Central Vancouver Island Orchid Society Newsletter

September2011

Meiracyllium **Trigem 'Paula' HCC/AOS 77pts**
(*trinasutum* x *wendlandii*) Exhibitor: Don Bednarczyk
Judith Higham, the photographer

President: Bryan Emery 250-294-6478
Secretary: Laurie Forbes 250- 722-3836
Membership: Bev Morrison 250-758-5361
Treasurer: Shelley Rattink 250-245-1370
Editor: Mike Miller 250-248-3478
Mailing address: P.O. Box 1061,
Nanaimo, B.C.
V9R 5Z2
email: stelmike@telus.net
web site: www.cvios.com

Meetings are held September through June on the Saturday before the 4th Wednesday of each month at the Harewood Activity Centre, 195 Fourth Street, Nanaimo, in the hall on the second floor, doors open at 11:30, with the business meeting starting at 12:00 noon.

Coming Meeting Dates: Sept 24, Oct 22, Nov 19, Dec 10

Program for September 24th

Orchid Culture

With Terry Groszeibl from Forestview Gardens

He is a professional horticulturalist with over 20 years experience. He owns and operates Forestview Gardens with his beautiful wife Charlotte, in Agassiz, BC. They specialise in slipper orchids, however they also grow other orchid genera, including Dendrobium, Miltonia, Phalaenopsis etc.

Coming Events:

- **FVOS** Show and Sale, George Preston Rec. Center Langley, October 23rd – 24th, 2011
- **Vic OS** Show and Sale, UVic Student Union Building, March 1st – 4th, 2012
- **Van OS** Show and Sale, VanDusen Gardens new building, Vancouver, March 23rd – 25th, 2012
- **CVIOS** Show and Sale, Country Club Center, April 13th – 15th 2012

Editorial:

Well here we are at the beginning of the meetings and show season and with all the vitality of spending hours looking for the sun this summer. It has been interesting and frustrating watching plants grow through this cool summer with so different results from years before. It will be interesting to see how the orchids bloom this winter after this summer. Don't be surprised if things turn out different from the usual. There may be less bloom or more depending on the parentage and genera involved. The sun-lovers may be sulking or may bloom much later while cooler growing and shade loving types may bloom heavily and out-do themselves. It will be interesting to see.

I hope you all had a great summer. The picnic was well attended and lots of great food and fun. Lets come back ready to enjoy our society and have some good times. You will note I have all four of the major shows listed in coming Events. I have never known them all so early. Now you can plan ahead to be part of the action in four places.

Cheers Mike

****

Central Vancouver Island Orchid Society General Meeting
Saturday June 18, 2011

President Bryan Emery called the meeting to order at 12:00 pm.
- Mike Miller moved acceptance of the May minutes as printed and Maureen Hawthorn 2nd. Motion carried.
- Correspondence included the most recent AOS Bulletin, the Lea Valley Garden Catalogue and a notice regarding the Gabriola Home and Garden Show.
- Treasurer Shelley Rattink reported on the current balance in the general account and the AOS account. She moved acceptance of her report and Sandra Lathrope 2nd. Motion carried.
- Bryan Emery reminded us of the excellent books that are available in our library, giving specific eamples of books on Dendrobiums, Bulbophylums and Lady Slipper orchids. He encouraged members to use our currently under used library.
- Bryan asked if someone would volunteer to take over the 50/50 and name tag draws in the fall. The rest of the meeting was tabled at 12:15 for the AGM.

- The meeting resumed at 12:40. Nancy Miklik asked members for program ideas for the fall.
- Sandra Lathrope indicated that we need volunteers to bring goodies for the September and October meetings. She will call those who volunteer to remind them before the September meeting.
- Bryan reminded everyone of our summer picnic at the home of Shirley and Ernie McClare in Yellow Point on Sunday July 24. Instructions on how to get to their home and details of what everyone needed to bring were provided.

The meeting was adjourned at 12:50 pm, followed by our show table a refreshment break and an informative presentation on the system used by Geoffrey Haywood to grow orchids under lights.

****

Central Vancouver Island Orchid Society
Annual General Meeting
Saturday June 18, 2011

The meeting was called to order by President Bryan Emery at 12:15 pm.
Mike Miller moved and Bev Morrison seconded approval of the minutes of the annual general meeting of June 19, 2010 as circulated. Motion carried.

Past President, Vivian Heinsalu-Burt led the process of the election of the Executive and Directors for July 2011 to June 2012. The new slate of officers are as follows:

Executive:
President - Bryan Emery
Vice President - Don McDermid
Secretary - Laurie Forbes
Treasurer - Shelley Rattink
Past President - Vivian Heinalu-Burt
AOS Show Chair - Sue Christison

Directors:
Membership - Bev Morrison
Plant Sales - Donna McDonnell
Library - Mary Palmer
Newsletter - Mike Miller
Programs - Nancy Miklic
Refreshments - Sandra Lathrope
Publicity - Shirley McClare
Director at Large - Maureen Hawthorn
Director at Large - Connie Gordon-Webster
Director at Large - Linda Regnier

Treasurer Shelley Rattink presented a financial report of expenditures and revenue for the year of June 1, 2010 to May 1, 2011. Shelley moved acceptance of her report and Mike Miller seconded the motion. Motion carried.
Members were notified that Don Miklic will be continuing as our AOS Representative and Web Master for the coming year and Vivian Heisalu-Burt will continue as our COC Representative.
Mike Miller moved to adjourn the meeting at 12:40 pm, Don McDermid seconded the motion and the meeting was adjourned.

****

When To Repot Cattleyas

By William P. Rogerson

One of the most basic and important rules to follow when growing cattleyas (or most other sympodial orchids, for that matter) is to "repot only when new roots are just starting to grow". In this short article, I will begin by explain what his rule means and why it is important to follow it. Then I will describe in more detail the various growth patterns of cattleyas and, in particular, when new root growth occurs in these different growth patterns.

The rule to "repot only when new roots emerge" follows from two basic characteristics of cattleyas. First, each lead of cattleya sends out a single flush of roots once, and only once, in its lifetime. The roots grow down into the medium for the next few months before they reach maturity and stop growing. No new roots will emerge from the old lead again, and, in general very few – if any – new roots will grow from the existing roots once they have matured. The only way for the plant to grow new roots is to send up another lead. Second, the repotting process is generally very hard on cattleya roots and often results in extensive root damage, even when done carefully. The roots are tender and tend to intertwine and cling to pieces of the potting medium and the pot, so dislodging the roots generally causes substantial damage. (The fact that roots cling to the medium and pot plays a big role in causing the damage. For example, new Paphiopedilum roots are tender as cattleya roots, but generally do not cling to the medium or pot. Consequently, repotting Paphiopedilums is a comparatively gentle act that causes very little root damage.) It is therefore imperative to repot them only when they are about to send out new roots to replace those damaged during repotting.

The ideal repotting time window is fairly short, lasting from about one or two weeks before the roots first begin to emerge until a week or so after this time. If one repots more than a week or two before new roots emerge, the plant can suffer dehydration stress between repotting and the time new roots begin to grow. From the time of the visible appearance of the first slight bump of the first root, it takes about a week for roots to grow too long (more than one quarter of an inch) for repotting to occur without significant risk damaging the new roots. New root tips are extraordinarily tender; brushing the emerging tips even very lightly against the side of a new pot is likely to crush or break them.

There are two ways to cope with this narrow window of repotting opportunity and I recommend that you employ both of them. First, constantly inspect your orchids for signs of new root growth, and be ready to repot them the instant you see signs of it. Second, learn each plant's growth pattern, so you can anticipate when it will need to be repotted. As I will discuss below, the precise point in growth cycle at which new roots emerge varies dramatically among different cattleyas, but any particular cattleya tends to exhibit the same pattern over and over again. Once you know an orchid's growth cycle, it is easy to either simply repot it a few weeks before it will send out roots, or to become particularly vigilant when you know its rooting period is near, and repot when the first signs of new roots appear. I generally keep an eye on entire groups of orchids that I know root at the same time, and then use the emergence of new roots on any one of these plants as a signal that it is time to repot the entire group.

Cattleyas exhibit two sharply distinct patterns of growth. In one growth pattern ("root before bloom"), roots emerge as the new lead grows; blooming occurs only once the lead and roots are mature and basically finished growing. In the other growth pattern ("root after bloom"), the new lead sends out roots only after it has fully matured and bloomed. This means that cattleyas that follow the "root before bloom" pattern should be repotted BEFORE they bloom, when the new lead is just emerging and beginning to grow. However, cattleyas that follow the "root after bloom" pattern should be repotted AFTER they bloom, when the lead is fully mature. Even many experienced orchid growers do not fully understand this distinction and tend to treat all of their cattleyas as if they follow the "root before bloom" pattern, repotting all of them when the new leads are emerging. For the "root after bloom" group, this practice effectively destroys many of the existing roots just when the plant will need them to support its major growth spurt of the year. Plants exposed to such shock are often set back and sometimes even die. I believe many cattleyas considered to be difficult to grow are in reality difficult simply because people do not understand when to repot them.

Cattleyas that follow the "root before bloom" growth pattern often bloom in fall, winter or spring. Orchids in this group typically send out new leads and roots during the spring and summer months so that leads are generally fully mature by fall. At this point the orchid enters into a rest phase that lasts until the plant's internal clock tells it that it is time to bloom. The plant then blooms, perhaps enters another rest period after blooming, then begins the cycle anew. (Fall-blooming cattleyas like *C. labiata* have a fairly short rest period after their leads mature, and a correspondingly longer rest period after they bloom. The reverse is true of cattleyas that bloom in spring, like *C. mossiae*.) Plants in the "root before bloom" group can send out successive leads during the summer growing period. The plant stores up all of these leads, then they all bloom simultaneously. Some of the most famous unifoliate species are in the "root before bloom" group. Listed in order of blooming, with the approximate blooming time in parentheses, these include *C. labiata* (October/November), *C. jenmanii* (December/January), *C. percivaliana (*December/January), *C. trianaei* (January/February), *C. schoroderae* (March/April), and *C. mossiae* (March/April/May). Most of the fall/winter/spring blooming hybrid unifoliates descend from these species, and follow the same growth pattern. Bifoliate species that follow this pattern, once again lited in order of blooming, are *C. amethystoglossa* (January/February), *C. aurantiaca* (February/March/April), *C. skinneri* (April). Many of the winter/spring blooming reds and oranges have *C. aurantiaca* in their background, and they all generally follow the "root before bloom" growth pattern.

Cattleyas that follow the "root after bloom" growth pattern often bloom in late spring, summer or fall. These orchids send up their new leads in late winter, spring or summer, and bloom almost immediately as the leads reach maturity. Roots are produced immediately after blooming. Many of them, particularly the bifoliates, enter a long rest period after they finish rooting. In this group, if a plant sends up successive leads in the same season, each lead will bloom as it matures. Most bifoliate species and hybrids derived from them follow the "root after bloom" pattern. Listed roughly in their order of bloom, these include *C. shilleriana* (March/April), *C. aclandiae* (April/May), *C. granulose* (May), *C. harrisoniana* (June/July), *C. velutina* (August), *C. bicolor* (August/September), *C. guttata* (September), and *C. tenuis* (September). While orchid growers often associate this growth pattern only with bifoliates, some unifoliates also exhibit this pattern. *Cattleya lueddemanniana* sends out new leads over the winter months, then blooms in March. Only after blooming do the leads send out new roots. It is more typical for unifoliates in this group to send out new leads in spring and then bloom in summer or early fall. Species following this pattern, listed roughly in their order of blooming include: *C. warscewiczii* (June/July), *C. dowiana* (late June/July), *C. rex* ((July), and *C. aurea* (also known as *C. dowiana* var. *aurea*, July/ August/September). Many summer and fall blooming unifoliate hybrids follow this pattern. For example, the very famous yellow hybrid *Blc.* Toshi Aoki has almost exactly the same growth pattern as *C. aurea*, which figures prominently in its parentage.

In closing, I should mention that I have simplified many details of each species' growth habits in this short article. For example, some of the species tend to send up an extra lead at certain times of the year. Whether or not these extra leads will bloom depends on the species. Many hybrids have such complex ancestry that they tend to be in growth almost constantly, sending up one lead after another with no particular seasonal pattern. However, if you study your plants carefully, I think you will find that almost all of them bloom quite consistently either on leads that have already rooted, or on leads that have not yet rooted. Classifying them according to this pattern will help you make a lot more sense of their growth patterns. For me, learning about individual plants' growth patterns is one of the most interesting aspects of growing orchids, and is far more that something I need to do simply in order to grow them better. Try it, and I think you may end up agreeing with me!

Orchid Digest July-Sept. 2003

****

Cladosporium orchidis - a fungal pathogen causing leaf disease in *Dactylorhiza*

By Maureen & Brian Wilson

Dactylorhiza make desirable garden plants and are widely grown by club members in Scotland where many do exceptionally well. In recent years, in common with many other growers, we have observed an increasing incidence of dark brown spotting on the leaves relatively early in the growing season, leading to premature senescence of the plant. The spots usually start small, are often irregularly lens shaped, aligned with the length of the leaf and may be surrounded by yellowing tissue. The brown areas enlarge so that eventually the whole leaf goes brown, the stem collapses and the plant dies down to the ground. The appearance of the spots is that of a classic hypersensitive response to an infection. While initially the leaf damage does not usually kill the plants, the shortened period of growth means that the new storage roots are much smaller than normal and premature loss of the foliage in successive years weakens the plants so that they eventually fail to reappear in the spring. The condition seems worse if the plants start into early growth and are then subjected to frost and prolonged cold damp growing conditions. Some colleagues have reported dark spots on the storage roots which may also be truncated and lack the fine white hairs of healthy roots indicating infection by spores carried through the soil by rain. Infected roots may rot prematurely. As a precaution some growers have destroyed their stocks of plants. There is no evidence that the infection is systemic as infected roots reportedly give rise to healthy offsets. There seems to be some variation in susceptibility of Dactylorhizas to the disease depending on the genetic background of the plants. Thus, in our experience *Dd. praeterissima* and *foliosa* and the Cruickshank form of *D. fuchsii* are badly affected. In one colony of hybrids only a few variant plants which are thought to be sports or seedlings of the original hybrid were damaged.

THE CAUSE

Examination of the brown areas showed they contain fungal hyphae which have been identified as *Cladosporium orchidis* - a member of a family of plant and animal pathogens. *C. orchidis* is a known pathogen of orchids (Ellis and Ellis 1997) which occurs in the wild in the UK where it can be common on colonies of *Dd. fuchsii* and *majalis.* Like many fungal pathogens it probably enters the plant through local areas of damage and senescing tissue such as those produced by frost. It is favoured by cool wet conditions. *Cladosporium* may also occur at times late in the season as the aerial parts of the plant die back for the winter. For those interested *Cladosporium* can be isolated on malt extract agar as olive colonies bearing greenish conidia. We do not know if *Cladosporium* infects other orchid genera but we have seen similar spotting on *Epipactis gigantea* and on *Orchis mascula* although we have not investigated these.

PREVENTION

Having identified the problem we now come to the speculative part, what are we going to do to save our Dactylorhizas next year? We would suggest the following strategy to reduce the extent of the disease. Like most plant diseases hygiene is a good place to start, thus cleaning up and destroying infected tissue and old leaves at the end of the growing season is essential. A clean mulch such as peat, sand, gravel or bark laid round the plants just before they start into growth should help to prevent overwintering spores being splashed onto the plants. Planting washed tubers into clean soil can also be tried.

Benzimidazole fungicides like Carbendazim applied at intervals early in the season should also help to control *Cladosporium* as should most other modem non-oomycete fungicides. For the amateur grower in the UK there are several fungicides suitable for use on ornamentals containing Carbendazim available in garden centres. There may be no recommendation on the label giving the frequency of application and dose for orchids but those suggested for fungal diseases such as *Botrytis* on ornamentals should be suitable. With most fungicides this equates to an application every two weeks in the early part of the growing season. As a precaution when treating new plants it might be wise to try spraying only a few plants initially to ensure that spray damage does not occur. Orchid leaves can be difficult to wet with sprays and the inclusion of a few spots of washing-up liquid as a wetting agent will help to ensure the leaves are thoroughly wetted by the fungicide. While these modem fungicides are to some extent systemic, a good coverage and wetting particularly of the underside of the leaves will ensure good penetration of the active ingredient. To reduce damage to the mycorrhiza (beneficial fungi) which are associated with orchid roots a wise precaution will be to protect the soil round the plants as much as possible and to spray upwards to reduce the quantity of spray reaching the soil. Because of the effect on the mycorrhiza we are not certain if dipping infected roots in fungicide and replanting them in clean soil will be beneficial.

In our experience physical protection of the plants in the early part of the year can also help prevent *Cladosporium.* Dactylorhizas grown in pots in the greenhouse and plunged outside when the danger of frosts is over seem to be free of *Cladosporium* infection. This treatment also improves the growth of young plants as their growing season is lengthened and they produce better storage roots by the end of the season.

PROGNOSIS

Cladosporium will always be in the environment and harmless infections may well occur most autumns during senescence. It has probably become a major problem earlier in the season because of a succession of years when we have had very mild periods in February and March followed by occasional sharp frosts and a cold wet cold spring lasting until July. Our experience is that Dactylorhiza colonies which have been infected in the last two years were previously fully hardy and disease free. Since we have only just identified the problem we hope that by adopting the precautions suggested above we can return to enjoying disease free orchids of former years.

FOOTNOTE

At the time of writing we have not yet been able to try all of the precautions suggested above. Neither the authors nor the Scottish Rock Garden Club can accept responsibility for a failure of, or any damage resulting from the treatments suggested which are given in good faith.

STOP PRESS:

It is now late April and we *have carried out many of the suggested measures and as an additional precaution covered the emerging plants with a plastic sheet set on bricks to keep the rain off. To date our plants are disease free. We will never know if this is due to the precautions taken or to the more normal winter/spring weather* we *have experienced since last summer.*

ACKNOWLEDGEENTS

We are grateful to Professor Graham Gooday of the Department of Molecular and Cell Biology, University of Aberdeen and Dr Roland Fox, Crop Protection, Department of Horticulture and Landscape, University of Reading for help in identifying *Cladosporium* and for comments during the preparation of this article.

REFERENCE

Ellis, M. B. and Ellis, J. P. (1997) *Microfungi on Land Plants: an identification handbook.* 2nd Edition Richmond Publishing, Slough.

****

Plant Food-Photosynthesis

By Graham Beagley, of Thornton Heath, Surrey, UK.

It is clear that if a plant is to make new cells or to use energy in the maintenance of life, it must be supplied with some useable material; this material is obtained in the form of food.

Food is a substance, which can be used by the plant either as a source of energy or for the building of new cells. It is not generally appreciated that the food of the higher plants is identical to the food of animals, consisting in all cases of organic compounds.

Strictly speaking, the inorganic mineral salts, which a plant obtains from the soil and which are added in the form of fertilisers, are often incorrectly called foods. These substances, although important to the life of the plant can be in no sense considered as foods since they are used neither as a source of energy nor directly for tissue building.

The actual foods of plants can be divided into three groups-carbohydrates, proteins and fats.

Plants, which contain chlorophyll differ from the animals in that they manufacture their own food within their tissue, while animals obtain their food either directly from plants or from other animals, which feed on plants. It is this carbohydrate material out of which fats and proteins are made. Because light is used by the plant in this process, the name PHOTOSYNTHESIS has been given to it. This means a synthesis utilising light (synthesis is the term used for the process of uniting elements or simpler compounds into another compound).

Any part of a plant that contains chlorophyll and is exposed to light can carryon the process. The main organs or photosynthesis however, are the leaves and, generally speaking, the thicker the -leaf the more light it can absorb.

The speed with which the plant will manufacture carbohydrates depends on a combined action of internal and external factors. The most important external factors are the type and amount of light, the temperature, the carbon dioxide supply and the water supply. There are two internal factors of importance-the chlorophyll content and another factor which could be called protoplasmic.

As far as temperature is concerned it has been found that for every 10° C rise in temperature the rate of photosynthesis increases 2 · 2-2 · 6 times, until a temperature of 30-35°C is reached when no further increases occur. If the temperature rises far above 30-35 ° C, the rate may decrease.

There is probably no other single external factor, which has a greater influence on the rate of photosynthesis than the carbon dioxide supply in the air around us. On average, there is only 3 hundredths of 1 % in the air. Experiments with plants have shown that they could use a much higher percentage if it were available. When greater amounts are supplied artificially the rate of photosynthesis increases until a maximum point is reached, after which no increase occurs. For many plants this point is reached when the concentration of the gas reaches approximately 0.5-1 %. When one remembers that the carbon dioxide in the atmosphere (other than that artificially supplied) is the only source of carbon for the plant and that this carbon makes up about 50% of the dry weight of the plants, it should become apparent how important an ample supply of this gas becomes.

One of the most variable factors in nature is light. It can vary in intensity, quality, and duration and any of these can affect the rate of photosynthesis. However, before we can discuss these factors it might be useful to consider the relationship between chlorophyll and photosynthesis. It is not my intention in this article to discuss the general properties of chlorophyll, however, we may assume that this pigment plays an important part in photosynthesis since in the absence of it no photosynthesis can take place. One of the most important ways in which chlorophyll takes part in this process is through its absorption of light.

White light as it comes from the sun consists of rays of different wavelengths. When a beam of light passes through a prism, each of the different rays are bent a certain amount; this bending is known as refraction and the longer red rays are the least refracted (bent) while the shorter, blue violet rays are most refracted-with the result that a spectrum is formed, part of which is visible to the eye in the form of a band of colours -red, orange, yellow, green, blue and violet, in that order. At the red end beyond the visible red rays, are a series of longer invisible rays called the infrared, and beyond the violet end are a series of shorter invisible rays called the ultraviolet. If a tube of chlorophyll is placed in a beam of light before it reaches the prism certain parts of the spectrum are absorbed by the chlorophyll and a continuous band of colours is no longer obtained, but the absorbed portions appear as dark bands. These dark bands are called the absorption bands of chlorophyll. The darkest of them will be in the invisible red. Others appear in the yellow, the blue violet and ultra violet. Green is the least absorbed and so chlorophyll has a green colour. It is the chlorophyll that absorbs light for the plant to photosynthesize.

During experiment it has been found that no decrease in the amount of chlorophyll in the leaves was seen during intense photosynthesis and so it seems that chlorophyll may act as a photocatalyst. (A photocatalyst is a substance, which accelerates a reaction in light appearing unchanged at the end of the reaction.)

I mentioned earlier that the variations in intensity, duration and quality of light can affect the rate of photosynthesis, and it has been found that the maximum photosynthesis rate is found in the red part of the spectrum, whilst the rate in the blue part is only half as much as in the red. The lowest rate occurs in the green area.

Infra red radiation is not used and the intensity of the ultra violet region in the spectrum is so low as to be of little value in photosynthesis. Although the rate is highest in the red region on account of its greater energy, value in sunlight and the greater absorption of light by chlorophyll in this area, if one were to mask out the blue-violet end of the spectrum a marked lowering in the rate of photosynthesis would be seen.

It is partly for this reason that photosynthesis proceeds at a lower rate under artificial light, since most artificial light, particularly tungsten incandescent lamps, are deficient in blue-violet rays. As to the intensity of light, the rate of photosynthesis increases as the intensity increases, up to a maximum point.

There is a considerable amount of variation in plants as to the location of their maximum point but for most plants it has been found that the intensity of the noon-day summer light can be reduced to approximately one-twelfth of its value before any decrease in the rate of photosynthesis in the individual leaves is observed, which indicates that there is ordinarily much more light available in nature than plants can use, provided the supply of the other factors, e.g. carbon dioxide, remain the same. The duration or length of time the plant is in the light will affect the amount of carbohydrate that can be made and this factor becomes more important during the short days of winter.

Since water is one of the raw materials out of which carbohydrates are made, a deficiency of water could check the rate of photosynthesis. It is only when wilting of the plant occurs however, that this factor is of importance, and under ordinary growing conditions the water supply seldom becomes a limiting factor.

Of the two internal factors affecting the rate of photosynthesis the one which I called a photoplasmic factor is one, which involves a number of features which contribute to the activities of protoplasm and are not yet well understood. However, it probably involves the action of enzymes which are associated with photosynthesis. The importance of this can be demonstrated by the fact that attempts to cause photosynthesis artificially in a laboratory with chlorophyll extracts, etc., have failed, so it is better to consider these two factors together. These two are closely tied in with temperature since the action of enzymes is always accelerated as the temperature rises and so it may be that the increased rate of photosynthesis which results from an increase in temperature is due in part to the speeding up of the action of the enzymes associated with the process. This can only happen, however, when there is an abundance of chlorophyll and in general, the more chlorophyll present, the higher will be the rate of photosynthesis because more light can be absorbed. When the chlorophyll content is low, an increase in temperature has little effect on the rate of photosynthesis because although this increase accelerates the enzyme activity, the process cannot go on any quicker since the chlorophyll is already working at maximum capacity and cannot absorb any additional light which would be needed to make use of the increased enzyme action. On the other hand, if the chlorophyll content is high, an increase in temperature will most certainly have a marked effect on the rate of photosynthesis since there will then be sufficient absorption of light to make use of the increased activity of the enzymes. Therefore with plants high in chlorophyll content the activity of the enzymes may be the factor that limits the rate of photosynthesis, while in plants low on chlorophyll, it is the rate of absorption of light which limits the rate.

It should be borne in mind that all these activities are operating simultaneously, therefore, the amount of carbohydrate made will depend on them all. However, as a chain is no stronger than its weakest link so will the rate of photosynthesis depend on the factor which will occur minimally - for example, if there is an abundance of carbon dioxide, water and chlorophyll and a favourable temperature but hardly any light, then the process will be determined by the intensity and quality of the light, which means that the light operates as a limiting factor. Any of the external or internal factors that have been discussed may become a limiting factor in photosynthesis.

The Orchid Review, February 1972

****

Vancouver judging Centre March 4, 2011
Judith Higham Photographer;

TOP LEFT
Doritaenopsis Jiaho Cherry 'White Cap' HCC/AOS 79pts Exhibitor: Pat Van Adrichem
BOTTOM LEFT
Cattleya Purple Cascade 'Beauty of Perfume' HCC/AOS CCM/AOS 86pts Exhibitor: Jonathan Littau
TOP RIGHT
Cymbidium goeringii 'Kadin Law' AM/AOS 83pts Exhibitor: Manlung Law
BOTTOM RIGHT
Phragmipedium Autumn Fire 'Ann' HCC/AOS 78pts Exhibitor: Dr. Art MacGregor

Central Vancouver Island Orchid Society

Membership Form 2011 -2012

Society mailing Address: P.O. Box 1061, Nanaimo, B.C., V9R 5Z2

Household membership $25.00 per year (Sept.-Aug.) ___________________

Meetings are held September through June on the Saturday before the 4th Wednesday of each month at the Harewood Activity Centre, 195 Fourth Street, Nanaimo, in the hall on the second floor, doors open at 11:30, with the business meeting starting at 12:00 noon.

Contact: Bev Morrison, Membership Chairperson (250) 758-5381

....

Name(s) for membership card(s) Date ______________

____

Mailing Address for Newsletter

____

____

Postal Code __________________

Phone number ___________________

Email address ____

Where I grow my orchids ___Windowsill CHECK ONE OR MORE
___Under Lights
___Greenhouse
___Other _____________________

I have (circle one) (0 - 10), (11 -20), (20 -35), (36 - 50), (50 -100), (100+) orchid plants

****

I hereby give permission to have my name address, phone number and email address included in the published membership list that will be distributed to members only.

I (GIVE) (DO NOT GIVE) permission for publication. (**CROSS OUT ONE PLEASE**)

Date _______________________

Signed ____

Please note if this section is not filled in we cannot list you as a member in the membership list.