



The **Slipper Orchid Alliance Newsletter**

Volume 1, Number 1

Spring 2000

Support for the Slipper Orchid Alliance

Support for the formation of the Slipper Orchid Alliance is beyond expectation. Thank you! As the first issue of the SOA newsletter goes to press, our membership is over 125 from four countries: Australia, Canada, the Dominican Republic, and the United States.

Among SOA's members there are ten commercial vendors who deserve special thanks as well: Antec Lab, Candor, NY; Bloomfield Orchids, Pittsford, NY; Curved Air Orchids, Santa Maria, CA; Ellenberger's Orchid Eden, Victor, NY; Fox Valley Orchids, Villa Park, IL; Orchidacea, Seattle, WA; Orchids Limited, Plymouth, MN; Ratcliffe Orchids, LLC, Kissimmee, FL; The Orchid House, Los Osos, CA; and Windy Hill Gardens, Labadie, MO.

The SOA extends its special thanks to the following individuals for their special donations to the success of the Slipper Orchid Alliance: Paula and William Bannon of Greenbush, VA; Ms. Regina Harrison of Indianapolis, IN; Dr. Isadore Rudikoff of Scottsdale, AZ. Thank you!

Status of SOA

The inaugural meeting of the Slipper Orchid Alliance took place October 2, 1999, during the 44th Eastern Orchid Congress in Pittsburgh, PA. The Steering Committee met in conjunction with the 44th EOC and at the 20th Annual Paphiopedilum Forum held by the National Capitol Orchid Society on February 19, 2000. The acting SOA officers are: Chairman, Barbara Tisherman, Pittsburgh, PA; Executive Director and Treasurer, Richard Grundy, Santa Rosa, CA; Secretary, Jamei Haswell, Santa Rosa, CA; First Vice-president, Gordon Slaymaker, Springfield, VA; Newsletter Editor, Janette Harris, Westfield, NC.

The SOA's Steering Committee is composed of the following individuals representing individual and commercial members: Ed Bayer, Gibsonsia, PA; Steve Drozda, Pittsburgh, PA; Jerry Fischer, Plymouth, MN; Norita Hasegawa, Anaheim, CA; Doug Kennedy, Vandorf, Ontario, Canada; Tom Kalina, Villa Park, IL; Harold Koopowitz, Santa Ana, CA; Paul Phillips, Kissimmee, FL; Kevin Porter, Santa Maria, CA; and Bob Wellenstein, Candor, NY.

At these meetings the Steering Committee adopted a statement of mission and purpose. The Committee also adopted a membership dues structure that provides for individual and commercial memberships. Initial dues through the year 2000 are \$25 for individuals and \$100 for commercial members.

By-laws are being drafted for the purpose of incorporation with both non-profit and for profit elements to the SOA's activities. Initially the SOA's activities will include the sponsorship of awards and/or speakers at related slipper orchid conferences. Articles will be published in orchid related magazines.

The SOA's Steering Committee will reconvene during the 45th EOC in Williamsburg, VA.



SOA Mission Statement

Promote broader understanding of all genera and species of slipper orchids including paphiopedilum, phragmiopidium, and cypripedium, as well as their conservation in natural habitats and under cultivation. Promote members exchange of information at regional, national, and international forums or seminars and advance scientific and horticultural studies of slipper orchid species and their hybrids.



Notable National Slipper Orchid Forums

Richard Grundy

Earlier this year, I was fortunate to attend two national speaker's forums for slipper orchid aficionados on the West and East coasts. In January for the first time, I attended the exclusive Paphiopedilum Guild meeting, sponsored by The Orchid House and held in Shell Beach, CA. And in February, I returned to Washington, DC, to attend the prestigious 20th Annual Paphiopedilum Forum, sponsored by the National Capitol Orchid Society. Each of these forums is unique despite an overlap in speakers over the years. Whether by intent or by evolution, as presently being conducted, each is tailored for a different audience. Both are tailored for the serious slipper orchid enthusiast. While the breadth of each program is restricted by the time available, the quality of the respective programs is excellent. Both events are well worth the time and expense should you find the opportunity to attend.

33rd Annual Paphiopedilum Guild Meeting

Begun by Norris Powell 33 years ago and continued by his daughter, Patti James, The Orchid House of Los Osos, CA, has sponsored annual meetings of the Paphiopedilum Guild in southern California. Chaired by Dr. Louis Hegedus, this year's meeting in January was held in Shell Beach, CA. The lecture program was structured to provide an opportunity for the attendees to network during the various breaks and at several luncheons and a banquet. In addition, there was a small flower show as well as sales by The Orchid House at their greenhouses.

The emphasis of this year's meeting was a full one and one-half days of excellent presentations related to paphiopedilum species and recent trends in their hybridization. Particularly interesting was a presentation by Dr. Leonid Aveyanov, of the Komarov Botanical Institute in St. Petersburg, Russia, which reviewed "New Discoveries in Vietnamese Paphiopedilum Species" based on recent discoveries. There followed an overview by Dr. Harold Koopowitz of "New Paph Species and What We Are Going To Do About Them."

An excellent presentation was made by Karin Muir on "Parvisepalums--Then and Now," which set forth criteria for the selection of their hybrids as additions to your orchid collection. There also were presentations reviewing recent Cymbidium Society of America (CSA) awards by Charles Weckerle-Thrun of San Diego, CA, and "Trends in Paphiopedilum Hybridizing" by Outhay Viengkhou of Walnut, CA, as well as an unusually complex taxonomic lesson from the eloquent Dr. Eric Christianson of Sarasota, FL.

The 33rd Paphiopedilum Guild meeting is a national forum attended by the stalwarts of the paphiopedilum world, such as the advanced hobbyist, hybridizers, AOS and CSA judges and other national and international experts. Norris Powell is to be commended.

Information on membership in The Paphiopedilum Guild may be obtained from Patti James, Treasurer, 1699 Sage Avenue, Los Osos, CA 93402; Email: orchid@orchidhouse.com.

20th NCOS Annual Paphiopedilum Forum

Begun 20 years ago by two avid paphiopedilum growers and their wives from Maryland and Virginia, Howard and Sissy King and Tom and Mary Lou Dundon, for the last twelve years the annual Paph Forum has been sponsored by the National Capitol Orchid Society and held in Washington, DC. During these twelve years, the co-chairs have been Gordon Slaymaker and Richard Grundy. Originally structured as an East coast alternative to The Paph Guild, the NCOS's Paph Forum now offers a unique program for the serious slipper orchid hobbyist as well as the advanced collector. The comprehensive one-day event contains three basic components: lectures, a spectacular exhibition table (of over 300 plants), and an extensive slipper orchid sales area. Each year's program also includes a representative review of recent AOS awards. From one year to the next, an effort is made to provide a balance between lectures of paphs, phrags and their culture, as well as the latest information on cypripedium culture and hybridization.

This year's forum lived up to its reputation for excellence. Despite snow the night before, there were over 130 attendees. The program included three outstanding talks. The morning program began with a review of "White and Pink Complex Hybrid Paphiopedilums" by Hadley Cash of Marriott Orchids in Kernersville, NC. Special attention was devoted to the roles of Dusty Miller, F. C. Puddle, Hellas, White Challenge, White Knight and Yuerba Buena. Following was a survey by Tom Kalina of Fox Valley Orchids of "Slippers for the New Millennium: New Species of Paphs and Phrags" and their potential use in hybridization. An extensive review of "Slipper Orchid Culture: A Rational Approach to Frequently Asked Questions" was provided by Bob Wellenstein of Antec Laboratory in Candor, NY. His presentation was accompanied by monographs on "Water Quality Issues" and "Mineral Nutrition" for slipper orchids, as well as the use of "Calcium Based Supplements" and procedures for "Deflasking and Compositing Paphs."

As an added benefit, there was an overview of recent AOS awards and commentary on the extensive and spectacular display table of over 300 paphs, phrags and cypripediums, as well as ribbon awards and AOS judging.

Upcoming Events

October 19 - 22, 2000

**45th EOC and AOS Fall Trustees Meeting
Williamsburg Marriott Hotel**

Williamsburg, VA

Slipper Orchid Alliance meeting and speakers sponsored by SOA.

Meeting hosted by Peninsula, Tidewater and Virginia Orchid Societies

November 4, 2000

3rd Annual Slipper Symposium

Ramada Plaza Hotel

Kissimmee, FL

The symposium will include lectures, sales, and an informal BBQ and SOA benefit auction on Saturday evening.

There will be an open house on Sunday, November 5.

Sponsored by Ratcliffe Orchids and A World of Orchids.

More details on both of these events will be in the September newsletter.

SOA Banquet and Benefit Auction

In conjunction with the 20th anniversary of the Paph Forum, the Slipper Orchid Alliance held a very successful auction and awards banquet. At the SOA awards banquet a provocative address was given by Jerry Fischer of Orchids Limited reviewing his recent field survey of "Borneo Paphiopedilums in Their Natural Habitats." At the awards banquet, the first SOA Awards Trophy of distinction was presented by popular vote to Paph. Dollgoldi, grown by Steve Male of Fishing Creek Orchids, Harrisburg, PA. There will be a picture of this lovely flower in the next newsletter.

Water Quality Issues for Slipper Orchid Growers

Bob and Lynn Wellenstein

Everyone's conditions are very different, and you must balance the various factors of your growing with each other. What is stated here are the factors we take in to consideration regarding water quality: it is hoped that there may be aspects discussed that may be useful to you. We suggest that careful experimentation on small numbers of plants be carried out before anyone makes any major change in their growing conditions. Also, everyone does not have the same goals in growing, and may not be interested in trying to tease every last bit of potential out of their plants. As a result, we'll also discuss some options to consider if you want to grow these plants under less optimal water quality conditions without the extra expense and trouble of water purification.

The first step in determining water quality and how it will affect your Slipper Orchids is to get a water quality analysis. If you are on a municipal water supply your DPW should be able to provide one to you. Be sure to inquire if multiple sources of supply are used, eg. different wells or surface sources, as there can be tremendous differences between them that may cause large differences in your plants' health. If you are on a private well supply you will probably have to get an analysis done at your own expense. TDS (Total Dissolved Solids) is the sum of all the mineral constituents that are soluble in water. The presence of these minerals is determined by the geology of the watershed or course the water travels before reaching your tap and the solubility of rocks and soils the water comes in contact with. There are a wide variety of substances or dissolved solids like sodium, chloride, sulfates, calcium, bicarbonate, nitrates, phosphates, iron, and magnesium that the water picks up. For example, water that flows through limestone and gypsum dissolves calcium, carbonate, and sulfate. One test for TDS is performed by evaporating off all of the water in the test sample. The remaining matter is then weighed and the results are expressed as parts per million (ppm) or milligrams per Litre (mg/L). You can get a general idea of the TDS by measuring the specific conductance in microsiemens (hand held instruments for this can be purchased in the \$50 range) and multiplying by a factor of 0.55 to 1.0 to obtain the TDS in mg/L (ppm) (see explanation of the range below). Some notes on measurement are in order at this point.

- Electrical resistivity is the A/C resistance in ohms measured across a 1 cm distance of the water solution at a standard temperature. The unit of resistivity is the ohm/cm.
- Electrical conductance is the inverse of the resistivity, or 1/ohm= 1mho.

- 1 mho = 1 Siemen (S) = 1000 millisiemens(mS) = 1,000,000 microsiemens(uS)
- Grains, or grains per gallon (GPG) is an ancient measurement still in use roughly equal to 1 dry wheat grain (1/7000 lb). 1 grain per gallon = 17.1 ppm.
- IEC (electrical conductivity or earth conductivity) = 1 mSiemen = 1000 uSiemens
- Electrical conductance meter readings cannot be exactly converted to ppm, although many are sold with scales reading in ppm. An approximation conversion factor has been added. Each dissolved salt in the solution has a different conductivity, a chart of representational values follows:

1 PPM of:	=	Approx. microsiemens/cm (20 C)
MgSO ₄	=	0.80
MgCl ₂	=	1.70
KNO ₃	=	1.10
K ₂ SO ₄	=	1.20
KH ₂ PO ₄	=	0.60
K ₂ HPO ₄	=	1.04
NaCl	=	1.64
(NH ₄) ₂ SO ₄	=	1.50
Urea	=	0.00

- pH is the measure of acidity or alkalinity of the solution, 7 being neutral, less than 7 acidic and greater than 7 basic. It is a log scale, so going from 8 to 9 is a ten fold increase ($\text{pH} = -\log[\text{H}^+]$)

Okay, we should have enough information there to let you be able to make conversions between any of the usual expressions of measurement of TDS in water, although if you are like me it'll make your head hurt.

The first step is to determine from your water analysis how your water stacks up for slipper culture. Don't depend on others opinions that XXX city water is great for orchids, so and so grew great Paphs, as everyone has different goals and idea of what constitutes good culture. If your water has a TDS level of 60 ppm or below and doesn't have excessive sodium (let's say its 5 ppm or less) or of the trace elements, you probably are one of those lucky folks that has perfect slipper growing water. I've seen water quality reports from North and South Carolina, Georgia, Colorado and the Downstate New York area with these wonderful values. You simply need to pick a fertilizer that matches your water, ie do you need any additional calcium or magnesium, or is your water adequate, and be careful what the pH of your water/fertilizer mix is, as your water may not be very highly buffered against shift. If the results are in the 60 to 120 ppm range, you'll have to make some decisions, perhaps based on

experimenting with some of your plants and a purer water supply to see just how much improvement you may get in growth. At about 120 ppm range and up, or if you have sodium that's 10 ppm or higher, or excess microelements, if you are serious about growing your slipper to the maximum, you may want to consider a water purification scheme. A frequently asked question is regarding the possible use of bottled "spring water". The answer is, it depends on the analysis. Spring water is not necessarily low TDS water, in fact some are touted for their mineral content, so the same rules that apply to your tap water apply to the spring water, you need to ask for a typical analysis, or take a conductivity reading yourself on a sample.

If you have decided you are not satisfied with your tap water quality, your next decision is what to do about it. There are several options available which all give suitable results, the choice of which will revolve around water availability and relative cost in your area. Before we discuss these options, lets discuss some that are not suitable. Water softening is an ion exchange procedure that will make your water completely unsuitable for orchid growing. The procedure essentially replaces the calcium and magnesium ions in your water with sodium ions, and these makes the water ultimately toxic to your plants, and quite frankly not too healthy for you either. It is commonly suggested that you can use softened water if you substitute potassium salts for the sodium salts. This certainly is a much better solution, but again, if your water was high enough in TDS to start with to warrant softening, you are going to end up with very high potassium levels that can affect (antagonize) the availability of nitrogen, calcium, magnesium, iron, manganese, zinc and copper, so I do not feel this is a good option either. Your best bet is to get a tap installed in your plumbing ahead of the softener and take your irrigation water from this tap. You might also want to consider installing an under sink RO unit for your drinking water to reduce your sodium intake. Also, there are various cartridge filters available. Usually these are simply sediment, carbon, or special resin cartridges that are useful for increasing the taste and safety of the water for you, but do little in lowering the TDS you are concerned with for your plants. There are some small deionization units utilizing a mixed bed resin that will remove the TDS, but this type of disposable cartridge DI unit will be quite expensive to operate.

The easiest way to obtain pure water is to collect it in the form of rainwater or snowmelt. If you have the means to collect and store sufficient quantities that may be the least expensive option for you. A few cautions do apply, however. First, it's probably best not too collect the first several minutes of rain from any storm, let the worst of the atmospheric pollutants and debris on your collection surfaces wash away before you start collection. Also, be aware that rainwater in some parts of the country can be extremely acidic, normal rainwater had a pH of about 5.6 due to dissolved CO₂, it will

approach neutral upon sitting and outgassing for a few days, but we have measured the rainwater here in Upstate New York as low as 3.2, with a TDS of 22 even 30 minutes after the start of the rainfall. The final caution is to store the water in the dark, and consider adding a very small amount of a growth retardant such as Physan 20 to limit bacterial and algal growth.

The simplest method to purify water is distillation. The resultant water is quite high quality, but few people have access to the appropriate equipment. An average energy price to distill a gallon of water in the US is currently put at about \$.35, and it is available in the supermarkets and drug stores in our area for about \$.95 per gallon, so it is quite expensive an option, suitable probably only for someone with just a few plants or for experimentation to see if pure water will significantly help your plants.

The most mentioned method of water purification is by processing the water through a reverse osmosis filter. The principle is that as the water pass over the membrane water is able to pass through the filter while most of the dissolved solids can not. These are removed in a tangential flow pattern from the filter with the use of excess water, which is then discarded (in more efficient systems a percentage is recycled). Reverse osmosis can produce very high quality water in large quantities with relatively little energy input. The drawback is the "waste" water that is discarded, which can vary from 1 to 3 gallons for each gallon of pure water produced (higher efficiency units are available, but generally are out of the size range likely to be used in orchid culture), so if water is in short supply or very expensive, then this may not be the best option. We have used RO for many years now and are very pleased with the quality of the water. A note on purchasing RO units is also in order, they are not all made equal. RO unit output is dependent on water pressure and water temperature. It is also dependent on manufacturer, and quite frankly I've encountered at least one that badly over rates their systems, so beware, and if your system does not perform any where near the specifications, contact the supplier. Because your water pressure may not be as high as that at which units are rated, and also will almost certainly be colder, and because slipper growers tend to increase their collections steadily, I suggest you consider buying a unit rated several times over what you think you need. Also, you may be advised that your unit membrane will last much longer if you soften the water before processing. If you decide to go this route, consider using the potassium salts mentioned earlier in this article. RO units do allow some passage of the minerals across the membranes, my units let 6 to 10 ppm through, and if you are softening the water with sodium salts this will be 6 – 10 ppm of sodium you are letting through. The importance of softening to preserve membrane life increases with the efficiency of the unit, ours at 2.7 gallons of reject per gallon purified have given us about five years life running continuously and converting 250 ppm unsoftened water to

the 6 – 10 ppm water we use.

Deionization is performed usually by a two tank apparatus, the first tank being the cation resin exchange tank where positively charged ions are exchanged with H⁺ ions. This process produces acids which are removed along with other negatively charged ions by the anion resin exchange tank. The tanks need to be recharged periodically. Most systems are rented from a water purification company, and they will either regenerate the tanks on your premises periodically or preferably exchange the tanks with fresh ones for you (the recharge process involves the use of strong acids and bases). Cost varies according to region, but you usually pay a monthly rental fee for the unit and a per tank recharge or replacement fee. The water quality is excellent, the systems can produce large quantities of water on demand and with no wasted water they are an excellent choice where water conservation is of ultimate importance.

What can you do if you or someone you are advising has less than good quality water, but isn't in the position to take one of the described steps to improve the quality, and does not have access to rain water? There are several possibilities, one is to limit oneself to species and hybrids that are known to be less sensitive to higher salinity. Also, bear in mind that there are clonal variations in sensitivities, so exchanging divisions that grow successfully for others with the same problems is a good idea. You should also use fertilizer sparingly, and utilize ones with highly available nitrogen sources and little or no urea, so that the smaller amounts of fertilizer you can use will be utilized efficiently. You should also flush the pots extensively with you irrigation mix with every watering. Not allowing the media to dry completely will aid in salt elimination, but can also lead to rotted roots, so using a more open mix than you normally would and watering more frequently may also be of help, letting you water without the mix completely drying out but still keeping some air supply at the roots.

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The SOA's Cypripedium Outreach Activities

Welcome! Cypripedium orchid growers and hybridizers. The Slipper Orchid Alliance is dedicated to the preservation and education of all slipper orchids, including cypripedium orchids. Our current membership includes several

cyripedium growers. In order to be more responsive to their needs, the SOA's steering committee has appointed Steve Drozda as its contact with the cyripedium orchid community. Let us know your interests and how we can be responsive to your needs. Steve can be reached at (412) 854-1862 or on the internet at sdrozda@stargate.net.

And Now, A Word from our Chairman

It seems that every new birth takes longer than we would like, but the outcome is worth the wait. Starting a new organization is no exception. The Slipper Orchid Alliance had its initial meeting in Pittsburgh at the Eastern Orchid Congress, October 1-3, 1999. Members of the steering committee who were in attendance met twice, and a luncheon attended by 72 persons was an opportunity for announcements and getting acquainted.

At that meeting the following mission statement was adopted: Promote broader understanding of all genera and species of slipper orchids, including paphiopedilum, phragmipedium and cyripedium, as well as their conservation in natural habitats and under cultivation. Promote members exchange of information at regional, national and international forums or seminars and advance scientific and horticultural studies of slipper orchid species and their hybrids. It was decided that individual and commercial memberships would be offered, which through the year 2000 would be \$25 and \$100, respectively. An introductory article was published in the January 2000 issue of **Orchids** and we are included in the AOS list of specialized orchid groups.

At the Paphiopedilum Forum in Washington, in addition to hearing three outstanding talks, a review of recent awards and commentary on the extensive and exciting showtable, members attended an auction and banquet, which featured Jerry Fischer of Orchids Limited presenting "Borneo Paphiopedilums in their Natural Habitat." Members of the steering committee met during the Paph Forum and strongly recommended that the next meeting of the SOA be held in the Spring of 2001 as a free-standing one. They will meet again in Williamsburg, VA during the AOS Fall Trustees meeting.

As in every volunteer organization, we need your help and input. Will you write an article? Experiences of amateur growers are just as helpful and important as those of commercial growers. Can you present a talk? Would you be interested in helping to plan our meetings? What else would you like to see in our newsletter? On our website? Please let me or Richard know of your thoughts and suggestions.

Barbara Tisherman, Acting Chairman

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Complex White Paphs: The Road Less Traveled

Nearly fifteen years ago I was trying to decide where it was that I wanted to go with my paph hybridization program. Much work was being done at that time with vinicolor breeding and within another few years, with the implementation of CITES, species would become all the rage. The flowers that I thought were the most beautiful, yet in which little work was being done, were those of the white complex. (I use the term "white" to include both white and pink types of offspring. With a large percentage of white breeding efforts there is the possibility for getting pinks; and likewise, when breeding for pinks one often gets whites.) Now, more than ever, it is hard not to be intrigued and indeed breed with the trends of the sanderianum and parvi lines. And, though I do hybridizing work from species and primary to strapleafed and novelties, I have remained dedicated to a breeding emphasis on the white complex. The obstacles that make this breeding path so difficult are many. They include seed production that is often low or none at all, a slow seedling growth rate to maturity, limited access to the best parents to breed with, and high cost of those quality parents when available. Fortunately, a handful of other hybridizers have also followed this road less traveled to seek better white complexes. We now have a broader color spectrum from absolutely unstippled pure whites, to smooth pastel pinks, to almost "screaming pinks," to whites with stipples everywhere. There have been great strides, as well, in size and form and many of the older awarded whites would pale by comparison to today's best. In this article I would like to show some of the steps along the way in this difficult line of breeding. Some of the historically great whites of the past and their links to today's breeding, color factors and influences of the parents used, and perhaps a glimpse of where we're going.

No greater parent has ever made its way into white complex breeding than Paph F C Puddle. It is either a direct parent or in the ancestry of nearly 900 registered crosses to date. It has an almost pure white flower, is not particularly large or full-formed, but is a prolific breeder. While its whiteness proves to be highly dominant, its deficits in size and form are generally recessive and can be relatively easily overcome. These two traits of F C Puddle's breeding, together with its high fertility, have made it instrumental as a white parent. From this starting point, many fine crosses have come about. This next step toward better whites generally involved crossing F C Puddle to other complex greens or golds to get bigger fuller form. Usually the other parent had a great deal of insigne in its background and this often helped to improve flower size. The following are among the best in this next generation, from a perspective of both

flower quality and future parental attributes: Ano Puddle 'Eureka' AM/AOS, Dimity 'Alexandra' AM/RHS, Glacier Creek 'Crystal', Huddle (various), Lucille Mackey 'Lester' AM/AOS, Luminance 'New World', Puddleham 'Doolittle' AM/AOS, Whitemoor (various), Salty (various), Susan Tucker (various), Greensuds 'White Foam', Freckles (various), Cinderella (various), Silvara (various), Blanche Sawyer 'Snowman' AM/AOS, Jack Tonkin (various), and Skip Bartlett 'White Pepper' HCC/AOS. From this league of white complexes come many of today's best modern offspring. In order to improve this new generation of whites and take the next step forward, the normal method was to again cross to larger complexes. Greens or green/golds were crossed to these whites if one wanted clean whites in the next generation. Often, however, brushed golds, honeytone, and even reds were used to add the size and form. New colors ranging from light pastel to deep pinks began to pop up in the next generation, along with the traditional whites.

Hellas 'Westonbirt' FCC/RHS proved to be an outstanding complex gold parent when crossed to many of the whites. One of the exceptional offspring in this line of breeding came in the mid 70's. When Huddle 'Maybrook' (Hellas x F C Puddle) was backcrossed to Hellas, a lovely rose pink flower was produced. The best of this cross was clearly the coveted cultivar Alabaster Brook 'Ruth' HCC/AOS. On the heels of this fine cross was the very highly awarded Via Ojai (Freckles x Hellas). There have been almost a dozen AOS quality awards given to this grex. The idea of using Hellas' genetics with complex whites to give better pinks has been demonstrated time and again over the years. The following are just a few of the many fine offspring: Tomas Garcia (Freckles x Inca...1/2 Hellas), Ojai Glow (Via Ojai...1/2 Hellas x Glowing Gold...1/2 Hellas), True Love (Hellas x Saint Ouens Bay), Snow Glory (Snowbird x Hellas), and Incan Treasure (Inca...1/2 Hellas x Porcelain Treasure). When Hellas is crossed to most whites, the green and gold pigments in Hellas are often suppressed. The honey and brown tones are then allowed to be expressed as pink, and overlay the offspring's white background.

In trying to yield white rather than pink flowers, the whites such as Salty, Freckles, Jack Tonkin, Whitemoore, and others were bred to the fuller or larger clear green or green/golds. Yerba Buena (a medium sized green) was crossed to Salty and was registered in the mid 1980's as Hama Snow. Some cultivars of this grex have very nice full flowers of almost pure white. Over the next twenty five years Yerba Buena has been crossed to a large number of the better old whites and produced generally high quality offspring. Since Yerba Buena worked so well when mated with whites, the logical next step was to cross one of Yerba Buena's own big green complex offspring to a white. The now famous white, Skip Bartlett 'White Pepper' HCC/AOS, was crossed to the green breeder Green Mystery 'White Lynx' (Yerba Buena x Greenhorn). This mating produced a high percentage of very fine whites and the cross was registered in 1987 as White Knight. Soon

after this cross became well known, Freckles was crossed to Green Mystery. The idea being that Green Mystery worked well with one white, let's try a different white and see what happens. This cross, registered in 1996, was called Dottie McDowell and often had very large full flowers with minimal stippling on the best. Green Mystery was such a success with both Skip Bartlett and Freckles, a mating of it with Silvara 'Halo' AM/AOS was tried. The hopes were that since the first two parents had moderate stippling and the Silvara used has almost none, perhaps a large true pure white flower would result. The concept proved true and in late 1999 the cross was registered as Snowblind. As the name implies, it can produce absolutely pure white flowers, and an AM/AOS was granted to an outstanding example of the grex. The flower, Snowblind 'Serenity' AM/AOS, is quite large and well formed with pure white and no stippling. It is one of the finest examples of a clean white complex. Other famous crosses in the same green to white style of breeding include Snowbird (Jack Tonkin x Diversion) and Saint Ouens Bay (Denehurst x Whitemoore). Both of these have gone on to be great breeders as well.

Skip Bartlett 'White Pepper', mentioned earlier, has been the most successful parent to come directly from F C Puddle. It is a mating between godefroyae v. leucochilum x F C Puddle, and the leucochilum used was the awarded cultivar 'Bion' FCC/AOS. 'Bion' was an immense example of the species, and probably contributes greatly in Skip Bartlett's ability to fill out its own progeny. There are two other qualities for which Skip Bartlett excels. It has a strong ability to pass on its whiteness to its progeny, and it is quite fertile. The White Knight cross which we discussed previously, set the stage for breeding Skip Bartlett to many of the finest large complexes over the next decade. Nearly one hundred crosses have followed which have Skip Bartlett in their parentage. This is a testimony to the fact that Skip Bartlett not only breeds quality, but it is also very prolific. Some of the more well known offspring include: Lunacy (Hellas x Skip Bartlett), White King (Yerba Buena x Skip Bartlett), White Queen (Via Virgenes x Skip Bartlett), Lady Luck (Winston Churchill x Skip Bartlett), Pacific Foam (Necessity x Skip Bartlett), White Castle (Memoria Toshio Miyata x Skip Bartlett), Pixie Dust (Skip Bartlett x niveum), and Winter Ermine (Skip Bartlett x Virgo). These crosses usually involved crossing Skip Bartlett to the biggest and fullest complexes available at the time. The first Skip Bartlett cross made, White Knight, is now continuing forward as a parent with amazing success. It has produced a number of flowers of remarkable size, fullness, and clear color when bred to some of the best contemporary complexes. These include Knight's Chalice (Great Western...1/2 Yerba Buena x White Knight), Knight's Challenge (White Knight x Memoria Toshio Miyata), Mystic Knight (White Knight x Elfstone...1/2 Yerba Buena), and Carmen Coll (Amandahill x White Knight). The best these approaches perfection.

No discussion of white complexes would be complete without mentioning the world renowned Miller's Daughter. On one side of its parentage is Chantal 'Aloha,' a large well-formed green complex. On the other side is Dusty Miller 'Mary' AM/RHS, which is F C Puddle x Chardmoore 'Mrs. Cowburn' FCC/RHS. The 'Mary' cultivar is thought by many to be a tetraploid and is probably responsible for the exceptional flowers in the original strain of Miller's Daughter. Several remakes of the grex have been done since the original making, and none have come close to the original for quality. Unfortunately, the Miller's Daughters have been relatively infertile. Those cultivars that have yielded offspring have done so in very limited numbers. Some suggest that the Miller's Daughters are triploid and normally only produce when crossed to other triploids. In any event, the lineage from them is relatively limited and few awards have come from their progeny.

The main benefit that I have gained from Miller's Daughter is neither from the cross itself or its progeny. It is, rather, what I have learned. Chardmoore, when crossed with whites, can produce some very fine offspring! It was this concept that led me to decide to breed with a grex called White Legacy. It is what I consider to be one of the finest complex white breeders which does not have F C Puddle in its ancestry. White Legacy has the primary Greyi as one parent and Silver Anniversary as the other. Silver Anniversary is one half Chardmoore. What we get in White Legacy is a high percentage of the brachypetalums niveum and godefroyae (37.5% and 25% respectively). I then compare this to the makeup of Skip Bartlett which also has a high brachypetalum makeup with niveum, bellatulum, and godefroyae (6.25%, 6.25%, and 50% respectively). The brachy content of both is just over 60%. The similarity of brachy content combined with the Chardmoore background in White Legacy, led me to feel that it could be an instrumental white complex parent. Additionally, it has nice size and full form and breeds quite readily, similar to Skip Bartlett. The early results have been very promising. Many of the successful green parents used with Skip Bartlett have now been used with White Legacy. Those crosses that have recently bloomed out tend to have excellent size and fullness, an ability to mask green/gold color with white, and great hybrid vigor. As new grexes bloom out using White Legacy, more of its attributes will come to light. The prospect is quite exciting of a different path to better white complexes, a path which does not use F C Puddle. There may be new color spectrums, shapes, genetic diversity, and indeed future avenues which could be opened. It's one more road less traveled on "the road less traveled."

Hadley Cash is the owner of Marriott Orchids in Greensboro, NC. Many of the white complex crosses mentioned in this article can be viewed online at <http://www.marriottorchids.com/>

Successful SOA Benefit Auction

In conjunction with the 20th Paph Forum, The Slipper Orchid Alliance held a benefit auction. The auction generated \$2,350 because of the gracious donations of SOA commercial members and vendors present at the event. Donations were received from Antec Laboratory, Candor, NY; Allen Black of Richmond, VA; Bloomfield Orchids of Pittsford, NY; Fox Valley Orchids of Villa Park, IL; Little Greenhouse Orchids of Baltimore, MD; Marriott Orchids of Kernersville, NC; Orchid Alley of Chesapeake, VA; Orchids Limited of Plymouth, MN; Parkside Orchid Nursery of Ottsville, PA; Ratcliffe Orchids of Kissimmee, FL; RKS Orchids of Glen Rock, PA; Alan Saltzman Orchids of Penfield, NY; and Woodstream Orchids of Langhorne, PA.

This newsletter is a publication of The Slipper Orchid Alliance and any questions or comments regarding its content should be sent to Richard Grundy (richardgrundy@att.net) or Janette Harris (jaharris@sunny.net).