BULLETIN OF THE FIRST INTERNATIONAL ODONTOGLOSSUM ALLIANCE MEETING

The first meeting of the International Odontoglossum Alliance was held in Vancouver on March 8, 1986. The Vancouver Orchid Society would like to thank the San Francisco group for agreeing to transfer the 1st meeting to Vancouver. The speakers were all outstanding with the superb paper by Dr. Wimber setting the tone of the meeting.

The expenses of the meeting were largely taken care of by the generosity of those who donated plants for auction and a generous donation from the Vancouver Orchid Society. We regret the delay in this publication but hope that you will enjoy it.

We are pleased to add an excellent contribution on computerization from:

Mr. Bill Arthurs
1228 Lampman Crescent
Ottawa Ontario,
Canada, K2C 1P8

Mr. Arthurs is President of the Ottawa Orchid Society.

The second meeting of the Alliance will take place in San Francisco on March 14, 1987 (see AOS Bulletin - Jan/87) in association with the 1987 AOS and ODC Trustees Meetings and the San Francisco Orchid Society's annual meeting.

The speakers are Brian Rittershausen on Odont. History, Keith Andrews on Novelty Odont. Breeding, Howard Liebman on Intergenerics, Andy Easton on Intergenerics and Wally Thomas on Breeding with Odm. crispum. There will also be an auction of outstanding plants - come prepared!

For further information, and registration please contact:

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Lastly, but by no means least I would like to thank my daughter Barb for putting this publication together.

Wally Thomas

PROGRAM

MORNING CHAIRMAN: Dr. Wally Thomas, Vanc. B.C.

09:00-09:50 DR. DON WIMBER Univ. of Oregon, Eugene Oregon
"ODONTOGLOSSUM CHROMOSOME NUMBERS and WHAT THEY MEAN TO HYBRIDIZING"

10:00-10:50 MR. BOB DUGGER Solana Beach Ca.
"A RETURN TO COCHLIODA HYBRIDIZING"

11:00-12:50 MR. TIM BRYDON San Francisco Ca.
"THE R.H.S. PAINTINGS and NELLIE ROBERTS"

12:00-01:15 LUNCH

AFTERNOON CHAIRMAN: Dr. Carl Withner, Bellingham Wa.

01:15-02:05 MR. ALAN MOON Jersey Channel Isles
"THE ERIC YOUNG FOUNDATION ODONTOGLOSSUMS"

02:15-03:05 MR. BRUCE COBBLEDICK San Francisco Ca.
"XANTHOTIC-ALBA ODONTOGLOSSUMS"

03:15-04:05 MR. BOB HAMILTON Berkley Ca.
"FROM FLASK TO FLOWERING SIZE"

04:15-05:00 ROUND TABLE ON CULTURE - MODERATOR: Dr. Wally Thomas

05:00-05:30 DATE and PLACE of Next Meeting and Auction

CHROMOSOME NUMBERS IN SPECIES AND HYBRIDS OF THE *ODONTOGLOSSUM* ALLIANCE

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Few chromosome numbers have been determined in species of the Odontoglossum alliance. The chromosome numbers of ten species of Odontoglossum and one Odontioda hybrid are reported in the "Summary of chromosome numbers in orchids" by Tanaka and Kamemoto (Orchid Biology III, ed. Arditti, 1984). Two diploid chromosome numbers are found in the species, 44 and 56. In this paper I report additional chromosome numbers of the Odontoglossum species and of a substantial number of Odontoglossum and Odontioda hybrids. Three new diploid numbers are found in the species. The major finding with the hybrids is that polyploidy is rampant.

Materials and Methods: Root tip material was taken from plants and processed according to the methods outlined by Tanaka and Kamemoto (1984). Plants were sampled at McBeans Orchids, Ltd., Burnham Nurseries, Ltd., Keith Andrew Orchids, The Royal Botanic Gardens at Kew and at the Eric Young Collection. No attempt was made to verify the labeling of the plants, although a few of the plants at Kew had been confirmed as labeled by one of the herbarium taxonomists. Several of the species are now considered to be in other genera by some taxonomists; no taxonomic distinction is made here, they are reported as labeled.

Results: The diploid chromosome numbers of the species are enumerated in Table 1. The numbers in parentheses are those species that have been reported before (see Tanaka and Kamemoto, 1984). The main findings are three new diploid chromosome numbers, O.mirandum (2n=66); O.reichenheimii and O.grande

(2n=60) and O.stellatum (2n=48). In addition, one triploid plant was identified, O.harryanum with 84 chromosomes, the diploid being 56, and several tetraploid O.crispum inbred plants from the Charlesworth collection (now at McBeans Orchids) were found with 112 chromosomes.

The Odontoglossum hybrids were divided into triploids or near triploids with about 84 chromosomes (Table 2) and tetraploids or near tetraploids (Table 3). No diploids were found amongst the hybrids that I sampled. I was not able to obtain totally, well-defined spreads of chromosomes in all cases, thus I am only reporting the broad groupings. However, precision was always plus or minus 2 chromosomes from the presumed triploid or tetraploid condition. Since most of these hybrids have a genetic background heavy in the O.crispum group, the diploid number is taken to be 56 and the triploid and tetraploid numbers are assumed to be 84 and 112.

The Odontioda hybrids incorporate the genus Cochlioda into the gene pool. Most often C.noezliana was the species used in hybridization. I determined its diploid chromosome number to be 56, the same as the O.crispum alliance. The Odontioda hybrids again fell into 2 broad groupings, the triploids (Table 4) and the tetraploids or above (Table 5). A few of the plants in this group had some of the highest chromosome numbers ever seen in orchids, in the range of 130-140.

Discussion: The major fraction of the hybrids sampled in this study came from the Charlesworth collection at McBeans Orchids. This was a select sample of complex hybrids which were of interest largely for use in the McBean hybridization program. Therefore, they should not be viewed as a random sample of hybrids in cultivation. No diploid plants were found amongst these

hybrids, all were triploid or above. From these observations, one can conclude that many of the desirable flower features common to modern hybrid Odontoglossums and Odontiodas have been enhanced by polyploidy. Thus, the hybridizers have unwittingly selected for polyploid plants in their continued search for quality stud plants and flower improvement.

One might surmise that one of the reasons that the firm of Charlesworth and Co. was so successful in the Odontoglossum and Odontioda breeding was their early introduction of polyploidy into the hybrid lines through their continued use of one or more tetraploid crispums. We have no information on precisely when this introduction occurred, although it seems likely that Charlesworth was using tetraploid crispums in the 1920s or before, judging from their registration of plants that we now know to be polyploids. The O.crispum inbreds in the Charlesworth collection today are the modern product of line breeding amongst those original "quality" crispum clones.

TABLE 1

CHROMOSOME NUMBERS OF ODONTOGLOSSUM SPECIES

Species	Diploid Number*
Bictonience	56
Brevifolium	56
Carniferum	44 (56)
Cervantesii	56
Citrosmum	44 (44-48)
Cordatum	56 (56)
Crispum	56 (56)
Crispum (Charlesworth Inbreds)	112
Crispum var Andersonianum	56
Denticulatum	56
Grande	60 (44, 60?)
Hallii	56
Harryanum	56, 84
Insleayi	44 (44)
Iocopan	56
Kegeljanii	56 (56)
Krameri	44
Laeve	56
Longipes	56
Luteopurpureum	56
Luteopurpureum var Sceptrum	56
Mirandum	66

TABLE 1 (Continued)

CHROMOSOME NUMBERS OF ODONTOGLOSSUM SPECIES

Species	Diploid Number*
Nebulosum	56
Odoratum	56
Oerstedii	44
Pardinum	56
Pendulum	44 (44)
Pescatorei	56
Pulchellum	44
Rossii	56
Reichenheimii	60
Schlieperianum	56 (44)
Schroderanum	56
Stellatum	48
Stenoglossum	(56)
Stenophylum	56
Trilobium	56
Uro-skinnerii	56

*Numbers in parentheses are previous counts taken from Tanaka and Kamemoto (1984).

TABLE 2

ODONTOGLOSSUM HYBRIDS
Triploid or Near Triploid (=84 Chromosomes)

Crispania 'Lyoth Gleam'	(Ascania x Crispum)	C - '43*
Perolia 'Lyoth Gama'	(Perryanum x Mongolia)	C - '57
Quistrum 'Lyoth Raja'	(Nubia x Pescatorei)	C - '38
Quistrum 'Lyoth Angelo'	(Nubia x Pescatorei)	C - '38
Tordonia	(Clydonia x Toreador)	C - '35
Royal Wedding	(Pancho x Ardentissimum)	M - '85
Royal Occasion	(Pumistor x Ardentissimum)	M - '85

TABLE 3

ODONTOGLOSSUM HYBRIDS
Tetraploid or Near Tetraploid (=112 Chromosomes)

Costro	(Stropheon x Connero)	C - '71
Opheon 'Majestic'	(Neron x Ophelia)	C - '39
Orphanto	(Manto x Ophelia)	C - '43
Perryanum	(Camilla x Toreador)	C - '35
Pumistor	(Cristor x Crispum)	C - '69
Stropheon	(Opheon x Robert Strauss)	C - '57
Theron 'Icefall'	(Crispum x Erzerum)	C - '29
Torpesca 'Mont Millais'	(Cristor x Pescalo)	C - '68
Rialto x Crispum		
Stropheon x Pescalo		
Stropheon x Cristor 'Lyoth Galaxy'		

*Year of Registration by either Charlesworth (C) or McBeans (M).

TABLE 4

ODONTIODA HYBRIDS
Triploid or Near Triploid (≈84 Chromosomes)

Astoria 'Lyoth'	(Pittiae x Odm crispum)	C - '30
Melina 'Heliotrope'	(Melina x Odm crispum)	C - '30
Margia x Colwell		
Odm Moselle x Pacific Gold		

TABLE 5

ODONTIODA HYBRIDS
Tetraploid, Near Tetraploid or Hypertetraploid (≈112 or 130-140)

A.G. Ellwood	(Pittiae x Odm Molyneaux)	C - '46
Elpheon	(A.G. Ellwood x Odm Opheon)	C - '51
Flocalo 'Chailey'	(Odm Pescalo x F. Stirling)	C - '67
Golden Rialto	(Odm Rialto x Pacific Gold)	M - '85
St. Clement	(Odm Crutordo x Elpheon)	M - '85
Stephanie 'Flamingo'	(Leoniae x Odm S. Stephenson)	C - '50
Aloette x Pacific Gold		
Aloette x Odm Phioman 'Lyoth'		
Odm Jerispol x Astargia		
Pittiae 'Lyoth Tan' x Aloette		
Odm Stropheon x Elpheon		
Trixon x Fremar 'Lyoth Bacrus'		
Ingmar x Trixon	Hypertetraploid	
Niobe x Brocade	Hypertetraploid	
Trixon x Brocade	Hypertetraploid	

A RETURN TO COCHLIODA HYBRIDIZING

Odontoglossum hybridizers have really been busy for we now have hybrids with six generas in them with a lot of intergeneric names and some of the mixing did not really improve the end result.

Hybridizing is a genteel type of gambling so there are winners and losers. In the old days at Las Vegas 21 players could ask the dealer for a new deck. We are about in the same position because we have pretty thoroughly run through our deck. Since there is not a new deck for us about all we can do is to go back to the basic genera approach.

Why not use some of our proven and successful parents back on Cochlioda noezliana? Hopefully to see if the resulting hybrid would be an improvement over the first primary hybrids. They might produce much larger and better shaped progeny.

Having had very good results using Odm. Stroperry, Oda. Aloette and Odm. Dilcon they were selected for this experiment. Oda. Aloette was selected, since it has Cochlioda in its background, to see whether it would help to produce more branching spikes in the resulting hybrids.

The main difficulty in this type of experiment was the color of the Cochlioda noezlianas I had available. I have been trying for years to find a deep red clone with no success as I am sure that the ones used initially were. All my clones were almost orange in color.

The crosses were made as follows:

# 3420 Cda. noezliana X Oda. Aloette	01 Mar	1980	Pollenation
	23 Aug	1980	Pod split
	26 Aug	1980	Seed sown
	08 Apr	1981	Replated
	08 Dec	1981	Potted out
# 3452 Cda. noezliana X Odm. Dilcon	07 Apr	1980	Pollenation
	10 Oct	1980	Pod split
	14 Oct	1980	Seed sown
	21 Sept	1981	Replated
	05 Apr	1982	Potted out
# 3453 Cda. noezliana X Odm. Stroperry	07 Apr	1980	Pollenation
	10 Oct	1980	Pod split
	14 Oct	1980	Seed sown
	30 June	1981	Replated
	11 Oct	1982	Potted out

Cross 3420's first seedling flowered 25 Feb 1985 with 25 flowers 60 mm wide from the largest bulb 3" (7.5cm) high with a good red color and shape. A second seedling flowered 28 Feb 1985 with 35 flowers on a branched spike. Flowers were 80mm wide from large bulbs.

The first seedling flowered for the second time on 8 Jan 1986 with 41 flowers on a branching spike flowers 65mm wide the color was a deeper red than on the original flowering. The bulbs on the seedlings of this cross are as large as the bulbs on Oda. Aloette. The second seedling to flower

This cross has been named Oda. Lianette.

Cross 3452's first seedling flowered 13 July 1984 with 3 flowers 60mm wide with a very good shape and red color. This seedling flowered for the second time on 16 May 1985 with 12 flowers 75mm wide.

The second seedling of this cross flowered 30 Mar 1986 with two spikes, 14 flowers 74mm wide and very good shape and red color. So far the bulbs of this cross are much smaller than 3420. However, new growths from both sides of the bulbs are present.

This cross has been named Oda. Conliana.

Cross 3453's first seedling flowered 23 Dec 1984 with 6 flowers 60mm wide with a fine shape and red color. A second flowering 24 Oct 1985 with 4 spikes and 35 flowers 68mm wide from a large bulb like Odm. Stroperry.

The second seedling of this cross flowered 15 Mar 1985 with 9 flowers 822mm wide excellent shape and a deep red color. It flowered again on 29 Jan 1986 with 26 flowers.

As of this date a total of six seedlings of this cross have flowered and the flower size, shape, color and size of the psuedo- bulbs have been quite uniform except in the sixth seedling. The growth habit is much smaller, the flower size is also smaller at 60mm wide, but on first flowering there were 4 spikes with 30 flowers having fine shape with a nice pattern and color.

This cross has been named Oda. New Start.

In all three of these attempts the shape of the flowers were much better than the original crosses especially the lip and the size of the flowers and the color was up to par. A deeper red Cda. noezliana would probably have enhanced the color. The plant vigor and size especially in the Oda. Aloette and Odm. Stroperry hybrids is a real plus.

Now where do we go from here???

Here is the batting average so far:

Oda. Lianette	4 attempts	2 failures
		2 split pods no seed
Oda. Conliana	2 attempts	2 split pods no seed
Oda. New Start	4 attempts	1 split pod with seed
		3 pods still holding

Efforts to use pollen from all three hybrids on a number of other hybrids were unsuccessful as expected.

Bob Dugger
DUGGER'S HYBRIDS

THE R.H.S. PAINTINGS and NELLIE ROBERTS

Nellie Roberts painted water colored portraits of orchids which received an Award of Merit or a First Class Certificate from the Royal Horticultural Society. Appointed by the RHS Orchid Committee in 1897, on a trial basis, she painted over 4,500 pictures for over 50 years.

Her color and style is inimitable. She had a clear eye for proportion and balance, leaving the viewer with an orchid portrait that is alive. No one painting for the RHS today comes close to Nellie Roberts.

THE ERIC YOUNG FOUNDATION ODONTOGLOSSUMS

In his introduction, Mr. Moon gave the history of the Eric Young Foundation. This Foundation was established from the estate of Mr. Young to house in perpetuity his magnificent orchid collection. The greenhouses are now moved to Victoria Village, Trinity, Jersey, Channel Islands. This is a forty minute flight from London and I can assure you it is a most exciting trip for any orchidophile.

Wally

SLIDE #

1 The first slide was Odm. pescatorii, these plants have been bred from self-crossings first at Charlesworths then later at McBeans. They are far removed from the plants introduced into England at the tern of the century, one of this cross gained an A.M. at the November RHS show.
2 Odm. Theran
3 Odm. Nicky Strauss 'Stonehurst' AM/RHS. This cross produced some fine marked, almost black, by crossing the first two plants.
4 Oda. Jumbo 'Mont Millais' AM/RHS an odd seedling we flowered at the foundation it seemed a natural cross to enhance the heavy markings of No. 3.
5/6 The result, these two are the very heavy marked type, there are some that resemble very large Odm. pescatorii.

Next are the pure colours.

7 Odm. crispum 'Xanthotes', these plants are also from line crossing at Charlesworths over many years, this line of breeding was a favourite of Joey Charlesworth. The one plant that he left was Oda. Rialto 'Lyoth Joy' although he had died by this time, 1928.
Ray Bilton made a cross Oda. Rialto X Odm. Pacific Gold of which we had some seedlings. While most were yellow with brown markings, we flowered a pure yellow.
8 Oda. Golden Rialto 'Mont Millais'.
9 Oda. Golden Rialto marked type.
10 Oda. Golden Rialto sibling cross 8-9. 25% pure, to flower.
11 Odm. (Neamosa x Rialto) this is just a yellow with brown markings. We crossed this with Oda. Golden Rialto to make our best Oda. yet..
12 Oda. Eric Young (see Orchid Review - Sept. 86)
13 Oda. Eric Young
14 Odm. Sorrel Point is Odm. Pumistor a fine xanthotic white tetraploid crossed with Odm. crispum 'Xanthotes'.
15 Oda. Ronez Point 'Mont Millais' is an Oda. Margia cross
16 coming from the famous parents Oda. Argia X Oda. Marie Antonette, always give good shapes.
17 Oda. Ronez Point 'Jersey'
18 Oda. Natrium 'Mont Millais' an Odm. harryanum hybrid.
19 (Oda. Natrium X Oda. Ronez Point)
20 Odm. Pescalo 'Lyoth Galaxy' a fine old parent, still one of the very best, we have used it a great deal.
21 Oda. Rozel Bay (Odm. Pescalo X Oda. Geron)
22 Odm. Torpesca 'Mont Millais' (Odm. Cristor X Odm. Pescalo)
23 (Wils. Five Oaks X Odm. Pescalo) first seedling

25 Oda. (Robesca x Matanda) some wonderful colours by introducing blue.
26 Oda. Matanta X Odm. crispum.
27 Oda. St. Catherins Bay 'Mont Millais' my favourite picotee type. It is Oda. Matanda X Oda. Florence Stirling.
28 Oda. Mont Felard is another Oda. Marie Antonette type.
29 Oda. Mousier Point the same type but with fine branching spikes.
30 Odm. Cristor, a super parent (120mm) there are some fine seedlings still coming out.
31 Odm. Phiomen 'Lyoth Zeta' very dominant with shape and texture, we have a good deal of faith in this plant.
32 Oda. Ingera 'Lyoth Galaxy', 20 flowers to a spike.
33 Oda. Longville 'Mont Millais' (Oda. Fremar X Oda. Jerispol)
34 Oda. A.G. Ellwood, the parent we are using for the bright patterns.
35 Oda. A.G. Ellwood X Odm. Stropheon
36 Odm. Stropheon 'Gothic'. We use two Odm. Stropheons.
37 Odm. Stropheon 'Lyoth Galaxy'
38 Odm. Ostro 'Mont Millais'
39 Odm. Costro, by introducing Odm. Connero we get these which are nicknamed the window orchids.
40 Oda. Corbiere Point, is an Odm. Connero cross.
41 Odm. Toreador 'Princess Mary', this was a great breakthrough in breeding, 1925, a few plants to come through, Odm. Petulum, Odm. Perryanum, Odm. Tordonia.
42 Odm. Perolia 'Mont Millais'

Alan Moon - Manager
ERIC YOUNG ORCHID FOUNDATION

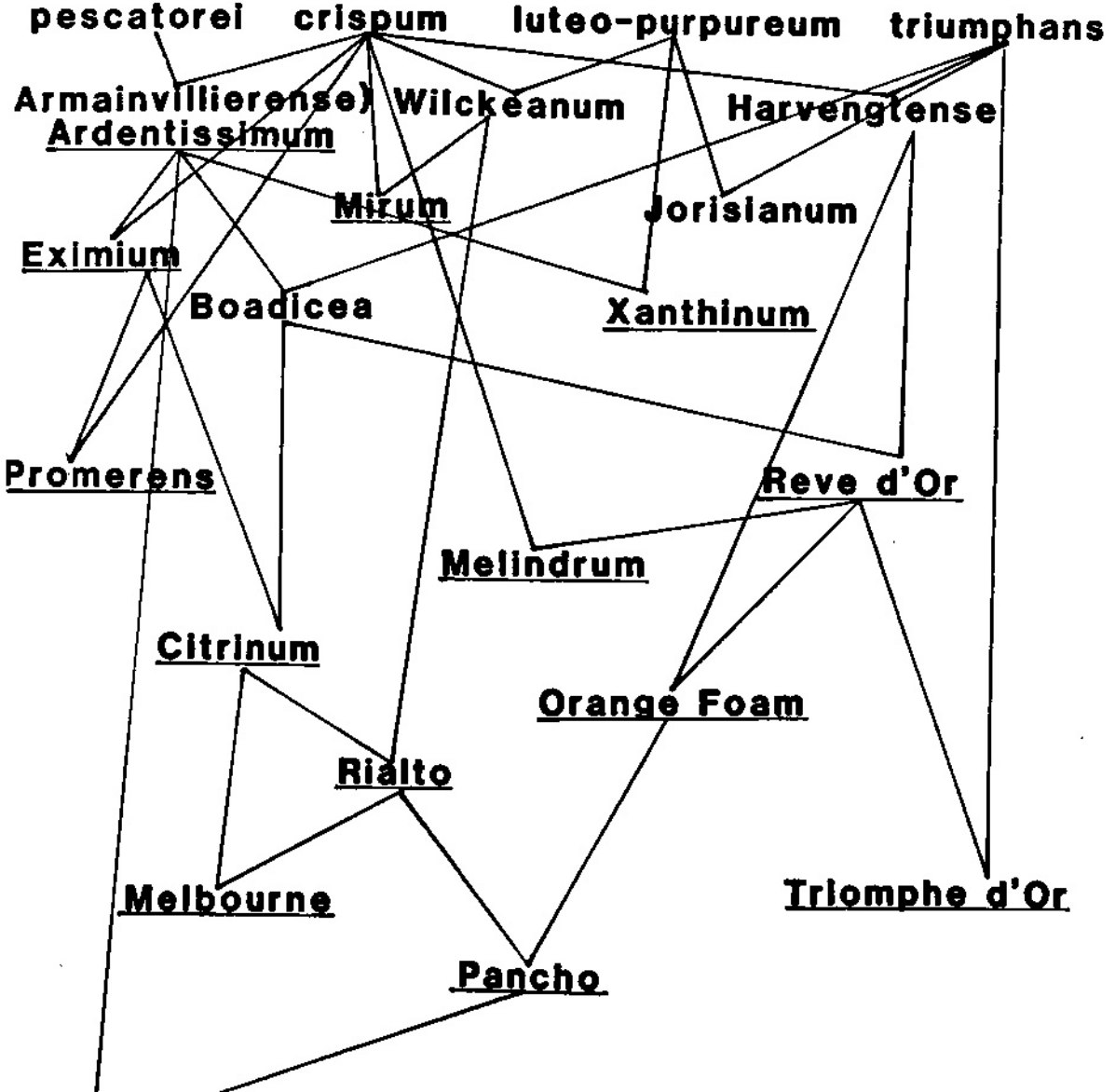
XANTHOTIC-ALBA ODONTOGLOSSUMS

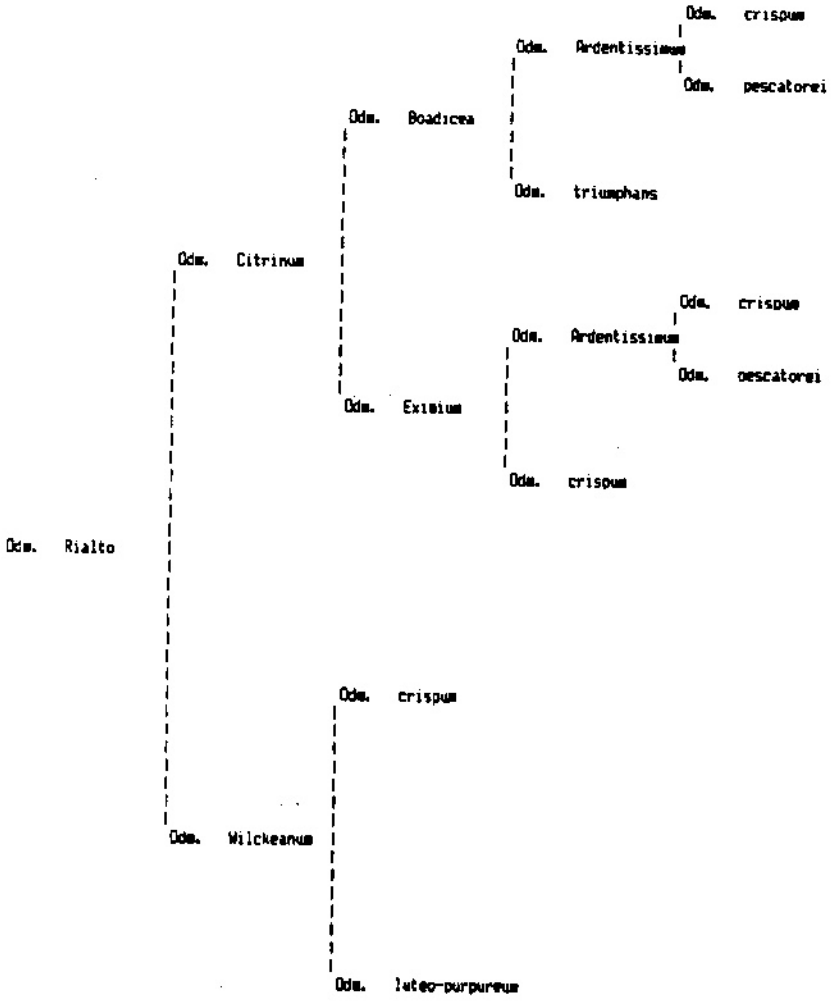
No paper received - Mr. Bruce Cobbledick
Plant pedigrees from Mr. Cobbledick's talk are however reproduced in the next few pages.

FROM FLASK TO FLOWER

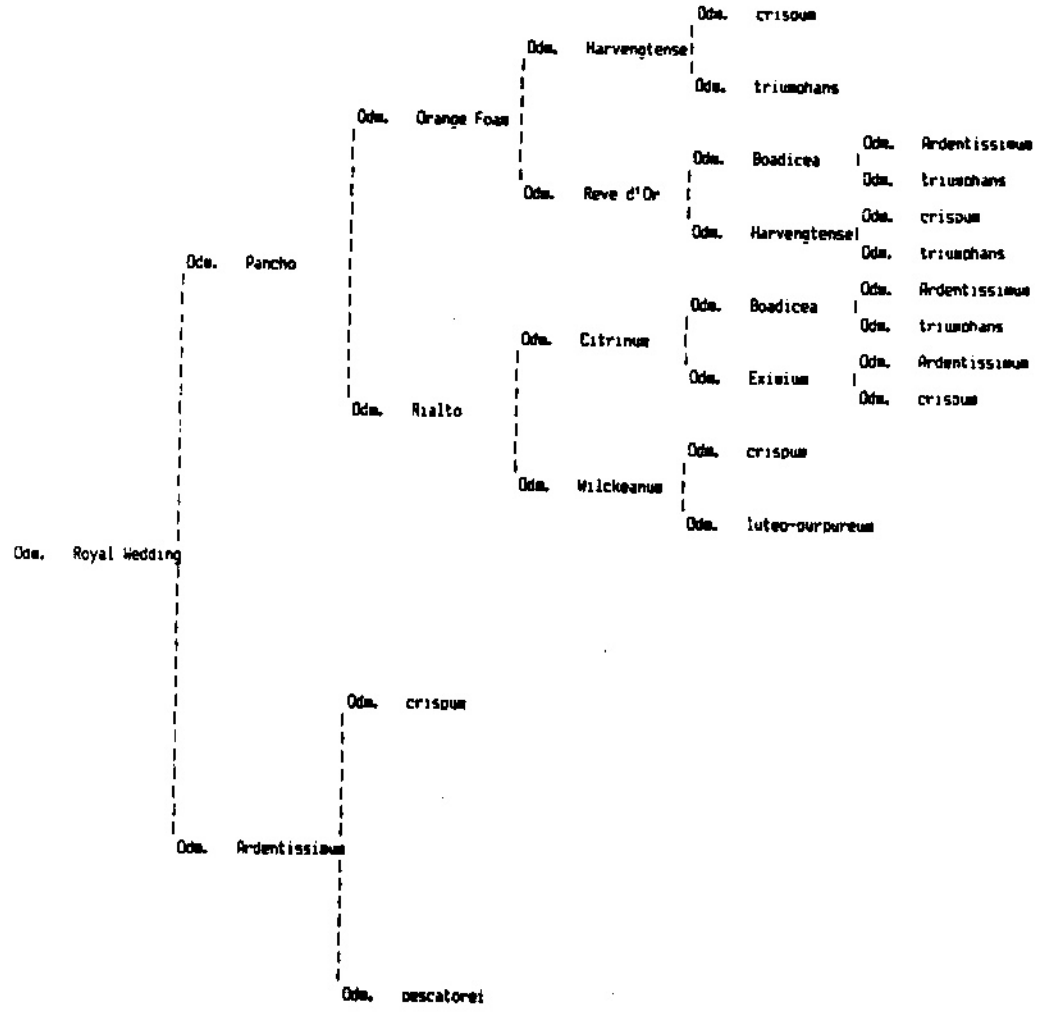
No paper received - Mr. Bob Hamilton

XANTHOTIC ROAD MAP





SPECIES	PERCENT
Odm.	



	SPECIES	PERCENT
Odm.	crispum	48.439 %
Odm.	descatorei	29.589 %
Odm.	triumphans	15.625 %

Deficiencies in the Database

Deficiencies in the Sanders' records are well known. These include registered grex names of unknown parentage, especially in Miltonia and Odontoglossum; imprecise information on the particular clones used in the crosses; and uncertainty in some cases regarding the particular species cited in the record. The records are, however, the most complete and comprehensive in all of horticulture, and more complete analysis of the data by computer would very likely reveal valuable genetic information.

Future Applications

Species Identification - A possible "add-on" capability of this system would be the provision of a species identification service. Plant characteristics could be entered and pre-programmed keys would assist in identification. In addition to conventional descriptive data, information such as chromosome counts, fragrances and other physiological and cytogenetic data could be used.

Determination of Dominant and Recessive Traits - Information useful in determining promising avenues for hybridizing could be built up and stored for easy retrieval, providing benefits for both the hybridizer and the geneticist.

Barriers to Fertilization - Much research is yet to be done in the field of chromosome compatibility, or lack of it, in the Orchidaceae. Other barriers to fertilization, such as self-pollination inhibitions, warrant further investigation. These areas could be illuminated by creation of a computer database.

Culture - The determination of the effects of variation of culture and environment on plants would also be facilitated by a computer-assisted program. Factors such as types of media, light intensity, temperature, humidity, watering schedules, etc. could thus be regulated for optimum results.

Judging - AOS, RHS and other awards data could be added to this program as an aid to show judging.

Conclusion

The computer-assisted program described above has been created for work within the Oncidiinae. It, of course, could be used for any of the other alliances once the applicable database has been compiled and entered. Only for more broadly-based work involving wider areas of the plant kingdom would a mainframe computer be required.

Further work will be undertaken to expand the capabilities of this program, and the author would be grateful for comments or suggestions for improvement.

Bill Arthurs