

The BackBulb

C A R M E L O R C H I D S O C I E T Y

January 2010



January Speaker: Harold Koopowitz

Harold grew up in South Africa where he attended university majoring in both Botany and Zoology. He then completed a doctorate at UCLA in California in 1968. A professor at the University of California at Irvine since graduating he was also the Director of the UCI Arboretum for twenty years. He is Professor Emeritus of Biology in the Department of Ecology and Evolutionary Biology at UCI, where he did research on conservation and ecology.

He is well known for his work on slipper orchids, both species and hybrids and is author of several books and a large number of research papers. His most recent books include "Orchids and their Conservation", "Clivias" and now "Tropical Slipper Orchids" for Timber Press. Harold is Editor Emeritus of the Orchid Digest. He also writes fiction.

Harold is also very interested in other plants and also breeds daffodils and has an international reputation as a breeder of miniature daffodils. For many years he was a partner in Paphanatics, unLimited with Norito Hasegawa. He still grows and breeds paphiopedilums especially miniature hybrids.

Harold is a member of the Species Survival Committee for Orchids for the International Union for the Conservation of Nature. He is on the board of Orchid Conservation International and is scientific advisor to the Orchid Conservation Alliance. In addition, he is a member of the International Orchid Commission. His topic will be on "Creating the New Miniature Slipper Orchids".

The January meeting is on
Monday January 4th, 7PM At
the **Community Church of
Monterey Peninsula**, 4590
Carmel Valley Rd.

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Carol's Commentary

Our Christmas Party was a fun event with lots of good food, camaraderie and a great plant table. I would personally like to thank Yoriko from BayBreeze for donating numerous plants to our raffle. Thanks to those of you who attended and thereby supported your Society.

2009 is almost behind us. For our Carmel Orchid Society the year was one of change. We partnered with the Carmel Valley Garden Club for a successful Flower Show/MayFaire and will continue to do so again this coming year. Next year we will have a 2-day show with more opportunity for growth and also to refine some of the lessons we learned this past May. Joanie already has her Committee together and they are busy with the preparations. As in the past we will be looking for volunteers to assist with this fun event. Another change for us this year was one of shrinking membership. We hope that you will help your Society by bringing potential new members to meetings and introduce them to the wonderful world of orchids. Your new Board is ready to take on the challenges for 2010 but we need your participation. Please attend our meetings and please volunteer when asked.

I hope you all have a happy, healthy and prosperous New Year.

Carol



My New Years Resolutions

1. Get rid of (almost) as many plants as I buy. Space is tight, give them away if I can't sell them.
2. Resist the siren call of cheap bare root plants. I don't know how many times I have told myself to buy well established, and more expensive, plants. But I keep falling for \$5-\$10 bare root specials without a viable root on them.
3. Attend more shows. This conflicts with #1, but I need to try to get down to the Santa Barbara Spring show.
4. Water less frequently but more thoroughly. Progress is being made but I'm not there yet.
5. Do more to promote our society and orchids in general.

John

Upcoming Events

January

1/4 Monday 7PM COS January Meeting. Harold Koopowitz will speak on "Creating the New Miniature Slipper Orchids"

1/9-10 Orchids Under the Oaks, Alden Lane Nursery 981 Alden Ln. Livermore, www.aldenlane.com

1/18 Monday COS board meeting, at Carol's house. Annual board dinner spouses welcome RSVP Carol.

1/23-24 Peninsula Orchid Society Show and Sale, Community Activities Building, 1400 Roosevelt Avenue, Redwood City

1/30-31 Santa Cruz Orchid Society Show, Soquel High School, 401 Old San Jose Rd., Soquel

February

2/5-7 Malihini Orchid Show and Sale. Cupertino Square (Valco Park), 10123 N.Wolfe Rd. Cupertino. www.malihini.org

2/6-7 Sonoma County Orchid Society Show, Santa Rosa Veterans Memorial Bldg., 1351 Maple Ave., Santa Rosa

2/26-28 SFOS Pacific Orchid Exhibition, Fort Mason Festival Pavilion, San Francisco. www.orchidsanfrancisco.org/poe

March

3/12-14 Santa Barbara International Orchid Show, Earl Warren Showgrounds Santa Barbara



Diodonopsis erinacea from the collection of John OConnell. A very cool little plant that I almost killed, but managed to bring back to almost what it was when I bought it.

All About RO H₂O Part 2

Last month we looked at the water quality, as far as orchids are concerned, in the Monterey area. This month is about improving your water by using a reverse osmosis (RO) filter.

How RO Works

A RO filter works by using pressure to force water to diffuse through a membrane leaving the impurities on one side, pure water on the other. The amount of pressure it takes to force the water through the membrane is proportional to the concentration of dissolved solids in the source water. Sea water with a Total Dissolved Solids (TDS) of > 30,000 parts per million (PPM) takes hundreds of Pounds per Square Inch (PSI) to make RO work. Our water is only 300-600 PPM TDS so we can get by with 40-80 PSI (about what most municipal water supplies provide) to force our water through the RO membrane. The unique way that RO membranes work means that all, affordable, RO systems share the same characteristics:

- ✿ RO wastes water. This is a byproduct of the TDS to pressure relationship. A set pressure will let you get just so much water through a membrane before the solids become too concentrated to allow more water across the membrane. The solution is to have water continuously flow over the membrane, the optimal pressure is maintained by a check valve, and then you get "clean" water, greater than 90% of the TDS removed, from one side of the membrane, and rejected water from the other side of the membrane. The rejected water is perfectly good, except that it is roughly

20% higher in TDS than the water you put in. Most household RO systems will reject 2-6 gallons of water for each gallon of pure water produced. There are a number of things you can do to get the rejection rate to the lower end of the range and there are several possibilities for recycling the rejected water.



- ✿ The small (water molecule size) pore size of the membrane requires clean, free of suspended solids, to avoid fouling. So pre-filters are a necessity. The membranes also tend to be degraded by chlorine and other organic compounds so activated carbon pre-filters are also required.
- ✿ Diffusing water across the membrane takes time, if the membrane is small enough to be affordable then the output is usually a trickle. It may take 10 to 45 minutes to produce a gallon of pure water. Slow enough that the capacity of these systems are measured in gallons per day. If you buy a 100 gallon/day system it can produce a gallon of water in about 15 minutes. a 12 gallon/day unit will take 2 hours to produce a gallon. Eight gallons (about what I use in a week) takes 2 hours with a 100 gallon/day unit, 16 with the 12 gal/day unit. Again there are ways to increase the speed, some of which are even affordable.

The Hardware

RO systems are complicated. They look like a bundle of filter canisters tied together with colorful tubing. throw in a TDS meter, a pressure gauge, and maybe a pump and it looks like only an engineer

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could figure one out and only a plumber could install it. For the larger more complex systems, both may be true, but it is possible for the non engineer, non plumber to understand and even install these things.



My RO System. The RO membrane is on top, the TDS meter and pressure gage are in front, and the carbon and sediment pre-filters are on the bottom.

First, about all those canisters. A RO systems can contain from 2 to as many as 8 separate filter elements. Descriptions of RO systems will say something like "3 stage filter" which means that the system has 3 filter elements including the RO membrane. These filters or stages can be broken down into pre-membrane, the membrane, post-membrane, and finishing filters. Pre-membrane filters include sediment filters and carbon filters. The vast majority of systems have a sediment filter and a carbon filter to remove anything that could clog or degrade the RO membrane. If you have non-chlorinated well water you may not need the carbon filter. The RO membrane is the heart of the system. Membranes are made of either Thin Film Composite (TFC) or cellulose triacetate (CTA). TFCs are more common and are generally superior to CTA

membranes, but they need a carbon pre-filter to remove chlorine which will shorten their life span. Add additional RO membrane in series with the first (piggy back membranes), will squeeze more pure water from your rejected water, doubling, or more, the efficiency and capacity of the system. Post membrane filters are usually deionization (DI) filters. DI filters can get rid of the minerals that make it through the membrane. Salt water aquarium people generally use one or more DI stages to get close to 99.9% pure water, just so they can add a carefully controlled amount of salt back in. Orchids are not quite that picky, so the DI filter just adds cost and another filter to change periodically. A finishing filter is a carbon filter that is placed after the storage tank, on system with one, to remove any tastes picked up from the tank. Useful if you want to drink the RO water.

In addition to all those filters many systems have a tank and faucet. The tank makes up for the slow production rate by storing the pure water until you draw it from the faucet. Typically you can draw about a gallon from the tank before the lack of pressure in the tank (the tank contains an air bladder that is compressed as you fill it) reduces the output to a trickle. When the tank is drawn down then water will be filtered until the tank is full again. Waste water usually goes down the drain, and you waste more water as the bladder exerts back pressure against the RO membrane while the last bit of the tank is being filled. A permeate pump can be used to speed the filling of the tank and reduce the waste caused by the back pressure. Most all tank systems are permanently installed under a sink, or very near a sink. Large unpressurized tanks (20+ gallons), rigged with a float valve to automatically top off, can supply many gallons of pure water quickly.

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If you want a system that is portable, are willing to babysit it (or put it on a timer), don't mind saving some cash, and like a more efficient unit, then you should look into a tank-less system. Tank-less systems (surprise) have no tank, you must collect the pure water as it is produced, when you have enough you turn off the water supply. Aquarium people like these systems because they can turn them on produce an aquarium worth of water, then turn them off. Without the tank the system is much smaller and can be portable, store it where convenient and bring it out to use when you need water. I store my system in the garage and carry it outside to filter. The system hooks up to the hose spigot, and I use a simple watering timer to keep the gallon jugs I filter into from overflowing. Waste water is collected in a 5 gallon pail, which I use to water the grass and landscaping. It takes a lot of babysitting but it will do until I think of a way to make it all more convenient.

With all those filters maintenance is very important. Failing to replace filter elements in a timely manner can result in either a shortened lifespan for that expensive RO membrane or a higher TDS in the "pure"



Acianthera chrysantha From John's collection.

I water. You can replace your filters by the calendar, or if you have a little engineer in you, you can measure TDS, pressure, and total volume processed to tell when to replace them. Either way, pre-filters need replace more often than the RO membrane. The calendar schedule is: RO membranes (\$50-\$80) every couple of years. Sediment filters (\$4-\$8) every 4-8 months, and carbon pre-filters (\$10-\$20) every year. Note that your manufacturer may have different recommendations, follow them. The analytic approach is a bit beyond this article, so if you have a bit of engineer in you, ask and I can provide you with the full page of directions.

The Bottom Line

How much will it cost? You can spend anywhere from \$100 for a minimal 2 stage system to \$300 for 4-5 stage, 100 gal/day tank system. \$500 to \$1000 buys a top of the line system that will deliver around a gallon of pure water a minute, doing away with the need for a tank. Shop around, prices vary widely for systems with the same specs. And remember to budget for installation if you don't feel capable.

Recommendations are hard to make since everyone's situation is different, but here are a few:

- ✿ If you want to use the water for drinking as well as your plants and can permanently install a system then get a system with a tank. If you use more than a gallon of water at a time get a big tank.
- ✿ Cut water waste with tank systems with a permeate pump.
- ✿ If you use much water at all get a 50 or 100 gallon/day system. Small systems are just too slow and don't save that much money.
- ✿ Tank-less systems are a bit of a hassle,

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but are worth it if you can't install a system permanently, or don't have room for a large tank.

- ✿ Don't like the idea of wasting all that water? Use the rejected water to water your yard and outdoor plants. Or double your systems efficiency by adding a piggyback filter.
- ✿ Don't bother with DI post-filters. 99.9% pure is probably counter productive, your plants need some minerals.
- ✿ Start out with a basic system (3 stage 50-100 gallon/day), use it for a while then upgrade with a 2nd membrane, a large storage tank, etc. Be sure to get a system that uses standard fittings and

filter sizes so upgrades will be easy.

The question now is not weather you drink the water, but are you going to let your orchids drink the water? Providing them with good water requires an investment of time and money, but it doesn't have to be extreme. You can keep it simple or indulge your inner geek with a very fancy toy. RO can be as simple or as complex as you want, or can afford.

John



Carol's Cattleya Porcia 'Cannizaro' FCC/AOS (C. bowringiana X C. Armstrongiae). The name has changed to: Cattlianthe Porcia 'Cannizaro' FCC/AOS (C. Armstrongiae X Guarianthe bowringiana) Guarianthe bowringiana used to be Cattleya bowringiana.

Porcia was registered in 1927 and the Cannizaro clone has 9 AOS awards including the FCC in 1988. Seven of the awards are CCM's (Certificate of Cultural Merit). From Carol's specimen you can see why this clone was awarded so many CCM's.

C A R M E L O R C H I D S O C I E T Y

2010 Membership Application

Please make checks payable to the **Carmel Orchid Society** and mail to: Carmel Orchid Society - Membership c/o Sharon Ashton 26966 Laureles Grade Road Carmel Valley, CA 93924

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Nag, Nag, Nag...

It's **that** time again, time for your otherwise nice, friendly society board members to nag you about paying your membership dues. As much as we would like to have your money to pay for our fabulous monthly speakers, what we really want is for you to come hear the speakers, buy the raffle tickets and take home all the interesting plants on our monthly raffle tables. None of that will happen if you are not interested enough to pay the pittance we ask for or yearly dues. Most orchids that we will kill in less than a year cost more than a years membership! So all we ask is that you pay your dues, come to the meetings and have a wonderful time!



While most of the area orchid shows are in the winter, the Santa Barbara Orchid Fair in July is a bit of orchid nirvana in the middle of summer.



Advertise in the BackBulb

If you have a business, or just want to advertise your yard sale, this may be the place. The COS is now accepting advertising in the BackBulb. Circulation is mainly to our members and visitors, around 100 copies per month. The rates are: \$5 quarter page, \$10 half page, and \$20 for a full page. If you are interested contact the BackBulb editor, John OConnell johnnoconnell19@att.net.

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Admission \$12 online/\$14 at the door, Seniors (65+) \$8 online/\$10 at the door
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If you love orchids, you can't miss POE! 70+ vendors, dozens of exhibits, species galore, incredible location on SF bay. Plan to spend all day, stay the night and enjoy San Francisco the next day!

2010 Santa Cruz Orchid Show and Sale

Saturday, Jan 30, 9 AM to 5PM
Sunday, Jan 31, 10 AM to 4 PM

At Soquel High School
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Soquel, California 95073

Presented by the Santa
Cruz Orchid Society and
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Trisetella hoeijeri ----->

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Photo by Frank Drake

The Santa Cruz show is by far the closest show, besides our own, to Monterey. They had a great selection of plants for sale last year, and beautiful plants being displayed.

Peninsula Orchid Society
Presents

ORCHIDS! 2010 Show and Sale

Community Activities Building
1400 Roosevelt Avenue
Redwood City, CA

Saturday, January 23
Sunday, January 24
10 am-5 pm

Featuring a Show Exhibit of Incredible Orchids,
Orchid Vendors,
Informative Seminars, and Member Sales

Admission \$5 Adults, \$3 Seniors,
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Information: <http://penorchidsoc.org>

Alden Lane Nursery Presents
Orchids Under the Oaks 2010



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Jan. 9th & 10th
10am-4pm

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