Newsletter

November 1998

<u>PROGRAM</u> International Odontoglossum Day World Orchid Conference 1999

The program and plans for the International Odontoglossum Day at the 1999 World Orchid Conference, Number 16, are in final shape. The day is planned for Thursday, 29 April 1999 in Vancouver, British Columbia, the second day after the opening of the conference. The day will begin with a morning session of five talks. There is an Odontoglossum Alliance noon lunch at which time some of the auction donated mate-



rial will be available. We expect to have a substantial amount of hard to obtain and unique plants, flasks, and other items. The material auctions will be divided between the noon luncheon and the evening dinner.

Lectures begin at 9:00 AM until 12:10 and commence again at 3:00 PM with the two final talks of the afternoon.

The Odontoglossum Alliance dinner is scheduled for the same evening at the Chinese Imperial Restaurant (a walking distance). The menu will be a banquet style with many courses. The menu is listed below. In 1997 at our Odontoglossum meeting a dinner was held at the same location. We had room for 50 and had to turn away people who wanted to attend. This year we have made arrangements to accommodate 100 people. At the dinner we will be using a commemorative wine glass, which can be taken away. The balance of the auction material will be an exciting climax to the day.

The menu for the dinner is: Deep fried seafood salad roll Roasted Peking duck Hot and Sour soup Sautéed lobster and crab with ginger and green onion Pan fried sliced beef with black pepper Sautéed diced chicken in kungpo Szechwan sauce Fried rice with egg white and canpoy Mango pudding and 2 bottles of wine per table.

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Complimentary commemorative wine glass

All the session speakers are the guests of the Odontoglossum Alliance

Morning Program

Session Chairpersons: Terry and Doug Kennedy

Terry and Doug Kennedy live in Toronto, Canada where they grow a variety of orchids. Terry is an AOS judge. The Kennedy's were awarded the first Robert Dugger AOS trophy for their Odcdm. Cherry Fudge 'Mocha'. They have exhibited in numerous shows from coast to coast including the 11th World Orchid Conference in Miami in 1984. The 55 AOS show trophies and countless other awards document the success of these shows.

After doing research in Biochemistry at University of Toronto for 24 years, Terry Kennedy now spends her time with family and plants. With her husband, Doug, she runs Orchids in Our Tropics. She is the current president of the Southern Ontario Orchid Society and has served on the organizing committee for the society's annual show since its inception.

In the spirit of true partnership, Terry is the compliment to Doug. With him, she has been growing and showing orchids for some 25 years. Terry is the one who spends her time on her knees creating the displays that have won the Kennedy's numerous AOS Show Trophies. At the 11th World Orchid Congress she orchestrated a silver medal winning display for the Southern Ontario Orchid Society. Orchids have allowed her to indulge her appreciation for the unusual and esoteric. The inability to resist the strange and/or miniature has introduced much of the variety seen in their collection. A multitude of trophies, AOS quality awards, and three silver medals from the 11th WOC in Miami attest to the quality of their collection.

Doug is a past Vice President of the Mid America Orchid Congress. He has also served several terms as president and show chairman of the Southern Ontario Orchid Society and continues to act as a long term director. Having taken early retirement in 1997, he now devotes full time to his family and vocation-orchids.

1. **<u>TITLE: Conservation in Colombia: Bad News</u>**

Juan Felipe Posada, Medellin, Colombia S.A.

Abstract

Destruction of native habitats for flora and fauna in Colombia is being done at such a rate that in very few years not much of the original forests will exist. On one side the natural expansion of the population, that requires more land for housing, agricultural or cattle projects, keeps tearing down original untouched woods and forests. On the other side and even at a much higher rate Colombia's drug problem is causing great devastation.

Drug people destroy enormous areas of forest for their cocaine and heroin production. Once these areas become unlawful plantations the police and the army, with international help, come and fumigate by air with chemicals to root out these plants. To compensate for their production territory loss, then the drug people go further in to other natural areas where they start all over again. And this cycle never ends! As a consequence the native habitats of our Andean Odontoglossum Alliance species will be lost forever.

Biography

Juan Felipe Posada was born in Medellin, Colombia. He grew up always involved with both parent families in farming, cattle, plants, etc. Ir. 1963, along with his Mother started a small collection of native orchids. Five years later he was joined by his Father, Jamie Posada, in the hobby collection. In 1972 the 7th World Orchid Conference was held in Medellin. At that time the orchid hobby was converted to a commercial nursery and named COLOMBOROQUIDEAS. Since then the nursery has expanded considerably and specializes in cool growing Andean species. Today Colomborquideas is owned jointly by Juan and his mother, Ligia Posada.

Juan Felipe is President of Industrias Estra, a 500 person plastic injection molding company, He has been Trustee and President of the Colombian Orchid Society in Medellin.

2. TITLE: Patterns of the Equatorial Odontoglossums

Alexander Hirtz Diversity PO Box 17-1200358 Quito, Ecuador, S.A

Abstract

Odontoglossums, considered as epiphytes, have also adapted to other common areas of no competition like extensive lava-flows and mud slides. The quasi hydroponic conditions on these extensive rocky surfaces are favorable for a healthy growth and allow for an odontoglossum species to multiply by the millions.

After the end of the last glaciation 12,000 years ago, the climate in the equatorial belt has changed dramatically. At least half of the orchid species are the result of punctuated orthgenetic macromutations triggered by adaptive radiation into the new habitats. Odontoglossums appear to be an exception, where the last macromutation probably happened in a previous period of interglaciation, after which natural selection had eliminated the weaker species, allowing for the strong species to invade large districts. During the last ice-age and the formation of new volcanoes, the forests were reduced to refugias, isolating the populations of a given species into various islands. During several mihernia, these populations have acquired distinct color characteristics and minor morphological distinctions to permit a taxonomist to subdivide them into varieties.

The equatorial Odontoglossums are species which have matured in the wild competing to be the fittest, where the weaker species already have gone extinct and could be considered today among the least threatened ones, as they have adapted, along with the required microrhyza and respective pollinators, to thrive on many types of ecosystems conquering extensive geographic surf.

Biography

Alexander Hirtz Naundorff

Graduated at the Colorado School of Mines in 1973

Currently General Manager of Exotic Cultivos, a company specializing in the development of new tropical agroindustrial products; the main project currently under development to be this year on the shelf is ARAZA (Eugenia stipitata), a fruit optimal as a flavor and color enhancer to be mixed with other fruit to produce high quality marmalades, juices, ice-creams, etc..

President and co-founder of TROPICA 2000, a non-profit organization to particularly protect the cloud-forests of the Upper Amazon through protection of specific sites and develop new alternatives as income for the people who live in the surroundings and need to increase their standard of living as means to keep them away from logging the forest. Also TROPICA 2000 is actively involved in public awareness of the worldwide loss of habitat and bio-diversity in the equatorial cloud forest and rain forest.

President of the Latin-American Orchid Council since 1991

Member of the UICN Orchid Specialist Group

Corresponding member of the AOS Conservation Committee

Member of the Site Selection Committee of the World Orchid Conference

Member of the Academy of Natural Sciences of Ecuador

Curator (Ad-hoc) of the Museum of Natural Sciences of Quito

Director and co-founder of the Orchid Society of Quito

Director and co-founder of the Botanic Foundation of the Andes

Co-founder of the non-profit foundations: Antisana, Puruha, Consumers Protection Association and Eco-turism Association

Co-founder of the University of San Francisco de Quito, currently considered to be the most revolutionary University in their teaching approaches and curriculums in Latin-America

Aler Hirtz has discovered or assisted in the discovery of over 600 new species of orchids and several new bromeliads and gesneriads and has co-authored with Dr. Carl Leur and Dr. Calaway Dodson over 300 descrip-

tions^t of the newly discovered species.

3. TITLE: Conservation: A Working Point of View

Sandro Cusi, Rio Verde Orchids

Abstract

Conservation comprises a vast number of areas, many of which for practical reasons are for the present time almost beyond our reach in a country like ours. These reasons being mainly population size, rate of growth, and very short term government planning. Many conservation efforts are wasted because of badly designated objectives and planning that do not consider the local conditions. In order to take advantage of the limited resources available and local knowledge, a project was started in 1997 with the following ideas and objectives

| 1. Objective: | To work in a small forested area in order to establish a management | 5 |
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| | plan for the conservation of the place. | |
| 2. Main Purpose: | To conserve the water quality and retention capacity of the basin, | |
| | for human and agricultural uses. | |
| 3. Other Purposes: | To conserve the habitat for epiphytes and other wildlife. | |
| | To obtain income from ecological tourism; Bird watchers, orchid lovers. | |
| | To help educate local people and tourists in the needs and advantages of conservation | |

Biography

Sandro Cusi is owner of Rio Verde Orchids in Mexico. Rio Verde was begun 25 years ago with the purpose of propagating and distributing world wide Mexican orchid species. Breeding is done with superior forms of species as well as line breeding species. Rio Verde Orchids also produces decorative hybrids for the domestic Mexican market. Mr. Cusi has years of experience growing in the natural environment of Lemboglossums (now Rhyncostele). Rio Verde Orchids is in Apartado Postal No. 69, Valle de Bravo, Mexico 51300.

4. TITLE: The Subtribe Oncidinae (Orchidaceae) in the Mountains of Bolivia

Roberto Vasquez Chavez, Cochabamba, Bolivia

Abstract

In biological terms, Bolivia is considered a country of megadiversity. The presence of the Cordillera de Los Andes to the west, the extensive tropical forest of the Amazon basin to the North and East and the xerophytic Chaco forest to the South has configured a region very varied in topography and climate, and this combination of factors has created one of the most diverse regions on our planet, but at the same time, Bolivia is one of the least studied countries biologically.

It is believed that around 15,000 - 20,000 species of plants grow in this country, 10% of which belong to the Orchidaceae family. The subtribe Oncidinae is represented in Bolivia by 42 genera and more than 160 species, 25% of which are endemic. The genera with the most numerous species are Oncidium (48 spp.), Odontoglossum (16 ssp.), Pachyphyllum (10 ssp.) Rodriguezia (7 ssp.), and Stigmatostalix (6 ssp.). Undescribed species are constantly being found in the wet mountain forests and need to be studied soon. Increasing basic needs of a growing human population are contributing to the destruction of habitats with negative effects on living organisms including orchids.

Biography

Roberto Vasquez was born in Cochabamba, Bolivia and attended college at High Point, North Carolina earning a degree in business administration. His major activities are farming and botany and specializing in orchids. He has been studying the orchids since 1872. With Dr. Calaway Dodson he has published 3 volumes of "Orchids of Bolivia" in the Icones Plantarum Tropicarum series, published by the Marie Selby Botanical Gardens and Missouri Botanical Gardens.

To date 200 orchids, new to science, have been published in co-authorship with Dr. Caryle Luer and Dr.

Calaway Dodson. The genus Vasqueziella was named after, Roberto. He has been a speaker at World Orchid Conferences in Miami, 1984 and Rio de Janeiro, 1996. He is founder and President of the "Sociedad Bolivana de Botánica".

5. TITLE: Endangered Hybrids

Robert Hamilton, Berkeley

Abstract

A century of hybridizing has given us spectacular odontoglossums and odontoglossum intergenerics. Within these hybrid plants reside a fabulous gene pool of species collected during the Victorian orchid craze -undeniably the best of the best. Regrettably, these species and their habitat are now gone forever. Today's growers have the responsibility to conserve this genetic treasure. In conflict, market forces, such as consumer taste and the goals of award systems drive hybridizing in directions that often destroys breeding "lines".

In "Endangered Hybrids", I define my concept of a breeding line and give strategies for preserving existing lines and for creating new lines. Chromosome counting provides a tool for increased yields. Experiments with the alkaloid colchicine may open yet unexpected pathways to new lines and intergeneric hybrids by creating parents with identical set of chromosomes.

Biography

Robert Hamilton has been growing orchids since 1976. In 1981, after hearing a talk by Robert Dugger, he converted to an Odontoglossum grower. He bought flasks and commenced building a stud collection, enhancing the collection from odontoglossum sources world-wide. In 1985 he initiated his own breeding program; doing his own sowing, flasking and raising of hybrids. He has done considerable hybridizing work following the research dictates of Don Wimber, using colchicine to obtain tetraploid species and re-creating many of the very earliest odontoglossum hybrids with very interesting results.

Afternoon Session

Session Chairman: Milton Carpenter, Executive Vice-President American Orchid Society.

Milton Carpenter, a native of the Florida Everglades, attended schools in Palm Beach County, the University of Florida and the Massachusetts Trades School in Boston, Massachusetts. He has been growing orchids for 38 years and is the owner of Everglades Orchids in Belle Glade, Florida. He is a past president and life member of the Orchid Society of the Palm Beaches. He is also Executive Vice President and a life member of the American Orchid society. He is an accredited Judge of the AOS.

6. <u>TITLE: Odontoglossum - Taxonomically Endangered</u>

Stig Dalström, Sweden and Sarasota, Florida

Abstract

A discussion about how to treat various groups of species-complexes in the genus Odontoglossum, which can be taxonomically justified to remain in the genus in a strict natural classification, which groups borderline other genera and which distantly related groups are placed in the genus based on convergent floral similarities only. **Biography**

Stig Dalström, born and reared in Sweden, now lives as a resident in Sarasota, Florida, USA. His first experience with the Odontoglossum Alliance, was a couple of jungle collected plants, imported from Central America, which were the first orchids to grow relatively well and flower in his collection This triggered a desire to find other related species and to learn more about them. A trip to Ecuador in 1979 turned out successfully plantwise, but as a failure nomenclaturally. This frustrating situation initiated a continuos quest to produce a taxonomical treatment for this large group of plants. He currently works for The Marie Selby Botanical gardens, Sarasota, Florida, as an artist, illustrator and researcher. He also works in conjunction with other taxonomists, organizations and institutions.

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7. TITLE: DNA phylogenitics and the Oncidium alliance: what to do with Odontoglossums?

Mark Chase, Kew Gardens, England and USA Abstract.

The authors of the paper are Mark W. Chase (Royal Botanic Gardens, Kew), Norris H. Williams and W. Mark Whitten (both of whom are in the Department of Natural Resources, Florida Museum of Natural History, University of Florida, Gainsville, Florida)

The Oncidium alliance (subtribe Oncidiinae) has been of great horticultural importance due to the popularity of genera such as Brassia, Cyrtochilum, Miltonia, Odontoglossum and Oncidium, but the taxonomic distinctiveness of these genera has never been satisfactorily assessed. Lindley was the first to treat all these genera, and he set forth the bases by which they could be defined. The shape of the lip, nature of the lip callus, and the angle by which the lip diverged from the column were the only characters used. Vegetative aspects were entirely ignored. Even today, it is still only the last of these three traits that are used to distinguish Oncidium from Odontoglossum, but quite a few species appear unable to be placed in either genus, whereas in other cases clearly unrelated species are dumped into the same genus, leaving their close relatives in a different genus. It is quite clear that the current situation does not permit a description of Oncidium that clearly permits its separation from Odontoglossum. We have used sequences of both the plastid (Chloroplast) and nuclear DNA regions to see whether this approach can shed any light on these problems as it has in many other groups of orchids. Both sets of sequences produce the same patterns of relationships; part of Odontoglossum is embedded in one of several groups of Oncidium (in this case, the group I, containing the type species of Oncidium), the other portion, group II, is embedded within Cyrtochilum. Group I is composed of the Digitatum group (excluded from Odontoglossum by Bockemühl), Odontoglossum subgenera Erectolobata, Lindleyana, Nevadensia, and Odontoglossum in addition to Chochlioda, Symphyglossum, Mexicoa, Miltoniodes and the great majority of Oncidium species outside of Brazil. Group II contains the former Oncidium subgenus Cyrtochilum (often now recognized as a distinct genus, Cyrtochilum) plus Odontoglossum subgenera Serratolaminata and Unguisepala as well as Neodryas and the genera recently segregated from Odontoglossum sect. Myanthium by Königer. By following the rules of classification, all of group I becomes Oncidium and all of group II becomes Cyrtochilum, completely eliminating Odontoglossum. If Odontoglossum is to be retained as a distinct genus, then people favoring this idea must produce data that refutes the DNA patterns, opinion alone is not sufficient cause for its retention.

Biography

Mark Chase was originally from southern Michigan where he attended Albion College obtaining a degree majoring in history. He attended the University of Michigan where he was earned Masters and Ph.D. degrees. His thesis was a monograph of the genus Leochilus (Oncidiinae). He did post doctoral work in molecular techniques at the University of Michigan, and then became an Assistant Professor in the Biology Department at the University of North Carolina (Chapel Hill) from 1988 to 1992. He was appointed Head of Molecular Systematics Section in the Jodrell Laboratory at the Royal Botanic Gardens, Kew. His current research, in addition to orchids, focuses on the classification and relationships of the families of flowering plants. He has been particularly interested to discover to which other families the orchids are most closely related.

Transporting plants out of Canada

At the Odontoglossum Alliance meeting in Vancouver in 1997 there were a large number of sources of supply of Odontoglossum Alliance material, It is expected that at the WOC there will be an even larger number of vendors with a broader range of alliance material. The show organizers had made arrangements with the Canadian officials in charge of plant exporting to be available at the hotel to provide the necessary documentation (CITIES and plant inspection certificates) to permit exiting Canada easy. Also for those going to the United States, US Department of Agriculture officials were also at the hotel to provide the necessary documentation for entry of the plant material into the United States. It all worked very well. I expect it to work as well if not better this time.

Odontoglossum Compendium

We have now had 29 Odontoglossum Alliance newsletters. These contain some very good material on the alliance. There will be available at the World Orchid Conference in April 1999 a "Compendium of the Odontoglossum Alliance". The material has been taken from the newsletters and organized into chapters. The chapters are: History, Species, Hybrids, Culture, Beginners, Diseases, Judging, Travels, Shows, AOS Trophy, Knudson, References and Sources, and reproduction of early alliance material. The book will be done in black and white only in order to keep the cost down and to have it available on time for the WOC. This will be an opportunity to obtain an organized collection of material on the Odontoglossum Alliance. This book will be available at the WOC. Provisions will be made to make it available after the WOC.

AUCTION AT WOC99

A great deal of effort and cost has been expended by the Odontoglossum Alliance to produce for the WOC99 an interesting, informative and exciting program for the 'Odont Day'. One of the popular events is the auction of fine and unusual odontoglossum alliance material. The auction will be held in two parts; one part at the luncheon and the other at the dinner on the "Odont Day'. We would like all alliance members to start now to find that 'special item' that can be contributed to the auction. In the past we have had wonderful response to the request for material. We have received many flasks of new crosses, community pots, divisions of rare or awarded plants, books, paintings, and even an Eric Young Orchid Foundation T-shirt. All were sold with spirited bidding. Please think now about your contribution, get it together and get it to the WOC99 in Vancouver. If it is plants (other than flasks) one suggestion for getting it there is to have one of the commercial growers, who will be selling at the Conference, include it with his shipment. Find someone in your area and ask if they will accommodate your contribution. You can also bring it in yourself.

Enigmatic Odontoglossums

Part 7 The Odontoglosssum harryanum Complex by Stig Dalström

The genus Odontoglossum embraces some 140 species distributed in the New World Tropic. Many of these have proven popular in horticulture, especially *Odontoglossum crispum* and its hybrids. To facilitate understanding of this genus, related species are grouped together and here we examine the *Odontoglossum harryanum* complex.

Odontoglossum harryanum Rchb.f. was described in Gardener's Chronicle 26, p 486, 1886. The type specimen came from Messrs. Horsman and Co., of Colchester, England, but no information about the origin of the plant was provided. Nevertheless, Professor Reichenbach was quite excited about this newfound treasure and stated in the description: "It is a fresh type, a grand and unexpected surprise, comparable with Od. luteopurpureum and Od. tripudans.

For some reason, this spectacular species remained hidden for almost 100 years until it was rediscovered in northwestern Colombia near La Carolina, Antioquia. This is strange since orchid collecting became a business in the middle of the 19th century.

Odontoglossum harryanum is easily recognized by the large flowers with bold coloration and patterns. The sepals and petals are usually greenish yellow almost covered with dark brown blotches and with some purple near the base. The lip is usually white with purple markings on the lower half, often centering a yellow area near the base. Although it is a large-flowered and handsome species, the habit of projecting the petals straight forward, covering the column and the lower part of the lip, detracts somewhat from its merits as a parent for hybridization. However, this is not a constant feature and clones exist with a much more open shape.

Odontoglossum harryanum is apparently known from only one area in Colombia, but is much more frequent in Ecuador. It occurs on the eastern slopes of the Andes at altitudes around 4,000 to 5,400 feet in wet forests, where it grows epiphytically. The flowers from plants in Ecuador do not vary much from those in Colombia. Despite this, Bockemühl (1989) considered the Ecuadorian form to represent a different species: Odontoglossum wyattianum G. Wilson. This is incorrect, because this later species is morphologically different and has so far been documented from Peru only.

Odontoglossum wyattianum was "described" in The Orchid Review, page 47, February 1928. It was not really a true scientific description, but rather a note of a plant exhibited by Messrs. Sanders during a meeting of the Royal Horticultural Society that created some interest because several years had passed since any odontoglossum plant of horticultural value had been reported. It was also mentioned that the plant had passed through the hands of Rev. Paul Wyatt (hence the name) Bedford, who had received the plant from a friend in Peru, which was assumed to be the origin of the plant. Scientifically, this "description" is somewhat suspect as far as validity is concerned. What makes it even more so is that no designated type specimen has been located or documented, to my knowledge. However, the description is clear enough to point out the true identity of this species, mentioning the golden-brown coloration and specifically the yellow pointed wings above the stigma. Odontoglossum wyattianum is presently known to exist along the eastern slopes of the Andes in central Peru, at approximately the same altitudes as Odontoglossum harryanum. There are repeated reports of Odontoglossum wyattianum from Ecuador as well, but I have yet to see a true specimen. Personally, I believe this is a case of misidentification based on the information in Bockemühl's monographic treatment of the genus (1989). The photographs and the illustration on pages 212 to 214 show the typical Odontoglossum wyattianum, while the citation from Ecuador (Andreetta 220, SEL) is a plant of Odm. harryanum.

Although commonly mixed and misidentified in cultivation, these two species can be separated rather easily by studying the shape of the column. In *Odm. harryanum*, the column is rather straight and is terminated with two small forward-projecting denticles in the same coloration as the column, which is pale yellowish, and not really worth describing as "wings." In *Odm. wyattianum*, on the other hand, the column is much more curved and has two rather large and well developed down-pointing wings flanking the stigma, commonly clear yellow spotted with purple. All other traditionally used features such as shape of flowers and color of sepals and petals can vary between the two species and merge into each other, although in general, *Odm. wyattianum* has a lighter-colored flowers in a warm golden brown shade and with a somewhat more open shape.

Obviously, these are two closely related species (or subspecies), but due to geographical isolation (probably), they have been able to develop into distinct entities. I am unfamiliar with any morphologically intermediate forms, as far as the shape of the column is concerned.

A third and just as exciting new species of this complex has turned up recently. It was described by Königer as *Odontoglossum helgae*, and published in Arcula 7, 1997. The plant was collected at 5,100 feet without specific location in the province of Pichincha (western slopes of the Andes), Ecuador.

Odontoglossum helgae is a striking species, closely related to Odm. harryanum and Odm. wyattianum. It appears to be morphologically distinct though, with an almost completely erect column projecting at a right angle from the base of the lip, like an accusing finger.

The first time I saw this plant was in the orchid collection of Hostería Uzhupud, outside Cuenca, in 1984 It had been collected by Mario Portilla during a most arduous trip to the Cordillera de Cutucú, an isolated and boorly explored mountain ridge on the eastern side of the Andes. I photographed the plant and collected a flower for my alcohol collection, but I was not able to prepare a herbarium specimen at that time. This was un-

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fortunate, since the plant disappeared without a trace shortly thereafter. What made the situation even more frustrating was the Cutucú area was, and is, a remote and sometimes quite hostile territory for which serious planning and permits must be organized before an expedition can be mounted. I never made it back to the Cutucú mountains but the image of the plant haunted me constantly. The fact that this area is remote and isolated might explain why such an attractive orchid species has developed and remained undetected for so long.

Therefore, considering my experience with species distribution and habits, I find it rather surprising the *Odm. helgae* was collected on the western slopes of the Andes, in a rather thoroughly collected area. Perhaps labels were mixed up somewhere, a phenomena not entirely unheard of in my experience. In any case, it is a most welcome contribution to the odontoglossum alliance, whatever its origin may be.

To discuss which other orchids are most closely related to Odm. harryanum is really like opening a barrel of snakes. The leads take off in various directions.

My personal belief is that morphological studies (studies of the shape of the entire plant) in a broad perspective, combined with any other information available, such as pollination biology, scents, distributions and habits, generally provide satisfactory evidence about these plants' relationships. The problem is that we too frequently get stuck on single and doubtful features, such as the angle between the column and the lip, number of teeth on the callus, color and size, etc. We also tend to forget to study the vegetative features and the general appearance of the entire plant including the flowers. For instance, by having a much broader perspective, it seems obvious that *Odm. harryanum* is closely related to a number of species presently treated as oncidiums (e.g. *Onc. hastatum* Lindl. and *Onc. maculatum* Lindl., etc.), *Miltonoides* (the *Oncidium/Odontoglossum* laeve complex), as well as some other odontoglossums. Without going into any further discussions on the genetic level I mention that DNA studies by Mark Chase (1992), and others support this conclusion.

In Bockemühl's treatment of *Odontoglossum* 1989), the author excluded *Odontoglossum velleum* Rchb.f., and suggested that it belonged to a "not yet definitely circumscribed Miltonia group." I disagree, based on the morphological as well as other features and believe that this unusual species fits in the *Odm. harryanum* complex. *Odontoglossum vellum* was described by Reichenbach in *Gardeners Chronicle* 406, 1874, based on a plant from Ecuador without specific locality. It had been collected by one of Mr. Low's collectors. It is presently known from southern Ecuador and northern Peru (Dodson and Bennett, 1989), at altitudes between 4,200 and 5,400 feet. It grows epiphytically in wet, lower mountain forests. Although not as large and floriferous as *Odm. harryanum*, it is still a charming orchid, too rarely seen in cultivation.

Odontoglossum nevadense Rchb.f. is another fascinating rare species that needs to be mentioned. Although maybe not as closely related to Odontoglossum harryamum as suggested by Bockemühl (1989), it certainly belongs there somehow. It was originally collected by Wallis, presumably in the Sierra Nevada de Santa Marta, an isolated mountain on the northern coast of Colombia. The plants were sent to Linden's nursery in Brussels, Belgium. As they later flowered in cultivation, the species was described in L'llustration horticole, 17, page 243, 1870, by Reichenbach. Odontoglossum nevadense appears to be endemic to Sierra Nevada de Santa Marta, and is morphologically distinct from all other Odontoglossum or Oncidium species. It bears a certain superficial resemblance to Odm. harryanum but study of the vegetative parts and the plant habit suggests that it may be more closely related to Odm. wallisii Rchb.f. Odontoglossum nevadense is a beautiful species and needs to be propagated in cultivation, partly because is difficult to obtain from any orchid nursery and partly because the only area in which it has been found is infamous as unsafe, and in Colombia that is to be taken seriously.

The cultivation of *Odm. harryanum* and its allies is not too demanding as long as an intermediate to cool-growing spot with plenty of air circulation and humidity can be provided. *Odontoglossum* plants do well on driftwood, treefern or slabs of cork bark if they are watered frequently; They do need to dry out somewhat between watering though. Most odontoglossums do well in good light but need to be protected against overheating by direct sun, and cooled down during the night.

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A Greenhouse for Odontoglossums

by John E. Miller

In December 1987 we moved into our newly constructed house in Westport, Massachusetts which is on the coast adjacent to the Rhode Island border. We had spent the previous two years in design and construction. Included in the house is an 18 foot by 24 foot greenhouse designed to grow the Odontoglossum Alliance in our location. I have been growing orchids since 1952 and had built greenhouses at five different locations. The most recert was in Brookline, Massachusetts. From this experience I had four objectives in designing and building the Westport location.

1. I wanted to cool the interior to 50F at night or as low as the outside temperature would permit.

2. The use of shading was to be minimized.

3. The entire operation was to be as automatic and carefree as possible, permitting a target of 1-2 weeks without attendance.

4. Eliminate the entrance of slugs in the greenhouse.

My experience in Brookline was that I got good growth without shading. However we had considerable shading from deciduous trees during the period of May - November. I did experience considerable odont leaf color changing to red in the spring, but this turned back to a nice green shortly after the trees leafed out. The greenhouse was set on an old (1896) brick foundation. I fought slugs continuously. It was so discouraging to grow plants for a year, then see the flower spike emerge only to find a few days later that a slug had eaten his way through the stem. I fought them with all the power of known insecticides and poisons. As I was going into retirement I did not want to be kept at home as a dairy farmer so every effort was made to minimize the requirement for human observation and attention daily.

With these objectives in mind we proceeded with the design. First it is necessary to understand the climate conditions in Westport. As can be seen in Figure 1 the minimum temperature rises above 50 degrees sometime in June and doesn't fall below 50 degrees until September. Our location near the sea moderates the temperature and is especially helped by prevailing South West winds off the water to the South facing greenhouse. However the heat of the summer does catch up and extends into October before we can reliably get cool nights on a consistent basis. By then we are in the period of shorter days. Thus it turns out there is a period of roughly mid June until late September when we are likely to have night temperatures in the high 60's and in the middle of this period in the mid or even high 70's. Under these conditions we will do the best we can without refrigerate cooling.

Westport Weather



An arbitrary decision was made to build an 18 foot by 24 foot greenhouse. This was the size that I felt would be appropriate to the maintaining a sane hobby. It would have been easy to increase the size for more plants and growing space, but I didn't wish to be a slave to the hobby. Following this a bench and walk-way layout was designed. The ratio of bench area to total covered area is a measure of efficiency. Clearly an efficiency number is dependent on the overall size of the greenhouse. For my size I felt that a layout that gave me 70% of the area as bench growing was a good number and achieved. I had originally planned to have two growing sections such that different temperatures could be maintained. The greenhouse was constructed this way and had two separate sets of controls. However today both sections are maintained at the same conditions and the door between them is never closed.

To deal with the slug problem and to help in the humidity we set in a three foot deep concrete footer and built concrete block walls up to three feet for the greenhouse sill. The interior was excavated to the depth of the footer and then back filled with sand for about two feet and inch size crushed rock up to the top on the footer. This cleared out any slugs that might have been in the ground and has effectively kept them out of the finished greenhouse. In eleven years of growing I have killed only five slugs in the greenhouse and those I am certain were carried in with new plants. I haven't seen a slug inside in the last five years. Yet next to the greenhouse outside, my wife is continually suffering slug damage even though she diligently covers the area with various poisons and walks around with tools to catch and kill them.

The greenhouse selected from the several bids received was an anodized aluminum with thermo pane-

glass. I had the option of using tinted glass or clear glass. I checked in several places to find if there was any data on growing with tinted glass

Since I could find none, I decided not to take a chance and went with clear glass.

There were no vents in the roof of this even span greenhouse so the cooling design was the next step. I located a graduate student at Brown University who had a computer simulation available that permitted us to calculate the internal temperatures of the greenhouse under various sun loads. The simulation also permitted adding cooling features such as evaporative coolers at various air movement capabilities and louvered vents.

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Odontoglossum Alliance

Using this simulation we calculated the necessary air movement in the greenhouse to maintain the inside temperature equal to the outside temperature under all the sun load and external temperature conditions, without using shading. The greenhouse was South facing and had no external shading from trees or the buildings. The cooling system consisted of an evaporative cooler for each section, a louvered vent and a tube fan with a second louvered vent behind the jet fan to bring in external air. The evaporative cooler was a 3/4 horsepower squirrel cage fan that pumped air into the greenhouse through wetted fiber cells. This evaporation lowered the incoming temperature by about 80% of the difference between the wet bulb and dry bulb temperature of the outside air. In our conditions of relatively high humidity we could achieve, on the average, about an 8 degree F temerature drop. The cooler had a two speed capability. At lower speed the cooler exchanged the volume of air every three-four minutes and at the higher speeds about every two minutes. The greenhouse volume is 2000 feet cubed for each section. While the evaporative cooler specifies 2000 cubic feet per minute at low speed, this is with no back pressure on the fan. The consticted air flow out of the greenhouse reduces the amount of air exchange per unit of time to approximately these numbers. This permitted a two stage controller. The jet fans had a similar two stage operation with the vent behind the fan opening at the higher temperature. At the time I was a director in a company that manufactured and sold computer controllers for environmental control. While we examined the application of these to the greenhouse, it was quickly determined that a simple off-on controller was more than adequate and much cheaper. Thus we ended up with thermostatic control for the high temperature region to control the evaporative coolers and the jet fans. Two thermostats were used; one for the lower temperature, approximately 80 degrees F and a second for the higher temperature(90 degrees F.). This completed the cooling design for the summer months.

Again this is how the cooling system works. As the temperature rises from , say the night temperature of 52 degrees, with the heating of the sun up to 80 degrees F, the system remains in a non-operative state. Once the temperature reaches 80 degrees F the lower temperature thermostat closes. This turns on the evaporative cooler at its lower speed, the jet fan comes on and the exhaust louvre opens. Should the greenhouse continue to rise in temperature up to 90 degrees F this will close the higher temperature thermostat. This causes the evaporative cooler to go to a higher speed and at the same time the louvre in back of the jet fan opens. This louvre permits the drawing of outside air into the tube of the jet fan which in turn is distributed into the greenhouse. Again the interval clock power is turned on at the same time as the evaporative cooler. This opens the water spray line every twenty minutes of cooler operation for a period of 30 seconds. This water spray is also blown around the greenhouse by the evaporative cooler.

In the winter the evaporative coolers were shut off and the openings into the greenhouse blocked. The rest of the cooling system remained operational. The summer/winter change over occurs in about April and November. One switch does it. The heating system was a straight forward hot water, gas fired boiler system. This has its own thermostat.

Humidity maintenance has been less than satisfactory. A set of under bench spray nozzles were installed. These come on for 30 seconds for every 20 minutes of running of the evaporative coolers. This kept the floor wet, but could not significantly bring up the humidity. Two ultra sound vaporizers have since been added. These have been satisfactory in maintaining the humidity at greater than 50%. However their reliability has been less than satisfactory and humidity maintenance remains a concern. I have now installed a Jaybird humidifier in one section of the greenhouse and this has been most satisfactory as it maintains the humidity at the humidistat setting.

Initial greenhouse operation began in December 1987 and without any shading. All went well until about June. The air temperature was maintained within the design limits, proving out the computer simulation. However my odonts developed nice red leaves that turned darker and darker. They did not however burn. But the light intensity was so high that the plants did not manufacture chlorophyll. Shading was added. I used a saran clotic on the inside of the house which remains on year round. For the summer months a second saran cloth covering is put up over the outside of the house and tied down. Growing experience and on the advice of friends more air movement was added to the interior. Two ceiling fans were added to each section. These are three

speed fans and they run at the slow speed continuously. I am amazed that they have operated without trouble for ten years.

The bench design consisted of redwood frames that were decked with the plastic light shades that are used as diffusers for fluorescent lights. They come in 2 x 4 foot pieces and are 1/2 thick at the webs with 1/2 inch square opening. This allows lots of air movement and the plastic is inert to growing any thing. This has been completely satisfactory.

The addition of a dos.tron to the watering system made for easy and accurate application of fertilizers to the plants.

A greenhouse work room separates the greenhouse from the living room of the house. This room is a great addition to the easy and caring of the greenhouse. I pot my plants here and maintain a desk of orchid reference materials. Supplies of all sorts are kept here.

I never take the plants outside for the summer. In this way I feel I am not allowing any infestation problems. I have had scale and mealy bug and red spider infestations. But so far I am able to eradicate them effectively.

have left the greenhouse on automatic operation for periods of up to two weeks without other care and at various times of the year. If I am going to be gone longer I am able to have a person look in on things and sometimes water.

In summary I am very pleased with the entire operation. I think almost all the objectives have been achieved. I can leave for periods of time without worry. I do have a temperature sensing system that goes into the central alarm of the house. This serves as a backup to the automatic controls. We have very effectively controlled the entrance of slugs. We have had to revert to shading and use saran cloth. I am investigating an aluminized shading material that I would use on the outside to help in temperature control. I feel that we have done the best we could under the conditions to keep the greenhouse cool especially at nights. I believe the only way to really solve the problem under our climatic conditions would be a refrigerate system This I feel would have numerous problems and not an insignificant expense.

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Some Items to Note

1. We did not receive a New Zealand Newsletter. It will be included in the next mailing.

2. May 1999 will be the dues request. Along with that will be the election of officers. A slate will be proposed at the 'Odont Day' in Vancouver. This slate will be published in the May 99 Odontoglossum Alliance Newsletter. Voting will be done with ballots in the May issue and ballots will be counted with results published in the August 99 newsletter.

3. The Chairman of the Board, Helmut Rohrl, has diligently completed a review and revision of the Odoutoglossum Alliance By-Laws. This will be published in the May 99 newsletter. Voting on adoption will be with the ballot for officer election.

Enigmatic Odontoglossums Part 7 The Odontoglossum harryanum Complex By Stig Dalström This page and opposite A specimen of Odontoglossum harryanum in a recently cut tree, in situ in Ecuador. Unfortunately, this plant was in an area that was cleared and burned.

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Above Odontoglossum helgae, a new species described in 1997, was discovered in the province of Pichincha, Ecuador.

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Above left

Odontoglossum nevadense, from Colombia, bears a superficial resemblance to Odontoglossum harryanum. Left Odontoglossum velleum, from southern Ecuador and northern Peru, grows as an epiphyte in wet, lower mountain forests.