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ORCHIDS

THE BULLETIN OF THE AMERICAN ORCHID SOCIETY

VOL. 90 NO. 8 AUGUST 2021



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The mission of the American Orchid Society is to promote and support the passion for orchids through education, conservation and research

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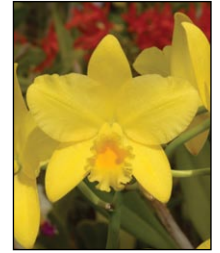
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Paphiopedilum fairrieanum f. *bohlmannianum* 'Dijon' AM/AOS grown by Dave Sorokowsky, Paph Paradise, and expertly photographed by Ramon de los Santos.

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PRONUNCIATION GUIDE

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

<i>Acanthophippium</i> (a-kan-tho-FIP-ee-um)	<i>Habenaria</i> (hab-en-AIR-ee-a)	<i>praecox</i> (PREE-koks)
<i>acutifolius</i> (a-kewt-ee-FOL-ee-us)	<i>Hadrolaelia</i> (had-roh-LAY-lee-a)	<i>Pseudofilicornu</i> (soo-doh-fil-ee-KORE-noo)
<i>Aerangis</i> (ay-air-RANG-iss)	<i>hartwegii</i> (hart-vegk-ee-eye)	<i>Psychilis</i> (sye-KYE-liss)
<i>Aerides</i> (ay-air-EE-deez)	<i>herrerae</i> (HAIR-err-ee)	<i>punctata</i> (punk-TAY-ta)
<i>album</i> (AL-bum)	<i>hincksianum</i> (hink-see-AY-num)	<i>purpurata</i> (per-per-AY-ta)
<i>Angraecum</i> (an-GRAY-kum)	<i>hirsutissimum</i> (hir-soo-TISS-ih-mum)	<i>Quercus</i> (KWAIR-kus)
<i>Anoectochilus</i> (an-ek-toh-KYE-luss)	<i>hodgsonii</i> (hodj-SONE-ee-eye)	<i>reichenbachiana</i> (rye-ken-bach-ee-AY-na)
<i>Ascocentrum</i> (as-koh-SEN-trum)	<i>Holcoglossum</i> (hole-koh-GLOSS-sum)	<i>Renanthera</i> (ren-AN-ther-a)
<i>atopilosa</i> (at-roh-pill-OH-sa)	<i>hookeriana</i> (hook-er-ee-AY-na)	<i>retusa</i> (reh-TEW-sah)
<i>bellinus</i> (BELL-ee-nuss)	<i>humilis</i> (HEW-mil-iss)	<i>Rhododenron</i> (roh-doh-DEN-dron)
<i>bigibbum</i> (bye-GIB-bum)	<i>insigne</i> (in-SIG-nee)	<i>Rhonhofia</i> (ron-HOFF-ee-eye)
<i>bohlmannianum</i> (bowl-man-ee-AY-num)	<i>intermedius</i> (in-ter-MEED-ee-us)	<i>Rhyncattleanthe</i> (rin-kat-lee-AN-thee)
<i>bractescens</i> (brak-TESS-senz)	<i>Kegeliella</i> (keg-el-ee-ELL-la)	<i>Rhyncholaeliocattleya</i> (rink-oh-lay-lee-oh-KAT-lee-a)
<i>Brassavola</i> (bra-SAH-vol-la)	<i>kesangiae</i> (keh-SANG-ee-eye)	<i>Rhynchostylis</i> (rink-oh-STYE-liss)
<i>briegeri</i> (BREE-ger-eye)	<i>kraenzlinii</i> (krenz-LIN-ee-eye)	<i>roezlii</i> (roze-lee-eye)
<i>Broughtonia</i> (brow-TONE-ee-a)	<i>kupperi</i> (KOO-per-eye)	<i>Roxburghii</i> (rocks-BURG-ee-eye)
<i>Bulbophyllum</i> (bulb-oh-FIL-lum)	<i>lagenaria</i> (laj-en-AIR-ee-a)	<i>Saccolabium</i> (sak-koh-LAY-bee-um)
<i>burmannicus</i> (ber-MAN-ih-kuss)	<i>limminghei</i> (lim-ING-ee-eye)	<i>Sarcochilus</i> (sar-koh-KYE-luss)
<i>calceolare</i> (kal-see-oh-LAIR-ee)	<i>lindleyi</i> (LIND-lee-eye)	<i>Satyrium</i> (sa-TEER-ee-um)
<i>Cattleya</i> (KAT-lee-a)	<i>longifolium</i> (lonj-ih-FOL-ee-um)	<i>saxicola</i> (saks-ih-KOH-la)
<i>Cattlianthe</i> (kat-lee-AN-thee)	<i>Ludisia</i> (loo-DEEZ-ee-a)	<i>Schimia</i> (SHIM-ee-a)
<i>Ceratopetalum</i> (sair-at-oh-PET-a-lum)	<i>Macodes</i> (mah-KOH-deez)	<i>scottianum</i> (scot-ee-AY-num)
<i>Cheirostylis</i> (kye-roh-STY-liss)	<i>maculate</i> (mak-yew-LAY-ta)	<i>Selenipedium</i> (seh-len-ih-PEED-ee-um)
<i>christensenianum</i> (krist-en-sen-ee-AY-num)	<i>Magdalena</i> (mag-dah-LEE-nee)	<i>semicarpifolia</i> (sem-ee-karp-ee-FOL-ee-a)
<i>chrysotoxum</i> (kry-soh-TOKS-um)	<i>mantinianum</i> (man-tin-ee-AY-num)	<i>Sievekingia</i> (seev-eh-KING-ee-a)
<i>Chysis</i> (KYE-sis)	<i>Masdevallia</i> (mas-deh-VAHL-ee-a)	<i>Sophrrolaeliocattleya</i> (sof-roh-lay-lee-oh-KAT-lee-a)
<i>Coelogyne</i> (see-LODJ-ih-nee)	<i>maxima</i> (MAKS-ih-ma)	<i>Spathoglottis</i> (spath-oh-GLOT-tiss)
<i>cristata</i> (kris-TAY-ta)	<i>micranthum</i> (mye-KRAN-thum)	<i>spicerianum</i> (spy-ser-ee-AY-num)
<i>crossianum</i> (kross-ee-AY-num)	<i>monantha</i> (mon-AN-tha)	<i>spicerovenustum</i> (spy-ser-oh-ven-OO-stum)
<i>curnowiana</i> (kur-nov-ee-AY-na)	<i>Monstera</i> (MON-ster-a)	<i>Stanhopea</i> (stan-HOPE-a but commonly mispronounced stan-HOPE-ee-a)
<i>Cymbidium</i> (sim-BID-ee-um)	<i>napalense</i> (na-pal-EN-see)	<i>Stanhopeinae</i> (stan-hope-EE-nee)
<i>Cycnoches</i> (SIK-noh-keez)	<i>Neofinetia</i> (nee-oh-FIN-ay-a but commonly mispronounced nee-oh-FIN-et-ee-a)	<i>Suavis</i> (SWAH-viss)
<i>Cypripedium</i> (sip-rih-PEED-ee-um)	<i>nobile</i> (NOH-bih-lee)	<i>Syngonium</i> (sin-GOAN-ee-um)
<i>dariense</i> (dair-ee-EN-see)	<i>obliquus</i> (oh-BLEEK-yew-us)	<i>thaiantum</i> (tye-AY-num)
<i>Dendrobium</i> (den-DROH-bee-um)	<i>Oncidium</i> (on-SID-ee-um)	<i>trigonopus</i> (try-GONE-oh-pus)
<i>densiflorum</i> (den-sih-FLOR-um)	<i>Paphinia</i> (paf-IN-ee-a)	<i>Utricularia</i> (yew-trik-yew-LAIR-ee-a)
<i>didieri</i> (did-ee-AIR-ee)	<i>Paphiopedilum</i> (paf-ee-oh-PED-ih-lum)	<i>Vanda</i> (VAN-da)
<i>discolor</i> (DIS-kul-ur)	<i>Phalaenopsis</i> (fail-en-OP-sis)	<i>venustoinsigne</i> (ven-oo-stoh-in-SIG-nee)
<i>Drosera</i> (DROH-ser-a)	<i>Philodendron</i> (fil-oh-DEN-dron)	<i>venustum</i> (ven-OO-stum)
<i>Epidendrum</i> (ep-ih-DEN-drum)	<i>Phragmipedium</i> (frag-mih-PEED-ee-um)	<i>wallichii</i> (wal-LIK-ee-eye)
<i>fairrieantum</i> (fare-ee-AY-num)	<i>Phragmopedilum</i> (frag-moh-PED-ih-lum)	<i>Zygopetalum</i> (zye-goh-PET-a-lum)
<i>farmeri</i> (FAR-mer-eye)	<i>Pinguicula</i> (ping-GWIK-yew-la)	
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<i>Gongora</i> (GONE-gore-a)		
<i>Goodyera</i> (GOOD-year-a)		

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Webinars-Coming Attractions!



When	August 05, 2021 8:30pm EDT Thursday	August 18, 2021 8:30pm EDT Wednesday	September 02, 2021 8:30pm EDT Thursday	September 16, 2021 8:30pm EDT Thursday
Topic	Greenhouse Chat (Orchid Q&A) <i>Send in your Questions!</i>	Leafless Orchids	Greenhouse Chat (Orchid Q&A) <i>Send in your Questions!</i>	Sarcochilus Australian Miniatures
Presenter	Ron McHatton Chief Education and Science Officer	Dr. Mary Mancini AOS Judge, Louisiana Judging Center	Ron McHatton Chief Education and Science Officer	Jean Allen-Ikeson JC National Education Coordinator, AOS Editorial Board Chair

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12-3-15 Orchid RO Water

16-4-20 Orchid Well Water

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Vegetable Starter Trays for Orchid Seedlings

I USE SEEDLING starter trays with humidity domes in the fall and spring for my vegetables. It did not occur to me to use them in the greenhouse for my orchids but when I deflasked my first orchid seedlings a couple of months ago, I needed a place, protected from the elements, to put the fragile seedlings. I keep a small amount of water in the tray and the humidity dome on top with both vents open. It sits on a shelf in my Arizona greenhouse in the southeast corner. After the first month, my seedlings doubled in size (the seedlings are pictured in the larger containers). So, I decided to move a few of my more fragile orchid divisions into the tray to see if I could encourage strength and growth. After another month, I noticed new growth and better color on the leaves (the divisions are pictured in the smaller pots).

I feed them every other week with MSU high-potassium fertilizer. Once a week, I leave the lid off for several hours just to increase the airflow and prevent mold or fungi from growing. If you grow indoors, this would be a great place



for orchids needing higher humidity or those that are more fragile. We often get small divisions or purchase orchids in 2-inch (5-cm) pots because they are cheaper. This tray and dome will keep them protected as they grow. It fits well under a counter and you can even mount a grow light under the counter if you are growing in a more shaded environment. These seedling starter trays with humidity domes cost under \$10. Be sure to get the heavy weight tray so that it will not collapse when moved.

— Cindy Jepsen (email: cindyjepsen@cox.net).

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PRESIDENT'S MESSAGE

IT IS SO refreshing to see the growing trend of orchid societies having regular, in-person meetings again. There existed a hunger in the orchid world for folks wanting to re-engage in a societal environment to share their experiences, their victories, their trials and their fails. Just to be able to be with our orchid families to interact, chat, share photos, etc., is invaluable. But the bottom line is that it is happening and it is wonderful.

I was fortunate to participate in a judging recently at the Atlanta judging center. They have a first-rate group of folks there. Doug Hartong, Barney and Aileen Garrison, Lowell Jacks, Charles and Susan Wilson, Ray Bullard and others, gave me a very warm welcome and ran the judging in a friendly, welcoming manner. It was a wonderful afternoon, and it was great to be a part of in-person judging. All those months of staying in and tending to our collections have paid off, as they gave many awards.

With all the judging events opening up, the American Orchid Society is seeing amazing, award-winning flowers. Certainly, 2021 is going to see a record number of awarded orchids that have passed before the judges. They will be recorded for all of history to be the bar for the next orchid to reach. And the growers will cherish those bragging rights forever.

The AOS, when it began 100 years ago, knew the importance of recording all the award-winning orchids for all posterity. The rudimentary tools available a century ago provided challenges to the Society, and nevertheless, they met those challenges and persevered. Hand-drawn images morphed into film photography and later digital images. Who knows what the future will bring? How will awarded orchids be recorded another 100 years from now? Imagery of the awarded orchids was and is vital as part of the registration and as a tool for judging future specimens.

All of the images currently collected in the annals of the record books of the American Orchid Society are available to AOS members on our website, but also in the *Orchids* magazine. *Orchids* magazine, available in print and digitally, is a wealth of information for any orchid enthusiast at any level — beginner, intermediate or expert. We cannot know how many times orchid lovers have switched cultivating orchids when they saw a photo of an orchid they had never seen before. But we all know it happens.

All it takes is a photo. In *Orchids* magazine we find those photos and



Bob Fuchs poses with judges from the Atlanta judging center. Left to right: Barney Garrison, Aileen Garrison, Bob Fuchs, D. Lowell Jacks and Ray Bullard.

so much more. Many of the award-winning orchids are premiered in the magazine, crediting the grower and the photographer for all of their work. Every issue of *Orchids* magazine is replete with articles, stories, tips, tricks and so much more. The magazine takes us back in time to learn about orchids discovered centuries ago and it can give us up-to-the-minute information on the latest orchid discovery. I would encourage everyone to read *Orchids* magazine cover to cover for everything orchid-related. Ron McHatton and Jean Allen-Ikeson work very hard every month, publishing this fantastic magazine. I am very grateful for all their efforts.

Orchids can move us from wherever we are and send us to a remote location, surrounded by glorious flowers typical to the region. The last issue of *Orchids* had an article on the orchids of Bhutan and I would love to share some of my experiences there. Several years ago, I had an opportunity to take a small group to this beautiful, pristine country in Asia. It lies right on the eastern side of the Himalayas with dramatic landscapes. While there, we were quite privileged to see native orchids in situ. This just added to the breathtaking, magical countryside we were all taking in. Bhutan is conservation-minded, also. We never saw any litter or trash anywhere during our visit. This is one place that should be on everyone's bucket list.

And all it takes is one word or picture to move us into our next experience.

I urge everyone to take every issue of *Orchids* and dive headfirst into it to get the most of the orchid experience everywhere it takes you. There is a

lot of work that goes into every issue and it cannot be matched by any other publication as a better reference tool.

Every month we move closer and closer to the AOS Centennial Celebration. We are almost down to the wire and all of the pieces are falling into place. By now, members should be registered for the events of the week and all the amenities that come with the registration. Starting with the welcome, registrants will receive a beautiful souvenir bag filled with items to use during their visit in South Florida or to use in their gardens when they return home. There will be social events to mingle with other orchid enthusiasts, chat about their collections and get to know one another better. There will be opportunities to listen to some wonderful speakers about orchids in the Americas, conservation and native orchids.

Can you imagine owning the original watercolor of the official AOS Centennial poster? This and many other extraordinary items will be up for auction during the week. Add to that the orchid show and sale hosted by the East Everglades Orchid Society, where judging will take place. Registered judges will receive transportation to and from the event for the judging, and lunch will be included. As I mentioned earlier, we are seeing record numbers of awarded orchids, thanks to the extra care the collections have received over the last months.

The gala will be the icing on the cake. With everything that is going on during the week, the gala will be an over-the-top celebration, filled with nothing but fun, food and fantasies. There will be music played by students from the University

of Miami's music department. Imagine being escorted to your table by life-size orchids and being served a gourmet meal. The entertainment will be off the charts. There is just so much going on, I do not have enough space to detail it all. It will be fabulous.

The success of this event will be a success for orchids. We are united in this because of orchids; all of this is for these incredible plants. The proceeds from the celebration benefit orchid conservation efforts. Conservation is an indispensable part of this industry, and there is no room for complacency. Many people work tirelessly to protect orchid habitats and ensure they are preserved all over the world. Ground-breaking initiatives are constantly emerging and with them, the satisfaction that the world will have orchids for future generations to appreciate.

If you have not already registered for the American Orchid Society Centennial Celebration, purchased tickets for the gala, or made reservations at the Biltmore Hotel, I urge you to do so quickly. Some of the events have limited seating and time is running out. So register today and we will see you there!

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

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August: A Month of Self-Soothing

By Thomas Miranda

IT IS ABUNDANTLY clear to us that as temperatures increase so do our tempers. We all notice it, but what really causes it? Something as basic as the increased activity of atoms and cellular functions? The entropy that ensues when energy levels get out of control? Or is it simply the fact that we are uncomfortably hot in the midsummer dog days? The deeper you plunge into the vagaries of human behavior the more possibilities you will find to explain our general testiness this month. As complex and diverse as we humans are, so are the plants we collect and aspire to grow into beautiful specimens: some enjoying the heat, others throwing tantrums.



Thomas Miranda

I had a wonderful assistant years ago, who knew that workplace politics used to affect me badly. She would always tell me to go stand by all the plants we were rooting and propagating and miraculously, I would instantly calm down. I do not know about you, but I am absolutely useless when I am upset or frustrated, sometimes to the point of paralysis. I make it a point to frequently take a walk through my garden and plant collection and find in myself renewed enthusiasm, optimism and faith in what the future holds. This type of self-soothing is something most orchid growers have experienced, even if we do so unconsciously. But I call your attention to it because, in this hypertense world we find ourselves in, I think it is helpful and therapeutic to do this activity intentionally. It is really hard to be angry when your cattleyas are in full bloom.

UNSEASONALITY Even though these warmer days of summer may provide a dearth of flowers to quell the beast within us all, it is important to remember that by next month or so, many of your plants will initiate their spikes. That anticipation can be delicious! Indeed, our orchid brothers and sisters in the Southern Hemisphere are likely having extraordinary bloomings right around now as well! It is always great to keep up with friends in other parts of the world, either digitally or in person now that traveling is starting to open up again. Reach out and make some new orchid friends around the world. Even though we might still feel isolated



It is impossible to feel bad when your cattleyas are blooming. Matthias Seelis, Shogun Hawaii Orchids, poses with a selection of color forms of *Cattleya purpurata*.

due to ongoing travel restrictions, we are actually more connected now than at any other time in history.

IT IS ALL ABOUT FLOW Although orchids are certainly still growing vegetatively this time of year, we have reached one of the trickier times of the year in terms of correct cultivation. Orchids from mountainous habitats rarely experience intense heat, tend to be exposed to frequent rains and mists and are generally caressed most of the day by gentle breezes. So, it is advisable to attempt to replicate such conditions. With a few exceptions the majority of orchids (cattleyas, oncidiums, phalaenopsis and dendrobiums) we grow live naturally as epiphytes in trees with a shady canopy covering them, well-draining vertical bark faces as their substrate, high humidity and regular precipitation to keep them hydrated. Make sure that all of the above are accounted for in your growing space, wherever it may be.

TEMPERMENTAL TIMES Just as we wilt and complain when it's too hot for us, orchids may rebel too when exposed to uncomfortable conditions well out of their comfort zones. It is our job in these extreme months of the year to provide conditions as close to comfortable and natural conditions for the orchids we have collected. Keeping plants in the shade is a good start, as is the acquisition of a small fan in the growing area. Occasional misting can also be helpful for cooling plants on the hottest days, but this must be done carefully and strategically. If misting results in overwatering, plants will sometimes rot in the heat, but even

worse is the possibility that stomata will open on the hottest days, leading to extreme desiccation. Misting must be brief and timed to relieve heat stresses rather than more constant, or you risk doing more harm than good to your plants.

A SUMMER FEAST Although it is tempting to overfeed orchids that may be growing rapidly in the heat, many plants that have been thriving and making many new growths up till now are suddenly stressed due to the fact that at high temperatures the metabolism of many plants shuts down. Feeding them when stressed often makes matters worse. So, it is often best to slow down the feeding this month and next until things start to cool off somewhat. Growing and feeding will often resume when cool nights return. Make sure you are alert to the fluctuations in temperature for your outdoor collection. Only you can personalize your orchid care during these tricky months. It pays to be observant each and every day, and not rely on automatic systems for your orchid care. Indeed, it is this relationship with your plants that soothes us and provides us with the solace and happiness they give us. By the simple act of caring for and understanding their needs, they give back so much to us in return for our efforts towards their well-being.

— Tom Miranda 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).

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QUESTIONS AND ANSWERS

FLOWERING PHALAENOPSIS



QUESTION

I know “novelty” phalaenopsis do not need cooler nights in the fall to initiate flowering. Do hybrids of *Phalaenopsis lobbii*, *bellina* or other thick, waxy flowers such as *Phalaenopsis amboinensis* need cooler temperatures to induce blooming? I do not have enough room on my outdoor patio table to put all my phalaenopsis — I have too many.

ANSWER

“Standard” phalaenopsis hybrids — whites, pinks, larger-flowered harlequins, need cooler temperatures to initiate flowering because the species in their backgrounds evolved in areas subjected to somewhat cooler conditions with the onset of winter. In fact, this is the basis of much of the phalaenopsis pot-plant industry as the plants can be forced into bloom by controlling the temperature. It is effectively the same as the poinsettia industry except in that case, it is daylength that is being controlled. Summer blooming phalaenopsis are different. *Phalaenopsis bellina*, *cornu-cervi*, *amboinensis*, and their relatives and hybrids not heavily dominated by white and pink species are largely induced to flower by the naturally longer days of summer.

Phalaenopsis lobbii and *parishii* are different in that they both evolved in areas that have cool (to even cold), dry winters. Flowering is induced, much like it is for many *Dendrobium* species, by a cool, dryer winter rest. Hybrids are much less sensitive to this, especially hybrids involving the other groups of *Phalaenopsis* species.

For Phalaenopsis, like most orchids, it helps to know what is in the background of your plant. In general, hybrids with a lot of big, full-flowered species in the background are going to need a period of cooler temperatures. Those dominated by the smaller-flowered, waxy summer-

blooming species will need increased daylength and warmth and those dominated by the truly novelty, little-flowered species may need a cooler, dryer rest.

LEAF SURFACE IMPERFECTIONS



QUESTION

I have a *Paphiopedilum wardii* and have noticed some tiny sunken areas on the leaves. There are also a couple of very small brown areas. I water about twice a week. For humidity, I run humidifiers during the winter but shut them down when I turn off the heat. This has been a dry summer, so I put the plant into a partially closed terrarium a few weeks ago (60–80 % humidity). The plant gets light but not direct sun.

ANSWER

I think these tiny pitted spots are related to a combination of water, humidity and air movement and appear to be quite common and in most cases, do not progress to any sort of real problem. It could be that twice-weekly watering isn't sufficient depending on the potting mix and the size of the pot. You do not want to overwater but it might not hurt to gently slip the plant out of its pot and check the condition of the roots.

The little brown areas are areas where the collapse of the surface tissue has progressed to the point where the tissue itself has died and turned brown. It doesn't look infected and if it does not spread further I would not worry about it although you want to make sure that you have sufficient humidity at all times.

Young, developing leaves are soft it is easy to get this tissue collapsing if humidity drops for even short times.

If you start to see brown, soft areas at the leaf bases it is a much bigger issue. That could be the onset of a bacterial infection called *Erwinia* that is fostered by aging potting mix and weakened root system. Should you experience that, remember that *Erwinia* is a bacterial infection and not caused by a fungus so most fungicides will be of no help. The exceptions are copper compounds, either topical or systemic, and hydrogen peroxide although the latter is strictly topical. As usual, be cautious and test products on a single plant before committing a collection to it.

OUT OF DOORS FOR THE SUMMER



QUESTION

I am trying very hard to look after my orchids this year outside in Boyton Beach, Florida. Buds come out and fall off before opening. The plants are in shade in baskets and on driftwood in the front garden and get only a little sun in the morning. What am I doing wrong?

ANSWER

Outdoor environments can be quite stressful, especially before the plants become acclimated. What you might have considered a bright indoor growing environment is actually much shadier than outside and sunburn or heat stress can happen very suddenly. The increased air movement also causes plants to dry out very rapidly. If that were not enough, then there are the incessant summer rains we get in Florida. All these factors have to be accounted for.

What I see in the pictures you included is evidence that the plants are not getting enough water, are possibly struggling to adjust to increased light and, especially

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.



the phalaenopsis, may be dealing with heat stress. Phalaenopsis like warmth but not necessarily our brutal summer heat and humidity. Phalaenopsis out-of-doors do best in the shade of a lanai with no direct sun or mounted in trees with enough leaf canopy to protect them from the sun.

Keep in mind that sunburn and heat stress do not necessarily show up right way and even plants that have been outside for some time may suddenly sunburn if the temperatures skyrocket. The sobralia in the picture here had been outside for over two weeks with temperatures in the mid- to upper-80s F (29–32 C) with no apparent problems. It took only one day with a temperature over 90F (32.2 C) to

cause sunburn/heat stress. How much light a given plant will take is a balance between air temperature, humidity and light level and the hotter it gets, the more likely it is for the leaf to overheat.

Moving plants outside in the spring can be one of the biggest challenges for the home orchid grower but the benefits, done correctly, far outweigh the negatives. Just do it carefully and with some forethought. Do not move plants suddenly from their indoor environment to outside in the middle of a heatwave – the result is almost guaranteed to be sunburn or heat stress! Check your forecast for the next 10 days or so and try making the move when the temperatures will be more moderate for several days in a row. Cloudy weather is also a plus when moving plants outside. Remember that our eyes are not good for measuring changes in light level. Move plants out into shady areas first and err on the side of less light than you think is optimal. Cattleyas grow well with 70% shade — phalaenopsis closer to 90%. Also consider where the sun will track during not just the day but how it changes over time. What may be plenty of shade during midsummer when the sun is high in the sky could turn out to be so strong

it causes sunburn when the sun's angle drops in the late summer or early fall and the light comes in under the shade canopy. Conversely, you could have too much shade in midsummer when it was just right early in the year. When plants are outside, the combination of wind and bright sunlight can dry your plants out much more quickly than when growing inside. Outdoor orchids benefit from rainwater as it helps to flush out fertilizer and hardwater salts that build up in the potting medium— just in moderation. Remember that a good rain one day isn't the same as a solid week of soaking rains and keep in mind that the increased light outdoors means that regular fertilizing can be especially beneficial. Water first and then fertilizer as this helps roots to better absorb the fertilizer. And do not forget it is a dog-eat-dog world so be wary of insect pests that decide you plants are a great smorgasbord. This is especially important toward the end of summer if your plants have to be eventually moved back in for the winter. During the summer months, the natural predators of our insect pests (remember that dog-eat-dog world) help to keep pests down but you do not want unwanted guests for the fall and winter.

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AOS Conservation Award: In Restoring Orchids in the Hills of Wayanad

By Jis Sebastian

The AOS Conservation Committee recently awarded the AOS Conservation Recognition Award for 2021 to Dr. Jis Sebastian of Kerala India, for her work in orchid conservation and restoration.

DURING OUR RESEARCH on the ecology of epiphytic orchids in the southern Western Ghats under the guidance of Dr. Giby Kuriakose, assistant professor, Sacred Heart College, Thevara, a phenomenon called “orchid fall” was observed in the Western Ghats of Kerala. And, this was apparently more common in coffee and cardamom plantations. These plantations, which are contiguous to forests in the hill tracts of Kerala, maintain huge native trees as shade trees. Because of this characteristic, these plantations were considered as a study site along with other forest types. To understand this orchid fall, a year-long conservation project was initiated with the help of the San Diego County Orchid Society. As field research was carried out, we found that orchid fall was more prominent in semi-natural plantations compared to the disturbed semi-evergreen forests in the same landscapes. Also, high orchid fall occurred in plantations and this was mostly attributed to management activities by plantation management. Following this research, a conservation program was executed.

This program started with an orchid conservation workshop at Government Higher Secondary School, Vythiri. Around 125 students from fifth through eighth grades from five schools in the locality attended the workshop. Also, great support was achieved from the local government, Red Cross and teachers. Photo exhibitions and interaction with experts provided students the opportunity to learn more about orchids. All participants were provided with small field guides for orchid identification. Later, with the help of a couple of plantation owners, students were taken for multiple orchid-trail walks. During these excursions, students learned how to identify orchids, take notes on the habit and habitats, and list orchids found in the plantations as a group effort.

Also, orchids were rescued and restored with the participation of the students and teachers. The team monitored the survival of the restored orchids for another few months and ensured 90 percent survival of restored



orchids. Apart from students from the local community, forest guards, landowners and workers from the agricultural plantations, indigenous community (Kaattunaikkar), staff at primary education centers, and voluntary youth clubs were also trained in identification, rescue and restoration of orchids. At the end, a high impact was measured when response and knowledge was assessed among the students.

The project yielded some new ecological findings such as high

- [1] Lectures about orchids and conservation in local public schools were an integral part of Dr. Jis Sebastian's work.
- [2] School children being shown how to properly restore fallen orchids as part of the project.
- [3] Supervised trail walks immersed students in the diversity of nature and learning how to locate orchids high in the trees.
- [4] A photographic exhibition at a local school introduced the wide variety of orchids found in the nearby forests.

Her Own Words

endemism and diversity among epiphytic orchids in the plantations due to the presence of large native shade trees and high orchid fall in plantations that stemmed from management activities. Therefore, the project suggested the following: semi-natural agricultural landscapes are an important habitat for epiphytic orchid diversity and endemism of the region and should be included in conservation strategies, and conservation interventions such as plant rescue and restoration can be a tool to prevent orchid loss. It is important to identify and involve stakeholders in field research and conservation for increased impact. This model can be replicated across biodiverse regions and communities that live close to the forests. Finally, ground field experience and conservation education can be tailored for students of various age groups in nature education.

— *The AOS Conservation Committee recently awarded the AOS Conservation Recognition Award for 2021 to Dr. Jis Sebastian of Kerala India, for her work in orchid conservation and restoration. She completed her PhD research on the influence of phorophyte, habitat and climate on the diversity, distribution and community structure of epiphytic orchids in the southern Western Ghats. Having been inspired by the success of the restoration project, she independently initiated the orchid research and conservation projects described above and is currently leading an ecological study on a critically endangered terrestrial orchid in the Western Ghats with support from the San Francisco Orchid Society and a conservation project on orchid-friendly tourism with the support of the San Diego County Orchid Society. She looks forward to promoting orchid research and conservation in the Western Ghats and India and advocating maintenance of agricultural ecosystems as both orchid habitats and at the same time a tool to fight climate change.*

Further Reading

Roopa, N. *Fallen Flowers: Restoring Wild Orchids in the Western Ghats.*

<https://round.glass/sustain/conservation/orchids-western-ghats/>



AOS Conservation Committee Issues New Grant



THE AOS CONSERVATION Committee is pleased to announce the award of a grant to Normandie González-Orellana, a graduate student at the University of Puerto Rico. The aim of her study is to understand the tripartite relationship between the Puerto Rican endemic orchid *Psychilis kraenzlinii*, its phorophytes (host trees) and its associated mycorrhizal fungi. The work will take place in the Susúa State Forest. *Psychilis kraenzlinii* has not been studied previously. This grant is for the first year of her proposed two-year project. Her work may well be able to recommend a conservation strategy for this endemic orchid of Puerto Rico.

— Charles Wilson, AOS Conservation Committee Chair (email: zooemeritus@gmail.com).

[1] The Susúa State Forest, 3,240 acres (1,311 ha), located on the foothills of the central mountain range of Puerto Rico is a transitional forest between the Guánica Dry Forest to the south and the Maricao humid forest to the north. It is the habitat of *Psychilis kraenzlinii*, inset.

[2] Grant recipient, Normandie González-Orellana.



Vandaceous Orchids

Supplement to volume 90, Orchids magazine

ROBERT FUCHS *Large-flowered Vandas*

ROBERT FUCHS *Smaller Flowers, Dazzling Color: Breeding with the Former Ascocentrum*

MARTIN MOTES *The Other Vandas: New Directions in Breeding*

JIM COOTES *Philippine Renanthera Species*

PATRICK VUURMAN *Rhynchostylis and its Hybrids*

GARY YONG GEE *Aerides*

STIG DALSTÖM *Cool-growing Vandaceous Orchids of Bhutan*

KEN JACOBSEN *Growing Award-winning Sarcochilus*

JASON FISCHER *Influenced by the Wind Orchids: Hybrids of the Former Neofinetia*

SYNEA TAN *Growing Award Winning Vandas in My Basement*

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COLLECTOR'S ITEM

Aerangis punctata J. Stewart 1986

By Judith Rapacz-Hasler



Aerangis punctata grown and photographed by the author. The inset photograph is *Aerangis monantha*, the correct name for the plants once confused with this species. The two are easily differentiated by the unequally bilobed leaf apices of *Aer. punctata* and the "pebbled" leaf surfaces.

RAPACZ-HASLER

THIS RARE *AERANGIS* species grows in the central highlands of Madagascar as well as Réunion on shrubs and trees in highland forests at elevations of 2,953–4,920 feet (900–1,500 m) and blooms in the spring and summer on a short inflorescence with two to three white flowers. In some clones, the extremities of the sepals and petals have a soft salmon-colored tint. The tiny plants are flowering size with less than a 1.5-inch (3.8-cm) leaf span. The 4-inch (10-cm) flowers are large to begin with, but when compared to the size of the tiny plants, they are gigantic! The word “aerangis” was coined from two Greek words, “aer” = “air” and “angos” = “vessel.”

Aerangis punctata has historically been confused with a species circulating under the name *Aerangis curnowiana*. The latter species is correctly called *Aerangis monantha*; the name *Aerangis curnowiana* sensu H. Perrier actually belongs to a species of *Angraecum*, also from Madagascar. Although *Aerangis punctata* and *Aerangis monantha* are similar in many respects, *Aerangis punctata* is easily distinguished by several features. The leaves, acutely bilobed at the apex, are a distinctive gray-green color speckled with tiny, silver spots that seem to be punctured with a needle when viewed through a magnifying glass while those of *Aerangis monantha* are simply pointed, smooth and a uniform green. Second, the verrucose roots are wider and flatter while those of *Aerangis monantha* lack the uneven, verrucose surface. *Aerangis punctata* often has two to three flowers on the inflorescence, whereas *Aerangis monantha* only produces a single flower. Generally, the petals of *Aerangis punctata* are somewhat shorter and a bit wider than the sepals, whereas the sepals and petals of *Aerangis monantha* are of similar size. Lastly, the shape of the lip of the *Aerangis punctata* is variable, sometimes wider closer to the apex, but it is always wider than that of *Aerangis monantha*. Like most species of *Aerangis*, *Aerangis punctata* grows best and its hanging inflorescences display best when the plant is mounted on pieces of tree fern or thick bark. However, such plants require high humidity, and, during hot dry weather, should be watered several times a day. When the leaves begin to wrinkle or curl, you can usually save the plant and it will continue to grow well if you immerse it in water for about 20 minutes at least three times a week.

The plants can also be grown in small, 3–5-inch (8–13-cm) hanging pots

or baskets, filled with a thick, loose, permeable substrate that holds the plant in the pot but allows the roots to grow out of the container. The plants should be repotted when the substrate begins to decompose. Repot only when new roots begin to appear so the plant will root quickly and the stress of repotting will be minimized.

During periods of active growth, the plants should be fertilized every week with $\frac{1}{4}$ – $\frac{1}{2}$ of the recommended dose of your chosen fertilizer. Balanced fertilizers can be used throughout the year, but fertilizers with an increased nitrogen content can be applied from spring to midsummer; in late summer and autumn, a good Michigan State University-type, high-potassium fertilizer (19-4-23) is recommended.

In its habitat, rainfall is moderate to heavy from late spring to early autumn. Averages drop rather abruptly in mid-autumn at the beginning of the five-month dry season, which lasts until late winter or early spring. Cultivated plants should be watered heavily while actively growing, but drainage must be excellent. Water should be reduced in the autumn after new leaves mature. In the winter, *Aerangis punctata* needs much less water,

but plants should not be completely deprived of it for a long period. Occasional morning fogging between occasional waterings should be enough in most areas. However, the amount of water supplied should be increased if the leaves wrinkle or show signs of weakness. Fertilization should be eliminated until new growths appear and more watering begins in the spring.

Temperatures during the summer days should average around 80 F (26.7 C), and nights average about 60 F (15 C) with a diurnal difference of about 20 F (11 C). Humidity should be 70–75 percent in summer and autumn, dropping to 60–65 percent for about three months in late winter and early spring.

— Judith Rapacz-Hasler is a member of the AOS editorial board, spending half the year on Florida’s west coast and the remainder in Europe (email: jorapacz@wisc.edu).

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Miniature Stanhopeinae

by Thomas Mirenda

THE FLOWERS OF *Stanhopea* and its relatives are the epitome of exoticism. Strikingly unusual, their typically pendulous inflorescences bear huge, intricate, evocatively fragrant flowers. But being rampant growers that quickly attain mammoth dimensions, it is the rare collector that can afford to give adequate space to more than a few of these spectacular orchids. Fortunately, there are several miniature genera related to these behemoths that have all if not more of their exoticism yet can be grown and bloomed in 3- or 4-inch (7.5- or 10-cm) net pots or baskets.

One such genus is *Sievekingia*, generally bearing wonderful fragrant pendent clusters of bright yellow or orange. *Sievekingia reichenbachiana* and *Sievekingia fimbriata* have fringed flowers, while *Sievekingia suavis* and *Sievekingia rhonhofiae* are smooth; they bloom prolifically and occasionally have purple spots on the segments.

Kegeliellas resemble small gongoras but are much more manageable. *Kegeliella kupperi* from Costa Rica has lovely yellow to olive green flowers with brown to burgundy tiger stripes. The overall impression of the flowers, depending on the mix of base color and overlays varies from very dark brown to quite light reddish burgundy. *Kegeliella atropilosa* boasts green flowers with black hairs. If these are not exotic enough for you, then have a look at the genus *Paphinia*. For me, this is simply the most bizarre and wonderful genus in the Stanhopeinae. The most well-known species, *Paphinia cristata* bears a couple of comparatively enormous flowers on a petite plant, while *Paphinia herrerae* can get up to eight huge flowers per inflorescence. A good hybrid between these two species is *Paphinia Majestic*. With its hybrid vigor, this grex is easier to grow than either parent and often throws larger and firmer flowers. Even though their flowers are not particularly long-lasting (about a week), the plants bloom quite frequently and are a spectacle when in flower.

These species come from warm, wet rainforest environments and do well in intermediate to warm conditions with frequent year-round watering. Beware of overwatering during overcast short days in winter. These plants thrive in live



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sphagnum moss. While a fine bark mix will also work, any hint of staleness will cause these plants to decline. Yearly reworking or replacement of the medium is essential with these little gems. For many years, misinformation was spread that these plants needed cool conditions, but keeping them cool will quickly lead to their demise. Instead, provide temperatures of 76–85 F (24.5–29.5 C) days and 60–65 F (15.5–18 C) nights for best results. It is also thought that they do best in rather shady conditions, but there is some evidence that *Pna. herrerae* and *Pna. Majestic* and most sievekingias grow better in bright shade.

— Tom 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).

- [1] *Sievekingia suavis* 'L. Blanco' AM/AOS; grower: Luis D. Blanco.
- [2] *Kegeliella kupperi* 'Chasus' AM/AOS; grower: Charles and Susan Wilson.
- [3] *Paphinia Majestic* 'Orquivalle' AM/AOS; grower: Orquideas Del Valle. Note that the photograph has been rotated 90 degrees to better display the flowers.
- [4] *Paphinia herrerae* 'Dandy's Custard' AM-CCM/AOS; a rare albinistic form of the species. Grower: Doug and Terry Kennedy.

The 2021 Fall Members Meeting will be held in conjunction with the AOS Centennial Celebration.

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POTS

Text and photographs by Carlos Macku

IN NATURE, ORCHIDS grow either as epiphytes, lithophytes, or more-or-less terrestrial plants. However, when cultivated in our collections, unless you grow a complete collection of mounted plants, suitable containers are necessary. Choosing the right container helps maintain appropriate levels of water, humidity, aeration, temperature and lighting for the developing roots of the plant. Individual growing conditions are enhanced when combined with the right choice of potting materials such as tree bark, tree fern, horticultural charcoal and perlite, lava rock and sphagnum moss.

There are three main types of orchid plant containers: clay (terra cotta), opaque plastic and translucent (often referred to as clear) plastic pots. Each container type is described and illustrated with common appropriate (orchid) plant choices.

CLAY

Porous clay, commonly referred to as terra cotta (or alternately terracotta or terra-cotta) is a material that has been used for construction for many centuries. It has also been used for artwork, and for the making of containers and decorative vases. Terra cotta is mostly made of clay and other processing ingredients that provide rigidity and strength. Clay itself is the pulverized remains of weathered rocks, with a chemical constitution largely made of silica and alumina. The color of terra cotta depends on the local materials, but the typical reddish terra cotta color of traditional clay pots is due to the ferric-oxide-rich component used during their manufacture.

Compared to other pot choices, terra cotta pots are very porous, unless they are coated with an enameled glaze (ceramic) or have an internal layer of much denser material found in some decorative “clay” pots in the mass market. For many years, terra cotta was practically the only material used for all kinds of plant containers. However, this material was gradually displaced by plastic during the 1960s.

Clay pots made specifically for orchids and other epiphytes differ somewhat from other plant pots because of the need for root aeration and humidity control inside the potting medium. In addition to the bottom, central drainage hole of the container, lateral slits or round



1



2



3

holes (either three or four) are added near the bottom of the pot for extra air and moisture circulation. Terra cotta pots are a reasonable choice for indoor epiphytes that require continuous cycles of dampness and dryness. Some growers believe that epiphytic orchids in clay pots are the best thing next to a mounted one (although one can argue that belongs to baskets), and an excellent choice for cattleyas and dendrobiums.

Clay pots are commercially available in many sizes, but the two most common are 6¼ × 4¼ inches (17 × 12 cm) — top outside diameter × depth, and 5¼ × 4

inches (13.5 × 10 cm). Smaller-diameter slotted pots can sometimes be found or regular clay pots can be used by breaking more of the bottom drainage hole for improved drainage and aeration. For larger pots, the same is true. Extra drainage can be provided by enlarging the drainage hole and inverted plastic pots in the center over the drainage hole helps to reduce the volume of potting mix in the center of the pot. By careful selection of pot size, filler and potting medium, growers can find clay pots for plants from small seedlings to specimen size. These containers used to be readily

available in most family-owned nurseries. However, as large warehouse stores took on more and more of the horticulture supply business, fewer choices have been available to orchid aficionados. But again, this situation is now being managed by e-commerce: This new way of shopping is certainly providing a greater breadth of possibilities as long as the grower is willing to pay shipping expenses. Sometimes, local orchid shows offer on-the-spot opportunities to find appropriate terra cotta containers. However, because of their weight and breakability, event vendors often focus on easier-to-transport containers such as plastic pots and baskets.

The unique properties of terra cotta pots for tropical epiphytic orchid plants must be matched with an appropriate potting medium. Potting a cattleya in a terra cotta container full of sphagnum moss might defeat the purpose of proper aeration and dampness control required by this group of plants unless grown in a space where watering can be strictly controlled. Similarly, potting the same cattleya in a clay pot full of inorganic Aliflor or other expanded clay medium might prove too dry if the plants are grown in a hot, dry climate. The medium used for cattleyas and dendrobiums plants must provide “avenues” for air and moisture between the inner walls of the container, the actual medium and the roots of the plant, as well as provide for adequate water retention between waterings. This can be achieved for most growers with a mixture of “chunks,” mixed with a perhaps 10% sphagnum moss to help with moisture retention. These lumps could be tree bark, wood chips, lava rocks, charcoal pieces or other irregularly shaped materials added to the mix. Placing a layer of drainage material on the bottom of the container (Macku 2011), will help achieve improved inner ventilation and reduce direct contact between the roots of the plant and the water accumulated in the saucer, if one is used.

In addition to the microenvironmental conditions that terra cotta containers provide to the root system of large (and tall) cattleyas and dendrobiums, these relatively heavy containers provide stability and minimize accidentally tipping over the plants. During repotting and plant movement, terra cotta containers also provide reliable strength and durability in comparison to other materials such as plastic pots that might get brittle with age or exposure to sunlight.



However, terra cotta pots are not indestructible or immutable and are prone to deterioration leading to a tendency to chip over time, particularly on the top rim. Routine watering carries carbonates and fertilizing salts that percolate through the matrix of the container because of its porosity. During wet and dry cycles, dissolved minerals crystallize and expand, creating cracks on the most vulnerable structural points similar to weathering of exposed rock.

Many growers use extra-large clay pots for upright-flowering cymbidium plants. These make elegant decorations for indoor settings, particularly when bearing several fully opened inflorescences. These terrestrial tropical orchids have been defined as semi-epiphytes (Cullina 2004) with a root system that requires some additional aeration. Plants can be grown in the same potting media used for cattleyas and dendrobiums, with or without added finer material. Repotting ranges from three to four years under ideal conditions — just be forewarned, these plants make massive root systems and exert tremendous pressure on the pots in which they are grown. Plastic pots may tear, but clay pots often simply

- [1] A specimen of *Cattleya* Exotic Smile ‘Spring Sensation’ grown in a slotted terra cotta orchid (or azalea) pot. These pots are slightly shorter for their diameter than traditional nursery pots. Notice the spalling taking place on the rim of the container.
- [2] *Cymbidium* Chen’s Ruby ‘Gold Tiger’ HCC/AOS in an 8¼ × 5¾ inch (21 × 14.5 cm) clay pot. For larger cymbidiums, traditional plastic nursery cans (capacity measured in gallons [liters]) would be the proper choice.
- [3] *Paphiopedilum* Hsinying Alien in an opaque, round pot.
- [4] A *Phalaenopsis* orchid plant with a healthy green root inside a clear plastic container. Because translucent pots allow light to reach the potting medium, green algae may grow on the inside of the pot over time (inset). Plastic pots are easily cleaned and reused — one of the main advantages over clay — and such deposits can be simply scrubbed off at repotting time.

shatter.

PLASTIC

Plastic containers for ornamental plants are the outcome of the plastic revolution that took place during the 1950s and 1960s. Plastic containers for orchid plants are made of polypropylene (PP) or polystyrene (PS) and, depending on where you live, may be hard to recycle.

The main distinguishing feature of these containers is the impermeable barrier of the plastic walls, which reduces humidity loss between watering cycles. Moisture is locked in for longer periods of time compared to terra cotta containers, potting medium being equal. Additionally, there is significantly reduced air circulation within the potting media, which might not always have a positive effect.

OPAQUE POTS Opaque plastic pots are appropriate for terrestrials or semiterrestrials such as paphiopedilums and phragmipediums. Slipper orchids certainly do appreciate the moisture-retention achieved with plastic containers. However, they may still need additional aeration, achievable by adapting the potting medium used. I achieve a good humidity balance for slipper orchids in plastic containers with a mixture of up to 50% sphagnum moss and less “spongy” materials such as bark, wood chips, lava rock and horticultural charcoal (similar components used in my terra cotta containers, but smaller chunks). Finally, it is noteworthy to point out that the bottoms of most commercial plastic pots have an increased number of perforations (either four or eight holes per unit) when compared to containers made for other types of plants, and this is to provide for adequate drainage. Plastic pots designed specifically for orchids often have slits in the sides or aeration cones in the center of the pot’s bottom for this purpose as well.

Commercial opaque plastic pots are available in a dark green, black or terra cotta color in a plethora of sizes and shapes from tree pots (very tall, narrow pots), to rose pots (2 ¾ × 2 ¾ × 3 ½ inches [6.7 × 6.7 × 9 cm] — popular for paphiopedilums) through all manner of square and round pots. So-called azalea pots are often popular with orchidists because they are somewhat shorter than traditional pots of the same diameter, as are bulb pots or bulb pans. Although available in larger and smaller diameter, the two round-rim sizes are the most widely used, 5¾ × 4¼ inches (14.5 × 11

cm) and 4¾ × 3¾ inches (11 × 9½ cm). Personally, I prefer circular over squared plastic pots as I find the square pots have a tendency to lose their “squareness” during potting.

Polypropylene and polystyrene are mixed with polymer additives such as UV light absorbers and antioxidants to provide stability and durability but plastic pots do not last forever. The polymers do eventually oxidize from exposure to sunlight causing the chemical bonds to break with ensuing brittle pot surfaces. How long a given plastic pot will last depends on its exposure to heat and light, just like plastic labels.

TRANSLUCENT POTS There are two different versions of more-or-less clear plastic pots — truly clear ones and those that are really just translucent, allowing light to pass through but sufficiently opaque that you cannot read a label through it. Typically truly clear pots are only available in smaller sizes (4 inches [10 cm] or smaller), are of much thinner material and have a tendency to embrittle more quickly in the sun.

The basic difference between clear-to-translucent and opaque plastic pots is the light that passes through the pot’s walls, exposing the plant’s roots at the pot–medium interface to sunlight. The result is that clear or translucent plastic pots not only present the plants the same increased moisture retention and decreased air movement as opaque pots, but also allow light to the roots — an added benefit for epiphytes whose roots have been adapted to light exposure.

I recently discovered how much I can improve the long-term outcome of my phalaenopsis plants by repotting them from clay to translucent plastic pots. Phalaenopsis are a classic example of tropical epiphytic plants where roots are completely exposed and attached to living forest surfaces. A great deal of photosynthesis activity is also carried out in these green roots, providing extra energy to build larger and healthier plants. Since switching to translucent pots, I have seen improved growth with some plants increasing the number and size of leaves and green viable roots by as much as 50%.

Translucent plastic pots designed for orchid and other epiphytes are being manufactured with very elaborate designs, particularly with regard to the bottom and sides of the container. These adaptations are meant to increase air and moisture circulation. Commercial sizes are comparable to opaque plastic containers,

although it may be hard to locate sizes on the extremes of the spectrum. Like opaque plastic, translucent plastic pots come in circular and squared configurations. The two circular sizes I use most often are the 5¾ × 5 inch (13.5 × 12.5 cm) and 4½ × 4¼ inch (11 × 11 cm). Because phalaenopsis plants are monopodial (in contrast to sympodial cattleyas and dendrobiums, and even terrestrial lady slippers), these plants usually do not need larger containers. The main monopodial stem is only shortened, the dead roots trimmed and repotted into new potting media.

Translucent pots do suffer from one minor problem, the proliferation of green algae on the inner walls of the container. This is a more or less inevitable consequence of the high moisture content of the potting medium coupled with exposure to light. The presence of algae in and of itself is not a pathological issue and I simply remove the algae during repotting by wiping or brushing it away when cleaning the pots.

Orchid plants in translucent plastic containers can be staged inside more elegant containers to improve their appearance for shows or just displaying them in your home. Just make sure the decorative pot does not fit so tightly that air cannot circulate around the pot and into the potting medium. Air movement can be improved by placing a few pebbles, small stones, or even pieces of bark between concentric pots and the top can be dressed with a bit of Spanish moss.

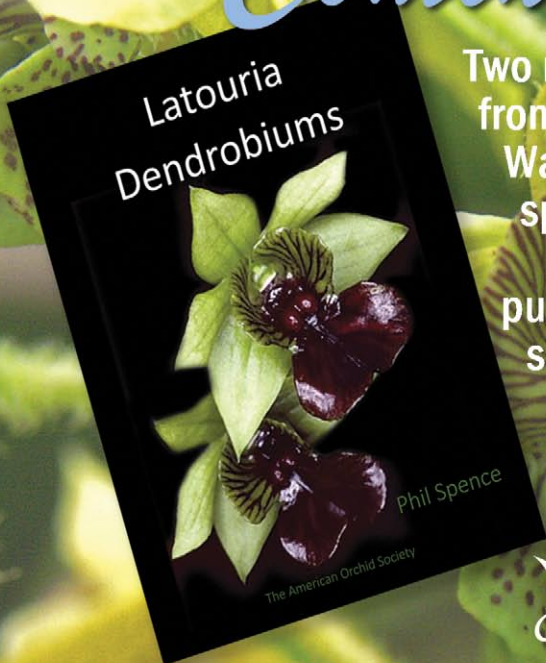
CONCLUDING REMARKS Clay pots, plastic pots, baskets or mounts? The choice is up to the grower, as long as the choice of container is appropriate to other growing conditions. Plastic pots in a constantly wet environment might be as much of a disaster as clay pots in the desert. Your choice will depend on the interplay of factors such as water — how much and how often, humidity and how hard it may be to control in your growing environment, the need for root aeration, and even temperature and light.

References

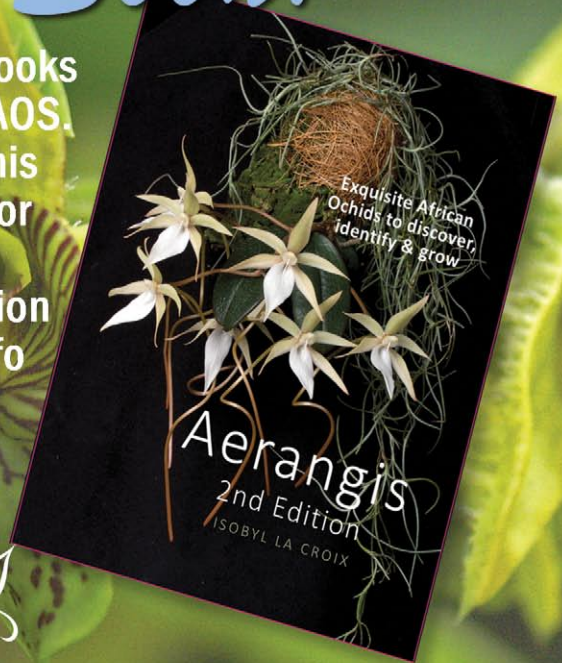
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— Carlos Macku was born in Caracas, Venezuela. He received a doctorate degree in Agricultural and Environmental Chemistry from UC Davis, California. He has been cultivating orchid plants for over 20 years inside his New Jersey residence (e-mail: carlosmacku@yahoo.com).

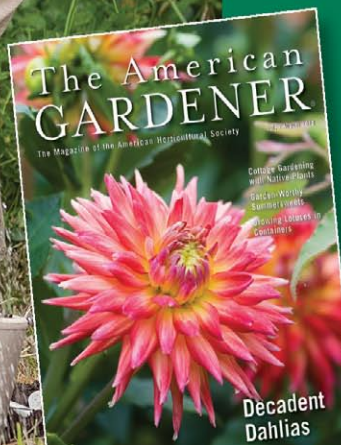
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Sylvia Strigari

Phragmipedium longifolium

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

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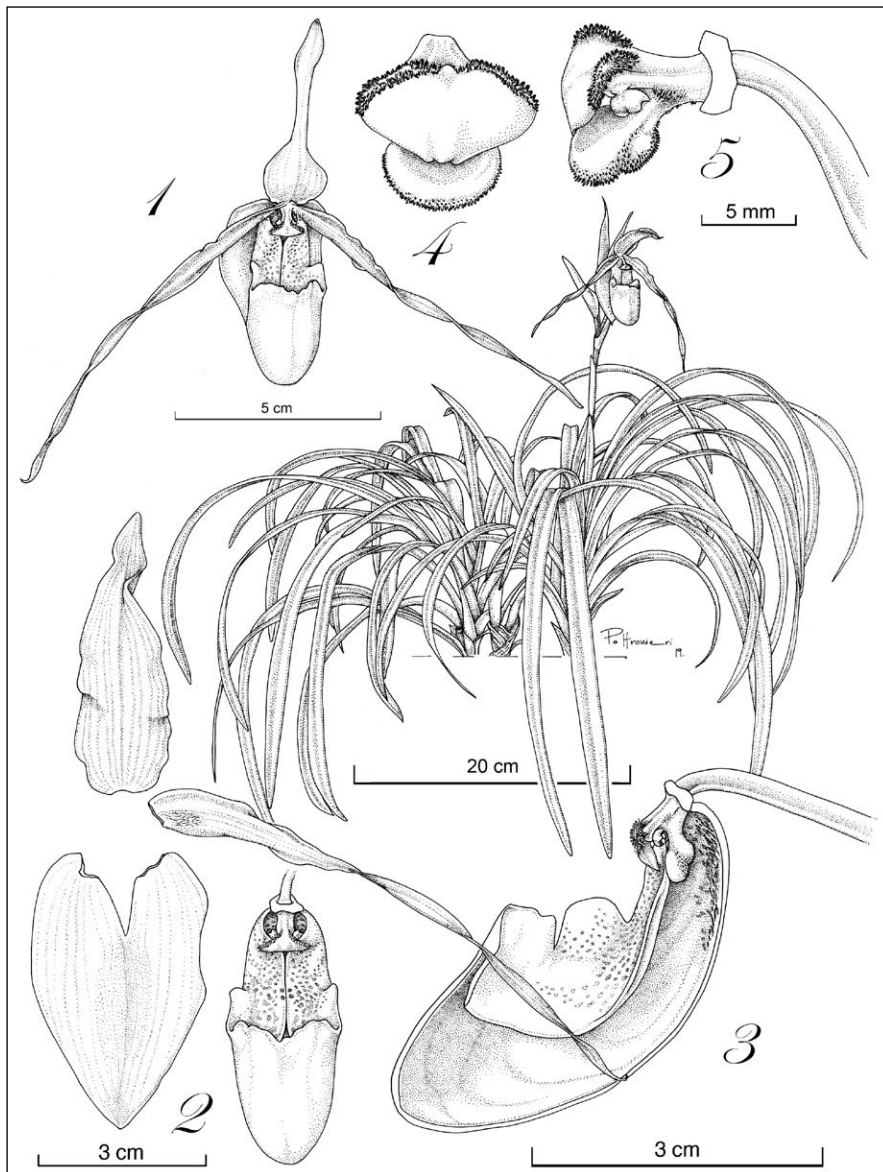
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An epiphytic, caespitose, fan-shaped herb, 25–100 cm tall including the inflorescence, the mature plants vegetatively highly variable in size. *Leaves* linear to narrowly lanceolate, mostly coriaceous, medium green to dark green, margins finely revolute, acute, 15–50 × 3–5 cm. *Inflorescence* a spicate raceme, erect, successively flowered, mostly 30–40 cm long, but occasionally reaching a length up to 2 m; peduncle terete, dark green, up to 30 cm long, enclosed in the midportion by two ovate, conduplicate,

loose, glumaceous-fibrose, green bracts, 6–8 × 2–3 cm. *Floral bracts* conduplicate, ovate, acute, glumaceous-fibrose, green to dark purple with maturity, 7–8 × 2.0–2.5 cm. *Flowers* green to yellow with purple veins in the sepals, the base of the petals green, becoming purple toward the apices, the margins white in the basal half, the lip green spotted with brown. *Dorsal sepal* ovate, reflexed, undulate, obtuse, 4.5 × 2.0 cm, 16-veined, the veins dark red and green. *Lateral sepals* fused into a broadly ovate, undulate, obtuse, convex synsepal, 5–6 × 2.5–3.0 cm, glabrous. *Petals* linear, obtuse, undulate at the base, curled towards the apices, 75–80 × 7.0–7.5 mm, covered with purple trichomes on the base of the adaxial surface, densely covered with minute trichomes on the apex of the adaxial surface. *Pouch* trilobed, 5.0–5.7 × 2.0–2.5 cm, the lateral lobes infolded, flat, the midlobe calceolate, auriculate, the rim truncate, glabrous on the abaxial surface, with white trichomes on the base of the adaxial surface. *Column* ca. 6.5 mm long, the staminode deltoid, approx. 7.5 × 9.0 mm, covered with dark purple trichomes on the lateral margins; stigma ca. 5 × 6 mm, hidden by the staminode, covered by small papillae. *Anthers* bilocular, 2.5–3.0 mm long. *Pollen masses* granulose, 1.5–2.0 mm long.

Phragmipedium longifolium is the most broadly distributed species of the genus. It can be found from Costa Rica to Ecuador and, as most species of *Phragmipedium*, it grows from middle to high elevations but can also grow near sea level (Cribb and Purver 2017). The species is recognized by its terrestrial and lithophytic habit, growing mostly in wet rocks close to creeks or waterfalls, in streambeds, and on steep slopes (Cribb and Purver 2017). We can hardly add anything else to a summary description of the typical characters of this species, because its variability — both among different populations as well as within the same population — extends practically to all of its characteristics. Whoever was confronted with one of those specimens growing in the humid and shady slopes of the pre-mountain forests of Costa Rica and which measure up to a meter in width between the tips of the leaves, and one

of those growing in full sun in Panama, in the midst of grasses in stony soils, with hard and narrow leaves of just about 15 cm, or those anchored to the rocks along the streams, which spend part of the year submerged by the rushing water, would certainly believe to observe three distinct species. Also driven by the desire to propose to the horticultural market new species of a genus that has historically inflamed the minds of collectors, botanists, collectors and horticulturists of the past have tried to identify “discrete” entities in the continuum of variation of *Phragmipedium longifolium* and to give them names, both at the species and variety level. The long and incomplete list of synonyms that opens this chapter of the *Refugium Botanicum* perhaps provides an idea of how many intermediate “forms,” defined for one or more aspects of the floral and vegetative morphology of *Phragmipedium longifolium* have gained taxonomic recognition. We have not gone into detail here with respect to other formal names, such as var. *coloratum*, var. *gracile*, var. *splendidum*, forma *minutum*, and probably also *Phragmipedium chapadense*, as the list of synonyms or possible synonyms of this species would have consumed all the space available for our presentation. Most authors are now in agreement on the fact that the characters used to circumscribe these variations in a formal way are generally inconsistent and in turn variable not only between one individual and another of the same region or population, but also in successive blooms of the same individuals, showing a mixture of variations across multiple taxonomic features. In a recent, annotated checklist of the genus *Phragmipedium*, Frank Cervera (2020a) well summarized the inherent impossibility “to classify this species in anything other than broad terms,” and the taxonomic necessity to treat *Phrag. longifolium* using a broad, versus narrow, species concept. Even though the concept of “ochlopecies” as proposed by Cronk (1998) to define a species of such complex pattern as to defy formal classification, has not gained broad consensus and use among biologists, it seems reasonably useful to understand the highly polymorphic species



382(2):167–181.

Phragmipedium longifolium. The plant.

1. Flower.
2. Dissected perianth.
3. Dissected lip, lateral view.
4. Column, frontal view.
5. Column, lateral view.

All drawn from Warner 22 by Sara Poltronieri.

of *Phragmipedium*. Even though variation in *Phragmipedium* is partly correlated with ecology and geography, the connections between taxonomic characters and specific locations is weak in the genus, with potentially diagnostic taxonomic characteristics present across the entire range of a given species (Cervera 2020b). In a companion paper to its taxonomic treatment, Cervera also presents an interesting account of the main habitats where the species is found, also showing in this case a broad array of suitable ecological niches, in part accounting for the extreme variation of *Phrag. longifolium* as to vegetative morphology. To quote him textually, the species can be found “in natural populations growing in bright light and low light under the jungle’s dense canopy. Natural plants with an overall leaf span over two meters have been seen growing a few meters from

plants not bigger than 30 centimeters” (Cervera 2020c).

Given its broad distribution, *Phrag. longifolium* is sometimes found growing sympatrically with other closely related species of the genus, which promotes the formation of natural hybrids; for example, *Phragmipedium* × *talamancanum* — a hybrid between *longifolium* and *humboldtii* — in Costa Rica and Panama, and *Phragmipedium* × *roethianum* — a hybrid between *longifolium* and *hirtzii* — in Ecuador (Gruss and Kalina 1998, Pupulin and Díaz-Morales 2018).

The pollination of *Phrag. longifolium* involves a brood-site deceptive mechanism in which syrphid flies act as the pollinators. The insect is attracted to the flower by visual and chemical cues that mimic the presence of aphids. Some species of syrphid flies typically oviposit on places with the presence of aphids because when developed, the larvae feed on the aphids. When the fly approaches the flower, it falls inside the calceolate lip and the only way it can escape is through the lateral openings where the pollen masses are located. The departing insect, carrying pollen, then visits a new flower where the pollen masses are transferred to the stigma when the insect tries to escape from that new flower (Pemberton 2013, Díaz-Morales et al. 2019).

This species is not difficult to flower and is not demanding with regarding to its potting mix. A mix of different substrates can be used including bark, perlite, charcoal, pumice, gravel and moss. Because this species naturally grows in humid areas, sometimes even in running water, what the plants mostly need is a substrate that holds enough moisture to emulate such conditions. As with many other species of *Phragmipedium*, *Phrag. longifolium* grows better when exposed to fresh air and air movement. During the spring and summer it can be kept outside as long as the temperatures are not below 50 F (10 C) or above 77 F (25 C), the temperature range that this species experiences in its natural habitat. The species is successive blooming meaning that after a flower drops the next bud will open although it is not uncommon to sometimes have two flowers open at the time. In exceptional cases, and depending on the growing conditions, some plants have presented up to six flowers open at the same time. Under suitable conditions the plants can bloom throughout the year. Due to its sympodial growth habit, it is important to repot the plant so it always has enough space.

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Yellow Sticky Traps



YELLOW STICKY CARDS are widely used to attract and capture the adult life stage (winged) insect pests including fungus gnats, leafminers, shore flies, thrips, winged aphids and whiteflies. If you don't have a ready source of these cards, you can easily make yellow sticky traps using readily available materials. Simply take a yellow plastic cup, cover the outside with Vaseline or Tanglefoot® (sold in most garden centers and big-box stores) and place the cup upside down on a stake tall enough to put the cup opening at just above foliage level. The cups should be replaced periodically because of either trapped insects in the coating or loss of stickiness over time.

Thank you to Laura Newton, AOS Awards Registrar, for bringing this homemade alternative to my attention. — Ron McHatton (rmchatton@aos.org).

Selected Botanical Terms

abaxial – underside
 adaxial – top or upper surface
 appressed – pressed against a surface
 acuminate – tapering to a long point
 acute – pointed
 apical – at or from the top
 arcuate – bow-shaped; curved
 articulate – having a clear joint between two separable parts
 auriculate – having small earlike projections
 bilocular – having two chambers
 bract – modified or specialized leaf
 bulbil – a small bulblike structure, especially in the axil of a leaf or at the base of a stem, that may form a new plant.
 caespitose – clumped or clumping
 calceolate – slipper-shaped
 concave – curved inward like the inside of a sphere
 conduplicate – folded lengthwise with upper surfaces facing each other
 convex – shaped like the outside of a sphere
 coriaceous – leathery; tough
 deltoid – triangular
 distichous – arranged in two rows
 ellipsoid – resembling an oval

elliptic – oval
 epiphyte – a plant that uses another plant as a means of support
 falcate – sickle-shaped
 fibrose – fibrous
 glabrous – smooth
 glumaceous – chaffy; having thickened, raised hardened tissue like the glandular warty tissue on many orchids
 granulose – composed of small grains or granules
 hyoid – U-shaped, similar to a horse-shoe
 incumbent – lying on a surface
 internode – interval between nodes or bracts
 lanceolate – narrow oval tapering to a point at each end
 linear – slender
 obtuse – blunt
 ochlospecies – a species of such complex pattern as to defy formal classification
 ovate – egg-shaped
 papillae – cone-shaped protuberances
 pedicel – a stalk attaching the flower to the inflorescence
 peduncle – the part of an inflores-

cence before the rachis or section to which the flowers are attached
 puberulent – finely pubescent
 raceme – branched or unbranched inflorescence of pedicellate flowers
 recurved – curved backward
 reflexed – bent sharply backward
 revolute – curved backward or downward
 rugose – wrinkled; corrugated
 scarious – dry and membranous
 spicate – arranged in the form of spikes
 staminode – modified sterile anther
 stipe – the stalk holding the pollinia
 sub – somewhat less than; i.e., subspherical would refer to almost but not quite a sphere
 synsepal – fusion of the lateral sepals to form a single structure
 terete – cylindrical or pencil-shaped
 thermophilous – warmth-loving
 trichomes – hairs or fine appendages
 trilobate – three-lobed
 truncate – abruptly cut off or terminated
 venation – an arrangement or system of veins

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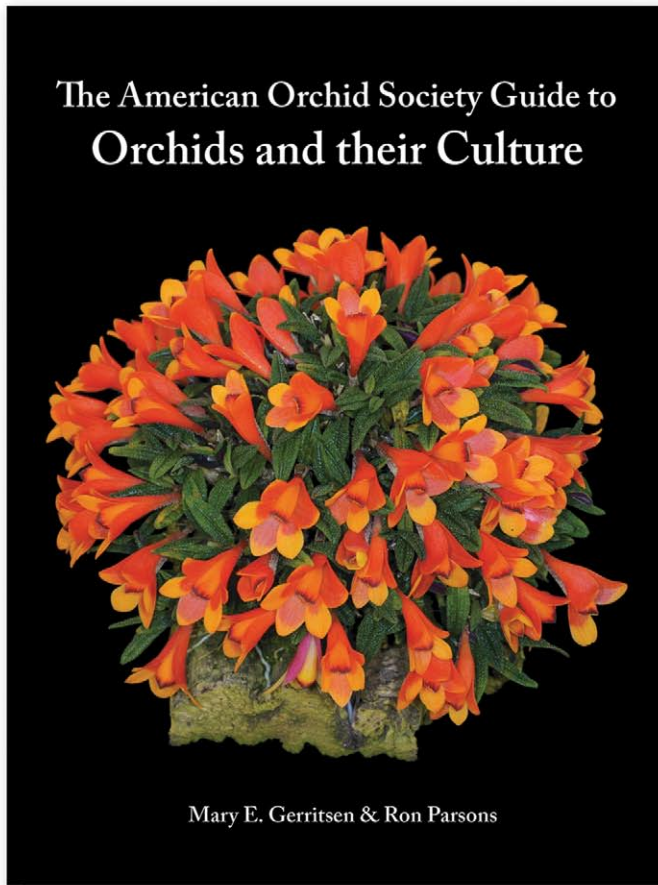
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Saccolabium calceolare.

Gastrochilus by Wesley Higgins and Peggy Alrich

A Southeast Asian Genus



THIS GROUP OF dwarf monopodial epiphytes was published as the genus *Gastrochilus* by David Don, *Prodr. Fl. Nepal.*, 32 (1825). Vegetatively, *Gastrochilus* species resemble small *Phalaenopsis* species but with longer, narrower leaves.

ETYMOLOGY Greek for potbelly or belly and a lip. In reference to the bellylike, swollen sac of the lip.

Seventy-one monopodial epiphytes are found in cool to humid, low to middle elevation, dense evergreen hill scrub to montane primary forests from northern India (Kashmir to Assam), Bangladesh, Japan, Korea to Taiwan, Myanmar to Vietnam and Indonesia with the greatest diversity found in southern China (Xizang and Yunnan to Hainan).

These small plants have slender, short to long, erect to hanging, branched or unbranched, strap-shaped stems, subtended completely by leaf-bearing sheaths, each with several, slightly fleshy to leathery, distichous, narrow to oblong, yellow-green to dark green, unequally bilobed leaves that are sometimes spotted red-brown. The short, numerous- to few-



flowered inflorescence has small to rather large, long-lived, waxy, slightly fragrant, hairy, flowers variously spotted, barred, or heavily blotched. The small, saclike, immobile, simple, or obscurely trilobed lip, sides firmly joined to the base of the column, has a broad, fan-shaped epichile and the pouchlike or saclike hypochile has a variously hairy to entire margin. The flowers have a short, stout, wingless, footless column. Pollinia two or rarely four,

waxy, unequal, on a long, narrow stipe with a bilobed viscidium.

CULTURE Mount on cork bark, rough wooden slab, wood shingles or tree fern, water frequently, allow to dry out briefly between waterings. Provide cool to intermediate conditions, bright to medium shade, high humidity, and good air movement.

A recent molecular study (Qiang Liu, 2019) indicated that *Gastrochilus* is monophyletic and subdivided into five clades. *Haraella* is nested in *Pomatocalpa*, and together they are sister to *Gastrochilus*. Five morphological characters (epichile hairs, stem type, leaf size, dorsal sepal size and presence of leaf spots) agree with the molecular phylogenetic trees and can be used to subdivide *Gastrochilus*.

Reference

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3

SACCOLABIUM BELLINUM.

Gastrochilus

ANTIQUÉ PLATES

- [1] *Gastrochilus intermedius* as *Saccolabium calceolare*, Paxton's Magazine of Botany, 6: 96 (1839).
- [2] *Gastrochilus obliquus* var. *obliquus* as *Saccolabium bigibbum*, Botanical Magazine, 95: t.5767 (1869).
- [3] *Gastrochilus bellinus* as *Saccolabium bellinum*, The Garden, 35: t.700 (1889).
- [4] *Gastrochilus acutifolius* as *Saccolabium acutifolius*, Annals of the Royal Botanic Garden, Calcutta, 8(3): t.302 (1896).
- [5] *Gastrochilus bellinus* as *Saccolabium bellinum*, Orchid Album, 4: t.156 (1885).



4



J. Nugent Fitch del. et lith.

SACCOLABIUM BELLINUM.

B.S. Williams Publ.

Let There be Light

Target PPFd for Orchids and Tropical Plants: Part 2

BY KELLY MCCRACKEN

THIS IS THE second in a five-part series of articles intended to be an introduction to growing orchids under artificial light. Innovation in the artificial lighting industry, for the last few decades at least, has largely been driven by the cannabis industry. Now, with cheap, available, higher-tech lights, we can grow an amazing variety of plants that would not have been possible with windowsill light alone.

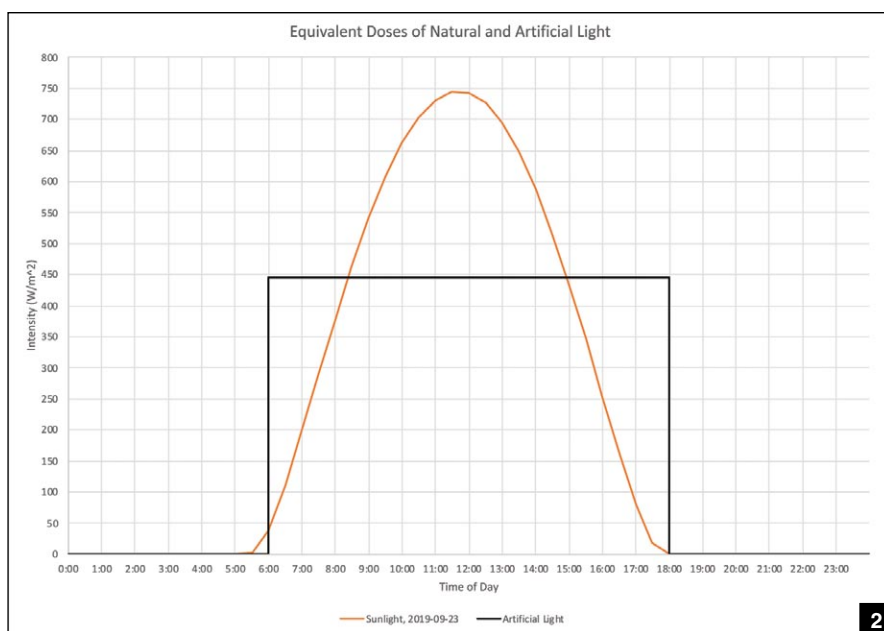
There is much information about how to grow cannabis under lights and the ideal light levels, spectra and photoperiod for it. But there is less information about house plants and in particular, orchids.

This article focuses on how I decided at what levels of light to grow our plants and what we have learned. I will talk specifically about what we are growing at what light levels.

To begin, you must understand the unit I am using. We are measuring light in PAR/PPFD. To learn more about PAR and why it is important for measuring plant light, check out my other AOS article: An Introduction to PAR, PPFD and Why You Should Forget Lumens (2021).

Before we built the 3,000-ft² (290 m²) growhouse, we needed to do a little research about growing orchids under lights. We wanted to know the specific PAR values that were recommended for growing orchids and tropical plants. After some furious Googling and considerable time spent scouring Google Scholar, we came up relatively empty-handed to the question of “How much artificial light do orchids need?” This was utterly frustrating. There are so many products on the market. A Google search of the term “LED growlight for sale” comes up with a whopping 144 million results! I could not find even one scientific article with the numbers I needed.

After coming up empty on the internet, we started to consult other types of plant growers. We talked to light companies, and we pleaded with orchid growers on Facebook. No one really had the data we were looking for. We just



needed to do the research ourselves.

We purchased a Quantum PAR meter, the Apogee Full-Spectrum Quantum Sensor, a \$500 instrument! I took this PAR meter out to my natural-light greenhouse, where I had been growing a huge variety of orchids for many years.

[1] The High Desert Orchids Growhouse.

[2] Natural vs. Artificial Light Dose.

[3] Gorgeous *Masdevallia constricta* grown under 40 $\mu\text{mol}/\text{m}^2/\text{s}$ on a 12-hour photoperiod.

I was comfortable with my knowledge of how the light behaved in my greenhouse. I used this knowledge to take natural light values using my PAR meter and convert that into target light levels for our artificial light grow house.

For example, I had a standard cattleya hybrid (a *Rhyncholaeliocattleya* Kat Green Power) growing on the same spot on my bench for the last three years. This plant flowers reliably twice a year, has bright apple green leaves, and generally grows well in that spot. Therefore, I knew the light in this spot was *bright* cattleya light. I took a PAR measurement in this spot, and various other spots in my natural-light greenhouse. I repeated this several times throughout the day (from 9:00 am until dark), and I averaged the values together into one ideal target light value for each type of light at which I was looking (i.e., shady, medium, bright, very bright).

Here is what we came up with:

- 50–70 $\mu\text{mol}/\text{m}^2/\text{s}$ — Under bench (mostly growing phalaenopsis here, some mottled-leaf paphiopedilums, aerangis).
- 100–150 $\mu\text{mol}/\text{m}^2/\text{s}$ — Shadiest part of bench level, northeast corner of greenhouse (here I grow masdevallias, many *Aerangis* species, miniature *Dendrobium* species, some bulbophyllums).
- 200–300 $\mu\text{mol}/\text{m}^2/\text{s}$ — Bright bench level (at 200- μmol level, I grow miniature cattleyas, many former *Sophranitis* species. At the 300- μmol level, I grow *Dendrobium* species, larger cattleyas, rhyncholaeliocattleya hybrids).
- 600–800 $\mu\text{mol}/\text{m}^2/\text{s}$ — 6 inches (15 cm) below the roof level, VERY bright light (here I grow *Brassavola* species and hybrids, rupicolous cattleyas and bifoliate cattleyas).
- 2,000–2,200 $\mu\text{mol}/\text{m}^2/\text{s}$ — full sun.

You might think you can just crank your lights up to these values and be good, but it is not quite so easy.

Because of the nature of artificial light, it really has two settings — on and off. Sure, you can certainly buy fancy and expensive dimmers that can replicate the path of the sun. But for the most part, your lights will follow the same path as the black line in natural vs. artificial light figure. The lights turn on at 6:00 am and off at 6:00 pm. They are on at a constant brightness all day. The other curve is the average path the sun would take on a day with a 12-hour day–night cycle.

To understand how this affects your plants, imagine your plant as an empty cup to be filled with water (in this analogy water = photons of light). Your goal each day is to fill your plant's cup with just the right amount of water, drip by drip (photon by photon). You can fill this cup as the sun would, by starting out at a slower rate, then peaking around midday, and then slowing down again before going dark. Or you can fill your plant's cup with a constant, but overall lower rate. Take another look at the figure. The area under these two curves is identical, meaning that the plants are being given the same dose of light in both situations. Though the artificial light does not have the same intensity peak, it is still receiving the same amount of light it would have if it had been given a more natural daylight dose of light.

If I grow my plants at the peak intensity reading that I got from measuring my greenhouse, I am going to be overdosing my plants on light! Based on the results of this graph, we found that on a 12-hour photoperiod, plants need about 30–50% less than the full natural-light values cited in our original light target estimates. We started growing using the averaged light measurements taken throughout the day, but we found that even this was still too high, and our plants are much happier at surprisingly low levels.

Here is a list of what we grow under what light levels:

- Low light bench: 40 $\mu\text{mol}/\text{m}^2/\text{s}$. Jewel orchids (*Macodes*, *Ludisia discolor*, a variety of *Anoectochilus* species such as *roxburghii*, *formosanus*, *burmannicus*, *Goodyera* species, *Cheirostylis* species) begonias (rex begonia hybrids), various ferns, *Masdevallia* species, *Pleurothallis* species, *Phalaenopsis* species and hybrids, limited low-light paphiopedilums (*Maudiae* hybrids, *Paphiopedilum thaianum*, *Paphiopedilum micranthum*), habenarias.
- Medium light bench: 150 $\mu\text{mol}/\text{m}^2/\text{s}$. Miniature cattleyas (former *sophrolaeliocattleya* hybrids, the former *Hadrolaelia* species, various other small cattleyas), higher-light paphiopedilums (strap-leaf species and hybrids), complex paphiopedilums, *Phragmipedium* species and hybrids, miniature *Dendrobium* species, oncidium intergeneric hybrids (such as *Oncidium Sharry Baby*), zygotetulum hybrids, *Gongora*



species, cynoches hybrids, *Angraecum* species and hybrids (such as *Angraecum scottianum*, *Angraecum pseudofilicornu*, *Angraecum Gem Star*, *Angraecum magdalenae*, *Angraecum didieri* and others), carnivorous butterworts, *Utricularia* and *Drosera* and *Pothos*.

- High light bench: 250 $\mu\text{mol}/\text{m}^2/\text{s}$. Standard *Cattleya* species and hybrids (labiate cattleyas, rhyncholaeliocattleya hybrids), *Dendrobium* species (including *Dendrobium farmeri*, *Dendrobium lindleyi*, *Dendrobium trigonopus*, *Dendrobium chrysotoxum* and many other species), *Dendrobium densiflorum* hybrids, *Dendrobium bigibbum* hybrids, nobile dendrobium hybrids, rupicolous *Cattleya* species and hybrids, miniature vandaceous plants (*Holcoglossum*, the former ascocentrums, *Renanthera*, *Vanda*), carnivorous *Pinguicula* and *Utricularia*, *Broughtonia* species and hybrids, *Epidendrum* species and hybrids, aroids (*Monstera*, *Philodendron*, *Syngonium*), strap-leaved paphiopedilums.

Coming in September — Measuring Artificial Light without a Quantum PAR Meter: Part 3

— Kelly McCracken is the owner of High Desert Orchids in Albuquerque, NM. She is an avid grower, breeder and seller of orchids. Currently, she is growing in a 3,000-ft² (290 m²) high bay warehouse space all under artificial light. Kelly also does orchid society talks on lighting and other orchid-related topics. You can email her at kelly@highdesertorchids.com, visit her website highdesertorchids.com or follow her on Instagram at @hdorchids.

Paphiopedilum fairrie anum

Part 1: The species and natural hybrids

CHRISTELLE KAPFER



Paphiopedilum fairrie anum 'Nova' AM/AOS; grower: Richard Buchter; photographer: Ramon de los Santos.

CLASSIFICATION AND DESCRIPTION

Paphiopedilum fairrieianum is a unique dwarf plant that, unlike many other paphiopedilums, cannot be confused with any other species in the genus due to the distinctiveness of its flower. According to Braem’s (Braem and Chiron 2003), classification of the genus *Paphiopedilum* (see for a description Table 1 for a comparison of different authors’ classification systems), it is the only species classified in the Section *Ceratopetalum* of the subgenus *Paphiopedilum*. The name comes from the Greek “keras,” meaning “horn,” describing how the petals are held; that is, recurved like the horns of a buffalo. The classifications of the genus *Paphiopedilum* made by Cribb (1998), Cash (1991), and Koopowitz (2008) all place *Paph. fairrieianum* in the Section *Paphiopedilum* (Koopowitz uses the term “Insigne Alliance”) of the subgenus *Paphiopedilum*, along with *Paphiopedilum insigne*, *Paphiopedilum spicerianum*, *Paphiopedilum hirsutissimum* and many others.

As described by Cash (1991), *Paph. fairrieianum* plants grow in clusters of several growths. Leaves are usually pale green, although clones bearing subdued tessellation are known. Leaves may bear minute serrations distally. Plants that produce vinicolor flowers typically bear purple spotting on the undersurfaces of the leaves.

The inflorescence bears a solitary flower. Bifloral scapes are considered rare. The hirsute peduncle extends to 4.7–17.7 inches (12–45 cm) and is typically arched to suberect. The flower is subtended by a pubescent bract.

The dorsal sepal is white with strong vertical green-and-purple veins, which are criss-crossed with subdued reticular venation in the same two colors. The apical margins undulate to form troughs to either side of the elevated midrib. Lateral margins are crisply undulate. All margins are feathered by the branching of the outermost veins. Elliptic in shape, the dorsal sepal measures 1.4–3.1 inches (3.5–8 cm) in length by 1.2–1.5 inches (3–7 cm) in width. The veined green-and-purple, ovate ventral sepal measures 1–1.4 inches (2.5–3.5 cm) long by 0.5–1 inch (1.2–2.5 cm) wide. Both sepals are pubescent on their reverse sides. The petals grow downward with the distal third of their length curving up and back. Their orientation has been likened to that of the curved horns of the water buffalo. The petals bear parallel veins of purple and green with undulate-and-ciliate

Cribb (1999)	Lee et al. (2017)	Braem (2003)
subgenus <i>Brachypetalum</i>	subgenus <i>Brachypetalum</i>	subgenus <i>Brachypetalum</i>
subgenus <i>Parvisepalum</i>	subgenus <i>Parvisepalum</i>	subgenus <i>Parvisepalum</i>
subgenus <i>Paphiopedilum</i> section <i>Barbata</i> section <i>Cochlopetalum</i> section <i>Coryopetalum</i> section <i>Paphiopedilum</i> section <i>Pardolopetalum</i>	subgenus <i>Paphiopedilum</i> section <i>Barbata</i> section <i>Cochlopetalum</i> section <i>Coryopetalum</i> section <i>Laosianum</i> section <i>Megastaminodium</i> section <i>Paphiopedilum</i> section <i>Pardolopetalum</i>	Subgenus <i>Cochlopetalum</i> subgenus <i>Paphiopedilum</i> section <i>Ceratopetalum</i> section <i>Paphiopedilum</i> section <i>Stictopetalum</i> Section <i>Thiopetalum</i>
		subgenus <i>Polyantha</i> section <i>Mastigopetalum</i> section <i>Mystropetalum</i> section <i>Polyantha</i>
		subgenus <i>Sigmatopetalum</i> section <i>Blepharopetalum</i> section <i>Planipetala</i> subsection <i>Barbata</i> subsection <i>Chloroneura</i> subsection <i>Loripetalum</i> section <i>Punctatum</i> section <i>Sigmatopetalum</i> section <i>Spathopetalum</i>

purple margins. Petal measurements are 1.6–2 inches (4–5 cm) in length by 0.4–0.6 inches (1–1.5 cm) in width. The lip is khaki or olive green with darker venation, and it measures 1.2–1.6 inches (3–4 cm) long by 0.6–1 inch (1.5–2.5 cm) wide. The chromosome count of *Paph. fairrieianum* is 2n = 26.

PAPHIOPEDILUM FAIRRIEANUM VAR. BOHLMANNIANUM Although there is considerable variation in flower size and color in populations in the wild, *Paph. fairrieianum* is considered a relatively uniform species. Its albino variant was first introduced in cultivation in Hamburg in 1941. The botanical gardens of Hamburg were given their *Paph. fairrieianum* plants some years before by Mr. Ernst Bohlmann, the president of the orchid section of the German Horticulture Society. The flower of an albino from this batch opened on New Year’s Day after the bud had already attracted attention with its light-green stem. The appearance of an albino form had been long awaited and created much excitement. The new variety was named in honor of Mr. Bohlmann (Gruss 2002). It

is interesting to note, however, that *Paph. fairrieianum* var. *bohlmannianum* bears occasional patches of colored tissue in the otherwise pure white-and-green flower on the dorsal sepal. It can be a patch of purple hair on the petal margin or a small streak of purple tissue. Koopowitz (2008) describes this issue as more likely an unstable gene that is switched on during the development of that part of the flower’s structure and still considers these flowers as true albinos. Although a few AOS awards have been granted under the name *Paph. fairrieianum* var. *album*, it is incorrect to use this name. The correct name is var. *bohlmannianum*, as it was originally described in an obscure German publication, *Orchideenbrief*, based on a plant cultivated by E. Bohlmann. The International Code of Botanical Nomenclature dictates that the epithet *bohlmannianum* takes precedence over *album* on basis of priority (Cribb 1998).

U.C. Pradhan (1976, 1978) described many varieties, forms, and “exceptional clones” of *Paph. fairrieianum* in his publications, such as var. *flavum*, a “very,

very rare clone, only once met with in [sic] a Bhutanese collection. Perianth white lined and reticulated with yellow. Pouch light golden yellow,” or var. *giganteum*, an “extremely well shaped [sic] and huge form which came in a wild collection from Bhutan.” However, according to other authors such as Braem (Braem et al. 2016), the varieties and forms are based on differences in size or position of otherwise normal flower parts. They were based on unique clones, which always appear commonly in wild-collected plants. Most of these varieties and forms are still, according to Braem (Braem et al 2016), of academic interest, have not been described validly and do not deserve scientific validation.

NATURAL HYBRIDS *Paphiopedilum fairrieianum* has only one known natural hybrid in the wild. It is a cross with its sympatric (occurring within the same geographical area) *Paphiopedilum* species, *Paphiopedilum venustum*. This natural hybrid has been discovered and described in 1979 as *Paphiopedilum* × *pradhanii*, by U.C. Pradhan, although it was already mentioned in a 1978 publication (Pradhan 1978). Among Indian paphiopedilums, *Paph. venustum*, owing to its wide distribution, seems to figure most invariably as one of the parents of natural hybrids of paphiopedilums (Pradhan 1976). Other well-known natural hybrids of *Paph. venustum* are *Paphiopedilum* × *spicerovenustum* (correctly × *polystigmaticum*) and × *venustoinsigne* (correctly × *crossianum*). The natural hybrids produced are all self-sterile.

DISTRIBUTION AND HABITAT

Paphiopedilum fairrieianum's place of origin remained a mystery for almost 50 years. Since the beginning of the 20th century, however, its location in the wild has been identified as Bhutan, adjacent to Arunachal Pradesh and Sikkim (which are both in India). K.C. Pradhan (2008) described his travels in those remote regions hunting the coveted orchid.

Paphiopedilum fairrieianum grows on outcrops of crystalline limestone on sheltered grassy slopes, on rocks in oak forest, on open gneiss ledges among grasses with good drainage and in dolomitic gravel on ledges above rivers and streams at altitudes between 4,593 and 7,218 feet (between 1,400 and 2,200 m). The region it grows in is affected by the monsoon season with abundant rain from May until August. From September onwards the region is cool and dry with night temperatures



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RAMON DE LOS SANTOS

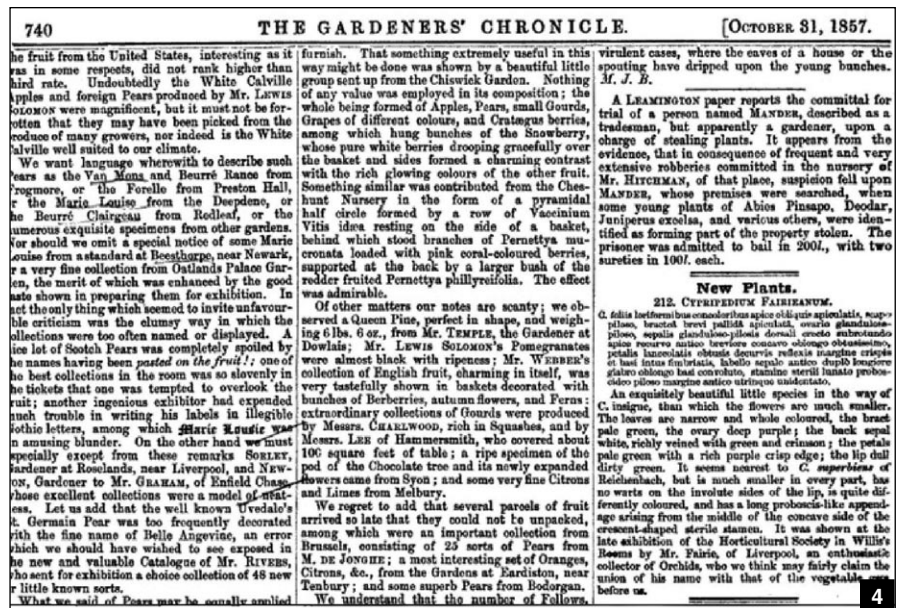


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ERIC HUNT

scarcely exceeding 50 F (10 C). It flowers in the wild from October until January (Cribb 1998). Already by 1969, Pradhan had described the plant as “becoming rather scarce in the wild,” the main cause being overcollection since its rediscovery. Today (last assessment: October 2014), *Paph. fairrieanum* is on the Red List of the International Union for Conservation of Nature and ranked as Critically Endangered. With 49 remaining mature individuals in the wild, the population’s reduction was of over 95% in the last three generations, and the population trend is deemed to still be decreasing. This species is endemic in India and a new population has been identified recently in Bhutan. The extent of occurrence is 5,358 square miles (13,878 km²), and the area of occupancy can be calculated as 6.2 square miles (16 km²; Rankou and Kumar 2015). The National Biodiversity Center of Thimphu in Bhutan is working on artificially propagating Bhutanese species, including *Paph. fairrieanum* and *Paph. venustum* (Hill 2016).

The fascinating story of *Paphiopedilum fairrieanum*’s cultivation began in 1857, when Dr. Lindley published a description of the new plant as *Cypripedium fairrieanum* (In his description, Lindley wrote “fairieanum” with only one “r.” It was later deemed to be an error and corrected, according to section 60.1 of the International Code of Botanical Nomenclature, which states “The original spelling of a name or epithet is to be retained, except for correction of typographical or orthographical errors....” Until the end of the 1970s or early 1980s, “fairieanum” is frequently seen with one “r” in the literature.) in the *Gardeners’ Chronicle* after having seen the new plant at an exhibition organized by the Horticultural Society at a venue known as Willis’s Rooms. The plant had been brought in bloom by Mr. Fairrie, an enthusiastic orchid collector. The “exquisitely beautiful little species” soon charmed the orchid world, but only a few plants had been brought from Asia, and different sources identified different locations where it originated. In 1905, due to poor knowledge of cultural requirements, most of the plants had died and only one small plant was said to still exist in the whole of England, in the collection of Sir Trevor Lawrence, with some more plants in Europe; the place where it grew in the wild was still a mystery. Then follows a quite exciting adventure of speculation, controversy, and orchid-hunting travels in remote areas in the mountains of



Tibet and Assam, where hostile tribes of indigenous peoples were living. A story circulated of a daring gamble made by Sander, who offered £1,000 to anyone who would send him a living plant with exclusive information concerning its location. Swinson (1970), in his book *Frederick Sander: The Orchid King*, tells this fascinating story in great detail. Although things did not go as planned for Sander, the craze he had caused with his excessive offer caused the plant to be rediscovered in the wild and to be furiously collected. This allowed orchid amateurs throughout Europe to finally obtain the so-desired slipper orchid for

- [1] *Paphiopedilum fairrieanum* f. *bohlmanianum* ‘Dijon’ AM/AOS; grower: Dave Sorokowsky.
- [2] *Paphiopedilum* × *pradhanii*, the natural hybrid between *Paphiopedilum fairrieanum* and *Paphiopedilum venustum*.
- [3] Distribution of *Paphiopedilum fairrieanum* in Bhutan and northeast India.
- [4] *Paphiopedilum fairrieanum*, as *Cypripedium fairrieanum*, mentioned in *The Gardeners’ Chronicle*, 1st. series, 17:740 (1857).

KAPFER

their personal collections. Unfortunately, that also led to its near extinction in the wild.

THE CHARM OF *PAPHIOPEDILUM FAIRRIEANUM* As for many other *Paphiopedilum* species, *Paph. fairrieianum* does not really fit in the AOS criteria of flower perfection in that it is neither round nor flat. But despite this, again and again *Paph. fairrieianum* gets awarded on our tables and has even received four FCCs to date. A quick review of the awards' descriptions reveals that the words "charming" and "elegant" are words of choice to describe the species. It seems that, since its first appearance back in 1857, it charms any orchid amateur who has the chance to see it. Hence the question as to what makes *Paph. fairrieianum* so "charming" is valid. Koopowitz explains (2018) that the "negative space," the gaps or windows between the sepals and petals, is what often gives a flower grace and daintiness. In other words, it gives the flower its own personality, and trying to make it look like any other "according-to-AOS'-criteria" perfect flower would be to deliberately breed the grace out of the flowers.

A good explanation of *Paph. fairrieianum*'s charm would probably be the idea of gestalt as described by Koopowitz (2018). The gestalt is the integrated whole, that is more than the sum of its parts. In summary, even if each part of a flower is individually quite good, all the parts need to be in proportion to the others for a pleasing effect. That pleasing effect is quite a success in *Paph. fairrieianum*, where not only the flower with its horn-shaped petals giving it an oriental aspect and its contrasting colors, but also the whole plant with its dwarf habit and well-held flower stem, are all in proportion. Judges might not be able to explain with objectivity why they find a flower exceptional and using the AOS scale might not be easy or representative of how they feel the flower should be rated, because it is not the quality (size, form, color) of a particular segment that will make the flower exceptional, but rather the overall impression it gives. Unlike some other orchid species, *Paph. fairrieianum* has never really been a "trend" on our tables. It has been consistently granted quality and cultural awards through time without being omnipresent, and judges seem to always be delighted to judge a *Paph. fairrieianum* and growers to treasure them.

QUALITY AWARDS Over time, with line breeding, the quality of the flowers



5

BILL JOHNSON



6

BRYAN RAMSAY



7

ARTHUR PINKERS

presented has drastically increased. It is interesting to see how fascinated judges always are by this species, whatever the decade it is awarded in, awarding sometimes FCCs or AMs to plants that

had major and obvious faults in their shape. It seems that once again, the factor "charm" was at work. For the species *Paph. fairrieianum*, the closest thing we could have to a round flower

would be a flower that is as wide as it is high. A wide dorsal sepal would also give an overall impression of roundness to the flower. However, a study (*OrchidsPlus* 2019) of the proportions of the flowers awarded since 2000 by the AOS reveals no relationship between the proportions of the flower (ratio of natural horizontal spread to natural vertical spread and ratio of dorsal sepal width to dorsal sepal length) and the value of the quality award granted. Although flowers are rarely wider than long, wide flowers (that is, closest to a proportion of width/length = 1) as well as longer flowers, are awarded equivalent quality awards. Since the expressions “well-balanced, pleasingly proportioned, as well as richly colored, brilliant color” and many of their synonyms are constantly used in descriptions, the bilateral symmetry and overall balance of the flower and the intensity and contrast of its colors seem to be the major characteristics that justify why most of those flowers stood out from the crowd and were awarded.

In the light of this, it is interesting to look at a recent FCC awarded for the species. Awarded in 2017, the clone ‘Vinh Huy Nguyen’ was granted an FCC of 90 points. It was the first FCC awarded since 2009 and for quite a special plant. The flower was an “extraordinary miniature, well-presented flower on 3.5-cm erect inflorescence,” “awarded for the balance of miniature size in relation to the size of plant and the exquisite charm and form.” It was different from all other awarded flowers in that the flower was the smallest awarded with a natural spread of 1.8 × 2 inches (4.5 × 5 cm) while the average of all awarded flowers since 2000 is 2.6 × 3 inches (6.5 × 7.5 cm). It gave rise to an interesting discussion on the Slipper Orchid Forum between orchid amateurs that agreed with this award and others that did not agree at all. The major arguments for those who were in agreement was the exceptional size of the flower compared to that of the plant, the potential for “teacup” breeding, nice flat form and colors, while the cons raised were regarding the fact that the plant was probably a first-time bloomer that had not matured and was possibly a weak plant.

Paphiopedilum fairrieianum var. *bohlmannianum* is much rarer in cultivation and, therefore, has not received as many awards as the colored form. Possibly due to less availability and hence less line breeding, good form seems harder to obtain with this variety.



The flowers are generally smaller than the colored ones, with an average of 2.5 × 2.7 inches (6.3 × 6.8 cm) while the average for the colored form is 2.6 × 3 inches (6.5 × 7.5 cm). If we look at the two most recent awards granted for *bohlmannianum*, we see that both cultivars had a similar natural spread of around 2.6 inches (6.5 cm) and similar colors. The ‘Dijon’ cultivar has, however, much better bilateral symmetry and balance, which would explain the better score.

Considering the charm of this species, it was only a matter of time before it began to be used to make hybrids. That part of the story is part 2 — coming next month.

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- [5] *Paphiopedilum fairrieianum* ‘Hampshire’ HCC/AOS; grower: Arnold J. Klehm.
- [6] *Paphiopedilum fairrieianum* ‘Morrigh’ AM/AOS; grower: Jeff Morris.
- [7] *Paphiopedilum fairrieianum* ‘Vinh Huy Nguyen’ FCC/AOS; grower: Vinh Huy Nguyen.
- [8] *Paphiopedilum fairrieianum* ‘Maybrook’ CCM/AOS; grower: G.A. Wright. This magnificent specimen got its grower a CCM for this stunning display in 1973! Modern growers have their work cut out for them when it comes to growing this species.

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Orchids of Bhutan

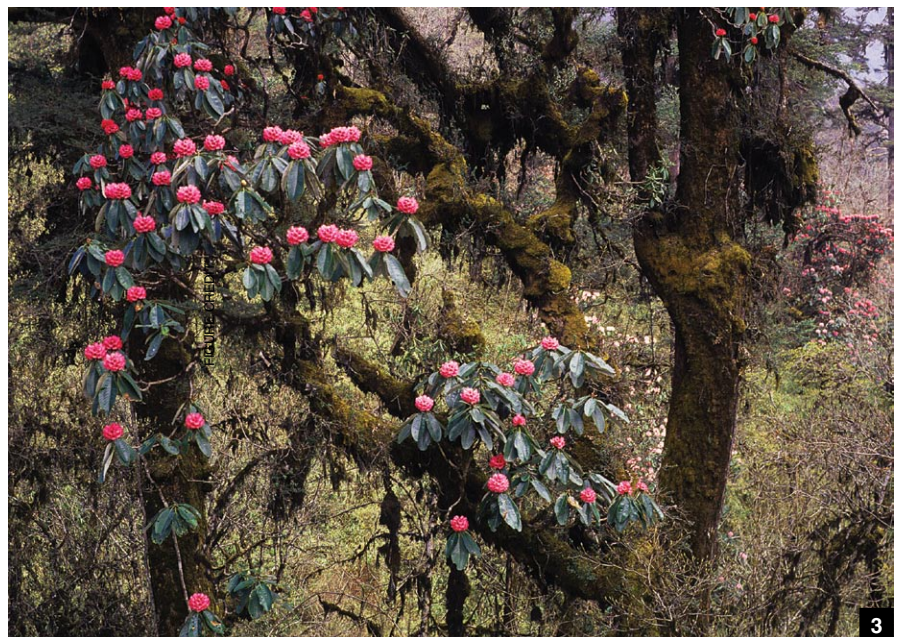
Pleione

BY STIG DALSTRÖM, CHOKI GYELTSHEN,
NIMA GYELTSHEN
AND KEZANG TOBGAY



THE FIRST TWO species of what we today recognize as members of the genus *Pleione* D. Don were originally described as *Epidendrum praecox* Sm. and *Epidendrum humile* Sm. in 1788 by Sir James Edward Smith, an English botanist and founder of the Linnaean Society. Smith had received a gift from his friend and fellow-student Dr. Francis Buchanan consisting of “all his drawings of Indian plants, together with his manuscripts and an herbarium of about 1,500 species, collected in his journey to Nepal ...” (Smith 1806). Among these were the two “*Epidendrum*” species, which according to Buchanan were growing among mosses on the trunks of trees or on rocks in “Upper” Nepal. David Don later transferred the two species into his new genus *Pleione*, hence becoming *Pleione praecox* (Sm.) D. Don, and *Pleione humilis* (Sm.) D. Don, respectively (Don 1825). Don based this genus on the deciduous pseudobulbs, the single-flowered inflorescences and the distinctive flowers. The name “*Pleione*” is quite appropriate for this genus and shows that Don was well familiar with the Greek mythology. The Pleiades were sea nymphs and the seven daughters of the nymph Pleione and her husband Atlas. Today the mother and her daughters can still be seen in the clear night sky where they form the star cluster of the Pleiades. Don appears to have been inspired by this cluster of daughters since *Pln. humilis* can produce a cluster of “daughter” bulbils at the apex of the previous year’s onion-shaped pseudobulb.

John Lindley, together with the subsequent authors Heinrich Gustav Reichenbach and Joseph Dalton Hooker, disagreed with Don that these two *Pleione* species merited the status of a separate genus and instead included them as a section in the large and widespread genus *Coelogyne* Lindl. But Lindley apparently had ambivalent feelings about this transfer, and he writes: “The habit of these plants is so peculiar that it seems desirable to separate them from *Coelogyne*, if any character can be found...” (Lindley and Paxton 1851–1852). A couple of years later Lindley continues: “There is something so peculiar in the plants called *Pleione* by Don, that it would be desirable to find some means of separating them from *Coelogyne*. At all events, pleiones constitute a group which can never be intermingled with the species of *Coelogyne* proper” (Lindley 1854). Lindley’s wish was finally fulfilled by Robert Allen Rolfe, who writes “Certainly the two groups are very similar



in floral structure, but there are several differences, notably, that the lip is quite different in shape and details; added to which there is the very differently shaped annual pseudobulbs, the thin deciduous leaves, and the peculiar inflorescence” (Rolfe 1903). Since then, most authors have accepted *Pleione* as a distinct genus.

The genus *Pleione* consists today of approximately 24 species, eight natural hybrids, and no less than 132 synonyms of various levels (WCSP 2021). The species are distributed from central Nepal and eastward throughout the Himalayan region, northeastern India and much of the upper-elevation mossy forests of southeastern Asia, China and Taiwan. In

- [1] A cluster of the attractive *Pleione maculata*. Photograph by Kezang Tobgay.
- [2] The Dochula pass along the road between Thimphu and Punakha is a popular place and heavily frequented by tourists and locals.
- [3] Dochula is also a good place to admire blooming *Rhododendron hodgsonii* and *Rhododendron kezangiae* in the spring. Many of them hosting *Pleione* plants hidden in the moss cushions.

Bhutan five species of *Pleione* have so far been recorded. Four of them represent what we can call “the usual suspects” being the well-known spring-flowering and unifoliate *Pleione hookeriana*

(Lindl.) Rollison and *Pln. humilis*, and the autumn-flowering bifoliate *Pleione maculata* (Lindl.) Lindl. and Paxton and *Pln. praecox*. They are well-known in cultivation and are widely distributed along the southern slopes of the Himalayas. The fifth species is the little-known autumn-flowering and unifoliate *Pleione saxicola* Tang and F.T.Wang ex S.C.Chen. It was described in 1987 from western China, and subsequently quite serendipitously discovered four years later in eastern Bhutan. Aside from having different flowering seasons, the vegetative morphology of the pseudobulbs also differs significantly among the species. In *Pln. hookeriana* and *Pln. humilis* the unifoliate pseudobulbs are ovoid (onion-shaped) and dark green, often with a dark purplish hue and dots, while *Pln. maculata* and *Pln. praecox* have larger and peculiar-looking bifoliate “bottle-shaped” pseudobulbs that are distinctly spotted with purple. In *Pln. saxicola*, however, the spotless and unifoliate pseudobulbs are dorsally flattened like a plastic bag filled with water, which together with the autumn-flowering habit give this species a very distinct taxonomic profile.

It has been demonstrated through molecular research that basing classification on floral morphology alone is very risky because many plant groups that are not closely related have developed similar-looking flowers, most certainly to utilize commonly occurring pollinators. In those cases, the vegetative morphology of the plant itself appears to provide much more reliable distinguishing features. This can assist in better understanding the underlying genetic relationships between individual and groups of species (Chase et al. 2008, Dalström and Higgins 2016). With this in mind, the three different types of pseudobulb shapes for the Bhutanese species suggest that they may not be too closely related to each other, but probably have their taxonomically closest allies occurring in other countries.

Pleione humilis or “dwarf pleione” (Hooker 1867) grows as an epiphyte on moss-covered tree trunks or in moss cushions on the ground at 5,500–9600 feet (1,850–3,200 m) elevation and is distributed from Nepal eastwards through Bhutan, northeastern India, Myanmar and northern Thailand (Cribb and Butterfield 1999). In Bhutan plants have been documented from near the Dochula pass between Thimphu and Punakha, where it grows on *Tsuga dumosa* (D. Don) Eichler, *Rhododendron*



NIMA GYELTSHEN

STIG DALSTRÖM

hodgsonii Hook.f., *R. kesangiae* D.G.Long & Rushforth and *Quercus semecarpifolia* Sm. At this location it is sympatric with *Pln. hookeriana*. *Pleione humilis* flowers in March in Bhutan as opposed to *Pln. hookeriana*, which flowers in late May to early June. The possibility for natural hybridization between these two charming species is therefore limited and no hybrids are known to us. The name “*humilis*” means growing “low” or “on the ground” (Mayr 1998), but the original author James Edward Smith may have had a different translation in mind since he also called *Pln. humilis* the “dwarf hairy-lipped *Epidendrum*.”

Pleione hookeriana was “scientifically” discovered by Joseph Dalton Hooker in Darjeeling, Sikkim, India, where it was growing on rocks in woods at 7000–10,000 feet (2330–3300 m). It was described as *Coelogyne hookeriana* Lindl. in 1854 by John Lindley in honor of Hooker, and officially transferred to *Pleione* in *The Orchid-Growers Manual* in 1885 by Benjamin Samuel Williams. *Pleione hookeriana* appears to be the most cold-tolerant species in Bhutan and grows at altitudes up to 12,600 feet (4,200 m), where it can be covered by snow during the winter months. It grows in multitude in deep moss cushions on *Schimia wallichii* Hook.f., and *Quercus semecarpifolia* at the Dochula and other high-elevation passes throughout the country. The pseudobulbs are deeply hidden and protected in the moss and are invisible without leaves or flowers. It is therefore a wonderful sight to see hundreds of pale pink to white flowers appearing as if from the tree trunk itself in the early summer. The flowering is soon followed by the development of the single leaf, which dries and falls off in the fall, once again hiding the delicate pseudobulbs deeply inside the protective moss cushions. *Pleione hookeriana* is also the most widely distributed Bhutanese species, known from the same general areas as *Pln. humilis*, but also from several locations in China.

Pleione praecox differs from the previous species in several ways. It is common and widely distributed in Bhutan and grows as an epiphyte on mossy trees, often without any protective moss cushions, or on steep rocky slopes with the roots and pseudobulbs partially embedded in moss and dirt, at 3,600–9,600 feet (1,200–3,200) elevation (Pearce and Cribb 2002). In the lower elevations *Pln. praecox* is sympatric with *Pln. maculata* and an alleged hybrid has



been described as *Pleione × lagenaria* Lindl. (see below). *Pleione praecox* appears to be a rather easy species to cultivate and readily establishes itself on rough wood or bark as long as its natural conditions in general are provided. The attractive and peculiar-looking bottle-shaped, purple-spotted pseudobulbs are worth growing for their own charm, but when the relatively large bright pink flowers develop in the fall among the lush green or fading pinkish foliage it gives a lot of satisfaction to the grower. The flower superficially resembles *Cattleya jongheana* (Rchb.f.) Van den Berg both in color and shape, and also to some degree *Cattleya maxima* Lindl. This may be due to a similar pollination syndrome, of which very little if anything seems to

- [4] *Pleione humilis*, as “*Epidendrum humile*”. The original illustration featured in James Edward Smith’s *Exotic Botany* from 1806.
- [5] *Pleione hookeriana*, featured as “*Coelogyne (Pleione) hookeriana*” in Curtis’s *Botanical Magazine*: plate 6388 (1878).
- [6] *Pleione humilis* growing epiphytically on *Tsuga dumosa* at the Dochula pass.
- [7] *Pleione hookeriana* growing epiphytically on *Schima wallichii* at the Dochula pass, flowering in late May to early June.
- [8] A white-flowered form of *Pleione hookeriana* from the eastern part of Bhutan. Note the emerging buds and leaves from the otherwise hidden pseudobulbs!
- [9] A cluster of *Pleione hookeriana* growing in a wet moss cushion at Changaphu, near Dochula.

be known.

Pleione maculata, also called the “spotted pleione,” was scientifically described by John Lindley in *Paxton’s Flower Garden* in 1851. The description includes a colored illustration of the species together with the alleged natural hybrid *Pln. × lagenaria*, also called the “bottle pleione,” which is believed to be a cross between *Pln. maculata* and *Pln. praecox*. *Pleione maculata* was originally discovered by Nathaniel Wallich’s collectors in the Khasi Hills, which is a lower mountain range on the Shillong Plateau in the Meghalaya state of northeastern India. Plants were apparently growing in moss on rocks and trunks of trees. It was subsequently collected in the same region by Thomas Lobb, who sent plants of both *Pln. maculata* and the alleged hybrid (and possibly *Pln. praecox* as well) to the Messrs. Veitch & Sons nursery in England, where the illustrated plants came from. *Pleione × lagenaria* was introduced at the same time as *Pln. maculata*, but differs “not only in colour, but in the form of the bracts and the lobes of the flower, and in the number of crested lines upon the lip” (Lindley and Paxton 1851). The alleged hybrid was also distributed among Wallich’s dried specimens as No. 1763, under the name “*Coelogyne humilis*.” The exact status of *Pln. × lagenaria* is still not definite but a discussion with a reasonable conclusion is presented by Cribb and Butterfield (1999), which we have no reason to disagree with. Both *Pln. maculata* and *Pln. praecox* are fairly common in Bhutan but no flowers that may represent the hybrid have so far been documented. *Pleione maculata* has a similar general distribution as *Pln. praecox* but grows at a slightly lower elevation, 3,600–5,400 feet (1,200–1,600 m), and plants can be seen in bright and exposed positions as epiphytes on *Schima wallichii* (DC.) Korth., as well as in shadier environments on rocks.

Perhaps the most intriguing *Pleione* discovered so far in Bhutan is *Pln. saxicola*. This species was originally described by the Chinese team of Tsin Tang and Fa-Tsuan Wang, and published by Sing-chi Chen (1987). The plant, No. 7914, was apparently collected by K.M. Feng in Yunnan without a precise locality, on a cliff along a stream at 7,200–7,500 feet (2,400–2,500 m). In China *Pln. saxicola* has since been found growing as an epiphyte or on mossy rocks in northwest Yunnan and southeastern Tibet at 7,200–7,500 feet (2,400–2,500 m) elevation (Cribb and Butterfield 1999). In 1990,



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- [10] Large groups of *Pleione praecox* can sometimes be seen growing on the ground along the roadsides in Bhutan, flowering in October. The relatively large flowers resemble the Brazilian *Cattleya jongheana*, possibly utilizing a similar pollination strategy.
- [11] White-flowered forms of *Pleione praecox* sometimes appear among the more common and typical pink-flowered forms.
- [12] *Pleione praecox*, as “*Epidendrum praecox*”. The original illustration featured in James Edward Smith’s *Exotic Botany* from 1806.

rock garden enthusiast Anne Chambers joined a hastily arranged botanical trip to Bhutan. The original goal for this trip was Tibet but because no visas would be issued by the Chinese government, the replacement destination was Bhutan. Chambers (1991) writes: “We eventually reached Tashigang Province in eastern Bhutan and our aim was to walk into the remote Mera [sic: Merak] Valley, inhabited for only a few months of the year by the fascinating Bragpa [sic: Brokpa] people whose economy depends on the herds of yaks they graze on the high pastures.... We had suffered long and hard to get that far, so, faced with a 1,500 m climb to the top of the intervening pass plus an unknown distance to Mera [sic: Merak] village, my thoughts that morning were on the destination, not the approach. But halfway up the pass at about 2,800 m was a patch of orchids, very different both in appearance and habit to *Pln. praecox* — just a few single flowers of deep rose-pink with darker magenta markings inside the lip and some yellow on the three callus ridges. The single leaves were long and strap-shaped, and the comparatively small pseudobulbs, smooth and very dark green in colour, were grouped in clusters on an open bank of short turf.”

On the arrival back to the United Kingdom, Chambers tried to have the unknown orchid identified from her photos but it was not until she reached out to the *Pleione* expert David Harberd that the identification became clear, as was the knowledge that Bhutan was enriched by the presence of *Pln. saxicola*, a new species for that country. Unfortunately, the only evidence that exists of this exciting discovery were two color slides that sadly were lost in the process of publishing an article in *The Rock Garden* journal about the Bhutan trip. Fortunately, however, one excellent photo did appear in the journal, which shows the attractive dark-rose-colored flowers very well. And from what can be detected from the photo it appears that the orchid really is *Pln. saxicola*. Chambers writes in an email to author Dalström: “We had major problems with the weather on that trip — although we had expected it to be post-monsoon it poured down rain and as we headed east the road was washed away ahead of us and behind us, so our bus was marooned on a small area of land I think at Rangjung! We climbed from there to camp at Radi Gompa, then next day (10th October) south up to the Mindu La [Mindula] before turning east towards Merak. *Pleione saxicola* was in



KEZANG TOBGAY

the grass before the Mindu La [Mindula] maybe less than 10 flowers and leaves spaced out on a patch of the hillside. I do not imagine the new road takes that route; it was a steep, relentless climb. The only other orchid we saw in flower was *Satyrium nepalense*.”

In May of 2012 members of the Thunder Dragon Orchid Conservation Project team from the National Biodiversity Centre in Serbithang organized a trekking tour that passed by the site where Chambers discovered *Pln. saxicola*. But because nobody thought about this orchid at the time or knew about its location, and no leaves or flowers would be displayed in early May anyway, no *Pleione* plants were spotted that day.

Successful cultivation of *Pleione* may depend on which species or hybrid it concerns. It also depends on whether plants are grown outdoors or indoors. A few general rules together with more in-detail cultivation recommendations are presented by Cribb and Butterfield (1999) in their excellent treatment of the genus. There are three general rules:

1. Do not overwater during the spring when the new roots are emerging at the base of the new shoots. The growing medium must be kept only slightly damp to force the new roots to search for moisture.

2. When the plants have developed a good root system and are growing strongly, they should be fed regularly.

3. Plants should be given a suitable rest period during the winter months with low temperatures, 32–35 F (0–2 C), for at least part of the time.



[13] *Pleione maculata* as an exposed epiphyte on *Schima wallichii*, flowering in October near Lochina, Chukha. A closer look at *Pleione maculata* reveals the distinct color patterns on the lip. [Kezang Tobgay]

[14] *Pleione maculata* and *P. x lagenaria* featured in Paxton's Flower Garden (1851).

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THOMAS HÖIJER



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STIG DALSTRÖM

- [15] The old trail from Phongmey to Merak was until recently the traditional and very exhausting route for tourists and locals alike. Today a modern road makes the trip quite comfortable, if it hasn't been flushed away by the monsoon rains. The grassy slope in the background may well be the location for *Pleione saxicola*!
- [16] The last "killer hill" after a long days' trek before finally reaching the remote village of Merak. To make this trip by car or bus makes the lives of the locals a lot easier, but does not have the same feeling of accomplishment for foreign visitors!
- [17] This photo is the only existing evidence and documentation of *Pleione saxicola* in Bhutan. Photo by Anne M. Chambers. Published with permission from the photographer and the editor of the Rock Garden Journal.

Who Were These Guys: Part 14

Carl Ludwig Blume (1796–1862)

DAVID ROSENFELD, MD

IN ANY DISCUSSION of 19th century orchid botanists and taxonomists, two men are universally recognized as preeminent: John Lindley (1799–1865) (Rosenfeld 2017b) and Heinrich Gustav Reichenbach (1823–1889) (Rosenfeld 2017a). There was, however, a third eminent orchid expert of the 19th century about whom little has been written and who has not received the recognition he deserves. This man is the German-Dutch botanist Carl Ludwig Blume (or Karl Ludwig von Blume). The reasons for this oversight appear to be several, but are most often cited as being related to his less-than-engaging personality. Another likely reason was that he confined his interest to the flora of what we now call the Indonesian Archipelago. My goal in this article is to enhance your knowledge of this early 19th century explorer and botanist.

Carl Ludwig Blume was born in 1796 in Brunswick, Germany. We are told that at a young age he professed an interest in pharmacy. Tumultuous events were occurring in Europe during his teenage years. This was the era of the Napoleonic Wars. Blume went to Holland in 1814 and was appointed as an apothecary second class in the Netherland's army and later served in the ambulance service of the army at the battle of Waterloo.

His interest in the natural world began when he was appointed assistant to Professor S.J. Brugmans. Brugmans was commissioned by the Netherlands government to arrange for the returning of natural history material to Holland that had been taken to Paris during the Napoleonic Wars. Upon his return to Holland in 1817, Blume completed a medical and natural history degree at Leyden University. In those years, these studies could be completed in one or two years.

The specifics about his decision to sail to East Asia in 1818 are not known. We do know that he was appointed health officer first class in the service of the forces of the Netherland East Indies



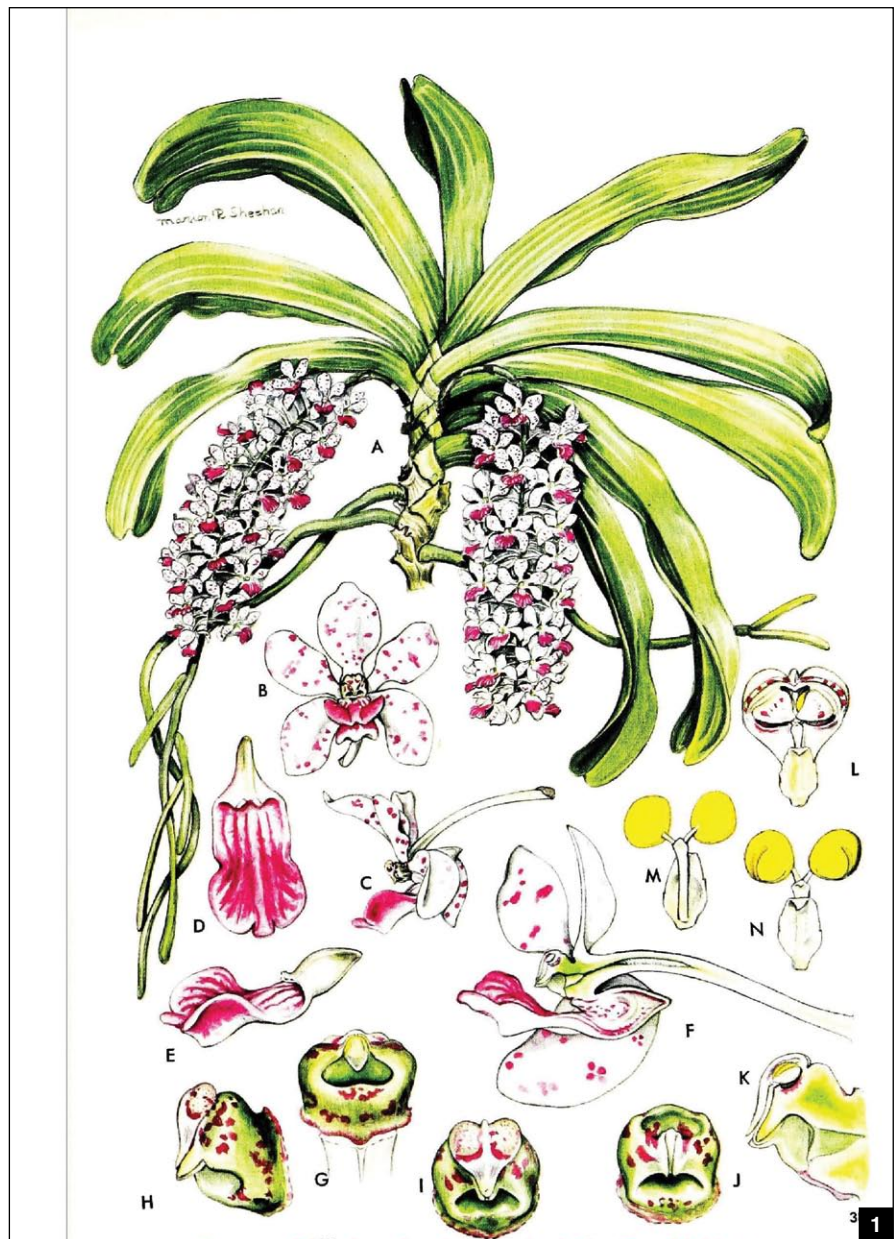
Carl Ludwig Blume from the Biodiversity Library.

and voyaged to Batavia, now Jakarta, on the island of Java. (Just a historical note that what was called the Netherland East Indies existed as a colony of the Netherlands from the 1620s to 1949, when Indonesia became an independent country.) Blume's duties were that of the physician in charge of diagnosis and treatment of tropical diseases. Most prominently he was appointed "Inspector of Vaccines." Smallpox vaccination was being encouraged worldwide following the publication of the seminal paper on vaccination by the Scottish physician Edward Jenner in 1801.

Blume was on the island of Java from 1819 to 1826. During these years, he explored large regions of the island. His interest in botany expanded exponentially, and he collected a vast number of plant genera that were new to science, including orchids. He was hardworking, dedicated and meticulous. By the time of his return to Holland in 1827, he had developed an herbarium of 3,000 plants. (An herbarium is a collection of preserved plant specimens and associated scientific data.) Also in 1822, while in Batavia, he became the director of the already notable botanical garden Buitenzorg (today Bogor). He expanded the garden's collection with plants he collected, as well as additional specimens he acquired from adjacent islands.

Remarkably, during these busy years as a physician, explorer and botanist he was able to write and publish. Between 1825 and 1827, he wrote a monumental six-volume treatise *Bijdragen tot de Flora von Nederlandsch Indie* (Contributions to the Flora of the Dutch Indies) that elucidated new concepts of the flora with detailed description of the genera. In the *Bijdragen*, there were concise treatments of some 700 genera and 2,400 species belonging to 170 families of flowering plants. Also in 1825, his manuscript *Tabllen in Platen Voor de Javaansche Orchideen* was completed. It described, for the first time, the orchids of Java and adjacent islands. In this article, he separated the orchids into three separate groups based on the pollen grains: powdery, granular, or waxy. Each genus was then described in detail including sepals, petals, column, lip, anther, pollinia and growth habit. Blume also drew careful floral descriptions of many of the orchid genera. Some of the genera he described are still recognized today, including *Phalaenopsis* and *Spathoglottis*.

In 1826, Blume, partially due to health, sailed back to Holland, never



to return to the Dutch East Indies. He brought with him his treasured 29 cases of herbarium material. The initial years back in the Netherlands brought him great distinction as a botanist by the Dutch government. He was given the title of honorary professor and appointed director of the State Herbarium (Rijksherbarium) in Leyden in 1829. He also ceded his vast collection of animals and insects to the Leyden Museum of Natural History.

The last three decades (1830–1860) of Blume's life were in many ways less rewarding than he had envisioned. There are several reasons for the disappointing achievements. The most commonly cited were his vanity, excessive ambition, autocratic personality and very strained relationships with Holland's scientific contemporaries. This was in large part due to Blume's obsession with monopolistic control of his herbarium specimens. During these decades, he remained adamant about refusing to share botanical data, provoking other prominent Dutch botanists to eagerly grasp any opportunity to damage his image. Blume was incensed by the decision of the Dutch government to establish a second separate herbarium at the botanical garden at Buitenzorg in Batavia (now Jakarta). He felt that this would create duplicates and destroy his precious monopoly.

He did make several attempts to expand the Rijksherbarium, including developing a manual that described how to prepare herbarium specimens in the tropics, which he distributed to Dutch civil servants, missionaries and other colonists. Overall, the results of these efforts were less than had been anticipated.

The 1850s, the last decade of Blume's life, was one of progressive isolation from his colleagues and diminished support for his botanical endeavors by the Dutch government. However, the one orchid project completed in 1858 was the *Flora Javæ et Insularum Adjacentium*. This elaborately illustrated and meticulously described book focused on Javanese species previously described by Blume and others. It is still considered a 19th century orchid literature gem.

Carl Ludwig Blume is remembered as the pioneer of Dutch botany and the first man to describe and organize Javanese orchids. Sadly, his difficult personality and conflicts with his scientific contemporaries precluded him from attaining the highest echelon of 19th century botanists,



ARNOLD GUM

attained only by John Lindley and Heinrich Gustav Reichenbach.

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— *David Rosenfeld, MD, has been growing orchids with his wife Joan for 40 years. David is a retired professor of pediatric radiology at the Rutgers Medical School. They have a 700-square foot (about 65-sq m) greenhouse with both warm and cool sections where they grow*

[1] *Rhynchosstylis gigantea* botanical drawing by Marion Sheehan.

[2] *Acanthophippium mantianum* grown by Golden Gate Orchids. *Acanthophippiums* are rarely seen in today's collections but these odd flowers make them well worth trying to find.

[3] *Rhynchosstylis retusa* 'Charlie' AM/AOS, the type species cited by Blume in describing the genus *Rhynchosstylis*; grower: Alan Del Castillo.

a mixed collection of species and hybrids. Their skill as growers is illustrated by their 100 awards. David has written 21 articles for Orchids and last wrote about James Veitch and the Lobb Brothers in the June 2021 issue (90[6]:453–455) (email: orchid-doc@comcast.net).

Love Sound

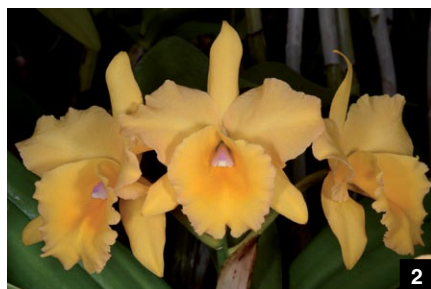
Dynamite from Japan

BY FRED CLARKE/PHOTOGRAPHS BY FRED CLARKE UNLESS OTHERWISE CREDITED

THE ORCHID COLLECTING hobby has gone through many phases. With cattleyas, the early years were dominated by the influence of the corsage cut-flower industry. Growers focused on developing productive plants with large flowers of heavy substance in lavender and, importantly, white, to satisfy the enormous demand for decorative corsages. The bloom season was critical, as Easter, Mother's Day and June weddings were important occasions for sales. When orchid growing as a hobby increased in popularity, these large standard Cattleyas were the main varieties available to the public. Those early corsage-type flowers were produced by large plants taking up a lot of space. As the demand for corsage flowers waned, some orchid breeders realized that the emerging orchid hobby offered an opportunity to develop something different, such as cattleyas in new, exotic colors. Before long, there were yellow, red, flared and even spotted flowers!

At first, plant size was not an important factor, as hobby growers were happy to fill their growing space with these new hybrids. As the hobby developed, so did the varied interests of hobby growers, each with a different growing space and many without greenhouses. Breeders soon realized that plants with smaller footprints would be well received. This objective required starting over and breeding with small-growing cattleya species, thus the first mini-Catts and compact Catts made their debut.

With this new focus in breeding, hybridizers from around the world began applying their craft to create hybrids tailored to meet the needs of hobby growers. Besides smaller plant size, hobbyists wanted a varied assortment of flower colors, plants that were quick to mature, sturdy upright stems that hold flowers above the foliage with minimal staking required, and plants that would grow well under a wide range of cultural conditions. In the late 1980s, one particular hybrid originating from



Japan embodied these characteristics and went on to be an influential parent: *Rhyncattleanthe* Love Sound.

Rhyncattleanthe Love Sound is *Rhyncattleanthe* Bouton D'Or × *Cattleya briegei*. *Rhyncattleanthe* Bouton D'Or was registered in 1968 by Earl J. Small and was a successful grex, receiving seven flower quality awards from the American Orchid Society. Its well-shaped flowers are apricot yellow, and the lip is brighter centrally.

Cattleya briegei is a Brazilian rupicolous or rock-growing plant, which thrives on exposed rock outcrops with rather extreme ranges of light, moisture and temperature. The plant's ability to thrive in such an environment is a dominant trait that is imparted to its

- [1] *Rth.* Love Sound 'Dogashima' AM/AOS. *Rhyncattleanthe* Love Sound (Bouton D'Or × *C. briegei*) was registered in 1987 by Dogashima Orchid Center.
- [2] *Rth.* Bouton D'Or 'Lewis' AM/AOS
- [3] *C. briegei* 'Star of Brazil' HCC/AOS
- [4] *Cattleya* Circle of Life 'Trailblazer' AM/AOS
- [5–7] *Rhyncattleanthe* Martha Clarke (Love Sound × *C. Circle of Life*): [5] 'Hawaii Trip', [6] 'Outstanding' and [7] 'Orange Tart'.
- [8] *Cattleya* Seagulls Apricot 'SVO Brilliance'
- [9–11] *Rhyncattleanthe* Pure Love (Love Sound × *C. Seagulls Apricot*): [9] 'Del Mar', [10] 'SVO' HCC/AOS and [11] 'Scarlet'.

offspring, making them adaptable to a wide range of growing conditions. *Cattleya briegei* is also dominant for other important qualities, such as a compact plant habit with pseudobulbs spaced close together. Flower stems are sturdy, and there is a slightly uplifted petal stance. Another floral trait imparted by *C. briegei* is flaring, which most often appears in second-generation crosses. This trait is expressed most often on the lateral sepals, and sometimes on the dorsal sepal and petals. These accents of color add considerable character to the flowers of its descendants.

Rhyncattleanthe Love Sound embodies the best qualities from its parents. The flowers are flat and full-shaped, with a joyous appearance from the slight upward tilt of the petals. Sturdy stems carry 7–8 well-arranged flowers, and the plants are compact with tightly spaced upright pseudobulbs.

The popularity of *Rth.* Love Sound with hobbyists was evident, and in the late 1990s and early 2000s, three cultivars were cloned and made widely available: 'Dogashima' AM/AOS, 'Lemon Star' AM/AOS and 'Fortissimo' HCC/AOS. The many desirable traits of *Rth.* Love Sound also caught the attention of hybridizers, and numerous combinations were created, leading to many high-quality offspring. There are now over 165 first-generation hybrids and more than 410 registered hybrids with *Rth.* Love Sound in their ancestry.

Rhyncattleanthe Love Sound and its hybrids have established a place in many hobbyists' collections. An amazing variety of flower colors and plant sizes have been created through thoughtful utilization of this important parent. Now, a new generation of crosses is being developed. Will they live up to the considerable promise of their parents and grandparents? You will just have to get some and see for yourself!

Rhyncattleanthe Martha Clarke (Love Sound × *C.* Circle of Life) produced many fine cultivars, and almost every plant that bloomed was a keeper. I wanted to keep them all! Because this grex is named after my wife, of course I had to have many good ones to show how much I love her. The flower form was greatly improved by the influence of Circle of Life, and Love Sound improved the flower count, stem and plant habit. We particularly liked the darker flaring on the lateral sepals and the range of warm sunset colors produced by this cross. It has been successful with America Orchid Society judges too,



receiving 11 quality awards, so far.

Rhyncattleanthe Pure Love (Love Sound × *C.* Seagulls Apricot) produced mini-Catt plants. Their compact stature and tightly spaced internodes allow for specimen plants in 4-inch (10-cm) pots.

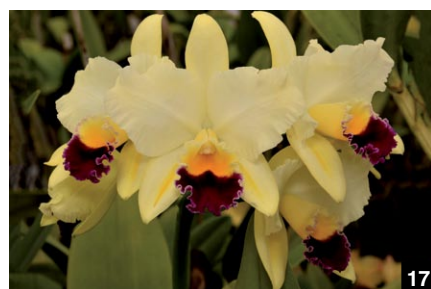
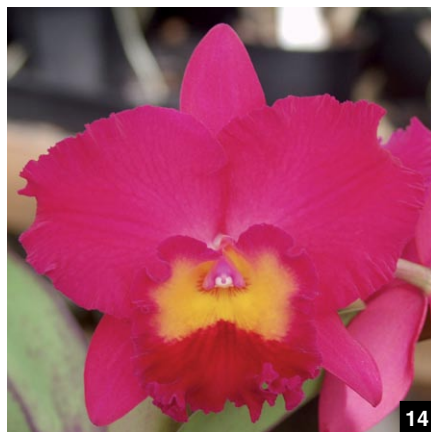
The flower shape and flower count are greatly influenced by *C. Seagulls Apricot* (California Apricot × *coccinea*). This grex blooms with 2–3 shapely flowers, held well on wiry stems above the foliage. The range of colors produced was impressive, from bright yellow to solid red and almost every sunset shade in between.

When the cross of *Cattlianthe* Dennis Olivas × *Rth.* Love Sound first bloomed, I was impressed with how well both parents came together to create a colorful head of flowers. *Cattlianthe* Dennis Olivas gave its color, good flower count and sturdy stem, and *Rth.* Love Sound filled out the flower shape and contributed to the red splashes on the dorsal and lateral sepals. While I was pondering the name of this new grex, my then two-year-old son came into the greenhouse in diapers and barefoot, running across the gravel floor and laughing! Inspiration struck, and the name of this grex became *Rhyncattleanthe* Laughing Boy.

Blooming plants for the first time is always fun. It is fantastic being the first person to see that flower. How many people (besides your orchid friends) ever get a chance to see something for the first time in the history of the world? When *Rhyncattleanthe* Nancy Smith (Love Sound × *Rhyncholaeliocattleya* Dream Circle) first bloomed, it drew my attention from halfway across the greenhouse. The flower color jumped out, and the closer I got, the more it glowed. The other qualities wowed me as well: 4-inch (10-cm) flower, flat shape, rounded petals, and well-proportioned lip, all coming from a plant in a 3-inch (7.5-cm) pot!

I usually purchase three to five seedlings of an interesting cross to see the potential. For some unknown reason, I just purchased one plant of *Cattleya* Melody Fair. Maybe I was concerned the plant was going to be too big, as *C. Melody Fair* is a large plant. Sometimes you get lucky, and I ended up with a good one. The 4–5 large, well-shaped flowers of *Rhyncattleanthe* Izumi Charm have beautifully contrasting crimson lips and are well supported on strong stems. Notice the accent of darker yellow on the lateral sepals — nice! Plants are vigorous growers and compact, with close pseudobulb spacing on mature plants standing 14 inches (35.6 cm) tall.

Rhyncattleanthe Burana Love (Burana Beauty × Love Sound) was registered in 2009 by Alan Koch of Gold Country Orchids. Alan has made many contributions to mini-Catt breeding, and studying his breeding lines has helped



[12] *Cattlianthe* Dennis Olivas ‘Best’ AM/AOS

[13] *Rhyncattleanthe* Laughing Boy ‘SVO’ AM/AOS (*Ctt.* Dennis Olivas × Love Sound)

[14] *Rhyncholaeliocattleya* Dream Circle ‘SVO’ AM/AOS

[15] *Rhyncattleanthe* Nancy Smith ‘SVO’ (Love Sound × *Rlc.* Dream Circle)

[16] *Cattleya* Melody Fair ‘Carol’ HCC/AOS

[17] *Rhyncattleanthe* Izumi Charm ‘SVO’ AM/AOS (Love Sound × *C.* Melody Fair)

[18] *Rhyncattleanthe* Burana Beauty ‘Burana’ HCC/AOS

[19] *Rhyncattleanthe* Burana Love ‘SVO’ AM/AOS (Burana Beauty × Love Sound)

[20] *Rhyncattleanthe* Golden Toshie ‘SVO’

[21] *Rhyncattleanthe* (Golden Toshie × Love Sound) ‘SVO’

me understand which pairings work well. A great example of his success is *Rhyncattleanthe* Burana Love. It has many qualities of a good hybrid: bright colors, compact plant, sturdy stem, well-arranged flowers and robust growth

habit. It is so good that we remade it. Imitation really is the sincerest form of flattery.

What makes a good cross? This is my list in order of importance: fast to grow and bloom, robust root system, compact plant habit, colorful flowers, good shape, good flower count, sturdy stem, pleasant fragrance and disease resistance. The unregistered hybrid *Rhyncattleanthe* (Golden Toshie × Love Sound) has many of these desirable qualities. You can see the outstanding colors and stem of the four well-arranged flowers. What you do not see is that the cross started blooming in a 3-inch (7.5 cm) pot and has another important characteristic: good rooting habit. *Rth.* Love Sound produces roots with the developing growth before flowering in the early spring, and *Rth.* Golden Toshie roots after the growth matures and blooms in late summer. This cross produces new roots in the early spring and again in late summer. Now that is a nice trait to have.

When *Rhyncattleanthe* Showcase began to bloom for the first time, many plants flowered simultaneously, reminding me of a floral showcase, thus the name. *Cattleya* Angel's Fantasy is a spectacular mini-Catt. The flowers have outstanding color, and the plants bloom twice a year. Combining these characteristics with *Rth.* Love Sound produces a hybrid that blooms with high color and on small, compact plants. It is almost too easy!

Rhyncattleanthe Schroder's Love (*C. schroederiae* × *Rth.* Love Sound) tested the capabilities of *Rth.* Love Sound and the dominance of the lip color from *C. schroederiae*. *Rhyncattleanthe* Schroder's Love holds four to five large, soft pink flowers with full ruffled lips and an orange-gold throat, plus accents on the lateral sepals. Flowers are held on sturdy stems that carry the well-arranged flowers above the foliage. Robust plants have tight pseudobulb spacing and stand about 14 inches (35.6 cm) tall.

When I am in the Santa Barbara area, I always make a point of stopping and visiting with James and Lauris Rose of Cal-Orchid. You never know what treasures you will find there. A few years ago, I was poking around their greenhouses, hunting for treasure, and spotted a cross of *Rth.* Love Sound and *C. loddigesii*. I promptly picked out four of the best-looking seedlings. This cross represents a new direction in *Rth.* Love Sound breeding, and buying these seedlings meant I did not have to make the cross



ARTHUR PINKEERS

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myself and wait to see the outcome. The clone 'Jim's Insight' was my first thought when this one flowered with a new and different look. The six blossoms are well arranged and supported. Each flower is flat, in a lovely soft color with a pink blush, accented by a soft-yellow lip. The overall effect is very pleasing. Well done,

James!

The flowers of *Rhyncattleanthe* Elaine Taylor 'Krull-Smith' FCC/AOS are just amazing, with a deep, rich color, magnificent shape, and broad, ruffled burgundy lips. As a bonus, these bloom twice a year — what is not to like? There is always a bit of speculation when breeding



a deep red flower to a yellow — you just do not know what the resulting colors will be. *Rhyncattleanthe* Lovely Elaine (Love Sound × Elaine Taylor) was one of those speculative pairings. All of the positive traits from *Rth.* Love Sound are evident: compact plants, sturdy stem, and lots of flowers. The intense flower color of *Rth.* Elaine Taylor was softened into a pleasing orange-red with hints of lavender, and the accents of color from *C. briegeri* are beautifully expressed on each segment, adding considerable character.

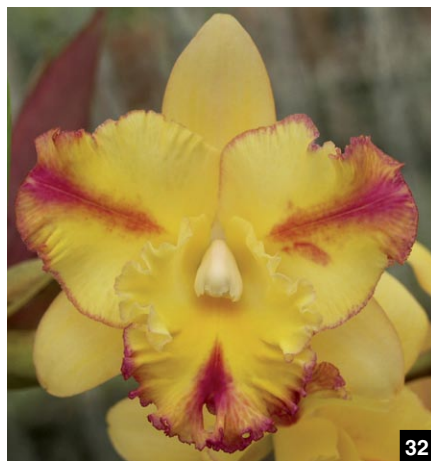
Rhyncattleanthe Love and Fame (Love Sound × *Ctt.* Fame 'N Glory) helped confirm the ability of *Rth.* Love Sound to improve the petal width of its progeny. The starry-shaped, flared flowers of *Rth.* Fame 'N Glory have been transformed into broad, well-rounded, flared flowers. Compact plants produce 4–6 flowers on sturdy stems.

Many years ago, I was fortunate to receive a plant of *Rlc.* Horizon Flight 'Happy Landing' JC/AOS from Frank Fordyce. He told me he paid a fortune for it and was hopeful that it would be an important breeding plant. Although it produced some great hybrids, it turned out to be a stubborn breeder. To my surprise, this combination (*Rlc.* Horizon Flight × *Rth.* Love Sound) developed a capsule on the first attempt and produced many strong-growing seedlings. The progeny bloomed with yellow flowers of heavy substance, and, interestingly, all had a red picotee around the margins of the petals. This picotee and the sturdy stems holding a flight of 4–6 flowers well above the foliage inspired the grex name, Picotee Flight.

Acknowledgments

I am indebted to Ron Kaufmann and Sue 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*, dedicated to developing hybrids and producing select species for the orchid enthusiast. He has been growing orchids for over 43 years and hybridizing for 41 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).



- [22] *Cattleya* Angel's Fantasy 'Solar Flare' FCC/AOS
 [23] *Rhyncattleanthe* Showcase 'SVO' (Love Sound × *C.* Angel's Fantasy)
 [24] *Cattleya schroederiae* 'SVO II' HCC/AOS
 [25] *Rhyncattleanthe* Schroder's Love 'Sunset Valley Orchids' AM/AOS (*C. schroederiae* × Love Sound)
 [26] *Cattleya loddigesii* 'SVO Select'
 [27] (*Rhyncattleanthe* Love Sound × *C. loddigesii*) 'Jim's Insight'
 [28] *Rhyncattleanthe* Elaine Taylor 'Krull-Smith' FCC/AOS
 [29] *Rhyncattleanthe* Lovely Elaine (Love Sound × Elaine Taylor) 'SVO'
 [30] *Cattlianthe* Fame 'N Glory 'Archtype' HCC/AOS
 [31] *Rhyncattleanthe* Love and Fame 'SVO' JC/AOS (*Ctt.* Fame 'N' Glory × Love Sound)
 [32] *Rhyncholaeliocattleya* Horizon Flight 'Happy Landing' JC/AOS
 [33] *Rhyncattleanthe* Picotee Flight 'SVO' (*Rlc.* Horizon Flight × Love Sound)





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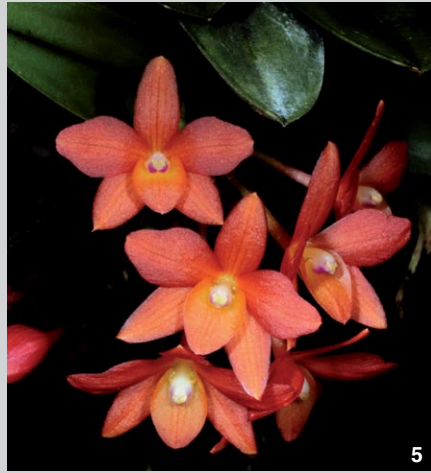


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- [1] *Paphiopedilum* Lunelight 'Hampshire' HCC/AOS (Lunacy x Nulight) 76 pts. Exhibitor: Arnold Klehm; Photographer: Nile Dusdieker. Chicago Judging
- [2] *Catasetum bolivarii* 'Nicola' CHM/AOS 84 pts. Exhibitor: Richard Fulford; Photographer: Carmen Johnston. Florida-Caribbean Judging
- [3] *Papilionanda* Ben Fragrance 'Garrett's I Can't Believe It's Not Butter' AM/AOS (*Vanda* Memoria Thianchai x Mimi Palmer) 81 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [4] *Vanda* William Bachschmidt 'Garrett's Gold Dust' AM/AOS (Crownfox Keylime x *tessellata*) 86 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [5] *Vanda* Greg Scott 'Motes Original' AM/AOS (*merrillii* x *tessellata*) 82 pts. Exhibitor: Motes Orchids; Photographer: Carmen Johnston. Florida-Caribbean Judging
- [6] *Tuberolabium quisumbingii* 'Windswept's Happy Face' CCM/AOS 86 pts. Exhibitor: Windswept in Time Orchids; Photographer: Katie Payeur. Great Lakes Judging
- [7] *Brassavola* Little Stars 'Evening Delight' CCM/AOS (*nodosa* x *subulifolia*) 87 pts. Exhibitor: Sandra Elliott; Photographer: Carmen Johnston. Florida-Caribbean Judging
- [8] *Oxystophyllum minutigibbum* 'Whisper Oliver Moronta' CBR/AOS. Exhibitor: Laura and Wes Newton; Photographer: Wes Newton. Florida North-Central Judging
- [9] *Phragmipedium* Olaf Gruss 'Whisper Has Cosmic Color' HCC/AOS (*besseae* x *pearcei*) 78 pts. Exhibitor: Laura and Wes Newton; Photographer: Kay Clark. Florida North-Central Judging
- [10] *Paphiopedilum* Odette's Moon (Luna Shadow 'Lehua One & Half Tall' HCC x Odette's Charm 'Pink Blush' AQ/AOS). Exhibitor and Hybridizer: Lehua Orchids; Photographer: Kay Clark. Florida North-Central Judging
- [11] *Paphiopedilum* Odette's Moon 'Slipper Zone Tall Grace' AM/AOS (Luna Shadow x Odette's Charm) 80 pts. Exhibitor: Lehua Orchids; Photographer: Kay Clark. Florida North-Central Judging
- [12] *Paphiopedilum* Odette's Moon 'Slipper Zone Tall Glamor' AM/AOS (Luna Shadow x Odette's Charm) 80 pts. Exhibitor: Lehua Orchids; Photographer: Kay Clark. Florida North-Central Judging
- [13] *Vandachostylis* October Twenty Second 'Jim Krull' AM/AOS (*Vanda tessellata* x Pine Rivers) 82 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [14] *Vanda* Wapme 'Garrett's Orange Brick Road' HCC/AOS (Wanpen x Meda Arnold) 75 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central Judging
- [15] *Vandachostylis* Sasicha 'Apopka' AM/AOS (*Vanda* Varut Fuchsia x *Rhynchostylis coelestis*) 80 pts. Exhibitor: Krull-Smith; Photographer: Wes Newton. Florida North-Central Judging
- [16] *Vanda* Banjong Pink Coral 'Garrett's Pink Profusion' AM/AOS (Silvia Palmieri x Yip Sum Wah) 84 pts. Exhibitor: Sharon and David Garrett; Photographer: Wes Newton. Florida North-Central





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- [1] *Rhyncholaeliocattleya* Theresa Winkelmann 'Suezzee Q' HCC/AOS (Lisa Irene x Debbie Dramm) 77 pts. Exhibitor: Ortonville Orchids; photographer: Lynn O'Shaughnessy. Great Lakes Judging
- [2] *Phalaenopsis* Forever Young 'M & B' HCC/AOS (Purple Gem x *deliciosa*) 77 pts. Exhibitor: Max Thompson and Bryon Rinke; photographer: Bryon Rinke. Great Plains Judging
- [3] *Rhyncholaeliocattleya* Memoria Julio Vinueza 'M & B' AM/AOS (King of Taiwan x *Cattleya violacea*) 80 pts. Exhibitor: Max Thompson and Bryon Rinke; photographer: Bryon Rinke. Great Plains Judging
- [4] *Aerides* Punchinello 'Sierra' CCE/AOS (*odorata* x *lawrenceae*) 93 pts. Exhibitor: Max C. Thompson; photographer: Bryon Rinke. Great Plains Judging
- [5] *Cattleya cernua* 'Syzygy' AM/AOS 83 pts. Exhibitor: Peter Ostlund; photographer: Lynn O'Shaughnessy. Great Lakes Judging
- [6] *Epidendrum porpax* 'Aloha Aina Orchids' CCM/AOS 86 pts. Exhibitor: Aloha Aina Orchids; photographer: Michael Blietz. Hawaii Judging
- [7] *Rhyncholaeliocattleya* Harriet Brickell 'Happy Halloween' HCC/AOS (Sydney Southwick x *Cattleya bicolor*) 79 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [8] *Cattleya trianae* 'For the Living' AM/AOS 80 pts. Exhibitor: Ben Oliveros and Orchid Eros; photographer: Glen Barfield. Hawaii Judging
- [9] *Cattleya* Bryon Rinke 'SVO Yellow Star' CCM/AOS (*briegeri* x *crispata*) 83 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging
- [10] *Pleurothallis nanifolia* 'Bryon' CCE/AOS 91 pts. Exhibitor: Bryon K. Rinke; photographer: Bryon Rinke. Great Plains Judging
- [11] *Cattleya* Touch of Class 'Shogun Hawaii' HCC/AOS (Spring Climax x Nancy Off) 78 pts. Exhibitor: Shogun Hawaii-Matthias Seelis; photographer: Glen Barfield. Hawaii Judging
- [12] *Rhyncholaeliocattleya* Island Warrior 'Blood, Sweat and Tears' HCC/AOS (Memoria Crispin Rosales x Dick Smith) 78 pts. Exhibitor: Shogun Hawaii-Matthias Seelis; photographer: Glen Barfield. Hawaii Judging
- [13] *Paphiopedilum* Odette's Whimsy 'M & B' HCC/AOS (Odette's Fantasy x Friedrich von Hayek) 77 pts. Exhibitor: Max Thompson and Bryon Rinke; photographer: Bryon Rinke. Great Plains Judging
- [14] *Habenaria rhodocheila* 'Island Sun' AM/AOS 82 pts. Exhibitor: Island Sun Orchids; photographer: Glen Barfield. Hawaii Judging
- [15] *Brassia* Steve Male 'Thanks John' AM/AOS (*keiliana* x Memoria Bert Field) 83 pts. Exhibitor: New Vision Orchids; photographer: Lynn O'Shaughnessy. Great Lakes Judging
- [16] *Paphiopedilum* In-Charm Topaz 'Slipper Zone No Cuts' CCM-AM/AOS (*helenae* x Pacific Shamrock) 82-83 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging





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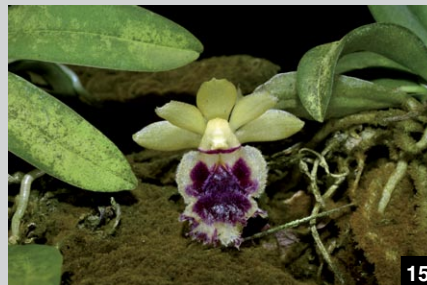
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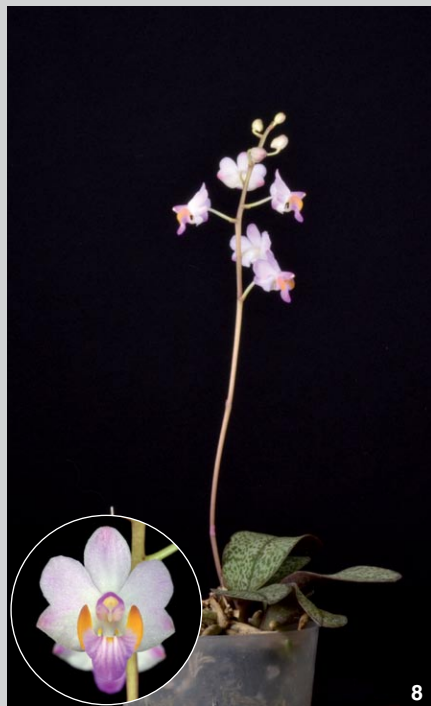
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- [1] *Paphiopedilum* Petula's Charisma 'Slipper Zone Flat Ambiance' HCC/AOS (Macabre Presence x Petula's Peacock) 78 pts. Exhibitor: Lehua Orchids; photographer: Glen Barfield. Hawaii Judging
- [2] *Paphiopedilum* Hilo Shamrock 'Green Diamond' AM/AOS (Pacific Shamrock x Hsinying Gold) 86 pts. Exhibitor: Hilo Orchid Farm; photographer: Glen Barfield. Hawaii Judging
- [3] *Paphiopedilum* Harvey Man Hee Wong 'Perfection' AM/AOS (Shun-Fa Golden x *armeriacum*) 88 pts. Exhibitor: Hilo Orchid Farm; photographer: Glen Barfield. Hawaii Judging
- [4] *Catasetum* Burnt Sugar 'Memoria John Stubbings' AM/AOS (Orchidglade x *sacatum*) 81 pts. Exhibitor: Steve Moffitt; photographer: Malcolm McCorquodale. Houston Judging
- [5] *Paphiopedilum* Turangi Wunder 'NFR 2019' AM/AOS (Turangi Valley x Lip-pewunder) 81 pts. Exhibitor: Hilo Orchid Farm; photographer: Glen Barfield. Hawaii Judging
- [6] *Paphiopedilum* Sea of Green 'Omaha' HCC/AOS (Hilo Super Green x Hilo Green Mountain) 78 pts. Exhibitor: Joe and Karen Lankton; photographer: Matthew Nutt. Mid-America Judging
- [7] *Cymbidium erythrostylum* 'Strange Magic' AM/AOS 83 pts. Exhibitor: Sergey Skoropad; photographer: Bryan Ramsay. National Capital Judging
- [8] *Paphiopedilum micranthum* (Eburneum) 'Mars' AM/AOS 80 pts. Exhibitor: Hilo Orchid Farm; photographer: Glen Barfield. Hawaii Judging
- [9] *Cattleya* Touch of Class 'Shogun Hawaii' HCC/AOS (Spring Climax x Nancy Off) 78 pts. Exhibitor: Shogun Hawaii-Matthias Seelis; photographer: Glen Barfield. Hawaii Judging
- [10] *Habenaria* Jiaho Yellow Bird 'Aloha Aina Orchids' AM/AOS (*radocheila* x *medusa*) 83 pts. Exhibitor: Aloha Aina Orchids; photographer: Michael Blietz. Hawaii Judging
- [11] *Warczewiczella amazonica* 'Paraiso' HCC/AOS 78 pts. Exhibitor: Sergey Skoropad; photographer: Bryan Ramsay. National Capital Judging
- [12] *Cattlianthe* Brazos Drop 'Jean Ikeson' HCC/AOS (Chocolate Drop x *Cattleya labiata*) 79 pts. Exhibitor: Don Maples; photographer: Malcolm McCorquodale. Houston Judging
- [13] *Rhyncholaeliocattleya* Eva's Antes de Ti 'Elsie Lee' HCC/AOS (Chan Hsiu Gold x *Cattleya Horace*) 76 pts. Exhibitor: Bryan Lee; photographer: Roy Andrade. Hawaii Judging
- [14] *Fredclareara* Kelly Longley 'Omaha' AM/AOS (*Mormodia* Painted Desert x *Catasetum* José Abalo) 83 pts. Exhibitor: Joe and Karen Lankton; photographer: Matthew Nutt. Mid-America Judging
- [15] *Paphiopedilum* Odette's Infatuation 'Witching Hour' HCC/AOS (Odette's Magic x Gyorgy Nagy) 79 pts. Exhibitor: Marc Kiriou; photographer: Bryan Ramsay. National Capital Judging
- [16] *Fredclareara* Doubtless 'Louisiana' AM/AOS (No Doubt x *Catasetum* Orchidglade) 82 pts. Exhibitor: Al Taylor; photographer: Malcolm McCorquodale. Houston Judging





- [1] *Cyrtorchis crassifolia* 'Irene' CHM/AOS 83 pts. Exhibitor: Al and Irene Messina; photographer: Maurice Garvey. Northeast Judging
- [2] *Dendrobium numaldeorii* 'Irene' CHM/AOS 81 pts. Exhibitor: Al and Irene Messina; photographer: Maurice Garvey. Northeast Judging
- [3] *Masdevallia magaliana* 'Susan' CHM/AOS 82 pts. Exhibitor: Chuck and Sue Andersen; Photographer: Robert Hesse. Northeast Judging
- [4] *Robiquetia amesiana* 'KBCC' AM/AOS 82 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [5] *Masdevallia nicaraguae* 'White Jade' CHM/AOS 88 pts. Exhibitor: Mary Ann Denver; Photographer: Maurice Garvey. Northeast Judging
- [6] *Dendrobium strongylanthum* 'Irene' CHM/AOS 83 pts. Exhibitor: Al and Irene Messina; Photographer: Maurice Garvey. Northeast Judging
- [7] *Stenoglottis longifolia* 'Rosie' CCM/AOS 81 pts. Exhibitor: Maryanne Laukaitis; Photographer: Robert Hesse. Northeast Judging
- [8] *Vanda Kaori* 'Nauti Mei Mei' AM/AOS (*falcata* x Cherry Blossom) 80 pts. Exhibitor: Deborah and William Bodei; Photographer: Robert Hesse. Northeast Judging
- [9] *Dendrobium comatum* 'KBCC' CBR/AOS. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [10] *Phalaenopsis mentawaiensis* 'KBCC' AM/AOS 82 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [11] *Dendrobium serratilabium* 'KBCC' AM/AOS 82 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [12] *Phalaenopsis hieroglyphica* 'KBCC' AM/AOS 82 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [13] *Thrixspermum wariatum* 'KBCC' CHM/AOS 83 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [14] *Oeceoclades gracillima* 'KBCC' CCE/AOS 92 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [15] *Gastrochilus retrocallus* 'KBCC' AM/AOS 82 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [16] *Phalaenopsis* Silbergrube 'KBCC' AM/AOS (*celebensis* x *equestris*) 84 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging





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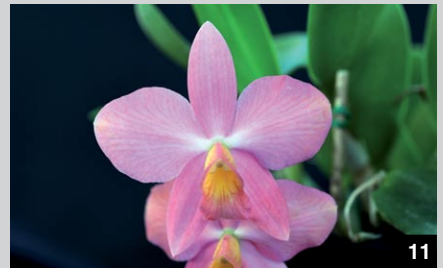
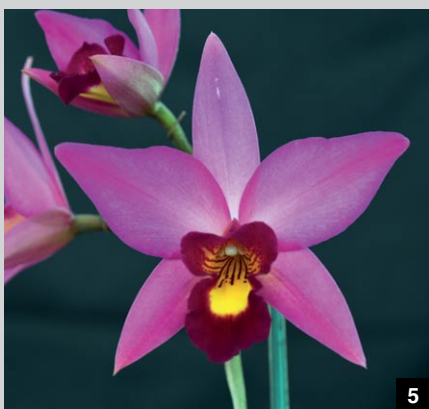


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- [1] *Phalaenopsis lindenii* 'KBCC' AM/AOS 83 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [2] *Catasetum albovirens* 'KBCC' AM/AOS 85 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [3] *Bogoria moorei* 'KBCC' CBR/AOS. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [4] *Lepanthes sijmii* 'KBCC' AM/AOS 82 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [5] *Kefersteinia candida* 'KBCC' AM/AOS 83 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [6] *Epigeneium nakaharaei* 'KBCC' HCC/AOS 75 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [7] *Phalaenopsis zebrina* 'KBCC' AM/AOS 80 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [8] *Phalaenopsis pulcherrima* var. *marmorata* 'Mackinac' CHM/AOS 82 pts. Exhibitor: James Hellig; Photographer: Chaunie Langland. Pacific Central Judging
- [9] *Eulophia pulchra* 'KBCC' CBR/AOS. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [10] *Phalaenopsis tetraspis* 'KBCC' AM/AOS 80 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [11] *Phragmipedium* Vingtaine des Mathias 'Frost Moon' HCC/AOS (Sunset Glow x *kovachii*) 77 pts. Exhibitor: John McCallen; Photographer: Ken Jacobsen. Pacific Central Judging
- [12] *Dendrobium cuthbertsonii* 'Tiny Jungle' CCM/AOS 86 pts. Exhibitor: Chris Mende; Photographer: Ken Jacobsen. Pacific Central Judging
- [13] *Phalaenopsis cornu-cervi* 'KBCC' CCE/AOS 90 pts. Exhibitor: Dr. Cecilia Koo Botanic Conservation Center; Photographer: Chun-Ming Chen. Pacific Central Judging
- [14] *Masdevallia rex* 'Tiny Jungle' CCM/AOS 85 pts. Exhibitor: Chris Mende; Photographer: Ken Jacobsen. Pacific Central Judging
- [15] *Cymbidium ensifolium* 'Fat Boy' AM/AOS 80 pts. Exhibitor: Amy and Ken Jacobsen; Photographer: Ken Jacobsen. Pacific Central Judging
- [16] *Zygopetalum* Advance Australia 'Night Sky' HCC/AOS (Titanic x Helen-Ku) 78 pts. Exhibitor: Jane Thompson; Photographer: Patrick Boisvert. Toronto Judging





- [1] *Paphiopedilum* Fred's Magical Bean 'Slipper Zone Bright Glow' AM/AOS (Fred's Moon x Fred's Magic) 80 pts. Exhibitor: Lehua Orchids; Photographer: Chaunie Langland. Pacific Central Judging
- [2] *Paphiopedilum* Emerald Brocade 'Brocade' AM/AOS (Limerick x Greenvale) 82 pts. Exhibitor: Hillsvie Orchids; Photographer: Ross Leach. Pacific Northwest Judging
- [3] *Paphiopedilum* Emerald Brocade 'Green Frog' HCC/AOS (Limerick x Greenvale) 79 pts. Exhibitor: Hillsvie Orchids; Photographer: Ross Leach. Pacific Northwest Judging
- [4] *Rhynchovola* Jimminey Cricket 'Super Bug' AM/AOS (*Brassavola nodosa* x *Rhyncholaelia digbyana*) 81 pts. Exhibitor: Mary Duggan; Photographer: Debra Tryon. Puerto Rico Judging
- [5] *Laeliocattleya* El Rosario 'Charlie' AM/AOS (Dorothy Elliott x *Laelia anceps*) 81 pts. Exhibitor: Konnor Jenson; Photographer: Bruce Hugo. Rocky Mountain Judging
- [6] *Paphiopedilum* Fred's Magical Bean (Fred's Moon 'Lehua's Glow' HCC/AOS x Fred's Magic 'Lightly Peppered') AQ/AOS. Exhibitor and hybridizer: Lehua Orchids; Photographer: Chaunie Langland. Pacific Central Judging
- [7] *Paphiopedilum* Olympic Spots 'Bogie' AM/AOS (Ceaser Pitta x Spotglen) 80 pts. Exhibitor: Hillsvie Orchids; Photographer: Ross Leach. Pacific Northwest Judging
- [8] *Phalaenopsis pulcherrima* 'N O K' AM/AOS 80 pts. Exhibitor: Noel Soler-Figueroa; Photographer: Irma Saldaña. Puerto Rico Judging
- [9] *Paphiopedilum* Oriental Green 'Keizer' HCC/AOS (Oriental Jewel x *sukhakulii*) 79 pts. Exhibitor: Hillsvie Orchids; Photographer: Ross Leach. Pacific Northwest Judging
- [10] *Brassavola* Little Stars 'Socia' AM/AOS (*nodosa* x *subulifolia*) 81 pts. Exhibitor: Antonio Torres; Photographer: Tom Kuligowski. West Palm Judging
- [11] *Cattleya* QF Kealoha 'Heidi Elise' AM/AOS (*coccinea* x *nobilior*) 80 pts. Exhibitor: Markus Ehrlich; Photographer: Bruce Hugo. Rocky Mountain Judging
- [12] *Guarianthe hennisiana* 'Sunswept Robert Hull' HCC/AOS 75 pts. Exhibitor: Thornton Conservatory; Photographer: Arthur Pinkers. Pacific South Judging
- [13] *Dendrobium* Blushing 'William Pabón' HCC/AOS (Thailand White x Pinky Sem) 75 pts. Exhibitor: Francisco Rodríguez Vargas; Photographer: Irma Saldaña. Puerto Rico Judging
- [14] *Catasetum* Irma Scott 'Julio David' AM/AOS (Louise Clarke x *denticulatum*) 82 pts. Exhibitor: Dr. Julio David Rios; Photographer: Irma Saldaña. Puerto Rico Judging
- [15] *Phragmipedium* Don Wimber 'Julio David' AM/AOS (Eric Young x *besseae*) 80 pts. Exhibitor: Julio David Rios; Photographer: Irma Saldaña. Puerto Rico Judging
- [16] *Cattleya* Alpine Sky 'Jeffrey Paul Davis' CCM-AM/AOS (Floralia's Azul x *purpurata*) 81-82 pts. Exhibitor: Konnor Jenson; Photographer: Bruce Hugo. Rocky Mountain Judging





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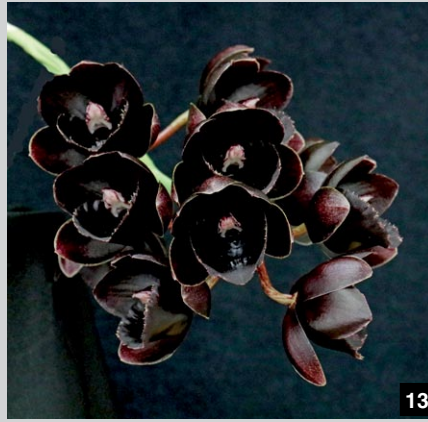
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- [1] *Vanda* Manuvadee 'FCC Pink' AM/AOS (Ponpimol x *coerulea*) 80 pts. Exhibitor: Markus Ehrlich; Photographer: Bruce Hugo. Rocky Mountain Judging
- [2] *Masdevallia velifera* 'Entre Flores' CCM/AOS 83 pts. Exhibitor: Daniel Piedrahita; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [3] *Angraecum viguieri* 'Entre Flores' AM/AOS 85 pts. Exhibitor: Daniel Piedrahita; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [4] *Stelis mystax* 'Kittiwake' CCM/AOS 84 pts. Exhibitor: Leda Bower; Photographer: Judith Higham. Western Canada Judging
- [5] *Paphiopedilum* Hilo Girl 'Elena C.' AM/AOS (California Girl x Taisuco America's Plum) 80 pts. Exhibitor: Markus Ehrlich; Photographer: Bruce Hugo. Rocky Mountain Judging
- [6] *Phalaenopsis* Yu Pin Infrared Ray 'Cotton Candy' HCC/AOS (Yu Pin Fireworks x Yu Pin Oicat) 77 pts. Exhibitor: Robert H. Gardner; Photographer: Joe Dicker. Toronto Judging
- [7] *Phalaenopsis* LD's Bear Queen 'Highlighter' HCC/AOS (*bellina* x Dragon Tree Eagle) 79 pts. Exhibitor: Pat Van Adrichem; Photographer: Judith Higham. Western Canada Judging
- [8] *Liparis swenssonii* 'Lorelei Rose Raymond' CBR/AOS. Exhibitor: Laura Bonnell; Photographer: Thang Dam. Toronto Judging
- [9] *Phalaenopsis tetraspis* 'Liliane' JC/AOS. Exhibitor: Angèle Biljan; Photographer: Ed Cott. Toronto Judging
- [10] *Clowesetum* Amazing Grace 'B-C' AM/AOS (*Clowesia* Grace Dunn x *Catasetum* Orchidglade) 87 pts. Exhibitor: B. Butts- C. Lefaive; Photographer: Ed Cott. Toronto Judging
- [11] *Phalaenopsis gigantea* 'Christmas' HCC/AOS 79 pts. Exhibitor: Pat Van Adrichem; Photographer: Judith Higham. Western Canada Judging
- [12] *Lycaste* Chita Carnival 'TG's Strawberry Pixie' HCC/AOS (*John Ezzy* x *virginalis*) 75 pts. Exhibitor: Calvin Wong - Tropical Gardens Orchids; Photographer: Judith Higham. Western Canada Judging
- [13] *Fredclareara* Doubtless 'B-C' HCC/AOS (No Doubt x *Catasetum* Orchidglade) 78 pts. Exhibitor: B. Butts- C. Lefaive; Photographer: Ed Cott. Toronto Judging
- [14] *Fredclareara* Beverly Danielson 'B-C' AM/AOS (After Midnight x *Catasetum* Orchidglade) 83 pts. Exhibitor: B. Butts- C. Lefaive; Photographer: Ed Cott. Toronto Judging
- [15] *Clowesetum* Donna Ballard 'B-C 50' AM/AOS (*Clowesia* Rebecca Northen x *Catasetum kleberianum*) 81 pts. Exhibitor: B. Butts- C. Lefaive; Photographer: Ed Cott. Toronto Judging
- [16] *Platystele orectoglossa* 'Jardin botanique de Montréal' CCM/AOS 81 pts. Exhibitor: Jardin botanique de Montréal; Photographer: Thang Dam. Toronto Judging

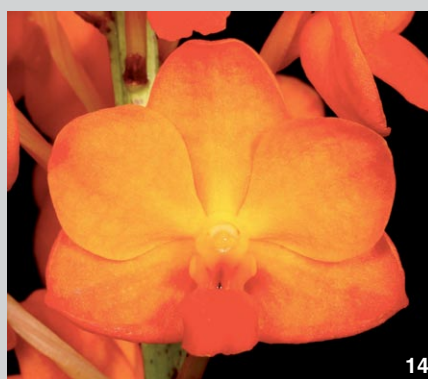




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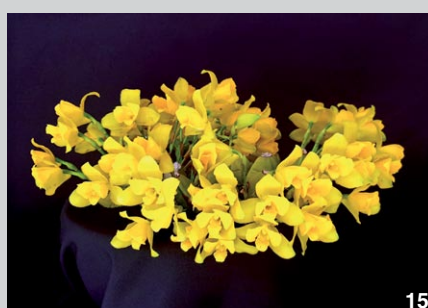
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- [1] *Cattleya jenmanii* (Rubra) 'Oraquivalle' AM/AOS 83 pts. Exhibitor: Orquideas Del Valle; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [2] *Cyrtopodium paniculatum* 'Luz Eleana' AM/AOS 84 pts. Exhibitor: Himer Holguin Gonzalez; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [3] *Rudolphiella picta* 'Genia' AM/AOS 83 pts. Exhibitor: Gabriel Cordoba; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [4] *Oncostele* Saint Anthony of Egypt 'Patricia Escobar' HCC/AOS (*Oncidium* Tiger Night x Tiger Barb) 79 pts. Exhibitor: Beatriz Velez de Escobar; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [5] *Zootrophion dayanum* 'David Manzur' AM-CCM/AOS 85-88 pts. Exhibitor: David Manzur; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [6] *Epidendrum laeve* 'Pilaruco' CCE/AOS 90 pts. Exhibitor: Hermanos Almanzar; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [7] *Lycaste* Chita Impulse 'Memoria-Gela' AM/AOS (Chita Melody x Alan Salzman) 83 pts. Exhibitor: Carolina Carder G.; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [8] *Eurystyles cotyledon* 'Entre Flores' CCM/AOS 83 pts. Exhibitor: Daniel Piedrahita; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [9] *Rhyncattleanthe* Netrasiri Starbright 'NN' AM/AOS (*Cattlianthe* Kauai Starbright x Orange Nuggett) 81 pts. Exhibitor: Odom's Orchids; Photographer: Tom Kuligowski. West Palm Beach Judging
- [10] *Renanthera* Kalsom 'Red Dragon' CCM/AOS (*philippinensis* x *storiei*) 85 pts. Exhibitor: So Orchids; Photographer: Tom Kuligowski. West Palm Beach Judging
- [11] *Masdevallia* Highland Monarch 'Entre Flores' CCM-AM/AOS (Highland Fling x Monarch) 87-86 pts. Exhibitor: Daniel Piedrahita; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [12] *Prosthechea prismatocarpa* 'Luzka' CCM/AOS 84 pts. Exhibitor: Karina Arango; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [13] *Vanda* Somsri Thai Spot 'Dave's Favorite' AM/AOS (Charles Goodfellow x Kulwadee Fragrance) 82 pts. Exhibitor: Krull-Smith; Photographer: Tom Kuligowski. West Palm Beach Judging
- [14] *Vascostylis* Pearl Cooper 'Florida Sunshine' AM/AOS (*Rhynchostylis coelestis* x *Vanda* Pralor) 83 pts. Exhibitor: Krull-Smith; Photographer: Tom Kuligowski. West Palm Beach Judging
- [15] *Lycaste macrobulbon* 'La Tizona' CCM/AOS 82 pts. Exhibitor: Judith Estrada; Photographer: Juan Carlos Uribe. West Palm Beach Judging
- [16] *Bulbophyllum grandiflorum* 'Adelaida' AM-CCM/AOS 82-86 pts. Exhibitor: Adelaide de Bohmer; Photographer: Juan Carlos Uribe. West Palm Beach Judging

CALENDAR

AUGUST

6–7—International Phalaenopsis Alliance Symposium, Highland Manor, 503 E. Main St., Apopka, FL; Contact: Eileen Hector; 813-368-7353, ipa.eileen@gmail.com
27–29—Ohio Valley Orchid Fest, Emmanuel Lutheran Church, 4865 Wilmington Pike, Kettering, OH; Contact: Jeanne Rhinehart, 513-383-3805; jeanws@me.com

SEPTEMBER

11–12—Kentucky Orchid Society Show, St. Matthew's Episcopal Church, 330 N Hubbards Ln, Louisville, KY; Contact: Richard Humke/Catherine Luckett, 502-299-1231/502-893-9282; richardhumke@gmail.com/catluckett@gmail.com
17–19—Alabama Orchid Society 37th Show and Sale, Birmingham Botanical Gardens, 2612 Lane Park Rd, Mountain Brook, AL; Contact: Beverly VonderPool, 205-821-0689; bvonderpool@yahoo.com
25–26—Tampa Orchid Club Expo, U.S.F. Botanical Gardens, 4202 E Fowler Ave, Tampa, FL; Contact: Cheryl Crilly, 813-244-7564; cents4me@aol.com

As of press time, all AOS judging centers with the exception of Toronto and Montreal are holding at least limited in-person judging. Please contact the appropriate judging center chair for location and time before taking plants (<https://www.aos.org/orchid-awards-judging/aos-judging-centers.aspx>).



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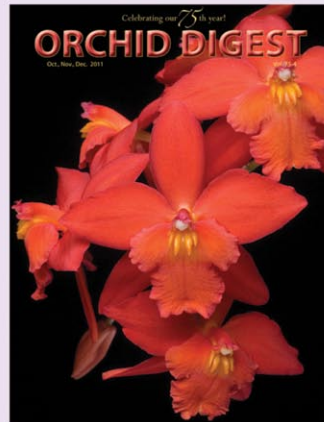
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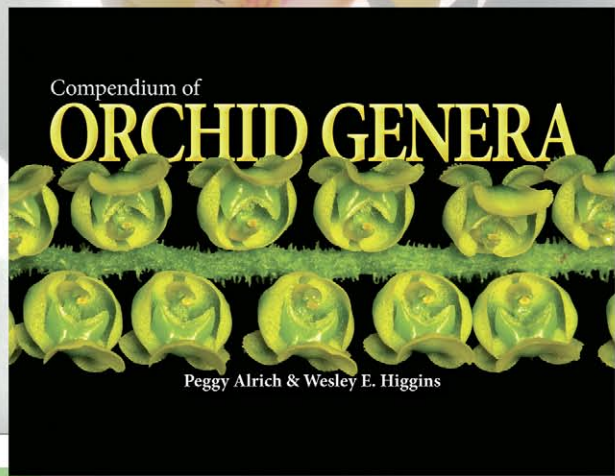
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For more information on the Conference, contact Dr. Lawrence W. Zettler (lwzettle@ic.edu) or Dr. Ernesto Mujica Benítez Scientific Secretary (emujica@upr.edu.cu).

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 by Peggy Alrich
 and Wesley Higgins



Angraecum Beyr

Voy. Ins. Afrique, 1: 396, t. 19 (1866).

Epithet: *Angraecum* - *Angraecum*

ETYMOLOGY: From the Latinized form of the Malay word (*Angrak* or *Angrok*) for the epiphytic orchids that resemble *Ardisia* and bind in habit. The name *Angraecum* was suggested by George Edward Rumphus (1628-1702), who coined it from the word *Angrak*, a name or title given by the Malays to "parrot-like" plants, the meaning of which has not been discovered. From Engbert Kämpfer (1685-1746) we learn that *Angrak* or *Angrok* is also the name used by the Indonesians for these plants.

GENETIVE: *Angraecum* *angraecorum* Beyr

Illustration: Angraecum beyr

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, savanna to montane evergreen forests of mainly tropical Africa (Guinea to Somalia, Gabon to Zimbabwe and South Africa), Madagascar, Mauritius to Reunion, 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 distichous 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 spurs 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 encloses 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 firm 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 Kämpfer ex Sprengel
Syst. Veg. (Sprengel), ed. 16, 8: 679, t. 716 (1826).
Erroresque: Greek for air and life, referring to the epiphytic habit of the plants.
Lecturere, *Aerobion angraecum* (Thunberg) Sprengel (*Angraecum aerobion* Thunberg) designated by Clegg, *Icon Bot.*, 20: 169 (2017).

New 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) Schachler, Mytnik & Goodcock
Biodivers. Res. Conservation, 29: 11 (2013).

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

Ten Sees, *Angraecoides pinguis* (Sprengel) Schachler, Mytnik & Goodcock (*Angraecum pingue* Frappet)

New 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 Reunion.

Arachnangraecum (Schlachter) Schachler, Mytnik & Goodcock
Biodivers. Res. Conservation, 29: 11 (2013).

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

Ten Sees, *Angraecum rufum* (Thunberg) Schachler, Mytnik & Goodcock (*Angraecum rufum* Thunberg)

New 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 Reunion.

Bonniers Cochran
Bot. Gaz. Ill., 11: 616, t. 10-11 (1899).

Erroresque: In appreciation of Eugene Marie-Gaston Bonnier (1853-1922), a French botanist, editor of *Revue Générale de Botanique* and publisher of *Candolle's notes on the orchids of Reunion*.

Ten Sees, *None designated*

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

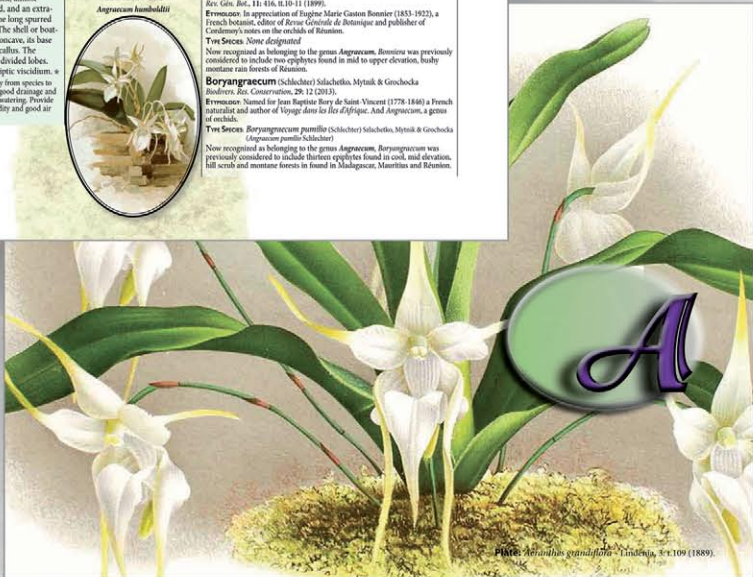
Boryangraecum (Schlachter) Schachler, Mytnik & Goodcock
Biodivers. Res. Conservation, 29: 12 (2013).

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

Ten Sees, *Boryangraecum pumilio* (Schlachter) Schachler, Mytnik & Goodcock (*Angraecum pumilio* Schlachter)

New 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 Reunion.

A



Platte Africaine continentale. Planchette, 8-c-109 (1889).

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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.

2021 Dillon/Peterson Essay Prize

THE AOS IS celebrating its Centennial Anniversary in 2021. To join in the fun, the Dillon-Peterson Essay Contest is asking for in-depth articles relating to significant people, events, programs or even plants or technology changes that have helped shape the direction of the AOS or are likely to in the future. Was there someone special in the AOS who mentored and inspired you and others? Did an AOS award you received plant the seed that resulted in you becoming involved in judging—could you tie that into how the judging program has helped shape the AOS and Affiliated Societies? Perhaps it is technological changes that the AOS has adopted that have changed and will change the AOS and your enjoyment of orchids? Share why the AOS has had and will have an enormous influence over lifetimes.

Membership in the American Orchid Society is not necessary to enter the contest.

The deadline is November 30, 2021. The winning entry, if any, will be published in the June issue of the following year. For complete contest rules see <http://www.aos.org/about-us/article-submissions/essay-contest-winners.aspx>

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Chysis, do you Keiki?

text and photographs by Laura Juszcak

THE ROUGH ROAD to a discovery runs through the detour of a mistake. I had only recently suffered an orchidomania relapse. My first bout with this addiction ended with pregnancy. Now that the nest has emptied of fauna, the flora have returned. I have been building my collection through the usual trial-and-loss process, learning what thrives under my conditions, and how I can augment those conditions to maximize variety and flowering. Observation is key and a bit of ingenuity helps, not to mention patience. What follows is the result of such a process.

In May of 2019, I was happy to report that I succeeded in blooming *Chysis bractescens*. What a gorgeous flower! My plants enjoy summering on a southwest-facing balcony, nine floors in the sky, pointing toward lower New York Harbor. With the approach of winter, my collection is moved indoors to a parallel sunroom having the same exposure. LEDs augment the sun, but lack of humidity is always a concern. That said, care must be taken to restrict water for genera that become dormant, like *Chysis*. Alas, at some point, I forgot this caveat with the following disastrous result.

The pseudobulbs constricted at their base but did not abscise, resulting in floppy pseudobulbs that nevertheless stayed attached to roots. It was not clear that the roots were functional. The pseudobulbs shriveled somewhat but stayed green, and the shriveling did not progress so the pseudobulbs continued to photosynthesize. Was anything recoverable? Would they sprout new roots along the old leaf scars?

It seemed like the plant was already a goner. In the face of my loss, of course I did what any sane orchid grower would do, I immediately purchased not only a replacement, but a hybrid, *Chysis Maritza Bielecki* (Langleyensis × *limminghei*), as well! I am happy to report that these are vigorously putting forth new growths and a healthy fan of leaves.

Nevertheless, the research scientist in me called for an experiment. What did I have to lose? Four pseudobulbs remained so I removed two, and potted them up to the level of two leaf scars in small mesh baskets with loosely packed sphagnum moss kept damp, in moderate



light. This experiment was a failure. After several weeks, the expanded portion of the pseudobulbs that were in the moss yellowed and started to soften.

The last two pseudobulbs remained attached to the old roots. What to do? I propped them up in a deep plastic container with some leca (lightweight expanded clay aggregate) at the bottom and some sphagnum moss covering the roots. The pot was placed under lights, and I would occasionally spritz the moss with a weak solution of plant food. The situation was static through the spring and summer. I felt a tension between despondence and curiosity. I tried not to look at the pseudobulbs too often. They were a constant reminder of my error but I was too curious to just bury them. Yet the pseudobulbs stayed green and did not shrivel further. Then at the beginning of September 2020, like a phoenix returning from the ashes, little growths emerged from several locations along the leaf scars of both of the remaining pseudobulbs! Jump for joy! I could hardly believe my eyes!

Has the keikiing of *Chysis* been reported? It is well known that phalaenopsis, vandas and even some dendrobiums will produce keikis, indeed the latter at their leaf axils, but I had not read of *Chysis* forming keikis. I searched the database of AOS magazine archives, and searched online — I cannot



[1] *Chysis bractescens* pseudobulbs in early September 2020 showing four of six keikis, two small ones on the bulb at 10 o'clock, two larger on the bulb at 1 o'clock. Inset close-up of fifth keiki showing roots developing at the base.

[2] *Chysis bractescens* in bloom in late May 2019.

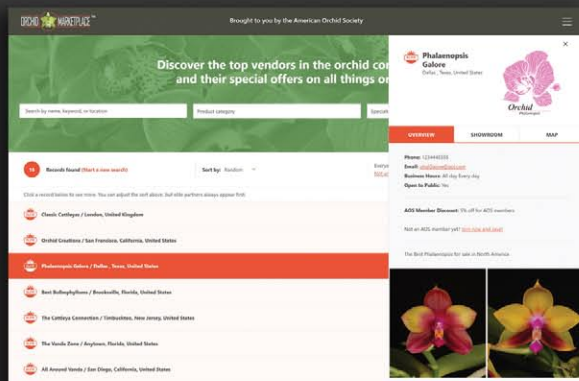
say this was comprehensive — but have not found any mention of keiki formation by any *Chysis* species. I would love to hear from the greater readership about their experience with this phenomenon. So to come full circle, the answer is a resounding “Yes, *Chysis* do keiki!”


— Laura Juszcak is an associate professor of chemistry, at Brooklyn College. She grows epiphytes indoors and out, and terrestrials on a rooftop community garden (email: laurajust54@gmail.com).

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