

news

Volume 15.2 -March 2003

Contents

MAOC/COC/SOOS

New web sites

COC Newsletter

Open Letter

Microorganisms and
Epiphytic Life

Hardy Orchids

Slide Programs

Coming Events

President's Message

Out here in Victoria, spring is coming along just fine. That means that it is becoming really busy around here, so this greeting to all of you will be brief.

Part of our busy-ness has to do with the garden, part with the re-potting for all the orchids with fresh little roots growing and a major part has to do with the springtime orchid shows that happen now.

This is my reminder to you to try to come (or send a delegate) to the COC show in Toronto April 4 – 6. It is going to be a BIG SHOW! The Southern Ontario Orchid Society is going all out to welcome orchid people from everywhere! Try to come and admire the flowers; spend some of your hard-earned money on more dreams (that is what orchids mean to me: beautiful dreams) and do attend the Annual General Meeting of your Canadian Orchid Congress, where we have some important items on the agenda, printed elsewhere in this newsletter.

I hope to see many old friends there and meet many more of you!

Ingrid Schmidt-Ostrander

MidAmerica Orchid Congress
Canadian Orchid Congress
SOOS Orchid Show
April 4-6, 2003

Presentations by -

Christie Borkowsky - MAOC Conservation Lecture
Tom Harper - Developing Red Phalaenopsis
Howard Liebman MD - Genus *Cyrtorchilum*
Andy Easton - Six Decades of Orchid Culture Changes

The entire show and conference will be at the Inn on the Park, Eglinton Avenue East at Leslie Street in Toronto.

You have an opportunity to buy orchids without import permits from vendors from outside Canada. For a list of vendors, see list on website below. If you have a special desire from their catalog, ask if they can bring it with them to the show.

For details and registration see:
Southern Ontario Orchid Society
<http://www.soos.ca/>

New Web Sites

Welcome to the Kingston Orchid Society
<http://home.cogeco.ca/~kos/index.htm>

and The Orchid Society of the Royal Botanical Gardens,
Burlington, Ontario
<http://www.osrbg.ca/>

The Vancouver Orchid Society is now at
<http://www.vancouverorchidsociety.ca/>

COC Newsletter Articles

The COC Newsletters are available on the COC website. Articles from the newsletters may be freely reprinted in your society newsletter as long as the author and the COC are credited in the by-line. The text of any article can easily be extracted using a web browser and the cut-and-paste function.

Open Letter To all Orchid Societies in Canada

On page seven is a copy of the planned agenda for the upcoming meeting of the Canadian Orchid Congress in Toronto on April 6/2003. I would appreciate it very much, if you and your society (executive) would look this over and jot down your decisions. Then, either send your (written) decisions and comments along with your delegate or mail them to me early enough to arrive here by March 25/2003.

The first item of new business on this agenda is titled: "Incorporation of the COC as a non-profit society"

I want to make certain that you are aware of what this means. It has only recently come to the attention of the current COC executive council, that the final steps to register us with the federal government, as a not-for-profit organization have never been taken. It had been planned at the beginning, I am told. After that, everybody very likely was under the impression that indeed, this had been taken care of.

Since the COC is actively involved with orchid societies in each of our provinces, we must comply with provincial laws – our federal registration will take care of that.

Federal incorporation also would provide protection of our name and, most importantly, give the COC legal protection against litigation (excepting in a case of fraud).

Basically, we are only looking at tidying up the standing of the COC. I hope that all of you agree that it must be done.

If you have any questions about this or any other item on the agenda, I will be happy to answer your mail, e-mail or telephone-call.

Thank you!

Ingrid Schmidt Ostrander, COC President
7005 Brentwood Drive, Brentwood Bay, BC, V8M 1B4,
(250) 652-6133 E-mail: ifl@telus.net

Orchids – Some Thoughts on Microorganisms and Epiphytic Life

(A report and interpretation of nutrient cycles between autotrophic and heterotrophic entities)

Written by Otto Moeller, published in 'Die Orchidee' Nov.2002, translated by I. Ostrander

If there had not been any living forms that broke down the autotrophic plants, at the same time as the chlorophyll came into being, there would be no life on earth now. The plants would have suffocated from their own products and thus there would no soil. The metabolism of nutrients would not have been possible and the plants would have starved together with all other life forms. The forced co-existence, after a struggle for balance, led to the relationships between autotrophic plants and the other (heterotrophic) life forms, as they exist today. The opinion of some scientists, who say that the first life forms (on earth) had been heterotrophic bacteria or similar organisms that materialized out of the primal hydrocarbon atmosphere, cannot be refuted. The heterotrophic life forms, bacteria, fungi, mushrooms and animals fulfill an important task in nature and are not the only beneficiaries of the green plants. Several secretions of the microphytes not only support the growth of plants in the higher orders but under certain conditions, only these secretions make higher plant life possible.

Plants are not altruistic creations; they do not want to be helpful. It is therefore incorrect to explain any symbiosis of different life forms in these terms, even though both partners may benefit from such an arrangement.

During the Carbon age, about 345 – 280 million years ago, there already existed saprophytes, parasites and even micorrhiza in the carbon forests. During the Jurassic age, about 125 million years ago, the kinds of plants changed through the development of angiosperms (flowering plants), which began to crowd out the growths of conifers and ferns. The microorganisms had to either adapt to the new conditions or form new species. During the course of all plants' development, they continue to form new substances, which they utilize in their struggle to create a labile balance. Many scientists are of the opinion that symbiotic relationships are derived from a parasitic one, where the subjected plant has developed substances that either weaken or destroy the attacker (two-sided or tolerant parasitism).

With the orchids, the symbiosis with fungi has developed

so far, that only through the presence of fungi on the root surfaces the antifungal orchinol is formed, which suppresses fungus growth within the orchid. If this antifungal substance existed in the orchids earlier, the growth of the fungus on the outside would not be possible. If the supply of orchinol is too weak, the plant dies. (A similar relationship occurs with the sweet potato, *Ipomoea batatas* where the protective substance ipomoea-maroon is present only after cell damage). Even farther developed is the germination symbiosis of orchids. The increase in substance is particularly high during the first year and can only be explained by the constant supply of nutrients. So far, it is not known what causes the fungi to supply the seedlings with nourishment. This germination symbiosis is rather different from the presence of micorrhiza in the adult orchid, where the fungi are capturing carbohydrates.

It is fairly easy to learn what a fully autotrophic plant needs in order to grow and to be able to fulfill these needs, knowing the conditions of its natural soil. This however, changes drastically when a plant is not capable any more to synthesize its food from the soil (nutrition-heterotrophy). This plant will then only grow in soils that can supply all the plant's requirements. One cannot expect to improve the plant's growth by fertilizing with chemicals. This might only be possible by supplying certain supplements to those organisms that secrete the materials needed by the plant. There could also be organic substances, which secrete these materials. Plants that have been removed from their correct habitats will only live in different soils until all the needed materials have been exhausted.

There are also fungi, which cannot synthesize food and are therefore useless to the orchids unless the orchids can use materials from the fungi to synthesize into substances, which both the orchid and the fungus can use. The mycologist E. Gaeumann writes: "In the real fungi, the vegetative body normally consists of hyphae that are enclosed with a layer of cells. The real fungi probably have evolved polyphetically from autotrophic algae, which have lost their assimilation color by mutation and thereby lost the capability to live autotrophically from carbohydrates. Some of them have even lost the ability to synthesize their own growth-substances and are therefore growth-substance heterotrophs. In this carbohydrate- and growth-heterotrophy they are, in a nutritional sense, close to the animal kingdom!"

This kind of nutrition for the fungi makes the symbiosis

with orchids even more of a puzzle, because they are still nourishing the plant.

When there are no growth-regulating substances in their food, all life forms' growth will stagnate. These infinitesimally small substances are generated by the life form itself and are called enzymes. Within each single cell, there are over 100 enzymes and enzyme systems, depending in their effect on the presence of a sufficient supply of trace elements. When these substances with their catalytic effect have to be taken up externally, they are called vitamins. One of these substances, which is critical in the germination of orchids, is thiamin (earlier 'aneurin'). Since it is also important for humans and its absence can have devastating results, its formation has been thoroughly investigated.

The biosyntheses of thiamine are important for epiphytes and perhaps also for the growth of the heterotrophic orchids. This synthesis is another example how different relationships between plants simply were forced to develop! Thiamine consists of two substances, namely pyrimidine and thiazol; each one separate is ineffective. Plants of the higher orders can produce sufficient thiamine in their chlorophyll-bearing organs, especially under high light. On the other hand, plant embryos and roots have only a rather limited capacity for this. Their growth is supported when microorganisms manufacture thiamine for them. The roots are even able to utilize the separate parts. Tests have shown that fungi, especially yeast, react differently from each other, even though they may belong to the same genus. This is also true for bacteria. Soil organisms that live in a symbiotic relationship can also produce thiamine. There are five separate groups of microorganisms that react differently to thiamine or its synthesis.

1. Those that need it as vitamin but cannot produce any.
2. Those that can build it from both its components, which must first be absorbed.
3. Those that can only manufacture pyrimidine and must absorb the other parts.
4. Those that can only manufacture thiazol and have to absorb the other parts.
5. Those that can generate both these substances and manufacture thiamine from them.

For the germination symbiosis of orchids, only those fungi can be of use which can deliver to the seed the vitamins of the B complex. Of optimum use are those fungi that also

supply materials, which the seedlings can turn into starch. It is possible that the Coral Root (*Corallorhiza*) with its large root mass has developed a different symbiotic arrangement. Coral Root always grows in places that show high biologic activity, where the groundwater contains minerals as well as organic supplies. Tests have shown that the root is able to absorb liquids on its total surface. Coral Root orchids, grown in pure Perlite have sprouted and flowered. Since plant roots are able to absorb thiamine and manufacture vitamin B1 from it, that might be a reason why fungi that cannot manufacture B1 like to grow on the roots of *Corallorhiza* (vitamin symbiosis?).

A process that is hardly noticed, but is of great value to the germinating orchid, is the guttation (Latin: gutta = drop). For terrestrial orchids, this secretion of its companion plants, for epiphytic orchids that of its host, is most important, perhaps even critical. Plants have developed special parts to facilitate the necessary secretion of liquids. In grasses, they are found at the leaf tips; other leaves have them around the edges. The physiological importance of guttation for the plants lies in the maintaining of the circulation of its fluids during periods of impaired transpiration. It is an activity similar to bleeding (after damage) and can be considerable, especially during long tropical nights. It is said that leaves of *Colocarias* secrete up to 190 drops per minute. During one 10-hour night, this comes to 8.16 liters of fluids. This fluid contains besides minerals and sugars amines, which will be different depending from what tree they come. In European trees, the Elm fluid contains mainly asparagine, walnut trees have mainly glutamine whereas Alders and Birches have cibulline. It is an important byproduct of amino-acid metabolism and can provide either storage or transportation. In plant fluids with high amounts of cibulline, orchids germinate particularly well.

These different combinations contained in the tree sap must of course influence the growth of the epiphytic orchids growing on them. One Importer related that the native collectors make cuts at the bottom of a tree to decide from the looks of the sap whether it is worth their while to climb the tree in order to get orchids. The weather conditions in the humid tropics have helped to create a relationship between trees and the microorganisms that grow on them, which is of benefit to both. The prerequisite for this is the regular guttation daily as well as during a year's cycle. Autotrophic plants generally have an abundance of sugars. This is in contrast to a general lack of nitrogen because only few lower forms can bind the atmospheric nitrogen. Higher plant forms, even the fungi

are not capable of this. It may be opportunistic to tie the growth of orchids to that of fungi, it is not realistic. The sources of nitrogen in tropical trees lies in the bacteria like *Actobacter* and *Beijerincka* and perhaps (blue-green) algae like *Nostocacea* that grow on the trees. (Natives call them 'parasitos'). Otherwise typical ground dwellers, these organisms have taken to the trees in the tropics. With a large supply of sugars, such bacteria can bind 15 mg of nitrogen for each gram of sugar. Algae only need minerals and light, they are completely autotrophic.

There are few exact data for the amounts of substances that are washed down by rain. During tests with radioactive minerals, in a three-hour period, the leaves of a plant subjected to heavy rain lost 27% of its sulfur, 20% of its calcium and 12.5% of its phosphorus. Someone figured out that in a 1 hectare apple orchard, the ground receives annually 800 kilo water soluble substances, mostly as sugars, which contribute greatly to the nourishment of the soil organisms.

Fungi like yeast and others from the family *Sarcharomycetaceae* have their homes mainly on leaves and fruit. They can also be found in the upper layers of soil, when there are sufficient sugars that are easily dissolved. Their fermenting capabilities are considerable. (In human medicine, the yeast fungi are the main source of the vitamin B complex). These fungi are ubiquitous and cause the fermentation of sugary plants (as in wine). It is noticeable that underneath the Hawthorn trees (*Crataegus laevigata*), grow huge masses of *Orchis mascula*. The guttation fluid contains sugar (measureable with test strips for diabetics). Does the dripping support the germination directly or the production of vitamin B by the fungi? Are these fungi receiving an optimum diet and is their production of vitamins encouraged?

There are, besides the described organisms other, which can grow on the surfaces of leaves so thickly, that this growth has been named the phyllosphere. The majority of

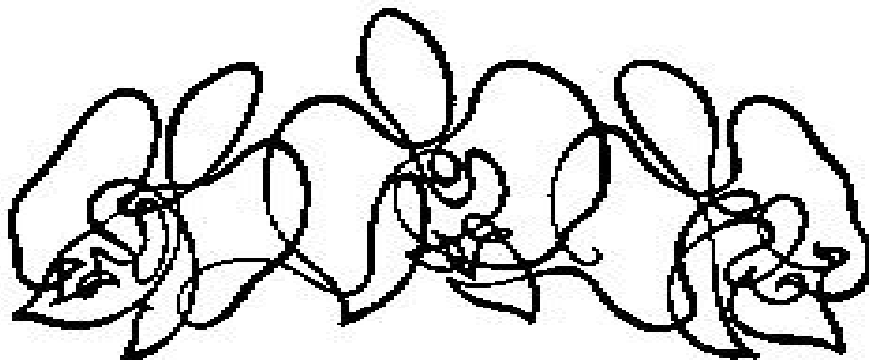
these organisms that grow on a tree during one humid, tropical night will die the next day. Their substance is therefore available as food to the tree and the orchids on it. It is easy to underestimate the mass of bacteria in action. During their growth (doubling within 15 minutes), it can be reckoned that (even with a doubling time of 30 minutes), in a 10 hour night 1 gram will increase to 500 kilo. It is of course, unrealistic to count on unhindered growth and a constant supply of food, but this possibly huge increase shows the importance of microorganisms in nature's pantry!

There exists one of the true symbioses (Eusymbiosis) between trees and the nitrogen fixers living on it. The bacteria receive the necessary nourishment from the tree's guttation fluid and deliver to it the nitrogen the tree cannot manufacture. Taken together, the products of the tree, the nitrogen fixers and the yeast fungi may result in a mixture, which will help the orchid to germinate, perhaps without micorrhizae?

From the close cycle of nourishment between the trees and its microorganisms as well as those on the ground, it becomes obvious why fertility is lost through tree cutting.

The relationship between host (tree) and orchid can only be called commensalisms (table company – the orchid is nourished by the tree without harming it), if there are not too many orchids growing on the tree. This changes when the epiphytes increase beyond a certain number. For instance, if the orange trees in Central American plantations are not regularly stripped of the epiphytes growing on them, they stop bearing fruit. Later the trees become crippled. All those epiphytes, bromeliads and orchids clearly damage the trees and really are 'parasitos'. Of course, they are not real parasites in a botanical sense – they do not penetrate their host to rob its food. It is mainly a question of definition.

O. Moeller, Am Suedhang 1, 30453 Hannover, Germany.



Hardy Orchids

It is catalogue time again! To be more specific: spring garden catalogue time is here. We receive in our mail all sorts of advertisements for lovely plants and flowers growing from bulbs, tubers and corms, dormant and evergreen, herbs, shrubs and trees. The garden magazines are also heralding a new season of gardening joys.

Last week, there came in the mail a catalogue with long lists of wonderful plants from a local BC West coast nursery. Of course, I will not mention their name here – but it really is a wonderful place to visit and browse – and spend all kinds of money, to buy dreams!

The first seven pages list: Hardy Orchids.

How many of you get any information on orchids for Canadian gardens? This is a list of orchid plants that will grow outdoors in Canada. Now, granted, most of Canada is not in the climate zone 7 or 8, which is what most of these orchids would need. There are also orchids listed that would grow in zone 3 or a little warmer.

We all receive information, from just about everywhere, how and where to acquire tropical orchids for growing indoors. Yes - these are wonderful and showy and they are the royalty of the orchid family. We are so used to considering 'orchids' as tropical, it seems that we have forgotten that the real world, outside our doors, lies in the Northern temperate zone. The tropics are far away. Naturally, our dreams want to go far afield, let us pretend that we are in a tropical paradise and grow some reminders of this paradise in our homes.

Perhaps we should consider growing some hardier orchids in our gardens or on our balconies and enjoy their fleeting charms without succumbing to the heavy-duty charms of exotic beauties. There are *Cypripediums*, *Pleiones*, *Calanthes*, *Bletillas*, *Dactylorhiza*, *Epipactis* and others, both species and hybrids that will do well in cooler climates. In very cold areas, you could plant these orchids in pots that are sunk in the ground for the spring, summer and fall. Most of these plants have a built in winter dormancy, making it simple to store them during the cold season. They will not need a heated greenhouse. They will often be very showy and a few will bloom for several months, some are fragrant. These are not just our real natives, dug from the wild and existing precariously for a few years before they die in an alien environment. They are flask-raised seedlings that like temperate conditions.

Why don't you look around at your local nurseries and see if you can also find some Hardy Orchids – for Hardy Canucks! Have fun!

Ingrid Ostrander

Slide Programs

Cattleyas - by Ken Girard. This is an excellent program.

Oncidiums - by Gordon Heaps. Slides have been added and the script has been re-done by Gordon Heaps.

Fragrant Orchids produced by Marilyn Light. More and more hobbyists nowadays cite fragrance as one of the major factors they consider when selecting orchids for their collections. Orchid flowers can offer a veritable potpourri of olfactory delight to adventurous growers. With sweet, spicy, citrus, vanilla and floral notes, the orchid fragrance palette is as varied as are the insect pollinators that the scents may attract. This presentation will tantalize the senses and introduce hobbyists to some common and not so common orchids that can be easily raised. A set of informative notes accompanies the slide set.

Terrestrial Orchids and Their Culture, compiled by Bill Bischoff

Phragmipediums includes fifty colour slides of all the Phragmipedium species, including all the newer ones up to September 2002 and a good number of hybrids. There is a short written introduction, with instructions on caring for Phragmipediums etc. and there are short notes for every slide.

A program on *Paphiopedilums* has been promised.

The slide programs are available for loan to the societies.

Note: When reserving a program, please include **two** (2) cheques, one cheque for \$10.00 to cover the cost of shipping and insurance, and another cheque for \$25.00.

The cheque for \$25.00 will be required as a deposit and will be returned as soon as the program is returned. Please include in your request the date of the meeting for which you want the slide program. Cheques are to be made payable to "The Canadian Orchid Congress".

The slide programs may be ordered from:

Janette Richardson
38 Straub Crescent,
Regina, Sask., S4T 6S6

Phone: 306-543-0560

Email: dale.richardson@sk.sympatico.ca

16th Canadian Orchid Congress Annual Meeting April 6, 2003

Agenda

Welcome All!

Attendance

List to be signed by all, indicating who is a

- Delegate
- Executive member
- Present
- Absent
- Excused

Minutes from Saskatoon 2002 meeting

Are there any errors/omissions? Move to adopt.

Business arising from minutes

Treasurer's Report

Are there any questions? Move to adopt.

Reports

- President:
- Secretary:
- Newsletter/Web:
- Education:
- Conservation:
- Medals & Pins:

New Business

- 1) Incorporation of the C.O.C. as a non-profit society
- 2) COC speaker's tour:
 - a. For the East: Manitoba to Maritimes – Yves Aubry, Quebec
 - b. For the West: Saskatchewan to BC and perhaps North if required – W. Bischoff, B.C.
 - c. Will the COC subsidize tours? How?
- 3) COC Website – Suggestions please?
 - a. Update society information
 - b. Update vendor's list
- 4) Policy on advertising next years' shows (example: SOOS/Vancouver)

5) Set clear policy on hosting COC meetings

6) Purchase of new Sanders' List of Orchid Hybrids for COC affiliates?

7) Shall we set up a program fund to encourage Canadian speakers?

8) How can we be of assistance to newly starting Canadian orchid societies? Possibly 1 year free newsletters?

9) Future Meetings:

2004: Vancouver, BC

2005: Calgary, AB

2006:

2007:

10) Any other business?

11) Elections:

The Past President Lynne Cassidy will take over the meeting.

Current nominees:

President: I. Schmidt-Ostrander (incumbent)

First VP: Margaret Blewett (incumbent)

Second VP: Lorne Heshka

Secretary: Theresa Kennedy (incumbent)

Treasurer: Janette Richardson (incumbent)

Appointments:

Conservation: Marilyn Light (incumbent)

Education: Mark Elliott

Newsletter/Web: Jerry Bolce (incumbent)

Please note that anyone nominating somebody for office must first get the permission of the nominee.

Declare the new executive as voted into office.

President thanks Lynne Cassidy

12) President asks for a motion that meeting be adjourned...

Thank you.

PS. Once the vote to register the COC as non-profit society has been passed, a committee will be struck to attend to the final paperwork (including updating the by-laws), before presenting our request to the Canadian Government within the prescribe time-frame. IS

COMING EVENTS

2003

March 8-9: London Orchid Society Orchid Show, Wonderland Gardens, 284 Wonderland Road South, London, ON
"http://los.lon.imag.net/losshows.htm"

March 29-30: Orchid Society of the Royal Botanical Gardens, 680 Plains Rd., Burlington, ON. "http://www.osrbg.ca/"
Show chair is Ben Boers, email bmboers@hotmail.com.

April 4-6: The 2003 Mid America Orchid Congress, COC meeting and Show is being hosted by the Southern Ontario Orchid Society at The Inn on the Park at Eglington Avenue East and Leslie Street.
"http://www.soos.ca/"

April 11-13: The Manitoba Orchid Society
"http://www.mosorchids.com/"
For more information, email: info@mosorchids.com

April 11-13: Central Vancouver Island Orchid Society
Location: Country Club Center, Nanaimo, BC.
"http://members.shaw.ca/CVIOS/CVIOS/"
Contact: Sue Christenson, email: CVIOS@shaw.ca

April 12-13: The Regina Orchid Society annual show and sale at the Core Ritchie Community Centre, 445 14th Ave., Regina.
Contact Janette Richardson, (306)543-0560
email: dale.richardson@sk.sympatico.ca

April 12-13: Kingston Orchid Society at Portsmouth Olympic Harbour. Contact: Tony Capon, kos@cogeco.ca
"http://home.cogeco.ca/~kos/index.htm"

April 12-13: The Orchid Society of Nova Scotia at the Nova Scotia Museum of Science, Halifax. Contact Gail Schwartz, 902-422-4553
Email: rschwarz@hfx.eastlink.ca
"http://www.chebucto.ns.ca/Recreation/OrchidSNS/"

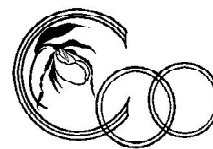
April 19-21: The Annual Toronto Artistic Orchid Association Show, Chinese Cultural Centre, 5183 Sheppard Ave., East (Markham Road) "http://www.cccgt.org/"

April 26-27: The Ottawa Orchid Society show, Nepean Sportsplex, 1701 Woodroffe Ave., Nepean
"http://www.ottawaorchidsociety.com/"

May 2-4: The Vancouver Orchid Society
The Orchid Show is at the Richmond Winter Club.
Show chair is Jennifer Smith, (604) 904-2447, jsmith@LMLS.com
"http://www.vancouverorchidsociety.ca/"

**COC Web Site - <http://www.CanadianOrchidCongress.ca/>
This newsletter may be found there.**

Please send in your show information - date, location, contact, etc.



news

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Waterloo ON, N2J 4S3
Phone: (519)885-1888
email: jerry@uwaterloo.ca

Editor: Jerry Bolce

The purpose of COC news is to inform members of the meetings, policies of the COC, to profile members, and to provide technical information regarding happenings, trends and techniques in orchid cultivation across the country and around the world.

We welcome your suggestions and contributions. Deadline for each issue is one month before the issue dates previously announced.

Recipients of this newsletter are strongly urged to pass a copy on to other members of their society

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