

Odontoglossum Alliance Newsletter

14th World Orchid Conference Show

by John Hainsworth

A floriferous February in Britain was followed by a paucity of plants in Glasgow for the 14th World Orchid Conference in April. The Eric Young Orchid Foundation showed some stunning concolor odonts together with intergenerics at their best. Odm. Augres 'Jersey' AM/RHS took Best Hybrid Reserve Champion and a Gold Medal - a superb white of some 100 mm with a yellow lip. Best Odm/Oda went to a white, heavily spotted with yellow Oda. Eric Young - sibling cross made to establish stable tetraploids. Every shade of yellow was present in the Silver Medal winning Oda. Belle Hougue Point together with Odm. Mont Pinel, the famous Oda. La Hougue Bie, and a Bronze Medal winning Oda. Mont Ube 'Jersey'. Crispum type hybrids were represented by Odm Coupe Point, a 100 mm white with rose blotching. The white with heavy purple markings made Oda. Archirondel a worthy Bronze Medal winner, the same award going to an outstanding cultivar of Odm. uro-skinneri. Alexanderara St Owen 'Gorey' AM/RHS took best intergeneric - 12 dark pink flowers with a beautiful pink and orange lip. The Foundation continued to sweep the board with the miltoniopsis. Milt. Jersey, one of thirty or so red miltonias staged on a tree took Best Miltoniopsis, and a Milt. Grouville won its class - a first flowering seedling with three large round dark pink flowers. Another miltonia tree had different cultivars of Milt. Robert Strauss, and Milt. St. Helier showed a range of pink flowers with black masks.

The medical profession habitually bring things into the world, and, after an immaculate conception, Sheffield's Dr. Cedric Maunder showed his latest George Blackara to the world -

not on a dark starry night. The precocious leader of this new genera flowered in the flask and with its yellow and orange flowers, we look forward to seeing more plants of this colorful quadrigeneric. The Sheffield Orchid Society stand also on a well deserved Onc. Species trophy for a nice clone of Onc. hastilabium. George Black could not be present himself, but some of his hybrids were - Bllra. Witches Cauldron 'Magic Brew' showed an improvement on its pod parent Mtssa. Charles M. Fitch, and a hybrid from Odcdm Golden Sunrise gave an orange of good shape and size with a red lip. Among other plants of interest the German Orchid Society won a Bronze medal for a yellow of good shape and substance - Odm Struber Gold showed what could come from Odm maculatum when crossed with Odm Hambuhren Gold. Best red went to Oda. Fireflower on the Japanese Orchid growers Association Stand, and the Dutch commercial growers showed some nice clones of Milt. Bealls Strawberry Joy.

Odontoglossum Forum at the 14th WOC

Michael Tibbs of the Exotic Plant Company, chaired the session of the Odontoglossum Forum at the 14th World Orchid Conference held the afternoon of 30 April 1993. The first speaker, Dr. Howard Liebman discussed miltonopsis intergenerics illustrated with pictures of the interesting crosses that have been achieved. Dr. Liebman continues to pioneer work in this area. Mr. Phillip Altman, of Australia, gave a description of odontoglossum growing in his area. He described the kind of odonts they needed to encourage orchid growers to have the alliance in their collection. He also gave insight into the difficulty and expense of importing plant material. He pointed out the most cost effective

and productive importing is done with pollen, seed and flasks.

Mr. Chris Channon has become the source for George Black's crosses. Chris illustrated his talk of the recent hybrids with a series of beautiful slides showing the variety of colors and shapes achieved. The lecture series concluded with a large number of slides of German raised hybrid alliance material described by Geld Rolke. His slides were of the size 120mm square and provided excellent and realistic visualization of the flowers.

The forum was attended by about 70 people which was disappointing considering the attendance at the conference. This was certainly, in part, due to the poor publicity given to the forum. The only notice was in the program and that was one line.

The day before there were three odontoglossum lectures given at the oncidinii session. This was rather well attended. Mr. Allan Long, Mansell & Hatcher discussed the role of *Cochlioda noezliana* in the development of red in *Odontiodas* and other alliance material. Mr. Alan Moon, Curator Eric Young Foundation, discussed his odontoglossum breeding program using ploidy technology. He illustrated his talk with slides of excellent and award winning odonts. Alan also received a standing ovation from the audience for the Eric Young display which won so many prizes and awards. I gave a talk on aspects of the odontoglossum alliance. This talk will be published, in three parts, in the newsletter.

John Hainsworth organized a dinner for the evening of 30 April for odont lovers. The dinner was exceptionally well attended to overflowing by 52 people from the world over. The food was exceptional and John is to be complimented. Alan Moon gave a set of informal and humorous remarks at the dinner. The odont people contributed a large number of flasks and other odont material that was auctioned. This raised 761L that was given to the newly started British *Odontoglossum Alliance*. It was a wonderful evening that produced many fine events that are pleasant memories.

John E. Miller

Living With Orchids The 1993 San Francisco Pacific Orchid Exposition

by Pat Pettit

This past year's weather changes have made our odontoglossums pouty and uncooperative. Although glad not to be the only one, I was sorry the show did not have as many plants as last year. Everyone I spoke to said she/he had nothing in bloom. In spite of this, a theme envisioned by someone who probably watches TV shows like "Stupidest Home Videos", evoking scenes of seedy sofas stuffed with *Sophronitis*, or gardens with plastic lawn chickens (our show's being too far west for flamingos), I thought the show was well done. To me, the San Francisco Show has the best combination of quality and variety on the west coast. Although last year's show had more plants and a much better but unofficial theme ("Pacific Rim" in general, interpreted by almost everyone as Oriental), there were many noteworthy odontoglossums shown.

Sunset Orchids (Steve Gettel, with Tim Brydon) did a one table mossed display lush with odont spikes and a few tasteful *masdevallias* scattered at the base. Steve received an HCC/AOS on his Odm. Royal Occasion, notable for its round shape, quite frilly edges, and a large lip compared to most of the cross. His Oda. Shelly Anne 'Sunset Leopard' caught my eye; a Star Trek-like hybrid with red-violet border, white background, and violet spotting. Steve's Oda. Rudolf Papst 'Blue Ribbon' drew attention for its hot pink background and intricate red-orange pattern; an unusual combination. On the right was a lovely Oda. Santa Maria 'Tangerine Eclipse' HCC/AOS, which I must mention because I love oranges; it was orange sherbet in color with white edges and much of the lip, and had a branching spray with many rather starry flowers. In the same display, Tim Brydon's first bloom seedling of Oda. Aviewood x Carnette was an excellent deep rose colored full flower

while most of the cross came white. Tim showed a breeding distinct from the Charlesworth line; it was distinguished by its large petals, and we would like to see it as a mature plant. Also a first-bloomer was the Oda. Joe's Drum x Florispum with its fuschia patterns. Tim displayed a well-formed xanthic, or purecolor; Odm Royal Wedding x Kopan, which had a better lip than most xanthics. His Odcdm. McKenzie Mts. x Odm. Buttercrisp was a dark, glowing yellow with nearly black markings. The Orchid House (Norris Powell) also had a one table display, and was notable for an Oda. Maravilla 'Maroon Madness', a nice upright spike of enormous burgundy flowers. A third table display was that of Bob Hamilton, Steve Beckendorf and Alexander Koomanoff, against black lattice with a perfect black and white Charlesworth type odont poster. Bob had a nice blooming of Odm. Stropheon 'Unicorn Leopard', with its large, well-contrasted white blooms marked burgundy. There was a Relton x Robert Dugger with excellent color, a round red and white Odm. Quito x Oda. Salway also of Bob's. Steve had a fine Vuyl. Happy Refrain; a well-marked dark red and white Vuyl of improved form. Tom Perlite of Golden Gate Orchids did about 100 square feet woody glen floor display with a tall tree and nude mannequins of Adam and *Eve (Tastefully leafed). While he did an excellent display, Tom suffered along with the rest of us in lacking a choice of many odonts for show this year. He had a fine fed Oda. Le Nez Point x Actrix among several reds and oranges with graceful arching branched spikes, including a striking Oda. Carmine x Onc. hastatum, in which the hastatum was visible only in the spike habit. On the other side was a distinctive grouping of Oda. Joe's Drum x Many Waters. While most of the group was yellow flushed with peach and variously spotted, one clone was mustard yellow with a white center to the petals and sepals overlaid with shocking lavender. Finally, our display (Strawberry Creek Orchids and Chieri Orchids, Patty Hill and Pat Pettit) was helped by donations from the Beall CO., Bruce Cobbledick, and Tim Brydon, without whose

help our 5' x 20' long display would have been embarrassingly skimpy. We crossed black lattice behind, with a swash of black cloth, adding baskets on black lacquer tables, and various black mannequin parts with Spanish moss for hair. Tim said it looked very elegant. Bealls sent down a very nice blooming of Odm. Quistrum 'Lyoth Angelo' AM/AOS, and four plants of Wils. Five Oaks, among others. I brought a Wils. Kendrick Williams 'Kent' AM/AOS with two spikes of mahogany blooms with yellow lips. Bruce had a nice Oda. New Start and an Oda. Shelley, both looked at for judging, and a shower of yellow marked brown blooms on his Odcdm. Tigersun 'Nutmeg' AM/AOS. Tim Brydon lent us a very fine Odm. St. Clements with a tall spike and heavily patterned blooms, as well as many others. Patty had many plants of notice. Her Florispum x Joe's Drum was huge, and looked like the best and darkest Joe's Drums. Also huge was her Drummer Joe, a superb concolor hot raspberry of excellent form. Patty's Oda. Annette x Mem Donald Campbell caught my eye for its contrast of pure white ground with lavender edges and raspberry markings. Probably the finest solid red in the show was her Oda. Island Red with only a few flowers open but excellent size and scarlet color. She showed two Odm. Boulivots (Shelley x pescatorei) with floriferous sprays of white blushed and spotted lavender medium sized bloom, and her novelty hybrid Odm, Ponterrin, which opens chocolate tipped yellow with a yellow lip and fades to white contrasting with the chocolate centers, and is half Lemboglossum rossii, complemented the Bealls plant of Oda. Phoenix, a charming ruffled white with big rossii lip and dark red wine spots. Patty had a wonderful first bloom seedling of Steve Gettel's cross of Oda. Pt. Nepean x Danilo; a dark almost bluish-lavender ringed with a thick plum-purple edge and large spots on large flowers. It looked better outdoors with some sunlight on it. The quality of this show's displays keeps getting better every year. It could be the best show in the U.S. for odonts. Those of you who haven't seen it should consider it for next year.

Editor's Note: Part I of this article was published in the February 1993 Newsletter. Because of the number of new members I have decided to publish the article in its entirety.

The Odontoglossum Pipeline

by Robert Hamilton

"There are many objects of great value to man which cannot be attained by unconnected individuals, but must be attained, if attained at all, by association."

Daniel

Webster - 1833

Abstract

Further improvement of Odontoglossums requires an engine driving hybridizing. Hobbyist growers must get better and more consistent plants in order to encourage purchases. Odontoglossum hybrids must be produced of sufficient quality for commercial purposes. Improvements will occur through a series of efforts. Crosses should be made with genetically compatible plants. Seedling populations must be grown and heavily culled, starting with the flask with culling continued through to blooming. This process can be thought of as a "pipeline". A description of this pipeline is presented with some thoughts on new avenues for breeding.

Introduction

I began growing orchids in 1976. The motivation was the acquisition of a house with an attached greenhouse. My first plant was a Stanhopea acquired from the annual University of California Botanical Garden sale. Within 3 months this plant bloomed and my orchid growing avocation was launched. Born in Berkeley, California I have remained here all my life. This area of California has a uniquely mild climate. During most of the year, the day temperatures average in the high 60's to low 70's F. and the evenings drop to the mid 50's. The winter months seldom see temperatures below the mid to high 30's and average in the low 40's with day temperatures in the 50's. The few hot days we experience are mostly in the fall and these are cyclical and quickly attenuate. As California's central valley heats, the air mass rises and is replaced with cool air in from the Pacific Ocean. Berkeley, being directly east of the Golden Gate (the mouth of the San Francisco Bay), benefits from this inward movement of ocean air -- natural air conditioning!

My orchid collection began with a mixture of intermediate temperature species and hybrids, mostly Cattleyas and Paphiopedilums. Later, I purchased blooming plants of Odontoglossums from the Rod McLellan Co. and the Beall Co. I was awe struck by their beautiful colors and patterns. In spite of my best attempts at culture, these deteriorated; thus, I made the decision to reduce night temperatures and

add cooling to my greenhouse. I eliminated plants requiring intermediate temperatures and began specializing in cool growers.

In 1981, the indefatigable Robert Dugger gave a local lecture on his Odontoglossum and Odontioda hybrids. I purchased several flasks from him and began growing Odonts in community pots. Thus, the course was set for building a significant Odontoglossum stud collection. My plan was simple (too simple it turned out). I would buy a hundred or more flasks and grow and cull these for the best. By 1985, I began to sense that something was wrong. I bloomed some beautiful and superior clones; however, there seemed to be no way of improving the yield of great plants. Essentially, building my superior stud collection came down to a crap shoot even with the best material available to me. I sensed I might run out of time before I reached my goal. I had also begun making crosses of my own. I sent seed pods to various flask services, seldom getting back quality flasks.

About this same time, a correspondence in the Orchid Review, orchid journal of The Royal Horticultural Society caught my attention. Ray Buckman a retiree of Charlesworth & Co. had written a note encouraging Odont breeders to return periodically to jungle species in an effort to restore lost fertility in some advanced hybrids. Alan Moon, curator of the Eric Young Foundation replied with an explanation of why fertility had become a problem in modern hybrids. The reason, explained Alan was the heteroploidy of modern Odontoglossum hybrids. Most Odont hybrids, through years of breeding for the largest flowers, had more than the normal, diploid chromosome number, 2N. Many were 3N; 4N and greater. When these plants were indiscriminately combined, reduced fertility, as well as other problems became manifest.

Differences in breeding philosophies became even clearer in talks I heard in Vancouver, BC, at the first meeting of The Odontoglossum Alliance. Dr. Wally Thomas organized this meeting and invited a panel of speakers. Amongst these were talks by Alan Moon and Dr. Don Wimber. Don Wimber spoke on chromosome counts he had done on plants at the Eric Young Foundation and Alan spoke on the foundations breeding program. One could not help being impressed with the breeding advances made by the foundation. There was clearly a connection between the chromosome counting done by Don Wimber and the choice of plants Alan Moon used in his breeding program. To quote Alan, "You can't just put pretty on pretty."

As a result of my own growing experience, the correspondence in The Orchid Review and the presentations at the first Odontoglossum Alliance meeting, I reached this conclusion; the concepts of quality in manufacturing had to be applied to Odontoglossum

breeding in order to make further advancements. Advancements will occur fastest when *Odontoglossums* are bred in commercial quantities. *Odontoglossum* won't become commercial until the yield of good plants is greatly improved. In short, one has to learn how to load "the *odontoglossum* pipeline".

History

Odontoglossums became popular in England around 1880. Superior clones were coveted and fetched high prices. By the turn of the century, hybrids began to appear. In 1904, the first inter-generic hybrid between *Odontoglossum nobile* (pescatorie) and *Cochlioda noezliana*, *Odontioda Vuylstekeae* was displayed at the Temple Show in London. It created a sensation. Thus, modern *Odont* breeding was launched. The greatest success in hybridizing *Odont*s was achieved by the firm of Charlesworth & Sons. Joseph Charlesworth mastered the propagation of plants by symbiotic culture. His firm had isolated an improved strain of fungus necessary for orchid embryos to convert starches to sugars; thus, Charlesworth & Sons could out-produce other nurseries in the production of seedlings. In addition, Charlesworth clearly understood and applied genetics to his hybridizing, creating the foundations for future breeding. Other firms such as Armstrong & Brown, Stuart Low Orchids, McBean Orchids and Mansell & Hatcher made contributions as well as individual breeders. Two world wars took their toll on hybridizing and today the only English firms of significance are McBean's and Mansell & Hatcher. There is renewed interest in *Odontoglossums*; however, they have yet to become a successful commercial crop except in the hobby market.

The Species

Leonore Bockemuhl recently published "Odontoglossum - Monographie und Ikonographie". This book describes fifty eight *Odontoglossum* species. These she divides into six subgenera:

Odontoglossum
Erectolobata
Lindleyana *Nevadensia*
Unquisepala
Serratolaminata

Only highlighted subgenera figure prominently in classic, modern hybrids.

Subgenus *Odontoglossum* includes:

armatum
crispum

cristatellum
cristatum
cruentum
*epidendroides**
hallii
juninense
kegeljanii (polyxanthum)
lacerum
luteopurpureum
nobile (pescatorie)
portmanii
praenitens
sceptrum
spectatissimum (triumphans)
subligerum
tripudians
 *the type specie for all *Odontoglossums*

Subgenus *Nevadensia* includes:

harryanum
nevadense
wyattianum

I have highlighted species that have played a significant role in hybrids and parenthesized common names. Of the 56 described species, 7 are important thus far. If you include *Cochlioda noezliana* with important *Odontoglossums*, our *Odontoglossums* and *Odontiodas* hybrids have 8 species in their background.

Recently, relationships between the *Odontoglossum* subgenera have come into question. At a talk before The Orchid Society of California, botanist Dr. Mark Chase questioned the validity of using only morphology in taxonomy. Morphology is the branch of biology that uses form and structure in defining relationships. Dr. Chases' work with DNA sequencing suggests the only subgenus that can be legitimately called *Odontoglossums* is the subgenus *Odontoglossum*. The other five subgenera are more closely related to *Oncidium*. Since *Odontoglossum harryanum* does not belong to *Odontoglossum* subgenus *Odontoglossum*, the large number of hybrids with *harryanum* in their background may more properly be thought of as *Odontocidiums*, inter-generics between *Odontoglossum* and *Oncidium*.

Breeding

Kevin Hipkin of Royal Orchids in Australia was visiting the San Francisco - Bay Area As I was driving, he read from a book on horse breeding he had just purchased (Kevin likes horse racing). "Cross the best with the best and hope for the best." My experience with orchids teaches me what is true for horses is not true in plants. In

mammals, one has to consider only one ploidy. Mammals are diploid having a chromosome number designated 2N. One chromosome received from each parent when sexual gametes (sperm and egg) combine. The exceptions to the 2N number are mammalian sex cells. Sex cells go through a reduction in chromosomes through a special division process called meiosis. They contain the haploid number of genes. Another way to look at this is sex cells are 1N. Thus, when sex cells from each parent combine, the normal 2N state returns with traits contributed by each parent.

In nature *Odontoglossums* have 56 chromosomes. Plants can survive and reproduce with higher than normal (2N) chromosome counts. In hybridizing, plants are sometimes created with 3N, 4N and higher chromosome counts. Plants with higher chromosome counts have some advantages from a horticultural viewpoint. As the ploidy increases, so must the cell volume to accommodate the increased number of chromosomes. Increased cell volumes mean larger and thicker flowers and spikes. Colors intensify because of their increased density. For the most part, plants higher than 2N grow more slowly; however, this is not always so. When ploidy increases excessively, plant growth becomes exceptionally slow. Orchids seldom perform well beyond the tetraploid number (4N).

Tetraploids spontaneously occur in seedling populations. I do not know the percentages but they are not as common in intra-specific crosses, i.e., crosses within a species. They are more common when breeding between dissimilar species or genera. There are inter-generic crosses where the whole seedling population appears to be higher than 2N ploidy. The best example I can think of is *MacLellenara Pagan Love Song* (Ocdm. Tiger Butter X Brs. *verrucosa*). As hybrids were created, spontaneous tetraploids appeared. With the attributes of larger size and rounder shape, these were selectively chosen as parents. Large populations of triploids were created when tetraploids were bred with the diploids. Problems began when these triploids were used as breeders.

From a cursory look at the hybrid registrations, it appears that the progeny of crosses between *Odontoglossum* (subgenus *Odontoglossum*) with *Odm harrayanum* (subgenus *Nevadensia*) were often the parents of choice. Is it possible that the seedling created by crossing these two subgenera often resulted in tetraploids and thus these became the parents of choice? When one considers *Odm harrayanum* more likely an *Oncidium*, this seems possible.

The results of indiscriminately breeding mixed populations of pretty 2N with 3N and 3N with 4N plants resulted in significant numbers of plants with higher than 4N chromosome counts. This is documented by counting. Two recent examples of such hybrids are *Odm. Stonehurst*

Yellow and Oda Red Rum. Hybrids with higher than 4N counts can be spectacular. Unfortunately these plants are also often unstable, failing to grow and bloom consistently.

One year they produce a good spike with gorgeous flowers. The next year the growth may be immature with an attenuated spike or the plants may produce a spike with a few developed flowers and the remaining spike aborted. I have heard these plants referred to as "hyperploids" because of their higher than 4N counts. There are those who suggest that some of these hyperploids are chimeras, composed of two or more genetically distinctive tissue. The term I have heard attached to them is "mixaploid". The problem of breeding mixed ploidy is seen in other types of orchid. A failure to understand the result of random mixing has led to the downfall of more than one orchid nursery.

When breeding, one does not and can not know the ploidy of all parents. Microscopic examination and chromosome counting are beyond the capability of most breeders. A bit of breeding advice I received from Alan Moon seems like good advice. Do a large percentage of line breeding with plants of known ploidy and background. Additionally, since spectacular results sometimes occur when one plays a hunch, a prudent breeder must do both kinds of breeding in reasonable proportion. For my breeding, I am working with a ratio of about 80% line breeding and 20% speculation. I distinguish these two kinds of breeding as "ready, aim, fire" and "ready, fire, aim".

Strong plants are selected as parents and pods set on the lower flowers. I try not to make more than 1 or 2 crosses per plant. After pollination, the flower wilts and a seed pod forms. Pods mature in 10-11 months. They're removed when they begin to yellow on the end or begin to split.

Flasking

It became apparent early on that I would have to do my own flasking. Commercial labs make their bread-and-butter with intermediate and warm growing hybrids and few of them have conditions suitable for the flasking cool growing *Odontoglossums*. I purchased a laminar flow workstation and devoted two bedrooms to a laboratory. Flasking *Odontoglossums* is fairly easy and I have had good success. I will not try and give a detailed account of orchid flasking; however, what follows are some of the techniques and media that I've found particularly successfully for flasking *Odont.*

Dry pods are removed from the greenhouse. Seed is shaken onto a clean piece of paper. The seed is then transferred to a 16 mm ID test tube and disinfected. I have used both Calcium Chlorite and Chlorox to disinfect with equally good results. For ease of use, I now use Chlorox exclusively. I take 35 ml. of tap water and add 15 ml. of

Chlorox. Since the Chlorox is heavier than water, it is added last. This is poured into the test tube containing seed and a sterile cotton swipe is pushed in as a cap. The seed/liquid level is about 75% of the test tube volume. Enough air is left so one can vigorously shake. Shaking is done for about 5 minutes. The cotton plug is now pushed gently to the bottom like a piston with a 1/8" stainless steel rod with a bent fork on one end. The cotton traps the seed against the bottom and the water/Chlorox poured off.

Water is added to this test tube by injection through a 25 mm .02 micron syringe filter attached to a 20 ml syringe. I use this method to sterilize water rather than autoclaving. The .02 micron pore size of the filter is small enough to eliminate all bacteria or fungus. Sterile water works just as well; however, this technique provides instant sterile water. The filters I use are made of polypropylene and can be re-sterilized as needed.

The cotton plug is slowly raised with the hook on the 1/8" stainless steel rod. The seed/sterile water mixture is shaken and the cotton plug is again pushed back down. This is repeated several times rinsing away any Chlorox. The seed is then sown in mother bottles. I make 2-3 mothers for each cross just in case one becomes contaminated. With a little practice, one should expect less than 5% of the mother bottles to contaminate. If 2 mothers are made instead of one and the contamination rate is 5%, the chances of both mother bottles contaminating is 1/400. I use 1/2 pint, wide mouth mason jars, filled with approximately 50 ml. of media for mother bottles. I've experimented with several media. The one I like the best for seed sowing is a pre-mixed media sold by Sigma Chemical Co. It is inexpensive and easy to use. Here is my formula for germination:

Sigma, Cat # M1053, Murishige-Skoog media (1L size)
20 grams of sugar (about 28 ml. by volume)
10 grams of agar (about 15 ml. by volume)
5 grams of charcoal
pH adjusted to 5.5 with nitric acid

I am a bit lazy so I don't weigh my ingredients more than once. I measure the volume of each material and then use volumetric measurements. I include these values in the above formula.

Sterilized seed is sown and a band and lid are screwed on. No vent is provided at this stage so that any jars that contaminate can be left sealed and disposed of. Germination begins with the seed turning green, usually from a few days to several weeks. After 1 month, the Mason bands are unscrewed and the solid lid is removed in the laminar flow workstation and replaced with a vented lid. For vented lids, I use a product sold by Sigma called "Suncaps" (Cat. # C6920). Suncaps are sterilized before

use by placing one between each page of a 5" X 7" notepad. I do about 25 at a time. The note pad is folded in aluminum foil and autoclaved. This packet is stored under the hood and opened as needed. As they are used, the paper cover sheet is torn away exposing a new, sterile Suncap.

In three to six months the seeds become protocorms, little green spheres about 1 - 2 mm in diameter. When you look closely you can see the leaf primordia forming at the center of each of these spheres. At this stage of growth, a small amount of material, (about the volume of a pea) is removed and evenly spread on replate media. Replates are done in pint jars filled with about 75 ml. of replate media. These are then closed with a Suncap and a Mason screw band is carefully screwed on. I make a first replate bottle for each one or two expected final bottles. It is very important not to spread too many protocorms at this stage or they will become to excessively crowded as they grow. I purchase replate media pre-mixed from Gallup and Stribling. It comes in a can as a concentrate and you only need to add water. I use tap water as Berkeley tap water is very pure (about 38 p.p.m. of total dissolved solids/gallon). Each can of produces 2.3 liters of media. The only modification I make to this media is the addition of 5 grams of Charcoal. It is my firm belief that charcoal darkened media is beneficial to growth. Roots disperse evenly in dark media. They tend to clump in the center of clear media. Evenly dispersed roots make separating plants much easier with less root damage. Thus far I have never found a better media than Gallup & Striblings.

Replates are grown under ordinary 4' fluorescent lamps at about 300 ft. candle. It is important that the flask room be kept in the mid 70's F. Excessive heat will cause problems. I chose lights with electronic ballast to minimize heat. In areas where summers are hot, it may prove beneficial to run lights at night instead of during the day. I use a photo period is 12 hours. Within a few months small plantlets should grow to about 1/2 - 3/4 inches tall. Replate these a second time using the forked end of the 12" long x 1/8" stainless rod. About 35 plants should be placed in each final replate jar. This hooked rod is thin enough to quickly sterilize with a torch and much more comfortable than tweezers. Be careful and make sure the rod is cool before using.

It is important to note a selection process has already begun. Enough material was initially replated to allow selection of only the fastest and best growing seedlings. I discard more than 90% of the plant material at this stage. The goal is to select plants based on vigor, i.e., fast growth. I carry this process of selection from first replate all the way through to blooming plants.

Final replates take about 4-6 months to reach the size ready

for community pots. The ideal size is about 2-3 inches tall. I try and time my final replates so the plants will be ready to take out around April or May. I have found this an ideal time to take plants out of bottles and plant them in community pots. It is my firm belief that at this stage you should make 3 to 4 times the plants you expect to bloom. You should cull plants at every stage possible for vigor.

Part II

Community Pots

Removing plants from a flask and establishing them in a community pot is an art. There are some definite things one can do to increase the chances for survival. First and foremost is starting with flasks of quality crosses. A flask should be in vigorous growth when received. Avoid flasks that are overgrown where the media is close to exhaustion. I have had more luck taking plants out of flask when they are 2-3 inches in height than "stopper pushers".

Excessively large plants tend to experience a lot of damage when removed from the flask. In addition, the pH of the media takes a sharp drop as plantlets grow and digest the nutrients in the media which causes deterioration of the roots and a shock upon replating. Another way to give yourself an advantage is to purchase flasks at a time of the year when seedlings will be in rapid growth and under minimum stress upon transplanting — springtime! It is difficult to establish plants right out of the bottle when the weather is excessively warm or in the winter when seedling growth grinds to a halt. I have learned to hold plants at the mother and first spread stage and do my final replates in late fall or early winter so the final replate is ready for spring planting.

I use several methods to remove seedlings and the best one depends on the individual flask. If seedlings are not excessively grown, I fill the flask with tepid water and use a bent hook to tug them out of the media and float them to the surface. When a flask is overgrown or roots entwined, I wrap the flask in newspaper and give it a wack across the bottom with a hammer. Roots separate best underwater. As an anecdote, I remember the experiments I did with dark versus light media. I wanted to test a blackened media without using charcoal as the blackening agent. I used graphite. Darkened media works better than un-darkened media because roots to disperse evenly throughout a major advantage in preventing damage when unflasking. It made no difference whether I used charcoal or graphite, the results were the same, however, plants grown in graphite were sure easy to separate, the graphite acted as a lubricant!

Media is rinsed from the roots of plants and all extra growths and proliferations are removed and discarded. Plants are sorted by size starting with the largest and set down on newsprint. This is the time to begin culling the weaker and inferior plants which should be thrown away. I

plant the selected seedlings in community pots which are 4" X 6" and a depth of about 2 1/4" purchased from J.M. McConkey in Sumner WA. Unfortunately, these are sold by the case. To solve this problem I often order a case with a couple of friends. A good alternative to the McConkey pots are community pots sold by OFE International. Seedlings are planted into a mixture of pre-moistened fine fir bark with about 25% course perlite added. This media is stored in a rectangular plastic bin with a lid to keep it from drying out. It is convenient to work in this bin when plating out compots. I place the empty compot in the bin and slope it a 45 degrees, enough of an angle so I can lay down a layer of bark about 1/2" thick without it moving. I then lay about 5 seedlings on top of this row and add another layer of bark mix. I alternate this way until the last seedlings are in the compot. It takes a little practice to get the media the right moisture content and to set the compot at the correct angle so things remain stable while it is filled. When this system works, it works very well and is fast. After completely planting out the compot I rotate the ends and give the whole mass a few taps. This packs the media after which I add what is needed to fill in any empty space created by tapping.

The compot is placed in the sink and the deck hose (the hoses used to rinse of dishes) is used to water in the seedlings and push around the loose bark. I do this work at the kitchen sink at night and place finished compots on a plate under a 25 watt light held about 2 feet away until morning. In the morning, the new compots are placed in the greenhouse. I never put a wet compot in the greenhouse as pathogens can take hold when leaves are wet and damaged. There is always some mechanical damage to seedlings fresh out of the flask, a source of invasion for pathogens. Using this procedure, I have found it unnecessary to use any fungicides. In fact, it has never made any sense to me to take something out of a sterile flask and then dose it with fungicide, most of which are phytotoxic! Compots have grown best for me at temperatures higher than mature plants and under less light, approximately 400-600 foot candles. I have seen other media used with success such as peat-perlite and NZ sphagnum moss. I prefer to use bark-perlite.

Over watering is a likely mistake growers make with compots. Assuming the temperatures in the greenhouse are reasonable and the bark-perlite mix was well moistened before planting, compots can go close to a week before they'll need water. Excessive water will not compensate for an excessively dry or hot environment, it will just kill the roots or the plants.

Individual Plants

Compots take from 9 to 16 months to grow to a stage where they need to be transplanted. When plants develop

bulbs about the size of a quarter I remove them from the compot and plant them in individual "rose" pots. Rose pot are 2 1/4" square pots, 3 1/2" deep. Again, I use my standard bark-perlite mix. The advantage of using deep pots is better growth. I speculate that as the water leaves a deep pot it effectively draws in a large volume of air to replace it. I have better luck with deep pots than shallow pots. At this point it becomes evident that the larger seedlings are at the end of the pot where the largest plantlets were first placed. Most seedlings will continue this throughout their growth, i.e. the largest to come out of the flask will continue to be the "leaders". You may want to re-constitute the smallest plants into a small compot and grow them on for a while. I am now throwing these away. Less-than-scrupulous dealers offer these runts for sale, holding back the leaders for themselves -- caveat emptor!

As an ardent hobbyist, I plant a few hundred rose pots out each year (perhaps it is more like 500). Labeling these is quite a chore so I purchased a dot matrix printer, a label program for my IBM clone, Labels Unlimited and plastic computer labels from Economy Labels, FL. It is a piece-of-cake to run out high quality labels in the exact quantity you need. The program, Labels Unlimited allows one to consecutively number labels. I place label #1 in the largest seedling and work right down the line. Tracking the leaders is fun and informative. Seedlings in rose pots are handled like mature plants and many will begin to spike within 1 year. It is best to remove bloom spikes on such small plants for it sets them back to let them bloom. Even I, after more than a decade of growing Odont seedlings sometime let these bloom! If one were to compare the weight of a first bloom attempt by an Odont seedling to its eventual mature weight it would not surprise me to find Odonts will bloom on smaller plants than any other orchid.

Blooming Size Plants

When well grown some seedlings will be ready for 4" pots within a year. Most will be moved first to 3" pots, then 4" and larger as the years pass. Odonts grow well with night temperatures in the mid 50's and day temperatures held in the 70's whenever possible. At least a ten degree difference from day to night temperatures is important. My seedlings and mature plants are grown at 1800 foot candles. More light would probably be better; however, I cannot maintain cool greenhouse temperatures at greater light levels. Better too dark than too hot! I fertilize at every watering with 20-20-20 fertilizer. I start with an application of fresh water and follow this with fertilizer. There is a trend now to avoid fertilizer with high urea contents. This is because bacteria needed to break down urea to a usable form do not grow vigorously in cool greenhouses. Some of my friends have moved to fertilizer marketed under names like "Peat-lite", etc. These are low to free of nitrogen in the

form of urea. I continuously use a wetting agent in my fertilizer throughout the year. This is the subject of some controversy with fellow growers. I like wetting agent because it reduces the surface tension of water, making leaves dry faster and pots drain faster in winter and reduces standing water on the leaves and leaf axles of plants. Ants and mealy bug are never a problem when you use wetting agent. These are killed because the wetting agent drowns them. A final advantage is re-wetting dried out media. I steadfastly hold the wetting agent helps plants stay moister in summer and dryer in winter.

Mature plants are re-potted yearly. I like to do this in late winter when the plants are under little stress from heat and can tolerate the inevitable root loss resulting from re-potting. Insects are, for the most part not very problematic with Odonts. Watch for spider mite in the dryer summer and aphid on bloom spikes. I have not found Odonts easily damaged by most common insecticides. Plants that are not vigorous or don't grow should be discarded unless they have some extraordinary value. Cutting tools should be heat sterilized as the spread of virus is a problem in Odonts. It is normal for Odonts to drop leaves when the light levels climb rapidly in the spring. If I had to name the number one problem I have in growing Odonts (besides bad genetics) it would be bush snails. These cosmopolitan snails are about 3-5 mm in diameter and live in the pots. They love to eat the root tip meristem of emerging roots and really slow down plants. Observation and diligence help control these pests. There's always a fresh supply on a newly purchased plant or batch of seedlings. I routinely broadcast granular metaldehyde snail granules about every other watering. Most of the older growers I know swear they don't have bush snails. The reason, I suspect is most likely prespyopia rather than no bush snails!

Odont leaves are easily bruised by moving them about. Try not to move them if not necessary. Once a flower spike initiates it is best not to rotate or move the plant or flowers may not lay out properly on the stem. You will have to decide at some stage of spike development how you wish to stake a spike. The AOS encourages a natural, arching spray. Try this with a 120mm modern tetraploid and see what you get! For larger flowers it is best to stake straight up or the spike will likely break as the flowers open or are watered. Most Odonts will continue to mature for several years from first blooming and the best results may take 4-5 years to see. Sadly, some Odonts that show great promise in first bloomings never perform well again

Things To Come

Growers of the Odontoglossum alliance can look forward to plants capable of growing well in warmer climates with better shape color and size. Alan Moon, Curator of

Orchids at the Eric Young Foundation has demonstrated the superb results when one follows the laws of genetics. Alan, with the assistance of Professor Don Wimber sorted out ploidy and applied the results to his breeding program. He has artificially induced polyploidy in species and primary crosses and the results are already becoming evident. I have tried my hand at hybrids with mixed results. Using a stud plant of Mansell & Hatcher of England, Oda Aviewood, some stunning and dramatic picotee flowers of incredible drama have been created in one generation. I am also introducing Odont (or more likely Oncidium) species native to the tall paramo grasses of the Andes in hopes of producing self erect spikes. With increasing numbers of Odont growers the availability of quality of plants should increase. Having a newsletter for Odontoglossum growers disseminates information and ideas. The next decade should be a very exiting one for the Odontoglossum Alliance.

"Odontoglossum - Monographie und Ikonographie",
Leonore Bockemuhl, Brucke - Verlag Kurt Schmersow,
D-3200 Hildsheim, West Germany, 1989.

Sigma Chemical Co., PO Box 15408, St. Louis, MO
63178-9916, P.N. 1-800-325-3010.

Gallup & Stribling, 645 Stoddard Ln., Santa Barbara, CA
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Odontoglossums

by Gerald McCraith

In the south-eastern regions of Australia, conditions are very suitable for the growth of Odontoglossums, and those genera which form the Odontoglossum Alliance.

Generally speaking, a glasshouse or a plastic construction is necessary, with suitable equipment to contend with the outside elements. The cold of winter is not a great problem to overcome to maintain a minimum temperature of 10 C (50 F). The chief problem is to provide protection against the strong bright light during most of the year, and to keep the temperature

down during the hot and dry conditions that exist during the summer periods.

Modern equipment comprising evaporative coolers, and effective shade cloth makes the challenge so much easier for the enthusiast. For the purpose of this paper, we will see that the grower who may have had a great interest in Cymbidiums, has decided to turn his attention to the Odontoglossum family. This choice may have been made because this family of orchids must be considered the most colorful of all orchids, and also that they flower all the year round, and not have a set flowering season.

WATERING.. this is a difficult factor to attempt to lay down hard and fast rules, and is governed by the season, the degree of growth, and more importantly, the type of potting medium being used. The Odontoglossums should never be allowed to dry out at any time of the year, and when ferns and other similar plant life grow well, it is a good indication that conditions are favorable. As the daylight lengthens during the heat of the summer, light night watering can be very beneficial to the well being of the plants.
VENTILATION.. This is an important factor at all times of the year, the internal air should be kept in a state of mild agitation at all times, and must be linked with moist surrounds to provide a pleasant buoyant atmosphere. Too much air movement and bright light will be the cause of rapid evaporation.

POTS.. this is an important stage to consider, while terra-cotta pots are considered the best for Odontoglossum growth, the disadvantages are great, as opposed to the plastic pot. Size, weight, breakage, grow slimes easily, and also dry out much more quickly than the plastic pot. Never mix these pots in a collection.

SHADING.. in the southern hemisphere, very little shading on the glass is necessary during July and June, during August, a very light coating on the glass will be necessary, by the end of August, we give another light coat before covering with 70% shade cloth. This is left on until the end of April, at the end of May, the paint wash is brushed over to allow the extra light. The Paint wash that is used is a plastic vinyl paint broken down with 7 parts water, this is rolled on

with long handled roller, if made stronger, it will prove most difficult to thin when the time arrives. The leaves of some *Odontoglossum* hybrids will pink or bronze more readily than others, but these should be used as sensors that indicates a little more shading is required. While this bronzing may look attractive, it is really a mechanism within the plant to provide protection against the stronger light, if the bronzing is allowed to deepen, possible leaf fall may result in due course. During our summer period, we depend on the efficiency of the evaporative cooler which cuts in at 22 C. (70 F). During the warmer weather, this equipment does not allow the temperature to exceed 32 C (90 F) within the greenhouse.

POTTING MEDIUM...in my travels visiting many growers who are involved growing *odontoglossums*, I never cease to be amazed at the variety of various mixes used successfully. The important factor was an open mix, and how it was watered, and its frequency. It is often a case of what is available locally in the economic sense. I can remember the time when we were advised that *Osmunda* fiber, and sphagnum, with all of the labor that was required, was the only medium that should be used with *Odontoglossums*.. I wonder if anyone uses this commodity now.

The medium that I've used for some time now is:

- 10 parts medium pine bark
- 2 parts peanut shells
- 10 parts river pebbles 5 to 8 mm
- 2 parts *Quercus* oak leaves
- 10 parts perlite 500
- 1/2 part hoof & horn coarse

I use this mix for all my orchids, including many that enjoy the warmer temperatures.

FERTILIZING... I believe that many orchids are over fertilized, and is possibly one of the greatest causes of failure among growers. Unless one has a reasonable knowledge of chemistry, a grower often wonders if it is good salesmanship, or good advice. I believe that the *Odontoglossum* only requires fertilizing for four months of any one year, in addition to that which may be in the pot. The root system of *Odontoglossums* are never as vigorous as compared with those of *Cymbidiums*,

Cattleyas, *Dendrobiums*, etc.

The new root system will come from the new growth that is developing, and from this stage until the bulb has matured on this leading growth that the plant will benefit from the liquid feed supplement, after this period of time, the fertilizer is wasted and in fact, helping to break the potting medium unwanted by the plant.

While this new growth is developing, so is the embryo flowering bud, unseen for the next three or four months when the tip of the spike will be seen immersing from the basal leaf that is tightly wrapped around this bulb. From this point, the spike develops rather rapidly, extending 3/4 of its ultimate length in the next five weeks. Staking should be a necessary step in the plants management, until the buds develop and ultimately open in about 100 days from when the tip of the spike was initially noticed.

Companion orchids that can be grown in the same conditions that you developed for *Odontoglossums* are:- *Masdevallias*, *Miltonias*, *Paphiopedilums*, *Lycaste*, *Sopronites*, and a host of other genera.

Always remember that the *Odontoglossums* are 'alpine plants'; often in the clouds, or have a cloud cover not far overhead, in a very bouyant atmosphere and not subject to hot drying winds. Shrivelling of the leading bulb is a sure indication that the root system is in trouble. This plant should be knocked out of its container, cleaned up, dead roots cut away, wrap in sphagnum moss to be potted in the smallest possible pot and left until the new root system is well under way. The successful growing of *Odontoglossums* is a challenge, but when the conditions are right, these magnificent orchids grow and flower with ease, they are most rewarding and never fail to attract attention.

107 Roberts Street
Essendon, Victoria 3040
Australia

Advertising Policy

The Board of Directors of the Odontoglossum Alliance initiated an advertising policy. It is the intention of the Alliance to support commercial suppliers of alliance material. Two forms of advertising will be made available: 1. Mail lists and, 2. Advertisement in the Newsletter.

1. Mail List.

For those suppliers who wish to do their own mailing the Alliance will supply a copy of the membership list and a set of mailing labels. The cost for this is \$5.00. We ask that in using the mailing list to advertise alliance material that members of the Alliance receive such advertisement a reasonable time ahead of other advertising.

2. Advertisement in the Newsletter.

The Newsletter will include in it's mailing a supplier's advertisement for alliance material. To use this method the ad must be supplied on 8 1/2" x 11" , black and white only, reproducible copy. The Newsletter will reproduce the ad and inclose it in the next mailing.

Receipt by

15 April	for the	May letter
15 July	for the	August letter
15 October	for the	November letter
15 January	for the	February letter

The cost for this service is \$30.00. Our present circulation rate is over 100 and growing. For running an ad at these rates we ask the material advertised be announced as available to our members a reasonable time before it is announced elsewhere. We will also supply you with a sheet advertising membership in the Alliance and ask you to enclose it with your orders.

Send your request for the mailing list and or Ad to:

Odontoglossum Alliance
John E. Miller
P.O. Box 38
Westport Point, MA 02791

British Odontoglossum Alliance Organized

A British Odontoglossum Alliance has been organized with Allan Long, Chairman. A meeting of interested persons was held on 14 February 1993. In addition to Allan being elected Chairman, John Hainsworth was elected Secretary and Gordon Nash - Treasurer. John Hainsworth, 52 Weaste Lane, Thelwall, Cheshire, WA4 3JR, Phone 0925 261791. Gordon Nash, 7 Bransdale Close, Altofts, Normanton, West York WF6 2SL. Alan Long is Director, Mansell & Hatcher, Ltd., Cragg Wood Nurseries, Woodlands Drive, Rawdon, Leeds, LS19 6LQ.

A cooperative program was initiated between the British Alliance and the American Alliance. The American Newsletter will be expanded to include articles and notices from the British Alliance. The Newsletter will be sent to Britain in a reproducible form and be distributed by the British Alliance to its members. The members of the American Alliance will continue to receive their Newsletter direct. Any current member may elect to be a member of the American Alliance by paying the appropriate dues and any current member may elect to become a member of the British Alliance by paying those appropriate dues. All British members have receive a special dues notice giving them the election of membership.

New Zealand Odontoglossum Alliance Newsletter Available

The New Zealand Odontoglossum Alliance Newsletter is available to any member for the addition yearly sum of \$2.00 additional dues. This letter will be sent out with the next American Newsletter after it is received in the US. For those interested in receiving this newsletter there is a box to be checked on the dues renewal form.

Dues Notice for June 1993 - May 1994

The annual dues notice is contained in this newsletter mailing. Dues for the year need to be submitted before the mailing of the August 1993 Newsletter to receive the mailing. Dues for mailing within the United States are \$10.00 and for mailing outside the United States are \$15.00 for the year. In addition if you wish to receive the New Zealand Odontoglossum Alliance Newsletter please check the box on the notice and add \$2.00 to your dues check.

I changed computers in the last month and lost the computer version of the mailing list. I had retained a back-up paper copy. However I may have missed if you have already paid your dues for the 93-94 year. If so send back your notice and so indicate to me.

I remind you also to vote for six directors. The results will be announced in the August Newsletter.

Send your vote and dues to:

Odontoglossum Alliance
P.O. Box 38
Westport Point, MA 02791
Attention: John E. Miller

FUTURE MEETINGS OF THE ODONTOGLOSSUM ALLIANCE

A meeting of the Odontoglossum Alliance will be held in conjunction with the Santa Barbara Orchid Show on Friday 11 March 1994. The meeting will be held at the Miramar Hotel. It is planned to have four to six speakers. Details of the meeting will be announced in the August 1993 Newsletter. Jerry Rehfield as agreed to be the local coordinator for this meeting.

The Odontoglossum Alliance will sponsor a set of talks on Odontoglossum Alliance topics at the Greater New York Orchid Show to be held in New York on 23-27 March 1994. Dr. Richard Kaufman has agreed to be the local coordinator for these talks. Details of the topics and speakers will be announced in the August 1993 Newsletter.

The Odontoglossum Alliance will hold its 1995 meeting in conjunction with the Western Orchid Conference to be held in Portland, Oregon 26-30 April 1995. This will be at the Red Lion Hotel - Lloyd Center. Details of this meeting will be announced in a future newsletter.

FCC Awarded

Odontocidium Tiger Hambuhren x Odontoglossum Herb Thorenson variety 'Roger Williams' was awarded an FCC/AOS with 90 points in judging at the Greater New York Orchid Show on 31 March 1993. Roger and Terry Williams of Oyster Bay, NY were the exhibitors. The description: Spectacular golden yellow flowers with lighter accent near column, beautifully arranged on an arching inflorescence with two side branches; oxblood spots are striking accents on the sepals and petals; lip intensely bright canary yellow with crest lightly streaked with oxblood; first bloom seedling. There were 23 flowers on a branching spike. The measurements were as follows: Natural spread 8.4" horizontal, 9.0" vertical.

ODONTOGLOSSUM HISTORY, HYBRIDIZING AND JUDGING

by Sue Golan

Student, Mid-America Region

December 1992

History and Taxonomy

The first mention of *Odontoglossum* was in a monograph published in 1816 by Humboldt Bonpland and Kunth.(1) The name, from the Greek, "Odonto" meaning tooth, "Glossa" meaning tongue, refers to the tongue-like lip and the dentate callus.

The type species of the genus, *Odontoglossum epidendroides* (H.B.K. 1816), was rediscovered in 1982, enabling taxonomists and Leonore Bockemuhl especially to "review and rearrange the genus according to natural criteria". Since hers is the most recent book devoted specifically and entirely to *Odontoglossums*, I have used her as the primary authority on this subject. (Hawkes speaks of the need for critical revision in this genus in his *Encyclopedia of Cultivated Orchids* of 1965.)

As of the publishing of her book in 1989, there were 325 valid names in the genus *Odontoglossum*. Through the transfer of species to other genera, she reduced the number to 166. Removing synonyms (32), those considered to be varieties or subspecies (6), and those recognized as natural hybrids (70), she has reduced the list to 58 species. (See list, page).

Geography

The geographic distribution of all the true *Odontoglossums* is in South America, specifically in the montane regions of Venezuela, Columbia, Ecuador, and Peru at elevations of 1600 to 3000 meters. The addition to the list of former "*Odontoglossums*" now known as *Rossioglossums*, *Osmoglossums*, *Cyrtochilums*, *Cuitauzinias* etc. (See complete list, page xx) extends the range to Mexico and Central America.

In 1927 Sanders Orchid Guide referred to *Odontoglossums* as the most popular family of the cool house orchids.

(1)There is a fascinating article in the *Orchid Digest*, July-August 1977 by Don Herman. He tells of the travels of Bonpland and Humboldt in South America, Cuba, and Mexico. After journeying five years and making many scientific, horticultural and geographic discoveries, they were invited to Monticello by President Thomas Jefferson. They spent three weeks with him in route to Europe.

Columbian *Odontoglossums*

Five Columbian species were key parents in the hybridizing of *Odontoglossums*: *crispum*, *harryanum*, *luteo-purpureum*, *nobile*, and *triumphans*. All except *harryanum* are in the subgenus *Odontoglossum*. *Harryanum* is in the subgenus *Nevadensia*.

ODONTOGLOSSUM CRISPUM

The most famous and popular of the *Odontoglossums* is surely *crispum*, a species discovered in 1841 in the Columbian Andes at elevations of up to 12,000 feet. It is the most variable of the species. During the proceedings of the Third World Orchid Congress in 1960, Mariano Ospino Hernandez speaks of the existence of 200 known varieties of *Odontoglossum crispum*. Bockemuhl considers some of this splitting the custom of the times. Still where have all these beauties gone? The form of the flower varies according to its geographical distribution and the four different types are recognized horticulturally:

The Pacho type occurs to the north of Bogota and has rounded flowers with wide sepal and petals.

Further north in Velez, a smaller flowered rounded rose-shaded flower is known as the Velez type.

A more open, star-shaped variety comes from the region of Fusagasuga, south of Bogota, and is known as the Fusa type.

The Popayan type presents many small flowers, often with branching inflorescence (variety *Lehmannii*).

Additionally, the 3"-4" flowers can range in color and spotting from the common white through yellow, rose, and violet with spotting that varies in size, color and quantity. "This one species has done more to improve the flower size and shape of *Odontoglossum* hybrids than any

other." (1) It is the dominant parent for white flowers, often with some purple markings. There are 21 awards to *Odontoglossum crispum* through 1991 including two F.C.C.s the more recent being two H.C.C.s in 1990.

ODONTOGLOSSUM HARRYANUM

Odontoglossum harrayanum was combined with *crispum* to make the first hybrid within the genus. *Odontoglossum Crispo-Harrayanum* (Vuylsteke-1898). The inflorescence of *Odm. harrayanum*, up to 24" long and occasionally branching, produces 4 or 5 three inch flowers. The coppery brown sepals and petals are dappled with yellow. The stunning white lip is marked in bright lilac. This species is reputed to grow slightly warmer than *Odontoglossum crispum* thereby adding not only color but also some warm tolerance. It has received two awards.

ODONTOGLOSSUM NOBILE

What we often refer to as *Odontoglossum pescatorei* is actually *Odontoglossum nobile*. It resembles *Odontoglossum crispum* but is more floriferous and has a larger lip. It has a similar history of confusion because of its variability. The 2 to 3 inch flowers vary from pure white to yellow with magenta markings, varying from pale to heavy spotting and striping. Variety *Veitchianum* exhibits dense concentric rose colored spots and stripes. *Leucoanthum* variety has white flowers with yellow in the center only.

ODONTOGLOSSUM LUTEOPURPUREUM

Odontoglossum luteopurpureum, also an extremely variable species, has chestnut brown sepals tipped with yellow and yellow petals heavily marked with chestnut brown blotches and a white or yellow lip also marked and spotted with brown. It has two awards.

ODONTOGLOSSUM TRIUMPHANS

Odontoglossum triumphans is synonymous with *Odontoglossum spectatissimum* according to Bockemuhl. The three inch flowers, also variable in their marking, are yellow and usually spotted and blotched chestnut brown.

HYBRIDIZING

The first generation of these species produced:
Ardentissimum (*crispum* x *pescatorei*) 1898
Crispo-Harrayanum (*crispum* x *harrayanum*) 1898

Rolfeae (*harrayanum* x *pescatorei*) 1898
Queen Alexandra (*crispum* x *triumphans*) 1902
Souvenir de Victor Hye (*harrayanum* x *luteopurpureum*) 1900

These crosses duplicated some natural hybrids discovered around that time. The addition of these primaries to the breeding pool allowed for such rapid expansion that the number of *Odontoglossum* hybrids tripled in the second decade of the 20th century and soon reached a peak unequalled since. During the years 1914-1918 some excellent hybrids appeared with no documentation of their background. Several of these have been important parents such as *Odontoglossum Georgius Rex*, *Odontoglossum President Poincare* and *Odontoglossum Dusky Monarch*. *Odontoglossum Georgius Rex* made an enormous contribution to our modern hybrids through *Odontoglossum Llewellyn* which produced *Alorcus* which is a parent of *Edalva* (7 AOS awards), a parent of many yellow hybrids. *Odontoglossum Nevon*, another *Georgius Rex* hybrid, has produced *Opheon*, *Stropheon* (10 AOS awards) and *Ophyras* (3 AOS awards). Other highly awarded *Odontoglossums* of the Columbian type are:

Connero (9)
Golden Ransom (11)
Kopan (9)
Perolia (8)
Quisto (7)

The highly awarded *Golden Ransom* has in its parentage:

luteopurpureum 1x
pescatorei 4x
harrayanum 4x
crispum 6x
triumphans 7x

A current trend in Columbian *Odontoglossum* which is beginning to be seen at shows on the West Coast is xanthotic or albino *Odontos*. Their breeding originated at McBeans with six plants purchased from Charlesworth in the twenties. *Odontoglossum Parade "Goldilocks"*, a xanthic clone by Vacherot and LeCoufle, is a prominent parent for this type of breeding.

MEXICAN ODONTOGLOSSUMS

ODONTOGLOSSUM BICTONIENSE

Third only to crispum in its use as a parent, *Odontoglossum* (*Lemboglossum*) *bictoniense* has enjoyed enormous popularity in the last ten years. It occurs in 68 crosses whereas it only appeared in one cross up to 1946. A vigorous grower with erect spikes up to 120 cm., it has 20-40 successively opening 1 1/2 inch flowers. They are yellow-green spotted brown with a striking ruffled white or pink spade lip. It grows in Guatemala and Mexico at altitudes of 6-7 thousand feet and can bloom several times a year. Used mostly as a pod parent, it imparts some tolerance to warmth and bright light, transmits red to violet spots to its progeny and, in general, produces strong red to violet colors. Its compact plant size and erect inflorescence dominate its hybrids. Many of its hybrids have been awarded. Those with another *Odontoglossum* parent are:

- Anneliese Rothenberger (Odm. Goldrausch) 5 awards
 - Bicnek (Odm. Nakned) 2 awards
 - Bic-Ross (Odm. rossii) 1 award
 - Gudrun (Odm. Costro) 1 award
 - Margrete Holm (Odm. Hanskoch) 1 award
 - Midnight Miracles (Odm. carniferum) 6 awards
 - Paradiese (Odm. Moselle) 2 awards
 - Red Nugget (Odm. cordatum) 5 awards
 - Stamfordiense (Odm. uro-skinneri) 5 awards
 - Summit (Odm. brevifolium) 5 awards
 - Ursala (Odm. Phioman) 4 awards
- Out of 20 *Odontoglossum* crosses made over the years with *bictoniense* as one parent, 10 have been awarded!

ODONTOGLOSSUM ROSSII

Odontoglossum (*Lemboglossum*) *rossii*, fifth in the number of hybrids made with it as a parent in this genus, is a small Central American species with 2-4 flowers of two to three inches on short scapes. The variety *Majus* has the largest flowers. It can be found at high elevation in the cloud forest. The white starry blooms have brown markings sometimes flushed with pink. There are many other wonderful *Odontoglossums* which may be seen occasionally at shows such as *maculatum*, *cervantsii*, *cordatum*, *pendulum*, *grande* etc. They are seldom used in hybridization and rarely be seen on the judging

table.

JUDGING

CRISPUM TYPES

The judging process began early in the cultivated life of *Odontoglossums* when the early collectors searched for plants with rounded flowers and rejected those with narrow sepals and petals. Those of us who seldom see these plants on the judging table (no less in situ) will have to really research the reference books when they make their rare appearance. The general form, which originally was given ten points in the first Handbook on Judging and Exhibition, now receives a fifteen point allowance. Ferguson Beall pointed out that this category might be called the "overall impression of sense of proportion of the flowers." These may be the most important points of all, especially for those who do not point score each section individually. The impression received initially, be it good or bad, is hard to alter without a careful study of the flower and a good look at all its parts. The ruffling of the sepals and petals and lips are a desirable aspect of many *Odontoglossum* species and hybrids. It should be pleasing to behold, never torn or uneven looking. Since the original species were flat and rounded, these characteristics are expected in the modern hybrids. The crystalline texture should be apparent in the white clones, while the colored clones may be expected to be velvety in texture. In order to examine in which direction judging has gone, I compared the earliest described *crispum* award to the most recent awards:

1953

Carbone's variety 86 points
 Natural spread 9.2 cm
 Petal width 3.8 cm Sepals 3.2 cm

1990

Nathan 76 points
 Natural Spread 10.5 cm
 Petal width 5.5 cm Sepals 4.0 cm

1990

Misha 77 points
 Natural Spread 9.0 cm
 Petal width 4.3 cm Sepals 3.0 cm

With no photograph of "Carbone's" variety or of "Nathan" which was marked down for "curling of the lower lip edge", I imagine the judges felt comfortable in awarding clones which were larger or which had wider sepals and petals, though they only ventured HCC's.

BICONIENSE AND OTHER SPECIES

HYBRIDS

When crossed with crispum type hybrids, *Odontoglossum biconiense* is used to provide vibrant color and spotting on vigorous plants. The size of the flowers will decrease. Its shape is not dominant so that even in the first generation hybrids, fairly rounded flowers in vivid hues are obtained. Even its spade lip is somewhat recessive. Excellent at producing dark red to violet colors on *Odontiodas*, it brings out orange tones with red pattern when crossed with clear yellow *Odonts* such as *Paradise* (*biconiense* x *Moselle*). The upright inflorescence of *biconiense* dominates in its hybrids. They will thrive and bloom in warm climates such as Florida where neither of the parents will thrive. It can pass on its habit of blooming several times a year to its progeny. Milton Carpenter says you can spot a *biconiense* hybrid across the room. The way they've been gathering awards, they've been seen and they've conquered.

ODONTOGLOSSUM SPECIES

(BOCKEMUHL)

angustatum, armatum, aspidorinum, auriculatum, auropurpureum, blandum, cirrhosum, claviceps, compactum, constrictum, crinitum, crispum, cristatellum, cristatum, crocidipterum, cruentum, dipterum, epidendroides, gloriosum, hallii harraynum, ioplocon, ixioides, juninense, lacerum, leucopterum, lindenii, lindleyanum lucianianum, luteopurpureum, matangense, mirandum, naevium, nevadense, nobile, ramulosum, reversum, revolutum, rhynachanthum, sceptrum schillerianum, spathaceum, spectatissimum, subuligerum, tenue, tetraplasium, tripudians, wallisii, weirii, wyattianum

Genera to which Bockemuhl transferred 137 untypical *Odontoglossum* species

Amparoa, Aspasia, Cochlioda, Cuitauzinia Gomesa, Lemboglossum, Maxillaria, Mesoglossum, Mesospinidium, Miltonia, Miltonoides, Miltonopsis, Oliveriana, Oncidium, Osmoglossum, Otoglossum, Rossioglossum, Rhynchostele, Solenidiopsis, Symphyglossum, Ticoglossum

IMPORTANT ODONTOGLOSSUM SPECIES AND HYBRIDS 1956 - 1990

	# of hybrids	Most Used Species	AOS Awards
<i>biconiense</i>	94	3rd	15
<i>carniferum</i>	10		0
<i>cervantsii</i>	8		4
<i>cirrhosum</i>	39	9th	0
<i>cordatum</i>	9		4
<i>crispum</i>	372	1st	21
<i>grande</i>	3		18
<i>hallii</i>	33	10th	5
<i>harryanum</i>	98	2nd	2
<i>laeve</i>	9		3
<i>luteopurpureum</i>	48	8th	2
<i>maculatum</i>	17		2
<i>pescatorei</i>	93	4th	3
<i>pulchellum</i>	4		3
<i>rossi</i>	8	5th	4
<i>triumphans</i>	58	6th	2
<i>uro-skinneri</i>	58	7th	6

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599 Old Mill Road
Lake Forest, IL 60045

ASPECTS OF THE ODONTOGLOSSUM ALLIANCE

John E. Miller
Presented at the 14th World Orchid Conference
29 April 1993

I am pleased to be talk about "Aspects of the Odontoglossum Alliance" and to be followed by a number of distinguished contributors to the growing of the odontoglossum alliance species and their hybrids. The Odontoglossum Alliance is an organization within the structure of the Orchid Society. The American group, which I represent is affiliated with the American Orchid Society. There is an Alliance in New Zealand, where Ron Maunder is the Editor of it's newsletter, the Australian Alliance led by Gerald McCraith, and a newly formed Alliance here in Great Britain with Allan Long as Chairman. While my remarks are from the perspective of the American group, which has many members outside the United States, I would hope they will be shared in spirit and in practice by all the Odontoglossum Alliances.

The Odontoglossum Alliance is devoted to increasing the knowledge, availability, and culture of these lovely orchids. I define the Alliance as those plants of the Odontoglossum species, those species which breed with odontoglossums and all of the resultant hybrids.

The fundamental tools of the alliance to achieve its objectives are the contributions of its members, newsletters, issued quarterly, and the annual alliance meetings. Additionally there are a number of special projects, led by one of the alliances, with invited participation and international benefit. We are devoted to the exchange of information on all aspects of the alliance and we are open to membership by any who wish to join us. Tomorrow there is, at this World Orchid Conference, an International Odontoglossum Alliance Forum with the theme of enlarging the culture of the Odontoglossum Alliance. The structure of this forum is patterned after our annual meetings and is serving as an International annual meeting. We have selected a theme which is "Enlarging the Culture of the Odontoglossum Alliance". We have four distinguished speakers, Philip Altman of Australia, Dr. Howard Liebman of the US, Chris Channon of Great Britain, and Gerd Rolke of Germany. The session chairman is Mike Tibbs also of Great Britain - a truly international representation. Our program includes not only these four lectures on topics of current interest and recent development, but also an opportunity later in the day and evening, for the Alliance members and all those interested, to spend time in discussions. This day is culminated with a dinner at which Allan Moon, Curator of the Eric Young Orchid Foundation will speak informally. I am hopeful that this international beginning for the Alliances of Odontoglossum growers will be followed by international meetings at all succeeding World Orchid Conference. We have selected this theme; "Enlarging the Culture of the Odontoglossum Alliance" as one of several means to increase the potential number of orchid growers, world wide, to have these beautiful plants among their collections. Three major aspects are fundamental to achieving this objective. They are (1) the plants natural cultural environment, (2) current, accurate, available alliance information, and (3) a plentiful known supply of alliance plants available at reasonable cost. Let me address each of these in turn, describe current activities of the alliance and suggest future directions for our alliance, the

orchid organizations and the commercial orchid community.

The odontoglossum species natural environment has night temperatures dropping into the low 50 degrees fahrenheit or 10 degrees Centigrade. The day temperatures rise to the low 80,s F or mid 20's centigrade. The humidity is high and moisture frequent. To grow the odontoglossum well one must either live in an area where these conditions exist or emulate these conditions with the aid of modern technology. The further ones local environment deviates from those required by the plants, the greater the cost of emulation. The environment to be concerned with are the heating, cooling and humidity. Modern technology and energy usage is costly and the expense grows greater as the local environment deviates from the natural environment required by the plants. It then comes to the choice of raising the bridge or lowering the water. Provide the environment required artificially or find plants that will grow successfully in the local area environment without excessive expense. I believe the principal problem to enlarging the geographical areas is providing enough cooling to permit acceptable growth and flowering without undue expense. If the night temperatures do not fall enough, then artificial cooling is required, using electricity, the most expensive form of energy. Complicating this is to keep the plants cool enough under sun loads, again an expensive and significant use of energy that increases linearly with heat loads. It has been difficult to find controllable elements that supply high air flow as well as high moisture content simultaneously. Besides the correct temperature and humidity, Odontoglossums, in nature, grow at ultra violet light levels that are high compared to most cultural regions.

If one examines the membership of the Odontoglossum Alliance to see where growers live you find several regions in the United States where the natural climate conditions prevail to permit good culture without excessive cooling. I refer you to the article by Barry Woodson in the May 1992 Odontoglossum Alliance Newsletter on growing odonts in Texas to see the difficulties and expense where both the night and day

temperatures significantly exceed those required for acceptable growth. The areas of reasonable local environment in the United States, are on the West Coast with a large center in San Francisco, across the northern states from Michigan, Ohio, and Wisconsin eastward to New England, and north of New York city along the coast. 90% of the US members of the Odontoglossum alliance live in these regions. In Europe the principal regions are here in Great Britain, France and north into Belgium, Holland, and Germany. New Zealand, parts of Australia, Japan and all of Canada characterize the areas of dominance of the present growing regions. Of course those areas of South America where the odontoglossum species emanate are the ideal growing conditions. Orchid growing in the United States is broadly spread over all states. The American Orchid Society has some 26,000 plus members while the Odontoglossum alliance has some 100 plus members. Many have admired the flowers of the alliance and would like to enjoy them within their own growing environment. They find themselves limited by the natural cultural conditions required to be successful. Enlarging the natural cultural environmental tolerance of alliance material will open large regions of the United states and other areas of the world to the growing of these plants. Creative hybridization with warmer tolerant species has produced plants that will do well in regions where the temperature tolerances rise by about 10 degrees fahrenheit or 5 degree centigrade. This enlarges enormously in the US the practical growing region for the Alliance. If the day and night tolerance temperatures were raised by 20 degrees fahrenheit then the plant is grow-able in over 90% of the US with reasonable means that are no more than the present cost of orchids being grown currently. What is needed is a concentrated and diligent effort on the part of hybridizers to create plants with wider environmental tolerances and award flower quality. Attention to the ada, miltonopsis, brassia, comparettia, aspasia, miltonia, miltonoides, cyrtochilum and other species combined with the enriched flower quality of the odontoglossums, odontioda's and odontocidiums to produce hybrids of wider growing tolerance.

The supply of such material must be known, available, and ample. Work certainly has been done. There are a number of growers working in this direction. Notable among them is Milton Carpenter of Belle Glade, Florida, who has, for a number of years been pioneering intergeneric hybridization of warmer tolerant alliance material. His plants grow well in the environment of successful cattleya and phalaenopsis material. I refer you to his article in the February 93 Odontoglossum Alliance Newsletter. Recent achievements have produced high quality flowers grow-able in more tolerant temperature ranges. If you attend tomorrow's forum you will see fine examples that would enhance any collection. I recommend this direction to the alliance community in addition to the fine work that is ongoing producing new hybrids in the classical odontoglossum, odontioda, and odontocidium lines. One project that would be of benefit in this area would be an exchange program for pollen and the growing of seed pods among varying cultural regions. Current, accurate and available information on the alliance is of major importance and a key to enlarging the culture of the alliance. Most important in the service of the odontoglossum alliance is the newsletter providing information to all members. These newsletters, issued quarterly, contain a broad spectrum of information including; cultural experiences and methods in different geographical areas, beginners information, new breeding developments, species descriptions, history, and editorials on current topics. The New Zealand and United States alliances have quarterly letters, and it is hoped the newly formed alliance in Great Britain will soon follow with a publication. I am pleased that we have worked out a harmonious program between the US and New Zealand alliances for letter exchange. This can be enhanced between us and any other alliances and for our part we are anxious to have the exchange done world wide. In today's economy it is important to keep the cost of information low. It is better to put the money into plants and growing. With modern technology of personnel computers with word

processors, scanners, publication software, modems, and laser printers it is feasible to produce a high quality newsletter at very nominal cost. I produce copy ready material at home, by myself, at no additional cost to the alliance. I believe Ron Maunder does the same in New Zealand. It is especially pleasing to see the color reproductions of very fine quality and at prices today of less than one pound per page. I currently pay \$1.25 per page of color reproduction for amounts exceeding 100 copies. This is half of what it was a year ago and will drop further in the future as technology cheapens hardware. Good color significantly adds to the understanding and enjoyment of the newsletter. Black and white flower drawings and written descriptions cannot stand up to a good clear color picture. As the cost of color reproduction falls we will increase the amount of color in the newsletter.

I undertook the newsletter writing a year ago. Our Alliance in the US was formed in 1988 and up to that time had issued a single newsletter in 1988 and one in 1989. I was fearful I would be faced with struggle for information of suitable quality. Such has not been the case. In fact the opposite is true. I have an abundance of information. Our members have been most generous and forth coming. I receive voluntary contributions. From time to time I request articles from our members on current topics, recent developments or to answer reader requests. I have yet to be denied a request for material. The newsletter is limited to about 25 pages to achieve reasonable reproduction and mailing costs as well as editorial and make-up time. I have a backlog of excellent and high quality material for future letters. Currently the newsletters contain articles on culture in different parts of the world, alliance species description, announcements of interest to the alliance members, new developments, recent advances and awards, comments on shows, history, and material especially for the beginning grower of the alliance.

The growers and would be growers lack a good current text on the culture of the alliance. The publication of the definitive work of

"Odontoglossum a Monograph and Iconograph" by Leonore Bockemuhl was a great addition to the body of knowledge and filled a definite void. What is lacking now is a definitive work on the other species that will breed with odontoglossums. Currently Ms. Bockemuhl has done a description of these species and they are being published in the newsletter.

A text on the culture of the Odontoglossum Alliance is a definite necessity. This was a project that was started in 1989 by the US Alliance. Excellent high quality preliminary material was collected from many contributors world wide. I had volunteered to edit the book. However the task is great and I have not been able to devote time and attention, nor do I have the skill to completing the work. Much preliminary work has been done, both from a material sense and from a production outlook. What was planned was a high quality text at a reasonable price published by one of the best firms with good distribution. The work would contain chapters on culture, species, history, breeding, and growing factors. I and the alliance world would welcome a person who would take this material and move the book to publication. Material for the book is contained in our newsletters and I plan to continue to publish all submitted articles.

It is important for articles on the alliance to be published in the major archival publications of the orchid world including the Australian Orchid Review, The Orchid Review, and the American Orchid Society Bulletin and other large circulation mediums.

The computerization of the orchid registration list by the RHS and the subsequent release of the data on a compact disk is a significant step forward for orchid growers the world over. This has prompted me to give my perspective on the market for the CD medium for the registration information and some recommendations to better serve the Odontoglossum Alliance community. The advent of the personal computer with its reasonable cost and availability of software has significantly changed in the past twenty years. The American market for PC's is the largest market, followed next by the European,

Japanese, Australian and Far East. Further the American market has only two basic types - the IBM (and Compatible) and the Apple. Both of these have large amounts of software readily available. The medium for this software transfer is overwhelmingly the floppy disk (5 1/4" and 3 1/2"). Most PC's have hard disks of 20 to 200 Mbytes of capacity. This grows each year. The compact disk, CD, with its large read only storage capacity is a coming medium. To utilize a CD with a PC you need a CD reader, which today cost from \$300-\$500. The multimedia capability is strongly advertized today, but as yet has little use. It is a coming technology and as such cannot be ignored. Kodak is currently marketing a system whereby you can have your developed film with 100 35mm pictures on a CD. I believe Kodak is the current front runner in the consumer market for CD usage.

The vast majority of American members of the AOS are growers. Further more they seem to grow relatively few genera. For example being familiar with the odontoglossum alliance growers, I observe that with few exceptions, they specialize in the alliance. Their collections may contain a few other genera, but the cultural requirements do not yet permit growers to have a large number of genera, something we wish to change. The current CD as the medium for distributing the orchid registration system has a number of advantages.

1. The system is available now on the market.
2. It contains the complete list of orchid registrations.
3. The addition of the AOS Award data base with pictures adds significantly to the value of the data. There are some disadvantages.

1. Relatively few American PC owners have CD readers.
2. The cost to the buyer of the data is high with \$1200.00 for the CD and \$300-\$500 for the CD reader.
3. Most odont alliance growers need only segments of the data.
4. The data distribution depends upon a small software company for continued updates and maintenance of the software. All this in a very small market. I have some recommendations.

1. Maintain the current CD system for those few users who need and use the entire registration list.
2. Keep the AOS in the CD market because this technology

with its large storage capacity will permit the additions of color illustrations. 3. Design and market the registration list into orchid alliances that breed together plus the miscellaneous genera. Utilize the medium of the floppy disk to distribute the registration and award data. 4. Format the floppy disk directly from the RHS data and set it up to interface with available data base packages. 5. Formate the floppy disks to be compatible with either the IBM or Apple styles of PC's.

The American Orchid society is now offering for sale Books of the complete listing of the RHS hybrid registration data and AOS Award data by alliances. This is a significant step forward and they are to be commended. I had the opportunity to review the Odontoglossum Alliance book prior to publication and sale. I found it to be a useful document. It is especially good to have the award data in the same volume. Award data lists the date and award but does not contain the flower description. Never-the-less it is a useful and cost effective publication. The same data in machine readable form on floppy disks in a format useable by popular PC data base programs would be a good next step addition to information for the odontoglossum alliance world. This would permit individual customizing and induce a whole new array of uses.

The registration of hybrids using the RHS data base in a real time manner could greatly simplify the registration of new hybrids. For example a phone call over a modem to the RHS data base computer could produce on the callers screen the registration form. This could be completed by the caller and checked by the RHS data base for accuracy, completeness and acceptability. The caller could charge the registration fee to a VISA or Master Card and the registration could be complete. Further more it would take no on-line manpower by the RHS and it should reduce the cost of registration.

I would also encourage the AOS to provide a 900 number access to the RHS data base through a modem. This would permit infrequent users of the data base access for a very nominal charge. Again the use of a modem to call into the AOS data source and charged to the callers phone

number.

The Odontoglossum Alliance Forum to be held tomorrow is an important facet of the information flow. It is the policy of the US alliance to hold a meeting annually to include at least a half day of speakers on current topics. Such meetings or forums are held in conjunction with major orchid conferences or shows. They have proved to be a big drawing card for the host meeting.

Tomorrow the 14th World Orchid Conference is the host for our forum. Last October the Eastern Orchid Congress was the host. Meeting attendance and interest at the EOC was increased by the addition of the Odontoglossum Alliance meeting and lectures. This has been recognized by other congresses and show organizations and the USA Alliance has requests from hosts for 1994 and 1995 alliance meetings. We currently plan to hold annual meetings at both the Greater New York Orchid and the Santa Barbara Orchid shows in 1994 and at the Western Orchid Congress in Oregon in 1995. It is our intention to hold meetings annually and to cover as wide a geographic area as is feasible. A part of the US meetings is a set of lectures, an auction of select alliance material contributed by members, exhibits, show tables, and sales tables from our suppliers of alliance material. From such a balanced program everyone benefits. It is important that the lecture series have current information and be from contributors in the field, both amateur and professional. To date we have received excellent cooperation and willingness from all requested participants. The Alliance newsletter publishes selected material from these meetings.

It does little good to enlarge the cultural regions amenable to growth of the alliance and add information needed to be successful in culture if there is no supply of plants. It is of vital importance that there be a viable and profitable community of successful commercial growers and producers of plant material. To create today's hybrids is increasing in cost. Modern technology of chromosome counting and ploidy hybridization is definitely increasing yields of

high quality material. Such technical information along with the growers instincts will progress the alliance. I would urge hybridizers to combine these techniques with those methods employed known as strategic planning. Setting up specific plant and flower objectives to be achieved in three to five generations with the multiple paths to be pursued, combined with computer simulation and prediction can aid in realizing objectives. The commercial grower is a vital link to successful alliance growers. The amateurs must support the commercial segment. The commercial segment must be profitable with enough margin to continue alliance development. The amateur segment alone will not make for a successful commercial operation. Revenues must be found from other sources including flower and pot plant sales. The Odontoglossum alliance is dedicated to supporting the commercial segment, and for its own good. We in the alliance will make available, at cost, the membership mailing list to suppliers of alliance material. We will, at the lowest possible prices, run advertisements of plants in the newsletter. Such a policy has only recently been established. I would expect that in the next US alliance newsletter we will have our first ads. This should benefit our membership as well as suppliers who will be provided with a direct interest audience. We provide a targeted audience with a definite interest in the product. We would like our membership to have the earliest opportunity at the supply. It is the policy of the Alliance to enhance the commercial suppliers of alliance material. There is a dearth of advertising of alliance material. In the past twelve issues of the American Orchid Society Bulletin there have been only two ads for odontoglossum plants.

One can not leave this subject without giving credit to the wisdom of establishing the Eric Young Orchid Foundation. The history of great odontoglossum growing has shown the rise and eventual fall of the commercial establishments. To see examples in England look at the Sanders, Charlesworth, and Stuart Low. In America there has been a similar pattern for many firms such as the Burrage, L. Sherman Adams, Butterworths,

and Lager & Hurrell.

The decision to establish the Eric Young Orchid Foundation with an endowment fund was far reaching and with great foresight. It provides real means to deal with today's technology to produce the best in new alliance material. It is ably managed and its policies have been constructive and forward thinking. Making surplus material available to the growing community is of great importance to the viability of the Odontoglossum Alliance. It is the obligation of the Alliances to undertake projects that will benefit the growers of the alliance. The New Zealand group is to be particularly commended in this area. They have led an effort to broaden the growing of species by importing new species for distribution among members. They have set up a species selfing program and flask distribution. They are starting a species data bank and are looking for contributions of species, pollen, and flasks. To start this bank they have solicited and received information on what species are currently grown by their members. This same program could and should be undertaken by all alliances. This will permit hemispheric differences to aid in the broader establishment of specie growing. To summarize the Odontoglossum alliance has the objective of enlarging the growing of the alliance material. To succeed we need plant material with greater environmental tolerance, information on the culture and a supply of plants available, known, and at reasonable cost. The four odontoglossum Alliances are committed to a spirit and active program of cooperation and we look forward to working with all interested in this beautiful orchid. The Odontoglossum Alliances are embryonic and continuing to form. It is a golden time for input from interested growers.

Odontoglossum Alliance

Species Description

by Leonore Bockemuhl

Miltonioides Brieger & Luckel 1983

The species of this group have been described primarily mostly as *Odontoglossums*. This fact is understandable when looking at the posture of the lip-base of the first described species, the *Odm. laeve* (Lindl). All further described members of this group yet show a connection of lip and column which is very different and has little regard to the true *Odontoglossum*.

Nevertheless less there is a distinct relationship between them concerning the carinate (keeled) lateral sepals, the shape of flower and the poor callosity and last not least the close distribution in Central America.

GARAY ("Die Orchidee" 34, 1962) and somewhat later DRESSLER and WILLIAMS (*Orquidea Mex.* 1975) pointed out the relationship of seven species of the "laeve-complex". At least BREIGER & LUCKEL (*Die Orchidee* 34, 1983) established the new genus *Miltonioides*.

The epiphytic growing plants are medium-sized. The lateral, sometimes branching inflorescences bear up to 50 flowers. All species of the genus are distributed in Mexico and Central America in altitudes about 1000 to 2000 meters.

Miltonioides laeve (Lindl) Brieger & Luckel 1983

Bulbs ovoid, furrowed with age, two- to three leaved, surrounded by several foliaceous sheaths; leaves oblong-lanceolate 30 cm long. Inflorescence lateral, up to 80 cm, paniculate, many flowered. Flowers 5 cm across. Sepals and petals almost equal, linear-oblong, cinnamon-brown barred with yellow-green, the sepals carinate. Lip blade supandurate, deflexed from a clawed base, the upper sidelobes bent down, white to rose-lilac; callosity very smooth dark-lilac stripes; column with distinct,

rose-coloured wings.

Skinner and Hartweg discovered the species in Guatemala and Southern Mexico and sent plants to England in 1841. Lindley described them as *Odontoglossum laeve* in *Bot. Reg.* 1844. The species was transferred by Brieger & Luckel to the new established genus *Miltonioides*.

Habitat: Epiphytic growing in shady places in mixed forest in montane cloud forest region.

Distribution: Mexico and Guatemala in altitudes about 2200-2700 m.

Artificially produced hybrids:

Oda. *Cleopatra* (x Oda. *noezliana*)

Odm *Extraria* (x Odm. *crispum*)



Odontoglossum laeve

Milionioides leucomelas

(Reichb.f.) Bockem.&Sengh. 1988

Bulbs ovoid, furrowed with age, two-leaved, surrounded by several foliaceous sheaths; leaves lanceolate 22 cm long. Inflorescence lateral, 60 cm long, racemose to paniculate, many flowered. Flowers 3 cm across; sepals and petals linear-oblong, blackish-brown, keeled behind. The lip at base adnate to the column for several mm, then turning down in an angle of about 40 degrees; the blade at base blackish-brown and pure white in the apical half. Callosity with four raising lines. Column with narrow-linear wings and a threadlike stolidium each side of the stigma.

The black-coloured orchid species appeared in Botanic Gardens at first at Warners in England in 1864 and was sent to Reichenbach. He described the novelty in "Botan.Zeitung" and named it *Odontoglossum leucomelas* (leuco = white, melas = black).



Milionioides leucomelas

This black orchid is a very scarce one, endemic to Honduras; better known is its subspecies *acutum*, with yellow-brown petals, distributed in

Mexico and Central America. Both species have been transferred to the new established genus *Milionioides* in 1988.

Habitat: epiphytic, sometimes lithophytic growing in the lower cloud forest region in humid areas. Distribution: *Milionioides leucomelas* grows endemically in Honduras, about 1500 - 1800 m.

Milionioides reichenheimii

(Lindl. & Reichb.) Brieger & Luckel 1983

Bulbs ovoid, furrowed with age, two-leaved, surrounded by several foliaceous sheaths, leaves oblong-lanceolate 35 cm long. Inflorescence lateral, 80 cm, paniculate, up to 25 flowers; flower 6 cm across; sepals and petals alike, linear-oblong, chestnut brown, barred greenish, the sepals carinate. Lip-blade subpandurate to oblong, the upper part dark purple, the lower part rose-purple. Callosity smooth to obsolete. Column with small-linear wings.



Milionioides reichenheimii

GHIESBREGHT was the discoverer of this species, found in Mexico about 1840. Yet plants have been sent to Linden, Brussels, years later and have been described in 1854 by Linden and Reichenbach as *Odontoglossum reichenheimii* (Pescatorea). The species was transferred by Breiger & Luckel 1983 to the new established genus *Miltonioides*.

Habitat: epiphytic growing plants in oak and pine forest in shady, humid places.

Distribution: Mexico, in the pacific range of Sierra Madre, altitude 2000-2300 m.

Miltonioides schroederiana

(O'Brien) Luckel 1986

Bulbs elliptic, furrowed with age, two-leaved, surrounded by one or two foliaceous sheaths; leaves lanceolate, 18 cm long. Inflorescence lateral, scape 15 cm long bearing up to 9 flowers. Flowers 7 cm across. Sepals linear-oblong, keeled behind, chestnut-brown, marked with yellow; petals similar in color and shape, falcately turned upwards. Lip sub-pandurate, the basal half rose-purple, the apical half convex, milk white. Callosity rather distinct with three protuberances and a raised line each side of them. Column with an infrastigmatic plate in front, wings rather poor.

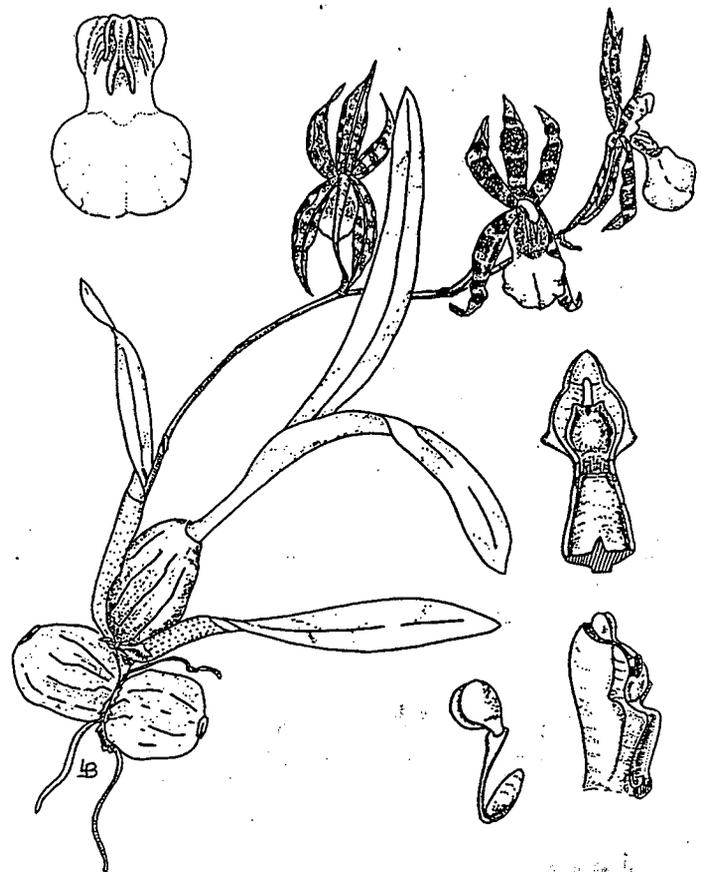
Sander and Co. imported the species from Central America about 1885 and Baron Schroeder could exhibit the flowering plant at the meeting of the Royal Horticultural Society. Reichenbach then described and named the species *Odontoglossum schroederianum* (Gard. Chron. 1887) - yet he overlooked his own former description of an *Odontoglossum schroederianum* (member of the *crispum*-group) which he had named in 1882 (Gard.Chron.). So O'Brien in 1889 felt induced to settle the confusion and transferred the new species to the genus *Miltonia* (Gard. Chron.) under the name of *Miltonia schroederiana*. The species was used rather often for artificial breeding. In 1986 Luckel transferred the species to the genus *Miltonioides*.

Habitat: epiphytic growing in the lower cloud forest in humid areas.

Distribution: Costa Rica in altitudes about 900-1400 m.

Artificially produced genera are registered under the name of *Miltonia schroederiana*

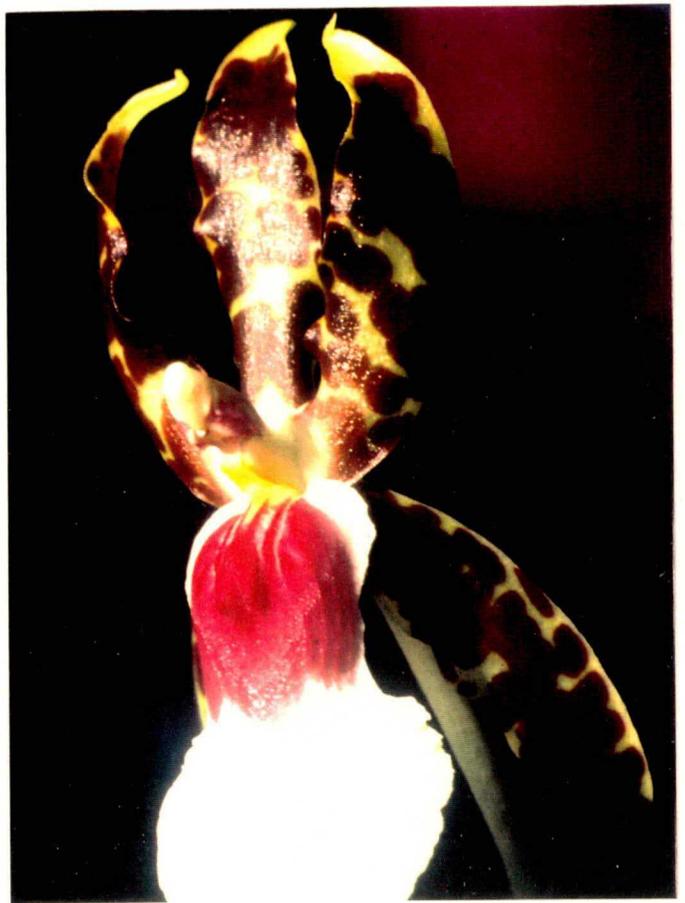
- Milt. *schroederiana*
- x *Cda noezliana* = Milt *da Ajax*
- x *Odm uro-skinnei* = Odm *na Longowoyi*
- x *Onc leucochilium* = Mtdm *Aristocrat*
- x *Milt Lypatia* = Milt *King Tut*
- x *Milt renellii* = Milt *Sunset Gold*
- x *Milt warszewiczii* = Milt *Ron's Rippling Delight*



Miltonioides schroederianum



Miltonioides leucomelas



Miltonioides schroederiana



Miltonioides laeve



Miltonioides reichenheimii