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ORCHIDS

THE BULLETIN OF THE AMERICAN ORCHID SOCIETY

VOL. 87 NO. 8 August 2018



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FRONT COVER

The variation in the genus *Habenaria* and its hybrids offers the grower of only a handful of plants a stunning palette of forms and colors. This month Leon Glicenstein shares a selection of his favorite hybrids.

Photograph by Leon Glicenstein

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The American Orchid Society provides leadership in orchids

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PRONUNCIATION GUIDE

Pronunciation of orchid names can be daunting for the novice and experienced grower alike. Presented below is a simplified pronunciation guide specific to the names found in this issue of *Orchids* magazine. An attempt has been made to represent each syllable using easily recognized sounds or words separated by hyphens and not standard phonetic symbols. Check out the Orchidist's Glossary on our website at <https://www.aos.org/orchids/orchidists-glossary.aspx>.

aemulum (EYE-mew-lum)
Anacamptis (an-a-KAMP-tis)
Anaphora (an-a-FORE-a)
arfakianum (are-fak-ee-AY-num)
arietinum (air-ee-a-TEE-num)
Artorima (are-tore-EE-ma)
atroviolaceum (at-troh-vye-oh-LAY-see-um)
bardolphianum (bar-dolf-ee-AY-num)
bicolor (BYE-kuhl-ur)
bigibbum (bye-GIB-bum)
blumei (BLOOM-ee)
bodegomii (boh-deh-GOME-ee-eye)
bornemanniae (born-ih-MAN-ee-eye)
Brachyantha (brak-ee-AN-tha)
Bulbophyllum (bulb-oh-FILL-lum)
Calanthe (kal-AN-thee)
calanthoides (kal-an-THOY-deez)
canadensis (kan-a-DEN-sis)
Cardiocrinum (kar-dee-oh-KRY-num)
carnea (KAR-nee-a)
carunculatum (kar-un-kew-LAY-tum)
caucasica (kow-KAY-sih-ka)
champagneuxii (cham-pain-YEW-ee-eye)
Cirrhopetaloides (sear-oh-pet-a-LOY-deez)
Cirrhopetalum (sear-oh-PET-a-lum)
claptonense (klap-tone-EN-see)
Corallorhiza (kore-al-oh-RYE-za)
Cordula (KORD-yew-la)
coriophora (kore-ee-OH-fore-a)
cornu-ovis (KORE-noo-OH-vis)
Corymborkis (kore-im-BORE-kiss)
curvicaule (kur-vee-KAW-lee)
Cymbidium (sim-BID-ee-um)
Cynorkis (sin-ORE-kiss)
Cynosorchis (sin-oh-SORE-kis)
Cypripedioideae (sip-rih-peed-ee-OY-dee-ee)
Cypripedium (sip-rih-PEED-ee-um)
Dactylorhiza (dak-till-oh-RYE-za)
dellense (dell-EN-see)
Dendrobium (den-DROH-bee-um)
discolor (DIS-kuhl-ur)
echinolabium (eh-kye-noh-LAY-bee-um)
erichmichelii (air-ik-mye-KEL-ee-eye)
facetum (fa-SEE-tum)
fascinator (fass-sih-NAY-tore)
flavum (FLAY-vum)
foemina (FEE-mih-na)
fritillariiflorum (frit-ill-lair-ee-ee-FLORE-um)
Fusarium (few-SAIR-ee-um)
gardineri (gar-din-ER-eye)
Gastroglottis (gas-troh-GLOT-tiss)
gennarii (gen-NAIR-ee-eye)
giganteum (jye-GAN-tee-um)

glanduliferum (gland-yew-LIF-er-um)
globuliforme (globe-yew-lih-FORE-me)
grandiflorum (grand-ih-FLORE-um)
guttulatum (gut-yew-LAY-tum)
Gyrostachys (gye-roh-STAK-iss)
Habenaria (hab-en-AIR-ee-ah)
hawkesianum (hawks-ee-AY-num)
Herorchis (hair-ORE-kiss)
hillii (HILL-ee-eye)
kingianum (king-ee-AY-num)
lasiochilum (lass-ee-oh-KYE-lum)
latifolia (lat-ih-FOLL-ee-a)
Latouria (la-TOUR-ee-ah)
lindeniae (lin-DEN-ee-eye)
lindleyana (lind-lee-AY-na)
Liparis (lye-PAIR-iss)
longicornu (lon-gee-KORE-noo)
longissimum (lon-GISS-ee-mum)
macroseratistis (mak-roh-seer-a-TIS-tiss)
maculata (mak-yew-LAY-ta)
maculosum (mak-yew-LOH-sum)
Malaxis (ma-LAKS-is)
maxillare (maks-ill-AIR-ee)
medusa (meh-DOO-sa)
Microstylis (mye-kroh-STY-liss)
militaris (mil-ih-TAIR-iss)
minutissimum (mye-new-TISS-ih-mum)
montana (mon-TAY-na)
morio (MORE-ee-oh)
mysorensis (mye-sore-EN-se)
nasica (NAY-sih-ka)
Neotinea (nee-oh-TIN-ee-a)
Neottia (nee-OTT-ee-a)
nudis-avis (NOO-diss-AY-vis)
omerandrum (oh-mer-AN-drum)
Oncidium (on-SID-ee-um)
Orchis (ORE-kiss)
oxysporum (oks-ee-SPORE-um)
palanganense (pal-ang-an-EN-see)
Paphiopedilum (paff-ee-oh-PED-ih-lum)
papilionacea (pap-ee-lee-oh-NAY-see-a)
Pectabinnaria (pek-ta-bin-AIR-ee-a)
Pecteilis (pek-TYE-liss)
phalaenopsis (fail-en-OP-sis)
Phyllorkis (fill-ORE-kiss)
Phytophthora (fye-toff-THOR-a)
picta (PIK-ta)
pleurochilum (plek-troh-KYE-lum)
praestans (PRAY-stans)
Pythium (PITH-ee-um)
quinquissetta (kwin-kwe-SET-ta)
reginae (reh-JYE-nee)
Rhizoctonia (rye-zock-TONE-ee-a)
rhodocheila (roh-doh-KYE-la)
rivinii (rih-VIN-ee-eye)
roebbelenii (robe-bell-EN-ee-eye)
rothschildianum (roth-schild-ee-AY-num)

sagarikii (sag-a-RIK-ee-eye)
Sarcochilus (sar-koh-KYE-luss)
schroederianum (schroh-der-ee-AY-num)
sichuanense (shich-wan-EN-see)
solani (SOH-lan-ee)
speciosum (spee-see-OH-sum)
spectabile (spek-TAB-ih-lee)
Spiranthes (spy-RAN-theez)
superbiens (soo-PER-bee-enz)
superbum (soo-PER-bum)
susannae (soo-ZAN-ee)
syriaca (seer-ee-AY-ka)
tibeticum (tih-BET-ih-kum)
tortisepalum (tore-tih-SEEP-a-lum)
trifida (TRY-fid-a)
Umbellatae (um-bell-LAY-tee)
umbellatum (um-bell-AY-tum)
uncinata (un-sin-AY-ta)
violaceolabellum (vye-oh-lay-see-oh-la-BELL-lum)
wilhelminae (will-hell-MIN-ee)
xanthochila (zan-tho-KYE-la)

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PRESIDENT'S MESSAGE

AS MANY OF you have undoubtedly seen on the news, the volcano on Hawaii's Big Island has now been erupting for a couple of months. A few commercial growers have lost not only their orchid greenhouse(s), but also their homes to the lava flows. As the volcano is still active, we do not know when they will be allowed back into the area, or how long it will be before they will start to rebuild. Please keep our orchid-growing friends on the Big Island in your thoughts as they face this terrible disaster.

Education is so very important to all of us. We start learning at an early age, and never stop. When you get a new orchid and you do not know how to care for it, where do you go for information — the internet, friends, your local society members or someplace else? We all know you need to be careful when asking for information on the internet, because so much information out there is not correct, and could actually prove fatal to your new plant. Or, the person giving you information may live in a totally different climate, and you have to adapt their information to make it work for your environment. The best sources are your friends in your local orchid society because they grow in the same climate. Another great source of information on a wide variety of different types of orchids is the culture sheets on the AOS website (<http://www.aos.org/orchids/culture-sheets.aspx>). These culture sheets provide general information for each group, and give you the parameters necessary to keep your plant happy and you successful.

Speaking of finding information on orchids, this month we are hearing from Phyllis Prestia, the chair of the Education Committee, about what that committee is doing. Phyllis is an educator herself.

"The Education Committee's focus is to promote and support the passion for orchids through education, one of the three overarching missions for the American Orchid Society. To that end, the committee develops, implements, and maintains comprehensive educational programs for the orchid community that embrace learners of all levels and ages. Current programs and activities include our webinars and online video presentations and the ongoing development of the "Kids' Corner," tailored specifically for young people and the orchid hobby.

In addition to maintaining current programs, the committee is dedicated to promoting new opportunities for learning. Creating new educational tools, taking



RON PRESTIA

Dr. Phyllis Prestia, chair of the AOS Education Committee

advantage of technology for education, and working with educational groups are areas for future emphasis. We are always looking for new ideas to achieve this goal and invite you to join in by emailing your ideas and experiences to education_committee@aos.org."

Our webinars remain a big hit, especially the monthly greenhouse chats with our very own Dr. Ron McHatton. In addition to the monthly Q&A, we try to offer an additional webinar each month presented by a grower focusing on one of his or her favorite orchids (or orchid groups) and sharing knowledge. If you have not yet taken part in any of the webinars, go to the AOS website and click on the All about Orchids pulldown tab; webinars will be on the top right. Click there to view upcoming webinars or scroll down the page to see previously recorded webinars that can be viewed at your leisure. Please note that membership in the American Orchid Society may be required to view some of the recorded webinars.

The AOS is currently seeking a staff librarian to allow us to open, at least on a part-time basis, our beautiful library. If you live near the Fairchild Tropical Botanic Garden, host to our library and headquarters, and would like to be considered for the position, please

contact Naya Marcano at naya@aos.org. We will also be looking for volunteers for the library once the librarian has been hired. If you would like to help, Naya is the contact as well. For now the goal is to make the library available part-time, but the Society's longer-term goal is to have it open full-time at some point in the future.

Please plan to join us for the Society's Fall 2018 Members Meeting, which will be held in conjunction with the 19th International Slipper Orchid Symposium, October 31–November 3 in Apopka, Florida (near Orlando). Once plans are finalized, schedules, speakers, vendors and registration information will be available on the AOS website. Everyone is welcome, so mark your calendar and let your friends know. We hope to see you there.

We are also looking for an orchid society to host our Spring 2019, Fall 2019 and Spring 2020 Members Meetings. It doesn't have to be a single society, so several societies in close proximity could combine efforts to host a meeting. For more details, please reach out to the Affiliated Societies Committee at affiliated_societies_committee@aos.org.

Until next time, happy growing!

— Susan Wedegaertner, AOS President
(email: susan@aos.org).

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QUESTIONS AND ANSWERS

PHALAEOPSIS MITES

QUESTION I have been battling a thrips problem for three years and have finally gotten it under control using Orthene. What do you think could be causing the scarring on the phalaenopsis leaf in the attached photograph? This problem has begun to appear on several plants other than the phalaenopsis. I think it may be bacterial rather than a virus. Do you have any suggestions as to which product to use.

ANSWER I think the key to this problem is the long-term trips problem and the use of Orthene to get it under control. Orthene provides good, inexpensive control but it is important to alternate pesticides to avoid creating secondary problems. In this case, it is not resistance to the pesticide but the fact that Orthene is indiscriminately brutal on an exceptional range of fauna. I believe the leaf scarring is due to an infestation of phalaenopsis mites allowed to get out of hand by the eradication of naturally occurring predatory mites that kept them under control. The problem often starts with phalaenopsis (their favorite hosts) and eventually spread to other plants with thin leaves and eventually even the thick leaved plants.



Horticultural oils and soaps offer reasonable control. Pyrethroid pesticides (Talstar, Bifenthrin) give good control and will also help to keep thrips at bay. Avid, Floramite, TetraSan and Pylon are other options. These are miticides with little effect on regular insects but they tend to be fairly pricey.

You can find a compilation of the most common miticides, their application frequencies and the life stages they control on the AOS website at <http://www.aos.org/AOS/media/Content-Images/PDFs/Miticides.pdf>.



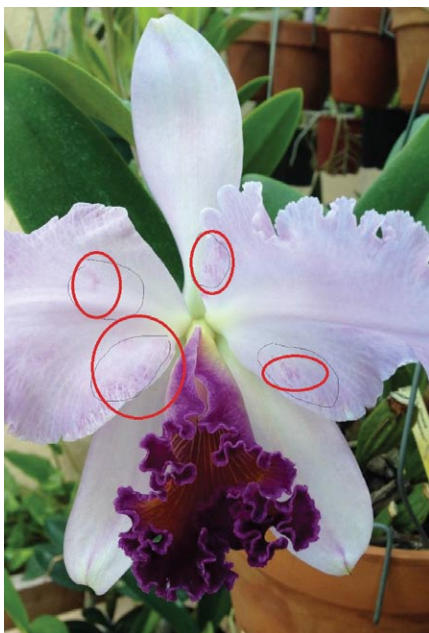
CATTLEYA LEAF CURL

QUESTION This picture is a plant I purchased about four months ago. The curled leaf circled in the photograph was flat when I got it. About a month later when it started to curl, I considered humidity as a problem and saw the leaf flatten somewhat. Since then it has regressed to a tighter form. I am now seeing the same problem on a plant I have had for about three years. Is this serious?

ANSWER You can breathe a sigh of relief here. What you are seeing in these leaves is part of the natural aging of the leaf. Cattleya leaves have a lifetime of about 3–5 years depending on the background of the plant and other cultural conditions. In this case, the plants are a bit drier than I would grow them but nothing critically so. The roots look fine and the curling involves the oldest leaves. Increasing water at the roots and humidity might slow the process down but what's happening here is that

the oldest leaves are nearing the end of their useful life. In some plants, this is accompanied by a gradual yellowing of the leaf and then leaf-fall without distortion of the leaf shape but for some plants, as the plant takes water out of the leaves to supply the front of the plant, the leaf will curl along the axis of the leaf, rolling up like this. It is more common on seedling leaves than on mature plants simply because these early leaves tend to be less rigid than leaves produced on mature plants.

— Ron McHatton (email: rmchatton@aos.org). These questions are part of our monthly webinar Q&A. To view recorded Greenhouse Chats (Q&A webinars) or register for a future one, see <http://www.aos.org/orchids/webinars.aspx>. Send questions to greenhousechat@aos.org



VIRUS?

QUESTION Could the pigmented areas on the petals of this cattleya hybrid be the result of a virus infection? The first time this plant flowered there was no indication of these spots but as the plant has gotten older they have become more and more apparent.

ANSWER It is unlikely that these are due to virus. Color break resulting from a virus infection usually shows up as a very unattractive streaking. If you look closely, there is a very faint lavender hue to the sepals and petals of this flower and it is most likely just an uneven expression of pigment. Some hybrid lines are more prone to this (and floral malformation as well) than others. Young plants may produce flowers with no visible imperfections but as the plants age, more and more color spots appear or the petals may progressively

become more like lips. The problem can also become more apparent in high light. At one time, it was nearly impossible to get good yellow cattleyas that did not produce deformed flowers over time. The seedlings would produce really well-shaped flowers only to become more and more deformed over time due to a genetic defect introduced from one of the species in the hybrid's background.

RHIZOCTONIA

QUESTION I grow my plants outdoors and I have developed a serious rhizoctonia infection in the cattleyas. How do I get control of this terrible disease. At this point, I am planning to repot everything, cutting off all the dead pseudobulbs and drenching with Thiomyl.

ANSWER Rhizoctonia is a fungal infection that occurs when drainage is poor, the medium has broken down and plants are overwatered. When growing outside it is important that a medium and pot combination is chosen to account for the lack of watering control or to provide overhead cover so you can allow cattleyas to dry between waterings. In cattleyas, rhizoctonia moves slowly from the older parts of the plant to the younger killing

the roots as it goes. The pseudobulbs of the infected portion turn brown and slowly become empty brown husks. You are doing the right thing repotting and removing all the dead and infected portions. Once cleaned up, the plants should be drenched in a suitable fungicide such as Thiomyl, Clearys 3336, Medallion or Pageant. The growing area can be disinfected with 10% bleach.

In hard water-water areas, plants should be thoroughly flushed at monthly intervals to prevent the buildup of salts in the potting medium and the subsequent root damage. Dead roots in the potting medium are an invitation to rhizoctonia problems.



HEAT STRESS

QUESTION I summer my plants outdoors and lately the summers have been much hotter than normal. I am worried about heat stress. Can you tell me the symptoms to watch out for?

ANSWER The signs of heat stress can vary quite a bit depending on the orchid genus and the extent of the stress. In mild cases, plants just do not look as green and healthy as they should. Foliage takes on a yellow color and pseudobulbs become shriveled, resembling the effects of overwatering but the root system will not be rotted. In cattleyas, heat stress coupled with calcium deficiency causes the leaves of the newly developing growths to die and blacken. This can resemble a fungal infection but the key is that only the leaves

of the youngest growths are impacted and only during periods of extended hot weather. Under the worst conditions, heat stress will look like sunburn as illustrated by the photograph to the left. At high enough temperature the leaf tissue is killed, collapses and produces these lesions. It can be distinguished from normal sunburn by shape and position. Sunburn occurs on the portion of the leaf blade perpendicular to the sunshine while areas killed by heat stress can be randomly distributed throughout the foliage as seen here.

GREATIdeas

Text and photographs by Jean Allen-Ikeson

Temporary Fixes

AH, THAT OUR growing areas, hardware and structures would be like those in a book of perfect culture. Life and nature often intervene. Most of us do not live with MacGyver, but with a little thinking out of the box, most of us can emulate him. The following quick cameos show you how to overcome some common problems. No doubt you have your own set of quick or temporary fixes for your orchids.

Pots that dry too quickly: A few people water selected plants more often or less often than the rest. Most of us do not have the time. So what to do with those small pots that dry out so much more quickly than the large ones? Try placing the small pot into a larger one and surround the small pot with sphagnum, with a bit on the bottom of the pot as well. It slows the quick drying and adds a little humidity especially if the outer, larger pot is clay. Or a 2-liter pop bottle with the bottom cut out and the cap left off also works like a mini greenhouse. But be careful to make sure it is not in strong sunlight as it may warm up too much.

Pots: All sorts of containers may be recycled as orchid pots when you do not have just the right-sized one. Drill or cut holes in the lower sides or bottom and try yogurt containers, cottage cheese containers, take-out soup containers, cut-off pop bottles or even the bottom half of a well-cleaned bleach bottle. They are not likely to last five years but your orchids will be complaining about living in old medium anyway if you wait that long! Drop them into a pretty ceramic pot and add a little sphagnum to camouflage the container when you show the flowers off at your local orchid society.

Plant clips: You can buy expensive clips to hold newly planted orchids firmly in pots or baskets, but crisscrossed small stakes or stiff wire pushed horizontally across the pot through drilled holes also works well. A pair of curtain hooks (drill holes in the pot for the part that would be in the curtain) work to hang pots on a vertical wire rack. Separate the hooks by about 15 to 20 percent of the pot diameter — enough to keep the pot steady but not so much that the hooks do not reach the wire rack.

Growing trainers: I love my cattleyas but some of them still think they are living



in a jungle on the side of a tree rather than putting out growths that stretch straight up like obedient soldiers at attention. They grow out horizontally. I cut a triangle out of an old plastic pot perhaps 2 inches (5 cm) wide and deep and shove it at a bit of an angle in front of the short new growth. When it is at an angle, the growth elongates up this little slide I have built and is forced upward. Although the growth may not grow perfectly straight vertically, at least it will grow upward. This is why I love *Cattleya purpurata*. They may be larger plants but the pseudobulbs and leaves bunch fairly close together and

[1] The author's "work platform" pressed into service as a temporary sunroom plant bench.

[2] Wooden stake inserted across this vanda basket helps hold the plant in place until roots become well-attached.

[3] This large epidendrum is potted in a relatively small pot. Placing the pot inside another pot helps slow down drying as well as adding stability.

grow mostly vertically without training.

Benches: You have just built a sunroom or greenhouse and have not had time to organize benching. Wood packing crates work well on a greenhouse floor or temporary outdoor shelter (raise them on concrete blocks to keep the rabbits out!). I hate to admit it, but I am still using a “work platform,” which is a hybrid between a ladder and a scaffold, in my sunroom. These are wonderful for standing on to paint besides using as a plant bench. They would work well on a porch for the summer and are fairly lightweight, like an aluminum stepladder, and fold flat. If you move frequently, you may find these just the trick. The one I have is 16 inches × 48 inches (41 cm × 122 cm) and about 20.5 inches (52 cm) high. You can find them as small as 12 inches × 36 inches (30 × 91 cm) or a bit larger. I have my phalaenopsis sitting on specially made trays for plants but you can use any sort of tray to catch water: cookie sheets with lips, the top from an ice cream container, a shallow plastic sweater box, etc.

— Jean Allen-Ikeson, along with Kathy Barrett, coauthors the AOS Editorial Board. She is an accredited judge in the Toronto Judging Center and serves as the Center’s Training Coordinator.

COMING ATTRACTIONS — WEBINARS



WHEN: **August 8, 2018 8:30PM EDT**

WHAT: *The Pleurothallidinae and Their Pollinators*

WHO: Adam P. Karremans, University of Costa Rica

REGISTER AT: www.aos.org/orchids/webinars.aspx

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August 14, 2018 at 8:30 pm EDT — Greenhouse Chat - Orchid Q&A with Ron McHatton, AOS Chief Education and Science Officer.

September 5, 2018 at 8:30 pm EDT — Greenhouse Chat - Orchid Q&A with Ron McHatton, AOS Chief Education and Science Officer.

September 18, 2018 at 8:30 pm EDT — Judging the Oncidiinae with Ron Midgett, New Earth Orchids, Santa Fe, New Mexico.

October 9, 2018 at 8:30 pm EDT — Orchid Bark - What is Everyone Talking About? with Garry Clark, Pacific Wide Corporation, New Zealand.

For webinar announcements and login information check www.aos.org/orchids/webinars.aspx. Webinar announcements are posted to Facebook, Instagram and in the AOS Corner of your affiliated society's newsletter.

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August: A Month for Adventure

Text and photograph by Thomas Mirenda

MOST OF US spend the bulk of our year toiling at our jobs. Even if you absolutely love what you do for a living, work responsibilities generally preclude us from engaging in unusual diversion opportunities that occasionally present themselves. Even my friends who are retired find themselves busier than they ever were when they were in their careers. It is not just the pursuit of money that motivates us, but rather, the desire to do a good job, to be efficient and to demonstrate our commitment to our employers and our communities. All of this is very admirable and even noble, but there has to be a balance. You know what they say about "all work and no play." We all need a little bit of adventure in our lives from time to time. August is a great month to play hooky.



Thomas Mirenda

I may be one of the luckiest people in the world to be doing what I love in my career. Even so, to do our jobs well, we need to focus and often sacrifice many interesting outside opportunities. But

sometimes the prospects that fall into our laps are just too compelling to resist. Such was the case when I was recently invited to China. A whole new world has opened to me as a result. Although I inherently knew that orchids are beloved around the world, it was both gratifying and reassuring to see the level of appreciation for our favorite plants in this incredible part of our planet. I was completely overwhelmed by the beauty and majesty of this magnificent country with its warm and gentle people, outstanding natural beauty, superb wildflowers and, of course, a myriad of fantastic orchids. When you get the chance to participate in such an adventure, I hope you will take it!

AUGUSTAN CHALLENGES For many of us in the Northern Hemisphere, this is a torridly hot month. The majority of orchids we cultivate are stressed out by intense heat, particularly montane species. Although a few orchids from lowland habitats love the extra heat and humidity of midsummer, particularly certain dendrobiums, oncidiums and bulbophyllums, it is dangerous to generalize. With such diverse orchid habitats, only the grower (you) can



Cypripedium tibeticum photographed by the author in southern China.

adequately research the requirements for your plants. The aforementioned genera have representatives from cool, high mountains as well as steamy lowlands.

A COOL BREEZE ON A HOT SUMMER DAY Does that sound nice? If they could hear, it would sound nice to most of your orchids as well. Even most of your hotter-growing orchids are from places that have great air movement and often frequent rain to cool them at midday. When it is super hot, it is always best to keep your plants out of direct, burning sunlight and place them in a spot where there is usually some gentle air movement.

A COOLING DRINK TO TAKE THE EDGE OFF Although excessive watering can cause detrimental fungal issues this time of year, watch your plants carefully for stress factors. You do not want your plants to roast, or have their medium become bone dry in the summer heat. On really hot days, a very gentle misting can be helpful to reduce leaf surface temperatures. Feel the leaves; if they are hot to the touch, they are in danger. Be careful of excessive misting, as that can

trigger plants to engage in respiration that might actually further desiccate them on a hot day.

OTHER WAYS TO BEAT THE HEAT Sometimes, summer heat can be relentless, particularly when nighttime temperatures barely dip from daytime ones. If your plants seem to languish and suffer this time of year, perhaps moving them near a cool pad or to an air-conditioned windowsill is in order. Although air conditioning takes much needed humidity out of the air, it is often preferable to excessive heat stress. In any case, the change is temporary. By next month, things should cool down somewhat and those stresses will be abated.

— *Tom Mirenda has been working professionally with orchids for over three decades. He is an AOS accredited judge and is the chairman of the American Orchid Society's Conservation Committee. He recently coauthored The Book of Orchids: A life-size guide to 600 species from around the world. (email: biophilialak@gmail.com; www.htbg.com).*

ORCHID HYBRID REGISTRATION GOES ONLINE

FOR THE FIRST time ever, people wanting to register a new orchid hybrid name with the RHS in its role as an International Cultivar Registration Authority (ICRA) can now do so online.

Registrants can now create an account, add all the details about their plant, send photographs and pay their registration fee all through the new online system. To set up an account go to <https://plantregistration.rhs.org.uk/login?returnUrl=%2Forchid>



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Sylvia strigari

Paphiopedilum glanduliferum

Text by Melissa Díaz Morales and Franco Pupulin/Watercolor by Sylvia Strigari

Subfamily CYPRIPEIDIOIDEAE
Genus PAPHIOPEDILUM Pfitzer

Paphiopedilum glanduliferum (Blume) Stein, *Orchideenbuch* 468, 1892. Basionym: *Cypripedium glanduliferum* Blume, *Rumphia* 4:56, 1849. *Paphiopedilum glanduliferum* (Blume) Pfitzer, *Bot. Jahrb. Syst.* 19:41, 1895; homonym *Cordula glandulifera* (Blume) Rolfe, *Orchid Review* 20:2, 1912. Type: New Guinea, Zippel s.n. (holotype, L.). *Cypripedium praestans* Rchb.f., *Gard. Chron.* n.s. 26:776, 1886. *Paphiopedilum praestans* (Rchb.f.) Pfitzer, *Bot. Jahrb.* 19:41, 1895. *Cordula praestans* (Rchb.f.) Rolfe, *Orchid Review* 20:2, 1912. *Paphiopedilum glanduliferum* var. *praestans* (Rchb.f.) Braem, *Paphiopedilum*: 69, 1988. Type: New Guinea, hort. J. Linden (holotype, W). *Cypripedium gardineri* Guillemard, *Cruise of the Marchesa* 2:309, 1886. *Paphiopedilum gardineri* (Guillemard) Pfitzer, *Bot. Jahrb.* 19:41, 1894. *Paphiopedilum glanduliferum* var. *gardineri* (Guillemard) Braem, *Paphiopedilum*: 69, 1988. Type: New Guinea, Japen (Jobi). *Paphiopedilum wilhelminae* L.O.Williams, *Am. Orchid Soc. Bull.* 10:373, t. 12, 1942. *Paphiopedilum praestans* subsp. *wilhelminae* (L.O.Williams) M.Wood, *Curtis's Bot. Mag.*: t. 743, 1977. *Paphiopedilum glanduliferum* var. *wilhelminae* (L.O.Williams) P.J.Cribb, *The genus Paphiopedilum*: 111, 1986. Type: New Guinea, Brass 11650 (holotype, AMES).

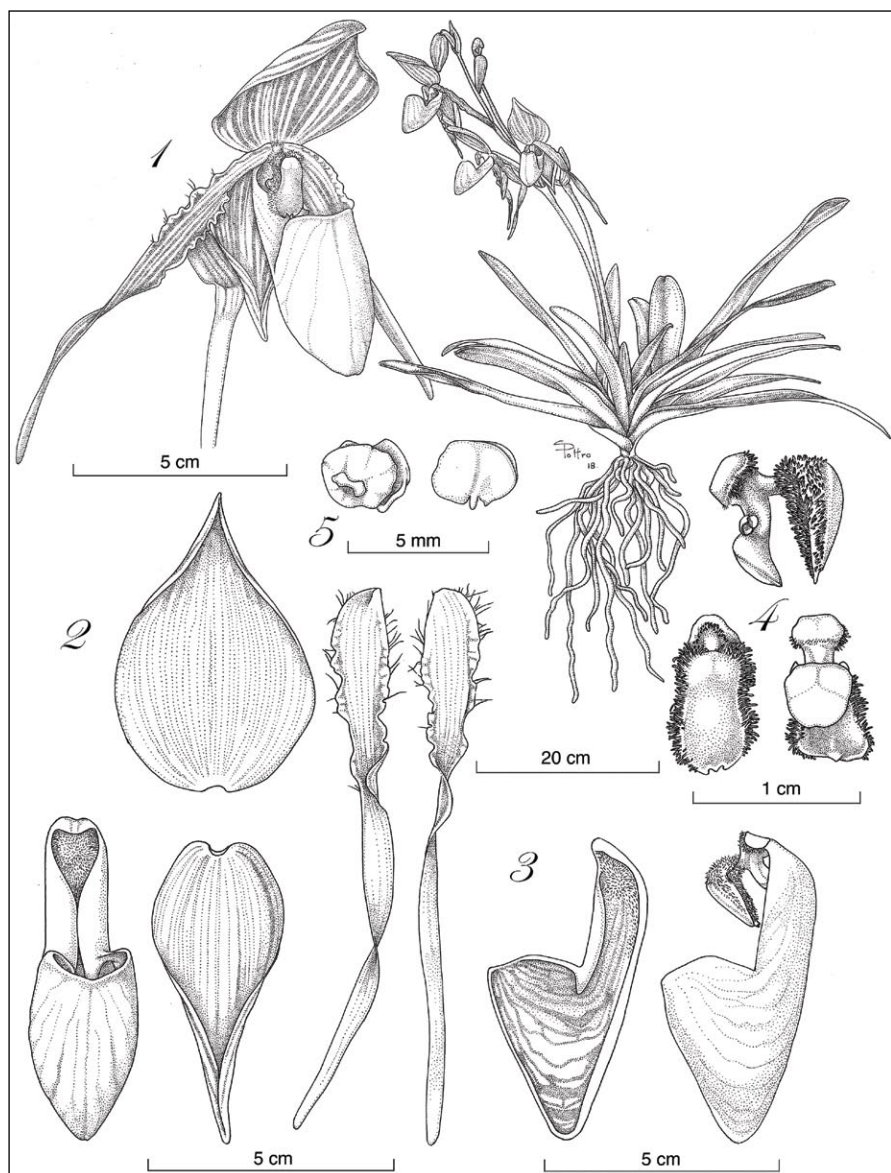
An epiphytic or terrestrial herb up to 50 cm tall. Roots coarse, branched, densely pubescent, dark brown, 4–6 mm in diameter. Leaves ensiform, obtuse, 16.5–34.5 × 2.0–4.2 cm midgreen. Inflorescence erect to arching–suberect, 35–37 cm long, unbranched, successively flowered; peduncle dark purple, finely pubescent, with a large, ovate, conduplicate bract, 6.5–9.0 × 1.0–1.5 cm, green suffused with a dark purple. Floral bracts conduplicate, ovate, acute, 3.4–4.5 × 1.0–1.6 cm, yellowish green suffused with red, tinged with dark purple along the veins. Flowers with white to pale yellow sepals, striped with dark purple, the petals white with yellow on the base becoming dark purple along the veins and towards the apex; lip pale yellow suffused

with red and dark purple veins, dark red on the adaxial surface; the staminode yellow with a wide reddish purple apical spot. Pedicel and ovary 49–58 × 5.0–5.5 mm, yellowish green with purple stripes. Dorsal sepal broadly ovate, acute, 5.1–5.9 × 3.8–4.1 cm, 17-veined, concave, with apical margins involute. Lateral sepals fused into an ovate, acute synsepal shorter than the lip, 5.2–5.7 × 2.0–2.6 cm, concave, the margins involute from the middle to the apex, finely pubescent on the base of the abaxial surface. Petals linear, obtuse, 114–122 × 0.5–0.6 cm, with dark purple, setose glands on the basal half of the crisped margins, finely pubescent in the apical half, longitudinally twisted. Lip urceolate, 5.7–6.4 × 2.0–2.5 cm, densely pubescent on the base of the adaxial surface, the frontal lobe subtriangular, the rim truncated. Column 8 mm long; the staminode subpandurate to subquadrate, minutely tridentate at the apex, approximately 7 × 4 mm, densely pubescent on the margins; stigma 6.2–6.5 mm long, hidden by the staminode, the base pubescent. Anthers small, 2.1 × 2.6 mm, bilocular. Pollinia glutinous masses, 2.6–3.0 mm long. According to Cox et al. (1998), the species has $2n = 26$.

After the early attempts to compile a flora of Malesia towards the end of the 18th century, made by the Spanish priest and botanist Francisco Noronha (or Noroña) (1748–1788), who wrote on the plants of Java and prepared several watercolor illustrations of the island's flora, and by the French naturalist Louis Auguste Deschamps (1765–1842), who explored the flora of Java at the end of the century, the figure of Carl Ludwig Blume (1796–1862) came out as the undisputed pioneer in planning the compilation of a *Flora Malesiana*. Blume was born in Braunschweig, Germany, but he carried out his education in medicine at Leiden University and centered his professional career in the Netherlands and the Dutch East Indies. He arrived in Java in 1819, then only 22 years old, to begin a research appointment at the newly established Botanic Gardens at Buitenzorg (Bogor), founded in 1817, of which he assumed the directorship in 1822 (van Seeën 1984). In the next five years he traveled widely on

the island, collecting plants and recording their uses and medical properties. He published many of the results of his explorations between 1825 and 1827 in *Bijdragen tot de Flora van Nederlandsch Indië*, published in 17 fascicles, where he produced a concise treatment of about 2,400 species in 700 genera of flowering plants. In 1826 Blume returned to the Netherlands and never returned to Java. Here he was appointed as the director of the Rijksherbarium, founded at Brussels in 1829 and later moved to Leiden, a charge he retained until his death in 1852 (van Seeën 1984). At the Rijksherbarium he worked to increase the collections and founded another large-scale work, *Rumphia*, aimed at including plants not only from Java but also from other parts of Malesia, which finally consisted of four volumes published between 1836 and 1849. It was in the fourth volume of this work where Blume described *Cypripedium glanduliferum*, based on a plant collected in New Guinea by one of the assistant curators in the botanical gardens at Buitenzorg, Alexander Zippelius (1797–1828). In 1828 Zippelius had joined the Natuurkundige Commissie voor Nederlandsch-Indië (Natural Sciences Commission for the Dutch Indies) in its expedition to the southwestern coast of New Guinea, and Timor. He died in Kupang, Timor, in December 1828, following the fate of 12 out of the 18 naturalists sent by the Commission to explore the Dutch Indies.

When Blume described *Cypripedium glanduliferum*, he had at hand not only two dried specimens prepared by Zippelius, but also a beautiful botanical illustration made by Jean Antoine Bartholomi Jacques Latour, an accomplished amateur illustrator who had accompanied Blume in his searches for plants all around Java and who eventually prepared some 1,500 illustrations of plants from the island. Blume brought back his drawings to the Netherlands on his return, and several of them were used to illustrate his *Flora Javae nec non insularum adjacentium...* (1828–1851), *Rumphia* (1835–1849), and the beautiful *Collection des Orchidées les plus remarquables de l'Archipel Indien et du Japon* (1858–1859). It is to him that



Paphiopedilum glanduliferum. The plant.

1. Flower.
2. Dissected perianth.
3. Lip and column, lateral view and longitudinal section (the lip only).
4. Column in lateral, frontal and ventral views.
5. Anther and pollen masses.

Drawn from a plant at JBL by Sara Poltronieri.

Blume dedicated the genus *Latouria* (now synonymized under *Dendrobium*), whose type species, the New Guinean *Latouria spectabilis*, is painted on the same branch where the original specimen of *Paphiopedilum glanduliferum* is also portrayed. The fact that taxonomic literature wrongly associates the eponymy of the genus *Latouria* with the French Théodore Leschenault de La Tour (Müller 1884 and following) results from a series of unlikely coincidences. As the botanist of the Baudin expedition (1801–1803), Leschenault de La Tour also visited New Guinea, and from there he moved to Java, where he spent another five years studying, describing and illustrating the native flora of the island. However, he could not have accompanied Blume on his expeditions, as Blume says in the introduction to *Rumphia*, because he left Java in 1806, 16 years before the arrival of

the German botanist, and he never visited the island again.

Berthold Stein transferred *Cypripedium glanduliferum* to *Paphiopedilum* in 1892 in his *Orchideenbuch* (*Orchid Book*), and Pfitzer (1895) superfluously remade the same combination in his “Contributions to orchid systematics.” Although Stein (and Veitch before him in 1889) considered Reichenbach’s *Paphiopedilum praestans*, described from New Guinea in 1886, a synonym of *Paph. glanduliferum* (which has priority), Pfitzer retained them separately, distinguishing the two by the shape of the staminode. As his view became the most widely accepted opinion about the species identity, *Paph. glanduliferum* was relegated into obscurity as a rare entity. It was not until the end of the last century when Blume’s name was resurrected, and *Paph. praestans* definitively recognized as a later synonym of it (Cribb 1987, Braem 1988). Being one of the first species of *Paphiopedilum* to be described, it is not strange that *Paph. glanduliferum* has quite a long list of synonyms. They include *Paphiopedilum praestans*, introduced from New Guinea by the Belgian firm of Linden, *Paphiopedilum gardineri* (based on the drawing of a plant from an island off the west coast of New Guinea, Guillemard 1886), as well as *Paphiopedilum wilhelminae* and the unpublished, horticultural name *Paphiopedilum bodegomii*, also from New Guinea. In his monograph of the genus, Cribb (1987) only recognizes at the varietal level var. *wilhelminae*, distinguished by the shorter leaves and the smaller flowers with the petals lacking the basal warts, a smaller lip, and a subquadrate staminode; this is the highland variety of *Paph. glanduliferum*, found in the southern highlands of Papua New Guinea. As populations of var. *wilhelminae* are geographically and ecologically distinct from those of the typical variety, the taxon should best be treated at the subspecific rank. Braem (1988) also treated at the varietal rank var. *gardineri* and var. *praestans*, which he essentially distinguished from the *varietas typica* by flower color.

Paphiopedilum glanduliferum is endemic to New Guinea, including the islands surrounding Western New Guinea. Although most of the varieties described for the species grow near sea level and in the lowlands up to 200 m, subsp. *wilhelminae* grows in the highlands up to 1,800 m on grassy slopes or claylike soils (Cribb 1987). In its natural habitat, the species can be frequently found growing

on limestone cliffs (Cribb 1987); however, it can also grow epiphytically, as shown in the illustration made by Latour, included in the original description of the species (Blume 1848).

The species can be cultivated in pots in a mix of charcoal and bark to provide adequate air at the roots, but also with moss and coconut fiber to retain the moisture needed for the plants. *Paphiopedilum glanduliferum* can tolerate intense but indirect light.

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Selected Botanical Terms

abaxial – the lower surface; pointing away from the stem	oblong – oval
acuminate – tapering to a point	obovate – egg-shaped with the narrow end down
acute – pointed	obtuse – blunt or rounded
adaxial – the upper surface; pointing toward the stem	ovate – egg-shaped with the narrow end up
adnate – joined; grown together	pedicel – a stem carrying a single flower
apex – tip or top	peduncle – the lower part of the inflorescence below the first bud
caespitose – densely clumping	petiole – The stalk joining a leaf to a stem or pseudobulb
concave – bowl-shaped	pubescent – covered in fine, soft hairs
convex – curved like the exterior of a sphere	semiterete – not perfectly pencil- or needle-shaped
cuneate – wedge-shaped	setose – bearing bristles; bristly
epiphyte – plant that grows harmlessly on another plant	stipe – stalk or stem
flexuous – full of bends and curves	subacuminate – almost pointed
glutinous – sticky	subpandurate – almost fiddle-shaped
incurved – curved in on itself	subquadrate – more or less rectangular
involute – curled spirally	urceolate – urn- or pitcher-shaped
lacinate – fringe of hairlike projections	
lanceolate – tapering to a point at the tip (sometimes also at the base)	
ligulate – tongue-shape	
oblanceolate – like an upside down lance	



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GENUS OF THE MONTH

Chinese Cypripediums

By Thomas Mirenda



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IT WAS ABOUT a year ago that Holger and Wenqing Perner visited me at the Smithsonian. I had met them several times previously at orchid events such as the Paph Forum in Washington, DC and other conferences, and genuinely liked them both. What a great team! Both of them were on fire with love of orchids, particularly slipper orchids. It was always a joy to interact with them. I was proud to show them our collection, get their advice and enjoy several new plants that they brought with them. Their incredible life in China, and their joint orchid venture, Huanglong Mountain Biotechnology, seemed so fascinating, adventurous and exotic. I was truly intrigued and longed for the day that I might go there myself and see all the wonderful things that Holger included in his informative and eye-opening presentations.



Thomas Mirenda

Within a couple of months of that joyous visit, word spread about Holger's untimely passing. It was devastating news to the orchid world, as this beloved husband, father and orchid expert was universally respected and admired for his scholarship and groundbreaking work. Many of us wondered about the future of the promising business venture he started with Wenqing, and how she would fare emotionally with the loss of her husband and partner, and the responsibilities of raising their two teenage daughters, caring for her elderly mother, running two nurseries (one temperate and one subtropical) and an international business venture and continuing to support the many employees dependent on the business. Although I know she has been grieving deeply, she has also proven to be exceptionally strong, resilient and incredibly smart. I was so pleased to see her carrying on at events such as the World Orchid Conference in Guayaquil and presenting at the World Slipper Orchid Symposium here in Hilo last January and began to see her confidence, strength and commitment starting to flourish. Although she refers to her husband and all the protocols he developed for propagation of Chinese orchid species regularly, she now carries the torch quite proficiently and professionally.

A few months ago, I got an email from her asking if I might be available to come to China and give a lecture at a conference she was organizing on Orchid Conservation and Ecotourism. I have always believed



ecotourism fosters stewardship of the natural world and is something I deeply believe is integral to the success of any conservation effort. I had some time on my hands, was flattered and honored to be asked, so ... I went! Wouldn't you? This is how I, quite improbably, find myself writing about the unimaginably beautiful world of Chinese orchids. This first installment will cover some of the very rare species I got to see on this trip, both in the nursery and the wild, but hold on to your hats for September's installment when I will feature the astounding success of Wenqing's growing and propagation efforts with Chinese slippers and other types of orchids too. It is just too awesome.

The gateway to Tibet, Huanglong Mountain is a UNESCO World Heritage site of outstanding natural beauty with a complex of spectacular karstic travertine

[1–2] *Cypripedium tibeticum* photographed in-situ in southern China. Photographs by Thomas Mirenda

pools and waterfalls. Although these are the main attraction for the millions of Chinese who visit the immense, immaculately maintained park, in June, the landscape is adorned with multitudes of colorful wildflowers such as wild columbines, primroses, cranesbill, ranunculus, anemones, azaleas and rhododendrons and even mind-blowing meconopsis (Himalayan poppies) in vibrant shades of yellow, red, violet and blue. It is heaven on earth. I already knew that because of the rugged topography and vast territory of China, there was far more slipper orchid diversity there than in North America. Even so, I was not prepared for the abundance and incredible beauty of these species, especially seeing them

in context, growing in situ in their natural habitat. Perhaps the most abundant in the park were the magnificent clumps of *Cypripedium flavum*. This pale yellow species, closely allied with the North American *Cypripedium reginae*, thrives and makes massive multigrowth specimens here. On closer inspection, each individual clump exhibits subtle and remarkable differences in color and form, some imbued pink and others with a greenish tinge, but all exceptionally lovely.

Our excitement grew as we progressed up the easily managed and well-maintained broad wooden boardwalk, spotting the first of the intensely colored and outrageously beautiful specimens of *Cypripedium tibeticum*. Wenqing told us that as visiting scientists we were permitted to go off the trail and get up close and personal to these remarkable flowers. There were already a few scientists and graduate students from the conference exploring the terrain. Not one to miss out on such an opportunity, I climbed over the rail and gleefully started my own explorations. There were thousands of *Cyp. tibeticum* in bloom, no two alike, all of them gorgeous. With vibrant purple pouches and intensely striped sepals and petals, they were an unforgettable sight to behold. With all that glory dominating my view, it was a while before I realized that there were other orchids in this amazing habitat including the more cryptic miniature *Cypripedium bardolphianum* and an exuberant legion of calanthes not yet quite open. In the adjacent woodlands I came across some tiny goodyeras with wonderful metallic-patterned leaves as well.

The park was extensive and a spectacle from start to finish, with snow-capped peaks in the distance; Taoist, Buddhist and Tibetan temples dotting the landscape; as well as new wildflowers and waterfalls at every turn. It may have been the high elevation combined with the intense emotions elicited by such beauty, or perhaps my age and compromised physical fitness, but I found myself quite drained and fatigued by the end of the day; nonetheless I was still hungry for more.

The following day Wenqing took us down the hill to some lowland habitats where other amazing species occur. On a trail flanking a raging river bedecked with purple aquilegias we met up with some colleagues to find the site of the tiny, and extremely rare, *Cypripedium palanghanense* on the banks of a placid



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ZONG-XIN REN



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THOMAS MIRENDA



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THOMAS MIRENDA

- [3] *Cypripedium flavum* is a close relative to our North American *Cypripedium reginae*.
- [4] Here a graduate student researcher photographs the extremely rare *Cypripedium palanghanense*.
- [5] Geologically, this part of China consists of uplifted mountains and eroded limestone karstic formation provided dramatic habitat variation.

rivulet. Its downward-nodding (cernuate) dark maroon, spurred flower and proximity to the stream made it rather challenging to photograph with my smart phone, but it was still amazing to see this likely fruit-fly-pollinated species. Another nearby riparian area, the home of *Cypripedium plectrochilum*, a personal favorite very similar to the North American species, *Cypripedium arietinum*, had a large population that had just finished blooming. Along the way we spotted giant lilies (*Cardiocrinum giganteum*), and once we explored the side of the road, realized there were dozens (maybe hundreds) of these magnificent 12-foot (3.7-m) plants veiled in the dense forest shade. It was beyond remarkable to walk among these incredible mammoth lilies with heart-shaped leaves and deliciously fragrant, maroon-blotched trumpets.

However, the highlight of the day was unquestionably finding the habitat of *Cypripedium sichuanense*, identified only by a particular large boulder on the side of the road, and no other marker, for reasons that became more obvious later on (apparently this site had once been tragically poached). Wenqing was worried that the habitat would be too difficult for me to climb and find the plants. Of course, I still wanted to try. The path was difficult and treacherous, but there were many immature specimens on the steep embankment, identified by their paired basal leaves, boldly patterned with dark spots. We found one plant with a newly formed seed capsule, and a tag from a researcher who had preceded us, studying its pollination biology and capturing the local flies that were likely pollinating it. Apparently, the dark leaf spots have osmophores (fragrance glands) that initially attract the pollinators and eventually guide them to the flowers which, close to the ground, appear to be a fallen fruit. What an interesting pollination syndrome! I decided to head back down early, as I did not see any flowers I could photograph and did not want to hold up my colleagues, when about 5 feet (1.5 m) from the road, I spotted a perfect specimen in full bloom. Although the irony of this did not escape me, I could not believe my luck and waited patiently for the others to find me.

Finding these rare species I had only seen in books and online photographs was such a rewarding experience. But, there was much more to see. Holger and Wenqing have been collecting and cultivating cypripediums from all over China and indeed, the world. Many of



WENQING PERNER



WENQING PERNER



LOURENS GROBLER

these were in glorious bloom in their nursery at Huanglong Mountain. Sorry, you will have to wait until September to see them here.

— Tom Mirenda has been working professionally with orchids for over three decades. He is an AOS accredited judge and is the chairman of the American Orchid Society's Conservation Committee. He recently coauthored The Book of Orchids: A life-size guide to 600 species from around the world. (email: biophiliak@gmail.com; www.htbg.com).

- [6] The dark damaged-looking spots on the leaves of *Cypripedium sichuanense* are a curious adaptation to attract a pollinating insect. Inset photograph by the author.
- [7] This diminutive *Goodyera* species is nonetheless stunning.
- [8] This profile photograph of *Cypripedium plectrochilum* taken by Lourens Grobler clearly shows the unusual shape of the pouch and the transparent windows this species shares with the North American *Cypripedium arietinum*.

Hydrogen Peroxide

Text by Sue Bottom/Photographs by Terry Bottom

MOST MEDICINE CABINETS have a brown bottle filled with hydrogen peroxide, used to help prevent cuts and scrapes from becoming infected. Hydrogen peroxide is water combined with an extra atom of oxygen, having the chemical formula H_2O_2 . The compound is unstable, ultimately converting into water and oxygen, although radical intermediates can be produced in the decomposition process. These reactive oxygen compounds are what make hydrogen peroxide useful as a disinfectant and sterilant in your battle against disease organisms. Keep a fresh bottle handy in your growing area. There are many ways to use it on your orchids.

FOLIAR DISEASES Hydrogen peroxide is a simple, cheap and amazingly effective antibacterial and anti-fungal agent, although it is not registered or labeled for this use. The 3% strength product sold in drug and grocery stores can be used full-strength on your plants. Search around for the 8-ounce (237-ml) spray bottle of hydrogen peroxide and keep it handy in your growing area. It kills bacteria and fungal spores on the aerial parts of the plant without damaging the orchid. Spray sunburned leaves to prevent secondary infections, spray leaf surfaces after prolonged rainfall to prevent rots, pour into phalaenopsis crowns to stop crown rot from progressing. Use it liberally whenever you see leaf discoloration, water pooling, sunken spots, etc.

DRENCHES Sometimes adding hydrogen peroxide to irrigation water is recommended as an easy way to increase the oxygen content in the root zone. When hydrogen peroxide is added to distilled water, it converts to water and molecular oxygen, the same compound that comprises 21% of the atmosphere, and this form of oxygen is great for the roots. But in the presence of organic matter or metal ions, reactive intermediate oxygen compounds (peroxyl radicals, superoxide ions, hydroxyl radicals) may be formed and these are indiscriminate oxidizers. They will deactivate anything that is organic: microbes and fungal organisms (good and bad), plant tissue (living and dead)



and organic matter (bark, peat or moss in your potting mixes). In fact, medical professionals no longer recommend hydrogen peroxide to sterilize wounds because it also destroys healthy tissue, although its effervescent cleansing actions are effective at debriding and removing necrotic tissue. If you choose to pour hydrogen peroxide through the root zone of your plants, you risk destroying

- [1] Look for the hydrogen peroxide sold in small spray bottles. Keep a bottle in your growing area so you can treat small problems before they become big problems.
- [2] Leaf rots are not uncommon after an extended period of rainy weather. Remove severely damaged tissue and spray with hydrogen peroxide to prevent the rot from spreading.



Sue Bottom

the microorganisms growing in the rhizosphere, whether they are beneficial, benign or pathogenic.

If you know you have a pathogen such as *Fusarium oxysporum* or *Rhizoctonia solani* infecting your roots, you may say “bombs away” and drench your potting mix with hydrogen peroxide. You are accepting the fact that you might kill the microflora, and then wait for the beneficial organisms to reestablish. If you have only one or a few plants, perhaps a better alternative is simply repotting them into a fresh potting mix, discarding the contaminated mix and infected tissue, rather than using a hydrogen peroxide drench. If you have a widespread problem, you might choose a fungicide with targeted effectiveness on the pathogen in question rather than a broad-spectrum peroxide drench.

AFTER REPOTTING Alan Koch of Gold Country Orchids has shared his technique of drenching pots with hydrogen peroxide after repotting to promote elongation and branching of the roots. There are scientific papers suggesting reactive oxygen species can increase lateral and adventitious root growth in some plant families, and there are reports promoting hydrogen peroxide applications to cuttings to prevent damping off and similar disease problems. If you spray the roots or drench your orchids with hydrogen peroxide after repotting into a fresh mix, you are probably not going to damage any rhizosphere populations except for those growing on or in your roots. Perhaps the hydrogen peroxide has the added benefit of sanitizing the wounds you inflicted on the roots during the repotting process, similar to cauterizing a wound. If you use biofungicides or probiotic products to help establish beneficial bacteria and fungi, apply them the day after hydrogen peroxide applications. If you use ProMix blends that contain mycorrhizae or biofungicides, spray the roots prior to repotting rather than drenching the potting mix.

WATER TREATMENT A disinfectant such as hydrogen peroxide can be used to treat irrigation water to remove pathogenic organisms and biofilm accumulations. Hydroponic growers that recirculate irrigation waters and others using surface waters as an irrigation source may have to treat water to prevent disease in the growing area. The literature suggests around 150 ppm hydrogen peroxide (3.8 tsp/gal or 5 ml/L of 3% product) is necessary to treat common waterborne pathogens such as *Pythium*,



Phytophthora, *Fusarium* and *Rhizoctonia* (Fisher 2011) and perhaps 400 ppm (3.4 tbsp/gal or 13 ml/L of 3% product) for virus (Runia 1995). Hydrogen peroxide can be used as an oxidizing agent to clean an irrigation system of algae and organic buildup, after which a low dose on the order of 10 to 25 ppm can be applied

[3] This small rot spot did not spread after a few sprays of hydrogen peroxide. If only I had started spraying after the first few days of rain.

[4] Spray hydrogen peroxide any place where water can pool to kill omnipresent bacteria before they rot the plant crown or new growth.

continuously to keep the irrigation system clean (0.25–0.64 tsp/gal or 0.4–0.8 ml/L). Hydrogen peroxide is used to destroy organic contaminants present in the water or water lines and should be consumed in these reactions before reaching the roots. It is used as a sanitizer rather than as a way of supplying supplemental oxygen to your orchid roots.

SHELF LIFE An unopened brown bottle of hydrogen peroxide has a shelf life of up to three years from the date of manufacture, as indicated by the expiration date on the bottle. Once the seal is broken and the peroxide exposed to air, warmth and light, the peroxide decomposes to water and oxygen gas at an accelerated rate. Under ideal storage conditions, you might have about 30–45 days of peak effectiveness and perhaps six months of useful activity. If you pour some on a cut and it no longer fizzes, it has lost its antiseptic qualities and the brown bottle contains only water. Mark the date you opened the bottle on the label, so you will know when to replace it. If you use the small spray bottles, get into the routine of pouring out unused solution and refilling the bottle on the first of every month.

DIFFERENT FORMULATIONS Hydrogen peroxide is produced in different strengths for various industrial applications, up to 98% for rocket fuel, but highly concentrated solutions are hazardous to handle. BioSafe Systems makes activated peracid products, such as SaniDate and ZeroTol, which contain both hydrogen peroxide and acetic acid, producing a highly reactive product called peroxyacetic acid (PAA). This is more effective than hydrogen peroxide alone, but it also more dangerous to handle. These products cost well over \$100 for a 2.5 gallon (9.5 L) jug and are probably more suitable for use by the commercial grower rather than the typical hobbyist. Biosafe Disease Control, available in smaller quantities and lower concentrations (5.34% hydrogen peroxide and 1.36% PAA), may be of interest to home orchid growers.

Keep hydrogen peroxide in your growing area so it is right there when you need it. Spray it on the aerial parts of your plants the moment you notice any wounds, discolorations, sunken spots, areas where water pools, anywhere that the plant tissue just does not look right. Use it liberally; the peroxide is not going to improve with age. The high-priced fungicides have their place in your arsenal, but you cannot buy them at the Dollar Store. Hydrogen peroxide is cheap,



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effective and available; what's not to like!

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— Sue Bottom started growing orchids in Houston in the mid-1990s after her husband Terry built her first greenhouse. They settled into St. Augustine, Florida, Sue with her orchids and Terry with his camera and are active in the St. Augustine Orchid Society, maintaining the society's website and publishing its monthly newsletter. Sue is also a member of the AOS Editorial Board (sbottom15@gmail.com).



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- [5] When Terry was replumbing the greenhouse water lines, he cut away an old section of pipe that containing a sticky, organic buildup on the inside of the polyvinyl chloride pipe. This deposit is a biofilm that develops inside irrigation lines, possibly exacerbated by the prior use of the pond behind the house for water.
- [6] This experiment to see how long it would take for the hydrogen peroxide to lose its fizz was a failure; the balloon partially inflated after a week or two but the balloon degraded before the peroxide did.

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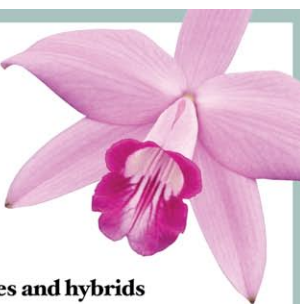
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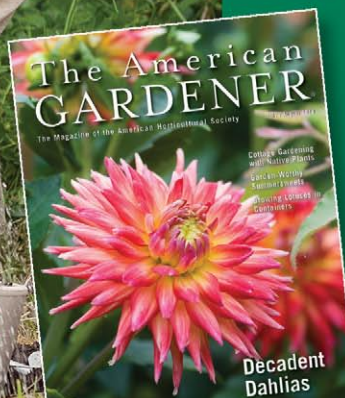
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Anacamptis morio by Peggy Alrich and Wesley Higgins

An Old World Species



THIS TERRESTRIAL SPECIES (*Orchis morio*) was originally described by Linnaeus in *Sp. Pl.*, 940 (1753); and later moved to the genus *Anacamptis* by R.M. Bateman, Pridgeon and M.W. Chase in *Lindleyana*, 12:120 (1997). There is one homotypic synonym, *Herorchis morio* (L.) D. Tyteca and E. Klein, *J. Eur. Orch.*, 40:541 (2008). *Anacamptis morio* also known as the green-veined orchid and is predominately a western Eurasia species. *Anacamptis* is from the Greek for “bent back,” referring to an allusion to the position of pollinia, and the name *morio* is derived from the Greek word *moros*, meaning “fool.” This refers to the colorful, green-striped flowers.

The species is found from central to southern England (Ireland and Wales) and east to Iran, and then in mostly full sun in short, poor grassland; limestone-rich meadows; alpine pastures; and forest fringes. The plants vary in size and habit, which is most often linked to environmental conditions; the more abundant and robust plants often grow on damp to wet soils, and the more spindle-shaped plants often grow in shadier regions. The hood and lip are sometimes

discolored, but the lip is rarely unmarked. The flowers do not produce nectar, but can attract pollinators with their visual appearance. This nectar-deception facilitates the mixing of pollen between different individual plants, promoting genetic diversity within the species.

There are six recognized subspecies: *Anacamptis morio* subsp. *morio*¹; *Anacamptis morio* subsp. *caucasica* (K. Koch) H. Kretzschmar, Eccarius and H. Dietr., *Orchid Gen. Anacamptis Orchis Neotinea*, ed. 2, 125 (2007); *Anacamptis morio* subsp. *champagneuxii* (Barnéoud) H. Kretzschmar, Eccarius and H. Dietr., *Orchid Gen. Anacamptis Orchis Neotinea*, ed. 2, 130 (2007); *Anacamptis morio* subsp. *longicornu* (Poir.) H. Kretzschmar, Eccarius and H. Dietr., *Orchid Gen. Anacamptis Orchis Neotinea*, ed. 2, 134 (2007); *Anacamptis morio* subsp. *picta* (Loisel.) Jacquet & Scappat., *Répartit. Orchid. Sauvages France*, ed. 3, 3:7 (2003); and *Anacamptis morio* subsp. *syriaca* (E.G. Camus) H. Kretzschmar, Eccarius and H. Dietr., *Orchid Gen. Anacamptis Orchis Neotinea*, ed. 2, 142 (2007).

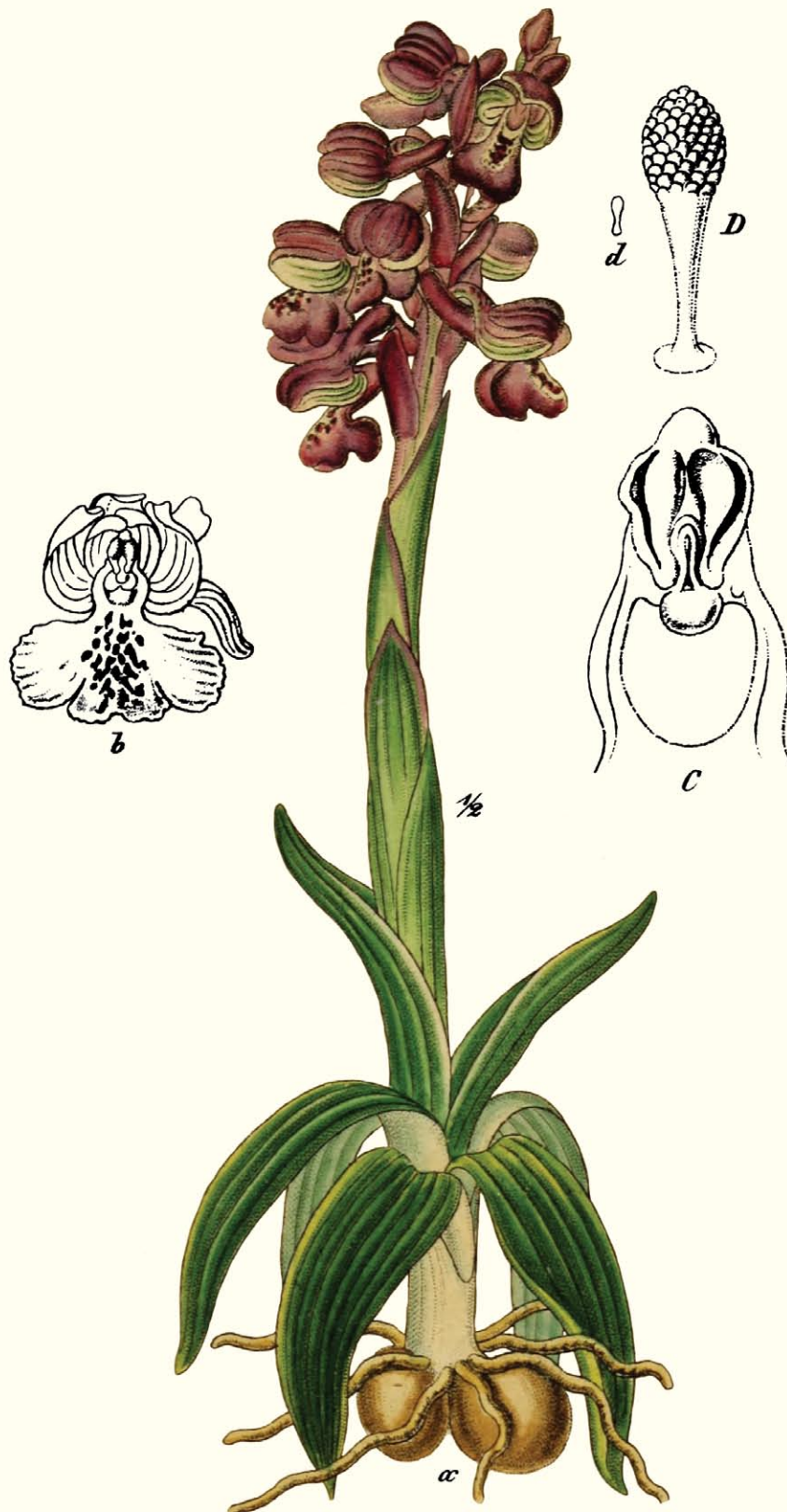
These usually robust, tall plants (up

to 16 inches [40 cm]) have thick stems washed with violet toward the tip. A few basal leaves grow in a rosette around the base of the plant and are usually narrow-shaped with a pointed tip (lanceolate). The short, numerous-flowered inflorescence has medium-sized, helmet-shaped flowers in various shades of violet, purple or lilac and sometimes white, but rarely pink. The roundish dorsal sepal is clearly veined green and washed green at the base. The often-broad lateral sepals are oblong and have rounded, scalloped margins, sometimes with slightly wavy margins. The dorsal sepal and petals are nearly equal in size, with the lip much broader than long. The kidney-shaped lip is almost flat to even concave, sharply folded and densely marked with violet to pink blotches, with the lip being rarely unmarked. The often-broad, robust spur is club-shaped and slightly shorter than the lip. The two pollinia are mealy and are either attached either to a solitary viscidium or to two separate viscidia.

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¹When a species is considered to contain subspecies, the subspecies that contains the name-bearing type of the nominal species is denoted by the same species-group name as the species, with the same author and date.

*Orchis Morio*. L.



Antique Plates—*Anacamptis morio*

- [1] *Dentaria radice coralloide* (*Corallorhiza trifida*), *Orchis latifolia* (*Anacamptis morio*), *Cynosorchis foemina* (*Anacamptis coriophora*) and *Nidus avis* (*Neottia nidus-avis*)—*Hortus Eystettensis*, 2:t.197 (1620).
- [2] *Orchis morio* (*Anacamptis morio*)—*Deutschlands Flora*, 20:t.70 (1848).
- [3] *Orchis morio* (*Anacamptis morio*), *Orchis maculata* (*Dactylorhiza maculata*) and *Orchis rivinii* (*Orchis militaris*)—*Kräuterbuch, unsere Heilpflanzen in Wort und Bild*, t.13 (1905).
- [4] *Orchis morio* (*Anacamptis morio*)—*Icones Plantarum Medico-oeconomico-Technologicarum*, 2:t.174 (1804).
- [5] *Orchis morio* (*Anacamptis morio*)—*Flora Londinensis*, 3:t.174 (1777).
- [6] *Orchis morio* (*Anacamptis morio*)—*Flora regni borussici*, 1:t.1 (1833).
- [7] *Orchis papilionacea* (*Anacamptis papilionacea*), *Anacamptis × bornemanniae* (*Anacamptis × gennarii nothosubsp. bornemanniae*), and *Orchis longicornu* (*Anacamptis morio* subsp. *longicornu*)—*Florae Sardoae compendium*, 66.7, f.4 (1884).

Selected Habenaria Hybrids

TEXT BY LEON GLICENSTEIN/PHOTOGRAPHS, UNLESS OTHERWISE CREDITED, BY LEON GLICENSTEIN

THE GENUS *HABENARIA* is presently thought to contain between 800 and 1,000 species. They are found on every continent, except Antarctica; however, this may change in coming years. The plants are terrestrial, although there may be a few lithophytes and humus-epiphytes, which grow from fleshy roots or tuberoids. The flowers are usually small, in shades of green, yellow, and white, or combinations thereof; nevertheless, there are some with large or colorful flowers. This last group is often used in hybridization.



Leon Glicenstein

As of July 2017, approximately 37 hybrids, both intra- and intergeneric, had been registered with the Royal Horticultural Society's orchid registry. That does not mean that there are not more; they are just not registered. More hybrids are being created every year.

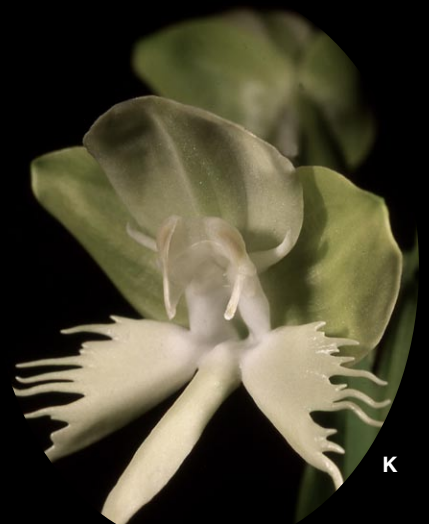
Those who are not interested in orchid history can skip this paragraph. The name *Habenaria* was created by Linnaeus based upon the Latin "habena," meaning "rein" (i.e., the narrow strip attached to one end of a horse's bit to help guide the horse where you want to go) referring to the rein-like nectary found in the genus; hence the common name of rein orchid for some members of the genus. In 1759 Linnaeus named a plant from the New World *Orchis habenaria*. Willdenow, in 1805, gave the plant the name we now know it by, *Habenaria quinquesetia* var. *macroseratitis* (or *Habenaria macroceratitis*), thus creating the genus *Habenaria*.

Once one understands the growth cycle for the genus *Habenaria* and its relatives (species and hybrids) they are fairly easy to grow. As mentioned above, these plants are mostly terrestrial, and grow from an underground tuberoid. Let's start in the spring, when the tuberoids are beginning to sprout. They are coming out of dormancy, of which more later, and have been kept fairly dry during their rest period. Please recognize that what follows is the way I grow them. If you are growing them successfully by other methods, by



all means, keep doing what you have been doing. At this point only water a little, moistening the surface of the medium, once a week. As the growth elongates and begins to produce leaves, water again once a week, but with more water; light feeding is good at this point too. The plants should be kept evenly moist, but not sodden. Moderate light (phalaenopsis light levels), humidity, air circulation, and intermediate temperatures make for good growing conditions. Sometime in mid- to late summer the plants, if mature, should flower. Enjoy! After flowering the

- [1] *Habenaria* Regnieri (*carnea* × *rhodochela*)
- [2] The author's *Hab.* Regnieri made using a yellow-lipped form of *Hab. rhodochela*.
- [3] *Habenaria* Erich's Pink Thing (Regnieri × *erichmicheli*)
- [4] *Habenaria* Flamingo (*erichmicheli* × *carnea*)



The species that make up the background of the hybrids discussed in this article:

(A–C) different color forms of *Hab. rhodochela*,

(D) *Habenaria erichmichellii*,

(E) *Habenaria roebbelenii*,

(F) *Habenaria xanthocheila*,

(G) *Habenaria lindleyana*,

(H) *Habenaria carnea*,

(I) *Habenaria medusa*,

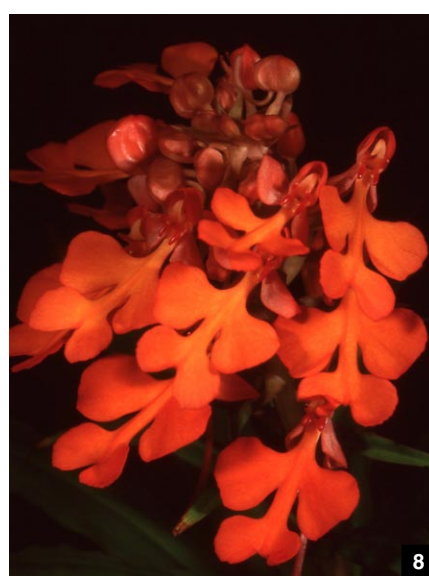
(J) *Pecteilis hawkesiana*, and

(K) *Pecteilis susannae*.

plants begin to die back. You can cut back on the water, but not completely. When the plants turn yellow and then brown it is time to begin the dreaded dormancy period. More *habenarias* are killed during this time, but it does not have to be so. Now you can cut back the plant. I like to leave at least an inch (2.5 cm) of stem so that when it comes time to repot I know which end of the tuberoid is the top. Because the plants do not need light at this point in their growing cycle you can put the pots anywhere with even, intermediate conditions, in the dark. Usually, if the plants are kept constantly wet at this time the tuberoids will rot. Some growers are able to keep their tuberoids completely dry during this period without deleterious results. If I do it, the tuberoids completely desiccate, shrivel, and die. So, once a week I spray a mist of water over the surface of the pots (I am not watering the pots!) and this works for me to get through dormancy without killing the plants. In late January or early February, I repot my plants. Some growers use sphagnum moss (do not pot tight!) or soilless medium but I prefer my terrestrial mix (Glicenstein 2017). I usually pot with the top of the tuberoids about ¼ inch (0.6 cm) below the surface of the medium. Because I have the stem that I left, I know which way is up, if it broke off and you cannot see which end is up, plant the tuberoid horizontally. Continue treating the pots as they were treated during the dormant period until growth begins, then treat again as above.

The World of Selected Plant Families reduces many of the species involved in the hybrids being discussed into synonymy with *Habenaria rhodocheila*; a position with which I do not agree. Here I have chosen to treat them as separate valid species based on reasoning expressed in my June 2018 *Orchids* magazine article (Glicenstein 2018).

In 1910 the first artificially created *Habenaria* hybrid was registered by the French plant collector, M. Régnier, a hybrid of *Habenaria carnea* and *Habenaria rhodocheila* named *Habenaria* Regnieri. In 1912 Régnier also registered the first *Pectabenaria* hybrid, *Pectabenaria* Original (*Habenaria rhodocheila* × *Pecteilis susannae*). The flowers of *Habenaria* Regnieri are about the size of an American quarter (~¾ inch [2 cm]) with a large, showy salmon-pink, trilobed lip and greenish-white sepals and petals. Usually this cross is remade using an orange- or red-lipped *Hab. rhodocheila*. I decided to try it with a yellow-lipped



one. Quite often yellow × pink produces white, or near white, flowers; because *Hab. carnea* is salmon-pink colored I did not know what would happen. The result, with the first seedling to flower, was a lip with a cleaner pink color. The foliage of both plants is handsome too. This, the traditional type of *Habenaria* Regnieri, has occasionally been confused with *Habenaria* Flamingo.

Erich Michel, at Hoosier Orchid Company, registered this hybrid (*erichmichelii* × *carnea*) in 2008. The flowers are about ¾ inch (2 cm) natural spread with a nice deep pink-salmon lip. The sepals and petals are white or green, sometimes with a slight pink tinge. As was mentioned in the previous paragraph, *Hab. Regnieri* is occasionally misidentified as *Hab. Flamingo*. Out of the original cross, there were only three seedlings, which were never sold, so unless it has been remade, the identification is not likely. Further, *Hab. erichmichelii* is very

[5] *Habenaria* Hoopoe (Regnieri × *roebbelenii*)

[6–7] Two color forms of *Habenaria* Tracy (*rhodocheila* × *erichmichelii*)

[8] *Habenaria* Hampson (*rhodocheila* × *roebbelenii*)

[9] *Habenaria* Conure (*xanthocheila* × Hampson)

[10–12] *Habenaria* Tanager (*xanthocheila* × *rhodocheila*)

dominant in the “stoop-shouldered” lip shape, at least in primary crosses with it. If you compare the lips of the two hybrids, you see that the shoulders of the side lobes of the lip in *Hab. Flamingo* are stoop-shouldered when compared to those of *Hab. Regnieri*, which raise up a bit.

The stooped shoulder can even be seen in the hybrid *Habenaria* Erich’s Pink Thing (Regnieri × *erichmichelii*) registered in 2016. Some of the Mercurochrome color at the base of the *Hab. erichmichelii*



lip comes through in the hybrid, the rest of the lip blade varying, depending upon the plant, from soft salmon to pink with some salmon overtones. The lateral sepals are a greenish-white. It is a decent-sized flower, about $\frac{3}{4}$ inch (2 cm) natural spread.

Habenaria Hoopoe (Regnieri \times *roebbelenii*) was registered in 2008. I tried to remember why I named it Hoopoe, and then recalled that I had seen a nature program about the Hoopoe bird at the time it first flowered and the colors of the lip reminded me of the colors in the bird's expanded crest. The flower is a little smaller than the previous hybrids, but charming, with warm hues of brown, yellow, and salmon.

Mike Dorris registered his *Habenaria* Tracy (*rhodocheila* \times *erichmichelii*) in 2012. One can readily see the *Hab. erichmichelii* stoop-shouldered lip in the hybrid. The flower can have a natural spread of about $\frac{3}{4}$ inch (2 cm) and is quite colorful. The lip colors can vary from a nice pink-salmon to rose-red flowers, depending on the plant.

The flowers of *Habenaria* Hampson (*rhodocheila* \times *roebbelenii*) are a brilliant red-scarlet. Many thanks to Dr. Harold Koopowitz for registering this hybrid in 2003. He used a red-lipped *Hab. rhodocheila* and a scarlet *Hab. roebbelenii* to create this jewel of a primary hybrid. The natural spread of the flower is about 0.6 inch (1.5 cm), and the plant is very floriferous. I wish I still had this plant.

Habenaria Conure (*xanthocheila* \times Hampson), registered in 2011, was named for the golden yellow plumage and orange-flushed underparts of the sun conure, a psittacine bird from South America, whose colors are reproduced in the flowers. The very floriferous plants have flowers that are about 0.6–0.75 inch

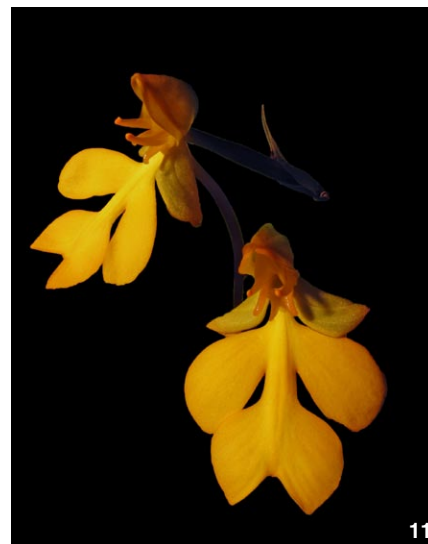


(1.5–2 cm) natural spread.

In 2008, *Habenaria* Tanager (*xanthocheila* \times *rhodocheila*) was registered. When originally made, the *Hab. rhodocheila* used was a red-lipped one. The flowers are yellow with a tinge of red. It has since been remade using the yellow form of *Hab. rhodocheila* and the flowers are a clear, bright yellow. However, an unexpected color form came out of this cross with reddish sepals and petals and a bright yellow lip. Regardless of color form, it is an easy plant to grow and flower. The flowers can have a natural spread of up to $\frac{3}{4}$ inch (2 cm).

One of the newer *Habenaria* hybrids is an unregistered grex I have labeled as *Habenaria* Oriole. The parentage is a little difficult to access. I have it listed as (Red Hybrid \times *xanthocheila*). What is the red hybrid? I bought it as *Habenaria roebbelenii*, but when it flowered, it definitely was not this species but was obviously a hybrid of that species — probably not a primary hybrid. The first plant of *Hab. Oriole* to flower had a brilliant, glowing golden-orange lip and light red sepals and petals. As the flower aged, instead of getting lighter, it became redder. The second plant to flower also had a golden lip, but not quite as bright as the first.

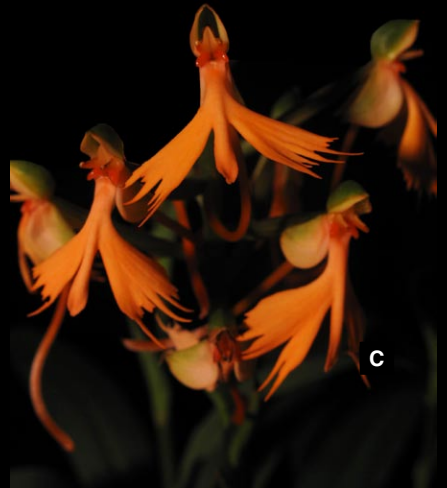
Another new hybrid is *Habenaria* Summer Tanager (Conure \times *roebbelenii*). The lip shape is very similar to that of the *Hab. roebbelenii*, but the color of the first one to flower was an intense, glowing red-scarlet to red. The flower is only about 0.6 inch (1.5 cm) natural spread. The sepals and petals were a light red. Because *Hab.*



Conure is a hybrid, not only of three different species but three different colors it is expected that this hybrid would vary from seedling to seedling and this is the case. The second one to flower was an orange-scarlet with a fuller flower. I cannot wait to see more variation.

In 2002, David Boucher of Hawaii registered his cross *Habenaria* Angel Bone (*carnea* \times *lindleyana*). This was the first *Habenaria lindleyana* hybrid to be registered. The flower, which is slightly cupped, is a lovely shell pink and is about $\frac{3}{4}$ inch (2 cm) natural spread. Unlike some of the other *Habenaria* hybrids which have an elongated leafy stem, the leaves of this plant usually form a rosette of leaves at the base of the plant like its *Hab. lindleyana* parent, the inflorescence arising from the center. At times there may be some elongation too. This hybrid has been remade a number of times.

Mike Dorris just released a new hybrid,





Collage of habenaria hybrids:

- (A) *Habenaria* Egret (*Kakoeri* × *medusa*),
- (B–D) *Habenaria* Bird of Paradise (*Conure* × *medusa*),
- (E) An unknown hybrid purchased as *Hab. roebbelenii*,
- (F) *Habenaria* Summer Tanager (*Conure* × *roebbelenii*),
- (G) *Habenaria* Oriole (*roebbelenii* × *xanthocheila*),
- (H) *Pectabenaria* Wow's White Fairies (*Pecteilis susannae* × *Habenaria medusa*) photographed by Nam Fook Lee,
- (I) *Habenaria* Kat's Whiskers (*lindleyana* × *medusa*),
- (J) *Habenaria* Pegasus (*carnea* × *medusa*),
- (K) *Habenaria* Raingreen's Pink Paw (Tracey × *carnea*),
- (L) *Habenaria* Sunrise Plumes (*roebbelenii* × *medusa*),
- (M) *Pectabenaria* Flamingo (*Habenaria erichmichelii* × *Pecteilis hawkesiana*),
- (N) *Pectabenaria* Perseus (*Pecteilis hawkesiana* × *Habenaria medusa*),
- (O) *Pectabenaria* Little Angel (*Habenaria carnea* × *Pecteilis hawkesiana*), and
- (P) *Habenaria* Angel Bone (*carnea* × *lindleyana*). The foliage, inset, is very attractive.

Habenaria Raingreen's Pink Paw, a hybrid of *Hab. Tracy* by *Hab. carnea*, a really nice hybrid with an intensely pink lip and light pink to white sepals and petals.

Everybody loves *Habenaria medusa* when they see it in flower, so it is natural to make hybrids with it. One of the earlier *Hab. medusa* hybrids was *Habenaria Egret* (*Kakoeri* × *medusa*), registered in 2008. *Habenaria Kakoeri* is *carnea* × *roebbelenii*, made by S. Kato and registered in 2003. The fringed side lobes of the lip (typical of all *Hab. medusa* primary hybrids) make the flowers look like egrets in flight. They are all in shades of salmon-pink, and are about ¾ inch (2 cm) natural spread.

Habenaria Pegasus (*carnea* × *medusa*) was registered in 2012. The name was chosen because when Perseus slew Medusa by cutting off her head, from her neck she gave rise to two "progeny": Pegasus, the flying horse, and Chrysaor, who, depending upon the myth cited, was either a giant with a golden sword or a winged boar. The flowers are very similar to those of *Hab. Egret*, but pinker.

In 2016, Marni Turkel registered *Habenaria Sunrise Plumes* (*roebbelenii* × *medusa*). The *Hab. roebbelenii* she used was a salmon-pink and the progeny are in the same color range with a really nice fringe.

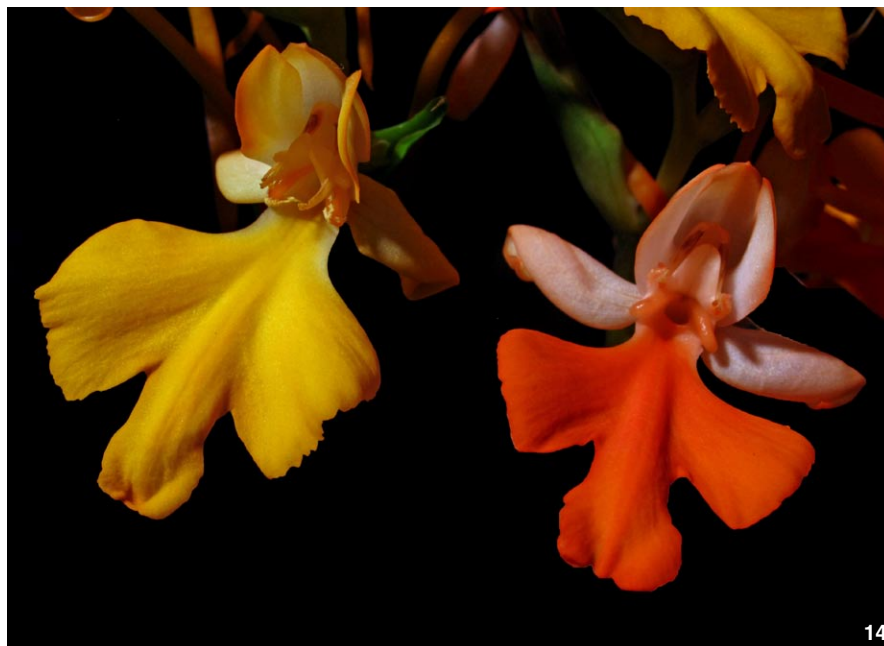
Also in 2016, *Habenaria Bird of Paradise* (*Conure* × *medusa*) was registered. The flower has the typical *Hab. medusa* hybrid shape and size, but the colors of the flowers vary from bicolored (sepals and petals red, lip orange), to shades of yellow through orange. Only one plant had the fringing that I wanted and it was pale.

The last straight *Habenaria* hybrid for this article was registered in 2017; it is the cross of *lindleyana* × *medusa*, as *Habenaria Kat's Whiskers*, named for my cat, Kat. Having seen how the *Hab. lindleyana* reduced the size of the lateral lobes on the lip of *Hab. carnea* in the hybrid *Hab. Angel Bone*, I was curious if it would do the same to the fringed lateral lobes of *Hab. medusa*. I have to admit having been very surprised as to the ultimate small size for the flower. It was white with some green in the lateral sepals, as expected, but the natural spread was only about ¾ inch (2 cm), and the fringing of the lateral lobes extremely reduced.

Intergeneric hybrids are always interesting, and as previously mentioned, the first intergeneric hybrid with *Habenaria* was *Pectabenaria Original*, in 1912, using *Pec. susannae*. *Pectabenaria* plants have the same growth cycle as



13



14

habenarias and are cultivated the same way.

The first of the new generation *Pectabenaria* hybrids was made by Nam Fook Lee in Southeast Asia. His hybrid, *Pectabenaria WOW's White Fairies* is a cross of *Pec. susannae* and *Hab. medusa* and was registered in 2006. This was, I believe, the first use of *Hab. medusa* in a hybrid. The cross has been repeated since it was originally made. The inflorescence can reach up to 30 inches (76 cm) tall, and the white, 2-inch (5-cm) flowers are spectacular.

Another hybrid, made by Erich Michel, is *Pectabenaria Flamingo* (*Hab.*

[13] *Pectabenaria Sandstone Sunrise* (*Pecteilis hawkesiana* × *Habenaria rhodocheila*),

[14] *Pectabenaria Western Tanager* (*Habenaria Conure* × *Pecteilis hawkesiana*)

[15] The most recent of the author's *Habenaria* hybrids to flower. The as-yet unregistered grex is *Habenaria* (*Conure* × *lindleyana*).

[16] *Cynorkaria Memoria Don Garling* (*Cynorkis calanthoides* × *Habenaria carnea*)

erichmichellii × *Pecteilis hawkesiana*) which was registered in 2007. Although the flowers are not very large, about 0.6 inch (1.5 cm) natural spread, they are a nice salmon-pink and have a pearly sheen to the flower. In the recent past *Pec. hawkesiana* was known as *Pecteilis sagarikii*.

Because the lip of *Hab. medusa* was lost in the hybrid of *Pec. hawkesiana* × *Hab. medusa*, I decided to register it in 2012, as *Pectabenaria* Perseus. The flower shape is different from straight *Habenaria* hybrids with *Hab. medusa*. Nevertheless, while not having “wings,” the flower has a charm of its own: white with a little yellow in the center of the fringed lip and about ¾ inch (2 cm) natural spread.

Pectabenaria Little Angel is a hybrid of *Hab. carnea* × *Pec. hawkesiana*, registered in 2011. It is a small, compact plant, the inflorescence reaching approximately 8–9 inches (20–23 cm) tall. The 1-inch (2+-cm) flowers are a rich shell pink. The leaves, like the *Pecteilis* parent, are mostly basal.

Danny Lyon, of Sandstone Orchids, registered the hybrid *Pectabenaria* Sandstone Sunrise (*Pec. hawkesiana* × *Hab. rhodocheila*) in 2014. I have only seen one plant, so I do not know if there is much variation, but the flowers on my plant were small, a little less than 0.6 inch (1.5 cm) natural spread, but were a nice soft salmon-red color.

On August 31, 2017, the first flower of the cross of *Hab. Conure* × *Pec. hawkesiana* opened. It is one of the brightest *Pectabenaria* crosses I have seen so far. The lip is a bright golden yellow, the sepals and petals a light orange, and the flower a little larger than 1 inch (2.5 cm). I know that there is going to be some very nice color variation in this cross, with lips ranging from bright yellow through bright orange, and even a bicolor that I was looking for. It is being registered as *Pectabenaria* Western Tanager.

As of now, although there are many genera related to *Habenaria*, the only other one to successfully produce a hybrid with this genus is *Cynorkis*. There are two registered hybrids, both utilizing *Cynorkis calanthoides* in the lavender-pink color form that used to be known as *Cynorkis uncinata*. Personally, I feel that the first one that was registered was really a depauperate selfing of the *Cynorkis* parent; however, the second one is consistent with the actual hybrid.

Dr. John Doherty, of Zephyrus Orchids, registered *Cynorkaria* Memoria Don Garling (*Cynorkis calanthoides* × *Habenaria carnea*) in 2010. The flowers



are a pleasing lavender-pink about ¾ inch (2 cm) natural spread. The plant habit is more like that of the *Habenaria* parent than that of the *Cynorkis*, but a little stockier.

On July 6, 2018, the first flower opened on a new *habenaria* hybrid (*Habenaria* [Conure × *lindleyana*]). Once again *Habenaria lindleyana* washed out the color, at least on the sepals and petals, which are an almost imperceptible light orange. The side lobes of the somewhat brighter yellow-orange lip are also extremely reduced in size. The natural spread of the flower is approximately 1 inch (2.5 cm). I am thinking of registering it as *Habenaria* Mayfly.

This is only a small selection of the *Habenaria* hybrids that have been made. As you may have noticed, since the original *Habenaria* hybrid in 1910, not too much was done until the 21st century. The species are more readily available now, especially seed-reproduced plants, which should remove pressure on the collection of wild plants. Hybridizers are always searching for that new combination that will make their hybrids outstanding — brighter colors, bigger flowers, plants that are easier to grow, interesting shapes, more floriferous plants, basal branching so they will fill in a pot faster, changing the chromosome number, etc. What will be the next goal of the breeders of *habenarias*? Watch this space.



DR. JOHN DOHERTY

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— Leon Glicenstein, PhD, is an international lecturer who speaks to orchid and plant societies. He has grown orchids for more than 55 years and was a breeder of novel orchid hybrids for the former Hoosier Orchid Company, especially in the *Gongorinae*, *Zygopetalinae*, *Pleurothallidae*, *angraecoids*, *jewel* and *painted-leaf* orchids; Orlando Avenue, State College, Pennsylvania 16803 (glicenstein33@msn.com).

Australian and New Guinea

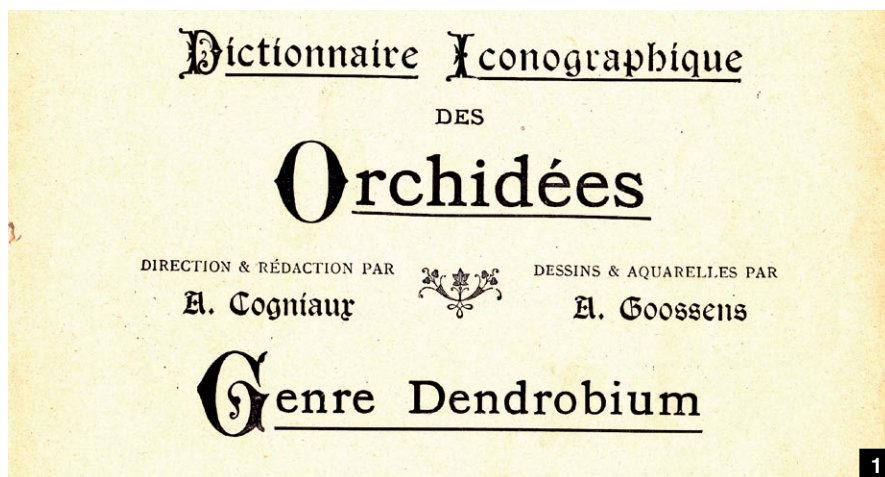
Cogniaux and Goossens Dictionary of Orchids 1896–1907

BY PETER ADAMS/PHOTOGRAPHS BY THE AUTHOR UNLESS OTHERWISE CREDITED

HOW DID SEVEN iconic Australasian orchids come to be featured in a 19th century, superbly illustrated, dictionary written in French and compiled by two Belgians?

The boisterous era of plant hunting and orchid collecting in Asia, Australia and South America in the 1870s and 1890s began a European craze of growing and exhibiting novel curiosities. It was not unusual for someone well-to-do to spend a year's income on one or two plants that would bring status and notoriety, and sometimes a formal botanical name in perpetuity to honor the owner. The orchid nurseries of Veitch and Sanders and others sent collectors out in a fierce commercial rivalry to bring in new species, and earlier, from the time of Cook's 1770 *Endeavour* voyage, ships had returned from the northeast Australian coast with specimens and plants for the English stovehouses. In general only the showiest Australian species received much attention, the smaller ones being regarded as inferior and sometimes stated as such with negative comments in gardening magazines.

Many of the first flowerings were briefly written up in English gardening periodicals as new species and varieties, but most were later understood as color variants of a much smaller number of species. There were few guidelines for describing species as well as few people with formal training to do the work, and only a small number of satisfactory type specimens were lodged in herbaria. In the 1890s, books illustrating the most striking and desirable importations were compiled, and one of the finest was the eight volumes (folders of loose sheets) of the *Dictionnaire Iconographique des Orchidées* of Alfred Cogniaux and Alphonse Goossens (1896–1907), produced by F. Havermans in Brussels. It contained over 600 species with a predominance of South American and Asian genera, and also a selection of Australian and New Guinea dendrobiums. No *Cymbidium*, *Sarcochilus* or terrestrial orchids were included, despite their discovery and inclusion in

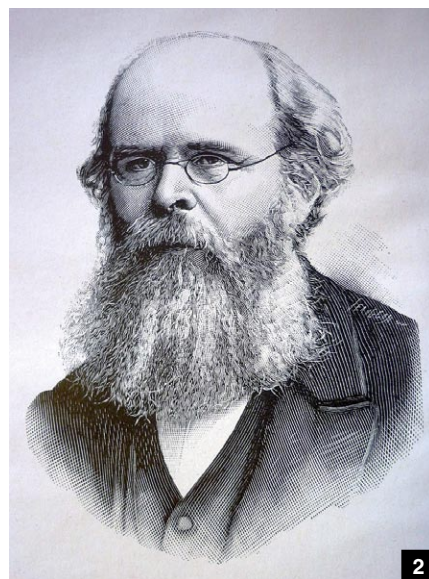


magazines for many years.

All of the Australian and New Guinea orchids were in the *Dendrobium* folder, the genus long regarded as containing outstanding, highly collectable species. The dictionary was never completed, and only 250 copies were issued. The exact number of plants in it is uncertain as different sets contained slightly different contents. It is rare to find a complete set, as the loose sheets are easily removed. In total, 91 different genera were covered, each part with 12–14 plates and with a four-page folder of text, in beautiful script of the time, and some calligraphic headings. The sheets of the larger genera, for example *Dendrobium*, were enclosed in half-canvas wallets and the eight folders were contained in maroon faux-leather slipcasses with gold-tooled titles, a presentation style rarely seen today. The examples were not arranged in a systematic order and were intended to be rearranged by genus as the illustrations became available.

The work was valuable to horticulturalists and orchid fanciers, as it focused on showy species best suited to cultivation and hybrid breeding, which was well under way at the time of publication. The dictionary was never completed, coming to an abrupt end in 1907, for uncertain reasons.

In this article, the illustrations and descriptions are examined, and the



[1] Front page of *Dendrobium* entries.

[2] Portrait of Alfred Cogniaux.

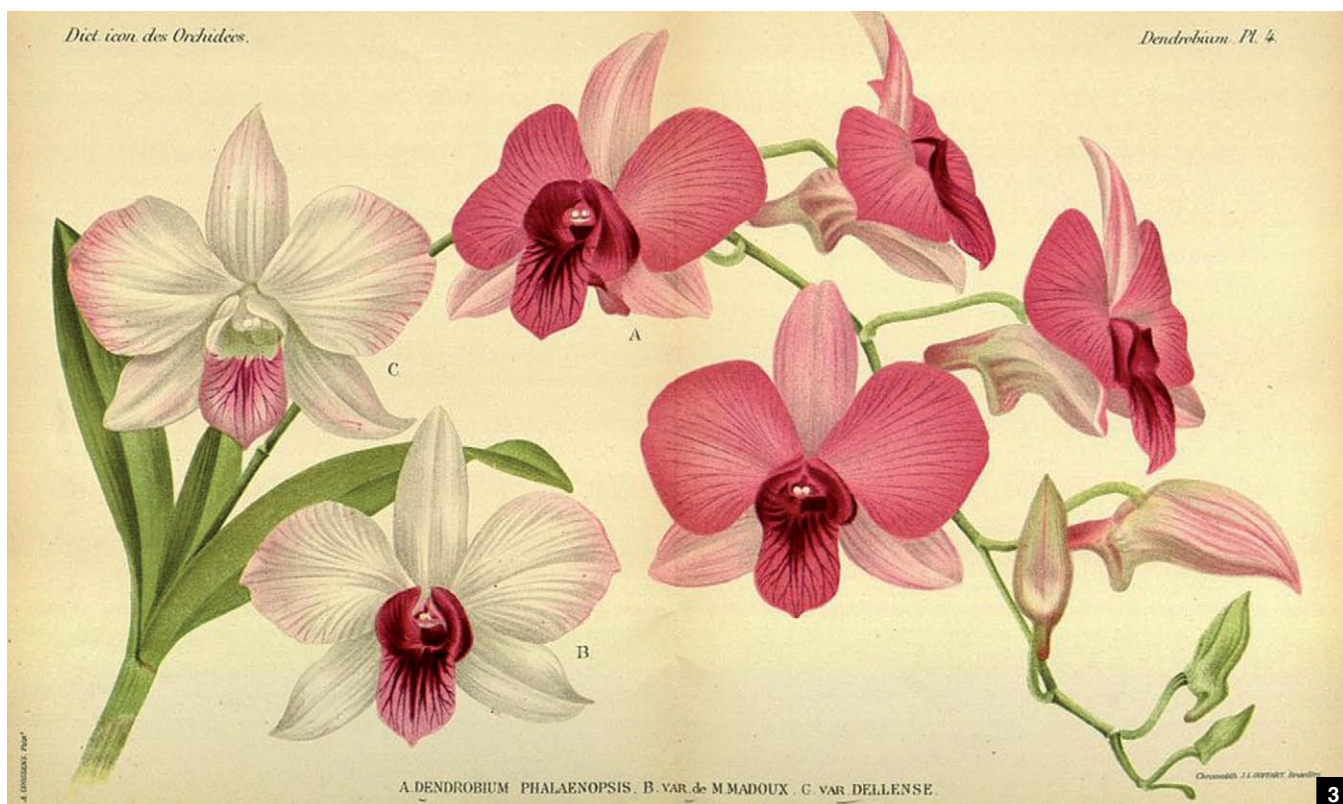
[3] *Dendrobium phalaenopsis*. Plate 4. Now recognized as *Dendrobium bigibbum* var. *schroederianum*.

[4] *Dendrobium bigibbum* var. *schroederianum*, Tanimbar Islands, Indonesia.

[5] *Dendrobium aemulum*. Plate 37.

depictions compared with some other early ones. Attempts are made to answer some questions about the Australian plants used to compile the dictionary. Where did they come from, and who supplied them? Can they be identified as

Dendrobiums



belonging to taxa as we understand today? How accurate was the identification at the time? What are the links of these plants with Australian colonial history and early orchid people in Australia? The sources of Australian plants for the dictionary were species growing in collections in England, France and Belgium.

COGNIAUX AND GOOSSENS

Celestin Alfred Cogniaux (1841–1916) was a Belgian botanist who, like most in the period, had no formal academic training and learned by experience under the supervision of notable taxonomists and natural historians such as Dumortier, Eichler and de Candolle, who established many plant families and genera in the early years of plant systematics. Cogniaux was a math and science teacher, becoming an “aide-naturaliste” at the State Botanic Gardens in 1872. He created herbaria at the gardens, collected specimens, and contributed 3,118 pages to the *Flora Brasiliensis*. Cogniaux left the gardens in 1880, probably after a disagreement with the director, Fr. Crépin, and continued to work on several plant families, including the Orchidaceae. Numerous plants are named after him, including the orchid



genus *Neocogniauxia* and the species *Pleurothallis cogniauxiana*.

Alphonse Goossens (1866–1944) is regarded by many as among the most important botanical artists of the period, acclaimed for orchid drawings, some that have not been surpassed.

AUSTRALIAN ORCHIDS

The species selected were certainly among the most spectacular and would



be early selections if a similar project was undertaken today. They were *Dendrobium aemulum*, *Dendrobium kingianum*, *Dendrobium bigibbum* var. *superbum* (included as *Dendrobium phalaenopsis*), *Dendrobium speciosum* and in some sets, *Dendrobium* × *superbiens*. In the Introduction to *Dendrobium* was the comment: “Several botanists have proposed creating a number of genera,

which is not to be followed.”

***Dendrobium aemulum* R. Br. (1810)**

Plants were sent by Allan Cunningham, botanist and explorer, from New South Wales in 1823 to the Royal Botanic Gardens Kew (Orchard and Orchard 2015), where some flowered in 1825. The illustration is of a somewhat stylized part stem with a raceme of five flowers, which are pure white with violet on the labellum. The floral parts are slightly twisted with some sepals and petals bent backward, which is not a feature seen in living plants. These characteristics may have resulted from the depiction in an initial sketch. The engraving by John Sims was prepared in September 1905 from a drawing supplied by William Townsend Aiton, a correspondent of Cunningham.

The notes in the dictionary record the Cunningham provenance which was in the Illawarra region, south of Sydney, New South Wales. Also recorded is this: “the plant is an epiphyte on *Eucalyptus*, and it is in the collection of M. le Baron von Furstenberg, who supplied a plant for illustration.” It is not possible to further identify the form of *Den. aemulum* from the illustration. The accompanying notes record short stems 2–4 inches (5–10 cm) long, which could represent a plant from a *Eucalyptus* host or a slender, short-stemmed rainforest form that also occurs in the area.

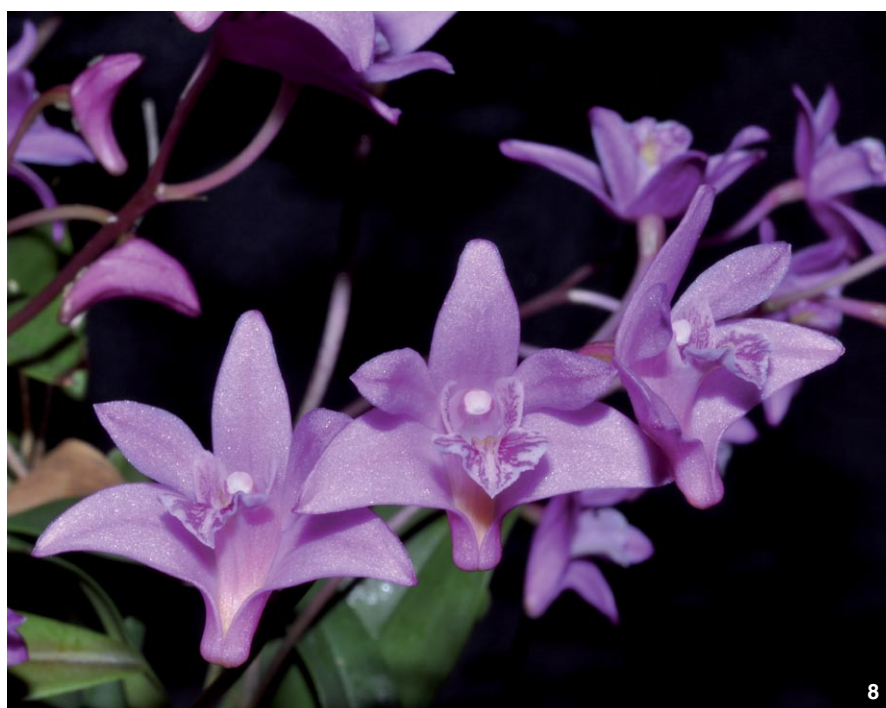
There is another early illustration of *Den. aemulum* by William Hooker in 1829, in *Curtis’s Botanical Magazine* vol. 56, plate 2906. It is a highly stylized short thick-stemmed plant with poorly opened flowers, suggestive of plants that grow on ironbark *Eucalyptus*. This species was not often illustrated in the period.

***Dendrobium kingianum* Bidw. (1844)**

John Bidwill discovered and sent the first plants to Kew Gardens and to the M.J. Veitch nursery at Exeter, naming it after his friend Capt. P.P. King. The dictionary records it as “*Dendrobium* de King, a remarkable small plant, several curious forms originally from Queensland... illustrated in 1905.”

The plants were likely to be from the southern part of the range of the species, and are identifiable as from there by the short stems with about three internodes and 3–6 flowers (Adams and Lawson 1995). They were not collected from Queensland, where plants are taller, with more internodes. The reference is to Bidwill sending them from the Maryborough area where he worked as a surveyor-general and is buried.

The species is very variable in form



- [6] *Dendrobium aemulum*, a large flowering form, Eungella, Queensland.
- [7] *Dendrobium kingianum*, Tallai Range, southern Queensland.
- [8] *Dendrobium kingianum*, Rowley’s Rock, New South Wales. Miniature form.
- [9] *Dendrobium kingianum*. Plate 38.
- [10] *Dendrobium speciosum*. Plate 24. Identified as *Den. speciosum* var. *speciosum*, with an exaggerated labellum width.
- [11] *Dendrobium speciosum* var. *speciosum*, eastern Victoria.

and flower color, with the variants regarded as color forms, and only the geographically isolated, rather diminutive and partially underground plants at Carnarvon Gorge, central west Queensland, are classified as a separate taxon, *Den. kingianum* subsp. *carnarvonense*. The accurate illustration depicts a plant with common mauve flowers that are found from Bulahdelah to the Hastings River region.

Dendrobium kingianum was infrequently illustrated in the period, but Walter Hood Fitch contributed a fine painting of another southern form in *Curtis's Botanical Magazine* in 1850 (plate 4527).

***Dendrobium speciosum* Sm. (1804)**

The provenance of the plant illustrated was "introduced from NSW by A. Cunningham in spring 1823 to Kew Gardens" ...found on rocks in bright sun (a rock lily); illustrated from a plant of M. Lionet of Brunoy (Seine-et-Oise). It is a stylized illustration labelled "*Dendrobium Elegante*" of the end of a raceme with 11 yellow flowers. It is of the type variety *Den. speciosum* var. *speciosum* common around Sydney in early days of the colony, said to have been collected by Surgeon-General John White and first sent to Sir James E. Smith in England.

Although the illustration does not portray the variety very well, the provenance is good, and the painting does not fit with the only other varieties known at the time of publication, *Den. speciosum* var. *hillii* (NSW), and var. *curvicaule* and var. *grandiflorum* from Queensland.

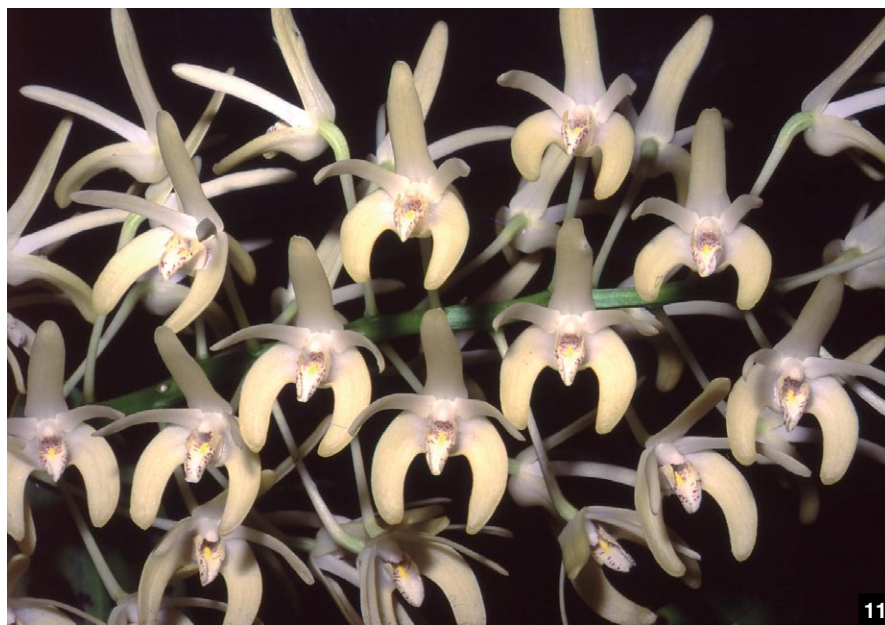
Dendrobium speciosum was often illustrated by early colonial painters, and often in the same heavily stylized manner, with a very dark green, squat pseudobulb sitting on a very similar rock, and bearing upright racemes of flowers with yellow and purple-red spotting, not seen in any present-day *Den. speciosum*. There appears to have been copying of others' work, and many of the flowers were unrecognizable as the species. George Raper, Port Jackson Painter, and Capt. John Hunter of the First Fleet illustrated *Den. speciosum* in the period 1788–1790, and William Hooker in *Curtis's Botanical Magazine* in 1831 (Plate 3074). Hooker's painting is the most botanically accurate.

***Dendrobium bigibbum* var. *schroederianum* (Hort. ex W. Watson) Peter B. Adams, labelled *Den. phalaenopsis* Fitzg. (1880)**

A double-page spread, one of only six in the dictionary, with three superb illustrations, is labeled "*Dendrobium Faux-Phalaenopsis*," representing color



10



11

forms consistent with *Den. bigibbum* var. *schroederianum*. This was much confused with *Den. phalaenopsis*, which, following recent extensive publication of research findings, has been reclassified as *Den. bigibbum* var. *superbum* (Adams 2015, Adams and Lawson, 2016). The paler color forms are more common in var. *schroederianum* than in var. *superbum* (Adams and Lawson 2016). The two taxa were both present in the collection of Baron von Schroeder, who had many color variations of var. *schroederianum* in his nursery at Edgham. He supplied the plants for these illustrations. The accepted name for this taxon (World Checklist of Selected Plant Families) is now *Den. bigibbum* var.

schroederianum (Adams 2016).

The "variety" (color form) named de M. Madoux refers to Madoux, an orchid collector, and var. *dellense* Hort. Williams (1894), another color form, refers to 'The Dell' at the baron's property. The origin is stated as northern Australia, New Guinea or l'île de Timor, presumably Timor Laut, another name for Tanimbar. This shows the early confusion of provenance for plants originating in Australia and in the Tanimbar Islands. The plants almost certainly did not come from New Guinea, where only *Den. bigibbum* var. *bigibbum* is a rare occurrence.

One of the best illustrations of var. *superbum* was labelled *Den. phalaenopsis*

var. *lindeniae* with pale sepals and petals and a violet-marked labellum, a chromolithograph of F. Pannemacker and Sons in *Lindenia* vol. 16 (1900). Illustrations, usually in black and white, of var. *schroederianum*, were common in books and periodicals, and the very large-flowered and vigorous forms were selected, which were far from representative of this variety (Adams 2016). There was a general acceptance that most plants of var. *schroederianum* grew more easily than var. *superbum* and especially more easily than var. *bigibbum*. John Day, eminent English orchid collector, grower and watercolorist, painted a beautiful example of *Den. bigibbum* var. *superbum*, clearly identifiable, dated September 1877 on the page. It notes the importation from Australia by Veitch and Sons in 1876, and confirms that *Den. bigibbum* var. *superbum* Rchb.f. (1878) was described and illustrated before *Den. phalaenopsis* Fitzg. (1880) (Adams 2016). *Dendrobium* × *superbiens* Rchb. f. 1878 (originally ascribed to *Den. bigibbum*)

This natural intersectional hybrid of *bigibbum* × *discolor* was understandably considered to be a species when described by Reichenbach and introduced to Europe in 1876 by William Macarthur of Sydney, who sent it to M.M. Veitch at Chelsea. The illustration made in 1898 and titled *Dendrobium d'en Noble Aspect* is of a raceme with five almost monochromatic mauve flowers and a terminal bud. The moderately wide sepals and petals are slightly twisted, well executed and clearly identifiable as the natural hybrid.

There is also a small line drawing of a plant in the notes with bare and leaved canes and an arching raceme. The notes state the Macarthur origin and "occurrence on Cape York Queensland and several small islands in Torres Strait." A plant owned by M. Madoux of Auderghem-lex-Bruxelles was used to make the illustration. The stated provenance is correct: the natural hybrid occurs at multiple sites where the parent species grow.

There is a drawing of plants with raceme in *The Gardeners' Chronicle* January 1878 series 11 (Vol. 9, Fig. 9, p. 40) accompanying Reichenbach's notes, which included "it is a great satisfaction to have this great beauty at hand...from Mr. B.S. Williams of Victoria and Paradise Nursery." Later, Williams, in *The Orchid Album* Volume V11, Plate 312 (1888), illustrated the plant with racemes, and noted that "our collector, Mr. Goldie, (found it) in the year 1877 in Torres



12



13

Strait...it is very free flowering with up to 15 spikes on a stem."

NEW GUINEA ORCHIDS

These were all members of *Dendrobium* sect. *Latouria*, namely, *Dendrobium atrovioleaceum* and *Dendrobium spectabile*.

Dendrobium atrovioleaceum Rolfe (1890)

The species is a medium-sized epiphyte with a few large flowers, from eastern New Guinea rainforest at 650–2,600 feet (200–800 m). It was imported to England by J. Veitch and Sons. The illustration of May 1898 is titled *Dendrobium a Labelle Violet Fonge*, showing seven cream flowers with purple spots and green-purple labellum. It is roughly finished in comparison with most other illustrations and in the notes there is a finely executed black-and-white drawing of a single flower. The plant used to make the illustrations was provided by Madame Ida Brandt of Zurich. There is

[12] *Dendrobium* × *superbiens*, Cape York Peninsula, north Queensland.

[13] *Dendrobium* × *superbiens*. Plate 15. A form with wide petals.

[14] *Dendrobium spectabile*

[15] *Dendrobium atrovioleaceum*. Photograph by Jon Cara.

[16] *Dendrobium spectabile*. Plate 22.

[17] *Dendrobium atrovioleaceum*. Plate 12.

also a very nice illustration of the species by Matilda Smith (lithographed by J.N. Fitch) in *Curtis's Botanical Magazine* 5.7371 (1894).

Dendrobium spectabile (Blume) Miq. (1855)

This is a large, robust, generally epiphytic species discovered in New Guinea in 1848 by Latour-Leschenault on

the Baudin expedition. The illustration “*Dendrobium Remarquable*” is of a distal end of a raceme with five striking and well-drawn naturally twisted flowers. There was also a line drawing of the detailed veining on the labellum, and in the notes there is a line drawing of a plant and raceme. It is based on a plant grown by M.J.F. Bennett Poe of London. The species also occurs in the Solomon Islands, Bougainville and Vanuatu in hot, humid lowland and swampy forest and in lower montane forest up to about 3,300 feet (1,000 m). It flowers in the dry season with flowers lasting several weeks and is relatively easy to grow.

There is another fine illustration of the species in *Curtis’s Botanical Magazine* plate 7747 in 1900 by Matilda Smith showing the raceme with seven flowers, whole plant and details of the labellum, column and pollinia.

CONCLUDING COMMENTS

The *Cogniaux and Goossens Dictionary of Orchids 1896–1907* celebrated more than 600 species, mainly from South America, Asia and Australasia. *Dendrobium* offered showy examples for Alphonse Goossens, an acclaimed botanical artist of the period. The Australasian plants were collected by explorers and early botanists noteworthy in Australian colonial history. The nomenclature has changed only a little over more than a century. Most of the specimens used for illustration were grown in Europe, resulting in outstanding life-like depictions, the double-page *Den. bigibbum* var. *schroederianum* (presented as *Den. phalaenopsis*) being the most successful.

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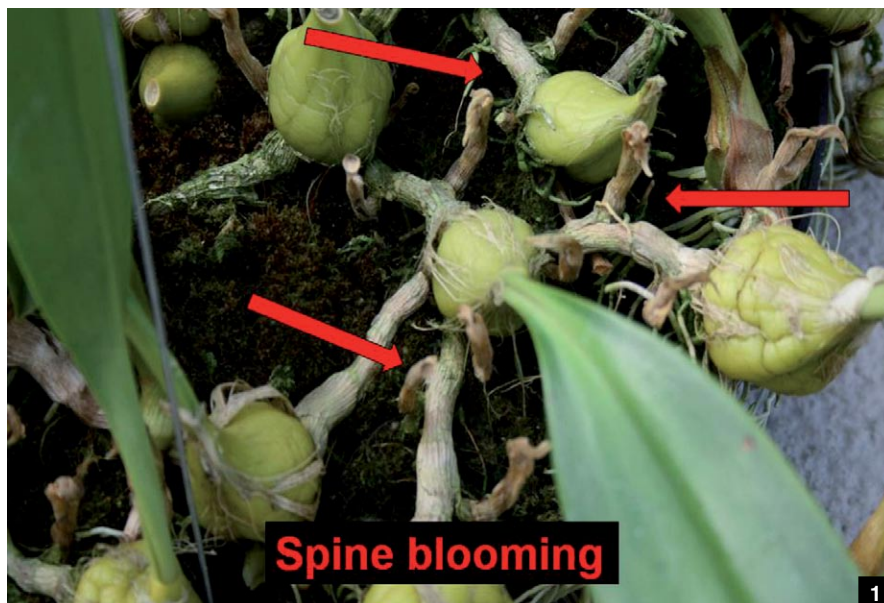
Bulbophyllums

Spare the Knife

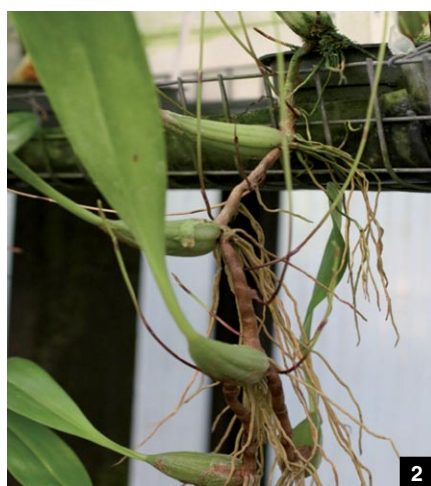
BY BILL THOMS

IN A GENUS the size of *Bulbophyllum* — at least 2,200 species in 101 sections distributed from Africa to Southeast Asia to the islands of the Pacific and even South America, there are bound to be structural differences. Although most bulbophyllums flower from nodes at the base of the pseudobulbs, there are plants in several large sections that differ in a major way. They bloom along the rhizome. Such popular species as *Bulbophyllum lobbii*, *Bulbophyllum claptonense*, *Bulbophyllum facetum*, *Bulbophyllum grandiflorum*, *Bulbophyllum fritillariiflorum*, *Bulbophyllum arfakianum*, *Bulbophyllum maxillare* (*blumei*), *Bulbophyllum nasica* and many others all do this. Over the years, numerous unsuccessful attempts have been made to segregate many of these sections as separate genera. Rather than renaming all these well-known species and resulting hybrids (many of which I made), let us just understand them better, including why you must treat plants that flower from the rhizome (and hybrids using them) a bit differently than the bulbophyllums that bloom from the base of the pseudobulb.

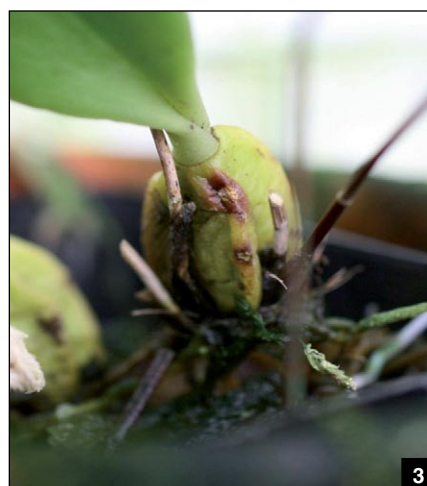
Most bulbophyllum plants bloom from the base of the mature pseudobulb. Some common examples are *Bulbophyllum fascinator*, *Bulbophyllum rothschildianum*, *Bulbophyllum lasio-chilum*, *Bulbophyllum longissimum*, *Bulbophyllum echinolabium* and all those that produce flowers in umbels that resemble the flowers of daisies. This includes single-flowered species as well as those that produce multiple flowers sequentially on an inflorescence. They need a certain amount of energy stored in the pseudobulbs in order to trigger blooming when the proper time comes. Because it is possible to get a tremendous amount of growth during the growing season, they can be quite impressive when all the pseudobulbs grown that season bloom at the same time. The flowers can arise from each pseudobulb grown that year and sometimes rebloom the following year(s). These plants will bloom easily with just 3–8 pseudobulbs. A three-pseudobulb division of *Bulb. rothschildianum* will flower the following



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BILL THOMS

year with a head of four to eight 6-inch (15-cm) flowers. Sometimes, plants that have been grown fairly to very well, but under insufficient light levels, will have stored up nodes at the base of older, mature pseudobulbs that can bloom as well when conditions improve. This really makes the grower happy when he or she is rewarded for their new-found knowledge. It is the size of the pseudobulb that determines whether flowering is triggered. Not enough juice; no flowers.

Plants that bloom from nodes along the rhizome need a certain amount of rhizome stored up in order to bloom

[1–2] *Bulbophyllum maxillare* [1] and *Bulbophyllum lobbii* [2] are examples of spine-blooming species. Close inspection of [1] reveals seven inflorescences and the red arrows in [2] mark prior inflorescences. [3] This species flowers from the base of the pseudobulb. Note the three old inflorescences and a newly forming one.



4

well. They often have a large internodal length (distance between pseudobulbs), which I think is to accommodate the need for movement (more light) and to act as a storage vessel for more nodes. Imagine this: you live among many other plants that are all getting the same (or similar) food, water, air and light. All are growing like mad, fighting the elements and reaching for the “big, white light” (a metaphor of life?). You decide to put up your flowers along your spine rather than just at the front. You put all your energy into growing — until you have 1–2 feet (30–60 cm) of spine — before you flower. This way you can flower whenever you like and wherever the light is best. Life is good and you are blooming your, well, spine off. Now, your home falls over and you will die until — along comes a rescuer and off you go to a new home. You think life is good, and just about the time you get ready to bloom in your new home, you are split into pieces because you have grown so much and have to start all over again. You say bad words in Latin and call your jailers slime molds.

So this is a long and fancy way to say, “If you want to get more flowers from plants in these sections (and hybrids with them), keep the rhizomes longer. Do not divide the plants until they have grown large enough to bloom well. Then, do not expect divisions to bloom again until

they grow a “spine” (another metaphor of life?).

What about hybrids between these two groups; the pseudobulb-bloomers and the rhizome-bloomers? Good question. Next? Just kidding. These blend the two in this way: they bloom from the front pseudobulbs mostly, but seem to have a few extra nodes at the base of their pseudobulbs that are triggered to flower sporadically so the plants bloom at odd times of the year in addition to their normal blooming time. They do not need to be as long as a straight section *Sestochilus* species, which is good. Some examples are *Bulbophyllum* Jersey (*lobbii* × *echinolabium*), *Bulbophyllum* Frank Smith (*lobbii* × *carunculatum*) and *Bulbophyllum* Joyce Krym-Ingalls (Tonya Jacobs × *claptonense*).

Finally, there is no need to change any tags or have any fears. Just remember that they are different and require a little different repotting care.

It is a wonderful day to grow orchids.

— Bill Thoms is a former AOS accredited judge in the Florida-North Central center. He is perhaps best known for his growing and hybridizing expertise in *bulbophyllums*, 1605 Palace Court, Valrico, Florida 33594 (email: dukesthoms@verizon.net).



5

[4] *Bulbophyllum* Jersey ‘Dorie’s Choice’ CCM/AOS had 15 flowers and six buds on a plant with only 20 pseudobulbs.

[5] *Bulbophyllum* Jersey ‘Diablo Sunset’ HCC/AOS had 24 flowers and buds on a plant presented in just a 6-inch (15-cm) basket.

Orchids of the Golden Land

Myanmar

TEXT AND PHOTOGRAPHS BY DINO ZELENKA

MYANMAR (BURMA) IS the most diverse country in mainland Southeast Asia in terms of both culture and nature. Some 135 distinct indigenous ethnic groups, many with their own language, reside in the country, making it an anthropologist's dream. Its natural — and not least botanical — treasures have likewise continued attracting attention. It was these natural resources, most notably



Dino Zelenka

the vast teak forest and gem mines, which gave it great wealth and also brought Myanmar to the attention of the British, who began their conquest and colonization of the country in 1824 with the first of a series of three Anglo-Burmese wars. The aftermath of the second war in 1853 resulted in the occupation of Yangon (Rangoon) and lower Myanmar, and the third, fought for mere weeks in November of 1885, resulted in the annexation of the entire country and the exile of the Burmese royal family to India. Myanmar — then known as Burma — would be a British colony until 1948. And the British would soon delight in the natural treasures that turned out to be even more extensive than they could ever have dreamed, with botanists and orchid hunters being equally captivated. Indeed, some consider Myanmar to be *Suvarnabhumi*, the legendary “Golden Land,” that is said to be somewhere in Northeastern India or Southeast Asia. In fact, its natural wealth meant that by 1900 colonial Yangon (Rangoon) had infrastructure and services on a par with London, with the Strand Hotel in its center being famous as one of the most luxurious hotels in the entire British Empire.

In mid-1852, while the Second Anglo-Burmese War (1852–1853) raged, an English Anglican priest by the name of Charles Parish (1822–1897) arrived in Calcutta, British India, from where he was immediately dispatched to Myanmar. From the mid-1840s he had shown a keen interest in both botany and geology,



having amassed a collection of plant specimens and fossils from around Britain and Ireland. Parish's passion would reach new heights during his next 25 years as priest in the city of Mawlamyaing (Moulmein), with orchids from 1859 onward being his particular interest. In the same year, he discovered the eponymous *Cymbidium parishii* in Myanmar, which was sent to Hugh Low along with *Vanda gigantea* (today *Vandopsis gigantea*). Utilizing both the British army (who used to bring him back specimens from their expeditions) and indigenous people along with their elephants, Parish made many discoveries in Myanmar, perhaps the most notable being *Paphiopedilum parishii* and *Dendrobium parishii*. Parish was also a friend of Colonel (later General) Benson, another orchid collector and employee of Veitch and Sons, with the two men frequently meeting (including at Parish's home in Mawlamyaing) and exchanging material; both *Dendrobium bensonii* and *Vanda bensonii* are named after Benson.

Britain's annexation of Upper Myanmar at the climax of the Third Anglo-Burmese War in 1885 paved the way for exploration of the country's eastern and northern highlands, where the climate ranges from highland tropical to truly alpine at the higher elevations. The most famous plant collector of this region, and surely known to many, is Frank Kingdon-Ward, who discovered *Paphiopedilum wardii* in 1922 and introduced the Himalayan blue poppy (*Meconopsis betonicifolia*) into cultivation. Kingdon-Ward's specialty was alpine plants, with his interest in orchids going as far as to name his daughter Pleione. Indeed, Kingdon-Ward's spellbinding descriptions of the beauties of far northern Myanmar, characterized by its breath-taking snow-capped mountains and deep, jungle-clad valleys, first inspired this author to visit the country after reading his letters at the Kew Gardens archive as a history undergraduate. Indeed, many of the best and most famous Asian orchids — among them *Vanda coerulea*, *Paphiopedilum charlesworthii*, *Paphiopedilum parishii*, *Paphiopedilum bellatulum*, *Paphiopedilum hirsutissimum*, *Coelogyne nitida*, *Dendrobium nobile*, and *Cymbidium suavisissimum* — come from the country, and in the case of species such as *Paph. bellatulum* and *Paph. charlesworthii*, Myanmar is the main center of their populations. But World War II would bring an abrupt end to orchid-related activities in Myanmar.

The Japanese began aerial



- [1] Shwedagon Pagoda in Yangon (Rangoon), Myanmar is also known as the Great Dragon or Golden Pagoda. The spire soars 326 feet (99 m), dominating the Yangon skyline.
- [2] *Paphiopedilum bellatulum* photographed in the wild. The species flowers from spring into early summer depending on elevation.
- [3] *Paphiopedilum charlesworthii*, a summer-fall blooming species.
- [4] *Vanda coerulea*. The distinctive blue flowers are produced in the fall.
- [5] One of the many signs of British colonialism in Myanmar.
- [6] Here an *Oberonia* species has colonized a large tree trunk.

bombardment of Yangon (Rangoon) in December 1941; by February 1942 a full ground invasion had commenced, with Yangon and other major towns and cities falling like dominoes as the British (along with many civilians) retreated to British India on an overland route. Many perished of disease or exhaustion along the way. The majority Bamar (from which the name “Burma” derives) had felt increasingly sidelined and resentful of the British for years before the war, not least because the British openly favored employing Anglo-Burmese and Indian administrators over them. Aung San (father of Aung San Suu Kyi) and many Bamar therefore welcomed the Japanese as “liberators,” hastening the country’s quick occupation. The Japanese were finally expelled in 1945 after ferocious fighting which required the drafting of many black African and Indian troops on the Burmese front. By that point, calls for independence grew too loud to ignore, with British departure being scheduled for 1948.

The Panglong Agreement, signed between Aung San and Myanmar’s major ethnic minorities (many of whom sided with the British against the Japanese in WWII) in February 1947, granted rights to all the country’s peoples. However, Aung San was assassinated soon afterward. Fighting then broke out almost immediately following independence in 1948 as various ethnic groups took up arms against the central government; Aung San’s efforts and his agreement died with him. Myanmar’s descent into chaos had begun. From 1948, Myanmar’s central government relied more and more on the army to fight the rebels and maintain order. A full military coup followed in 1962 under General Ne Win, snubbing out a fragile democracy and subsequently putting down all unrest with great cruelty. All foreigners (save for diplomats) were banished from the country, with Myanmar becoming known as a closed, dark place, with its orchids and other wildlife largely inaccessible to visitors for the next half century. Economic mismanagement and human rights abuses by the military junta would also transform a formerly prosperous country into among the poorest in Asia that was infamous for unspeakable crimes, and few foreign tourists dared venture.

Winds of political change were already blowing by the time I first visited Myanmar in December 2014, on the invitation of an orchid friend. Little did I know when I stepped off the plane in



Yangon, that Thant Sin Aye, a medical student and trainee doctor from the city, would become one of my closest friends; we shared far more in common than just orchids. To my great surprise, one could openly talk about Aung San Suu Kyi and criticize the army. In contrast to Myanmar’s brutal reputation, I found the people to be gentle and kind, and audibly fed up with the wars and economic chaos that had plagued their land for so long. Decades of isolation meant that its botanical diversity was among the least studied in the Northern Hemisphere, but now the time seemed right for further engagement with the country and its orchids. I also found myself marveling at Yangon’s Shwedagon Pagoda, its golden clad exterior seemingly shining brighter than the sun, while delighting at the *Rhynchostylis retusa* and various other

- [7] *Bulbophyllum oblongum* photographed in-situ. The interesting flowers are produced in the spring.
- [8] *Calanthe triplicata* is a common forest sight, its bright white flower heads standing out against the green of the forest floor.
- [9] Local fishermen on Inle Lake. The lake, at 2,900 feet (884 m) is one of the highest in Myanmar, and at 44.6 sq mile (116 sq km) is Myanmar’s second largest lake.
- [10] *Dendrobium pendulum* can often be found growing in full sun. It belongs to the deciduous group including *Dendrobium nobile*. A pronounced cool, dry rest is required for good flower.

orchids that grew wild on trees all around the city. But there would be much more to discover.

Like myself, Thant Sin had long been alarmed at the scale of illegal wild collection of orchids in the region. Myanmar has sadly not been spared, with collection accelerating in recent years resulting in once-common orchids becoming increasingly rare. Kachin State and far northern Myanmar — once the center of Kingdon-Ward's expeditions — remains isolated and difficult to reach, partly because of ongoing conflicts there. However, Shan State, in eastern Myanmar, is another hugely biodiverse region with much better links and, of more recent times, less fraught with politics. Since the British colonial period, it has been famous as the center of diversity for such species as *V. coerulea*, *Paph. bellatulum*, *Paph. charlesworthii*, and *Paph. parishii*. Sander, Veitch and others all sent their collectors there. I was now ready to explore the area for myself, and for Thant Sin and me to formulate a plan on how we may conserve orchids and other plants of this beautiful country.

At 60,155.2 square miles (155,801.3 sq. km), Shan State covers almost a quarter of the country and is its largest administrative region. Located in eastern Myanmar, this area of jungle-clad mountains is named after the Shan people, who are the country's second largest ethnic group and form a majority in the state. Culturally and linguistically the Shan are closely related to the Thai and Lao, with Shans referring to themselves as *Tai* or *Dai* and calling their language *kwam tai* ("Tai language"), which is largely mutually intelligible with the Thai and Lao languages. Mutual intelligibility with standard Burmese, which is in a different language group altogether, Sino-Tibetan, is nil. However, standard Burmese is taught in all state schools. Added to this, many other distinct ethnic groups are indigenous here, with most having their own distinct traditional dress and speaking their own languages. These include the Pa'O, Wa, Palaung, Akha, Lisu, Danu and Intha. In addition, many Indians, Nepalis and Ghurka migrated to the region during the British colonial period (where their descendants still live), and significant numbers of ethnic Chinese have arrived in the state in more recent times, making it an extremely diverse cultural melting pot.

Historically, Shan State was a collection of princely states ruled by local Shan princes, often finding themselves on



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the periphery of Burmese control. This autonomy was subsequently continued under British rule. Since 1948 and particularly after 1962, various groups, including some Shan, have formed their own national armies and have fought against the Yangon government in a bid for independence. These ongoing tensions mean that parts of the state are still closed off to foreigners, though significant parts have opened in recent years. The area around Inle Lake, an Intha-inhabited area in southern Shan State and UNESCO World Heritage site, has become particularly famous with visitors of all ages for its floating villages and unique paddling-fishing styles of the local inhabitants. However, venturing away from Inle Lake and the nearby capital of Shan State, Taunggyi, one enters pristine countryside and virgin jungles which

many tourists still do not experience.

The countryside around Taunggyi still holds a reasonable amount of jungle and other orchid habitat; home to many *Coelogyne*, *Dendrobium*, *Bulbophyllum*, *Cymbidium* and other species. As it was the rainy season (July) when this trip was made, few of these were in flower. However, a fair amount of (still unidentified) terrestrials could be seen. Though not large and showy like many epiphytes and certain other terrestrials, they were still interesting to observe. One terrestrial that was particularly impressive and identifiable was *Calanthe triplicata*, which grows next to streams in damp woodlands. One locality saw many dozens of plants flowering all at once, making for an enchanting sight on a dark woodland floor. Another terrestrial that was found in large numbers in a different, somewhat

drier woodland location was *Malaxis ophrydis* (*latifolia*), commonly cultivated in the United Kingdom. Growing with it were two other as-yet-identified terrestrials, all growing in a habitat characterized by limited undergrowth (and therefore competition).

An orchid garden was visited in Taunggyi itself, which featured plants from the local area. These included *Vanda* (*Ascocentrum*) *ampullacea*, *Vanda coerulea* (in many forms), *Vanda bensonii*, many *Coelogyne*, *Bulbophyllum*, *Dendrobium*, *Cymbidium* and other vandaceous plants, plus *Paph. charlesworthii*, *Paph. bellatulum*, *Paph. parishii*, *Paph. hirsutissimum* and *Paphiopedilum spicerianum*, among other botanical treasures. Unfortunately, many of these orchids — particularly *Paphiopedilum* and medicinal *Dendrobium* — are now very rare around Taunggyi, with the bulk of the decline taking place in the last two decades (evidenced by the fact that many people we spoke to remarked that, upon being shown pictures of *Paphiopedilum* and other species, that they were common in the area “a few years ago”). In fact, these once-common wildflowers are now so rare that it often takes two days of trekking into deep jungle to see them. Much of this can be attributed to wild collection, as habitats are, for the most part, intact. This issue is explored further below.

In the mountains in the vicinity of Inle Lake there is a village (whose location will remain undisclosed) where many specimens of *Paph. bellatulum* still grow in the wild. The center of diversity of *Paph. bellatulum* is Shan State, though wild specimens from neighboring China and Thailand have been much more widely studied because of Myanmar’s isolation. Here they grow in rocky soil on north-facing slopes and in bushes and long grass. Minimum temperatures during the dry season (December–February) often dip to around 35 F (2 C), with the possibility of a frost every few years. These are very low light conditions and it may surprise the reader that *Paph. bellatulum* in this locality often grows like this; they are not simply victims of competition from other vegetation. In fact, our local village guide immediately started searching thick bushes upon being shown an image of the flower, saying he remembers as a boy that they always grew in bushes! What he said afterward, however, was much more disconcerting: that when he was younger, *Paph. bellatulum* commonly grew everywhere in the entire locality. It



is now reduced to just one hillside. The guide was 29, so this massive decline has only happened recently, with the reason (as confirmed by the villagers) being wild collecting. This is a deeply rural area and the habitat is intact and unspoiled, which is a common occurrence across this entire area. Those who claim that wild collection of orchids is insignificant compared to habitat destruction should take note of this fact. The one remaining hillside where many remain has only been spared because the land belongs to the village monastery, with the monks — like many across Myanmar — taking a proenvironment, anti-wild-collection stance. But areas outside their ownership are a free for all, and the issues in this village effectively encapsulate the situation all over Shan State and Myanmar.

An hour’s drive to the west of Inle Lake is the highland town of Kalaw, a modern town built by the British in the 19th century as a “hill station.” Myanmar’s isolation has meant that it has effectively remained frozen in time, with many distinctly British-style villas, houses, churches and public buildings remaining. Even the original mock-Tudor train station is still functioning, and the descendants of Nepalis and Ghurkas who built the railway live in the town to this day. One can now stay at the original Kalaw Hotel (now called “Kalaw Heritage Hotel”), once the accommodation of choice for prestigious European guests, and enjoy English tea in its very British-looking garden. An hour’s drive from this home-away-from-home in another village (which for now will also remain undisclosed) lies a large virgin jungle of huge ancient trees. Unlike many other tracts of jungle, this

[11] *Rhynchostylis retusa* makes a dramatic sight in the winter and early spring.

[12] Terrestrial orchids are a common sight in the forests of Myanmar. Many terrestrials have long lists of synonyms and *Dienia ophrydis* is no exception. At one time or another, this species has been classified as a *Malaxis*, *Neottia*, *Spiranthes*, *Microstylis*, *Liparis*, *Gyrostachys*, *Anaphora*, *Gastroglottis* or *Corymborkis* — and those are just the genera! Perhaps the most well-known synonym in cultivation is *Malaxis latifolia*.

particular one has been mercifully spared of collection of its orchids and other wildlife, largely because it is state-owned and protected. Even at the entrance to the village, enormous trees covered in countless orchid specimens can be seen. One large example of a *Pholidota* was in full flower, its white flowers swinging in the gentle breeze far above my head; there was no means of getting closer to identify the exact species. A myriad of *Bulbophyllum*, *Coelogyne*, *Dendrobium* and *Vanda* covered nearby trees, and a large specimen of *V. coerulea* in front of a house, still on its branch, could be seen nearby. Its owners specified that they had found it in the nearby jungle, the branch having collapsed from its tree. I instantly knew I had struck gold in terms of orchid territory.

As I walked into the jungle itself, trees full of an unidentified white *Bulbophyllum* immediately struck me, followed by gargantuan trees covered in, among other things, *Thunia alba* and *Bulbophyllum lobbii*. Many *Dendrobium* and *Coelogyne* or *Pholidota* species were also observed,

though as it was outside their flowering period it was not possible to identify them. Every turn — nay every tree — seemed to have a huge array of orchid species, and one could spend hours marveling at each one.

HOPE FOR THE FUTURE Yet not all is well in this jungle either, as we quickly noticed small outdoor stalls selling clearly wild-collected plants to tourists (with the sellers themselves not shy to admit that the plants did indeed come from this jungle). But because the jungle is unlikely to be completely depleted because of its status, as well as because of the area's outstanding natural beauty and tourist potential, Thant Sin and I decided to base our orchid project in the vicinity of this village. In short, we plan to do this by initially purchasing a few acres of virgin jungle, some land in order to propagate local Myanmar orchids and sell them internationally, and working with local people to educate them on the importance of looking after the environment. In short, we plan to have a full scale, eco-minded social enterprise, which will be linked to my tourism company, with some of the profits going directly to conservation and local people. A more detailed plan is as follows:

- Initially purchasing a few acres of virgin forest that will be strictly protected and treated as a nature reserve. More and more acres of jungle will be purchased as time goes on and profits grow.
- Additional land will be purchased for an orchid propagation lab and nursery facilities, from where flasks and plants will be sold internationally. Part of the profits will go strictly toward the project and conservation, with the lab due to be opened at the end of 2018.
- My company, Real Escape Travel (www.realescapetravel.co.uk) will be joined directly to the project, with orchid tours offered to the area. Part of the profits will go directly to the eco-social enterprise.
- Records of profits and figures made from tours will be posted on Real Escape Travel along with specific details on how this money has been spent, with newsletters published and sent out with more detailed information.
- Work with local people from day one. Thant Sin will use his medical expertise to help them on a practical level, and we will both engage in teaching locals about the environment and the importance of preserving it. Education and working with locals is

absolutely key to long-term conservation success.

- Experts from various fields will be invited to help us survey the jungles and local environment. These will not just be orchid specialists, but botanists more broadly, as well as insect and animal specialists.
- Volunteers and visitors will be accepted. No experience is necessary, though they would be required to pay a fee to volunteer or visit (some of the profits will go directly to conservation and local people).
- This will not be run as a closed project where only certain individuals are invited. Everyone will be welcome to visit and help.

Thant Sin and I would like to take this opportunity to announce formally our first orchid tour to Myanmar, which will be open to the public in August 2018 running for 12 days. Part of the profits will be used to build a road for the villagers where *Paph. bellatulum* grows, replacing the current badly maintained dirt road, as well as investing in education on environmental matters. The rest of the money will go toward purchasing more jungle for our nature reserve.

If one goes to the early morning market at Nyaung Shwe by Inle Lake, the scale of the challenge we are facing becomes painfully apparent. Here villagers from all around the area congregate to sell their wares, among them many wild orchids. *Prima facie*, one would presume that it is poverty in itself which drives this collection. Yet upon closer inspection and speaking with the villagers, it is revealed that they in fact work full time as farmers and have a sustainable income; collecting wild orchids is just an extra source of money. In fact, many villages and towns in the region also have stalls like this with wild-collected orchids. By talking to them something more disturbing is revealed: Businesspeople from neighboring countries arrive and buy the plants at rock-bottom prices, often less than the already low prices advertised. One such plant is *Paph. bellatulum*, which these villagers too remembered as once being a common wildflower. Now, just as these villagers do, one must trek for two days in the jungle to get to them; one worrying comment was that it was until fairly recently “common,” but now “very rare, almost disappeared.” They added that they often have to sleep in the trees to avoid dangerous animals. In the market, *Paph. bellatulum* goes for less than \$1 for a bunch of flowering-sized plants; these prices are



subsequently bargained down even lower by businesspeople before being sold on for much more elsewhere. The villagers feel lucky that these “weeds” are worth anything at all, and seem shocked that their retail price elsewhere is, in fact, many times higher than the pittance they are led to believe it is worth. This is an example of exploitation in its strictest definition. Myanmar's isolation has meant that environmental education has fallen by the wayside, with a genuine lack of awareness on eco issues. It is doubtless that Thant Sin and I face an uphill battle to reverse this trend. However, as the first eco-social enterprise venture in the country that specifically specializes in orchids and other plants, we are hopeful of a better future for the country as it turns to democracy after its turbulent past and that local people can be taught how to take care of their environment. We sincerely hope you will support us in this venture.

— *Dino Zelenika was born in Mostar, Bosnia and Herzegovina (then Yugoslavia) and has lived in Bristol, United Kingdom for some 20 years. A historian by training, he has grown orchids for 15 years and has been an orchid judge for five. He combined his passions for plants, history and gastronomy with his love of travel to found Real Escape Travel in 2016 which also offers orchid tours, including to the Balkans and Myanmar (email: dino91@sky.com; www.realescapetravel.co.uk).*

Bulbophyllum: A New

TEXT AND PHOTOGRAPHS BY WOLFGANG RYSY

NOT TOO LONG ago Tom Mirenda (2017) gave, in this magazine, a short overview of the genus *Bulbophyllum* with the emphasis on 10 species with the most extreme appearance. One of the 10 species he presented was *Bulbophyllum echinolabium*, a species with an extremely large flower — and I think with a length of about 16 inches (40 cm) the largest in the genus. But, if we are talking about extremes, we are missing the counterpart with the smallest flower. To my knowledge, this would be *Bulbophyllum minutissimum* (from Latin: “especially small”) and *Bulbophyllum globuliforme*, two natives of Australia. Both species have very tiny, disk-like or globular pseudobulbs with diameters of 0.08–0.12 inch (2–3 mm) and flower diameters also a mere 0.12–0.14 inch (3.0–3.5 mm)!

We learned from Tom’s article that the genus *Bulbophyllum* is perhaps the largest in the orchid family, consisting of more than 2,200 species occurring in tropical and subtropical regions of every continent. These species are segregated into about 100 sections — and in what follows I will address a collection of species that, with the exception of two, belong to section *Brachyantha* Rchb. f. described in 1861. Most growers will recognize the later synonym, section *Umbellatae*, established by the leading plant systematician of his time, George Bentham (1800–1884) of England in 1883 just before his death. Even Emly Siegerist, in her book *Bulbophyllums and Their Allies* (2001) mistakenly treated the section using this synonym. There Siegerist included examples of species, but unfortunately without photos or drawings.

Bentham described the section as having racemes characterized by the scape apex (rachis) abbreviated in an umbel or a small head nearly like those in *Cirrhopetalum*, but without fused lateral sepals. At the end of his definition he mentioned the table 4267 from the *Curtis’s Botanical Magazine*, which shows *Bulbophyllum guttulatum*. In other words by Siegerist (2001): “the lateral sepals are folded inwards once or more, and the margins of these folded



parts are parallel to some degree” — and I supplement: and may not touch each other as in section *Cirrhopetalum*. The section (*Brachyantha*) now has more or less 26 species distributed from India to Japan, southward to the Philippines and (so far) a single species found in New Guinea. Here I discuss five of them along with two additional species from other sections whose flowers are structurally very similar.

***Bulbophyllum bicolor* LINDL. 1830**

Section *Cirrhopetaloides* 1994

Synonym: *Cirrhopetalum bicolor* (LINDL.) ROLFE 1903

Etymology: Latin *bicolor* = “two-colored,” because the sepals and petals have red-purple lines on a pale background.

This species was first described by John Lindley (1799–1865) in 1830. Later, in 1903 R.A. Rolfe (1855–1921) transferred this species to the genus *Cirrhopetalum* now Section *Cirrhopetalum*, but from our present understanding of the genus *Bulbophyllum* is a better fit to section *Cirrhopetaloides*.

Bulbophyllum bicolor is a creeping plant, mostly on rocks, with pseudobulbs spaced about 1.2 inch (3 cm) apart along the rhizome with a diameter of 0.12–0.16 inch (3–4 mm). The pseudobulbs are ovoid and prominently four-angled; they are 0.8–1.6 inch (2–4 cm) long and



[1–2] *Bulbophyllum globuliforme* is one of the tiniest species in the genus. It is endemic to Australia where it grows between 300 and 750 m. Inflorescences, at 1.5 cm, barely exceed the height of the leaves.

[3] *Bulbophyllum bicolor*. This easily grown species is readily available in cultivation and makes a rewarding specimen.

[4–5] *Bulbophyllum cornu-ovis*. The species is very unusual, not only in the mottling of the foliage but in the long threadlike projections on all three sepals.

Set of Extremes

have a diameter of 0.4–0.7 inch (1–1.8 cm). Pseudobulbs produce a solitary, leathery, oblong and at the apex rounded leaf 4.3–8.7 inches (11–22 cm) long and 1–1.4 inches (2.5–3.5 cm) wide. The inflorescence, 2–3.1 inches (5–8 cm) long, arises from the base of the pseudobulb from within a sheathing bract. The usually 3–5 (rarely up to seven) attractive flowers are arranged in a subumbel. The entire flower is ivory white or pale yellow with red-purple stripes. The apices of the dorsal sepal and the petals are dark red. The mobile lip is orange-yellow and finely speckled red all over. The dorsal sepal, 0.4–0.5 inch (1.0–1.3 cm) long and 0.2–0.3 inch (0.6–0.8 cm) wide, is ovate and acute at the apex; its margin is sometimes coarsely ciliate. The lanceolate-ovate, falcate and obtuse lateral sepals are nearly parallel and about an inch (2.3–2.6 cm) long and about ¼ inch (0.6 cm) wide; the upper parts are typically rolled inward. The ovate, acute petals are 0.3 inch (0.7 cm) long and 0.2 inch (0.5 cm) wide. The fleshy, tongue-like and curved lip is up to 0.6 inch (1.5 cm) long. In the middle of the basal portion is a grooved depression.

The species is distributed from Hong Kong westward to Thailand growing on and among rocks in humid, uniformly warm conditions at low to medium elevations (up to 1,500 feet [450 m]). Flowering takes place in late April through early June

Bulbophyllum cornu-ovis RYSY 2011

Section unknown

Etymology: From the Latin *cornus* = “horn” and *ovis* = “sheep,” because the lateral sepals look like horns of the male North American bighorn sheep

With this species I have had the rare opportunity to discover a new, unique species, especially in respect to the flower shape. When I purchased the plant from an orchid nursery in the summer, the young shoots were just developing and the leaves displayed strange dark purple spots in irregular cross-stripes on a green background. The mature leaves were uniformly green. Later I observed that the purple spots on the leaves disappear slowly, as the pseudobulbs mature and just before the next new shoots start to grow. I have never observed this behavior on any other *Bulbophyllum* species. The



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final highlight was the delightfully strange shape of the flowers: about an inch (2.5 cm) in diameter, appearing in late spring and arranged in the characteristic umbel. Spontaneously the twisted lateral sepals reminded me of the horns of the male North American bighorn sheep (*Ovis canadensis* or *montana*); therefore the species name. So, it was a pleasure for me to describe this wonderful new species in detail with many photos in Rysy (2011).

Here I include its official diagnosis: "It cannot be confused with any other *Bulbophyllum* species. Four to 10 flowers are arranged in an umbel at the end of the peduncle. The flowers have an especially striking look with their lateral sepals turned back and twisted like the horns of the bighorn sheep (in Latin: *cornu-ovis*) of North-America. The petals are directed forward, have an oblong form with a typical, threadlike appendage at the apex much longer than the petals themselves; the margins at the apex bear some long hairs. The dorsal, convex sepal has an obtuse form; the connection between the straight base and the ovary is only in the middle in a small area; at the rounded, but acuminate apex a threadlike appendage is fixed with nearly the same length as that of the sepal itself. The narrow tongue-shaped lip is directed upwards at the base

and its front half is sharply bent by 90 degrees forward and down."

Concluding, I supplement some plant dimensions: pseudobulbs ovoid to globular carried 0.2–0.8 inch (0.5–2 cm) apart on the branching rhizome, length 0.6–0.8 inch (1.5–2.0 cm), diameter 0.4–0.6 inch (1.0–1.4 cm); solitary leaf oblong-elliptic, 3.9–5.5 inches (10–14 cm) long and 1.2–1.8 inches (3–4.5 cm) wide; inflorescence 4–7 (sometimes 10) flowers, peduncle 5.5–7.5 inches (14–19 cm) long.

The species exact distribution is presently unknown although assumed to be Sumatra. Flowering in cultivation occurs in April and May.

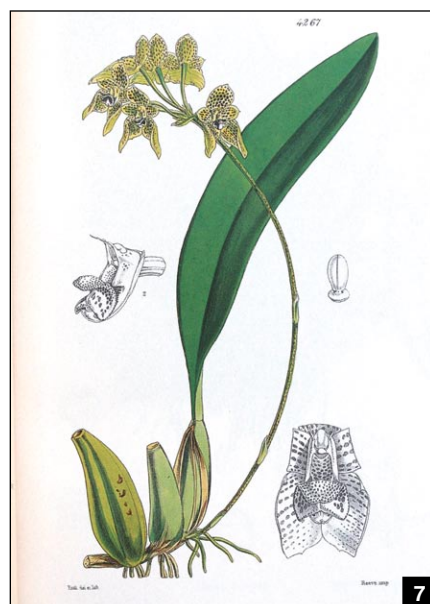
Bulbophyllum guttulatum (HOOK.F.) N.P.BALAKR. 1970

Section *Brachyantha* 1861

Synonyms: *Cirrhopetalum guttulatum* HOOK.F. 1890, *Phyllorkis guttulata* (HOOK. F.) KUNTZE 1891, *Bulbophyllum umbellatum* LINDL. 1845, not *B. umbellatum* LINDL. 1830.

Etymology: From the Latin *guttulatus* = "provided with small dots."

John Lindley (1799–1865) first described this species in 1845 using the name *umbellatum*. Unfortunately he had already used the name for a similar but still rather different species, which



he described in 1830. To add to the confusion, in 1890, J.D. Hooker transferred it (together with a colored drawing) to the genus *Cirrhopetalum* as *Cirrhopetalum guttulatum*, not *umbellatum*, because this name had been taken in 1832 by another quite different species. The species treated here does not fit the criteria used to separate *Cirrhopetalum*. Therefore, far later, in 1970, N.P. Balakrishnan from India

recombined this species as *Bulbophyllum guttulatum*.

The pseudobulbs are produced at intervals on a slender rhizome rooting from the base of the pseudobulbs. The conical-ovoid pseudobulbs, 1.2–2 inches (3–5 cm) long and 0.4–0.6 inch (1–1.5 cm) in diameter are arranged close together or at intervals of about 0.4 inch (1 cm) along the rhizome. The solitary, oblong-elliptic leaf is 3.1–5.9 inches (8–15 cm) long and 0.8–1.2 inches (2–3 cm) wide. The inflorescence arises from the pseudobulb base, first erect and at flowering slightly curved. Six to 10 attractive flowers nearly 0.8 inch (2 cm) in diameter are arranged in a typical umbel. The slender peduncle with a length of nearly 10 inches (25 cm) exceeds the leaf length. The sepals and petals are whitish to greenish yellow with fine purple spots; the lip is whitish to pink with darker purple spots. The broadly ovate dorsal sepal is 0.2–0.4 inch (0.6–1.0 cm) long and about 0.2 inch (0.4–0.5 cm) wide. The lateral sepals, 0.6–0.7 inch (1.4–1.8 cm) long by about 0.2 inch (0.5 cm) wide, are lanceolate-ovate, twisted from the base to the acuminate apex nearly 90 degrees along the midrib; they stand free and are adnate (joined) to the column foot. The ovate, shortly apiculate petals are 0.1–0.2 inch (0.3–0.5 cm) long and about 0.08 inch (0.2 cm) wide. The fleshy, oblong, about 0.16 inch (0.4-cm) - long lip is deflexed from about the middle. The column has broad rectangular lateral wings and decurved apical stielidia (horns) with a remarkable length of up to 0.1 inch (0.25 cm).

The species is found from central Nepal to Bhutan, northeastern India (Sikkim, Darjeeling, Khasia Hills) to Vietnam in broad-leaved subtropical and temperate rainforests at elevations of 2,300–5,200 feet (700–1,600 m) (in Bhutan, 8,500 feet [2,600 m]). Flowering occurs from July through September.

This species is closely related to *Bulbophyllum umbellatum* (see below), but differs in having an inflorescence longer than the leaves, spotted flowers and long-caudate stelidia.

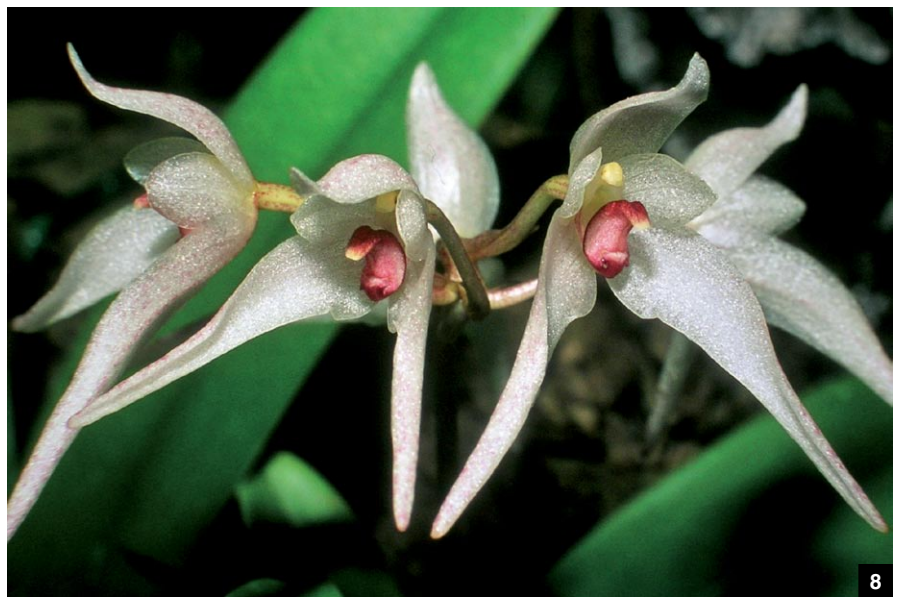
Bulbophyllum mysorens (ROLFE) J. J. SM. 1912

Section *Brachyantha* 1861

Synonym: *Cirrhopetalum mysorens* ROLFE 1895

Etymology: derived from the Mysore District in India, where it was first found.

Robert Allen Rolfe (1855–1921) described this species first as *Cirrhopetalum mysorens*, but today we know that it really does not belong to section



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Cirrhopetalum. Johann Jacob Smith (1867–1947), born in Antwerp (Belgium), transferred it to the *Bulbophyllum* in 1912.

This creeping and branching epiphyte has ovoid pseudobulbs, borne on a stout rhizome at distances of about an inch (2–3 cm). The pseudobulbs are about an inch (2.0–2.5 cm) long and have a diameter of about 0.4 inch (1 cm). The single, narrowly lanceolate leaf has a length of 2.8–3.9 inches (7–10 cm), a width of 0.6–0.7 inch (1.4–1.8 cm) and is scarcely notched at the apex. The 3.9-inch (10-cm), erect inflorescence arises from the pseudobulb base and carries 3–5 flowers of about 0.8 inch (2 cm) diameter in the typical umbellate arrangement. The oblong-ovate dorsal sepal is about $\frac{3}{4}$ the length of the lanceolate-falcate lateral sepals. The apical edges are rolled inward so that they have an acuminate appearance. The

[6] *Bulbophyllum guttulatum* is another species easily found in cultivation. It is found in the subtropical areas of the Himalayas from India to Vietnam. Shade and good air movement with warm temperatures and high humidity are necessary for good growth and flowering.

[7] *Bulbophyllum guttulatum* from Curtis's Botanical Magazine.

[8] *Bulbophyllum mysorens* is one of the smaller species in the section, standing about 4–6 cm tall.

[9] A native of China and Taiwan, *Bulbophyllum omerandrum* is uncommon in cultivation. It grows as an epiphyte or lithophyte at elevations between 3,300 and 6,600 feet (1,000–2,000 m).

smaller petals are ovate and their apices are rounded. The oblong, lip is nearly 0.2-inch (0.5 cm) long and rather sharply decurved. Sepals and petals are white and the lip is purple, providing a sharp contrast.

The species is found in southern India (the hills in the Mysore District) and flowering takes place from July to September.

***Bulbophyllum omerandrum* HAYATA 1914**
Section *Cirrhopetalum* (Lindl.) Rchb.f. 1861

Synonym: *Cirrhopetalum omerandrum* (HAYATA) HAYATA 1917

Etymology: not explained by Hayata

The general plant habit of this species is very similar to that of *Bulbophyllum umbellatum* (see below). The ovoid-conic pseudobulbs are produced at a distance of 0.2–0.8 inch (0.5–2.0 cm) on the creeping rhizome. They are 0.6–1 inch (1.5–2.5 cm) long and up to 0.8 inch (2 cm) in diameter. The single, leathery, linear-oblong leaf is 3.1–4.7 inch (8–12 cm) long and 0.6–1 inch (1.5–2.5 cm) wide. The inflorescence, consistent with the section, arises from the pseudobulb base and carries 2–4 flowers typically arranged in an umbel. The flower length is 1.2–1.6 inch (3–4 cm). The dorsal sepal is ovate-triangular. The lateral sepals are lanceolate with an acuminate apex. The petals are oblong-ovate and their margins are typically ciliate, especially at the apex. The base color is greenish yellow or light brownish yellow and more or less densely spotted reddish brown, especially densely near the apex. The small tongue-shaped lip is greenish or reddish light brown and more or less spotted dark red. Remarkable are the pectinately ciliate anthers.

The species is distributed from South China to southern Taiwan in montane, primary forests at elevations between 3,300 and 6,600 feet (1,000–2,000 m). Flowering occurs from December to January.

***Bulbophyllum umbellatum* LINDL. 1830**
Section *Brachyantha* 1861

Synonyms: *Cirrhopetalum maculosum* LINDL. 1841, *Phyllorkis maculosa* (LINDL.) KUNTZE 1891, *Bulbophyllum tortisepalum* GUILL. 1954, *Bulbophyllum umbellatum* J.J.SM. 1905 nom. illeg.

Etymology: From the Latin *umbellatus* = "like an umbrella," because the flowers are arranged in a ring (umbel) like the spokes of an umbrella.

Bulbophyllum umbellatum is the type species for section *Brachyantha*. The conical-ovoid pseudobulbs are closely spaced or up to 1 cm apart on the



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creeping, thick rhizome and are about an inch (2–3 cm) long and 0.6–0.8 inch (1.5–2.0 cm) in diameter. The solitary, deep green leaves are 3.9–5.9 inches (10–15 cm) long by 0.6–1.2 inches (1.5–3 cm) wide, thick-coriaceous and linear-oblong. The inflorescence arises from the base of the pseudobulb and reaches a length of about 3.9 inches (10 cm) at the top of which is carried an umbel of 3–7 flowers. The base color is yellowish green to brownish yellow, profusely spotted with very small red dots. The ovate-triangular dorsal sepal is less than 0.4 inch (1 cm) long and 0.3 inch (0.7 cm) wide. The ovate-lanceolate lateral sepals are about 0.8 inch (2 cm) long and 0.4 inch (1 cm) wide and are rolled into nearly a tube and carried horizontally to slightly downswept. The broadly ovate petals are about ¼ inch (0.6 cm) long and 0.18 inch

[10] *Bulbophyllum umbellatum*, is widespread throughout the Himalayas, mainland Southeast Asia, southern China and Vietnam. It is the type species for the section. It grows in mossy forests under uniformly warm conditions and high humidity.

[11–12] *Bulbophyllum violaceolabellum* appears to be endemic to southern Yunnan Province and northern Laos.

(0.45 cm) wide. The tongue-shaped lip is slightly decurved and about 0.2 inch (0.5 cm) long.

The species is widespread from India to Nepal, Bhutan, Vietnam, South China and to Taiwan in primary forests at elevations between 2,300 and 6,600 feet (700 – 2,000 m). Flowering occurs in February.

***Bulbophyllum violaceolabellum* SEIDENF.**

1981

Section *Brachyantha* 1861

Etymology: From the Latin *violacea* = "violet" and *labellum* = "lip," because of the violet (purple) lip.

The species was first described by Gunnar Seidenfaden (1908–2001), a Danish diplomat and orchid researcher, in 1981 on the basis of a plant collected by him on the road to Luang Prabang in Laos in April of 1957, then growing in Copenhagen and flowering for the first time in May of 1980. He compared it to *Bulbophyllum guttulatatum* (see above), but it is clearly distinct in a number of characters.

The conical pseudobulbs, about an inch long (2–3 cm-), are arranged at a distance of 2.44–3.9 inches (6–10 cm) on a stout rhizome. The single, leathery, oblong leaf is 4.7–5.9 inches (12–15 cm) long and about 1.6 inch (4 cm) wide. The inflorescence, arising from the base of the pseudobulb, is longer than the leaf (up to about 9.5 inches [24 cm] long) and carries 8–10 flowers of about 0.6 inch (1.5 cm) diameter arranged in the characteristic umbel. The sepals are about 0.3 inch (0.8 cm) long and 0.2 inch (0.5 cm) wide. The dorsal sepal is ovate and somewhat hooded. The lateral sepals are broadly triangular. The petals are oblong-ovate with a distinct cusp at the apex; their measurements are about 0.2 inch (0.5–0.6 cm) long and about 0.08 inch (0.2 cm) wide. The small lip is strongly recurved and has a low, rounded longitudinal midkeel. At the apex of the column are two stamidia that are 0.08 inch (0.2 cm) long, held at a right angle to the column axis. The sepals and petals are pale greenish yellow with many small dark purple dots. The light purple lip is covered with many small red dots.

The species is found in Laos, Vietnam, southern Yunnan Province in China on tree trunks in open forests on limestone slopes at elevations of about 2,300 feet (700 m). Flowering occurs from February to May.

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Acknowledgments

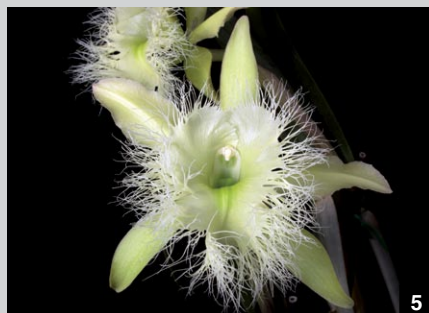
I would like to thank Thomas Mirenda for the proofreading of this article.

— Wolfgang Rysy is a retired mechanical engineer and has been an orchid hobbyist for more than 45 years. He has been a member of the German Orchid Society since 1973 and of the AOS since 1975. He has visited many countries in Europe, the Americas, South Africa, Southeast Asia and Australia to study orchids in more detail in their native habitats and he maintains an orchid collection in a small greenhouse.



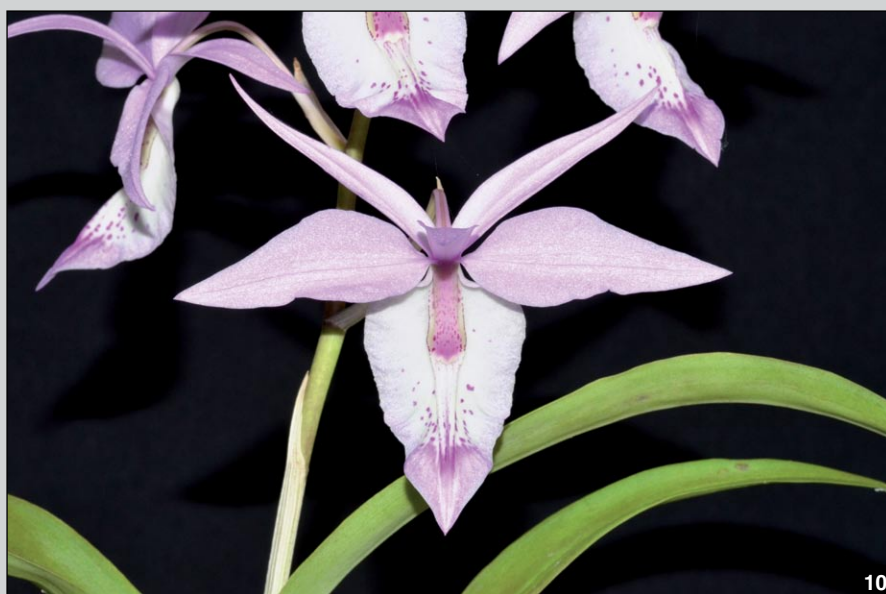
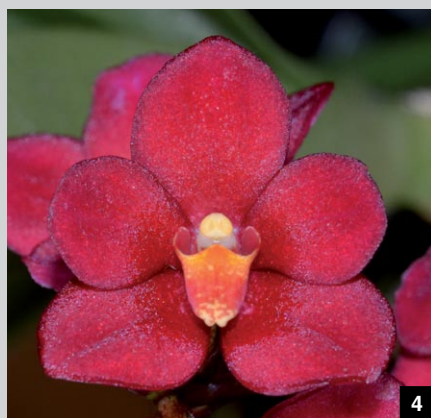
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The results of his orchid studies are published in books and nearly 100 articles in national and international magazines. He is a national and international lecturer who speaks to orchid and general botanical societies. For 15 years he has been a member of the editorial staff of the German Orchid Society. His special interest is the *Bulbophyllinae* (email Rysy-Erlangen@t-online.de).





- [1] *Enanthleya* Pixie Charm 'Stony Brook' AM/AOS (*Cattlianthe* Pixie x *Encyclia alata*) 84 pts. Exhibitor: Susan Gange; photographer: Maurice Marietti. Mid-Atlantic Judging Center
- [2] *Cryptochilus sanguineus* 'Marni's Cardinal' HCC/AOS 78 pts. Exhibitor: Stanley Luk; photographer: Ed Cott. Toronto Judging Center
- [3] *Rodrumnia* Apple Hollow 'Sunset' HCC/AOS (Hare Hollow x Sycamore Hollow) 78 pts. Exhibitor: Jeanne Kaeding; photographer: Robin McLaughlin. Toronto Judging Center
- [4] *Rodrumnia* Beaver Hollow 'Burgundy Lace' HCC/AOS (*Tolumnia* Maple Dancer x Sycamore Hollow) 78 pts. Exhibitor: Jeanne Kaeding; photographer: Robin McLaughlin. Toronto Judging Center
- [5] *Rhyncholaelia digbyana* 'Memoria Bob DeCoudres' AM/AOS 80 pts. Exhibitor: Plato Mathews; photographer: Julie Rotramel. National Capital Judging Ctr.
- [6] *Aerangis* Elro 'Grace' AM-CCE/AOS (*ellisii* x *modesta*) 85-92 pts. Exhibitor: Orchid Eros; photographer: Glen Barfield. Hawaii Judging Center
- [7] *Phalaenopsis* Arakaki Spring Fairy 'CAD Orchid' AM/AOS (Arakaki Black Eagle x Taisuco Kochdian) 83 pts. Exhibitor: David Bryan; photographer: Robin McLaughlin. Toronto Judging Center
- [8] *Oncidium* Tropic Breeze 'Everglades' CCM/AOS (*wydlery* x *Acemanda*) 87 pts. Exhibitor: Wilson Ng; photographer: Robin McLaughlin. Toronto Judging Ctr.
- [9] *Lycaste aromatica* 'Gerry's Gold' CCM/AOS 87 pts. Exhibitor: Stephen Male and Fishing Creek Orchids; photographer: Julie Rotramel. National Capital Judging Center
- [10] *Cattleya loddigesii* (Coerulea) 'House of Blues' AM/AOS 85 pts. Exhibitor: Orchid Eros; photographer: Glen Barfield. Hawaii Judging Center
- [11] *Paphiopedilum* Gina's Child 'Lehua's Tall Elegance' HCC/AOS (Gina Short x *rothschildianum*) 75 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging Center
- [12] *Phragmipedium* Waunakee Doll 'Plum Fancy' HCC/AOS (*longifolium* x Barbara LeAnn) 78 pts. Exhibitor: Woodstream Orchids; photographer: James Winner. National Capital Judging Center
- [13] *Paphiopedilum* Spring Moonbeam 'Lehua's Sandra' HCC/AOS (Luna Jewel x *sukhakulii*) 75 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging Center
- [14] *Coelogyne incrassata* var. *sumatrana* 'Copper Glory' CCE/AOS 90 pts. Exhibitor: Stephen Male and Fishing Creek Orchids; photographer: Julie Rotramel. National Capital Judging Center
- [15] *Paphiopedilum* Lady Booth 'EVELICE' AM/AOS (Lady Isabel x Susan Booth) 85 pts. Exhibitor: Stephen Male and Fishing Creek Orchids; photographer: Julie Rotramel. National Capital Judging Ctr.
- [16] *Cymbidium lancifolium* var. *lancifolium* 'Dark Mountain' AM/AOS 81 pts. Exhibitor: John and Shirley Dunkelberger; photographer: Julie Rotramel. National Capital Judging Center





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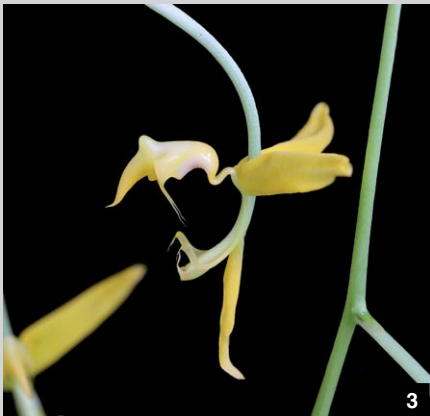


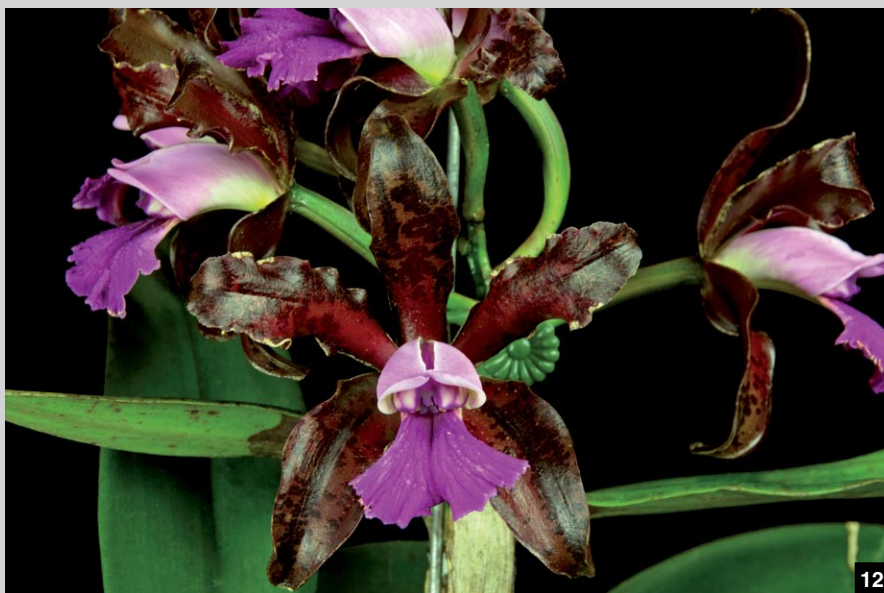
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- [1] *Paphiopedilum* Johanna Burkhardt 'Suzanne' AM/AOS (*rothschildianum* × *adductum*) 89 pts. Exhibitor: Glen Decker; photographer: Robert Hesse. Northeast Judging Center
- [2] *Phragmipedium pearcei* 'Wade's Orchids' CCM/AOS 84 pts. Exhibitor: Wade Hollenbach; photographer: Geoffrey Gould. Northeast Judging Center
- [3] *Phragmipedium caudatum* 'Josie's Joy' HCC/AOS 78 pts. Exhibitor: Josie Lee; photographer: Kevin Witham. Pacific Central Judging Center
- [4] *Sarcochilus* Nicky's Girl 'Fran Weaver' HCC/AOS (Duno Nickys Twin × Heidi) 75 pts. Exhibitor: Bill Weaver; photographer: Chaunie Langland. Pacific Central Judging Center
- [5] *Lycaste* Memoria Olga Antón 'Lyn Froehlich' HCC/AOS (Chita Sunset × *macrophylla*) 77 pts. Exhibitor: Kenneth Meier; photographer: James Winner. National Capital Judging Center
- [6] *Leptotes bicolor* 'Fireworks' AM/AOS 82 pts. Exhibitor: Jason Douglass; photographer: Chaunie Langland. Pacific Central Judging Center
- [7] *Sarcochilus* Nicky's Girl 'Dick Weaver' HCC/AOS (Duno Nickys Twin × Heidi) 78 pts. Exhibitor: Bill Weaver; photographer: Chaunie Langland. Pacific Central Judging Center
- [8] *Rhyncattleanthe* Peggy Ann 'Wade's Orchids' HCC/AOS (*Rhyncholaeliocattleya* Oconee Circle × Elaine Taylor) 78 pts. Exhibitor: Wade Hollenbach; photographer: Geoffrey Gould. Northeast Judging Center
- [9] *Dendrobium regium* 'Louanne' CHM/AOS 80 pts. Exhibitor: Tom Pickford; photographer: Ken Jacobsen. Pacific Central Judging Center
- [10] *Barkeria spectabilis* 'Bob Hoffman' HCC/AOS 78 pts. Exhibitor: Chaunie Langland; photographer: Chaunie Langland. Pacific Central Judging Center
- [11] *Dendrobium wassellii* 'Beth's Tintinabulation' CCE/AOS 95 pts. Exhibitor: Dr Lawrence Schweitzer; photographer: Teck Hia. Northeast Judging Center
- [12] *Capanemia superflua* 'Mary Brownell' CCM/AOS 82 pts. Exhibitor: Chaunie Langland; photographer: Chaunie Langland. Pacific Central Judging Center
- [13] *Dendrobium officinale* 'Wade's Orchids' CHM/AOS 83 pts. Exhibitor: Wade Hollenbach; photographer: Geoffrey Gould. Northeast Judging Center
- [14] *Phragmipedium* Grande 'Belmont' HCC/AOS (*longifolium* × *humboldtii*) 78 pts. Exhibitor: Josie Lee; photographer: Kevin Witham. Pacific Central Judging Center
- [15] *Brassavola acaulis* 'Deanna's Prodigal Quiver' AM-CCM/AOS 87-80 pts. Exhibitor: Dr Lawrence Schweitzer; photographer: Teck Hia. Northeast Judging Center
- [16] *Tolumnia* Pine Hollow 'Sunspots' HCC/AOS (Sundown Reef × Maple Dancer) 78 pts. Exhibitor: Jeanne Kaeding; photographer: Geoffrey Gould. Northeast Judging Center





- [1] *Cattleya granulosa* 'Bentley' HCC/AOS 75 pts. Exhibitor: Amy and Ken Jacobsen; photographer: Chaunie Langland. Pacific Central Judging Center
- [2] *Bifrenaria silvana* 'Kveta' CBR/AOS. Exhibitor: Sasha Kubicek; photographer: Judith Higham. Pacific Northwest Judging Center
- [3] *Gongora galeottiana* 'Annie Albert' CHM/AOS 86 pts. Exhibitor: Darrell Albert; photographer: Doug Savage. Western Canada Judging Center
- [4] *Paphiopedilum* Billy Cardalino 'Wendy' AM/AOS (*philippinense* × Susan Booth) 80 pts. Exhibitor: Don Mills; photographer: Judith Higham. Western Canada Judging Center
- [5] *Cypripedium* Sabine 'Ivory Rose' AM/AOS (*fasciolatum* × *macranthos*) 82 pts. Exhibitor: Shawn Hillis; photographer: Doug Savage. Western Canada Judging Center
- [6] *Masdevallia* Teipels Streifenhörnchen 'Paramount's Nora and Hanson' AM/AOS (*garciae* × *chaparensis*) 81 pts. Exhibitor: Paramount Orchids; photographer: Doug Savage. Western Canada Judging Center
- [7] *Cattleya* Green Emerald 'Jaime's Chasus' HCC/AOS (Elizabeth Mahon × Thospol Spot) 79 pts. Exhibitor: Charles and Susan Wilson; photographer: Ross Leach. Pacific Northwest Judging Center
- [8] *Paphiopedilum* Becky Fouke 'Buttercream' AM/AOS (Armeni White × *primulinum*) 80 pts. Exhibitor: Robert Scott; photographer: Ross Leach. Pacific Northwest Judging Center
- [9] *Dendrobium* Ueang Phueng 'Evguenia' CCE/AOS (*jenkinsii* × *lindleyi*) 91 pts. Exhibitor: Alexey Tretyakov; photographer: Judith Higham. Pacific Northwest Judging Center
- [10] *Dracula gorgona* 'David' HCC/AOS 79 pts. Exhibitor: Don Mills; photographer: Judith Higham. Pacific Northwest Judging Center
- [11] *Cattleya purpurata* (Striata) 'Candy Cane' AM/AOS 81 pts. Exhibitor: Amy and Ken Jacobsen; photographer: Chaunie Langland. Pacific Central Judging Center
- [12] *Cattleya* Mareeba Tiger 'Adelain's Chasus' HCC/AOS (*tigrina* × *schilleriana*) 79 pts. Exhibitor: Charles and Susan Wilson; photographer: Ross Leach. Pacific Northwest Judging Center
- [13] *Masdevallia* Susy de Bermeo 'Sunset Dream' HCC/AOS (Angel Frost × Gold Dust) 76 pts. Exhibitor: Catherine Frutiger; photographer: Judith Higham. Pacific Northwest Judging Center
- [14] *Maxillaria striata* 'Robin Jane' FCC/AOS 90 pts. Exhibitor: Sasha Kubicek; photographer: Judith Higham. Pacific Northwest Judging Center
- [15] *Cattleya* Tokyo Magic 'Sidsel' AM-CCM/AOS (Irene Finney [1964] × *briegeri*) 84-81 pts. Exhibitor: Svend Munkholm; photographer: Judith Higham. Pacific Northwest Judging Center
- [16] *Maxillaria meleagris* 'Ashley' CHM/AOS 85 pts. Exhibitor: Liana Webb; photographer: Ross Leach. Pacific Northwest Judging Center



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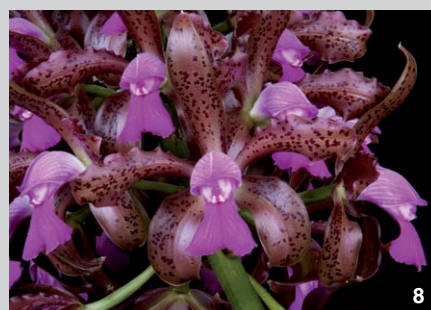
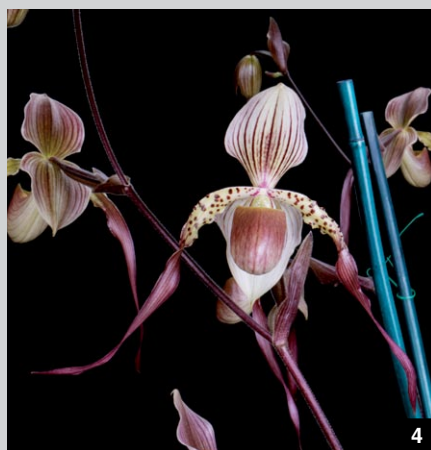


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- [1] *Catasetum* Ten Dragons 'Alicja' AM/AOS (Dragon's Teeth × *tenebrosum*) 84 pts. Exhibitor: Harry and Alice Yannagas; photographer: Doug Savage. Western Canada Judging Center
- [2] *Masdevallia* Fraseri 'Seattle Dream' CCM/AOS (*coccinea* × *igneae*) 85 pts. Exhibitor: Clackamas Orchids; photographer: Jack Floegel. Pacific Northwest Judging Center
- [3] *Paphiopedilum* Wallula Glenn 'Carol Renee' AM/AOS (Betty Glenn × *liemianum*) 80 pts. Exhibitor: Carol Liese-Rodriguez; photographer: Jack Floegel. Pacific Northwest Judging Center
- [4] *Phalaenopsis* bellina 'Norman' AM/AOS 83 pts. Exhibitor: Norman's Orchids; photographer: Arthur Pinkers. Pacific South Judging Center
- [5] *Masdevallia* Machu Picchu 'Windflower' AM/AOS (*ayabacana* × *coccinea*) 87 pts. Exhibitor: Betty Kelepecz; photographer: Arnold Gum. Pacific South Judging Center
- [6] *Phragmipedium* High Voltage 'Lauren' AM/AOS (Red Lightning × Grande) 82 pts. Exhibitor: Bob Lucas; photographer: Doug Savage. Western Canada Judging Center
- [7] *Paphiopedilum* Memoria Gordon Peters 'Seagraves' AM/AOS (Julius Irving × *philippinense*) 80 pts. Exhibitor: John Hagee; photographer: Arnold Gum. Pacific South Judging Center
- [8] *Bulbophyllum* lobbii 'Olga Gurel' CCM/AOS 87 pts. Exhibitor: Darrell Albert; photographer: Doug Savage. Western Canada Judging Center
- [9] *Masdevallia* trochilus 'Windflower' AM/AOS 81 pts. Exhibitor: Betty Kelepecz; photographer: Arnold Gum. Pacific South Judging Center
- [10] *Paphiopedilum* Lady Booth 'Lady Sara' AM/AOS (Lady Isabel × Susan Booth) 83 pts. Exhibitor: Richard Hess; photographer: Arthur Pinkers. Pacific South Judging Center
- [11] *Cattleytonia* Jamaica Beauty 'Feuerbach' HCC/AOS (*Broughtonia sanguinea* × Jamaica Jewel) 78 pts. Exhibitor: Renate Schmidt; photographer: Arnold Gum. Pacific South Judging Center
- [12] *Cattleya* warszewiczii 'Kimberly Burzel', HCC/AOS 78 pts. Exhibitor: Linden Burzell; photographer: Arnold Gum. Pacific South Judging Center
- [13] *Leptotes* pohlitinocoli 'Feuerbach' HCC/AOS 78 pts. Exhibitor: Renate Schmidt; photographer: Arnold Gum. Pacific South Judging Center
- [14] *Miltoniopsis phalaenopsis* 'Sycamore Creek' AM/AOS 83 pts. Exhibitor: Bill Robson; photographer: Arthur Pinkers. Pacific South Judging Center
- [15] *Oncidesa* Sweet Sugar 'Memoria Richard Waugh' AM-CCE/AOS (Aloha Iwanaga × *Gomesa varicosa*) 90-82 pts. Exhibitor: Deborah Halliday; photographer: Arnold Gum. Pacific South Judging Center





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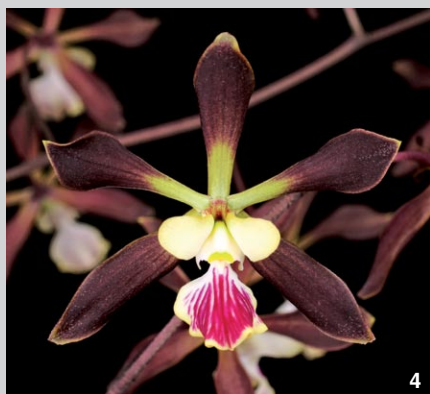
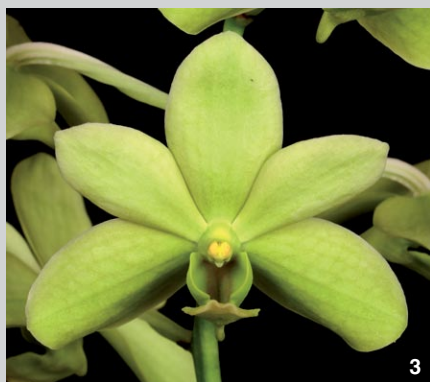
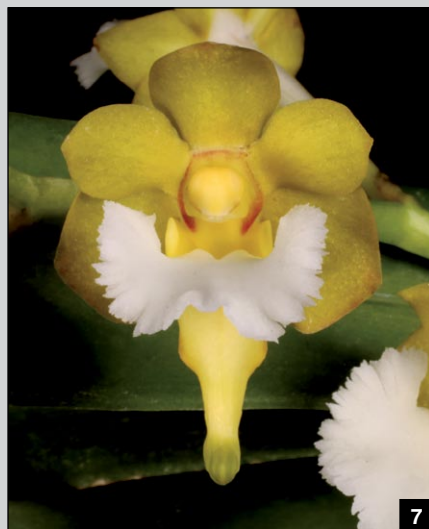


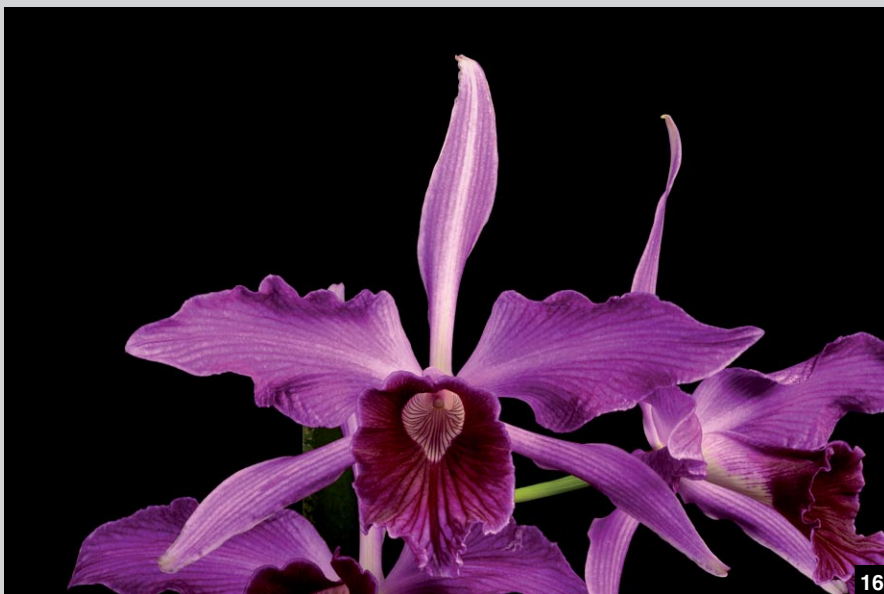
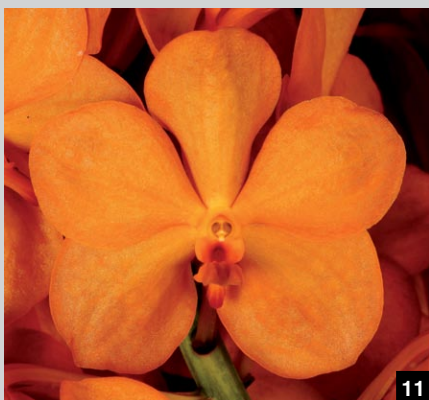
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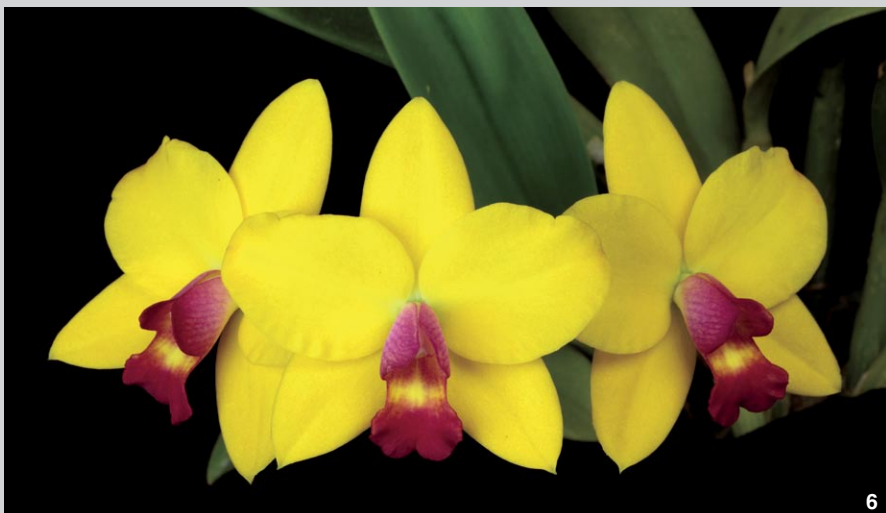
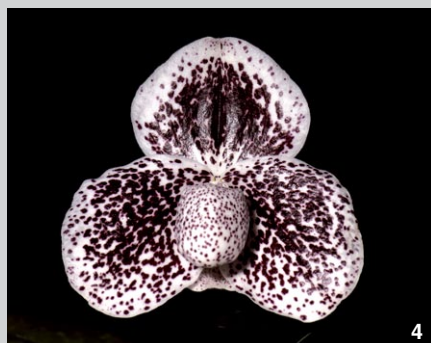
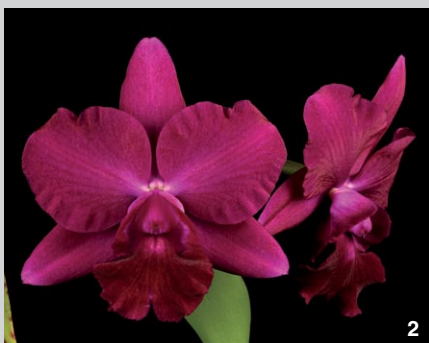
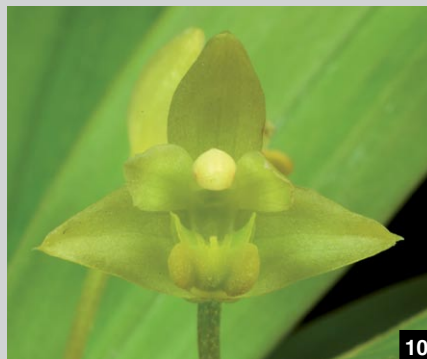
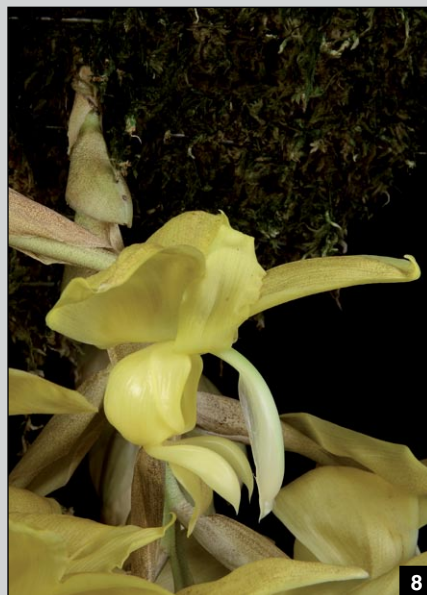
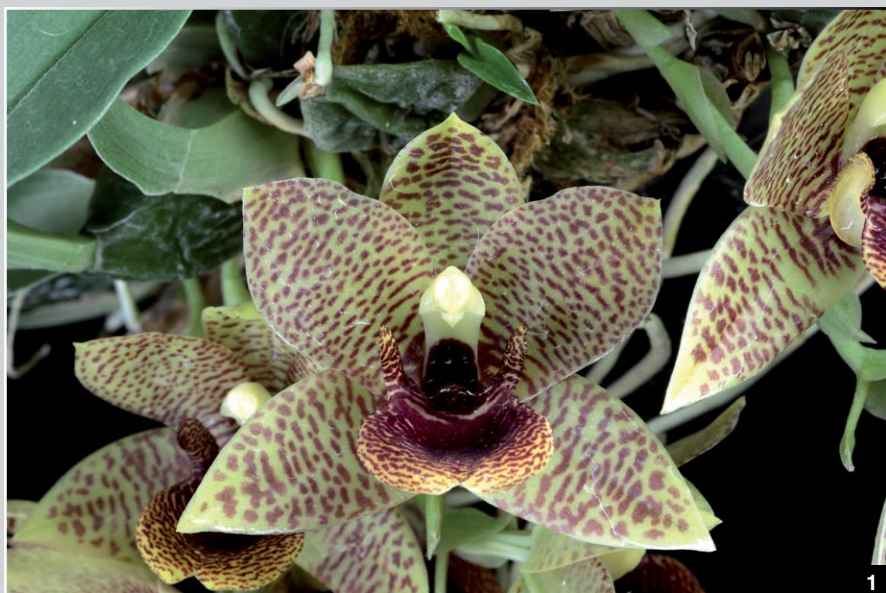
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- [1] *Phragmipedium* Thunderbolt 'Sara's Choice' AM/AOS (Mont Fallu x *caudatum*) 84 pts. Exhibitor: Richard Hess; photographer Arthur Pinkers. Pacific South Judging Center
- [2] *Paphiopedilum* Memoria Mary Henry 'Beloved' HCC/AOS (Neeri-Twist x *rothschildianum*) 78 pts. Exhibitor: Thomas Henry; photographer: Arthur Pinkers. Pacific South Judging Center
- [3] *Paphiopedilum* Bobby Orr 'SVO Pearl' AM/AOS (*stonei* x Mount Toro) 82 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinker. Pacific South Judging Ctr.
- [4] *Paphiopedilum* Memoria Mary Henry 'La Vieja' AM/AOS (Neeri-Twist x *rothschildianum*) 80 pts. Exhibitor: Thomas Henry; photographer: Arthur Pinkers. Pacific South Judging Center
- [5] *Paphiopedilum* Neeri-Twist 'Sweet Pea' HCC/AOS (*haynaldianum* x *glanduliferum*) 77 pts. Exhibitor: Thomas Henry; photographer: Arthur Pinkers. Pacific South Judging Center
- [6] *Phalaenopsis* Tying Shin Fly Eagle 'Wilson' HCC/AOS (*tetraspis* x Dragon Tree Eagle) 78 pts. Exhibitor: Norman's Orchids; photographer: Arthur Pinkers. Pacific South Judging Center
- [7] *Paphiopedilum* Michael Koopowitz 'Gayle's Favorite' AM-CCM/AOS (*philippinense* x *sanderianum*) 80-80 pts. Exhibitor: Gayle Brodie; photographer: Arthur Pinkers. Pacific South Judging Center
- [8] *Cattleya tigrina* 'Montclair' HCC/AOS 76 pts. Exhibitor: Norman's Orchids; photographer Arthur Pinkers. Pacific South Judging Center
- [9] *Cattleya* Lacey Michelle Matherne 'Heavenly' HCC/AOS (*aclandiae* x *tigrina*) 78 pts. Exhibitor: Ruben Colmanares; photographer: Arthur Pinkers. Pacific South Judging Center
- [10] *Mormodes buccinator* 'Pink Perfection' AM/AOS 82 pts. Exhibitor: Michelle Dobard-Anderson; photographer: Arthur Pinkers. Pacific South Judging Center
- [11] *Dendrobium hancockii* 'Little Saigon Gold' HCC-CCM/AOS 85-78 pts. Exhibitor: Ha Bui; photographer: Arthur Pinkers. Pacific South Judging Center
- [12] *Aspasia silvana* 'Catatoulou' CHM/AOS 83 pts. Exhibitor: Eron Borne; photographer: Wilton Guillory. Shreveport Judging Center
- [13] *Phalaenopsis* Ching Miao's Green Apple 'Brazos' HCC/AOS (Texas Jewel x Yungho Gelb Canary) 79 pts. Exhibitor: Mitsi Runyan; photographer: Wilton Guillory. Shreveport Judging Center
- [14] *Masdevallia infracta* 'Elizabeth Grace' HCC/AOS 77 pts. Exhibitor: Eron Borne; photographer: Wilton Guillory. Shreveport Judging Center
- [15] *Paphiopedilum rothschildianum* 'Midnight' HCC/AOS 78 pts. Exhibitor: Jim Longwell; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [16] *Vanda* Suksamran Sunlight 'Crownfox Tangerine' HCC/AOS (Jiraprapa x Pralor) 79 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [17] *Paphiopedilum philippinense* 'Louisiana II' HCC/AOS 76 pts. Exhibitor: Al Taylor; photographer: Wilton Guillory. Shreveport Judging Center





- [1] *Cattleya* Hardyana (1896) 'July's Freedom' FCC/AOS (*dowiana* × *warscewiczii*) 91 pts. Exhibitor: Fred Missbach; photographer: Jason R. Mills. Atlanta Judging Center
- [2] *Epidendrum* Bridal Showers 'Everglades' AM/AOS (*stamfordianum* × *bracteolatum*) 84 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [3] *Vanda* Hawaiian Verde 'Crownfox Lime Freeze' AM/AOS (*sanderiana* × *vietnamica*) 84 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [4] *Encyclia* Crownfox Chocolate Star 'Crownfox' AM/AOS (*guatemalensis* × Judy Russ) 81 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Ctr
- [5] *Vanda* White Crane 'Hyeland' AM/AOS (*sanderiana* × *falcata*) 83 pts. Exhibitor: Carl Kassabian; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [6] *Paphinia* Majestic 'Raise The Red Lantern' AM/AOS (*cristata* × *herrerae*) 80 pts. Exhibitor: Jeff Tyler; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [7] *Vanda* flabellata 'Robert' JC/AOS. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [8] *Paphiopedilum* rothschildianum 'Graciano' FCC/AOS 91 pts. Exhibitor: Dave Sorokowsky; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [9] *Stanhopea* Lydia Bush 'Genevieve' AM/AOS (*tigrina* var. *nigroviolacea* × *grandiflora*) 82 pts. Exhibitor: Doug Hartong; photographer: Jason R. Mills. Atlanta Judging Center
- [10] *Vanda* Carla Wood 'Crownfox Martian Sunrise' AM/AOS (Kultana Gold Spot × Nina Patterson) 86 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Ctr
- [11] *Vanda* Udomchai 'Sun Glow' AM/AOS (Nam Phung × Pralor) 85 pts. Exhibitor: Jim Longwell; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [12] *Phragmipedium* Jason Fischer 'Lydia Brand' AM/AOS (Memoria Dick Clements × *besseae*) 83 pts. Exhibitor: Ralph Brand; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [13] *Vanda* tessellata 'AM Orchids' AM/AOS 85 pts. Exhibitor: Mike Pitiriciu; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [14] *Vanda* Eileen DeVries 'Crownfox' HCC/AOS (*tessellata* × Robert's Delight) 79 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [15] *Encyclia* Crownfox Chocolate Star 'Athena' AM/AOS (*guatemalensis* × Judy Russ) 86 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging Center
- [16] *Cattleya* purpurata var. *sanguinea* 'Phyllis' HCC/AOS 78 pts. Exhibitor: Paul and Phyllis Chim; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center





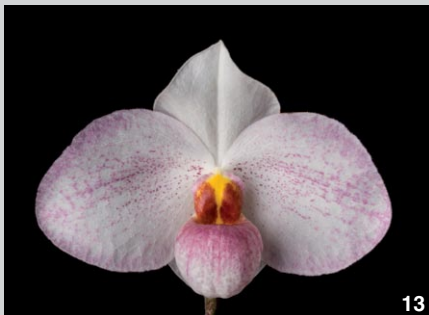
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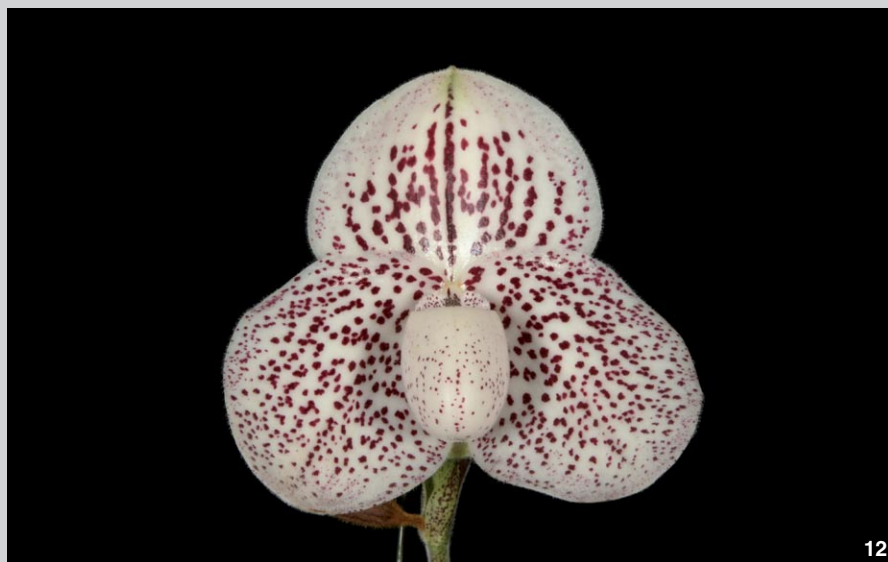
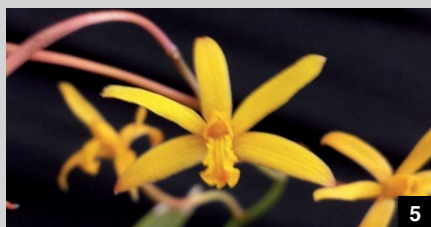
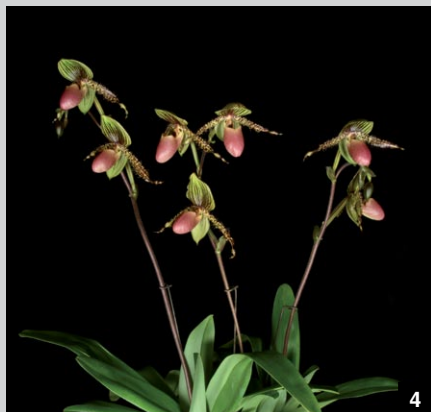
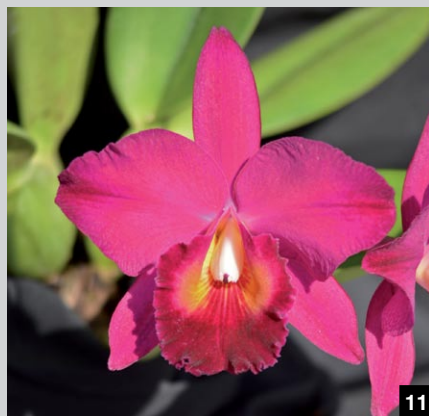
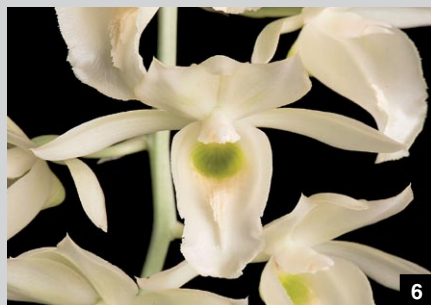


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- [1] *Promenaea* Chameleon 'Jon' AM-CCM/AOS (Limelight x *guttata*) 83-83 pts. Exhibitor: Diana Blasingame; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [2] *Cattleya* Purple Fantasy 'Big Ben' FCC/AOS (Precious Stones x Mini Purple) 90 pts. Exhibitor: Ted McClellan; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [3] *Cattleya tigrina* 'Kathleen II' AM/AOS 84 pts. Exhibitor: William Rogerson; photographer: Nile Dusdieker. Chicago Judging Center
- [4] *Paphiopedilum* Jennifer Reinoso 'Lone Jack' AM/AOS (Memoria Hirohisa Kawai x *godefroyae*) 83 pts. Exhibitor: Alex McConnell; photographer: Jim Pyrzynski. Chicago Judging Center
- [5] *Phalaenopsis* OX Happy Girl 'Iowa Ox 1664' HCC/AOS (OX X-ray x OX Little King) 77 pts. Exhibitor: Robert B. Bannister; photographer: Jim Pyrzynski. Chicago Judging Center
- [6] *Rhyncholaeliocattleya* Matthew Koch 'Gold Country' AM/AOS (Sunday x *Cattleya* Bright Angel) 87 pts. Exhibitor: Ted McClellan; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [7] *Myoxanthus antennifer* 'Memoria Lillie' CBR/AOS. Exhibitor: Larry Sexton; photographer: Jim Pyrzynski. Chicago Judging Center
- [8] *Stanhopea maduroi* 'Gunnii' CBR/AOS. Exhibitor: Joan Gunn; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [9] *Stanhopea wardii* 'Joan' HCC/AOS 79 pts. Exhibitor: Joan Gunn; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [10] *Pinalia concolor* 'Bonheur' CBR/AOS. Exhibitor: Lynne Murrell; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [11] *Ianclarkara* Cheyenne Marie 'Midori' JC/AOS (*Pabania* Eva's Blue Amazon x *Zygolum* Louisendorf grex). Exhibitor: David Bird; photographer: Jim Pyrzynski. Chicago Judging Center
- [12] *Phalaenopsis* Tying Shin Unicorn 'Iowa G817', HCC/AOS (Leopard Prince x Yu Pin Fireworks) 75 pts. Exhibitor: Robert Bannister; photographer: Jim Pyrzynski. Chicago Judging Center
- [13] *Paphiopedilum* Joyce Hasegawa 'Pink Wings' AM/AOS (*delenatii* x *emersonii*) 84 pts. Exhibitor: Orchid Inn, Ltd.; photographer: Richard Noel. Cincinnati Judging Center
- [14] *Phragmipedium* Peruflora's Angel 'Debby Day' HCC/AOS (*richter* x *kovachii*) 76 pts. Exhibitor: David Bird; photographer: Jim Pyrzynski. Chicago Judging Center
- [15] *Phalaenopsis* Tassanee Jongdamkerng 'Pylo' AM/AOS (*equestris* x *appendiculata*) 81 pts. Exhibitor: Big Leaf Orchids; photographer: David Gould. Dallas Judging Center
- [16] *Paphiopedilum hookerae* 'Captain Hook' HCC/AOS 75 pts. Exhibitor: Orchid Inn, Ltd.; photographer: Richard Noel. Cincinnati Judging Center





- [1] *Phalaenopsis violacea* 'Melencia' AM/AOS 87 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California-Sierra Nevada Judging Center
- [2] *Paphiopedilum leucochilum* 'Locomotion' HCC/AOS 75 pts. Exhibitor: Orchid Inn, Ltd.; photographer Richard Noel. Cincinnati Judging Center
- [3] *Clowesetum* Rocky Clough 'Mark's Serenity' AM/AOS (*Catasetum* Rocky's Ruby x *Clowesia russelliana*) 83 pts. Exhibitor: Mark Margolis; photographer: Brian Monk. Florida-Caribbean Judging Center
- [4] *Paphiopedilum* Vanguard 'Semper Fi' CCE/AOS (*glaucochillum* x *rothschildianum*) 90 pts. Exhibitor: Bill Thoms and Doris Dukes; photographer: Ernie Walters. Florida North-Central Judging Center
- [5] *Cattleya vasconcelosiana* 'Losgar' CBR/AOS. Exhibitor: Nancy Losgar; photographer: Laura Newton. Florida North-Central Judging Center
- [6] *Clowesetum* Sandy Kasner 'Snowfall' HCC/AOS (*Clowesia dodsoniana* x *Catasetum* Alexis Pardo) 78 pts. Exhibitor: Mark Margolis; photographer: Brian Monk. Florida-Caribbean Judging Center
- [7] *Catasetum* Edgardo A. Pauneto 'Jim and Melana' AM/AOS (*Frilly Doris* x *Lucis*) 84 pts. Exhibitor: Jim and Melana Davison; photographer Brian Monk. Florida-Caribbean Judging Center
- [8] *Catasetum* Rocky Clough 'Nicola' CCM/AOS (*fimbriatum* x *Sodiroy*) 82 pts. Exhibitor: Richard Fulford; photographer: Brian Monk. Florida-Caribbean Judging Center
- [9] *Bulbophyllum* Wes Newton 'Whisper Jäeger's Dad' AM/AOS (*Laura Newton* x *echinolabium*) 80 pts. Exhibitor: Laura and Wes Newton; photographer: Laura Newton. Florida North-Central Judging Center
- [10] *Encyclia* Orchid Jungle 'Losgar' HCC/AOS (*alata* x *phoenicea*) 79 pts. Exhibitor: Nancy Losgar; photographer: Patricia Cartwright. Florida North-Central Judging Center
- [11] *Rhyncholaeliocattleya* Mima's Brilliant Treasure 'WingDreams' AM/AOS (*Rubescence* x *Hisako Akatsuka*) 82 pts. Exhibitor: Julio and Eileen Hector; photographer: Julio Hector. Florida North-Central Judging Center
- [12] *Paphiopedilum* Tommy Guild 'Springwater' AM/AOS (*Memoria* Jim Coyle x *Otogozen*) 80 pts. Exhibitor: Springwater Orchids and Thanh Nguyen; photographer: Ernie Walters. Florida North-Central Judging Center
- [13] *Brassocattleya* Edna 'Woodlands' HCC/AOS (*Brassavola nodosa* x *Cattleya coccinea*) 77 pts. Exhibitor: Laura and Wes Newton; photographer: Ernie Walters. Florida North-Central Judging Center
- [14] *Encyclia tampensis* 'Whisper Boon II' HCC/AOS 76 pts. Exhibitor: Laura and Wes Newton; photographer: Ernie Walters. Florida North-Central Judging Ctr
- [15] *Phragmipedium* Red Sky 'Remembering Alex Challis' AM/AOS (*Demetria* x *Twilight*) 85 pts. Exhibitor: Sally Heinlein; photographer: Ed Cott. Great Lakes Judging Center
- [16] *Catasetum* Chuck and Louise 'Nicola' HCC/AOS (*Chuck Taylor* x *Louise Clarke*) 76 pts. Exhibitor: Richard Fulford; photographer: Brian Monk. Florida-Caribbean Judging Center

AUGUST

3-4—Houston Orchid Society 39th Summer Workshop, Link Lee Mansion @ University of St. Thomas, 3800 Montrose Blvd., Houston, TX; Contact: John Stubbings, 832-693-8140; JDStubbings@comcast.net
7-12—Sociedad Colombiana de Orquideologia “Exposición Orquideas, Flores & Artesanías,” Jardín Botánico – Carrera 52, Medellín – Antioquia, Colombia; Contact: Javier Rios, (57) 313 6600946; secretariaexposicion@sco.org.co
31-September 2—Asociacion Jueces de Orquideas de Costa Rica “Exposición Nacional de Orquideas AJOCORI 2018,” Ave 16, calles 0 y 1, 6° piso parqueo, Hospital Clinica Biblica, San José, Costa Rica; Contact: Ana Cristina Rodriguez León, 506-8393-3736; orquideaslinda@hotmail.com

SEPTEMBER

15-16—*South Bay Orchid Society Show & Sale, South Coast Botanic Garden, 26300 Crenshaw Blvd., Palos Verdes Peninsula, CA; Contact: Arthur Hazboun, 310-995-1592; webmaster@southbayorchidsociety.com
15-16—Wisconsin Orchid Society Show “Fall In Love With Orchids,” Mitchell Park Horticultural Conservatory, 524 S. Layton Blvd., Milwaukee, WI; Contact: Richard Odders, 262-632-3008; odders2445@gmail.com
21-23—Great Divide Orchid Society Show and Sale, Wingate Hotel, 2007 North Oakes Street, Helena, MT; Contact: Nancy Horn/Cheri Bergeron, 406-459-9252; nancylhorn@outlook.com
22-23—Ridge Orchid Society Show “An Orchid Explosion,” IFAS Stuart Center, 1702 US Highway 17 South, Bartow, FL; Contact: Glen Gary, 863-602-0778; glengary54@yahoo.com
22-23—Shreveport Orchid Society SWROGA, Randal T Moore Center, 3101 Fairfield Avenue, Shreveport, LA; Contact: Lena Parker, 318-868-4568; lparker59@att.net
28-30—*Associação Portuguesa de Orquidofilia “4th International Lisbon Orchid Show,” Mercado de Culturas, Arroios, Lisboa, Portugal; Contact: Diogo Correia, apolisboa@gmail.com
29-30—Central New York Orchid Society Fall Show, Beaver Lake Nature Center, 8477 East Mud Lake Road, Baldwinsville, NY; Contact: Judi Witkin, 315-422-0869; mraush@twcny.rr.com
29-30—*Fascination of Orchids International Show and Sale, South Coast Plaza Village, 1621 Sunflower Ave., Santa Ana, CA; Contact: Tony G., 949-416-0505; tonyg@fascinationoforchids.com;

for additional information go to <http://fascinationoforchids.com>
29-30—Kentucky Orchid Society Show and Sale, St. Mathews Episcopal Church, 330 N Hubbards Lane, Louisville, KY; Contact: Richard Willias, 502-259-9707; ricknw@twc.com
29-30—South Florida Orchid Society Show “Orchid Holiday,” University of Miami Watsco Center, 1245 Dauer Dr., Coral Gables, FL; Contact: Dan Christensen, 954-252-8116; damorchid@aol.com
29-30—Tampa Orchid Club Expo Show and Sale, USF Botanical Gardens, 12210 USF Pine Drive, Tampa, FL; Contact: Cheryl Crilly, 813-244-7564; cents4me@aol.com

OCTOBER

3-14—Central California Orchid Society “The Big Fresno Fair Orchid Show,” Fresno Fairgrounds, Floriculture Building, 2011 S Chance Avenue, Fresno, CA; Contact: Gordon Wolf, 209-999-0181; gwsangca@yahoo.com
4-7—Maui Orchid Society – Maui Fair “Orchidland,” War Memorial Gymnasium, 700 Halia Nakoa St., Wailuku, HI; Contact: Bert Akitake, 808-250-1585; jakitake@hotmail.com
5-7—East Everglades Orchid Society Show and Sale, R.F. Orchids, 28100 SW 182 Ave, Homestead, FL; Contact: Kimberly Belisle, 786-367-7177; concept22@aol.com
6-7—Tri-Cities Orchid Society Annual Show and Sale, Tri-Tech Skills Center, 5929 W Metaline, Kennewick, WA; Contact: Randy Scheele, 509-628-8184; randys001@charter.net
6-8—National Capital Orchid Society Annual Show and Sale, Behnke Nurseries, 11300 Baltimore Ave., Beltsville, MD; Contact: Louis Ross, 571-205-6744; manager_proposal@yahoo.com
10-14—Kenya Orchid Society Show, Sarit Expo Hall, Lower Kabete Road, Nairobi, Kenya; Contact: Helena Rame, 254722513467; helena@airtraffic.co.ke
12-14—*Honolulu Orchid Society Show, Washington Middle School Cafeteria, 1633 S. King St., Honolulu, HI; Contact: Katherine Leonard, 808-542-8672; kateleonard@hawaiianteil.net
13-14—Gainesville Orchid Society Show “Orchids in the Garden,” Kanapaha Botanical Gardens, 4700 SW 58th Dr., Gainesville, FL; Contact: Joan MacLeod, 352-665-2640; neilmacleod@bellsouth.net
20—*Mid-Hudson Orchid Society Fall 2018 Orchid Show and Sale, Union Presbyterian Church, 44 Balmsville Rd, Newburgh, NY; Contact: Ruth Natras, 845-343-2901; rnrn@frontier.com

20-21—Greater Cincinnati Orchid Society Fall Show, Krohn Conservatory, 1501 Eden Park Drive, Cincinnati, OH; Contact: Cheryl Jaworski, 812-438-2898; jaworchid@gmail.com
26-28—Delray Beach Orchid Society Show “Orchids on the Square,” Old School Square Fieldhouse, 51 N. Swinton Ave., Delray Beach, FL; Contact: Annette Jackson, 561-573-2422; aojax@comcast.net
27-28—Calcasieu Orchid Society “Pirates Chest of Orchids,” Good Shepherd Episcopal Church, 715 Kirkman Street, Lake Charles, LA; Contact: Keith Joiner, 318-614-3516; kjoier2000@yahoo.com
27-28—Eastern Iowa Orchid Show and Sale “Orchids Are A Scream,” Cedar Rapids Elks Lodge #251, 801 33rd Ave. SW, Cedar Rapids, IA; Contact: Andy Coghill-Behrends, 319-512-8076; mistercoghill@hotmail.com
27-28—Florida West Coast Orchid Society Show “Orchids in Wonderland,” Pinellas Park Performing Arts Center, 4951 78th Ave. North, Pinellas Park, FL; Contact: Bill Nunez, 727-239-2700; biddison22@aol.com
31-November 3—AOS Fall Members Meeting and 19th Slipper Orchid Symposium, Highland Manor, 604 East Main Street, Apopka, FL; Contact: Frank Smith, 407-886-4131; orchidfrank@aol.com

NOVEMBER

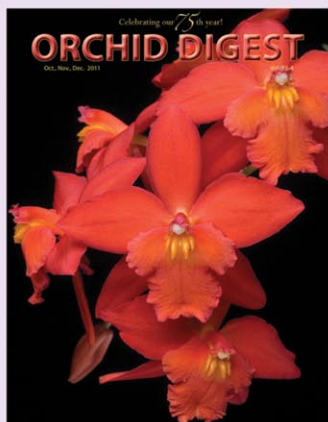
2-3—12th Merritt Huntington Memorial Symposium, Virginia Beach Resort and Conference Center, 2800 Shore Drive, Virginia Beach, VA; Contact: Vincent Bryan, 757-467-0760; daveandjoannebryan@verizon.net
3-4—Essex County Orchid Society Show and Sale, Colasanti's Tropical Garden, 1550 Road 3 East, Kingsville, ON, Canada; Contact: Juliette St. Pierre/Meta Hall, 519-727-6343; canadel48@gmail.com/mhall@cogeco.ca
3-4—Kansas Orchid Society Fall Show, Botanica, The Wichita Gardens, 701 Amidon St., Wichita, KS; Contact: Greg Tompkins, 316-283-1265; wdsprn46@outlook.com
9-11—Triangle Orchid Society Show “Fall for Orchids,” Doris Duke Center, Sarah P Duke Gardens, 420 Anderson Street, Durham, NC; Contact: Nancy Harvey, 919-401-4533; ntrharvey@gmail.com
10-11—Ft. Pierce Orchid Society Show, River Walk Center, 600 N Indian River Drive, Ft. Pierce, FL; Contact: Rita Zebelin, 772-879-6108; rita2zfpos@gmail.com

Events preceded by an asterisk (*) in this listing will not be judged by the AOS.

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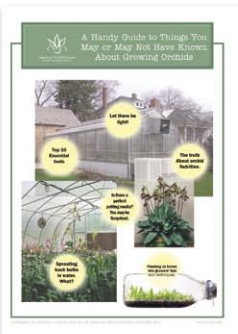
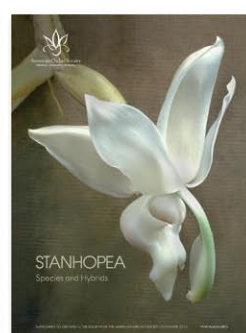
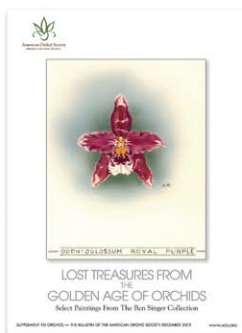
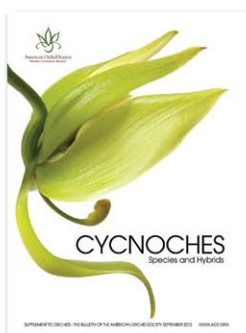
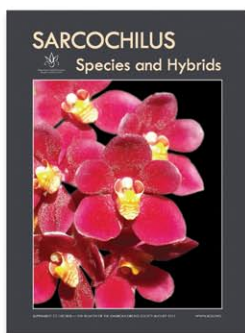
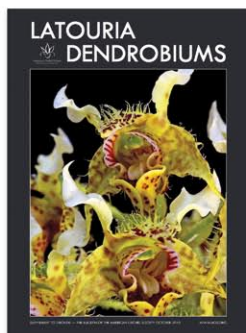
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— Kathy Barrett, along with Jean Allen-Ikeson, cochairs the AOS Editorial Board (email: mormodes@hotmail.com).



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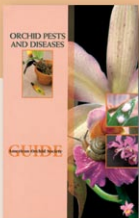
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AWARD GALLERY CORRECTIONS

July 2018 (87:7), page 541. Picture 14 was captioned as *Rlc*. Cloud's Candy Corn 'Odom's Orchids' AM/AOS (Waianae Leopard × *Cattleya* Landate) 83pts. The plant photographed is actually a cultivar of *Rlc*. Tatarown (Memoria Helen Brown × *Cattleya granulosa*).

July 2018 (87:7), page 548. Picture 10 was captioned as *Vanda* Thailand Gold 'Janice Williams' HCC/AOS (Thananchai × Amphai). This is correctly *Vandachostylis* Thailand Gold (*rhynchostylis coelestis* × *Vanda* Mee).

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The AOS welcomes the submission of manuscripts for publication in *Orchids* magazine from members and non-members alike. Articles should be about orchids or related topics and cultural articles are always especially welcome. These can run the gamut from major feature-length articles on such topics as growing under lights, windowsills and thorough discussions of a species, genus or habitat to shorter, focused articles on a single species or hybrid to run under the Collector's Item banner. The AOS follows the World Checklist of Selected Plant Families with respect to species nomenclature and the Royal Horticultural Society Orchid Hybrid Register for questions of hybrid nomenclature.

Articles as well as inquiries regarding suitability of proposed articles should be sent to jean.ikeson@gmail.com, mormodes@hotmail.com or the editor at rmchatton@aos.org.

Ice Cubes vs. Orchids

By T.J. Hartung

I KEEP MEETING people who tell me that they were told they should water their orchids with ice cubes.

I do not know if anyone has conducted a scientific study on this subject. If one has been conducted, I would be interested in reading the results.

Let's examine this subject from the perspective of an average orchid grower. First, we need to look at the component of ice: water.

Water contains dissolved minerals. The types of minerals and the amount depend on a number of factors. Even rain water can contain trace amounts of minerals. When I lived in Southern California I received a notice once a year from the water company listing all the minerals dissolved in the water coming from the taps in my house. This notice included a warning that tap water should not be given to children under the age of five.

If you have a water softener, it uses salt and, as a result, salt ends up in the water coming from your taps.

The bottom line is this: whether you are using ice cubes or tap water, you are adding some dissolved minerals to the potting medium of your orchids. The types and amount depend mostly on where you live and type of water you use. Obviously, rain water will contain few minerals, as will reverse-osmosis purified water.

If you fertilize your orchids, a recommended procedure if you want healthy plants and beautiful flowers, this only compounds the problem. Fertilizers also contain minerals and not all of them get absorbed by your plants.

As a result, the potting medium will have minerals left over from the fertilizer you use, and from the water you use. As the concentration of minerals builds up, the health, and very existence, of your orchids can be endangered.

The cure to excessive mineral buildup in potting medium is simple: replace the potting medium. The prevention of excessive mineral buildup in potting medium is even easier: flush with water every month or two. By allowing water to run through the potting medium, it will pick up many of the excess minerals and carry them away, down the drain.

Now let's look at the other component



of ice cubes: temperature.

When ice melts, the resultant water is 32 F (0 C). It may warm slightly as it trickles down through the potting medium, but not much.

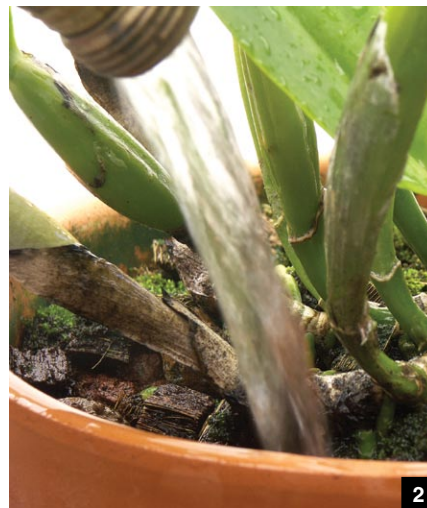
Most epiphytic orchids come from the tropics and grow well in temperatures that humans find comfortable. Summer daytime temperatures of about 75–80 F (24–27 C) and winter night temperatures of about 55–60 F (13–16 C) are typical for many orchids. Temperatures above 85 F (29 C) or below 45 F (7 C) could result in permanent damage or death.

There are exceptions, of course: orchids that prefer conditions warmer or cooler than these temperatures. One exception that I know of is *Artorima erubescens*, an orchid from Mexico that will not bloom unless it is exposed to overnight freezing. This orchid is found at elevations above 7,900 feet (2,400 m).

Consider what happens to the roots of an orchid that prefers the temperatures noted above when it is exposed to water that is just above freezing.

I know what happens to me when I am splashed with ice water.

— T.J. Hartung is a retired computer systems analyst, living in Puerto Vallarta, Mexico. He has spoken about Mexican orchids to several dozen orchid societies in New England, east-central Canada and the United Kingdom, and at the Vallarta Botanical Gardens in Puerto Vallarta. He has been studying orchids as a hobby



- [1] The use of ice cubes to water orchids is a poor practice on several levels not the least of which is the physiological shock from near-freezing water.
- [2] Proper watering involves thorough flushing of the potting mix followed by allowing the plants to become nearly dry before the next watering. This practice helps to minimize the buildup of salts in the root zone while providing the necessary gas exchange required by the roots of epiphytes.

for almost 20 years, and has written two books — one on Vanilla and the other on fragrant orchids (tjhartung@gmail.com).

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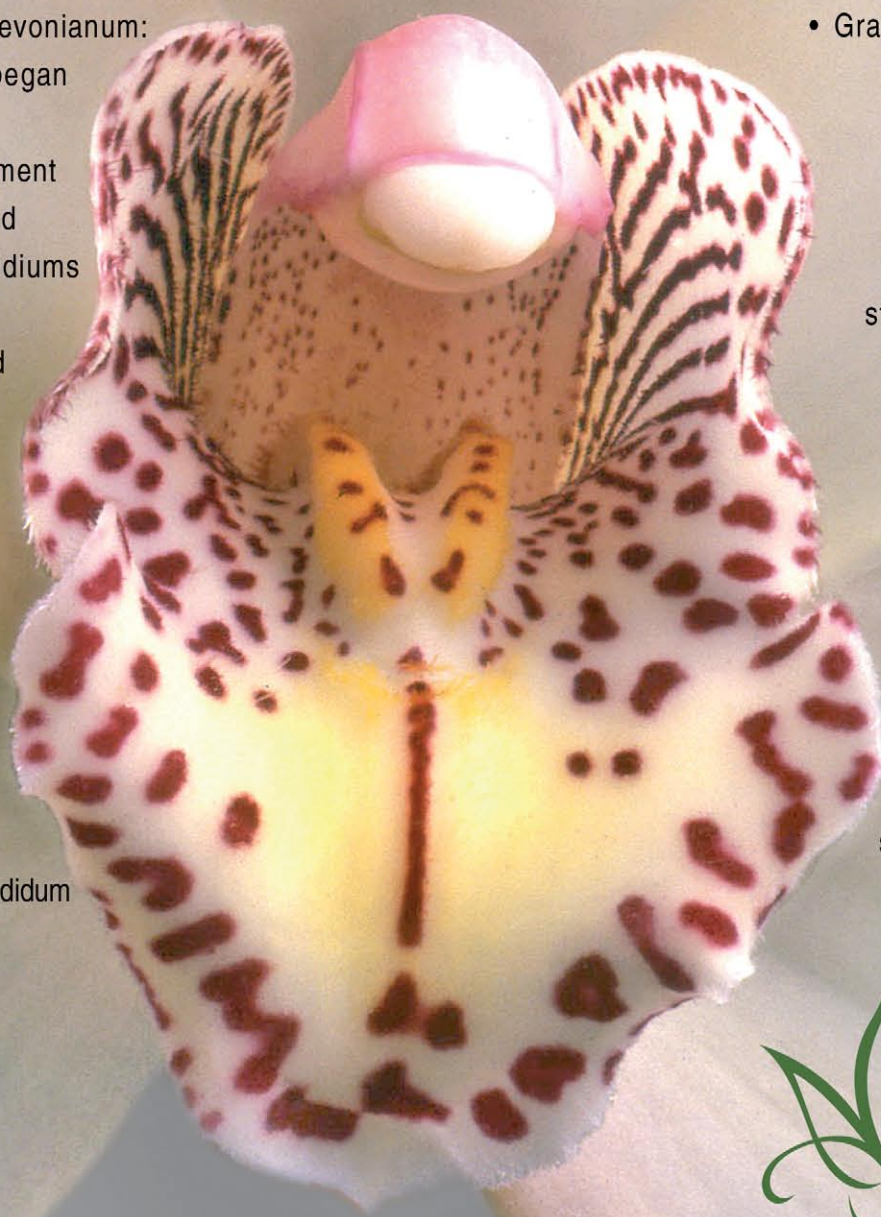
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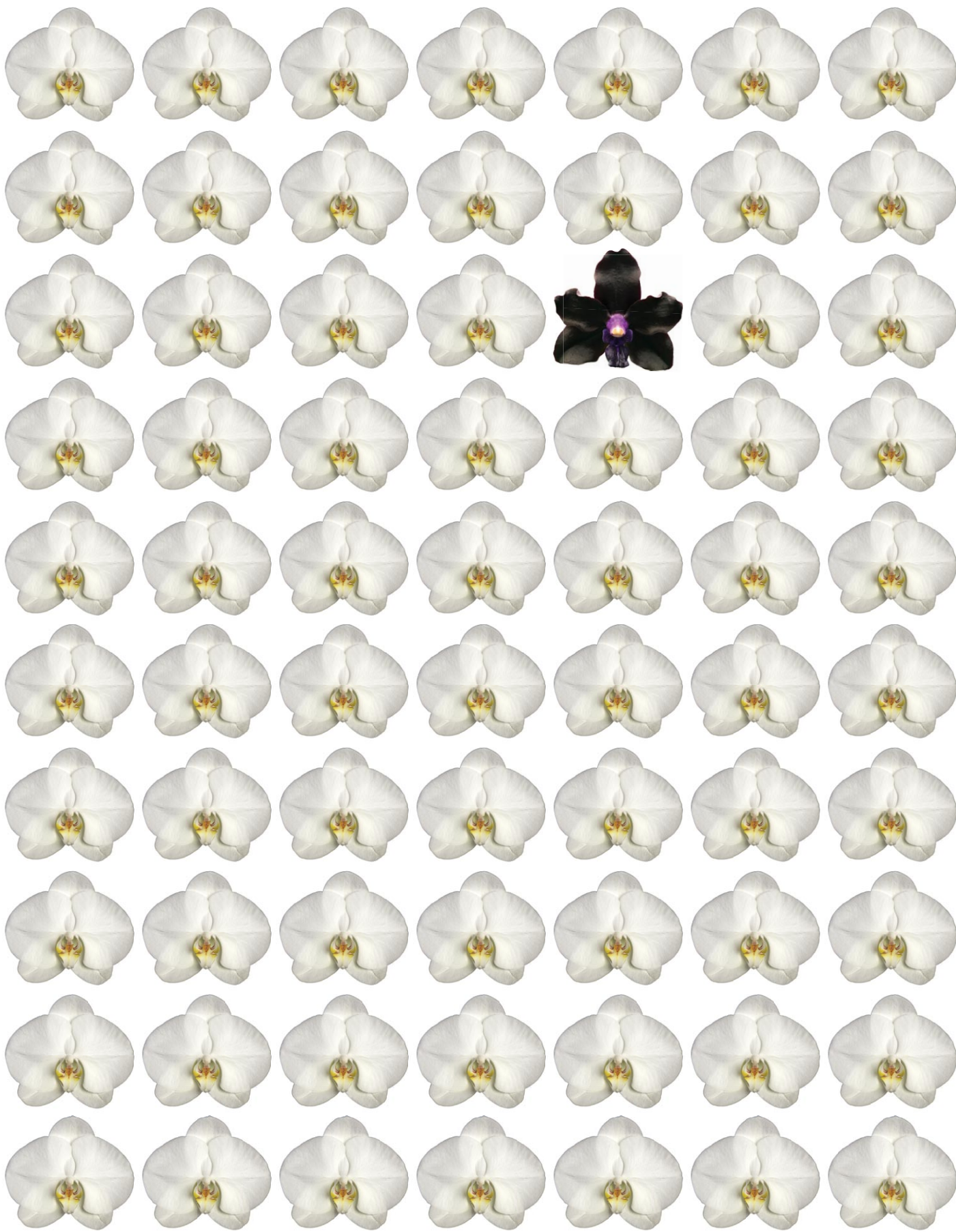
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