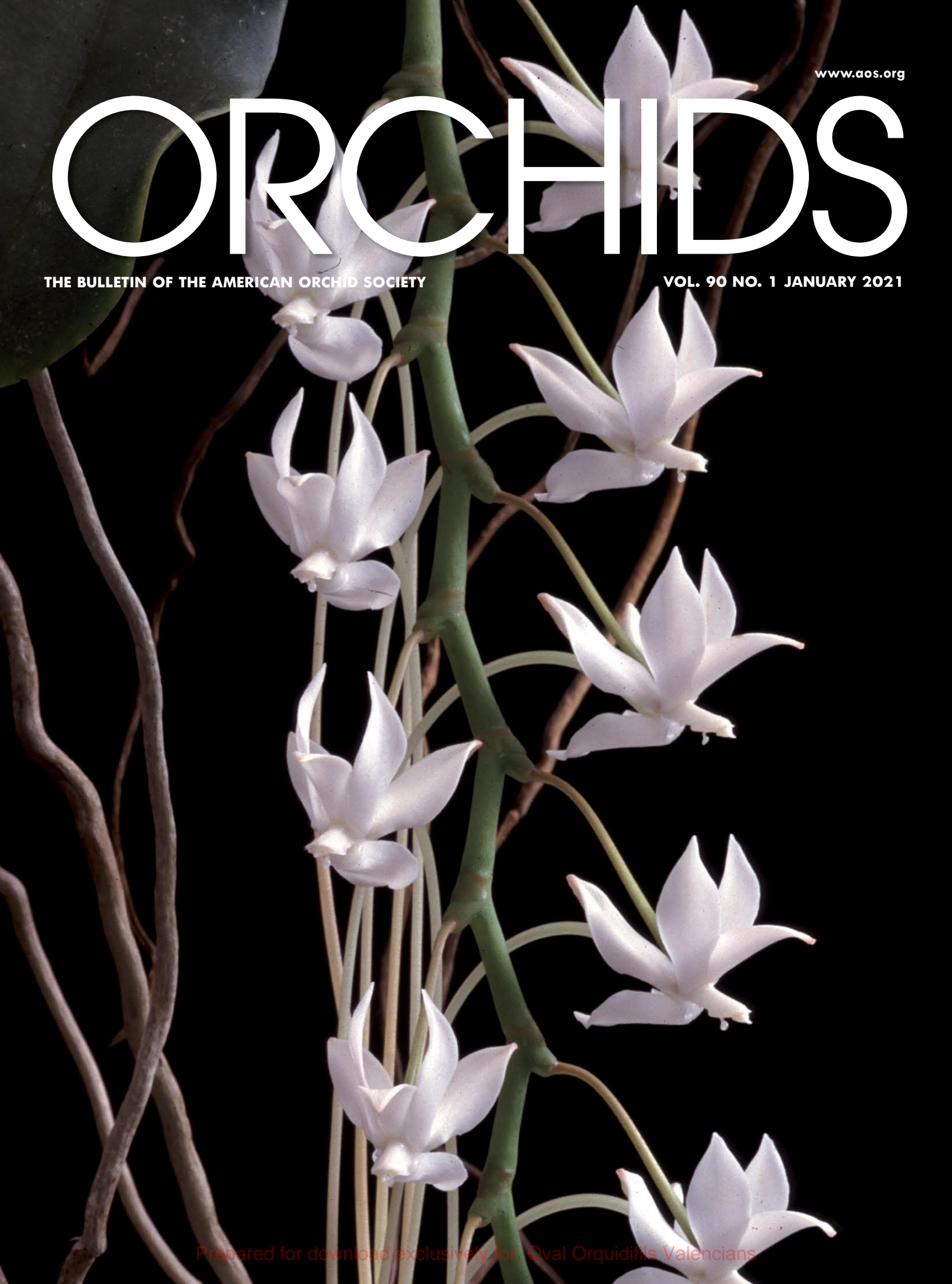


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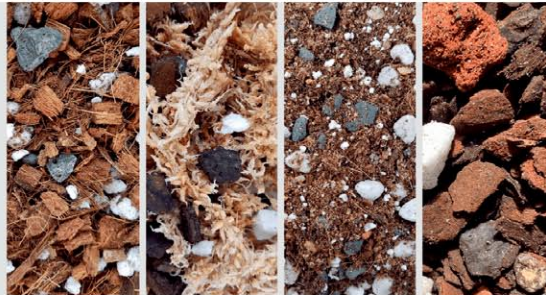
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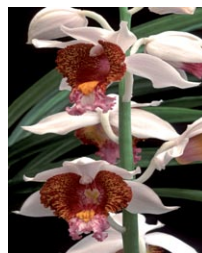
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FRONT COVER

Aerangis spiculata was first introduced by Humblot from the Comoros and described in 1882. Photograph by Johan Hermans.

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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>.

<i>Aerangis</i> (air-ANG-iss)	<i>Glomerella</i> (glom-er-EL-la)	<i>ospinae</i> (oss-SPEE-nee)
<i>alboviride</i> (al-boh-VEER-ih-dee)	<i>Gomesa</i> (goh-MAZE-za)	<i>Paphinia</i> (paff-EE-nee-a)
<i>alphabetica</i> (al-fah-BET-ih-ka)	<i>Gongora</i> (GONE-gore-a)	<i>panamensis</i> (pan-a-MEN-sis)
<i>anceps</i> (AN-seps)	<i>Grammangis</i> (gram-MANG-giss)	<i>Paphiopedilum</i> (paff-ee-oh-PED-ih-lum)
<i>anfracta</i> (an-FRAK-ta)	<i>grandidieriana</i> (gran-did-ee-air-ee-AY-na)	<i>Paradeciduosae</i> (pare-a-deh-sid-yew-OH-see)
<i>Angraecum</i> (an-GRAY-kum)	<i>grandiflora</i> (gran-dee-FLOR-a)	<i>patens</i> (PAY-tenz)
<i>annulata</i> (an-nyew-LAY-ta)	<i>Graphorkis</i> (graf-ORE-kiss)	<i>peruviana</i> (per-oo-vee-AY-na)
<i>Anthracoze</i> (an-THRAK-nos)	<i>graveolens</i> (grav-ee-OH-lenz)	<i>Phaius</i> (FYE-us)
<i>Ardea</i> (ARE-dee-a)	<i>guttulata</i> (gut-yew-LAY-ta)	<i>Phalaenopsis</i> (fail-en-OP-sis)
<i>avicula</i> (a-VIK-yew-la)	<i>haseloffiana</i> (hass-eh-LOF-ee-AY-na)	<i>Phragmipedium</i> (frag-mih-PEED-ee-um)
<i>barbigerum</i> (bar-BIJ-er-um)	<i>helenae</i> (HEL-len-ee)	<i>plana</i> (PLAY-na)
<i>Brassia</i> (BRASS-ee-a)	<i>henryanum</i> (hen-ree-AY-num)	<i>planifolia</i> (plan-ee-FOL-lee-a)
<i>breviflorum</i> (brev-ee-FLOR-um)	<i>henryi</i> (HEN-ree-ee)	<i>platyceras</i> (plat-ee-SEER-ras)
<i>Bulbophyllum</i> (bulb-oh-FILL-um)	<i>hermannii</i> (her-MAN-ee-eye)	<i>posadae</i> (POH-sahd-ee)
<i>candida</i> (KAN-did-a)	<i>hernandezii</i> (her-nan-DEZ-ee-eye)	<i>pulla</i> (PULL-a or PEWLL-a)
<i>canhii</i> (KAN-ee-eye)	<i>hirsutissimum</i> (her-soo-TISS-ih-mum)	<i>radiosa</i> (ray-dee-OH-sa)
<i>caobangense</i> (kow-bahng-EN-see)	<i>humbloti</i> (hum-BLOW-tee)	<i>reichenbachiana</i> (rye-ken-bahk-ee-AY-na)
<i>capillipes</i> (ka-PILL-ih-pee-z)	<i>Humblotia</i> (hum-BLOW-tee-a)	<i>Rhyncholaeliocattleya</i> (rink-oh-lay-lee-oh-KAT-lee-a)
<i>Cattleya</i> (KAT-lee-a)	<i>humblotianum</i> (hum-blow-tee-AY-num)	<i>ruckeri</i> (RUCK-er-eye)
<i>chierii</i> (CHEER-ee-eye)	<i>Humblotiella</i> (hum-blow-tee-EL-la)	<i>rungsuriyanum</i> (rung-suh-reh-YAY-num)
<i>cingulata</i> (sing-yew-LAY-ta)	<i>humblotii</i> (hum-BLOW-tee-eye)	<i>saccata</i> (sak-KAY-ta)
<i>Cinnyris</i> (SIN-nih-riss)	<i>Humblotiodendron</i> (hum-blow-tee-oh-DEN-dron)	<i>sanderianum</i> (san-der-ee-AY-num)
<i>cirrhatta</i> (ser-AY-ta)	<i>hyacinthinum</i> (hye-a-SIN-thee-num)	<i>schilleriana</i> (shill-ler-ee-AY-na)
<i>citrata</i> (sih-TRAY-ta)	<i>hypocritum</i> (hih-POK-rih-tum)	<i>sesquipedale</i> (ses-kwi-ped-AY-lee)
<i>claptonense</i> (klap-ton-EN-see)	<i>Ida</i> (EYE-da or EE-da)	<i>Sestochilos</i> (ses-toh-KYE-los)
<i>coccinea</i> (kok-SIN-ee-a)	<i>inodora</i> (in-OH-dore-a)	<i>shuttleworthii</i> (shut-ul-WORTH-ee-eye)
<i>Coelogyne</i> (see-LOJ-ih-nee)	<i>insigne</i> (in-SIG-nee)	<i>spiculata</i> (spik-yew-LAY-ta)
<i>Colletotrichum</i> (kol-let-oh-TRIK-um)	<i>insignis</i> (in-SIG-niss)	<i>squalens</i> (SKWAL-enz)
<i>concolor</i> (KON-kuhl-er)	<i>intermedia</i> (in-ter-MEE-dee-a)	<i>Stanhopea</i> (stan-HOPE-a although most often heard mispronounced as stan-HOPE-ee-a)
<i>connata</i> (kon-NAY-ta)	<i>jenischiana</i> (jen-ish-ee-AY-na)	<i>stevensonii</i> (stee-ven-SON-ee-eye)
<i>costaricensis</i> (kos-ta-ree-KEN-sis)	<i>Laeliocattleya</i> (lay-lee-oh-KAT-lee-a)	<i>sumatranum</i> (soo-mah-TRAY-num)
<i>crocea</i> (KROH-see-a)	<i>lasioglossa</i> (lass-ee-oh-GLOSS-a)	<i>supina</i> (soo-PEEN-a)
<i>Cymbidieae</i> (sim-BID-ee-ee)	<i>leonis</i> (lee-OH-niss)	<i>theobromicola</i> (thee-oh-broh-mih-KOH-la)
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<i>Deciduosae</i> (dih-sid-yew-OH-see)	<i>lietzii</i> (LEETS-ee-eye)	<i>tricolor</i> (TRYE-kuhl-ur)
<i>deltoidea</i> (del-TOY-dee-a)	<i>livingstoneana</i> (live-ing-stone-ee-AY-na)	<i>tricornis</i> (trye-KORE-niss)
<i>Dendrobium</i> (den-droh-bee-um)	<i>lobbii</i> (LOB-ee-eye)	<i>tuberculosa</i> (too-ber-kyew-LOH-sa)
<i>Dendrophylax</i> (den-droh-FYE-laks)	<i>Longisepalae</i> (lon-jih-SEEP-al-ee)	<i>Vanilla</i> (van-IL-la)
<i>Dracula</i> (DRAK-yew-la)	<i>Lycaste</i> (lye-KAS-tee)	<i>variegata</i> (vair-ee-eh-GAY-tah)
<i>Drypetes</i> (DRY-peh-teez)	<i>macranthum</i> (mak-RAN-thum)	<i>Vepris</i> (VEH-priss)
<i>eburneum</i> (ee-BURN-ee-um)	<i>macrophylla</i> (mak-roh-FILL-la)	<i>wardii</i> (WARD-ee-eye)
<i>ecornuta</i> (ee-kore-NYEW-ta)	<i>maculosa</i> (mak-yew-LOH-sa)	<i>warszewicziana</i> (var-shuh-vitz-ee-AY-na)
<i>ellisii</i> (el-LIS-ee-eye)	<i>marizaiana</i> (ma-ritz-ee-AY-na)	<i>Xanthantheae</i> (zan-THAN-thee)
<i>embreei</i> (em-BREE-eye)	<i>Maxillaria</i> (mak-sill-LAIR-ee-a)	<i>Xylobium</i> (zye-LOH-bee-um)
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<i>florulentum</i> (flore-yew-LEN-tum)	<i>nigripes</i> (NYE-grih-pee-z)	
<i>frymeri</i> (FRYE-mer-eye)	<i>nigroviolacea</i> (nye-groh-vye-oh-LAY-see-a)	
<i>germinyatum</i> (jer-min-ee-AY-num)	<i>oculata</i> (ock-yew-LAY-ta)	
<i>gibbosa</i> (gib-BOH-sa)	<i>Oeceoclades</i> (ee-see-oh-KLAY-deez)	
<i>gloeosporioides</i> (glee-oh-spore-ee-OY-deez)		

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Presenter	Ron McHatton Chief Education and Science Officer	Michael Coronado Production Manager, VP, R.F. Orchids, Inc.	Ron McHatton Chief Education and Science Officer	Doug Martin Meeting the Challenge of Growing Native Orchids

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CALL FOR GRANT APPLICATIONS

AOS Conservation Committee Accepting 2021 Grant Applications
 By Charles Wilson

IN ITS CONCERN for the protection of wild orchid species around the world, the AOS Conservation Committee announces that it is taking applications for conservation project grants for 2021. Please note that in recent years, the AOS has decided to separately fund conservation projects from research projects, allowing for some different types of projects to be considered. Although conservation research will still fall under the purview of the Research Committee, conservation grants are intended to encourage a more practical, hands-on grassroots approach. We are seeking applicants engaging in a wide range of projects that protect orchids and their natural habitats including, but not limited to:

- Studies that enhance our knowledge of crucial ecological information,
- Conservation assessments of specific orchids or regions,
- Seed propagation of rare or threatened species,
- Habitat restoration or reintroduction efforts,
- Raising public awareness regarding orchid conservation and encouraging public participation, and
- Providing education or outreach to present and future members of the conservation community.

All conservation-oriented projects, anywhere in the world, will be considered. Although an institutional affiliation is helpful, it is not required. An accurate, estimated budget is, however, required. Funds are limited; past grants have averaged about \$3,000.00. We REQUIRE projects be reported on annually, and that an article featuring your project be submitted for publication in *Orchids* magazine within six months of completion. Due to the nature of conservation projects, ongoing multiyear support is a possibility. The application period begins January 1, 2021. Applications must be received no later than March 14, 2021. Please see the AOS website for application and requirements or contact the AOS Conservation Committee directly at Conservation_committee@aos.org for an application. Good luck! — Charles Wilson, Chair AOS Conservation Committee (email: conservation_committee@aos.org).



Dendrophylax lindenii photographed in-situ by Greg Allikas.

PRESIDENT'S MESSAGE

HAPPY NEW YEAR! Now that we have left 2020 behind, we can wipe the slate clean and start fresh with everything. It is so good to know that the vaccine for the coronavirus will soon be available to all and the virus itself will be under control. We became smarter and more flexible with our daily lives, as a result. Over the course of 2020, we learned new ways to conduct business amid the chaos of the pandemic. Let us just leave 2020 behind us, focus on 2021 and the future, especially the future of the AOS.

One of the cornerstones of the AOS and its continuity is conservation. That is the theme of the Centennial and very important to so many.

Conservation was already on the minds of orchid cultivators, enthusiasts and lovers of the AOS since it was founded 100 years ago. Logging, agricultural activities and deforestation were the roots of the disappearance and reduction of orchid species in the wild. Many orchids wind up being burned in the name of "progress." The reason for this was the bottom line. Governments and developing countries would not financially support orchid conservation without seeing if there is a value to backing such an endeavor.

Some have found out there is a value to orchid conservation. To have humankind not be responsible for the disappearance of something from nature is invaluable. Exercising orchid conservation can generate funds as well. Organizing nature tours for orchid lovers, bird watchers and outdoor types will generate funds to government agencies and the like.

In 1973, the Convention on International Trade in Endangered Species (CITES) was created. This was the first major step in conserving, not only orchids, but any flora and fauna threatened by extinction. The scope of CITES is very broad. Originally, it was only meant for animals but then plants were woven into the treaty. CITES is certainly not a one-size-fits-all solution, but it was a start. It provided a strict regimen for international trade but provided no solutions to habitat protection. Unfortunately, CITES has, in my opinion, gone a little too far with their regulations. They have made it very difficult for some countries to receive species plants which then prohibits them from perpetuating and cloning those species for generations to enjoy.

It is as important to maintain the natural environment for orchids as it is to protect them from unlawful trade. In any case, conservation is here to stay. It is not a short-term goal.

Fast forward 100 years, even though some progress has been made to help protect orchid habitat conservation, there is still a long road ahead. I cannot stress enough how important it is to promote this far and wide. The support is out there, and it begins with two people — you and me.

There is so much going on with the American Orchid Society and its concentration on orchid conservation. In the last two years the AOS Board has provided more than \$40,000 to orchid conservation on a worldwide platform through grants awarded by the AOS Conservation Committee.

One of the trailblazers of orchid conservation was Philip E. Keenan. He spent much of his life in orchid study and contributed so much to this field, particularly with the study of native orchids. It was his belief that orchid species were the foundation for all orchids around the world. His impact was so great that a trust fund was founded in conjunction with the AOS to award those individuals who have provided a meaningful contribution in the area of orchid conservation.

In an unprecedented move, the AOS Conservation Committee awarded two Philip E. Keenan Awards in recognition of efforts made to preserve North American Orchids in 2020. Jennifer Reinoso received one for her work with the Florida leafless beaked orchid, *Sacoila lanceolata* (Reinoso 2015). The second award went to Dr. Andy Huber for his work in restoring orchid habitats in eastern Oregon (Huber 2020). You will find information on these awards in addition to other information regarding the Philip E. Keenan awards and conservation on the AOS website.

The Philip E. Keenan Award is limited to work in North America, but there are opportunities for international awards as well. For more information contact conservation_committee@aos.org.

The list of orchid conservation awareness programs with the AOS is practically endless. This year, the AOS plans to create webinars on the restoration of *Prosthechea karwinskii* in the wild after ceremonial uses in Oaxaca, Mexico, and orchid restoration in the United States. These are just examples of upcoming programs. There are many more plans on the agenda.

As mentioned earlier, this does not happen on its own. It is through the efforts of many dedicated people with their time, their talents and their treasures that get the jobs done. And if



MICHAEL CORONADO

Bob Fuchs and Thor on National Dog Day.

you are reading this, you are one of those people too. Your donations of any kind are very much appreciated. Check out the conservation page on the AOS website for more information on helping in this area.

The American Orchid Society is very excited about the Centennial Celebration this October. Changing the date to the fall will draw a bigger crowd, considering that time of year in South Florida is so pleasant. This is a big anniversary for the AOS and we want as many people as possible to attend. Tickets for the event are now on sale through the website.

Angela Mirro, a foremost botanical watercolor artist of orchids, will be painting a one-of-a-kind image of native American orchids for the AOS Centennial. Commemorative posters of the watercolor will be available for purchase beginning April 2021 and the original will be auctioned to one very lucky person during the Centennial Celebration weekend.

Looking forward to seeing many of you there! — *Bob Fuchs, AOS President (email: bob@rforchids.com)*.

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Philip E. Keenan by David Nixon

His Award and Why You Need to Participate

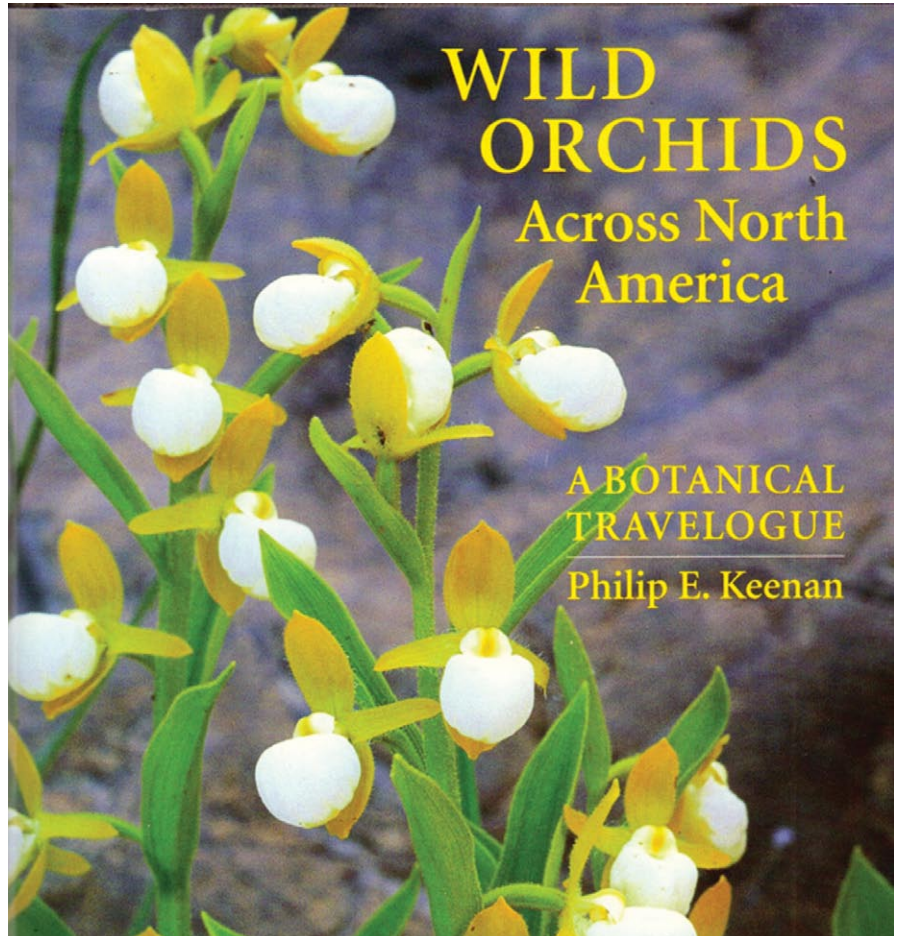
PHILIP KEENAN SPENT a lifetime driving and flying thousands of miles in pursuit of orchids in their native habitats. He was passionate about sharing his adventures of finding wild orchids with the world and an ardent advocate for preserving their natural habitat. He was a founding member of the North American Native Orchid Society and was actively involved in numerous conservation societies.

He contributed multiple articles and hundreds of photographs to *Orchids*, as well as publishing two books, one on orchids and the other on his other passion — native birds of North America. To quote from the flyleaf of his book, *The Wild Orchids of America*, “In describing the world of orchids, Keenan does not confine himself to individual plants but also comments on the wildlife, geology and important natural features associated with orchid habitats.” His book is a chatty account of his field trips in Canada and the United States to document many of our native species, but it also provides inspiration to explore the wealth of orchids and their habitats respectfully.

Why should you be concerned about native orchid conservation? Species orchids are the basis for all orchids that are available to the thousands of orchid growers around the world. Conservation of diverse orchid species and their habitat is paramount if we are to maintain a vibrant genetic pool from which to draw on. Just think of the impact the discovery of *Phragmipedium kovachii* has had.

In recognition of Keenan’s lifetime of work in the conservation field, a trust fund was established many years ago with the AOS to recognize and reward individuals, groups and Affiliated Societies for outstanding work in the field of orchid conservation. The Conservation Committee has a goal to award this every year to deserving individuals or projects; the committee can, in fact, grant two first-place awards (\$500 each) and two runner-up awards (\$250 each) each year.

You can do your part by contacting the Conservation Committee at orchidconservation@gmail.com to



let them know of any projects, small or large, near or far, that promote orchid conservation or their habitats. It is hoped that we can feature these projects in regular articles in *Orchids* to spread the word, as well as letting the people involved in those projects know that they are important and

recognized. Please do your part and become involved and be an advocate of conservation projects you are aware of.

— For more information on the Keenan Awards, contact the AOS Conservation Committee (conservation_committee@aos.org)

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January: The Month of Innovation and Collaboration

By Thomas Mirenda

After the tribulations of 2020, many of us are thankful and hopeful about what 2021 may bring. Surely, there will always be further daunting challenges, but after this past year, things can only get better, right? A better tomorrow mostly depends on your attitude, your ability to forgive, compromise, get on with progress and of course, your gratefulness for the blessings Mama Nature bestows on those of us who have discovered the splendor of orchids.



Thomas Mirenda

Integral to our progress, as well as our happiness, is the inspiring innovation occurring in the world of orchid breeding. Despite all the stories about the orchid industry waning,

and the demise of orchid societies because of the internet, the COVID crisis seems to have brought orchid lovers together online! Orchid dealers have reinvented themselves as mail-order powerhouses, and it seems that the industry is in better shape. International collaboration and cooperation abounds.

One such example is the wonderful synergistic relationship between cattleya growers in Thailand and the Big Island, reported elsewhere in this issue. This kind of global relationship and communication is also needed in the world of orchid conservation. Far from discouraging this, the internet is now facilitating such efforts in ways never before imagined.

WINTER WONDERLANDS Perhaps the most wonderful thing about the orchid world is the fact that so many bloom or begin to spike in the short days of winter. Few other plants can deliver the wow factor of our winter-flowering orchids. *Phalaenopsis*, cymbidiums, deciduous dendrobiums, lycastes and certain cattleyas are all reliably in fat bud or bloom this month, and almost all of the above have long-lasting flowers to keep our spirits up during the gloomier days spent mostly indoors. A diverse collection can have a wonderful variety of orchids in bloom all year round, but it is the next 3 months that are simply the best. Make sure you have collected plants that will feed your need for sublime beauty every day of the year.

LIFE IN THE TROPICS Even if you cannot come to visit me here in Hawaii,



MARY MANCINI

Phalaenopsis Lioulin R Lip 'Snookie' JC/AOS (Tying Shin Unicorn × Lioulin Pretty Lip) truly deserves the Judges' Commendation it received at the Shreveport Judging Center in January 2020. Exhibited by Doug Stannard, this unusual plant simultaneously expresses a combination of three different mutations — a petaloid lip, harlequinism AND petal color distribution on the lip as well as the petals.

keeping an orchid collection provides the next best thing; a "staycation." On a brisk winter's day, how healthy and uplifting it is to have a plant room, greenhouse or windowsill bedecked with orchidaceous pulchritude. Spending time in orchid growing conditions — high light, warmth, humidity and air movement — is also good for YOUR health. Make sure light levels are adequate in your growing space. Indoor growers may need to supplement light, humidity and air with special bulbs or tubes, a humidifier and perhaps a small fan. Monitor your temperature to make sure it is adequate for the various plants you are keeping. Beware of plants near heat sources cooking or falling below Sahara Desert humidity levels. Conversely, search for cracks or cold drafts in your growing area, as even a small one can mean the demise of plants in its path.

ORCHID NO-SHOWS Among the joys we have all been missing this past year are the fantastic orchid shows we normally attend. Although I am hopeful shows will resume this year, it is fun to just do your own exhibit for family and friends. Create an area where your blooming plants can be displayed for your own pleasure. You can even practice your exhibition skills

by coming up with a design concept and building something imaginative for your orchids to perch on. If you like the result, perhaps you can use it, or expand on it in a future exhibit. For now, make all your social media friends salivate. You likely have the time, so put your imagination to work.

BACK TO ORCHID SCHOOL With many days and nights spent indoors, it is the perfect time to crack those dusty orchid books and learn a thing or three. The world of orchids is delightfully vast; there is always something new to learn. Indeed, hundreds of new orchids are discovered every year, and thousands of hybrids are created by those innovative breeders. Because most of the orchid growers of the world have evolved into internet mail-order powerhouses, perhaps this is the time to invest in some new innovative hybrids for your collection.

— Thomas Mirenda has been working professionally with orchids for over three decades and is the past chair of the AOS Conservation Committee. He is an AOS accredited judge in the Hawaii Center (email: biophiliak@gmail.com).

CALL FOR EDUCATION GRANT APPLICATIONS

AOS Education Committee Accepting 2021 Grant Applications

By Phyllis Prestia

THE AOS EDUCATION Committee announces the very first Education Grant for 2021. The new grant will support development, implementation, maintenance and support for comprehensive educational programs and activities that embrace learners of any age level. Applications are encouraged that develop, implement, maintain and/or support educational activities that embrace and promote the passion for orchids through education.

We are interested in a wide range of activities that encourage a hands-on approach to learning. Our goal for the outcome of projects is to develop a greater knowledge of, and appreciation for, orchids.

All orchid-related educational projects will be considered. Affiliation with an accredited educational institution is encouraged but not required. Grants are available to applicants from the United States, as well as countries from around the world.

The application period begins January 1, 2021. Applications must be received no later than March 1, 2021. Please see the AOS website for further explanation and application requirements or contact the AOS Education Committee directly at education_committee@aol.org for an application. Good luck!

— Phyllis Prestia, Chair AOS Education Committee (email: education_committee@aol.org).



Students in the Writlington School greenhouse. Photograph by Simon Pugh-Jones who leads the Writlington School Orchid Project.

AOS PRESIDENT'S AWARD

ONE OF THE highlights of being President of the AOS is presenting the AOS President's Award to a very deserving person.

The recipient of this year's AOS President's Award is Bill Bodei. Bill wears many hats and with each hat he wears, he always brings 100 percent of himself into the picture. He is a team player who comes to all the meetings, bringing ideas to the table and engaging with the others as an open-minded person who will work within a group for the benefit of all. As a critical thinker, problem solving comes easily to him and his colleagues appreciate his help very much.

As part of his work with the AOS, Bill is a tremendous ambassador to the organization, attracting individuals and educating them about the American Orchid Society and how the AOS can help them with their collections, and enticing them to join as members. He has his pulse constantly on, promoting the AOS and keeping it in the spotlight. He does this with innovative thinking that gets the message across.

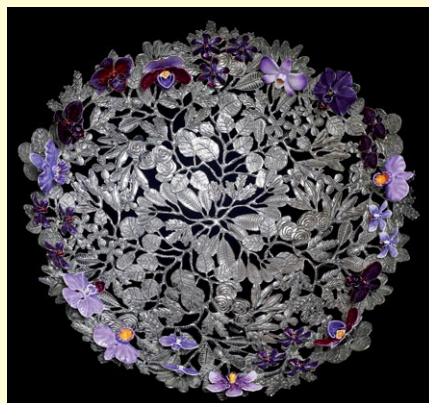
Bill keeps our Facebook page in his crosshairs so it remains genuine to

its mission and he is always at the ready should something get posted that crosses the line. Because he is quick to respond, these issues are resolved in a very timely manner because he is action-oriented in these situations.

As if that were not enough, Bill is a Trustee, the Chair of our Membership and Marketing Committee and moderator of our Facebook page. I am so very pleased to present Bill Bodei with the 2020 AOS President's Award.

Congratulations, Bill.

— Bob Fuchs, AOS President (email: Bob@rforchids.com).



Above: Bill Bodei, current AOS trustee and chairman of the AOS Membership and Marketing Committee giving a lecture to his local orchid society.

Left: The beautiful pewter bowl given to Bill Bodei recognizing his AOS President's Award.

Leaf Spotting Fungi in

Anthracnose from *Colletotrichum*

Text by Sue Bottom/Photographs by Terry Bottom

ANTHRACNOSE IS A name given to fungal infections caused by *Colletotrichum* and *Glomerella* species. Many fungi reproduce both sexually and asexually, and each stage produces different fruiting bodies and spores. Typically, the asexual stage is more important in the spread of the disease. The pathogen usually associated with Anthracnose is *Colletotrichum gloeosporioides* (asexual stage, the sexual stage is known as *Glomerella cingulata*). In thin leaved orchids, we often recognize Anthracnose caused by this pathogen by the alternating lines of dead tissue with little tan dots, the spores, that extend down from the leaf tip.



Baker and Baker (1996) describe the symptoms of Anthracnose from *Colletotrichum gloeosporioides* as follows: "Leaf tips turn brown beginning at the apex and proceeding toward the base. Dark brown or light gray patches develop, sometimes as concentric rings or as numerous dark bands across the leaf. The affected area is usually sharply defined and somewhat sunken, while the remainder of the leaf appears normal. Sporing bodies develop in the infected area."

The damage seen in thick leaved orchids such as cattleyas is not so easily identified. In some cattleyas, the damage begins at the leaf tip and moves downward relatively slowly. The damaged portion of the leaf becomes necrotic and eventually papery. Younger sections have a dark demarcation line with a yellow advancing edge, with tiny dots, the spores, in the dead tissue. The lower leaf surface just shows discolored tissue. The sporing bodies are on the upper surface only. Leaves on the oldest pseudobulbs show the most damage.

In other cattleyas, affected leaves have discoloration from the leaf tip advancing downward without a strong demarcation line. Leaf tips have discolored yellow to brown blotches,



extending downward mostly along the leaf edges, with leaf yellowing ahead of the discoloration. Discoloration is present on the leaf undersides corresponding to the upper leaf surface damage. Sporing bodies only appear on the upper leaf surfaces.

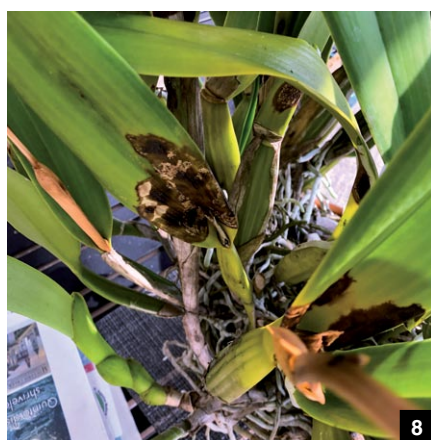
Anthracnose does not always start on the leaf tips. A friend of ours was having problems with her *Laelia purpurata*.

- [1] In thin leaved orchids, orchids such as many oncidiums, gongoras, stanhopeas and dendrochilums, the symptoms of Anthracnose usually begin at the leaf apex and move toward the base of the leaf, with alternating bands of dead tissue and sporing bodies in the dead area.
- [2] *Cattleya* Nell Clark, excellent vigor, oldest four pseudobulbs had leaves with discolored tips.
- [3] The damage on the upper leaf surface began at the leaf tip and continued down the leaf, with a darker band at the advancing edge and many sporing bodies evident in the dead tissue.
- [4] The leaf undersurface showed necrotic tissue with a distinct demarcation of discolored tissue and a slight advancing yellow margin.

Cattleyas, Part 3



These symptoms were unlike anything I had ever seen before. It sounded like it happened fast, suggesting either sunburn, a bacterial infection or black rot. One of the images looked like sunburn, but that usually appears on the highest point of the leaf where the sun's rays impact the most directly. That was not the case for the discolored areas in the other images. So, perhaps it was caused by a bacterial rot from water pooling in the pseudobulb sheath, but there was no sheath and there was green tissue between the leaf axil and the discolored area. The next thought was perhaps black rot, but the discolored tissue was not soft or odorous. Whatever the source of the problem, there was a clear need for emergency surgery to stop the spread of disease.



Some leaves were collected for laboratory analysis. The damage in this Cattleya Alliance plant was in roughly circular patches at the base of the leaf rather than at the leaf apex. The necrotic tissue contained many fine dots, the spores, that spread the disease. The leaves on all the cattleyas pictured in this article were sent to the Florida Department of Agriculture laboratory in Gainesville for diagnostic analysis. They determined the disease to be Anthracnose caused by *Colletotrichum* fungi.

The pathogen usually associated with Anthracnose is *Colletotrichum gloeosporioides*, but as we reported in

2018, cattleyas can also be infected with the leaf spotting fungus *Colletotrichum theobromicola*, not before reported as an orchid pathogen. This pathogen causes a chlorotic mottling on the upper surface of the leaf, with corresponding patches of fine tiny spots occurring on the leaf underside. There is an occasional sunken or necrotic spot. The upper surface chlorotic leaf mottling with patches of fine spots underneath is the key diagnostic for this pathogen.

The first step in responding to Anthracnose is to sanitize the plant, which means removing all the damaged tissue to remove the fungus and its sporing bodies to prevent it from spreading. Afterward, a protective fungicide can be applied to help prevent recurrence. Copper-containing fungicides or Daconil can be used, as can

- [5] *Rhyncholaeliocattleya* Samba Splendor 'Puerto Rico', a vigorous grower.
- [6] Leaf tips have discolored brown blotches, extending downward mostly along the leaf edges, with leaf yellowing ahead of the discoloration. No distinct line of demarcation.
- [7] Discoloration is present on the leaf undersides corresponding to the upper leaf surface damage. No sporing bodies present on leaf undersides.
- [8] Severely damaged leaf, with black necrotic discoloration and spores evident in the discolored area.
- [9] In this Cattleya Alliance plant, the circular area of dead tissue from Anthracnose begins above the leaf axil and there are numerous spores in the dead area.



Cleary's 3336 (Thiomyl is the same active ingredient) or Heritage (Azoxy 2SC is the generic), although the more expensive Pageant provides very good control.

The problem with relying on chemicals to cure an infection is the fungal hyphae in the leaf are beyond the reach of most fungicides, so the spores spreading the disease will continue to form. Although fungicides will help prevent the spores from spreading onto uninfected leaves, cutting away diseased tissue is the best way to prevent the spores from forming in the first place.

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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

[10] *Cattleya* *Astraea* 'Ginny', a vigorous grower.

[11] Chlorotic mottling where the chlorosis aligns with most serious underleaf spotting.

[12] Brown blotchy splotches where fine dark spots coalesce, occasional sunken spots.

Society, maintaining the Society's website and publishing its monthly newsletter. Sue is also a member of the AOS Editorial Board (email: sbottom15@gmail.com).

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COLLECTORS' ITEM

Bulbophyllum section *Sestochilos*

Prolific Bloomers with Curved Lips!

Text and photographs by Charles Wilson



OF THE OVER 2,000 validly published species names in the genus *Bulbophyllum*, the most popular and best known species is most likely the widely grown *Bulbophyllum lobbii*, which has received an astounding 67 American Orchid Society awards for quality and culture. With its wide geographic range (from Thailand through Malaysia to Borneo and the Philippines) equally reflecting enormous variation in colors and size, this species most likely consists of several species yet to be circumscribed.



Charles Wilson

There are, however, also 28 or so equally handsome other species in section *Sestochilos*, the “curved or bent-lip *Bulbophyllums*,” with some authorities ascribing as many as 54 species to the section. They occur in the light shade of forests at elevations from sea level to 9,200 feet (0–2,800 m) and range from India and Nepal throughout Southeast Asia to Taiwan, Japan, and the Philippines and eastward to the Solomon Islands.

The species in this section generally produce single flowers atop thin stems that emerge from multiple points along the rhizome between the pseudobulbs. From these points, they can bloom repeatedly for multiple years! A well-grown plant even in a small pot can produce a great number of flowers, which is a bonus for growers with limited space. The flowers are typically pleasantly scented if any scent is notable at all, and are most often well-presented at or above leaf level. There are a few that have very short pedicels, making the flowers somewhat recondite (hidden), although they can make up for their shortness in being floriferous, such as in *Bulbophyllum macranthum*. The petals of many of the species in this section are often backswept or reflexed, giving them a shape somewhat reminiscent of sea stars. Some have petals that are longer than their pedicels (stems), which would suggest they are more suited to rafting than to growing in a pot.

The Bornean species *Bulbophyllum anceps* is distinct in this section in that it produces multiple flowers of over 2 inches (5 cm) in diameter per inflorescence from the base of its large flat, disk-like pseudobulbs. A well-grown specimen can be quite a sight to see. The flowers of the species in section *Sestochilos* are widely variable from tiny *Bulbophyllum capillipes* at about ½ inch (1.6 cm) tall to some of the larger varieties of *Bulbophyllum lobbii*



at 5½ inches (14 cm) tall. Pseudobulbs range in size from nearly nonexistent in the rambling and elongate growths of *Bulbophyllum chierii* to pear-shapes more than 2 inches (5 cm) tall in *Bulbophyllum lobbii*, topped with single leaves to 12 inches (30 cm) long.

CULTURE

Light levels Like most bulbophyllums, members of this section thrive in bright, indirect light. Many actually enjoy the higher light levels often appreciated by some species of *Cattleya* provided adequate air movement and humidity are provided.

- [1] *Bulbophyllum anceps* has large, flattened pseudobulbs over 2 inches (5 cm) across and inflorescences that typically have multiple flowers.
- [2] *Bulbophyllum claptonense*, named for its discovery in Clapton, Australia, was initially considered a variety of *Bulb. lobbii*, but distinctive lip characteristics validate it as a separate species.
- [3] *Bulbophyllum macranthum* produces bountiful, pleasantly sweet-smelling non-resupinate flowers (lip uppermost) that may be overlooked beneath the leaves.



- [4] *Bulbophyllum patens*, with its fragrant and nonresupinate flowers, has long intervals between pseudobulbs and benefits from being mounted on a 24 inch (61 cm) tall tree fern plank.
- [5] Found from Assam to Vietnam, *Bulbophyllum capillipes*, with flowers about ½ inch (1.6 cm) tall is one of the smaller species in the section.
- [6] *Bulbophyllum chierii* has small, nearly nonexistent pseudobulbs with long intervals between them making it more suitable to growing in a basket or rafted on a post.
- [7] *Bulbophyllum lobbii* can easily produce 30 or more flowers in a 10-inch (25-cm) pot.
- [8] *Bulbophyllum lobbii* at the Tenom Botanical Garden in Bornean Indonesia.
- [9] *Bulbophyllum lobbii* var. *breviflorum* (meaning “short flower”) was long considered a species in its own right and is often encountered in the trade under the name *Bulbophyllum sumatranum*.



7



8



9



Temperatures The species in this section prefer warm growing temperatures with minimum nights of 60 F (15.5 C) and can tolerate higher daytime temperatures even into the 90s F (32.2+ C) provided they have excellent air movement and high humidity. These species will grow year-round if kept warm and watered. Growing conditions that are too cool, below 55 F (13 C), generally slows growth and can retard blooming.

Potting and watering Because *Bulbophyllum* species have threadlike or fine fibrous roots, a shallow layer of potting mix (e.g., we use seven parts small bark, one part small perlite and one part small charcoal) or a quality sphagnum moss atop an ample bottom layer of expanded polystyrene “peanuts” in a shallow pot or basket will provide the needed perfect drainage. This shallow medium allows the grower to water nearly every day without much worry of rotting the roots, as well as the potting medium. This method of shallow potting closely resembles the way *Bulbophyllum* grow in the wild — on the top of branches and trunks that dry out quickly. An advantage of this shallow rooting in nature is in capitalizing on the high humidity of the tropics coupled with morning dew, and in the rainy season the ability to shed excess water. In nature, they seldom totally dry out for long periods, even in the drier seasons.

— Charles Wilson is an accredited AOS judge out of the Atlanta Judging Center who has been growing orchids for over 40 years and is Chair of the Conservation Committee. His special interests include *bulbophyllums*, *cattleyas*, *coelogynes*, *dendrobiums*, *paphiopedilums* and about everything else (email: Zooemeritus@gmail.com).



[10] Pin-striped *Bulbophyllum membranifolium* var. *inunctum* has drooping petals longer than the flower's pedicel (stem) and might be better suited to raft-culture.

[11] *Bulbophyllum veitchianum* was only described in 2009 and shows the close relationship to *Bulb. lobbii* in this section.



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QUESTIONS AND ANSWERS

VIRUS TESTING

Question

When virus testing do you test old or new growth? Can Cym or ORSV cause flower deformities? I recently had three plants in which there was extra tissue in the side lobes or a twisted column. I wonder if heat was a factor? Only one tested positive for virus.

Answer

For virus testings, take a sample of the most recent mature growth, not from the new front lead growth. The reason for this is that an older leaf should have a higher virus load and thus would give you a better chance for a correct positive result.

Viruses can cause myriad symptoms or none at all depending on the plant infected and the type of virus and the only sure way to know is to test for those viruses for which tests exist. For instance, yellow bean mosaic virus causes a translucent rectangular checking between the veins of newly developing leaves and, many cases curled foliage but as the leaf matures, it becomes harder and harder to see distinct viral symptoms. Sepal wilt virus in cattleyas causes no outward visible symptoms in foliage or the color of flowers, rather infection causes the sepals to wilt after only a few days ruining the flowers. Other viruses cause unmissable foliar symptoms that often are hard to distinguish from fungal and bacterial infections.

All that said, twisted columns, missing segments and extra tissue including fusion of sepals and petals to the column are most often genetic in origin or caused by heat stress in the developing flower buds. *Cattleya bicolor* hybrids are notorious for growing extra tissue and fusion of floral segments to the column. Very often, first bloom seedlings may look just fine but later flowerings as the plants mature may start to show extra tissue, worsening with subsequent flowerings. In early yellow cattleya breeding it was hard to get plants that did not eventually show this extra tissue crippling the flowers. The blame was originally placed with *Cattleya dowiana* but it is now understood to be likely due to *C. bicolor* in the background.



MILTONIOPSIS PROBLEMS

Question

I am having trouble with this *Miltoniopsis*. The root system appears strong with no rot, but the pseudobulbs are rotting. I removed the offending leaves hoping that would cure the problem. I am afraid I will lose the plant. Any advice you can share would be greatly appreciated.

Answer

Many growers have problems with *Miltoniopsis* because the plants prefer a fairly narrow range of temperatures and have fine root systems for the size of the plants. I am afraid the plant in your photographs will not likely survive. Because of the fine root system in this genus, fine potting media is recommended and plastic pots help most growers maintain the necessary water supply to the roots.

This plant is potted in a clay pot in pretty coarse potting medium, both certain to stress the plants and invite all manner of other problems. When using coconut husk chips make sure to thoroughly leach them to remove the sodium chloride they may contain.

Newer sources of husk chips are not as loaded with salt as they used to be but still may still contain enough to be toxic to the plants if not leached first.

All of these sources of stress could be causing the problems you are experiencing and it is difficult to tell from a photograph. The typical time to repot *miltoniopsis* is in the fall. There is a great article in Orchids

magazine (October 2019, pages 750–759) on repotting these types of plants.

You mention that although the roots look ok, the pseudobulbs are rotting. I cannot tell from the photograph if the pseudobulbs are actually rotting or if they are just drying up and turning brown. It is possible that the underlying problem is simply that the plants can't get enough moisture and if that's the case, the older leaves would be shed first and the bulbs will just shrivel and turn brown starting from the oldest and moving up to the front of the plant. However, if the lesions on the pseudobulbs appear as an orange discoloration (typically starting at the base), this is a bacterial infection called *Miltonia Scorch*. It typically starts in one pseudobulb and travels from one to the next through the rhizome. This is a bacterial infection that is not easy to stop. You must remove all traces of infected tissue and then treat with a systemic bactericide or a fungicide with antibacterial efficacy.

If the lesions are a light chartreuse or chestnut color, appear watersoaked and have a foul smell, the problem is a bacterial infection called *erwinia*. Treatment is similar to that for *Miltoniopsis/Miltonia scorch*. If the lesions are brown, soft but not oozing liquid, it is likely a true fungal infection and the plants can be treated with thiomy, Clearys 3336, Heritage or Pagaent fungicides once all traces of the rot are removed.

These questions were part of one or more recent monthly webinar Q&As and compiled by Larry Sexton for inclusion here. Each month, a Q&A webinar is held during the first two weeks of the month. To view recorded Greenhouse Chats (Q&A webinars) or register for a future one, see <https://www.aos.org/orchids/webinars.aspx>. Send questions to greenhousechat@aos.org — Ron McHatton, AOS Chief Education and Science Officer.



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Sylvia Strigari

Lycaste lasioglossa

Text by Lisbeth Oses and Franco Pupulin/Watercolor by Sylvia Strigari

Tribe CYMBIDIEAE
Sutribe MAXILLARIINAE
Genus LYCASTE Lindley

Lycaste lasioglossa Rchb.f., *Gard. Chron.* 1872:215. 1872. TYPE: Imported by Messrs. Veitch from Guatemala, *J. Veitch s.n.* (holotype, W).

A terrestrial, sympodial, erect *herb* up to 35 cm tall. *Roots* dark brown, rough, stout, terete to 2 mm in diameter. *Pseudobulbs* dark green, ovoid, laterally compressed, erect, up to 6 cm long, 3.5 mm wide, the newest ones enclosed by a papyraceous bract ca. 4 cm long. *Leaves* green, erect, glabrous, plicate, elliptic, with wavy margins, up to 29 cm long including the petiole, 6 cm wide, the base gradually narrowed into the petiole ca. 7 cm long. *Inflorescence* a solitary flower, borne on a willowy lateral peduncle; peduncle terete, green, born laterally from the base of the pseudobulb, to 15 cm long, enclosed by 3–4 triangular, papyraceous bracts, one at the base and two near the middle. *Floral bracts* light green when young, becoming yellow-brown with age, inflated, scarious, conduplicate 20 × 6 mm. *Ovary* pedicellate, light green, darker green toward the apex, terete, remarkably wider and sulcate at the apex, 3 cm long. *Flowers* showy, with a faint fragrance, the sepals cinnamon brown, the petals yellow with a lighter, greenish base and the veins also remarkably lighter, the lip yellow, subtly stained with reddish brown spots at the base, and with dots in the apical lobe, the column yellowish white, with barely visible reddish spots on the column foot. *Sepals* glabrous and laevigate until the base where they are minutely pubescent. *Dorsal sepal* free, erect, oblong-elliptic, obtuse to subrounded, slightly conduplicate-concave, 5.5 × 2.0 cm. *Lateral sepals* asymmetrically elliptic-lanceolate, subacute, minutely apiculate on the abaxial side, conduplicate-concave, 5.8 × 2.0 cm. *Petals* elliptic, rounded, sinuate at apex, oblique, distinctly shorter than the sepals, 3.5 × 2.0 cm. *Lip* trilobed from a narrow obcunetae claw, 3.6 × 2.1 cm, obovate in outline when expanded, the lateral lobes elliptic, rounded at apex, the apical lobe subrectangular-convex, truncate, fimbriate, the disk with an ovate-triangular callus directed forward, crenulate at the tip. *Column* semiterete, 3 cm long, 0.6 cm wide, the ventral surface with a small group of hairs before the stigma, provided

with a distinct foot extended backwards, 1.7 cm long. *Anther cap* cucullate, ovate-subrounded, bone white, with two circular brown spots on each side. *Pollinia* four, yellow, the two dorsal larger, dorsoventrally flattened, semi-elliptical, on a translucent white, thin, rhombic-oblong stipe and a lanceolate deltoid viscidium.

The British botanist John Lindley established the genus *Lycaste* in *Edwards's Botanical Register* in 1843 when, on the basis of morphological characters (for example, the notable unequal size of sepals and petals), he transferred to this new genus nine species that were previously classified in the genus *Maxillaria* Ruiz and Pav. Lindley was quite unclear about the derivation of the name “*Lycaste*,” which he used for his new genus and to which he simply referred to as “a fanciful name, *Lycaste* was a beautiful woman.” While we may never know the true origin of Lindley’s “*Lycaste*” there is no doubt that the name of the genus has its origins in Greek mythology, being the Latinized form of Greek Λυκάστη (of unknown meaning). Perhaps the most widely accepted interpretation is that the generic name *Lycaste* derives from that of the homonymous nymph, a daughter of King Priam and step sister of Helen of Troy, but other hypotheses suggest that it derives either from the god Dionysus’ “charming” wet nurse, *Lycaste*, or Eryx’s beautiful concubine mother, *Lycaste*, or a follower of Artemis or even a woman of Lemnos who slew her twin brother Cydimus. It is also somewhat intriguing that Lindley (1842) proposed this name one year before to describe his *Lycaste plana*, but without some explanation or description of the generic characters, and with no cues about the origin of the name. What is clear, is that the “beautiful women” to whatever mythological figure he referred, probably reminded him of the majestic charm of the flowers in the genus (Ryan, 2001; Toledo, 2016; Pupulin, 2020). As presently circumscribed, *Lycaste* includes around 54 species, distributed from Mexico to South America, where populations can be found from close to the sea level to about 2,500 m in elevation (Ryan et al. 2000). Most species are recorded from Mexico to Panama, Central America being the hotspot of the genus’ diversity.

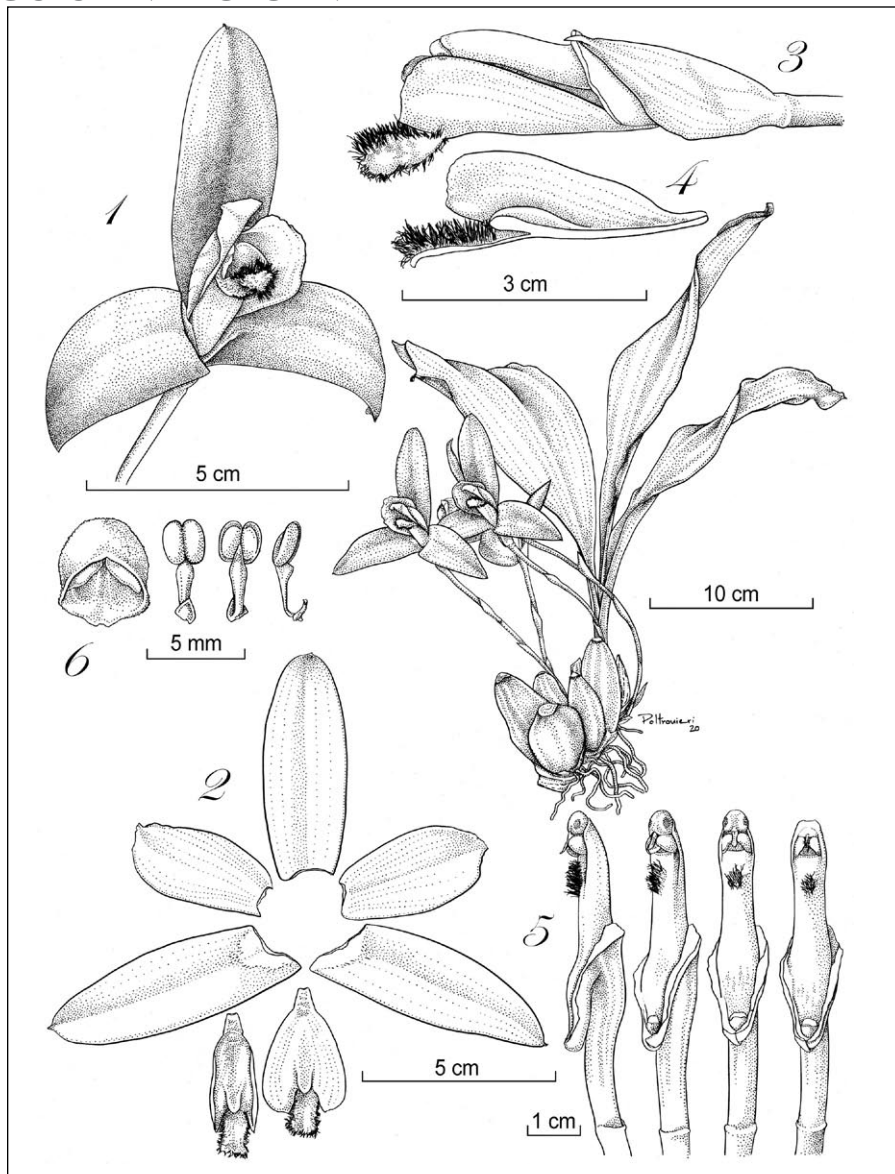
The infrageneric treatment of *Lycaste*

most commonly used is that proposed by Fowlie (1970), who recognized four sections and two subsections (both the latter *nomina nuda*), but one of the sections, *Lyc. sect. Fimbriatae*, had support from molecular studies to be segregated into the separate genus *Ida* (Ryan et al. 2000; Chase et al. 2015; Bogarín and Pupulin, 2016). Of the other sections, *Lyc. sect. Deciduosae* is characterized by species with leaves that are deciduous in the dry season, and which leave apical spines on the pseudobulb after falling (except *Lycaste tricolor*). Due to differences in their geographic distribution and the color of the flower, *sect. Deciduosae* is separated into a yellow-flowered group of species (subsect. *Xanthanthae* from Mexico to northern Colombia), and a pink-flowered group (subsect. *Paradeciduosae* restricted to Nicaragua, Costa Rica, and Panama). *Lycaste sect. Lycaste* (from Guatemala to Bolivia), includes species bearing some morphological resemblance to *Lycaste macrophylla*, with dark pseudobulbs, which may or may not have spines, evergreen leaves, and nonfimbriate lip with a spatulate callus. Finally, Fowlie placed *Lycaste schilleriana*, from the highland regions of Colombia, Ecuador and northern Peru, as the only species of section *Longisepalae* that in turn resembles the long-sepaled members of *sect. Lycaste* (Ryan, 2000).

Among the species of *sect. Deciduosae*, subsect. *Xanthanthae*, *Lycaste lasioglossa* stands out for its yellow petals and lip. Like *Lyc. tricolor*, in subsect. *Paradeciduosae* (Pupulin, 2018), it does not present apical spines on the apex of the pseudobulb after the leaves fall.

During the last decades of the 19th century, Professor Reichenbach of Hamburg, recognized for being one of the greatest authorities on orchids of his time, began to regularly visit the Chelsea orchid show and the orchid houses established in the area, and he also became an assiduous visitor of James Veitch & Sons’ acclaimed nurseries. He would describe many of the new Veitch introductions from all parts of the world over the next few years (Heriz-Smith, 1989).

One of these new introductions was *Lyc. lasioglossa*, which Reichenbach published in 1872 in his column on new garden plants for the *Gardener’s Chronicle* (Reichenbach, 1872), after the opportunity to study it



Whitten, W. M. 2009. *Lycaste*. Pp. 161–165 in: A.M. Pridgeon, P.J. Cribb, M.W. Chase and F. Rasmussen (eds.). *Genera Orchidacearum*. Volume 5. Epidendroideae (Part two). Oxford University Press, Oxford, England.

Lycaste lasioglossa. The plant.

1. Flower.
2. Dissected perianth.
3. Column and lip, lateral view.
4. Lip, longitudinal section.
5. Column views.
6. Anther cap and pollinarium in dorsal, ventral, and lateral views.

All drawn from JBL-03032 by Sara Poltronieri.

at the exhibition the Royal Horticultural Society used to stage during its Wednesday meetings. Reichenbach mentions that “this very interesting species looks as if intermediate between *L. schilleriana* and *L. macrophylla*.” Effectively, if in general appearance it resembled *Lyc. macrophylla* and reminded one of *Lyc. schilleriana* for the short petals, the lip of the new species was totally peculiar, by its wonderfully bearded middle apical lobule. It is this character that gives the species its name, derived from ancient Greek *lāsios*, “hairy” and *glōssa*, “tongue.” A plant from the original introduction by Veitch from Guatemala was illustrated a few years later in *Curtis’s Botanical Magazine* (t. 6521, 1876). In Guatemala its natural habitat are the forests of Alta Verapaz, but the species ranges to Mexico in the North and to Honduras southward. Claims about the natural occurrence of *Lyc. lasioglossa* in Costa Rica are based either on erroneous

identifications or on imported materials.

Like the other species of the genus, *Lycaste lasioglossa* has medium-sized flowers that are usually pollinated by bees searching for perfumes (Whitten, 2009; Bogarín and Pupulin, 2016); however this species is not very fragrant, and no direct observations are available on its pollination biology.

Lycaste lasioglossa is a quite variable species, with distinct forms having the sepals ranging from pale to much stronger brown color (Pérez-García, 2011), but its markedly fimbriated labellum makes it unmistakable. Pérez-García (2011) related how the species became extinct in the region of Los Lagos Montebello (Mexico), first by the indiscriminate extraction and in recent years, by the reduction of the forest due to a bad agricultural practice.

Like most other species of *Lycaste*, *Lyc. lasioglossa* requires good light exposure and a short rest period to induce flowering. In its natural habitat this occurs in late winter and early spring, from December through March, when watering should be almost completely suspended. Plenty of water must be given during the growing season, providing fresh air with shady conditions. Repotting should be done when the plant is resting or when the new growths are developing. At the Lankester Botanical Garden, *Lyc. lasioglossa* is grown in a medium consisting of 40% stone, 60% pine bark (particles of 0.5 cm, for moisture retention) and 10% Chilean sphagnum moss. Plants are fertilized every six months with a fertilizer rich in nitrogen and phosphates.

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Selected Botanical Terms

abaxial – lower or reverse surface
 acute – pointed
 adaxial – upper or front surface
 apiculate – ending abruptly in a small, distinct point
 arcuate – curved, shaped like a bow
 claw – narrow extension between two parts
 column foot – basal protrusion of the column to which the lip is attached
 concave – curved inward like the inside of a sphere
 conduplicate – folded lengthwise
 convex – shaped like the outside of a sphere
 crenulate – irregularly wavy or serrate margin
 cucullate – hooded
 deltoid – triangular
 distichous – arranged in two rows
 dorsoventrally flattened – flattened like the blade of a leaf
 elliptic – oval
 fimbriate – fringed
 glabrous – smooth
 laevigate – smooth as if polished
 lanceolate – narrow oval tapering to a point at each end
 ligulate – tongue-shaped

obcuneate – wedge-shaped, widest at the base
 oblanceolate – narrow at attachment, rounded apically
 obovate – egg-shaped with the wide end up
 ovate – egg-shaped, narrow end up
 ovoid – oval
 papyraceous – dry, papery
 pedicel – a stem carrying a single flower
 peduncle – main stalk of the inflorescence
 petiole – stalk connecting leaf to stem
 plicate – folded, corrugated
 pubescent – covered in fine hairs
 scarious – chaffy
 sinuate – wavy
 stipe – supporting stalk or stemlike structure
 sub – somewhat less than; i.e., subspherical would refer to almost but not quite a sphere
 sulcate – longitudinally furrowed
 terete – cylindrical or pencil-shaped
 truncate – terminated abruptly as if cut off
 viscidium – sticky pad to which orchid pollinia are attached.

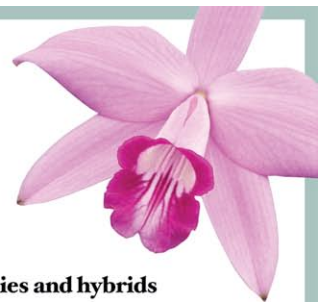
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Exceptional form, shape and novel emphasis on lip diversity

TEXT BY MATTHIAS SEELIS/PHOTOGRAPHS BY SIAM NOISUWAN UNLESS OTHERWISE CREDITED

QUITE SUDDENLY AND unknowingly, we have entered a new phase in cattleya breeding from across the ocean in Thailand. Colorful new hybrids with big flat lips and exceptional vibrant colors are entering the US market and taking the world by storm. The outstanding, innovative work of Mr. Siam Noisuwan has created a fresh wave of enthusiasm in the world of cattleya lovers with his new line of breeding. In the past five years he has created more than 60 new registered hybrids of excellent color, size and substance, mostly ranging from 5 to 6 inches (12.5 to 15 cm) in natural spread, often displaying intensely vivid color ranges from solid yellows to oranges, sunset colors to deep magenta.

Mr. Noisuwan resides in Bangkok, Thailand, where at the age of 11 he was gifted a few cattleya plants by his cousin, who was the owner of an orchid business. He was inspired to learn by example and visited many of the established orchid nurseries around Bangkok. It was inevitable that he would soon contract that life-long "orchid virus," the one we all dread and where all our monies go. At 21 he created his first hybrid *Rhyncholaeliocattleya* Siam White (Elizabeth Hearn × *Cattleya* Gertrude Hausermann) while still attending the University of Bangkok. Since then he has created numerous new large-flowered hybrids with a focus on concolor cattleyas and new patterns with vibrant colors.

One of his earliest hybrids, *Rhyncholaeliocattleya* Chomthong Fancy (Laddawan Beauty × Haadyai Delight) exceeded all expectations and became an instant classic, mostly because of the incorporation of *Rlc*. Haadyai Delight. The size of the large lip and the beautiful burnt orange coloration, with saturation of color depending on the ambient temperature, are simply amazing. *Rhyncholaeliocattleya* Chomthong Fancy has become an important stud plant in his breeding, as the large flat lip has greatly influenced the look of the next generation of its progeny with a total of 13 offspring such as *Rhyncholaeliocattleya*



Saeng U-Sa (Yen Twentyfour Carat ×), *Rhyncholaeliocattleya* Nakornchaisri Sunset (× Nakornchaisri Delight ×), *Rhyncholaeliocattleya* Bangkok City (× Chunyeah) and *Rhyncholaeliocattleya* Siam Firework (× Suvarnabhumi Magic) so far.

A breakthrough that, in my opinion, put Mr. Noisuwan on the map worldwide is the incomparable *Rhyncholaeliocattleya*

- [1] Mr. Siam Noisuwan with all of his magic cattleya creations.
- [2] *Rhyncholaeliocattleya* Siam White, Mr. Noisuwan's first registered hybrid.
- [3] *Rhyncholaeliocattleya* Golden Diamond
- [4] *Rhyncholaeliocattleya* Thaksina Gold '#1'

Cattleya Breeding

Amazing Thailand (Haadyai Delight × *Cattleya* Brazilian Treasure). What an achievement! Registered in 2014 and awarded by the American Orchid Society in 2019 with an award of merit of 80 points exhibited by Matthias Seelis of Shogun Hawaii, this hybrid exceeded all expectations by a landslide. When I notified Mr. Noisuwan of the Award of Merit award, the response was almost like he had won the Olympic gold medal for Thailand! Within days of the news spreading in Thailand the country was celebrating this prestigious award in the orchid community and beyond. We sometimes forget how noteworthy it is to get an Award of Merit from the AOS, and it puts things very clearly in perspective for all of us on how important it is to work together with no boundaries between different countries. This is the power of orchids to bring the world together.

Once again, *R/c.* Haadyai Delight provided the beautiful full, round and rather large lip, which, when bred with *C.* Brazilian Treasure, resulted in a colorful and magical beauty that is *R/c.* Amazing Thailand. Depending on the season, colors change from a golden yellow with large pink flares to an almost eggshell base color with magenta flares. As the flowers mature, colors change and the process is enchanting to witness. The inflorescence holds up to three flowers that benefit from good staking prior to opening.

Solid concolor hybrids are Mr. Noisuwan's specialty, and needless to say, they are striking and are becoming a new focus for future breeding. There are not many new, large-flowered yellow cattleya hybrids, but Mr. Noisuwan managed to produce some stunning new examples of concolor yellows. Some fine examples include *Rhyncholaeliocattleya* Golden Diamond (Ploenpit Golden Delight × Ratima Urthamapimuk), *Rhyncholaeliocattleya* Thaksina Gold (Yen Golden Masterpiece × Haadyai Delight) and *Rhyncholaeliocattleya* Thongsuparn 'Pure Yellow' (Yen Twentyfour Carat × Haadyai Delight).

Lots of vibrant orange and sunset



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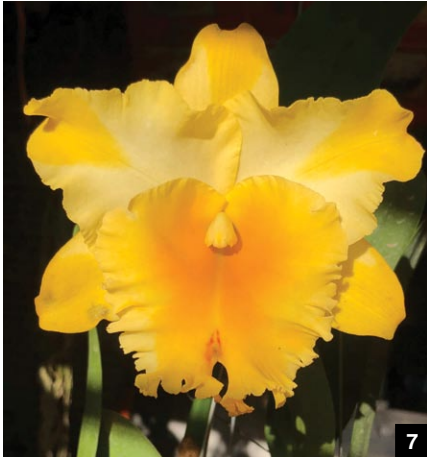
MATTHIAS SEELIS

colors were serendipitously produced in the process, and these are among the outstanding examples emerging from the fresh young mind of Mr. Siam Noisuwan: *Rhyncholaeliocattleya* Yingluck Smile

(Liu's Joyance × Willette Wong Yen), *Rhyncholaeliocattleya* Siam Aurora (Korat Sunshine × Yen Twentyfour Carat), *Rhyncholaeliocattleya* Golden Paragon (C. Tainan Gold × Yen Twentyfour Carat),



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- [5] *Rhyncholaeliocattleya* Madonna Queen
'Lucky Star'
- [6] *Rhyncholaeliocattleya* Chomthong Fancy
- [7] *Rhyncholaeliocattleya* Double Delight
'Lightening Plasma'
- [8] *Rhyncholaeliocattleya* Yingluck Smile
'Heart of Gold'
- [9] *Rhyncholaeliocattleya* 'Saeng U-Sa '#1'
- [10] *Rhyncholaeliocattleya* Amazing Thai-
land 'Rainbow'



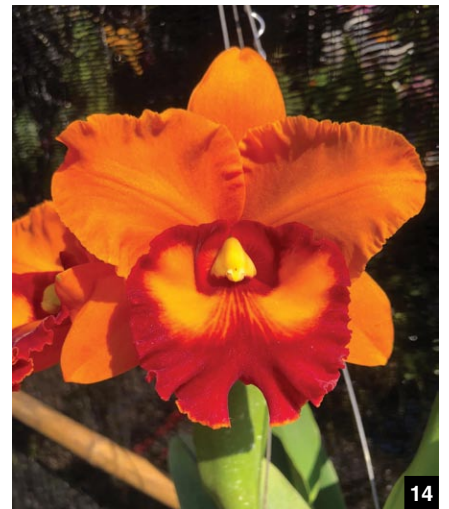
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Rhyncholaeliocattleya Nakornchaisri Delight and *Rhyncholaeliocattleya* Memoria Buranapan Nikom (Haadyai Delight x *C. Tainan Gold*). Also noteworthy in these hybrids is their stout foliage and the relatively short thick leaves. Mr. Noisuwan has put a lot of effort toward producing a shorter, more compact cattleya plant for the hobby market, which also makes for easier shipping. Not only are the colors of all of his hybrids vivid and bright, but the luscious blooms also are long-lasting and can flower multiple times a year with the proper care.

Personally, I am envious of the large facilities they have in Thailand to bloom out hundreds of seedlings and select the very best of the possibilities from each new cross. Here in the United States we are somewhat more limited in terms of how many seedlings per cross can be grown to first bloom, as this requires so much capital and labor. But despite this envy, cattleya lovers should all be grateful for these beautiful plants coming from Thailand! Certainly, it appears that this is the beginning of a flurry of new hybrids, and we should be thankful for the fresh perspective of our fellow breeders in other countries. I, for one, am welcoming and enthusiastic about these new breeders, as we should all be. I look forward to further collaborations with my friends in Thailand and sharing the beautiful results with orchid lovers around the globe!

— Matthias Seelis is the owner of *Shogun Hawaii* on the Big Island of Hawaii where he breeds and grows cattleya orchids on his 6 acre (2.4 ha) farm. He is an avid breeder of large-flowered cattleyas and loves his doberman dogs. He can be reached through his website <http://www.cattleyaorchidshawaii.com>).



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- [11] *Rhyncholaeliocattleya* Saeng-U-Sa '#2'
- [12] *Rhyncholaeliocattleya* Siam Red
- [13] *Rhyncholaeliocattleya* Nakornchaisri Delight '#2'
- [14] *Rhyncholaeliocattleya* Nakornchaisri Delight '#4'
- [15] *Rhyncholaeliocattleya* Monthatip Gold
- [16] *Rhyncholaeliocattleya* Nakornchaisri Delight '#3'
- [17] *Rhyncholaeliocattleya* Siam Song



Maxillaria supina.

Xylobium by Wesley Higgins and Peggy Alrich

A Central to South American Genus



***Xylobium* Lindley**

Botanical Register, 11: t.897 (1825)

ETYMOLOGY From the Greek for wood or tree (xylon) and life (bios), alluding to the plants' epiphytic habit.

GENERITYPE *Xylobium squalens* (Lindley) Lindley (*Dendrobium squalens* Lindley)

Sympodial epiphytes or terrestrial species that are found in wet, low- to middle-elevation hill scrub and montane forests from southern Mexico (Chiapas) to Bolivia, Venezuela, the Guianas, northern Brazil (Amazonas, Pará to Mato Grosso) and southeastern Brazil (Bahia to Rio Grande do Sul) with the largest center of diversity found in Venezuela. Although the World Checklist of Selected Plant Families (WCSP 2020) recognizes 36 species and four varieties, Paul Ormerod (2018) limits the genus to just 18 species. Generic boundaries in the tribe have changed substantially with new molecular evidence. Phylogenetically, *Xylobium* is

now placed in tribe Cymbidiæ; subtribe Maxillariinæ (Whitten et al. 2007).

These tufted plants have ovoid to pear-shaped, almost pencil-like, dark green pseudobulbs, subtended by distichous, overlapping, thin, dry bracts, each with one to three large, often leathery, strongly ribbed or pleated, pseudopetiolate based leaves that have veining on the undersides.

The erect to hanging, solitary to few-flowered inflorescence, borne from the base of a pseudobulb, has small, showy or inconspicuous, faintly fragrant, yellow-white to purple flowers. The lateral sepals along with the column foot form a chin-like protuberance. The simple or trilobed lip, hinged to the tip of the column foot, has erect side lobes enfolding the column and the thickened midlobe has a distinctly warty callus. The flowers have a short, massive, erect to slightly curved wingless column. Pollinia four, in two pairs. *Xylobium* flowers do not show the

euglossine syndrome, and are probably pollinated by some other insect, possibly stingless bees.

CULTURE These vigorous growing plants need a free-draining medium and water during the growing period then reduced during cool months. Provide hot to intermediate conditions and bright light but not direct sunlight.

— Peggy Alrich is a freelance graphic designer (sunflowerltd@earthlink.net).

— Wesley Higgins is an AOS Accredited Judge (wesley.higgins@comcast.net).

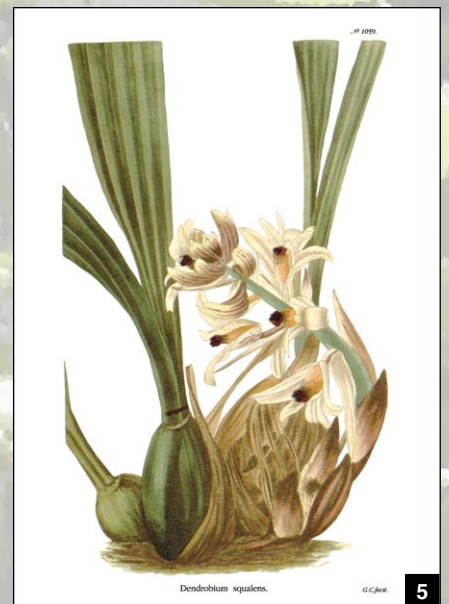
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1. *Gomexa planifolia* Lindl. var. *crocea* Rgl. a. e.
2. *Maxillaria hypocrita* Rehb.

Lit. G. Ebenhuser Stuttgart.



Antique Plates —Xylobium

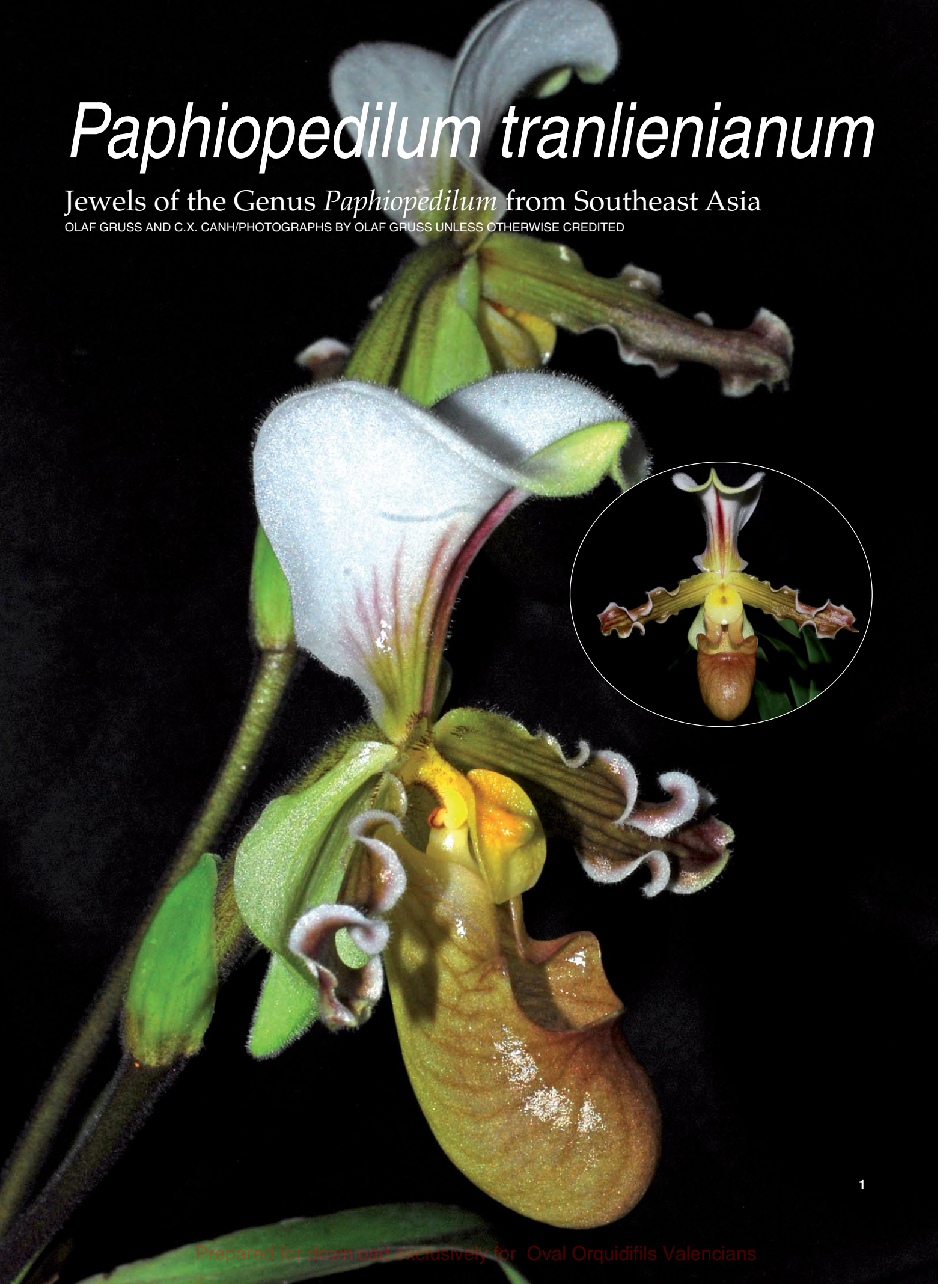
- [1] *Xylobium variegatum* as *Maxillaria supina* – *Nova Genera ac Species Plantarum*, 1:t.67 (1835).
- [2] *Gomesa planifolia* as *Gomezia planifolia* v. *crocea* and *Xylobium hypocritum* as *Maxillaria hypocrita* – *Gartenflora*, 30:t.1052 (1881).
- [3] *Xylobium hyacinthinum* as *Xylobium hyacinthina* – *Gartenflora*, 30:t.1066 (1881).
- [4] *Xylobium leontoglossum* – *Botanical Magazine*, 115:t.7085 (1889).
- [5] *Xylobium squalens* – *Botanical Cabinet*, 11:t.1059 (1825).
- [6] *Xylobium squalens* as *Maxillaria squalens* – *Botanical Magazine*, 56:t.2955 (1829).
- [7] *Xylobium squalens* – *Botanical Register*, 9:t.732 (1822).



Paphiopedilum tranlienianum

Jewels of the Genus *Paphiopedilum* from Southeast Asia

OLAF GRUSS AND C.X. CANH/PHOTOGRAPHS BY OLAF GRUSS UNLESS OTHERWISE CREDITED



GRUSS AND CANH

IN 1998, THE botanist Tran Ngo Lien discovered a supposedly new species of the genus *Paphiopedilum* in the Vietnamese border area with China. Initially, the occurrence of *Paphiopedilum helenae* was expected in this area, so the plants were referred to as “big helenae.” Sometime later, the explorers realized that these plants appeared to be a rather special form of *Paphiopedilum herrmannii* (Fuchs and Reisinger 1995). Some of these plants also arrived in Japan as *Paph. herrmannii*.

In 1998, the explorers from Vietnam sent a fresh inflorescence and a leaf to Olaf Gruss and Holger Perner to describe this possible new variety. Initially, the name *Paph. herrmannii* var. *tranlienianum* was chosen for the description.

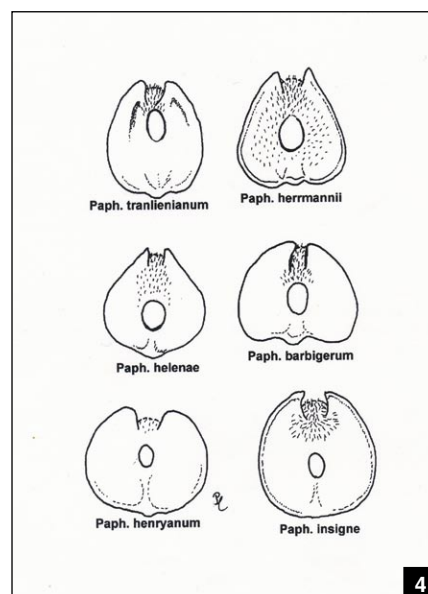
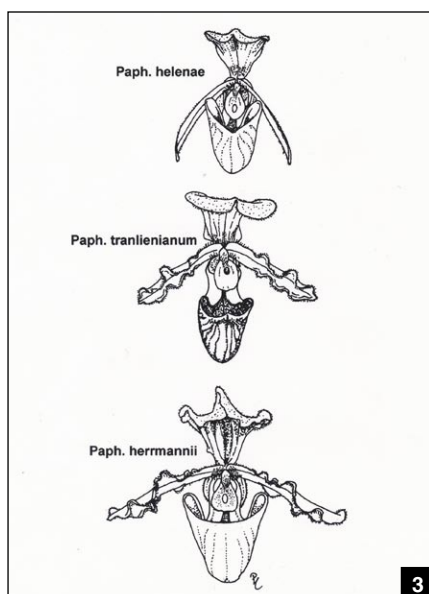
Upon closer investigations clear differences to the closely related species became apparent, so that the description of a new species seemed reasonable to the authors. The question arose whether it could be a natural hybrid between *Paph. herrmannii* and *Paphiopedilum henryanum* (Braem 1987), like the one found in the border area with China, or as Phillip Cribb (pers. comm. 1998) suspected between *Paph. helenae* (Averyanov 1996) and *Paphiopedilum hirsutissimum* var. *esquirolei* (Karasawa and Saito 1982). However, the authors rejected these theories after a close comparison of the species.

The clear differences to the other species convinced Gruss and Perner that it was an independent species. In 1998, they published the new description in the member magazine of the Italian orchid society, *Caesiana* (Gruss and Perner 1998).

A few days after the description of this new species in *Caesiana*, an article about this species appeared in the Vietnamese magazine, *Hoa Canh* (Tich 1999). However, there was no valid Latin diagnosis, so this description was not only too late, but also produced an invalid name leaving *Paphiopedilum tranlienianum* (Gruss and Perner 1998) as the valid name.

SYNONYMS *Paphiopedilum herrmannii* var. *tranlienianum* hort. O. Gruss and H. Perner *Caesiana* 11: 63–73, 1998. *Paphiopedilum caobangense* Tich in *Hoa Canh* 1:14, 1999 nomen nudum.

ETYMOLOGY *caobangense* in reference to Cao Bang, Vietnam; *tranlienianum* after the discoverer of the species Tran Ngo Liên. According to the descriptors, this long name was chosen to avoid a language confusion of this species with *Paphiopedilum liemianum*



and *Paphiopedilum linii*.

GEOGRAPHICAL DISTRIBUTION Vietnam on the border with China in the province of Bắc Thái.

HABITAT There is insufficient information about the location of this species in the wild. Plants grow at somewhat lower altitudes (approx. 1,640 feet [500 m]) like *Paph. helenae*, but more than 100 miles (160 km) from known locations of the latter species. They are found in moss cushions between ferns and grasses on rather steep rock faces, developing their roots in small rock cracks filled with leaves and moss.

CLIMATE A small sized, warm growing lithophyte found only in northern Vietnam in primary broad-leaf evergreen forests on highly eroded limestone cliffs and mountains in narrow crevasses at elevations of 131–2,460 feet (40–750 m) in partial shade, a cool dry winter and a wet warm summer with three to six

- [1] *Paphiopedilum tranlienianum* ‘Grassau’ photographed in cultivation by Olaf Gruss. This diminutive species produces flowers that are large for the plant, up to about 3 inches (8 cm) natural spread, and spectacular specimens can be contained in pots no bigger than 4–5 inch (10–12.5 cm) diameter.
- [2] *Paph. tranlienianum* (left) compared to another small Vietnamese species, *Paphiopedilum herrmannii* (right). The two, although similar, can easily be distinguished by the shapes of their staminodes.
- [3] Line drawing by the late Holger Perner comparing *Paph. tranlienianum* (middle) to *Paph. herrmannii* (lowermost) and *Paphiopedilum helenae* (uppermost).
- [4] Line drawing by Holger Perner comparing the staminode shapes of *barbigerum*, *helenae*, *henryanum*, *hermannii*, *insigne* and *tranlienianum*.



distichous, clear green, linear-ligulate leaves that are obtuse, unequally bilobed, or minutely tridentate apically and sharply keeled beneath and blooming in the fall in nature on a suberect to arcuate, 4- to 6¾-inch (10–18-cm) long, bright green, pubescent, single-flowered inflorescence with a conduplicate, ovate, acute or obtuse, green spotted maroon, pubescent floral bract.

VARIABILITY The species varies in both flower size and color saturation. In 2003, a white-green color form was reported from Vietnam. In 2005 Olaf Gruss described it as *Paphiopedilum tranlienianum* f. *alboviride* (Gruss 2005).

POSSIBILITY FOR CONFUSION Although there is a certain similarity to *Paph. herrmannii* and *Paph. barbigerum*, there is really no reason for confusion. At first glance, this species differs by the strongly wavy margin of the petals, the differently shaped pouch with a significantly lower opening and by a differently shaped staminode. In addition, the staminode is, in contrast to that of the *Paph. herrmannii*, largely hairless.

CULTURE Plants present no special concerns in cultivation and should be grown as all the other similar small species are grown.

FLOWERING PERIOD October to November in the native habitat.

Most of the species described in this series have already been artificially propagated in sufficient numbers via seed and some have already been brought into the market from seed. Because of their small size and compact shape, they are particularly suitable for cultivation on a windowsill.

Time will tell whether additional species may be found in the coming years. The discoveries of *Paphiopedilum canhii* and *Paphiopedilum rungsuriyanum* in recent years indicate that many botanical treasures have remained undiscovered in Southeast Asia. However, it should always be borne in mind that these species are under strict protection and may only be exported or imported with appropriate CITES documents.

The aim should always be to preserve the habitats of the plants, so that future generations have the opportunity to admire these gems in their native habitat.

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Further Reading

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Acknowledgments

On the one hand, I would like to thank the many photo authors who made their material available to me, and on the other hand the gardeners and orchid friends who gave me the opportunity to take photos of their collections. We also thank Judith Rapacz-Hasler for the German-to-English translation.

— *Olaf Gruss is internationally recognized for his work with paphiopedilums, phragmipediums and phalaenopsis. He has written books about the genus Phalaenopsis and the albino forms of the genus Paphiopedilum, as well as two books about the genus Phragmipedium. He has been a member of the editorial board of the journal of the German Orchid Society, Die Orchidee. Gruss resides in Germany and lectures*

- [5] *Paph. tranlienianum* flowering on a nearly vertical cliff face in Vietnam. Photograph by C.X. Canh.
 [6] One of the green-and-white forms described by Olaf Gruss in 2005 as *Paph. tranlienianum* f. *alboviride*.

throughout Europe, Japan, Taiwan, China, and the U.S. In der Au 48 83224 Grassau, Germany (email: a-o.gruss@t-online.de). — Chu Xuan Canh is a naturalist interested in orchids, especially Paphiopedilum and their habitats. His curiosity about nature started during his childhood with lengthy trips and explorations. He has spent more than 30 years collecting, growing and photographing orchids and enjoys traveling across Vietnam to understand orchid habitats. He takes pictures and shares them via Facebook with orchid lovers around the world. The discovery of a new Paphiopedilum species in May 2010 was named after him, namely Paphiopedilem canhii. He helps to organize sightseeing tours to the habitats and gives lectures on the botanical jewels of the genus Paphiopedilum in Vietnam. 92 Thanh Nhan Street, Hai Ba Trung District, Hanoi, Vietnam (email: cxcanh@gmail.com).

Cool Stanhopeas

Their Culture and Suggestions to Grow

DOUGLAS B. PULLEY



STANHOPEAS APPEAL TO two types of orchid growers — lovers of fragrance and lovers of the weird. The first weird is that they bloom downward, so they must be grown in a basket once of mature size. The second weird is the unusual shape of the lip and column. The third weird is that the blossoms only last 4–7 days, depending on species and breeding. But a large plant (and they do get large) in a basket can give you a dozen or more spikes blooming sequentially through the season, usually May through October.

Their fragrances range from somewhat medicinal to sublime. You will know when a stanhopea is in bloom, even if you are blind. No other orchid genus has such pleasantly powerful fragrances, and some continue to perfume the air at night. *Stanhopea connata* smells like narcissus, *Stanhopea panamensis* like wintergreen and *Stanhopea oculata* ‘Chocolate Mint’ speaks for itself. *Stanhopea tricornis*, *Stanhopea reichenbachiana* and some cultivars of *Stanhopea grandiflora* have the marvelous fragrance of the naked lady lily (*Amaryllis belladonna*). *Stanhopea jenischiana* smells like vanilla and *Stanhopea inodora* (obviously misnamed) smells like hot cinnamon. The one drawback is the flowers’ short longevity, which is why so few are awarded.

Some *Stanhopea* species are harder to bloom than others. Several years ago, I grew all of them in my greenhouse, guessing which ones would do best in the intermediate side (about 58–60 F [14–16 C] at night) and which would do better in the cool side (somewhat variably 45–52 F [6–11 C] at night in winter).

Because I am an enthusiast of many types of orchids, several genera must share the greenhouse with the stanhopeas, including cattleyas, phragmipediums, paphiopedilums, dendrobiums, paphinias, gongoras, draculas, phaius, angraecums, miltoniopsis, brassias, dendrophylax and the warmer-growing cymbidiums. Having limited greenhouse space of 15 × 21 feet (4.5 × 6.5 m) means that decisions must be made.

One easy decision is to place extra divisions in locations that are tolerable for the plant, even if not optimal. Thus, when I divided *Stanhopea martiana* ‘Oaxaca’ CBR/AOS, several years ago, my own larger division stayed in the greenhouse, and the smaller division for sale went out with the cool cymbidiums on my deck. Plants on my deck are protected from winter frost so that their coldest winter temperatures are 35–38 F (2–3 C).

You can imagine my surprise when the



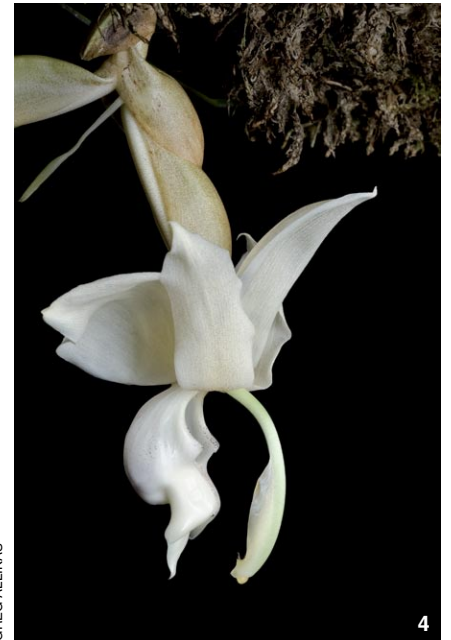
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smaller division of *Stan. martiana* growing in the colder conditions bloomed, and the well-favored one did not. Sometimes I can learn what my plants are telling me the first time, and *Stan. martiana* has bloomed more regularly ever since, out with my cymbidiums, than it ever did in the greenhouse.

Somewhat by trial and error, I learned that the following *Stanhopea* species (and their hybrids) do just as well or better outdoors or on the cool side of the greenhouse: *Stanhopea embreei*, *Stanhopea graveolens*, *Stanhopea hernandezii*, *Stanhopea intermedia*, *Stanhopea jenischiana*, *Stanhopea martiana*, *Stanhopea oculata*, *Stanhopea*

- [1] *Stanhopea maduroi* ‘Gunnii’ CBR/AOS; confirmed by SITF (2017); exhibitor: Joan Gunn; photographer: Ramon de los Santos.
- [2] *Stanhopea connata*
- [3] *Stanhopea panamensis* ‘Goodwood’ CHM/AOS; confirmed by SITF (2009); exhibitor: Inge and Peter Poot.
- [4] *Stanhopea reichenbachiana*

posadae, *Stanhopea panamensis*, *Stanhopea radiosa*, *Stanhopea saccata*, *Stanhopea tigrina* and *Stanhopea wardii*. These should all do well outdoors year-round in coastal southern California, and wherever that ideal climate for cymbidiums prevails. My goal has not been to collect every *Stanhopea* species, so I am sure there are several others that will thrive in cooler temperatures.

Another benefit of growing stanhopeas cool, even in winter, was realized when one of them — *Stan. grandiflora*, which can flower any month — bloomed in January. Daytime temperatures were in the low 50s F (11 C). The flowers remained in perfect condition for two weeks, perhaps a record for the genus.

Hybrids that do best with, or at least tolerate cooler temperatures, include *Stanhopea* April Fool (*connata* × *panamensis*), *Stanhopea* Quirky Queen (Love Potion × *wardii*), *Stanhopea* Spindleriana (*oculata* × *tigrina*), *Stanhopea* Love Potion (*connata* × *tigrina*), *Stanhopea* June Bride (*panamensis* × *Assidensis*), *Stanhopea* King Kong (*tigrina* × *gibbosa*), *Stanhopea* Grad Nite (*oculata* × *Assidensis*), *Stanhopea* Victory (Love Potion × *tigrina*) and *Stanhopea* Mormon Pioneer (*gibbosa* × *panamensis*).

Stanhopeas do best in cool to intermediate temperatures, but will easily tolerate 40–100 F (4–38 C). They will grow well in low to high light but seem to bloom best in medium light. They are best when grown as a hanging plant, but seedlings do well in pots on or under the bench, even with only indirect light.

In the San Francisco Bay area, we experience several hot days each summer in the range of 100 F (38 C) or a little higher. Those stanhopeas grown with my cymbidiums are not protected from that heat. My goal is to water the stanhopeas any day that goes above 80–85 F (27–29 C), even if that means watering daily. On those hot days, there is little harm in watering basket-grown stanhopeas as late as 6 pm. That may be orchid heresy, but I have done it many times.

Stanhopeas seem to thrive and bloom better with frequent watering once the weather warms up. I water all stanhopeas, in pots or baskets, at least twice weekly from mid-March through October. Those that winter with the cymbidiums are watered infrequently from December through February. Frequent watering in the summer is your key to flowering. Taper watering in the autumn. Some species, such as *Stan. hernandezii*, *Stan. insignis*, *Stan. jenischiana* and *Stan.*



JUDITH HIGHAM

5



GREG ALLIKAS

6



JAY NORRIS

7



MARK VAN DER WOERD

8

- [5] *Stanhopea tigrina* var. *nigroviolacea* 'Tiger Jewels' FCC/AOS; exhibitor: Jonathan Littau.
- [6] *Stanhopea grandiflora*
- [7] *Stanhopea pozoi* 'Goodwood' CHM/AOS; confirmed by SITF (2012); exhibitor: Inge and Peter Poot.
- [8] *Stanhopea maculosa* 'Mysterious Valley Gargoyle' CBR/AOS; confirmed by SITF (2011); exhibitor: Ian Rich; photographer.
- [9] *Stanhopea ruckeri* Vera Cruz' CHM/AOS; confirmed by SITF (2012); exhibitor: David G. Hunt.
- [10] *Stanhopea haseloffiana* 'Huntington Leopard' HCC/AOS; exhibitor: Huntington Botanical Gardens.
- [11] *Stanhopea ospinae* 'Huntington Spotted Gold' AM/AOS; exhibitor: Huntington Botanical Gardens.
- [12] *Stanhopea schilleriana* 'Genevieve' CHM/AOS; confirmed by SITF (2018); exhibitor: Doug Hartong

PULLEY

martiana do best with a cool to cold and dry winter. Stanhopeas are among the easiest orchids to grow. They will grow vigorously and bloom easily under widely varied conditions. Blossoms are fantastically unusual “jungle gems” of curious shape, 4–8 inches (10–20 cm) across and 2–12 per inflorescence, depending on the variety and culture. The inflorescence grows downward through the potting mixture, so they will not bloom in a pot. Flowers hang below the plant. I grow all my seedlings in pots until they bloom (see how to bloom them in pots online at www.dpulleyorchids.com under “orchid info”). Set mature plants (pseudobulbs larger than 1-inch [2.5-cm] diameter) in baskets lined with moss so the inflorescences can find a way out. I recommend 1-inch (2.5-cm) wire mesh, which is easy to cut and form your own square basket 4–5 inches (10–12.5 cm) deep and 5–8 inches (12.5–20 cm) across, lined with moss and filled with mix around the roots. Or you can use plastic baskets from <http://www.orchidbasket.com/>. For my mix, I use approximately 70 percent small bark, 20 percent medium perlite, 5 percent charcoal and 5 percent tree fern chunks, chunky peat moss or coir. The plants can be grown in 100 percent New Zealand sphagnum moss as well. Fertilize with 30–10–10 or a similar formula every two weeks from April to October, less in other seasons. Repotting is necessary every year for fast-growing seedlings, but a mature plant in a basket can wait 2–3 years if it is doing well. If new growths poke out through the basket, just cut the wire around them, and include it inside the new basket. Pests are unusual, except that stanhopeas seem susceptible to mites. If you start seeing multiple small spots on the leaves, spray with a good miticide (Pentac, Mavrik or Talstar); three applications 7–10 days apart. My advice to new orchid hobbyists is to try at least 10–12 different types of orchids. See which ones grow and bloom best for you in your growing conditions. Remember to find the right microclimate, whether in your greenhouse, your backyard or on a windowsill. Even if you do not have a greenhouse, try something new — try stanhopeas.

— Reprinted from the October 2010 issue of *Orchids magazine* (pages 568–571) modernized with new photographs and for spelling-nomenclatural changes.



HOW TO GROW STANHOPEAS

By Inge Poot and Peter Poot

IF YOUR PLANTS ARE growing and flowering well, do not change anything, no matter what works well under our conditions. For example, we saw about 20 species grown in the Montréal Botanical Gardens, Quebec, Canada, much cooler and drier than our plants, but doing well, possibly because the humidity was much higher than in our greenhouse.

WATERING When in growth, all stanhopeas need a great deal of water and fertilizer, perfect drainage and good humidity. In the winter, a little less water is given. Most species should never dry out completely.

And now for the exceptions:

- The first notable exception is the type species of the genus, *Stanhopea insignis*. It needs to be moderately wet at all times but not sopping wet. So, water it less frequently or grow it in a more porous medium.
- The other exceptions are some of the species that come from seasonally dry areas, such as parts of Mexico, and they need a dry rest to set flower buds. Examples are *Stanhopea cirrhata*, *Stanhopea florida*, *Stanhopea jenischiana*, *Stanhopea lietzi*, *Stanhopea maculosa* and, to a certain extent, *Stanhopea martiana*. This species only needs to be kept on the dry side in the winter, not get a true dry rest. Under our conditions, *Stanhopea costaricensis* also needs a dry rest. There may be others. But remember that dry with humidity is not the same as dry without high humidity. What works in the humid tropics does not necessarily work in the north in dry indoor conditions.

GROWING TEMPERATURES We grow our stanhopeas in a 20 × 30 ft (6 × 9 m) double polycarbonate and glass-covered greenhouse, divided in half into a cool and an intermediate section. Adjacent to the greenhouse is a warm light setup. Winter minimums are 50 F (10 C) in the cool section and 60 F (15 C) in the intermediate section, and under lights the minimum is 65 F (18 C). The day temperature of the cool section is set at 60 F (15 C) and in the intermediate and warm sections at 70 F (20 C), but as soon as the sun comes out it goes much higher.



We have an evaporative cooler in the cool section to try to keep as close to the set maximum as possible. The summer day temperatures do go higher than the set maximum temperature.

Species of this genus can be found from sea level to rainy, cool mountaintops and will vary considerably in their temperature requirements.

Most species will grow just fine at intermediate temperatures, but there are exceptions.

WARM GROWERS All the so-called primitive species: *Stanhopea annulata*, *Stanhopea avicula*, *Stanhopea candida* (grown intermediate and not sopping wet in the Montréal Botanical Gardens), *Stanhopea cirrhata*, *Stanhopea ecornuta*, *Stanhopea grandiflora*, *Stanhopea pulla*, *Stanhopea reichenbachiana* and *Stanhopea tricornis*.

The advanced-species warm growers are *Stanhopea frymeri*, *Stanhopea gibbosa*, *Stanhopea haseloffiana*, *Stanhopea insignis* (warm to cool), *Stanhopea napoensis*, *Stanhopea posadae*, *Stanhopea shuttleworthii*, *Stanhopea warszewicziana* (supposedly warm to intermediate, but for us it grows best cool) and *Stanhopea wardii* (warm to cool, so experiment with each of your plants, because the species occurs over a wide geographical range and plants may

be adapted to the local habitats from which they originated).

COOL GROWERS *Stanhopea anfracta*, *Stanhopea deltoidea*, *Stanhopea florida* (intermediate to cool), *Stanhopea graveolens* (but we do fine with it in intermediate temperatures), *Stanhopea guttulata*, *Stanhopea hernandezii* (also okay for us in the intermediate house), *Stanhopea insignis* (grows warm to cool), *Stanhopea jenischiana* (intermediate to cool), *Stanhopea maculosa*, *Stanhopea marizaiana*, *Stanhopea martiana* (inter-

POOT AND POOT

mediate to cool), *Stanhopea nigripes*, *Stanhopea oculata* (intermediate to cool), *Stanhopea ospinae*, *Stanhopea peruviana*, *Stanhopea platyceras*, *Stanhopea ruckeri*, *Stanhopea stevensonii*, *Stanhopea tigrina*, *Stan tigrina* var. *nigroviolacea* (intermediate to cool with flowers lasting better at cool), *Stanhopea wardii* (warm to cool) and *Stanhopea xytriophora*.

LIGHT REQUIREMENTS For most species provide intermediate light intensities up to light given cattleyas, but avoid direct sun. (Cattleya light is the intensity necessary to throw a sharp shadow when you hold your hand over a surface; it is about 2,500–3,500 footcandles.) Most will flower better if given higher light levels. Some warm-growing species, such as *Stanhopea cirrhata*, need partial shade.

FERTILIZING This is important when using an inert medium such as rockwool. We use Michigan State University fertilizer (the version formulated for distilled or rainwater) and a locally distributed similarly formulated hydroponic fertilizer. The fertilizer must supply both macro- and micronutrients because we use rainwater. Our well water contains 250 parts per million (ppm) of solutes and is too hard for most of the orchids we like to grow. We alternate fertilizer with plain water.

AILMENTS Pests and diseases are surprisingly rare in this genus. We find false spider mites are the worst, because the leaves are relatively thin, even if they are leathery. We must act fast when we see the typical spotting or else we will lose the leaves. We use Neem oil at the rate of 2 teaspoons (10 ml) of warm Neem oil plus 1 teaspoon (5 ml) of insecticidal soap concentrate (or dish detergent if we run out of insecticidal soap) in 1 quart (1 L) of warm water. The Neem stinks like rotten onions, but the bugs hate it even more than we do. Repeat the spray two more times at one-week intervals. Neem gets hard at room temperature and that is why everything has to be warm. We find even mice and slugs dislike the smell and we immediately spray with Neem if we see evidence of their presence.

The other rodents we would like to warn you about are squirrels. The red, gray and black species are a menace to stanhopeas. The latter chomps on plants hung outdoors. We had an uncapped chimney on our house and thought it was so cute that the odd red squirrel or chipmunk found their way in via that gap in the chimney caused by the missing cap. However, last autumn as we came back from a weekend of judging in Montréal,

we found the floor of the greenhouse just covered with stanhopea leaves and far too many of the pseudobulbs on the plants either were missing or chewed. We immediately bought some fresh Neem oil from a local grower and sprayed all the plants, and then set out Havahart-brand live traps baited with apple slices. Five red squirrels and two chipmunks later (all transported to a conservation area 30 minutes from our house), we decided enough was enough and had the chimney capped. No more cute visitors, but also no more stanhopea-leaf hayfields.

The other pest we get intermittently is a tiny species of brown scale that loves to hide beside the ribs of the leaves. It takes diligence to not overlook it. The Neem-soap spray takes care of it too, but we have to do at least two courses of three sprays interrupted by just insecticidal soap sprays to avoid plugging up the stomata of the leaves with all this oil.

POTTING When potting, one must take into account that all but the primitive species, including *Stan. candida* and *Stan. grandiflora*, direct their inflorescences downward. The primitives tend to have more horizontal inflorescences, which is not much more convenient. In addition to this, the inflorescences of stanhopeas will abort if they hit a flat surface. They are not programmed to go around anything.

WIRE BASKETS Our experience has been that if we do not want to find dead inflorescences in the medium at repotting time, we had best pot in wire baskets. Even if an inflorescence hits a round wire head on, the growing pressure will cause it to slip past, because there is nothing to get stuck on. Make sure the openings in the wire mesh are not much smaller than 1 inch (2.5 cm), so that the species with fat buds do not get stuck in the openings. There are no such worries with *Stan. wardii* and *Stan. greeri*, because both species have thin buds that do not swell to differentiate before reaching the mature length. The most handsome baskets we have found by far were offered by Ikea, a Swedish furniture and household items store. The baskets are chrome plated and stay shiny and free of rust even after a few years.

If you must use wooden slat baskets, take a file and try to round the slat faces that are facing inward. It is a tedious job, but fewer inflorescences will get hung up. Or construct a basket out of at least $\frac{3}{8}$ -inch (1-cm) diameter dowels. Choose $\frac{1}{2}$ -inch (1.5-cm) diameter dowels for species with buds that enlarge early, such as the two-flowered species, among them *Stan.*

tigrina and *Stan. insignis*, as well as *Stan. costaricensis*, *Stan. embreei*, *Stan. oculata*, and *Stan. graveolens*.

Another no-no is the use of fiber mats like the ones often used in wire baskets that hang to hold summertime annuals. The mats are too dense for any of the species with fat inflorescences to get through. I have seen *Stan. wardii* boring through the bottom, but the flowers were poor, maybe because the medium dried out too much.

MEDIA Because we do not like repotting and feel that under our conditions stanhopeas do not like repotting either, we pot them in absorbent rockwool. We get rockwool in long narrow slabs wrapped in plastic from a greenhouse supply company. Before attempting to use the packaged rockwool we pour some water into the package and only then take out the now sopping-wet rockwool. This avoids creating any lung-health-threatening dust and nasty, stiff fibers getting stuck in our hands. We cut the slabs into chunks that we place around the plants, making sure that the fibers of each chunk run vertically. We tie the whole bundle onto a wire platform with our grandson's discarded, outdated fish lines (or place it into a wire basket), and lastly attach a wire hanger. The rockwool will first grow some unsightly black algae on its surface, but the mess will soon be overgrown with beautiful moss.

Alternative potting media are sphagnum moss (use the longer-lasting long-stranded New Zealand type) and, for people who cannot stop watering, coconut husk pieces (make sure they are leached) or bark mixes work well too. The basket must be lined to hold the coconut chunks or bark pieces. There, sheet moss looks best, with the green side facing down and out.

Watering is done as soon as the surface of the medium starts to dry out. It is hard to rewet dry rockwool, so we try not to wait too long. If the wool dries, we plunge the whole basket into a bucket of water and leave it there for an hour. (I have to set my stove alarm, otherwise I will forget for sure and end up with not only some roots turned to hay, but even more killed by drowning.) Putting a little bit of insecticidal soap into the drenching bucket helps with rewetting.

— Reprinted from the September 2012 *Orchids Magazine* issue (pages 544–545) edited to conform to modern nomenclature and spelling.

Léon Humblot

White Sultan and Plant Hunter Extraordinaire

CLARE HERMANS AND JOHAN HERMANS/PHOTOGRAPHS BY J. HERMANS UNLESS OTHERWISE CREDITED



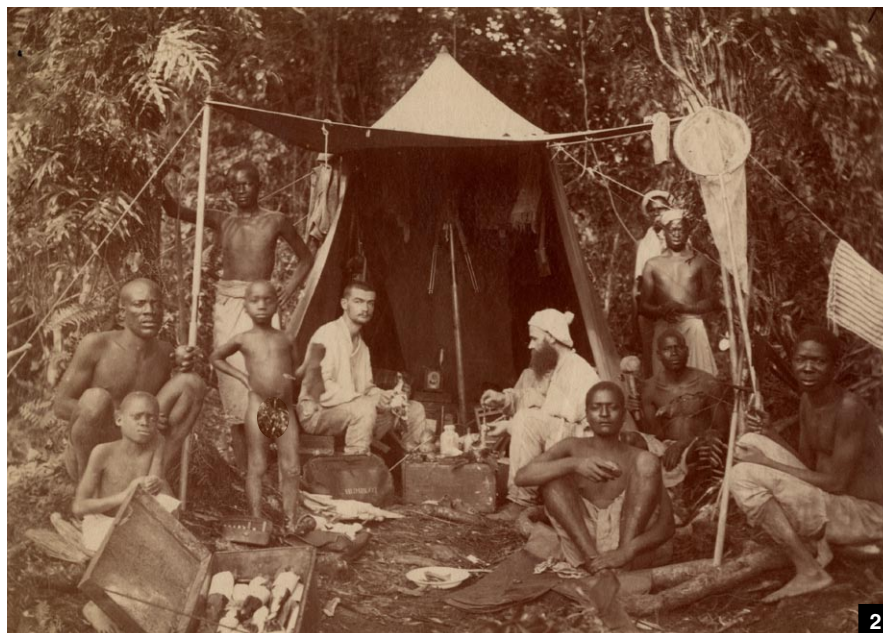
HERMANS AND HERMANS

THE NAME HUMBLOT regularly pops up when researching the flora and fauna of the Indian Ocean islands of Madagascar, and especially of the Comoros islands. The story of his exploits and colonial aspirations are both disturbing and fascinating.

In late 2018, a collection of photographs connected with Léon Humblot came up for sale at Sotheby's in London showing scenes on Grande Comore (now Ngazidja); they are albumen prints and dated ca. 1885. One in particular was of special interest — it shows Humblot, a companion (possibly Léon's nephew Henry) and several others around their tented camp. The photograph gives a glimpse of the explorers' life on the Comoros: they are skinning birds with a box full of specimens in the foreground, collecting tubes and butterfly nets are scattered around, a leather travel bag has "L. Humblot" on it and on the bedside table is a portrait of a woman, possibly Humblot's wife Gabrielle. Other photos in the collection are of local people, including the ruler at the time, Sultan Said Ali Bin Said Omar.

We knew Humblot's name in connection with Madagascan orchids but little about his time in the Comoros, so we had to find out more. Our main sources of information were Humblot's letters to Frederick Sander now in the archives at Kew, his collecting lists in the Museum National d'Histoire Naturelle, Paris, the original descriptions of the iconic orchid species he discovered and various biographical notes shown in the references below. However, much detail still remains sketchy, and there are often gaps of six months or more.

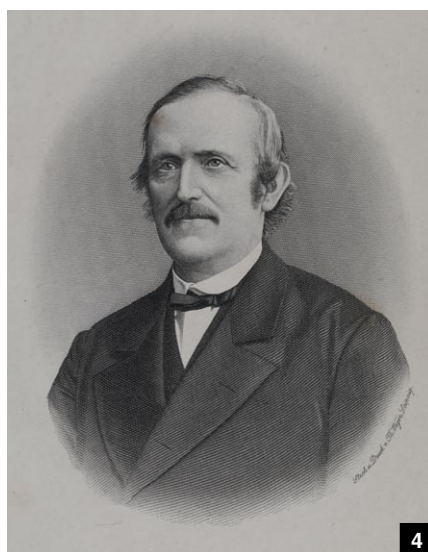
EARLY YEARS The story starts at No. 8, Place d'Alliance, Nancy, France, where Joseph Henry Humblot was born on June 4, 1852, the son of Joseph Antoine Humblot, a market gardener, and Françoise Noirel, his wife. Although christened Joseph Henry he became known as Léon and his closest brother Henry Nicolas was three years his junior. Léon started work at his father's nursery at 22 Rue des Jardiniers in Nancy and sometime later moved to Paris to study horticulture and eventually became a gardener at the Museum National d'Histoire Naturelle. There are secondary records indicating that, shortly after his arrival in Paris, he was sent on a collecting trip to Cuba and Mexico, but it has not been possible to verify this. It is known that in 1878 the Director of the Museum wanted to enlarge the collections, so Humblot was sent on a botanical research



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- [1] There are several color forms of *Gastrochis humblotii*, first imported by Humblot and described by Reichenbach f. in 1880.
- [2] Léon Humblot (in tent with a beard) and possibly Léon's nephew Henry on his left, on a collecting trip sitting in their camp. Grande Comore. Photograph courtesy of Johan and Clare Hermans.
- [3] Center front row Sultan Said Ali Bin Said Omar and members of his entourage. Grand Comore. Photograph Courtesy of Johan and Clare Hermans.
- [4] H.G. Reichenbach f. described many of Humblot's new discoveries. Engraving from Schultze, 1894.

mission to Madagascar. At the same time, Humblot was also engaged as one of Louis Roempler's collectors. Roempler owned a nursery specializing in botanical novelties located very close (13 Rue des Jardiniers) to the Humblot home in Nancy. By 1881, the *Revue Horticole* wrote that it was one of the foremost nurseries in the eastern region of France.

NEW DISCOVERIES FROM MADAGASCAR, 1878 Victorian commercial nurseries often worked with botanical specialists to get their newly imported plants identified and named. After the death of John Lindley in 1865, H.G. Reichenbach *f.* took over describing many of the new orchid species flooding into Europe. Once identified, plants were then sold by the nurseries either directly to customers or through auction rooms; Messrs. Stevens of London was one of the most prominent auction houses. As an example, in February 1877, Reichenbach *f.* described the spectacular *Eulophiella roempleriana*, in his usual flowery language, in the *Gardeners' Chronicle*: "There it is, the newest sailor from Madagascar, if I rightly understand, en route for Mr Stevens' enormous room . . . they have been obtained from Mr. Roempler of Nancy who is said to have made a curious importation from that mysterious island, Madagascar." (p. 240)

Although these first plants were not collected by Humblot, he did find it later and his watercolor of a flower is mounted on a Reichenbach Herbarium sheet in Vienna. At the end of 1878, Reichenbach *f.* wrote again in the *Gardeners' Chronicle*, the journal used for describing most of Humblot's discoveries, about the reintroduction and sale of *Grammangis ellisii* by Humblot and Roempler: "Mr. Humblot hunted a long time with his servants for the plant. Each was got by cutting down the tree on which it sat enthroned, usually quite alone." (p. 333) Few plants remain in the wild today. Other Humblot reintroductions mentioned by Reichenbach *f.* in 1878 were *Graphorkis concolor* var. *alphabetica* and the beautiful *Gastrorchis tuberculosa*.

1879–1880 EXPEDITION TO MADAGASCAR AND THE SANDER CONNECTION It is not clear if Humblot returned to Paris following the 1878 trip, but the Museum put him in charge of a zoological expedition to Madagascar between 1879 and 1880. Humblot's younger brother Henry also traveled to Madagascar in October 1880 as a member of the same expedition. In addition to collecting animal specimens for the



Museum, they were also collecting plants to sell. Reichenbach *f.* named *Gastrorchis humblotii* for Humblot in December 1880: "The large flowers are rosy with white and red blotches according to the statement of its lucky discoverer, Mr. Humblot, who has just succeeded in bringing it over in good health from Madagascar." (p. 812)

Around this time, Humblot had a dispute with Roempler over money and therefore arranged for Frederick Sander's Nursery in the UK to handle his plants. Humblot's letters to Sander start in October 1880, after Humblot's return to Paris. They detail his ongoing financial difficulties with Roempler, and some request Sander to pay him directly. Matters were finally resolved by a tribunal the next year and the arrangement with

Roempler was terminated. Instead, in May 1881, writing from Marseille, Humblot drew up a legal agreement with Sander stating that he would collect exclusively for him, the profits would be split 50:50 and Humblot could donate plants to the Paris Museum. Humblot would be accountable for his own costs getting to Madagascar and within the country but Sander would be responsible for the cost of importing the plants via Réunion and Marseille and then by train to St. Albans. In addition, Sander would be responsible for their cultivation and any publicity.

MADAGASCAR, 1881 At the end of May 1881, Humblot departed for Madagascar having heard that his brother Henry, still in Madagascar, was unwell. Once there he stayed and collected plants



in the Foulepointe (Mahavelona) area, north of the port of Tamatave (Toamasina) on the east coast. Humblot set up a nursery near Tamatave to export his plants and only returned to Paris in September 1881. In October, Stevens published an Auction Catalogue detailing a sale of Léon and Henry Humblot's collections and noted Henry had died of a fever. At no point did Léon mention the fate of Henry in his letters to Sander. However, Frederick Boyle relates in his book *About Orchids: A Chat* (1893) that: "Those parts of Madagascar which especially attract botanists must be death-traps indeed! Mr Léon Humblot tells how he dined at Tamatave with his brother and six companions, exploring the country with various scientific aims. Within twelve months he was the only survivor." (p. 132)

Last year we took a group from the Orchid Conservation Alliance to the same area — luckily all of us returned alive and well!

DEALINGS WITH SANDER AND MARRIAGE In November 1881, Humblot met Sander in Marseille to coincide with a consignment arrival that included *Aerangis fastuosa* described by Reichenbach *f.* in December and more of the commercially desirable *Gastrorchis tuberculosa*. Boyle (1893) wrote about the latter's discovery:

Mr. Humblot himself has had awful experiences. He was attached to the Geographical Survey directed by the French Government and ten years ago



he found *Phajus (Gastrorchis) humblotii* and *Phajus tuberculosa (Gastrorchis tuberculosa)* in the deadliest swamps of the interior. A few of the bulbs gathered lived through the passage home and caused much excitement when offered for sale at Stevens' Auction Rooms. (p. 132)

The same month, Humblot married Gabrielle Legros, whose father was a

- [5] The sensational *Eulophiella roempleriana* was named for Humblot's importer.
- [6] A colored drawing of *Eulophiella roempleriana* by Humblot. Photograph courtesy of The Reichenbach Herbarium, Naturhistorisches Museum, Vienna.
- [7] Many trees were cut down to harvest *Grammangis ellisii* for export, here is one of the remaining plants in Eastern Madagascar.
- [8] *Graphorkis concolor* var. *alphabetica* was exported in great quantities by Humblot.
- [9] *Aerangis fastuosa* was exported in great quantities.
- [10] *Vanilla humblotii* was first collected by Humblot and named for him by Reichenbach *f.* in 1885, it is a leafless species from the Comoros. Growing here in Mayotte. Photograph by Jean-Michel Hervouet.
- [11] Frederick Sander imported many of Humblot's orchids.

Notary at law and Mayor of Épinay-sur-Orge near Paris. In a letter to Sander just before the wedding he said marriage would change nothing. He then sent an invitation for Sander and his wife plus a request for some white orchids for the bridal bouquet. The wedding invitation titles him "Monsieur Léon Humblot, Naturaliste a Madagascar." It is unlikely

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the Sanders attended the wedding, as there is a thank you note for his good wishes and another for the flowers and a gift of a bracelet.

MADAGASCAR, 1882–1883 True to his word, in December Humblot departed again for Madagascar leaving his new wife behind in Paris. He proceeded to Madagascar via Mauritius and did not return until late 1883. During 1882, he was based at Foulepointe and sent many shipments to Sander; his packing lists were included with his letters. In one, he mentioned sending a live aye-aye lemur for the London Zoo if they were interested and would Sander be kind enough to sell his lemurs? A typical orchid list consisted of 1,000 clumps of *Gastrorchis tuberculosa*, 250 *Phaius henryi*, 300 *Aerangis ellisii*, 100 *Angraecum sesquipedale*, 1,000 *Aerangis citrata* and 100 clumps of *Grammangis ellisii*. The *Phaius henryi* is a mystery. It may have been named after Humblot's brother Henry but was never validly published. There is no description in the letters apart from it being pretty with many varieties. Mounted on a Reichenbach Herbarium sheet in Vienna is an unsigned pencil drawing of pseudobulbs labeled '*Phaius henryi* Mad' together with Reichenbach f.'s original description of *Gastrorchis humblotii*. An 1897 specimen at Kew is annotated by Robert Allen Rolfe as "a white variety of *Phaius humblotii* called *henryi* in gardens" but has no other information. An earlier reference to the name is in an article on "New Orchids" by William Watson in 1890 in *Garden and Forest*. He comments *Phaius henryi* was a rose-colored variety of *Phaius humblotii* and plants of both had been shown by Sander at the recent RHS Temple Show. Therefore, given these different portrayals it remains unclear what *Phaius henryi* is.

In another letter in April 1882 Humblot mentioned having a fever and being unable to collect more *Gastrorchis humblotii*. During this long trip he was also sending specimens to the Museum in Paris, and in 1883 alone he sent 1,400.

Disaster struck during 1883 when the Tamatave nursery was destroyed. There are different accounts of the cause. Humblot himself said in a letter to Sander it was from the French bombardment of Tamatave, but other sources later stated it was due to a cyclone or bankruptcy. Most of the subsequent letters were about money, especially Sander's unpaid debt to him rather than concerning the fate of his nursery. Another uncertainty is around the timing and duration of Humblot's illness.



[12] *Angraecum leonis* was first discovered on the Comoros and named for Léon Humblot in 1885.

[13] *Aerangis modesta* from Madagascar.

[14] *Gastrorchis tuberculosa* was exported in great quantities by Humblot.

[15] *Angraecum florulentum* was first collected by Humblot and described by Reichenbach f. in 1885, from the Comoros.

[16] *Angraecum humblotianum* was first collected by Humblot and described by Finet in 1907.

Boyle (1893) reports he was seriously ill and hospitalized on the French island of Mayotte for a year after his second trip collecting *Gastrorchis tuberculosis* and *Gastrorchis humblotii*, though there is no corresponding gap in either the letters or collecting books. Sander states in *Reichenbachia* in 1893 that Humblot was ill following their meeting in Marseille in 1881. Both authors were writing many years after the event, so the exact details and timings are sketchy.

Humblot finally returned to his wife in August 1883. Possibly eager to diversify and therefore find more ways to make money, he agreed to lead a study trip to the Comoros for the French Ministry of Agriculture. He told Sander in January 1884 that he was leaving for Zanzibar and arrived in Mayotte in April. This was the start of his Comorian adventures.

THE COMOROS During 1884 Humblot's letters and shipments to Sander become less frequent. In contrast, the record of plant specimens sent to the Museum show a huge increase where he sent animals, insects and birds as well. The collecting books in the Paris Museum reveal trips to both Mayotte and Grande Comore but none to Madagascar. Grande Comore in particular impressed Humblot, and as head of the French Scientific Mission he met the Sultan of Bambao, Said Ali. The state of Bambao was in the center of the island and was one of many rival sultanates. Humblot and the Sultan got along well and on Humblot's return to Paris in January 1885 he took a letter from the Sultan to the French Government requesting protection and therefore recognition as the island's overall ruler. There is then a gap in the correspondence with Sander, until May when they restart from Paris, although a letter was sent from London in June that does not reveal what Humblot was up to.

Among Humblot's collections were more new species and in June Reichenbach *f.* described *Vanilla humblotii* and *Angraecum leonis* from the Comoros. Reichenbach *f.*'s notes (p. 726) about the Vanilla include: "Never before have I seen such well dried Vanilla flowers. They have evidently been prepared in hot sand — an excellent idea. . . . This great ornament of the African Flora was discovered by my excellent friend Mr. Leon Humblot, to whom it is dedicated with great pleasure." (p. XXX)

He also wrote about the angraecum: "A magnificent discovery of Mr. Leon Humblot, of course dedicated to this intrepid traveler. . . . A very stately thing,



quite novel as to the leaves, taking little space, and bearing large flowers — is this not sufficient to make a collector's heart beat with satisfaction?" (p. 726)

The same species was later also found on Madagascar. In addition, Reichenbach *f.* devoted two entire articles to Humblot's Comorian collections in *Flora* (1885), listing over 60 species, more than half of them new to science.

GRAND AMBITIONS By the time of Humblot's return to Grande Comore in autumn 1885 he had much grander plans than just collecting plants and animals. In November he procured the signature of the Sultan Ali establishing the basis for a Grande Comore Protectorate. Although the French government may not have been unaware of this, the treaty made France the most favored partner. It also included Humblot's exploitation treaty in which he was supposed to pay 10 percent of any profits to the Sultan. It ensured Humblot had the monopoly and right to exploit all land above 655 feet (200 m) without tax or rental. The Sultan even had to supply the workers but in return Humblot had to provide 500 jobs for five years or lose his monopoly. Immediately after signing the treaty, the Sultan went to war with his southern neighbor, a battle he lost, and he was captured and then required the intervention of the French army. As a consequence, in January 1886 Grande Comore became a French Protectorate and Humblot came to be the French Government Representative. It was during this period Humblot took many of his photographs. Several have survived, including general views of

[17] The diminutive *Bulbophyllum humblotii* was named for Humblot in 1891.

[18] *Eulophia megistophylla* was first collected by Humblot and described by Reichenbach *f.* in 1885, from the Comoros.

the island as well as ones of Sultan Ali and other Comorian dignitaries, only a few were of local orchids and include *Angraecum eburneum* and *Angraecum leonis* in the wild and a vase of *Eulophia livingstoneana* (to view these photos, visit <http://www.comores-online.com/collections/gravures/humblot.htm> and <http://www.comores-online.com/mwezinet/histoire/images.htm>).

It was the beginning of Humblot's systematic stranglehold on the island. He quickly set about establishing a plantation, naming it Société Humblot and ran it with his brother-in-law Charles Legros. It consisted of hundreds of thousands of trees for the production of essential oils and spices, and he even pioneered the commercial cultivation of vanilla. He apparently was not popular to work for and imported many workers from abroad, including slaves. An interesting anecdote is in a letter to Sander dated April 1886 when he requested Sander to send him books on the slave trade via his wife in Paris, though he does not say why he wanted them. As well as his business ventures, Humblot continued to send orchids to Sander during 1886 and arrived back in Paris in September. In November he wrote to Sander telling him he regrets that one of the consignments reached St Albans

during a frost. He later commented he was surprised Sander felt his expense claim of 7,600 French francs was exaggerated as it covered his 14-month voyage and Sander erroneously thought he was being funded entirely by the French Government. The outcome of this dispute is unknown as Humblot's letters to Sander cease in December 1886. Nonetheless, one of his Madagascan collections was presented by Sander to Kew and was later described by Sir Joseph Dalton Hooker in 1889 as *Angraecum germinyanum*. Reichenbach f. described another Comorian specimen in 1888 as *Angraecum sanderianum* (= *Aerangis modesta*) naming it after Sander himself: "The name is intended to commemorate Mr. F. Sander's high merits in populating our collections." Another species associated with Humblot's name is *Cymbidiella humblotii* (= *Cymbidiella falcigera*) which was described by Rolfe in 1892 from an unnamed Humblot Madagascan specimen at Kew.

THE WHITE SULTAN There is then another gap in the timeline until May 1887 when Humblot formally sets up a company, La Société de la Grande-Comore, in Paris. He returned to Grande Comore in June and persuaded the Sultan to let him have more land on the pretext that the forests were the source of illness. In the process, however, Humblot deprived many locals of their land. Humblot then set up shops, farms, a sawmill and factories throughout the island and made his base at Nyumbadju. Finally, in November 1889 he became the Resident and earned the nickname "White Sultan" as he had become so untouchable. The business prospered and his nephew Henry joined in 1891. However, relations with the local people deteriorated and there were riots in 1890 and 1891 against both the Sultan and Humblot. Subsequently, their respective positions of Sultan and Resident were restored but their friendship never recovered. Humblot's dubious activities did not escape the attention of the French Government and he was stripped of his Resident title in 1896 following charges of corruption. Nonetheless, Humblot continued to have political influence, and he was involved in the deposition and subsequent exile of the Sultan in 1897. He blatantly overstepped the mark when he registered the seized lands in his own name in 1899. This was probably one of the triggers for Sultan Ali to seek redress in the Parisian courts. Humblot was sued for unfair practices and after many years the Tribunal finally found in the Sultan's favor in 1912. The Sultan's victory was

short-lived as he died in exile in Tamatave in Madagascar in 1916, although he did outlive Humblot, who died in March 1914 at Nyumbadju where his tomb remains. There is uncertainty about the cause of Humblot's death: some reports say it was due to a fall on a rock and subsequent cerebral congestion, others say it was an embolism. It is also unclear if his wife ever joined him at Nyumbadju, but it is reported that many of his descendants still live on Grande Comore. This enigmatic and controversial man leaves a legacy of numerous new orchids based on his collections including *Aerangis spiculata*, *Angraecum florulentum*, the diminutive *Angraecum humblotianum*, *Bulbophyllum humblotii*, *Oeceoclades megistophylla*, *Neobathiea grandidieriana* and many more. In addition, he sent over 2,000 other plant species, more than a third of them new, to the Paris Museum and other herbaria, together with more than a thousand butterflies, molluscs and numerous birds. Aside from orchids, Humblot's name is commemorated by the botanical genera *Humblotia* (now *Drypetes*), *Humblotiella* (a genus of ferns), and *Humblotiodendron* (now *Vepris*), the bird species Humblot's Heron (*Ardea humbloti*) endemic to Madagascar, the Grande Comorian endemics Humblot's Flycatcher (*Humblotia flavirostris*) and Humblot's Sunbird (*Cinnyris humbloti*), also endemic to Mohéli (Mwali). His contribution to orchids is immense but his impact on the history of Grande Comore is more contentious.

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Acknowledgments

We are most grateful to the authorities



[19] *Neobathiea grandidieriana* was first collected by Humblot in Madagascar and described by Reichenbach f. in 1885

and staff of the Royal Botanic Gardens, Kew and the Muséum National d'Histoire Naturelle, Paris (MNHN) for access to archive material, and to Germinal Rouhan of the MNHN, Jean-Michel Hervouet and Etienne Vennetier for their advice and photographs.

— Clare Hermans is the Chair of the Royal Horticultural Society Orchid Committee (clare.jepsen@btinternet.com).

— Johan Hermans is an Honorary Research Associate, Royal Botanical Gardens, Kew.

Rlc. Rubescence 'SVO' AM/AOS

A Lucky Chance and its Hybrids

TEXT AND PHOTOGRAPHS BY FRED CLARKE

HYBRIDIZING HAS BEEN a big part of my orchid experience and has grown into 48,000 sq ft (4.459 sq m) of greenhouses filled with hundreds of thousands of plants. The first orchid plants I purchased were from a nursery that specialized in hybridization, and after a behind-the-scenes tour of their breeding collection and propagation lab, I realized at 19 years old, that I wanted to do the same. Shortly thereafter, I made my first cross.

Since that beginning, I have become a passionate breeder who is highly motivated to develop new hybrids. What drives my passion? It is many things: considerable thinking and research before making the cross, watching the seed capsules ripen, sowing the seed, deflasking and caring for the seedlings to maturity, and then, after years of waiting, seeing the first plants bloom. That is what inspires me! We should all understand that witnessing a plant bloom for the first time is truly a

special experience, as you are the first person in the history of the world to see those flowers. Whoa!

The acquisition of worthy breeding plants and understanding how to unlock their potential in hybrids is the task of the hybridizer. When successful, the rewards are very gratifying. Where does one start? First is the selection of a breeding objective. It is important to identify your goal, as this will guide your decisions and, importantly, give you a way to know when you have achieved your objective. Your goal will be influenced by several factors, including what kinds of flowers you like and the parental plants you have at your disposal. Depending on the objective you may need to undertake a more patient approach, searching out desirable parental stock. Worthy breeding plants can be difficult to acquire, and often they are tightly held and expensive.

Sometimes you just get lucky. About 20

years ago, I was visiting the nursery of Frank Fordyce, who will forever be immortalized as one of the most influential breeders of mini and compact cattleyas. Frank was selling flasks of *Rhyncholaeliocattleya* Oconee 'Mendenhall' AM/AOS × *Cattleya* Seagulls Apricot 'Choice Morsel'. I knew from experience that *Rlc.* Oconee 'Mendenhall' AM/AOS had a prestigious breeding heritage and passed several important dominant traits to its progeny: rich deep color, good shape, and a ruffled dark burgundy lip. Frank was impressed by a new miniature cattleya hybrid that was just beginning to demonstrate its breeding potential, *C.* Seagulls Apricot (California Apricot × *coccinea*). The strong influence from *C. coccinea* makes this grex very showy, and its flowers have round shape and rich red to orange color, while the plants are small, only 6 inches (15.2 cm) tall.



[1a-c] The parentage of *Rlc.* Rubescence; [1a] *Rlc.* Oconee 'Mendenhall' AM/AOS, [1b] *C.* Seagulls Apricot 'Choice Morsel', [1c] *Rlc.* Rubescence 'Sunset Valley Orchids' AM/AOS

Frank described his expectations for this cross as something like "the large flowers will be well-rounded with flat petals in deep red, with impressive dark burgundy lips, all produced from midsized plants." His reputation and enticing description of the potential for this cross were too tempting for me to overlook, and I handed over \$75 to purchase one flask. About 15 plants grew to maturity, and three had excellent

quality flowers and good plant habits. These cultivars were named 'Sunset Valley Orchids', 'Little Brother' and 'Creation'. Shortly after I flowered my first plants, Frank Fordyce registered the grex as *Rlc.* Rubescence.

One plant in particular had outstanding flower quality, was a vigorous grower and had an important and desirable trait of blooming twice a year. This plant was

awarded as *Pot.* (now *Rlc.*) Rubescence 'Sunset Valley Orchids' AM/AOS in 2003. From the time of that serendipitous flask purchase three years had elapsed; an example of the 'long game' needed when acquiring potential breeding plants. *Rhyncholaeliocattleya* Rubescence 'Sunset Valley Orchids' AM/AOS has gone on to become a champion parent in our hybridizing programs.

CLARKE

Rhyncholaeliocattleya Rubescence imparts many important and desirable qualities: deep red color, flat rounded petals, ruffled lips in deep burgundy, compact to small plant stature and twice-a-year blooming habit. It also imparts a few faults: low flower count, generally only one

or two blooms and a short inflorescence. With an understanding of these floral traits and plant habit, the next step is unlocking *Rlc.* Rubescence's potential and overcoming its faults with the appropriate partners to achieve long-term breeding objectives.

Here are some of the successes that have been achieved using *Rlc.* Rubescence. Dominant traits that are passed to its progeny include rich color, round flat petals, and ruffled dark red lips.



[2a-c] In making this cross, the objective was to improve form and intensify color. *Rhyncholaeliocattleya* Lebenkreis (*C.* Circle of Life × Rubescence) resulted in many fine cultivars, and the influence of the wide petals from *C.* Circle of Life made for well-formed flowers. Flower count was limited to 1 or 2 blooms. *Rhyncholaeliocattleya* Lebenkreis has begun to demonstrate excellent potential as a breeder. [2a] *C.* Circle of Life, [2b] *Rlc.* Rubescence and [2c] *Rlc.* Lebenkreis.



[3a-c] Here we expected to improve flower size, maintain excellent form and develop a full, ruffled lip. *Rhyncholaeliocattleya* Louise Clarke (Rubescence × Golden Circle) is named for my mother, so it had to be good! With beautifully shaped flowers and full ruffled lips, these look a lot like large standard cattleya flowers, but the plant is only 7 inches (17.8 cm) tall with 3.5-in (8.9-cm) flowers and starts blooming in a 3-in (7.5-cm) pot. [3a] *Rlc.* Rubescence, [3b] *Rlc.* Golden Circle and [3c] *Rlc.* Louise Clarke.



[4a-c] With this cross, the goal was to reduce plant size to miniature cattleya stature and develop flowers in deep red with full dark lips. *Rhyncholaeliocattleya* Loud Nine (Rubescence × *C.* Orpetii) represented an important improvement in miniature cattleya breeding: fuller lip shape (no collagen injections required). The flower count is one or two per stem, and color is off the charts! The name is a play on words, not a typo, but I was on cloud nine when the first of these bloomed! [4a] *Rlc.* Rubescence, [4b] *C.* Orpetii and [4c] *Rlc.* Loud Nine.

CLARKE



[5a-c] The goal here was to reduce plant stature while keeping the intense red to crimson flower color. *Rhyncholaeliocattleya* Higher Multiplier (Rubescence x *C. Pink Doll*) gave us very consistent progeny. Every plant from this cross had round, flat petals of outstanding color and darker ruffled lips. Flowers were almost 3-inches (7.5 cm) across on plants only 5 inches (12.5 cm) tall. [5a] *Rlc.* Rubescence, [5b] *C.* Pink Doll and [5c] *Rlc.* Higher Multiplier.



[6a-c] We have learned that crossing a miniature cattleya to *Rlc.* Rubescence reliably produces plants with small stature and flowers of excellent form and color. *Rhyncholaeliocattleya* Velvet Rubies (Rubescence x *C. Tangerine Jewel*) is aptly named, as the flowers are just that: intense velvety texture and ruby red color. The intrinsic beauty of this flower comes from the conformation and balance of the floral segments. [6a] *Rlc.* Rubescence, [6b] *C.* Tangerine Jewel and [6c] *Rlc.* Velvet Rubies.



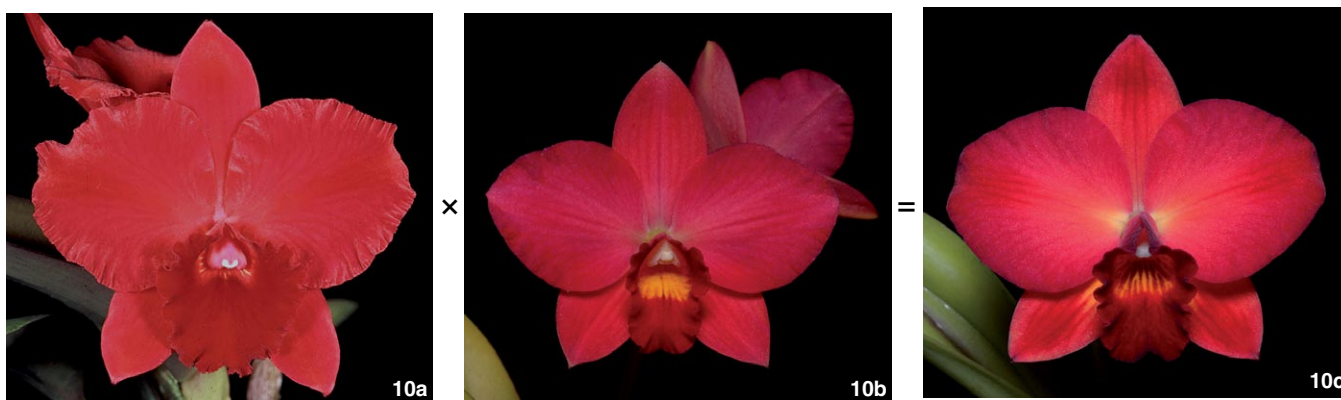
[7a-c] *Rhyncholaeliocattleya* Oconee is in the background of both parents in this cross, assuring good flower shape and deep red color with very dark full-formed burgundy lips. *Rhyncholaeliocattleya* Crimson Christmas (Elaine Taylor x *C.* Rubescence) resulted in deep red flowers with beautiful form and a dark red lip. Two flowers, 3.5 inches (8.9 cm) across are carried on 8 inch (20.3 cm) tall plants. [7a] Elaine Taylor, [7b] *Rlc.* Rubescence and [7c] *Rlc.* Crimson Christmas.



[8a-c] In this cross we expected that about half the offspring would be solid red and the others flared, and we anticipated that the flares would incorporate some yellow from the lip of Cosmic Delite. *Rhyncholaeliocattleya* Ruby Delight (Rubescence × *C. Cosmic Delite*) produces deep red flowers with darker red stripes and flares! [8a] *Rlc.* Rubescence, [8b] *C. Cosmic Delite* and [8c] *Rlc.* Ruby Delight.



[9a-c] Here we expected *C. Minipet* to reduce plant size and flatten flower form. This unregistered miniature cattleya cross (Rubescence × *C. Minipet*) produced 1–2 very flat flowers in intense red, blooming in 3-in (7.5-cm) pots with flowers 3 inches (7.5 cm) across! [9a] *Rlc.* Rubescence, [9b] *C. Minipet* and [9c] one of the first of the grex to flower.



[10a-c] The objective of this cross was to reduce plant size while retaining good shape and intense red color in the flowers and improving presentation and inflorescence strength. *Rhyncholaeliocattleya* Memoria Alida Laboy (Rubescence × *C. Virginia Dickey*) produced a high percentage of good quality flowers. This miniature blooms in a 3-in (7.5-cm) pot, with sturdy stems supporting 2–3 blooms that are 2.5 inches (6.3 cm) across and flat with well-rounded segments in shades of red. This is a real winner! [10a] *Rlc.* Rubescence, [10b] *C. Virginia Dickey* and [10c] *Rlc.* Memoria Alida Laboy.



[11a-c] A long-term goal at Sunset Valley Orchids has been the development of crosses that produce higher counts of shapely red flowers. In pursuit of that goal, this cross and *Rlc. Rubescent Fire* were made at the same time. In this cross *Rhyncholaeliocattleya Star Fire* (*C. Trick or Treat* × *Rubescence*), flower count is increased but some of the full, rounded *Rubescence* shape is lost. These compact plants produce 7 to 9 blooms with a full starchy shape on a sturdy stem. [11a] *C. Trick or Treat*, [11b] *Rlc. Rubescence* and [11c] *Rlc. Star Fire*



[12a-c] This cross also was designed to increase flower count and have well-supported flowers in red with darker red lips. *Rhyncholaeliocattleya Rubescent Fire* (*C. Spring Fires* × *Rubescence*) surprised us. The full-shaped flowers and the intensely dark lip were more impressive than expected. The compact plants have sturdy stems holding 4 to 5 sparkling deep red flowers. We think the next step is to breed this with *Rhyncholaeliocattleya Star Fire* and *Rlc. Rubescent Magic*, and we expect to produce high flower counts and improved shape of red blooms with darker lips. [12a] *C. Spring Fires*, [12b] *Rlc. Rubescence* and [12c] *Rlc. Rubescent Fire*.



[13a-c] *Rhyncholaeliocattleya Rubescent Magic* (*C. Tokyo Magic* × *Rubescence*) broke from the traditional red flower color of *Rlc. Rubescence* breeding by pairing it with the well-known *C. Tokyo Magic*. We were expecting sunset colors, full dark red lips and sturdy stems of 4 to 5 flowers. The pronounced red flaring on the tips of the segments was a nice surprise, although not unexpected as many crosses of *C. Tokyo Magic* can have similar markings. [13a] *C. Tokyo Magic*, [13b] *Rlc. Rubescence* and [13c] *Rlc. Rubescent Magic*.



x



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[14a-c] This unregistered cross of *Cattleya* Purple Doll x *Rlc.* Rubescence is one of the first crosses with *Rlc.* Rubescence to produced purple-flowered miniature cattleyas. The depth of color and sparkling texture of this unnamed grex is just outstanding. Add to that the full shape, contrasting lip and 3 in (7.5 cm) flower size, all from a 3-in (7.5-cm) pot! [14a] C. Purple Doll, [14b] *Rlc.* Rubescence and [14c] one of the first of the grex to flower.

Rhyncholaeliocattleya Rubescence has demonstrated excellent qualities as a parent, transmitting many positive traits to its offspring and moving our hybridizing program forward. But what about its progeny? How will they behave as parents? What should the breeding objectives be? Larger flowers on smaller plants? Or what about large, round, flat, deep red flowers with full ruffled dark burgundy lips on sturdy stems holding 5–6 flowers above the foliage, blooming first in a 3-in (7.5-cm) pot and reaching maturity in a 4-in (10-cm) pot? And let us add that these should bloom three times a year, be easy to grow, root out twice a year, break multiple leads, and be disease and pest resistant.

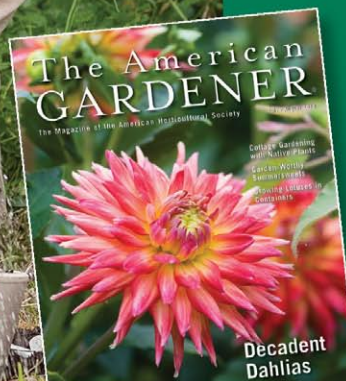
Did I forget anything? Now is the time to make crosses and see how many of these objectives can be attained.

We have only scratched the surface in unlocking the hybridizing potential of *Rlc.* Rubescence and its progeny. I can assure you that seeing many of these offspring bloom for the first time truly has been a special experience, as I was the first person to see those amazing flowers. Sometimes you just get lucky!

Acknowledgments

I am indebted to Ron Kaufmann and Sue and Terry Bottom and honored to have them as my editors. Their combined insight and wisdom truly are beneficial.

—Fred Clarke owns and operates *Sunset Valley Orchids*, which is dedicated to developing hybrids and producing select species for the orchid enthusiast. He has been growing orchids for over 40 years and hybridizing for 38 of those years. He is committed to the education of orchid hobbyists around the world in the culture of their plants. Fred is an accredited American Orchid Society judge in the Pacific South Judging Region. His hybrids have received hundreds of quality awards for orchid enthusiasts from the American Orchid Society and other orchid societies worldwide (email: fred.clarke@att.net; website: www.sunsetvalleyorchids.com).



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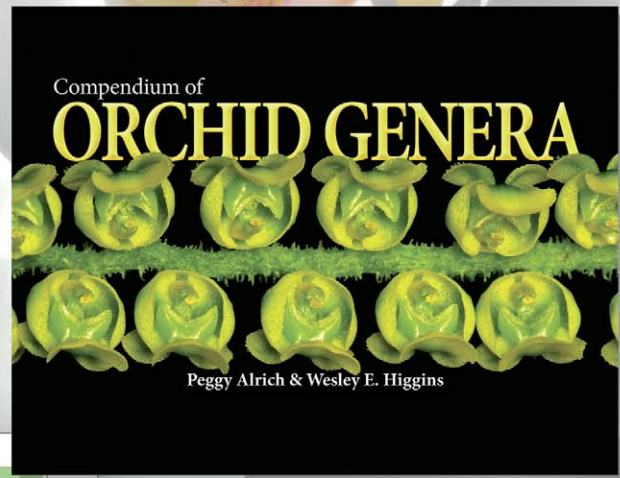
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Angraecum Reyer
Epiphyllanthoides Vahlstr. *Angraecium*

ETYMOLOGY: From the Latinized form of the Malay word (*Angraek* or *Angraek*) for the epiphytic orchids that resemble *Angraecum* and *Vanda* in habit. The name *Angraecum* originated with Georg Eberhard Rumphius (1628-1702), who coined it from the word *Angraek*, a name also given by the Malabars to "parrot-like" *Lycodiscus* plants, the meaning of which has not been discovered. From *Frageblatter* Kuntze (1851-1730) we learn that *Angraek* or *Angraek* is also the name used by the Indians for these plants.

GENETICS: *Angraecum* *chrysanthum* Reyer
Monocladum *Angraecum* *terrestris*

More than two-hundred twenty-one, very small to very large monopodial epiphytes, a few lithophytes or rare terrestrials have a wide range of distribution in humid, low to mid elevation, coastal to hill scrub, savannas to montane evergreen forests of mainly tropical Africa (Guinea to Somalia, Calicut to Zanzibar and South Africa), Madagascar, Mauritius to Réunion, although one species is found as far away as the Seychelles and Sri Lanka. These miniature to large, rambling to clump-forming, warm to cool growing plants are vegetatively and florally quite diverse. The short to long, sometimes branched stems are leafy throughout with fleshy to leathery, channelled, unequally bilobed, usually ditch-like leaves. The one to several, short to long, solitary to few-flowered inflorescences have long-lasting, small to large flowers in shades of white, ivory or green with sepals and petals free, usually spreading. The flowers are noted for their spots of widely varying lengths from quite long to short. The flowers have a thick, almost leathery texture, an exceptionally long flowering period, and an extraordinarily heavy nocturnal fragrance (usually within the long spurred species) and the lip is larger than the other segments. The shell or boat-shaped, simple or obscurely lobed lip is usually quite concave, its base more or less encircles the column, and it has a central callus. The flowers have a very short, footless column with deeply divided lobes. Pollinia 2, waxy, each attached to its own narrow or elliptic viscidium. **Culture:** Growing conditions and habitat options vary widely from species to species. Generally they do best mounted on a fern slab with good drainage and most of the species benefit from a resting period of reduced watering. Provide intermediate conditions, bright to diffused light, high humidity and good air movement.

Valid Angraecum Synonyms

Aerobion Kuntze ex Sprengel
Sig. Sprengel, ed. 18, 8:479 & 716 (1826).
Ernostron Greek for air and life. Referring to the epiphytic habit of the plants.
Lectoreve *Aerobion asperulum* (Thouars) Sprengel (*Angraecum* Thouars)
Angraecum *Gen. del.*, 8028 (1817).

Now recognized as belonging to the genus *Angraecum*, *Aerobion* was previously considered to include twenty-four epiphytes found in warm, mid elevation, montane forests of Madagascar and the Mascarene Islands.

Angraecoides (Candolle) Schlachter, Mynik & Grochoccka
Biodivers. Res. Conservation, 28: 9 (2013).

Ernostron *Angraecum*, a genus of orchids, and Greek for likeness or form. Refers to a similarity to *Angraecum*.

Two Secas *Angraecoides pinguis* (Frappet) Schlachter, Mynik & Grochoccka (*Angraecum pinguis* Frappet)

Now recognized as belonging to the genus *Angraecum*, *Angraecoides* was previously considered to include twenty-five epiphytes found in cool, mid elevation, hill scrub and montane forests in northwestern Madagascar, Mauritius and Réunion.

Arachnangraecum (Schlechter) Schlachter, Mynik & Grochoccka
Biodivers. Res. Conservation, 28: 11 (2013).

Ernostron Greek for spider and *Angraecum*, a genus of orchids. Refers to the long, spider-like segments.

Two Secas *Arachnangraecum ramosum* (Thouars) Schlachter, Mynik & Grochoccka (*Angraecum ramosum* Thouars)

Now recognized as belonging to the genus *Angraecum*, *Arachnangraecum* was previously considered to include thirteen epiphytes found in cool, mid elevation, hill scrub and montane forests in found in northwestern Madagascar, Mauritius and Réunion.

Bonnieria Coudouy
Rev. Gén. Bot., 11: 416, Pl. 10-11 (1899).

Ernostron In appreciation of Eugène Marie Gaston Bonnier (1853-1932), a French botanist, editor of *Revue Générale de Botanique* and publisher of Candolle's notes on the orchids of Réunion.

Two Secas *Notre dérogation*

Now recognized as belonging to the genus *Angraecum*, *Bonnieria* was previously considered to include two epiphytes found in mid to upper elevation, bushy montane rain forests of Réunion.

Boryangraecum (Schlechter) Schlachter, Mynik & Grochoccka
Biodivers. Res. Conservation, 28: 12 (2013).

Ernostron Named for Jean Baptiste Bory de Saint-Vincent (1778-1848) a French naturalist and author of *Voyage dans les îles d'Afrique*. And *Angraecum*, a genus of orchids.

Two Secas *Boryangraecum pumilio* (Schlechter) Schlachter, Mynik & Grochoccka (*Angraecum pumilio* Schlechter)

Now recognized as belonging to the genus *Angraecum*, *Boryangraecum* was previously considered to include thirteen epiphytes found in cool, mid elevation, hill scrub and montane forests in found in Madagascar, Mauritius and Réunion.



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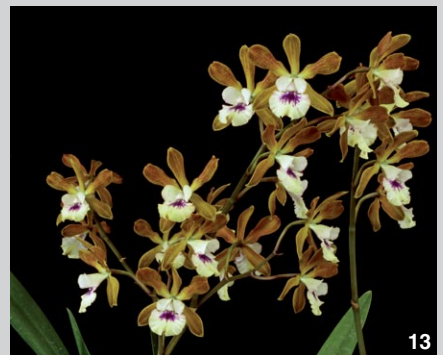
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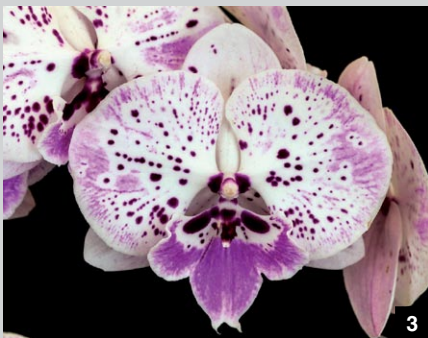
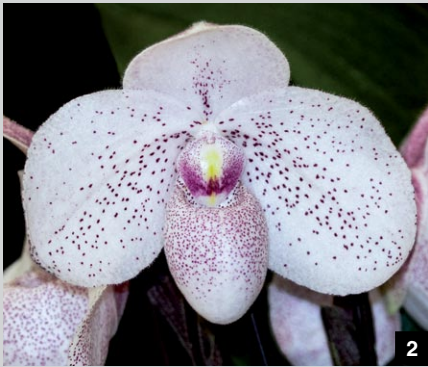


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- [1] *Paphiopedilum* Shin Yi Gigantic 'Wacousta' HCC/AOS (Lady Rothschild x *gigantifolium*) 79 pts. Exhibitor: Dorothy Potter-Barnett; photographer: Ed Cott. Great Lakes Judging
- [2] *Bulbophyllum* Agathe 'Max' HCC/AOS (*siamense* x *phalaenopsis*) 79 pts. Exhibitor: Max C. Thompson; photographer: Bryon Rinke. Great Plains Judging
- [3] *Paphiopedilum* Chiu Hua Dancer 'Wacousta' AM/AOS (*gigantifolium* x *sanderianum*) 81 pts. Exhibitor: Dorothy Potter-Barnett; photographer: Ed Cott. Great Lakes Judging
- [4] *Vanda* Kalapana Delight 'Sunrise' HCC/AOS (Spotted Denis x Chao Praya Sapphire) 78 pts. Exhibitor: Sarah Pratt; photographer: Bryon K Rinke. Great Plains Judging
- [5] *Paphiopedilum* Fred's Allure 'Slipper Zone Dorsal Supreme' HCC/AOS (President Fred x Raisin Magic) 77 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging
- [6] *Cattleya purpurata* 'Shogun's Dancing Angels' HCC/AOS 77 pts. Exhibitor: Shogun Hawaii- Matthias Seelis; photographer: Glen Barfield. Hawaii Judging
- [7] *Paphiopedilum* Odette's Desire 'Slipper Zone Burgundy Maud' AM/AOS (Odette's Spell x Petula's Magic) 82 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging
- [8] *Paphiopedilum* QF Voodoo 'Dorothy Mae' HCC/AOS (Voodoo Kitty x Lorraine's Pride) 76 pts. Exhibitor: Jay C. Simon; photographer: Bryon K Rinke. Great Plains Judging
- [9] *Phragmipedium caudatum* 'QF Sandy Song' AM/AOS 84 pts. Exhibitor: Quintal Farms, Inc.; photographer: Glen Barfield. Hawaii Judging
- [10] *Paphiopedilum superbiens* var. *curtisii* 'Quintal Farms' CCM-AM/AOS 86-84 pts. Exhibitor: Quintal Farms, Inc.; photographer: Glen Barfield. Hawaii Judging
- [11] *Cattleya warscewiczii* (Semi-alba) 'Pauline Brault' CCE/AOS 94 pts. Exhibitor: Shogun Hawaii- Matthias Seelis; photographer: Glen Barfield. Hawaii Judging
- [12] *Cattleya warscewiczii* (Coerulea) 'Mirtha Isabel Oliveros' HCC/AOS 75 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [13] *Louiscappeara* Richard Ace Otaki 'Hawaii' AM/AOS (Queen Adelia x *Encyclia randii*) 81 pts. Exhibitor: Hawaii Hybrids, LLC; photographer: Glen Barfield. Hawaii Judging
- [14] *Phragmipedium* Peruflores Spirit 'Dorothy Mae' AM/AOS (*kovachii* x Eric Young) 80 pts. Exhibitor: Jay C. Simon; photographer: Bryon K Rinke. Great Plains Judging
- [15] *Cattleya purpurata* (Flamea) 'Shogun on Fire' CCE-AM/AOS 90-84 pts. Exhibitor: Shogun Hawaii- Matthias Seelis; photographer: Matthias Seelis. Hawaii Judging
- [16] *Encyclia adenocaula* 'Orchid Eros' HCC/AOS 77 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging





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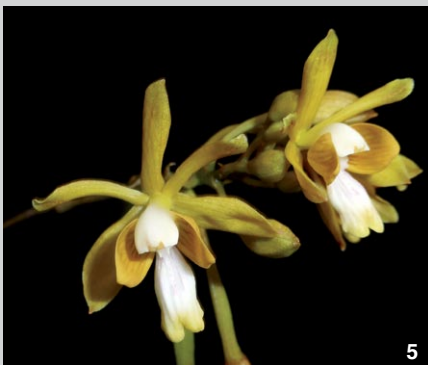
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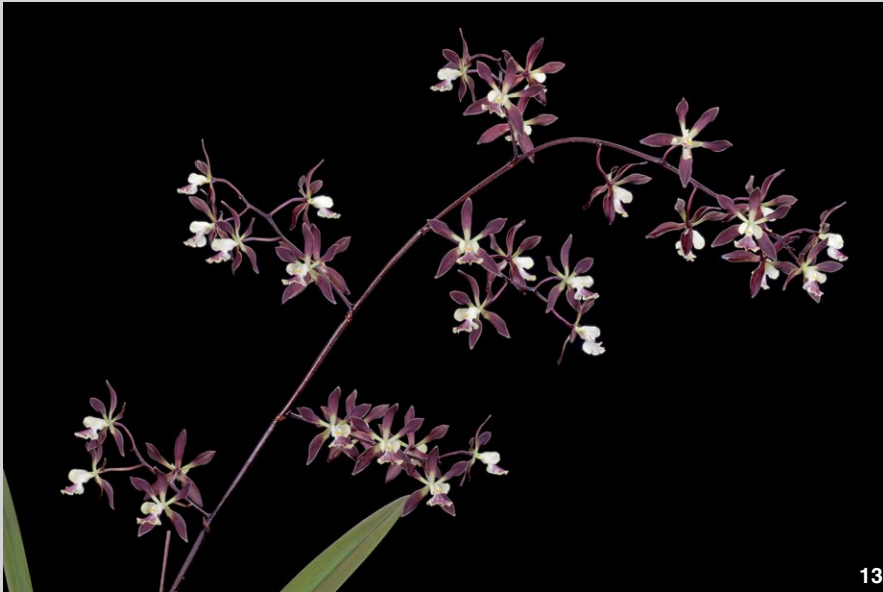
- [1] *Mystacidium* Neil McCormick 'Bryon' HCC/AOS (*capense* x *braybonae*) 78 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging
- [2] *Paphiopedilum* Vanda M. Pearman 'Freckles' AM/AOS (*bellatulum* x *dele-natii*) 81 pts. Exhibitor: Carol R. Stauder; photographer: Larry Hennessey. Houston Judging
- [3] *Phalaenopsis* Lioulin Pretty Lip 'Gene and Jeanette' HCC/AOS (Yu Pin Fire-works x Chian Xen Mammon) 76 pts. Exhibitor: Richard Crespin; photographer: Larry Hennessey. Houston Judging
- [4] *Vanda* Greg Scott 'Georg Hirsch' AM/AOS (*merrillii* x *tessellata*) 81 pts. Exhibitor: Meta Flanagan; photographer: Larry Hennessey. Houston Judging
- [5] *Paphiopedilum* Odette's Whimsy 'Slipper Zone Why' AM/AOS (Odette's Fantasy x Friedrich von Hayek) 81 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging
- [6] *Cattleya* Pacavia 'Sebastian Ferrell' AM/AOS (*purpurata* x *tenebrosa*) 85 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [7] *Cattleya tenebrosa* 'Sebastian' CCM/AOS 85 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [8] *Dendrobium* Jairak Spin 'Amoré' AM/AOS (*superbiens* x Sakol) 82 pts. Exhibitor: Sharon Meola; photographer: Larry Hennessey. Houston Judging
- [9] *Enantheleya* Twilight Magic 'Windy Hill' HCC/AOS (Middleburg x *Encyclia alata*) 78 pts. Exhibitor: Marilyn LeDoux; photographer: Melissa Garner. Mid-America Judging
- [10] *Rhynchostylis retusa* var. *alba* 'Waterfield' HCC/AOS 77 pts. Exhibitor: Norman Mizuno; photographer: Glen Barfield. Hawaii Judging
- [11] *Catasetum* Dagny 'Windy Hill's Falkor' FCC/AOS (*pileatum* x Brent's Black Hawk) 91 pts. Exhibitor: Marilyn LeDoux; photographer: Melissa Garner. Mid-America Judging
- [12] *Paphiopedilum* Armeni White 'Kathleen's White Knight' HCC/AOS (*armeni-acum* x *dele-natii*) 79 pts. Exhibitor: Kathleen Harvey; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [13] *Cattleya* Tokyo Life 'Erin' HCC/AOS (Tokyo Magic x Circle of Life) 78 pts. Exhibitor: Chris and Loretta Rehmann; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [14] *Acriopsis liliifolia* 'ISO' CCM/AOS 81 pts. Exhibitor: Island Sun Orchids; photographer: Glen Barfield. Hawaii Judging
- [15] *Paphiopedilum haynaldianum* 'Rogan's Gold' HCC/AOS 79 pts. Exhibitor: John Rogan; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [16] *Paphiopedilum* Magical Peacock 'Aardvark' AM/AOS (Presidential Magic x Petula's Peacock) 82 pts. Exhibitor: Woodstream Orchids; photographer: Bryan Ramsay. National Capital Judging





- [1] *Paphiopedilum* Prince Edward of York 'Big Apple' AM/AOS (*rothschildianum* x *sanderianum*) 80 pts. Exhibitor: Sergey Skoropad; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [2] *Cymbidium ensifolium* 'Bao Dao Xien Nu' AM/AOS 81 pts. Exhibitor: Sarah Hurdel; photographer: Bryan Ramsay. National Capital Judging
- [3] *Paphiopedilum* Snowlight 'Green Magic' AM/AOS (*victoria-mariae* x *godefroyae*) 81 pts. Exhibitor: Sergey and Elena Skoropad; photographer: Bryan Ramsay. National Capital Judging
- [4] *Oncidium* Tropic Breeze 'Everglades' CCM/AOS (*wydleri* x *Acemanda*) 89 pts. Exhibitor: Joe Thomas; photographer: Maurice Garvey. Northeast Judging
- [5] *Phalaenopsis* Cornustris 'Queen of Spades' AM/AOS (*equestris* x *cornucervi*) 80 pts. Exhibitor: Sarah Hurdel; photographer: Bryan Ramsay. National Capital Judging
- [6] *Phragmipedium* Ecuagenera Dream 'Strawberry Moon' HCC/AOS (Sedenii x *kovachii*) 79 pts. Exhibitor: John McCallen; photographer: Ken Jacobsen. Pacific Central Judging
- [7] *Coelogyne candoonensis* 'Irene' CBR/AOS. Exhibitor: Al and Irene Messina; photographer: Maurice Garvey. Northeast Judging
- [8] *Cattleya violacea* (Flamea) 'Sentinel' AM/AOS 87 pts. Exhibitor: Mark Nelson Werther; photographer: Bayard Saraduke. Mid-Atlantic Judging
- [9] *Bulbophyllum humbertii* 'Irene' CBR/AOS. Exhibitor: Al and Irene Messina; photographer: Maurice Garvey. Northeast Judging
- [10] *Lycaste* Nobuo 'Hugh's Gold' CCM/AOS (Rowland x *aromatica*) 81 pts. Exhibitor: Kathleen Whettam; photographer: Chaunie Langland. Pacific Central Judging
- [11] *Barkeria spectabilis* 'Mona' CCE-AM/AOS 91-85 pts. Exhibitor: Kay Klausing; photographer: Arthur Pinkers. Pacific South Judging
- [12] *Cattleya* Granier's Pride 'OA's Blue Lip' AM/AOS (*Cattlianthe* Minerva x *walkeriana*) 80 pts. Exhibitor: Plato Mathews; photographer: Bryan Ramsay. National Capital Judging
- [13] *Cymbidium faberi* 'Gracie' AM/AOS 81 pts. Exhibitor: Ken and Amy Jacobsen; photographer: Ken Jacobsen. Pacific Central Judging
- [14] *Scaphyglottis coriacea* 'Irene' CBR/AOS. Exhibitor: Al and Irene Messina; photographer: Maurice Garvey. Northeast Judging
- [15] *Aerangis* Elro 'Daisy Chain' AM/AOS (*ellisii* x *modesta*) 80 pts. Exhibitor: Deborah Halliday; photographer: Arthur Pinkers. Pacific South Judging
- [16] *Bulbophyllum trachyanthum* 'Petaluma' CCM-HCC/AOS 88-79 pts. Exhibitor: Judy Carney; photographer: Ken Jacobsen. Pacific Central Judging



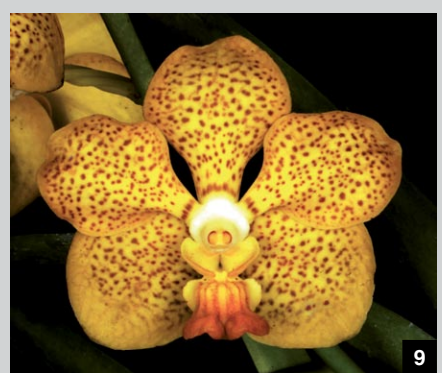


- [1] *Phalaenopsis bellina* (Alba) 'St. Clair' AM/AOS 82 pts. Exhibitor: James Heilig; photographer: Chaunie Langland. Pacific Central Judging
- [2] *Lycaste aromatica* 'Fire Mountain Gold' AM/AOS 82 pts. Exhibitor: Neal Grant; photographer: Arthur Pinkers. Pacific South Judging
- [3] *Dendrobium Jiaho Delight* 'Diamond Orchids' AM/AOS (Hsinying Frostymaree x *tobaense*) 86 pts. Exhibitor: Peter T. Lin; photographer: Arthur Pinkers. Pacific South Judging
- [4] *Dendrobium Jiaho Delight* 'Montclair Sunset' HCC/AOS (Hsinying Frostymaree x *tobaense*) 77 pts. Exhibitor: Norman's Orchids; photographer: Arthur Pinkers. Pacific South Judging
- [5] *Psychilis krugii* 'Francisco's Gift' CHM/AOS 81 pts. Exhibitor: José González Pérez; photographer: Irma Saldaña. Puerto Rico Judging
- [6] *Aerangis Elro* 'Little Saigon Angels' HCC/AOS (*ellisii* x *modesta*) 78 pts. Exhibitor: Ha Bui; photographer: Arthur Pinkers. Pacific South Judging
- [7] *Dendrobium chrysotoxum* 'Louisiana' HCC/AOS 76 pts. Exhibitor: Al Taylor; photographer: Guillory Wilton. Shreveport Judging
- [8] *Ramasamyara Jairak Blue* 'Amanda's Blue' AM/AOS (*Vandachostylis Blue Haze* x *Aranda Christine*) 82 pts. Exhibitor: Deanna J DeLong; photographer: Irma Saldaña. Puerto Rico Judging
- [9] *Cattleya Mareeba Tiger* 'Gayle' HCC/AOS (*tigrina* x *schilleriana*) 77 pts. Exhibitor: Gayle Brodie; photographer: Arthur Pinkers. Pacific South Judging
- [10] *Catyclia Wufong Harrison* 'Montclair' HCC/AOS (*Cattleya harrisoniana* x *Encyclia tampensis*) 77 pts. Exhibitor: Norman's Orchids; photographer: Arthur Pinkers. Pacific South Judging
- [11] *Paphiopedilum lowii* 'Rebecca' HCC/AOS 75 pts. Exhibitor: Jim Sloniker; photographer: Arthur Pinkers. Pacific South Judging
- [12] *Phalaenopsis Lianher Focus* 'Louisiana' AM/AOS (Lianher Happy Song x E-Hsin Angel) 84 pts. Exhibitor: Al Taylor; photographer: Guillory Wilton. Shreveport Judging
- [13] *Encyclia Snap To* 'Chocolate Treat' AM/AOS (Cynthia x Ginger Snap) 80 pts. Exhibitor: Deborah Halliday; Photographer: Arthur Pinkers. Pacific South Judging
- [14] *Catasetum Pileabrosum Green* 'Sunset Valley Orchids' AM/AOS (*tenebrosus* x *pileatum*) 82 pts. Exhibitor: Fred Clarke; photographer: Arthur Pinkers. Pacific South Judging
- [15] *Cymbidium Helen Bannerman* 'Adele Chaya' CCM/AOS (*canaliculatum* x *madidum*) 84 pts. Exhibitor: Glenda Urmacher; photographer: Arthur Pinkers. Pacific South Judging
- [16] *Bulbophyllum Tien Noi Evening Star* 'Julio David' AM/AOS (*lasiochilum* x *beccarii*) 82 pts. Exhibitor: Julio David Rios; photographer: Irma Saldaña. Puerto Rico Judging





- [1] *Vanda falcata* (Momoyamanishiki) 'Flora Peculia' JC/AOS. Exhibitor: Taras Kowalczyk; photographer: Ed Cott. Toronto Judging
- [2] *Paphiopedilum wilhelminae* 'Drogon' AM/AOS 80 pts. Exhibitor: Daniel Scher; photographer: Ed Cott. Toronto Judging
- [3] *Bulbophyllum setaceum* 'Jardin botanique de Montréal' CCM/AOS 81 pts. Exhibitor: Jardin botanique de Montréal; photographer: Michel Tremblay. Toronto Judging
- [4] *Epidendrum parkinsonianum* 'Sydney Mei' AM/AOS 82 pts. Exhibitor: Eugene Banziger; photographer: Judith Higham. Western Canada Judging
- [5] *Chiloschista usneoides* 'Dax' CCM/AOS 80 pts. Exhibitor: Drew Goddard; photographer: Ed Cott. Toronto Judging and *Phalaenopsis parishii* 'Jadzia' CCM/AOS 80 pts. Exhibitor: Drew Goddard; photographer: Ed Cott. Toronto Judging mounted together
- [6] *Cypripedium* Hans Erni 'BB8' HCC/AOS (*franchetii* x *calceolus*) 77 pts. Exhibitor: David Truong; photographer: Doug Savage. Western Canada Judging
- [7] *Dendrobium boosii* 'Tropical Gardens Orchids' CBR/AOS. Exhibitor: Tropical Gardens Orchids; photographer: Doug Savage. Western Canada Judging
- [8] *Paphiopedilum* Blushing Petula 'CAD's Northern Lights' AM/AOS (President Fred x Petula's Peacock) 80 pts. Exhibitor: David Bryan; photographer: Ed Cott. Toronto Judging
- [9] *Phragmipedium* Perufflora's Cirila Alca 'Lady Sansa' AM/AOS (*kovachii* x *dalesandroi*) 81 pts. Exhibitor: Daniel Scher; photographer: Ed Cott. Toronto Judging
- [10] *Bulbophyllum pecten-veneris* 'Jardin botanique de Montréal' CCM/AOS 82 pts. Exhibitor: Jardin botanique de Montréal; photographer: Michel Tremblay. Toronto Judging
- [11] *Cattleya tenebrosa* 'Jardin botanique de Montréal' CCM/AOS 82 pts. Exhibitor: Jardin botanique de Montréal; photographer: Michel Tremblay. Toronto Judging
- [12] *Paphiopedilum haynaldianum* 'Carlisle' AM/AOS 84 pts. Exhibitor: John Marcotte; photographer: Ed Cott. Toronto Judging
- [13] *Cyrtorchilum flexuosum* 'Jardin botanique de Montréal' CCM/AOS 85 pts. Exhibitor: Jardin botanique de Montréal; photographer: Michel Tremblay. Toronto Judging
- [14] *Phalaenopsis* LD's Bear Queen 'Frosty Cheeks' CCE/AOS (*bellina* x Dragon Tree Eagle) 91 pts. Exhibitor: Pat Van Adrichem; photographer: Judith Higham. Western Canada Judging
- [15] *Phalaenopsis* LD's Bear Queen 'Alma' AM/AOS (*bellina* x Dragon Tree Eagle) 84 pts. Exhibitor: Pat van Adrichem; photographer: Judith Higham. Western Canada Judging
- [16] *Dendrobium tangerinum* 'Orange Twist' CCE/AOS 90 pts. Exhibitor: Darrell Albert; photographer: Doug Savage. Western Canada Judging





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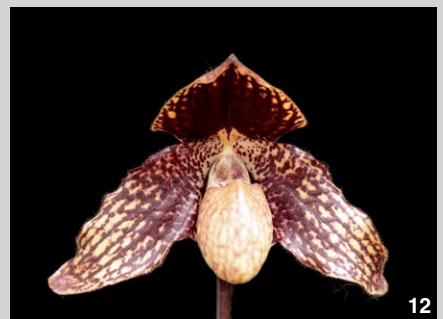
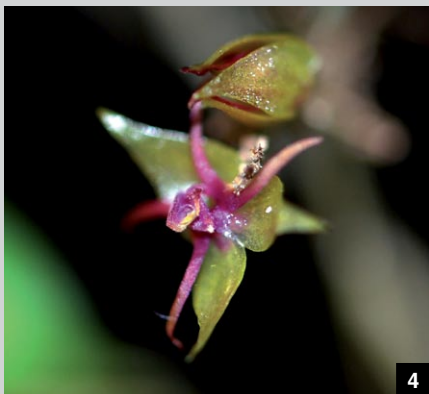


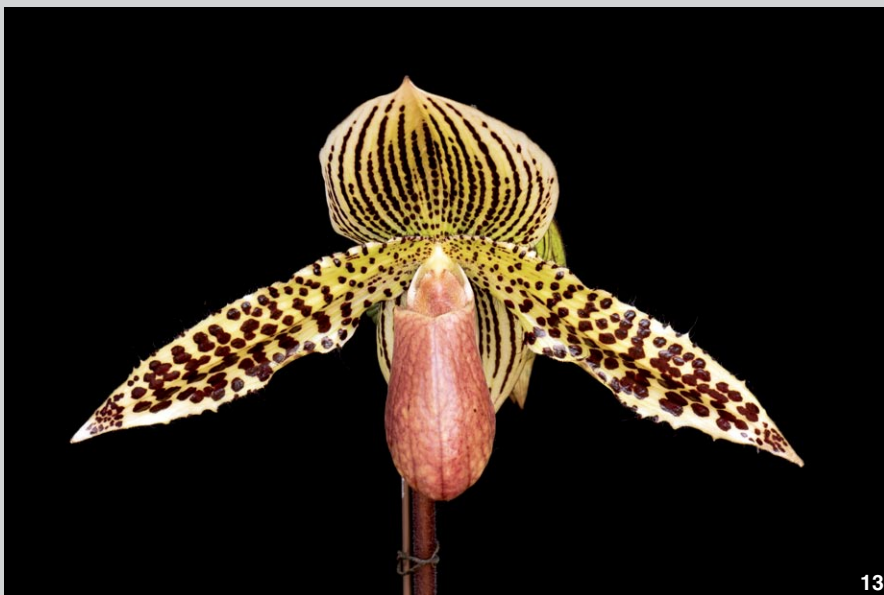
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- [1] *Dendrobium* Etincelle LCDO 'Fire Phoenix' HCC/AOS (*dickasonii* x *unicum*) 77 pts. Exhibitor: Catherine Frutiger; photographer: Judith Higham. Western Canada Judging
- [2] *Encyclia* Renate Schmidt 'Crownfox' HCC/AOS (Orchid Jungle x *alata*) 78 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging
- [3] *Myrmecotlaelia* Carol de Biase 'Crownfox' AM/AOS (*Laeliocattleya* Millie Perner x *Myrmecocattleya* Memoria Louise Fuchs) 82 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging
- [4] *Cattleya* Sierra Doll 'M&M' HCC/AOS (*walkeriana* x Pink Doll) 79 pts. Exhibitor: Ted McClellan; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [5] *Vanda* Somsri Thai Spot 'Leopard' AM/AOS (Charles Goodfellow x Kulwadee Fragrance) 80 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging
- [6] *Phalaenopsis tetraspis* f. *imperatrix* 'Melencia' HCC/AOS 77 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [7] *Podangis dactyloceras* 'Janet Kaye' CCM-AM/AOS 86-85 pts. Exhibitor: Dennis and Janet Wade; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [8] *Cattleya* A Miracle Everyday 'Sandi Block-Brezner' AM/AOS (*briegeri* x Circle of Life) 80 pts. Exhibitor: Tony Millet; photographer: Tom Kuligowski. West Palm Beach Judging
- [9] *Papilionanda* Ben Fragrance 'Redland Sunglow' AM/AOS (*Vanda* Memoria Thianchai x Mimi Palmer) 82 pts. Exhibitor: R.F. Orchids, Inc.; photographer: Tom Kuligowski. West Palm Beach Judging
- [10] *Papilionanda* Gillian Trevor 'Annie Love' HCC/AOS (Josephine van Brero x *Vanda* Eisenhower) 78 pts. Exhibitor: John Versteegen; photographer: Charlotte Randolph. Alamo Judging
- [11] *Phalaenopsis bellina* 'Blue Ridge Finest' FCC/AOS 92 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [12] *Phragmipedium* Bel Royal 'Bull's Blood' AM/AOS (Memoria Dick Clements x Sorcerer's Apprentice) 81 pts. Exhibitor: Dave Sorokowsky; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [13] *Epidendrum kockii* 'Raymond' AM/AOS 81 pts. Exhibitor: Dennis Olivas; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [14] *Epidendrum kockii* 'Kelly' AM/AOS 80 pts. Exhibitor: Dennis Olivas; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [15] *Epidendrum kockii* 'Marc' AM/AOS 82 pts. Exhibitor: Dennis Olivas; photographer: Ramon de los Santos. California Sierra Nevada Judging
- [16] *Dendrobium* Hibiki 'Melencia' CCM/AOS (*bracteosum* x *laevifolium*) 84 pts. Exhibitor: Ramon de los Santos; photographer: Ramon de los Santos. California Sierra Nevada Judging





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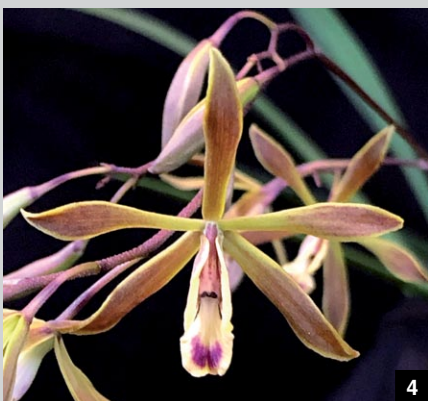
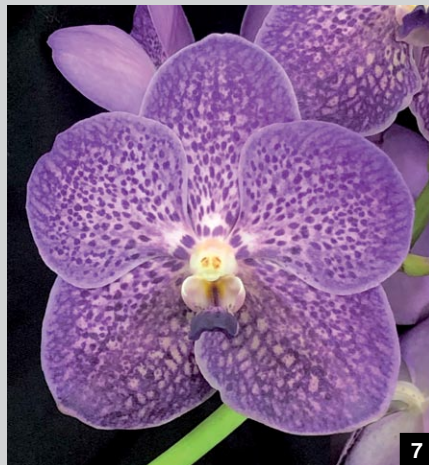


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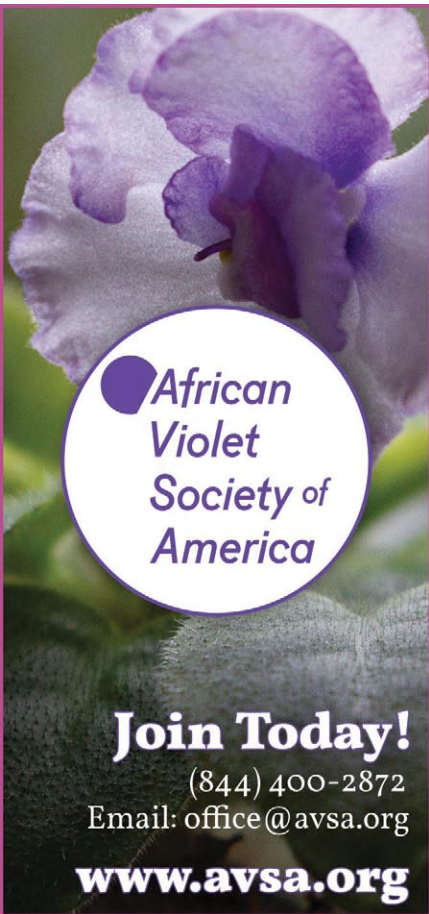
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- [1] *Paphiopedilum* Shin-Yi's Pride 'Orchidheights' AM/AOS (Michael Koopowitz x *rothschildianum*) 81 pts. Exhibitor: Looking Glass Orchids; photographer: James Curtis. Carolinas Judging
- [2] *Phalaenopsis bellina* 'Blue Ridge Hellbender' AM/AOS 86 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [3] *Paphiopedilum* Joyous Sunshine Peake 'Sunshine' HCC/AOS (Prime Yellow x *primulinum* var. *primulinum*) 79 pts. Exhibitor: Arnold J. Klehm, Grower; photographer: Anne Kotowski. Chicago Judging
- [4] *Lepanthes teretipetala* 'Cheryl's Joy' CBR/AOS. Exhibitor: Cheryl Erins; photographer: Anne Kotowski. Chicago Judging
- [5] *Phalaenopsis violacea* 'Tina' AM/AOS 86 pts. Exhibitor: Mike Mims; photographer: James Curtis. Carolinas Judging
- [6] *Oncidium* Volcano Hula Halau 'Cheryl's Joy' HCC/AOS (Issaku Nagata x Kilauea) 75 pts. Exhibitor: Cheryl Erins; photographer: Anne Kotowski. Chicago Judging
- [7] *Paphiopedilum* Temptation 'Duchess of Dilworth' HCC-CCM/AOS (*kolopak-ingii* x *philippinense*) 76-82 pts. Exhibitor: Marc Burchette; photographer: James Curtis. Carolinas Judging
- [8] *Phragmipedium* Fritz Schomburg 'Top Notch' HCC/AOS (*kovachii* x *besseae*) 76 pts. Exhibitor: Orchids Limited; photographer: Lois Cinert. Chicago Judging
- [9] *Masdevallia* Marguerite 'Looking Glass' HCC/AOS (*infracta* x *veitchiana*) 77 pts. Exhibitor: Looking Glass Orchids; photographer: James Curtis. Carolinas Judging
- [10] *Phragmipedium* Jersey 'Betsey' HCC/AOS (*dalessandroi* x *besseae*) 78 pts. Exhibitor: Graham Ramsey; photographer: James Curtis. Carolinas Judging
- [11] *Paphiopedilum niveum* 'Snow White' AM/AOS 80 pts. Exhibitor: Orchid Inn, Ltd.; photographer: Richard Noel. Cincinnati Judging
- [12] *Paphiopedilum* Chou-Yi Anigode 'Emma' HCC/AOS (*godefroyae* x *adductum*) 75 pts. Exhibitor: Orchids Limited; photographer: Jim Pyrzynski. Chicago Judging
- [13] *Paphiopedilum* Robert Deniro 'Forget About It' AM/AOS (Raisin Pie x *rothschildianum*) 80 pts. Exhibitor: Orchids Limited; photographer: Jim Pyrzynski. Chicago Judging
- [14] *Phragmipedium* Olaf Gruss 'Delia Owens' HCC/AOS (*besseae* x *pearcei*) 78 pts. Exhibitor: Graham Ramsey; photographer: James Curtis. Carolinas Judging
- [15] *Paphiopedilum* Alexej 'Golden Sunset' AM/AOS (*rothschildianum* x *hangianum*) 85 pts. Exhibitor: Orchid Inn, Ltd.; photographer: Richard Noel. Cincinnati Judging





- [1] *Phalaenopsis* Mituo Purple Dragon 'Pylo' AM/AOS (LD Purple 3S x Mituo Princess) 80 pts. Exhibitor: Peter Lin; Photographer: David Gould. Dallas Judging
- [2] *Phragmipedium* Sorcerer's Apprentice 'Dolly's Dream' HCC/AOS (*longifolium* x *sargentianum*) 78 pts. Exhibitor: George A. Bogard; Photographer: David Gould. Dallas Judging
- [3] *Vanda* Burning Embers 'Garrett's On Fire' HCC/AOS (Hot Embers x Fuchs Sunkist) 77 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [4] *Encyclia oxypetala* 'Alicia Aguilar' HCC/AOS 77 pts. Exhibitor: Gerardo Aguilar; photographer: Wes Newton. Florida North-Central Judging
- [5] *Phragmipedium* Ecuagenera Dream 'Hayden P.' HCC/AOS (Sedenii x *kovachii*) 76 pts. Exhibitor: George A. Bogard; photographer: David Gould. Dallas Judging
- [6] *Clowesetum* Mark Margolis 'Hawaiian Sunrise' AM/AOS (*Catasetum* Durval Ferreira x *Clowesia dodsoniana*) 82 pts. Exhibitor: Mark Margolis; photographer: Carmen Johnston. Florida-Caribbean Judging
- [7] *Vanda* Blue Eyes 'David Made It' HCC/AOS (Peggy Foo x Gordon Dillon) 75 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [8] *Vanda tessellata* 'Garrett's Blue and Gray' AM/AOS 83 pts. Exhibitor: Sharon and David Garrett; photographer: Wes Newton. Florida North-Central Judging
- [9] *Vandachostylis* Thai Noi 'Emilia Luna Motes' HCC/AOS (*Rhynchosstylis coelestis* x *Vanda flabellata*) 78 pts. Exhibitor: Martin Motes; Photographer: Carmen Johnston. Florida-Caribbean Judging
- [10] *Phalaenopsis bellina* 'Atticus' FCC/AOS 93 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [11] *Paphiopedilum wenshanense* 'Fajen's Orchids Aurea' HCC/AOS 76 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [12] *Paphiopedilum* Nathaniel's Spectra 'Fajen's Orchids' AM/AOS (*thaianum* x *godefroyae*) 83 pts. Exhibitor: Fajen's Orchids; Photographer: Wes Newton. Florida North-Central Judging
- [13] *Vanda denisoniana* 'Garrett's Karat' HCC/AOS 78 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [14] *Rhynchochola* David Sander 'Garrett's Pink Kiss' AM/AOS (*Brassavola cucullata* x *Rhynchochola digbyana*) 82 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [15] *Vanchoanthe* Ben Mianmanus 'Garrett's Mocha Star' AM/AOS (*Vandachostylis* Evergreen Magic x *Papilionanda* Mimi Palmer) 84 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [16] *Encyclia inaguaensis* 'Glen Gary - Cottage Orchids' CHM/AOS 83 pts. Exhibitor: Glen Gary; Photographer: Wes Newton. Florida North-Central Judging
- [17] *Perreiraara Sunshine* Padriew 'Emilia Luna Motes' AM/AOS (Bangkok Sunset x *Rhynchosstylis gigantea*) 82 pts. Exhibitor: Martin Motes; Photographer: Carmen Johnston. Florida-Caribbean Judging



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— Jean Allen-Ikeson

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HOME REMEDIES

— Rather than expensive and potentially dangerous herbicides, spray full-strength vinegar to kill weeds between pavers and on greenhouse floors. (Do not spray on orchids.)

— Aspirin (just ¼ of one 325 mg tablet per gallon of water) helps protect plants from fungal and viral pathogens when used as a spray. More is NOT better. Do not exceed this amount.

— Homemade insecticide (mix in a 1 gallon [3.8 L] jug): 1 pint (0.5 L) rubbing alcohol, 1 pint (0.5 L) 409 spray cleaner, and 3 quarts (2.8 L) water. Apply as a spray.

— Isopropyl (rubbing) alcohol can be put into an empty spray bottle and used to treat scale, mealybugs, thrips, aphids, red spider mites and perhaps other pests. It works only while wet and must contact the insect.

— Neosporin has been reportedly used to treat orchid crown rot; remove rotted area of plant before treatment.

IX International Conference on Orchid Conservation "Soroa 2021"

THE SOROA BOTANICAL and Orchid Garden and the University of Artemisa announce the IX International Conference on Orchid Conservation "Soroa -2021," which will take place February 22–25, 2022 (**NEW DATE**) at our facilities. The Symposium will feature scientific panels addressing such topics such as:

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- Dr. Ernesto Mujica Benítez, Scientific Secretary of the Organizing Committee (emujica@upr.edu.cu)
- Ms. C. Esther Liliam Santa Cruz Cabrera, Executive Secretary of the Organizing Committee (lilysacruz@ecovida.cu)

For more information on the Conference, contact Dr. Lawrence W. Zettler (lwzettler@ic.edu) or Dr. Ernesto Mujica Benítez Scientific Secretary (emujica@upr.edu.cu).

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Submission of articles for ORCHIDS magazine

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. The AOS style guide and usage guides can be downloaded from <http://www.aos.org/about-us/article-submissions/style-guide-for-aos-publications.aspx>. Articles as well as inquiries regarding suitability of proposed articles should be sent to jean.ikeson@gmail.com or the editor at rmchatton@aos.org.

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How NOT to Grow Healthy, Happy Scale and Mealybugs

by Derek I. Lowenstein

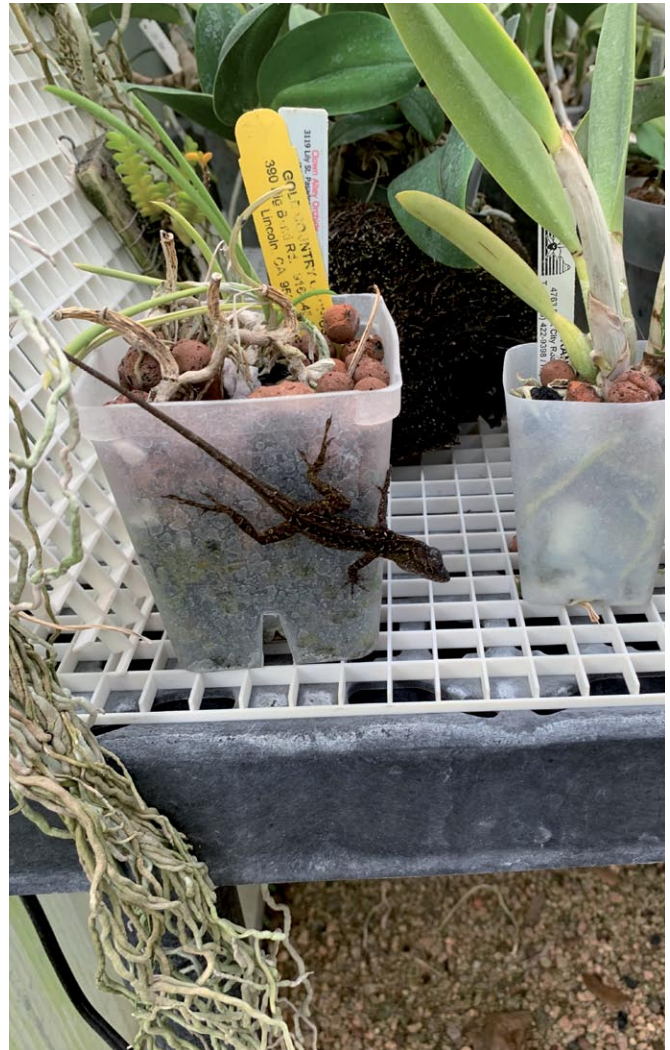
IN THE JUNE 2020 issue of *Orchids*, Deborah Dillon-Townes wrote a wonderful tongue-in-cheek article about successfully propagating orchid pests and destroying your orchid collection. Sooner or later, every orchid grower is inevitably faced with dealing with destructive insect pests. Control usually consists of a continuing regimen utilizing a host of hazardous chemicals. If only there were a way to eliminate this risky and tedious process.

Insects may mutate to become resistant to various insecticides. That is why the rule-of-thumb is to vary the types of chemical insecticides used. Suffocants such as various oils overcome this problem. But insecticides do not necessarily harm the eggs in the potting material, so when the next generation of eggs hatch, the problem can rapidly get out of control. The application of insect growth regulators prevents the target insect, in both the potting medium and on the plant, from maturing into an adult. All these chemical solutions are environmentally unfriendly as well as detrimental to human health. Spraying them in the home is to be avoided. Most are known carcinogens that require great care when applying them to your plants, and many are quite expensive.

Having grown orchids for 30+ years in four different environments ranging from Long Island, New York to Houston, Texas, I serendipitously discovered a nontoxic solution to “eliminate” the unwanted houseguests. Six years ago, my wife and I moved to Houston along with a golden retriever and 200 orchids. Unfortunately, after the record Houston floods of 2015 and 2016 we were convinced to move to higher ground and moved ourselves into a new home and the orchids into a newly built 12 × 16 foot- (3.7 × 4.9 m) greenhouse. During daily inspections and watering, I noticed that the greenhouse had acquired a small population of shy and inquisitive four-legged lizard inhabitants. They moved in during the Houston winter of 2017, which passes for early summer in New York, and they have not left since, as the habitat appears to suit them well. The greenhouse never drops below 56 F (13 C) and maintains a relative humidity of 60–90 percent. Because it does get colder for a few days each year, a small electric heater takes the chill out.

The lizards are green anoles (*Anolis carolinensis*) and the brown or Bahamian anole (*Anolis sagrei*), a species invasive to the United States. The green anole is an arboreal lizard native to the southeastern United States and west to Texas. It has been introduced to Hawaii and southern California. The brown or Bahamian anole is native to Cuba and the Bahamas and has been introduced to the United States, other Caribbean islands and Taiwan. It has forced the green anole to move to the treetops, while the brown anole inhabits the ground. Both species live in my greenhouse with *Anolis sagrei* being dominant. The anoles are ubiquitous on our property and seem to have also decimated the local mosquito population.

The point of this long-winded story is that no chemicals or suffocants have been necessary for the past two years. There is no evidence of the ubiquitous scale, mealybugs or other invasive



A brown anole in the author's greenhouse

pests. Ants and snails are kept in check as they wander in from the garden to inhabit the orchid collection. The “no-see-‘em” flying bugs are practically nonexistent.

The bottom line is that the insecticide sprayer has been retired, and I now have quite a collection of unused bottles of chemicals sitting on a garage shelf. With anoles on the prowl you may have to forego the pests, accept healthy plants and purchase orchids to only expand your collection and not to replace the insect-riddled dead or dying.

— Derek Lowenstein, PhD, a retired physicist, has been growing orchids for over 30 years on windowsill, under lights and in greenhouse environments. He is an AOS accredited judge in the Houston judging center, past vice-president of the Suffolk Orchid Society (NY) and past president of the Houston Orchid Society (email: dereklowenstein@gmail.com).

Graham Wood Presented an AOS Outstanding Hybridizer Award

OVER THE LAST 21 years, Graham Wood of Lehua Orchids has created 568 hybrids, the overwhelming majority of these in the genus *Paphiopedilum* and holds the all-time record for most awarded hybrids in the genus *Paphiopedilum* with 205 individual hybrids, revolutionizing the *sukhakulii* and Maudie-type breeding lines.

In addition to many flower quality and Awards of Quality (AQ), one of Graham's most recent awards was an Award of Distinction for *Paphiopedilum* White Promise (Egret's Jewel × Oriental Jewel), an interesting flower described as stunning for its unusual greenish white color.

One of the greatest achievements of any hybridizer is for one of their hybrids to receive an AQ indicating outstanding overall quality. Graham has received 12 such awards — 11 of them for paphiopedilums. His amazing breeding lines include *Paphiopedilum* Magical Illusion (Magically Wood 'Serenity' × Red Illusion 'Lehua's The Only One HCC/AOS) pictured here, *Paphiopedilum* Spring Starlight (*lawrenceanum* 'Syn Splendor' × Spring Moonbeam 'Lehua Dynamic Duo' HCC/AOS), *Paphiopedilum* Ghostly Contrasts (Magical Contrasts 'Dorsal Clear' × Macabre Contrasts 'Lehua Frank's Druthers') and *Paphiopedilum* Jeweled Venus (Jewel Green 'Greenery' × Parisienne Venus 'Pink Joy) to name just a few.

One of the hallmarks of AQ strains is the outstanding overall quality of the grex as evidenced by multiple AOS flower quality awards. Several of Graham's many hybrids have 10 or more AOS awards — for example, *Paphiopedilum* Fairly Stoned AQ/AOS has 17 flower quality awards and *Paphiopedilum* Petula's Sensation AQ/AOS has 14 flower quality awards.

Not only is Lehua Orchids now a household name in *Paphiopedilum* hybrids, but Graham has also created many collections, with names that will forever evoke superior quality; Odette, Petula, Fred, Venus, and of course the noted 'Wood' series. They are delightful, enchanting, charming, captivating, ghostly, and magical.

Having left his mark on the



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Paphiopedilum world, the Trustees of the American Orchid Society bestowed the Society's coveted Outstanding Hybridizer Award at its virtual Members' Meeting October 24, 2020.

— Laura Newton is the AOS Awards Registrar and an accredited judge in the Florida-North Central judging center (email: laura@aos.org).

- [1] Graham Wood addressing the membership at an AOS Members' Meeting while the Society's Treasurer.
- [2] Graham's Outstanding Hybridizer Award is an original carved 7- x 10-in (17.8- x 25.4-cm) crystal piece by Larry Mayse of Nature Glassworks patterned after one of Graham's award-winning hybrid paphiopedilums.
- [3] *Paphiopedilum* Magical Illusion AQ/AOS, one of Graham's many award-winning hybrids graced the front and back covers of our October 2020 issue.

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