

LUIS MATIENZO: ORCHIDS OF THE AMERICAS

Take a look through your orchids. No matter how much experience you have as a hobbyist, chances are that there are a few New World orchids in your collection. The orchids of the Americas comprise such familiar genera as Cattleya, Encyclia, Phragmipedium, Cypripedium, Masdevallia, Epidendrum, Odontoglossum, Oncidium, and the list goes on. Just think of the diversity introduced to the orchid growing hobby by the more temperate regions of the Americas!

For our March 3RD meeting (2:00^{PM}, St. Augustine's Church) CNYOS is proud to welcome Luis J. Matienzo of the Southern Tier Orchid Society, who will give a presentation entitled "Orchids of the Americas." Luis has been growing orchids, mainly under lights, for the past 25 years. His interests have been concentrated on orchid species of varied genera and their adaptation to survival away from their native environments. On many occasions, Luis has managed to visit and observe orchids in nature from locations in Canada to several habitats in South America.

Luis is a senior engineer at IBM Corporation in Endicott NY. His academic training in Chemistry and Chemical Engineering (B.Sc., M.Sc., Ph.D.) has stimulated his interest on chemical interactions between plants and their surroundings. Whenever possible, travels for business purposes or as a visiting professor at various universities have permitted him to combine his obligations and his favorite hobby.

IN THIS ISSUE...

February Meeting & Minutes	2
CNYOS Calendar	3
AAUUGGHHH!!!!	3
STOS & GROS News	3
February Show Table	4
Miscellaneous Business	5
Attention On-Line Members!	5
Spot Light On...	6
Scale Insects on Orchids	8

FEBRUARY MEETING: GROWING ORCHIDS FROM SEED

At our February meeting, GROS member Jeanne Kaeding discussed her experiences growing orchids from seed. Jeanne started doing her own flasking right in her own kitchen. In a well-illustrated slide presentation, Jeanne outlined how an orchid is pollinated, her methods for mixing the agar-based media, sterilizing the flasks, and sowing the orchid seed. She uses a pressure-cooker to sterilize the media, and sows the seed in a make-shift laminar flow hood. Extreme care is taken to ensure that everything remains sterile--orchid seeds don't require sterile conditions to germinate and grow, but if the growing media becomes contaminated with mold or bacteria, the fragile seedlings will be smothered. Once the seedling germinate and start to grow, they eventually need to be transferred to larger living quarters. The entire process takes many months and even years. Jeanne brought examples of flasks brimming with seedlings, and even a flask or two that had become contaminated with mold. After the meeting, the club took Jeanne out to dinner at the Blue Water Grill in Baldwinsville.

1. Field trip to Bloomfield Orchids; approximately 20 people have showed an interest. Please either meet the group in the church parking lot to car pool or use the directions on the back of the newsletter individually.
2. Flower/Garden Show; the fee this year is \$75. There is a question of space availability at the State Fair Grounds. Set-up is 8-3:00PM on Thursday. The sign-up sheet was circulated. Jeff Stuart will order the plants for sale.
3. March meeting—Deb Coyle would like us to think about and be prepared to sign for the committees for the Rochester and STOS shows. Iris can help take down.
4. Newsletter Editor Jeff Stuart is providing the club with three options to receive the newsletter: the club web site, E mail, or direct mail. Please chose one of these three options and let Jeff know. He also reminded us that dues are due.
5. New members were introduced.
6. Our speaker was Jeanne Kaeding , from the Rochester Club, who gave a multi-media presentation on flasking.
7. Thanks to Kathy Verone and Gary Stensland for the refreshments.

**Respectfully Submitted,
Barbara Weller, CNYOS Secretary**

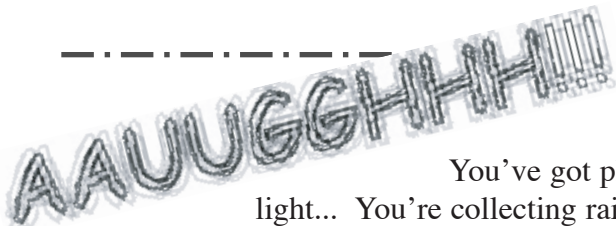
Photo References page 1: Phrag. caudatum, http://www.orchidweb.com/plt_wkLG.asp?PRecn o=534

.....
JOIN US FOR DINNER WITH THE SPEAKER

After Sunday's meeting, we'll be taking Luis out to dinner at the **Blue Water Grill** in Baldwinsville (5:30^{PM}). If you're interested in attending, please let Judi Witkin know by Saturday so she can make reservations (422-0869).

.....

March 14-17, 2002**Central New York Flower & Garden Show**, State Fair Grounds: CNYOS **will (!)** have an information booth & display, and will sell orchids & supplies to the public—this is our largest fund-raiser of the year!**April 18-21****Genesee Region Orchid Society Show**, Eisenhart Auditorium, Rochester Museum & Science Center, 657 East Ave., Rochester, NY. Contact: Jeanne Kaeding, 161 Crosman Terr., Rochester, NY 14620; (716) 442-3202.**April 26-28****Southern Tier Orchid Society Spring Show**, Oakdale Mall, Reynolds Road, Johnson City, NY. Contact: Gail Kirch, 1099 Powderhouse Rd., Vestal, NY 13850; (607) 723-3414.**September 27-29****2002 CNYOS Annual Fall Orchid Show & Sale**: Shoppingtown Mall. Details to be announced.



You've got plenty of light... You're collecting rain water or you use reverse osmosis... The fertilizer levels and the pH are just right... You've got several fans to keep up the air circulation, and the hygrometer indicates plenty of humidity... You've matched the temperature preferences of your various plants with the available "micro-climates" in your growing area... All of your orchids are repotted regularly... You've done everything all the books say, but your orchids are still not blooming as well as they should be!!!

WHAT MORE CAN YOU DO??? WHAT IS THE PROBLEM???

Could it be...



This month we present the first of several articles by Paul Johnson of the South Dakota Orchid Society on a few of the common insect squatters that take up residence in our collections. In the first article, Paul discusses the various types of scale insects that are common in hobbist collections. See Page 8.

GROS NEWS: NEWS FROM THE GENESSEE REGION ORCHID SOCIETY

For the March 4TH meeting, Barbara Drake, president of The Bergen Swamp Preservation Society will speak on Native Orchids and their habitats in the Bergen Swamp and Zurich Bog. Ms. Drake, who also serves as scientific committee chairwoman for the Bergen group, will be bringing a good slide presentation that's sure to pique your interest in seeing some of our native orchids in the wild. (The GROS has offered tours of the Bergen and Zurich preserves almost every Spring, led by volunteers from the club and from the Bergen Society.)

Taken with permission from *The Orchid Collection*, Newsletter of the Genesee Region Orchid Society, Vol. 24, No. 6, March 2002, Phil Matt, Newsletter Editor (716) 288-7025.

STOS NEWS: NEWS FROM THE SOUTHERN TIER ORCHID SOCIETY

There is no regular program planned for the March meeting of the STOS; instead, planning will be done for the quickly approaching Spring show, scheduled for April 26-28.

Monthly meetings begin at 2:00^{PM} in the Vestal Public Library. For directions, etc. call STOS president Kenneth Lattimore at 570-553-2753 or e-mail him at <klatt@epix.net>.

Cypripedium Alliance

<i>Paph. insigne</i>	Stuart
<i>Paph. Clair de Lune</i> (Emerald x Alma Gavaert)	Cohen
<i>Paph. fairrieantum</i> (sic)	Witkin
<i>Paph. Macabre</i> (Voodoo Magic x <i>sukhakulii</i>)	"
<i>Paph. Forest Nymph</i> (Alma Gavaert x <i>venustum</i>)	"
<i>Paph. Forestvale</i> x Shapely (sic)	Bordoni
<i>Paph. Magic Mood</i> x Golden Acres	Stensland
<i>Paph. sukhakulii</i> x Sunken Treasure	Rice & Kwiek

Cattleya Alliance

<i>Slc. Seagulls Andy Sean</i> (Hazel Boyd x Dixie Jewels)	Ditz
<i>Mrclm. trinasutum</i>	"
<i>L. anceps</i>	Stuart
<i>Oerstedella centradenia</i>	Coleman
<i>Prosthechea garciana</i>	"
<i>Pot. Love Knot</i> (<i>L. sincorana</i> x <i>C. walkeriana</i>)	Witkin
<i>Slc. Andy Myers*</i> (Tangerine Imp x <i>C. Moon Festival</i>)	Cohen
<i>Lc. Memoria Robert Strait</i> x Aloha Case	Kot

Vandaceous

<i>Phal. sp.</i>	Ufford
<i>Sarcoglyphis comberi</i>	Witkin
<i>Dtps. Bright Kiss</i> x Malibu Target	Bordoni
<i>Ascf. Cherry Blossom</i> (<i>Neof. falcata</i> x <i>Asctm. ampul-laceum</i>)	Capella
<i>Phal.</i> (Paifang's Queen x Salu Spot [?]) x Brother Purple	Weller

Oncidium Alliance

<i>Tpla. suavis</i>	Stuart
<i>Rhynchostele</i> (sic) <i>rossii</i>	Witkin

<i>Adgm. Summit</i> (<i>Rhynchostele bictoniensis</i> x <i>Ada keiliana</i>)	Capella
<i>Hwra. Lava Burst</i> (Mini-Primi x <i>Rdza. lanceolata</i>)	Bordoni
<i>Onc. Maple Hollow</i> (Tafsan x Private Stock)	"
<i>Hwra. Mini-Primi</i> (<i>Rdcm. Primi</i> x <i>Lchs. oncid-ioides</i>)	Cohen

Dendrobium

<i>Den. Nora Tokunaga</i> x <i>atroviolaceum</i>	Coyle
<i>Den. nugentii</i>	Bordoni
<i>Den. Chao Phaya Blue</i> (May Teo x Kultana)	Kot
<i>Den. toressae</i>	Witkin

Cymbidium

<i>Cym. unknown</i>	Coleman
<i>Cym. Showgirl</i> (Sweetheart x Alexanderi)	Coyle
<i>Cym. Eastern Promise</i> (Claudona x <i>sinense</i>)	"

Miscellaneous

<i>Ludisia discolor</i>	Stuart
<i>Aërgs. hyaloides</i>	Witkin
<i>Masd. attenuata</i>	Coleman

*This cross has now been officially registered as *Sophrolaeliocattleya* Andy Myers. I was unable to use Memoria because that would make it too much like another grex name.

Iris Cohen

Don't forget to update your labels from each month's Show Table listings!

COMPOTS FOR SALE FROM STOS

- 6245** (1) (Slc. Regal Gold x Blc Love Sound) x Pot Free Spirit: yellows
t2945 (3) Mtdm. Hawaiian Sunset "Hawaii": yellow and red flowers
t2717 (1) Odtm. Lorraines Fourteenth WOC "Hawaii": maroon, white lip/red
t3154 (2) Blc (Toshie Aoki x American Heritage): yellow/red flaring/red lip
t2896 (1) Odb. Billabong: yellow and brown
5918 (1) Pot. S. Taylor x Blc. (Bryce Canyon x Toshie Aoki): reds

5914. (2) Pot. Alice Kayser x Blc Hunting Island "Carmela": reds

t2898 (2) Odb. Nikoline Lorenzen: unknown

5633 (1) Phal. Taipei Gold x Taida Lawrence: bright yellows

Pricing: 1 compot for \$20, 3 compots for \$55 or 5 compots for \$85.

Make checks payable to **Southern Tier Orchid Society**. Additional information can be obtained via e-mail from Imatienzo@stny.rr.com or via phone after 6:00^{PM} at 607-754-5702. STOS/CNYOS member Colin Dimon will deliver requested compots on his next trip to Syracuse.

CLUB REMINDERS

Orchid-Growing Supplies are now available, including fir bark, sphagnum, sponge rock, charcoal, and 40W fluorescent tubes. Call Rich Groll for details on pricing and availability.

The **CNYOS Club Library** is now located at St. Augustine's church. Make arrangements with Val Introne (682-8595) if you want to borrow an item from the Library.

**DON'T FORGET TO BRING YOUR
BLOOMING ORCHIDS FOR THE MONTHLY
SHOW TABLE!!!**



Phalaenopsis bellina (violetaceae), photograph by Vagisha Sharma, with digital enhancement by J. Stuart.

MARCH 14-17: CNY FLOWER & GARDEN SHOW!

Once again, CNYOS will be hosting a booth at the *FLOWER & GARDEN SHOW* at the State Fair Ground, including a display and sales of orchids & supplies. Plans will be made at this Sunday's meeting. Please consider helping out!

REFRESHMENT SCHEDULE

March 3	Ken Renno, Judith Daly & Betsey Keck
April 7	Donna Coleman & Monica Kot
May 5	Dave Ditz & Jen Wilson

CNYOS IS NOW ON-LINE!

CNYOS is on-line at www.paphiopedium.net. The site is regularly updated and will be changed as the club's two crack web-masters (Jeff Stuart & Charles Ufford) have time to do so, so check back frequently!

CNYOS ON-LINE MEMBERS!

As discussed at the last two meetings, the CNYOS Newsletter can be downloaded from the club's website, www.paphiopedium.net. **Adobe Acrobat 4.0** is needed in order to successfully view the **FULL COLOR!** pdf file. Several requests have been made to customize it further for optimal printing, or a text-only format, but in order to protect my sanity (!) I have decided, with apologies, not to pursue those options. The newsletter will e-mailed to those who request it, or directly mailed as usual. Although the newsletter will always be available for download from the web site, members who opt for internet distribution will receive it by direct e-mail. This way, I'm sure you receive it and are notified of the club's activities. If you have not yet tried to download the newsletter, please do so—if you have no problems, then consider saving the club a few bucks in printing and postage by switching to on-line access. A high-speed connection is recommended, although not necessary if you're a really patient person! If you are having problems, please let me know and I'll do my best to help you out.

Thanks, Jeff Stuart
CNYOS Newsletter Editor

ENCYCLIAS CORDIGERA & PLICATA

Encyclia cordigera has for many years been incorrectly known as *Epidendrum atropurpureum* and only in 1964 was rightfully transferred to the *Encyclia* group. One of the most handsome of the genus, the beauty of *Encyclia cordigera* is compounded by its delightful, intoxicating rose fragrance. There are several color varieties found including 'randii', which is the type, 'rosea' with a beautiful dark rose-colored lip and an apple green 'alba' form with a white lip. *Enc. cordigera* is one of the most frequently used *Encyclias* in hybrid breeding programs producing attractive hybrids such as *Epicattleya Florida* (x *C. dowiana*), *Epi. Atropine* (x *Enc. tampensis*), and *Epi. Atrowalker* (x *C. walkeriana*). This species grows easily under intermediate conditions either in a pot of well-drained medium or mounted on cork or Tree Fern. As with all *Encyclias* be on the lookout for scale between the clustered pseudobulbs and take appropriate action when found.

Encyclia plicata is usually thought of as the finest of the Bahamian *Encyclias*, although some taxonomic confusion exists between it and the very similar *Encyclia phoenicea*. The large (almost two inch) flowers are indeed striking. The orchid can be found growing on limestone marl or low shrubs in exposed places on Andros and other Bahamian islands as well as Cuba. In the wild these orchids lead a harsh existence and are quite adaptable in culture. Give them bright light, plenty of air movement and regular but not excessive water. Pot in an open mix such as tree fern or lava rock, avoid sphagnum.



The large flowers of *Enc. cordigera* are wonderfully fragrant and colorful, with mahogany brown sepals and petals, and a broad deep rose-colored labellum.



Encyclia plicata boasts large greenish-tan flowers marked with red-brown and a strong chocolate fragrance. The intricate white lip is marked with deep rose.

Reference: Photos © Greg Allikas. The Orchid Photo Page by Greg Allikas: <http://www.orchidworks.com/>. Text reference, Greg Allikas (<http://www.orchidworks.com/>) & Jeff Stuart.

SCALE INSECTS ON ORCHIDS

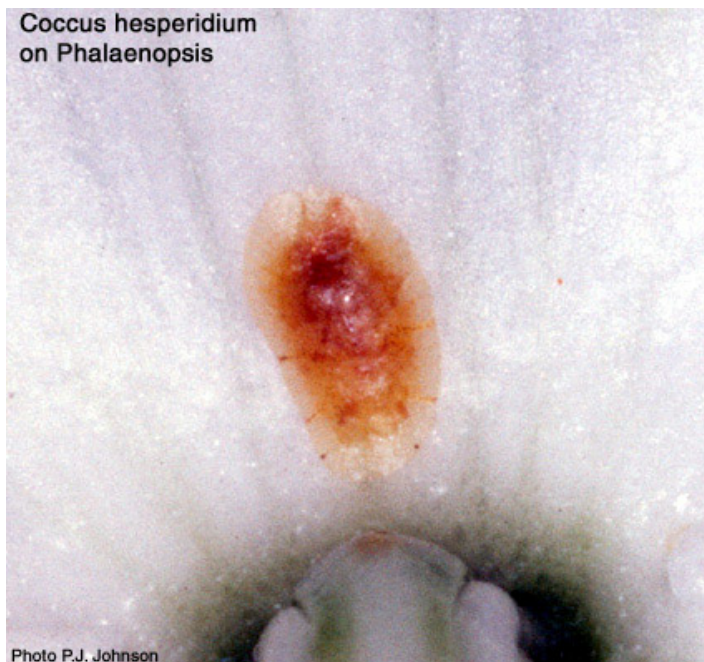
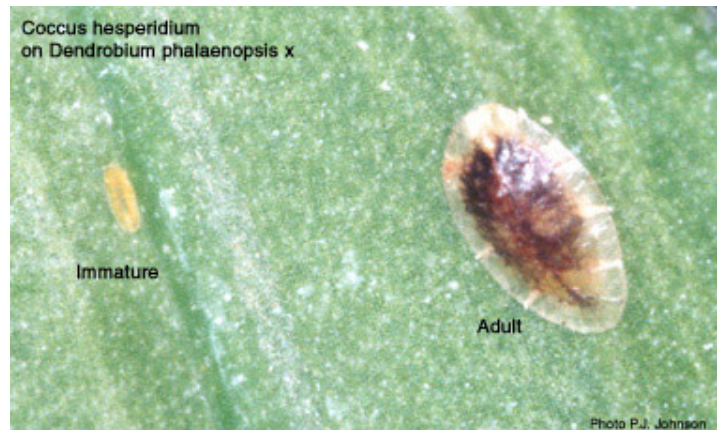
Paul J. Johnson
 Insect Research Collection,
 Box 2207A, South Dakota State University,
 Brookings, SD 57007

This note is written for the orchid keeper or grower in northern states of the U.S., and Canada, that generally has a small to medium sized indoor collection. The keeper or grower in southern states enjoys the potential of many more scale problems because of outdoor growing, but also benefits from natural environmental population management by the weather, and predatory and parasitic enemies of scales!

SOURCES AND IDENTIFICATION

Scales are probably the most important insect pests of cultivated orchids in northern climates. Mealy bugs and aphids may tie for second in importance and are controllable with the same methods. According to a 1976 publication from the Florida Department of Agriculture and Consumer Services, there are no fewer than 27 species of scale identified from cultivated orchids. Fortunately, few hard or armored scales, but mostly soft scales, usually referred to as brown soft scales or hemispherical scales, regularly survive in the north on indoor or greenhouse plants. Especially common is the brown soft scale (*Coccus*

hesperidium) shown lower left, and possibly the similar elongate soft scale (*Coccus longulus*). Boisduval's scale (*Diaspis boisduvali*), the scourge of the southern orchidists, is rarely encountered in northern collections and apparently does not survive well here, except in the largest greenhouses.



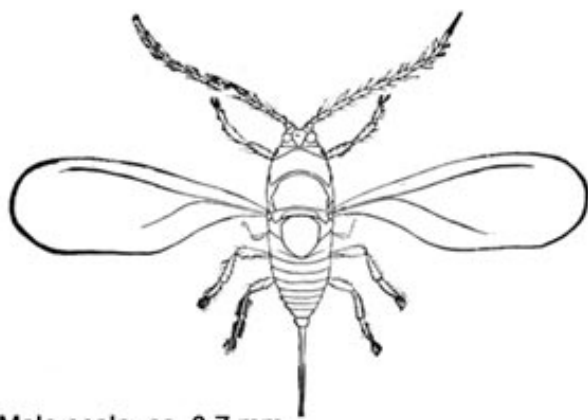
The more common species of these odd insects that infest orchids are immediately recognized in the adult stage by the light yellowish to greenish-brown, tan, or dark brown, oval to circular, objects that show-up on leaves, petals, sepals, petioles, pseudobulbs, and sometimes rhizomes and roots. Mature females of Boisduval's scale are a rather typical rounded and light-colored scale type, while males are easily recognized by the cottony appearance of aggregated males, and these may be confused with mealybugs if not examined closely. The immatures, or crawlers (shown above), of all scale species are tiny and yellowish to pinkish, and not easily seen without a magnifier.

In the home orchid collection, scales are acquired by your plants in some combination of three sources. The most common way of acquiring scales is by purchasing an infested plant. On plants at home, scales are easily transmitted from infested to clean plants when your plants touch each other and the crawlers to move from plant to plant. The final source is colonization of your plants by windblown crawlers. Colonization is usually done during the summer when your plants are outdoors, but it can also occur indoors in greenhouses and sunrooms by floating on currents produced by circulating and heater fans. This occur-

rence appears to produce the odd effect of having pockets of infestation when the crawlers settle on plants where the air currents are the weakest and early during a spreading infestation. Similar effects are found with aphids, mealybugs, whiteflies, and spider mites.

LIFE CYCLE

Scale insects have a three-stage life history: egg, larva (or nymph), and adult. Eggs are laid by females, with the eggs usually retained in the body and under the outer "scale" covering when the female dies. These hatch into the mobile nymphs, called crawlers. The crawlers are the active stage that can move between plants. After finding a suitable place for feeding, the crawler will settle and begin feeding, and transform into the next nymphal stage. At this point the female begins to form the hard protective "scale" covering. The covering enlarges as the insect grows. Nymphs often have a light yellowish scale, which darkens to tan or brown as the insect matures. Males of soft scales do not form the hard coating or scale, but are small winged creatures whose primary, if not sole, role is to mate and die.



Male scale, ca. 0.7 mm

Scales have short life cycles, but may cycle many times a year. In a warm greenhouse or indoors the life cycle may be accelerated, though typically a month or more is required for completion of a generation. It is the overlapping of generations that creates the biggest scale management problem. All control methods are at their greatest effectiveness against the crawlers. By the time the scales have formed the

hardened cover (the scale), it is too late to easily kill those adults with chemicals. Also, the large dry brown scales are already dead and the "shells" may be full of eggs (if they are full of a fine powder-like substance, then they were probably killed by a chemical treatment).

MANAGEMENT

Scale management is usually a protracted and serious effort, and never much fun. Light infestations restricted to one or a few plants can usually be treated with household products rather than concentrated insecticides. When possible, immediately isolate infested plants from others to prevent the crawlers from moving amongst them.

Because the life cycle of scales can be so short combined with the overlapping of generations, in order to bring a serious problem under control you will need to do a treatment every 2-5 weeks, depending on the life cycle period of your particular problem scale species. Consequently, the key to scale control is persistence.

Management methods that are the least toxic to people, pets, and plants, are the most time consuming and laborious. Insecticidal methods, including horticultural oils, soaps, and synthetic insecticides are progressively more toxic (to both the insects and humans!) and more expensive, but less work. Regardless of method or chemical used, you must remain vigilant and expect to make at least 2-3 applications 10-16 days apart.

Because of plant costs, personal attachment to orchids by owners, and the over-riding desire to avoid insecticides whenever possible, a number of effective "home remedies" for scale control are available. Be aware that non-insecticidal treatments may not be highly effective for elimination of scales. Thus, they should be viewed as controls, not eradicators. Also, many common home chemicals are extremely toxic to humans, pets, and plants even in diluted forms, often being proportionately more toxic than the feared insecticides.

RUBBING ALCOHOL

Probably the most popular home remedy is to swab and daub plants with a Q-tip or ball of cotton dipped in isopropyl (rubbing) alcohol. Do not use other alcohols, such as ethanol or methanol, that will penetrate the plant tissues rapidly and cause considerable damage! The concentration of the isopropyl seems to make little difference; the common 70% available in stores is satisfactory. On hard-leaved plants, gentle rubbing with the fingers or a soft infants toothbrush is effective, with or without the alcohol massage.

Remove all scales, large and small. Afterwards, you will still need to repeat the alcohol treatment to remove the tiny yellowish spots which are the recently hatched crawlers. Pay particular attention to the midrib, other veins, and leaf edge areas. Closely monitor your plants to get an idea of the life cycle of the particular species of scale that is your problem, but expect to repeat treatment against the immatures every 1-2 weeks.

A common alternative to the swab and daub method is to spray the alcohol with a misting bottle or small pump sprayer. Many home growers will also mix-in a small amount of mild liquid dish detergent, and sometimes mineral oil, neem oil, or horticultural oil. One recipe for a 1.5 liter spray bottle is to mix a 50:50 solution of isopropyl and water, with a few drops to about a teaspoon of liquid soap to act as a spreader, and 1/4-1/2 teaspoon of one of the oils. But, it seems that every grower has their own proportions of these ingredients, none of which seem to work significantly better than another. Caution is urged, however, as excessive amounts or too strong of a detergent, or use of an ammonia-based chemical cleaner may damage your plants, particularly buds and flowers. This is particularly true of dish-soaps and household detergents that could remove natural protective waxes from plant tissues. Also, alcohol sprays are not effective against eggs protected by the scale covering, hence the physical removal of the scales by hand is more effective and provides more rapid control.

A potential problem with alcohol treatment that is occasionally reported may be chilling of the plant. The rapid evaporation of alcohol cools the plant tis-

ues. Especially with air movement that increases evaporative cooling, this chilling is suspected of over-cooling tissues and creating zones of dead cells that may become necrotic from bacteria or fungi. On warm or breezy days consider wiping any residual alcohol with a tissue instead of permitting it to evaporate off the plant. Such problems and tissue drying are found particularly on soft or thin-leaved orchids (e.g. *Oncidiinae*).

REPOTTING

Given an extreme infestation you may see scale developing on the roots and rhizomes. At this time, or anytime you observe a heavy infestation, then you may need to consider replacing the potting medium. The potting medium can harbor eggs and crawlers, so dispose of it in a compost pile or in the garbage. When repotting, a close inspection, and if necessary a very gentle cleaning of scale and spraying of the roots before repotting is essential. Use caution with the cleaning of roots because of the delicate nature of the velamen.

OILS, SOAPS, AND STERILANTS

Horticultural oil, neem oil, mineral oil, insecticidal soaps, and sterilants form the next stage of chemical control of scale insects. The oils and soaps are often regarded as "organic" or non-chemical methods, but this is a misconception or an extremely broad concept of "organic." Indeed, neem oil is extracted from the neem tree, but horticultural oils and mineral oil are petroleum distillates. Likewise, insecticidal soaps are a solution of synthetic pyrethroids mixed with a detergent (soap) that is made from petroleum products. Sterilants are anti-bacterial and anti-fungal chemicals that are also often effective on algae. However, all of these solutions are generally considered safer for humans, pets, and plants than usual insecticides. None provide absolute control over pests, but frequent use during the presence of pests frequently reduce insect populations to below self-sustainable levels in small orchid collections.

Horticultural, mineral, or neem oil solutions smother the insects, so complete coverage of all sprayed plants is essential. These oils are mixed with water and usu-

ally a plant-safe detergent for enhancing the spreading and sticking of the oil. The main caution with these oil solutions is that they should never be applied to plants on hot days (>85 degrees F) or in direct sunlight, as to prevent burning of tissues. Leave the plant in shade until the application has dried.

Insecticidal soaps are usually solutions of a synthetic pyrethrin, piperonyl butoxide as a synergist (to enhance the effectiveness of the pyrethrin), and sometimes a plant-safe detergent. As with oils the detergent acts as a surfactant and spreader for dispersing the pyrethrin evenly, and as a mild caustic against the insects. Also, to prevent sun-burning, apply the chemical and allow it to dry in shade. Pyrethroids are synthetic analogs of pyrethrum, the natural extract from certain Asteraceae. Caution should be urged with so-called "safe" insecticidal soaps as some plants are sensitive, particularly tender new tissues, and when mixed with hard water precipitates may form that decrease effectiveness and clog up sprayers. Some non-orchid ornamentals will drop leaves and abort flowers when sprayed with insecticidal soaps, so caution is urged with prized orchids. Though piperonyl butoxide is usually regarded as safe for plants, it can cause allergies and respiratory problems for users and may contribute to phytotoxicity problems.

Sterilants are usually Physan 20, RD20, or Consan 20, and these are used as anti-bacterial, anti-algal, and anti-fungal agents. These solutions are all composed of isomer cocktails of ammonium chloride and all have the same antibiotic activity. These chemicals can be used in diluted form, according to label directions, usually for controlling bacterial and fungal diseases on orchids. However, at these same dilutions there is some limited effectiveness on scale crawlers and other delicate insects. Frequent use of sterilants for insect control is not recommended, due particularly to potential damage on new growth, buds, and flowers, and should be done under shade to prevent sunburn.

INSECTICIDES

Persistent populations of scale or infestation in many plants often demand the need for use of synthetic

insecticides. There are few insecticides specifically registered for use on orchids, but there are several common, inexpensive, home-and-garden chemicals labeled for ornamental plants. Insecticide formulations not labeled for ornamental plants are often mixed with solvents that aide in the application of the active ingredient for specific purposes. These solvents, not necessarily the insecticide itself, often produce phytotoxicity and may seriously damage or kill plants. Thus, never use any insecticide that is not specifically labeled for ornamental plants.

There are many insecticides available for ornamental plants, but some are not tested on orchids, and others are generally too expensive or otherwise readily available for the small keeper or grower. Some of the more available and effective insecticides that come in various brand names are acephate (e.g., orthene [wetable powder]), malathion (liquid), diazinon (liquid), and carbaryl (water-based emusifiable concentrate). Fertilizer/systemic combinations for roses and other ornamentals, usually with disyston or disulfoton, may be effective but are not widely tested on orchids. Also, caution should be given to the fertilizer effect on your plants in combination with other nutrients. Of course, always follow label directions and never, never, never exceed the minimum recommended concentration given in mixing directions! Recommended solutions are based on extensive testing for selected pests and plants. Orchids are tough plants, but are sensitive to many chemicals, particularly under direct sunlight or high heat, and while certain species may not react to a given formulation others may, so testing is justifiable.

Some insecticides are occasionally discontinued for use because of some discovered hazard. For example, Cygon used to be available, but it no longer recommended and labeled for orchids because it will damage many plants, especially the buds and flowers, and is extremely hazardous to use. Although most insecticides with discontinued labels are legally allowed to be "used up," it may be best to dispose of such chemicals rather than continue their use and risk damage or loss of plants, or increase your own health hazard.

Most home orchid keepers and growers in northern

states that need to apply insecticides during inclement weather need special care for applications. If you cannot spray out of doors, place your plant(s) inside a large plastic bag (remove the bag after the spray has settled!) and let the plant ventilate where the fumes will not be wafted around the house or work area. Again, you may have to consider removing the potting medium, spraying the plant, and repotting it with new media in a clean pot when the spray has dried.

GROWTH REGULATORS AND CHITIN INHIBITORS

Research on the use of insect growth regulators, botanical insecticides, and their application to ornamental plants is increasing, but incomplete. Insect growth regulators, such as kinoprene (tradename = Enstar II), are synthetic forms of juvenile hormone which is highly important in insects at critical stages of their metamorphosis. The use of growth regulators interrupts the normal development of the insects, including orchid pests such as scales, mealybugs, aphids, and whiteflies. Apparently, there is little good and reliable information on their use on orchids, but an increasing number of growers are reporting satisfactory results with Enstar II and there does not seem to be any plant health problems noted thus far. Also, they are regarded as safe for humans and pets.

Azadirachtin (tradenames = Azatin and Neemazad) is a plant derived (neem tree) chemical, or botanical insecticide, that is a chitin inhibitor. Chitin is a primary component of the insect integument, or exoskeleton. Azadirachtin reduces the insects' ability to properly develop its integument and causes mortality through incomplete development. There is little information available on this chemical for use on orchids, but it is available on a wide variety of ornamentals and is labeled for greenhouse applications.

FINAL CONSIDERATIONS

Heavy infestations of scale, especially on many plants may require severe control methods. In such situations, you may need to consider the use of a synthetic insecticide. On the extreme side, if you have a plant showing signs of decline from scale you may have to seriously consider destroying that plant, as the low

likelihood of rejuvenating that plant may not justify the expense and effort of continued treatments. After all, the destruction of a sick plant can be used to justify the purchase of a new and healthier plant!

If you are battling scale for long periods of time (e.g., >9 months) and have been using the same insecticidal control method then you may have built a bigger problem that you started with. Depending on the length of time of your problem and the intensity of chemical use you could have selected a population of resistant scales. The best resolution to this is to change methods and chemicals occasionally; that is, do not use the same chemical mix more than 3-4 times sequentially. After isolating infested plants give them a thorough application of something different from what you have been using. For example, if you used insecticide then switch to an oil, soap, or different insecticide.

Generally, never use an insecticide not labeled for ornamental plants. Whenever using oils, soaps, and insecticides, be thorough, change formulations frequently, and do not use less than the minimum concentration of mixture. Too little of a chemical enhances resistance, while too high of a concentration may damage the plant. Never use chemicals prophylactically, that is do not routinely use chemicals as a preventative as it is a waste of chemical (and money!) and such use allows resistant scales to develop. Finally, keep up the manual removal of all scales, if possible. Removing the egg laying adults is as important as killing the nymphs. Again, you need to monitor the cycling of your scales to optimize spray effect and minimize total number of sprays.

*Updated from the November 2000 issue of the Newsletter of the South Dakota Orchid Society.

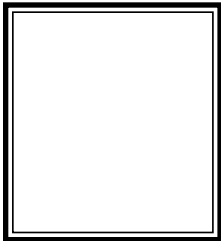
Note: This article is reprinted with permission of the author, Dr. Paul Johnson, elater@itctel.com. All photographs © Paul Johnson. A version of this article also appeared in *Orchids*, the magazine of the American Orchid Society. Website for the South Dakota Orchid Society: www.abs.sdstate.edu/sdnhcbs/orchids/SDOS.htm



Next Meeting: March 3, 2002.
Guest Speaker: Linn Mattingly of the Southern Tier Orchid Society



March 14-17: Central NY Flower & Garden Show



THE CENTRAL NEW YORK ORCHID SOCIETY
Your local AOS & Orchid Digest Affiliate
351 Kensington Place
Syracuse, NY 13210-3309

Central New York Orchid Society

Presidents: Deb Coyle (315) 445-9106
Dianne Bordoni (315) 446-3836
Vice Presidents: Judi Witkin (315) 422-0869
Ken Renno (315) 652-6495
Treasurer: Elinor Burton (315) 682-6274
Secretary: Barbara Weller (315) 468-5039
Newsletter Editor: Jeff Stuart (315) 471-1404

The Central New York Orchid Society meets at St. Augustine's Church, 7333 O'Brien Rd, Baldwinsville, at 2:00^{PM} on the first Sunday of each month from September through June. Yearly dues are \$15.00 per individual, or \$17.00 family. Dues should be paid to the CNYOS Treasurer, Elinor Burton.

THE ORCHID ENTHUSIAST

The CNYOS Newsletter, *The Orchid Enthusiast*, is a publication of the Central New York Orchid Society and is distributed to the Society's members ten times per year, prior to all club meetings, events, or functions.

Jeff Stuart, Editor
351 Kensington Place
Syracuse NY 13210-3309
(315) 471-1404
e-mail: jastuart@syr.edu

