CROSSWORDS

THE GESNERIAD HYBRIDIZERS ASSOCIATION

NEWSLETTER

VOLUME NUMBER 2 ISSUE NUMBER 3 FALL 1978

DIRECTOR'S MESSAGE

GHA members wondering about the projected meeting at the AGGS convention regarding the continuation of CROSSWORDS, wonder no more. We have six volunteers who vowed to keep the publication going. The new officers will be:

Co-ordinator	Peter Shalit 1579 NE 172nd. St. Seattle, WA 98155
Printing and Mailing	Martin Mines 2206 East 66th. St. Brooklyn, NY 11234
Co-editors	Ann Crowley 232 Austin St. Hyde Park, MA 02136
	Ron Myrh RR1 Claremont, Ont. Canada L0H 1E0.
Membership	Jeanne Morton 75 Sandy Pond Rd. Ayer, MA 01432
Treasurer	Peg Conner 312 Bay Ave. Huntington, NY 11743

If anyone has a typewriter equipped with a carbon ribbon and the time to do some typing please write to Ron Myrh or Ann Crowley.

It is vital that everyone support the new officers. Send in your renewals to Jean Morton as early as possible- so they can judge how many copies to print. The renewal form is on page 15. (Please note change in membership fee.)

Peg and I are most grateful to you all for your letters and contributions, please feel free to write us anytime.

Art Belanger, Director

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INTERGENERIC CROSSES IN GESNERIACEAE

Paul Arnold - Binghamton NY

What ones exist and what do they look like? asked Bob Stewart in CROSSWORDS, Spring 1978. It sounds like an easy question to answer. I started to make a list of them. Would you believe that I found over thirty different names? Here is the list, along with the literature references so that Bob, or anyone, can look them up.

xACHIDONIA Wiehler, SELBYANA 1(4): 406. 1976. Proposed to replace the 1858 name PLECTOPOMA Van Houtte (Achimenes x Eucodonia). As of March 1978, AGGS considers such plants to be interspecific Achimenes hybrids.

xACHIMENANTHA H. E. Moore, BAILEYA 19(1): 35. 1973 (Achimenes x Smithiantha). Replacing the illegitimate (incorrectly formed) former name xEucodonopsis.

xCOLBERGARIA (proposed) Wiehler, SELBYANA 1(4): 408. 1976 (Columnea x Dalbergaria). As of March 1978, AGGS considers such plants to be interspecific Columnea hybrids. Not listed in trade.

xCOLTADENIA (proposed) Wiehler, SELBYANA 1(4): 409. 1976 (Columnea x Pentadenia). As of March 1978, AGGS considers such plants to be interspecific Columnea hybrids. Not listed commercially.

xCOLTRICHANTHA (proposed) Wiehler, SELBYANA 1(4): 408. 1976 (Dalbergaria x Pentadenia). As of March 1978, AGGS considers such plants to be interspecific Columnea hybrids. Not listed commercially.

xDALTADENIA (proposed) Wiehler, SELBYANA 1(4): 408. 1976 (Dalbergaria x Pentadenia). As of March 1978, AGGS considers such plants to be interspecific Columnea hybrids. Not listed commercially.

xDALTRICHANTHA (proposed) Wiehler, SELBYANA 1(4): 409. 1976 (Dalbergaria x Trichantha). As of March 1978, AGGS considers such plants to be interspecific Columnea hybrids. Not listed commercially.

xDIASKOHLERIA Wiehler, SELBYANA 1(4): 407. 1976 (Diastema x Kohleria) denominating an unnamed intergeneric hybrid reported by Wiehler using formula only, SELBYANA 1(1): 29. 1975. Not seen in the trade

xEUCODONOPSIS Van Houtte, FL. SERRES. 1865, a name not in accord with the Botanical Code but persisting in the trade. Corrected to xACHIMENANTHA H. E. Moore, BAILEYA 1973.

(cont.)

xGLOXODONIA (proposed) Wiehler, SELBYANA 1(4): 407. 1976 (Gloxinia x Eucodonia). As of March 1978, AGGS considers these plants to be xAchimenantha hybrids.

xGLOKOHLERIA Wiehler, SELBYANA 1(4): 407. 1976 (Gloxinia x Kohleria), denominating an unnamed intergeneric hybrid reported by Wiehler, SELBYANA 1(1): 29. 1975 by formula only. Not listed commercially.

xGLOXILOMA (commercial name without botanical standing) Park Seed Co. "New Flowers" cat. 1964. A bogus hybrid genus name for Sinningia 'Paschia' claimed to be a bigeneric hybrid (Sinningia x Kohleria). Still found in some catalogs.

xGLOXINANTHA R. E. Lee, BAILEYA 15(2): 60. 1967 (Gloxinia x Smithiantha). Replaced the illegitimate (improperly formed) previous name "Smithennis" still found in limited use.

xGLOXINERA Weathers, GARD. CHRON. III, 18: 144. 1895 (Sinningia x Rechsteineria). Now considered by AGGS as interspecific Sinningia crosses.

xGLOXINOPYLE Wiehler, SELBYANA, 1(4): 407. 1976 (Gloxinia x Monopyle). Unlisted commercially.

xHEPPIANTHA H. E. Moore, GENTES HERBARUM, July 1955 (Heppiella x Smithiantha). Not listed in the trade.

xHEPPIGLOXINIA Wiehler, SELBYANA 1(4): 407. 1976 (Heppiella x Gloxinia). Not listed in the trade.

xHEPPIMENES F. Batcheller, SELBYANA, in press 1978 (Heppiella x Achimenes). Not listed in the trade.

xHYPOTANTHUS W. Saylor, GLOXINIAN 21(4): 20. 1971 (Hypocyrta x Nematanthus). Considered by AGGS as interspecific crosses in Nematanthus.

xKOELLIKOHLERIA Wiehler, BAILEYA 16(1): 29. 1968 (Koellikeria x Kohleria).

xMOUSSOGLOXINIA Wiehler, SELBYANA 1(4): 407. 1976 (Moussonia x Gloxinia), denominating an unnamed cross reported by formula only, Wiehler, SELBYANA 1(1): 28. 1975. Not seen in the trade.

xMOUSSOKOHLERIA Wiehler, SELBYANA 1(4): 407. 1976 (Moussonia x Kohleria), denominating an unnamed cross reported by Wiehler in SELBYANA 1(1): 28. 1975. Not seen in the trade.

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xMOUSSONIANTHA Wiehler, SELBYANA 1(4): 406. 1976 (Moussonia x Smithiantha), denominating an unnamed cross reported by Wiehler in SELBYANA 1(1): 28. 1975. Not seen in the trade.

xMOUSSONOPHORA Wiehler, SELBYANA 1(4): 407. 1966 (Moussonia x Solenophora), denominating an unnamed cross reported by Wiehler, SELBYANA 1(1): 28. 1975. Unlisted in the trade.

PASCHIA (commercial name) Hermann Holtkamp cat., Isselburg, Rh., Germany, 1962 (Sinningia x Kohleria). Bogus hybrid still in the trade. Plant identified as S. speciosa "Maxima Group."

xRHYTIDONERIA R. Katzenberger, GLOXINIAN, Mar-Apr. 1976 (Rhytidophyllum x Gesneria). Not seen in the trade.

SMITHENNIS L. and E. Hammond, G.S.N. Jan-Feb. 1964. Illegitimate (improperly formed) name for (Smithiantha x Gloxinia) hybrids, replaced by xGloxinantha.

xSMITHEPPIELLA Wiehler, SELBYANA 1(4): 406. 1976 (Smithiantha x Heppiella). Unseen in trade publications.

xSMITHICODONIA Wiehler, SELBYANA 1(4): 406. 1976 (Smithiantha x Eucodonia). As of March 1978, considered by AGGS as xACHIMENANTHA. Unseen in the trade.

xSTREPTOGLOXINIA Rodigas, ILL. HORT. 1899. Illegitimate name for an impossible cross (Streptocarpus x Sinniagia), usually called STROXINIA and considered Sinningia speciosa "Maxima Group."

STROXINIA Florence Knock advt., GLOXINIAN, Sept-Oct. 1954. Bogus hybrid, presumed (Streptocarpus x Sinningia). Considered a S. speciosa "Maxima Group" cultivar.

xTRICHADENIA Wiehler, SELBYANA 1(4): 409. 1976 (Trichantha x Pentadenia). As of March 1978, AGGS had suspended judgment on the adoption of this combination. Unseen in the trade.

So many unfamiliar new scientific names are being bandied about for gesneriad hybrids that confusion may arise as to their meaning in certain cases. Provided that an author follows the International Code, and no typographical errors creep in, a Latin name preceded by the multiplication sign and having a capital initial letter (example, xAchimenantha) normally denotes an intergeneric hybrid. If the multiplication sign is followed by a name without a capital initial letter (example, Columnea Xeuphora) a hybrid between two or more species in the same genus is denoted.

MUTATIONS
Report by Peter Shalit, Seattle, Washington

As gesneriad breeders, we are interested in changing our plants. Specifically, we would like to change their heredity, rather than simply making temporary changes in them. You could produce a yellow-flowered African violet by painting its flowers yellow, as the gardeners did with the roses in Alice in Wonderland. But for some reason, that isn't quite satisfying. We prefer stable, hereditary changes, to achieve our goals.

The scientific term for a sudden, stable change in the hereditary material is mutation. (The plant which posseses this new mutation is called a mutant. Try to keep the two words separate in your vocabulary.) We usually talk about hybridizing, in this newsletter. Hybridizing does not bring about mutations. It simply produces new combinations of the genes that already existed in the parents. For example, by crossing Sinningia canescens (orange flowers) with Sinningia pusilla (lavender flowers), S. 'Ramadeva' (bluish-pink flowers) was produced. However, that does not mean that S. 'Ramadeva' contains a new, mutated gene for pink flowers. The pink flowers are produced by the interaction of the genes for orange flowers (from the S. canescens parent) with the genes for lavender flowers (from S. pusilla).

Back to mutations. Sometimes a person may wonder, hmm, why not try mutating my plants to change them, instead of going through lots of crosses? A logical question. To answer it for yourself, you should first get to know something about mutations and how they are created.

A plant's heredity is encoded in a set of DNA molecules (chromosomes), each of which is present in two copies in every cell of the plant. Each chromosome is like a recipe book; it contains hundreds of genes, which are like recipes for the various components of the plant. In total, several thousand genes are contained in a set of DNA from a plant species.

Each gene contains some information on a specific topic. One gene might have part of the recipe for chlorophyll (the green leaf pigment). Another might deal with the arrangment of leaves on the stem. A third might specify the number of petals per flower.

DNA is very delicate. It is easily damaged by X-rays, ultraviolet light, or any of a long list of substances. Plants have ways to repair such damage, but often the damage is severe and cannot be repaired completely or correctly. That results in a mutation: a permanent hereditary change in the DNA. A gene that once said one thing, now says something else. Many kinds of mutation are lethal to the plant, if they drastically change a gene that is essential to the plant's survival. Others produce unhappy, misshapen plants. A few produce changes that we find desirable.

To illustrate a few kinds of possible mutations, I will use words to represent genes. Here then are some purely hypothetical illustrations of the kinds of mutation that may occur.

normal gene	mutated gene	result
LAVENDER PIGMENT	LRPTENDER PIGMENT	plant cannot make lavender pigment; flowers and white
FUSE PETALS INTO A TUBE	FXXXBE	plant has the "split corolla" syndrome
MAKE CHLOROPHYLL	MAKE CLOROPHYLL	plant makes defective chlorophyll, is pale green, possibly variegated
MAKE CHLOROPHYLL	MAKEYLL	plant cannot make chlorophyll at all, is albino, dies

As shown, a mutation cannot produce an entirely new gene. It can only change an existing one. Most often, a mutation just knocks out a gene, so what we see is a plant that is "defective" in some way.

(cont.)

Most mutations are recessive. That is because all genes are present in two copies in normal diploid plants. Even if one copy is mutated, the other copy persists unchanged, to provide the proper information for the plant. For example, say that normal Sinningia pusilla has a gene for lavender pigment (LAVENDER/LAVENDER). If one of the two copies of that gene is mutated to a useless form (LAVENDER/LRPTENDER), the plant still can make the pigment and the flowers are still lavender, though they may be paler. To obtain a plant which shows the effect of the mutation fully, we need to self our mutant plant; by Mendel's rules, 1/4 of the offspring will be (LRPTENDER/LRPTENDER) and hence will be white-flowered (unable to make lavender pigment).

Knowing all of this, now how can we employ mutation to help us produce new gesneriads?

By realizing, first of all, that mutations are usually defects. We cannot expect to add new genes to a plant; new genes must be introduced from another plant, by hybridizing. However, mutations can still produce some pleasant results. For example, say you are starting with a pale violet-flowered Saintpaulia. By producing a mutation in the plant, we can change the flower to:

white (by knocking out the plant's ability to make floral pigment); or

purple (by destroying or modifying a gene that normally serves to restrain pigment production); or

pink (by deleting a gene that influences the cell's pH, causing the cell sap to become more acid, changing the pigment from blue to pink, just like litmus paper or hydrangea flowers).

HOWEVER, since there are several thousand genes controlling the appearance and growth of your Saintpaulia, the chances of hitting a specific one are very slim. So, all we can do is try to cause some low level of mutation, not enough to make the plants sick, then self-pollinate them and grow up many seedlings, and look for recessive mutations in the next generation.

Now for the nitty-gritty. How do you actually do the job of producing mutations?

Carefully, first of all. Keep this in mind: in animals, mutations can cause cancer and birth defects. Early workers with radiation, people exposed to atomic blasts, factory workers handling mutagenic substances, all have high cancer rates. So if you are going to try to induce mutations in plant material, don't expose yourself to the mutagenic agent!

Many chemicals are known to cause mutations. Some are found in foods. Cyclamate is a famous example. Aflatoxin, found in rancid peanuts (and hence in peanut butter until recently) is one of the most potent mutation-inducers (and carcinogens) known. Benzpyrene, found in tobacco smoke, is also very effective. I suppose that if you are still a smoker, you should try exhaling onto the plants you want to mutate, but I doubt the smoke would penetrate into the plant's cells.

Some mutagenic chemicals are available from scientific or industrial suppliers. Examples are EMS (ethyl methane sulfonate) and MMS (methyl methane sulfonate). However, these are also carcinogens, and must be handled with extreme care. As carcinogens, they are also regulated by the Toxic Substances Control Act, which means they should be impossible for you to get legally for private purposes.

One strong mutagen which is probably easy to obtain is Neutral Red, a "vital dye" (it stains living tissues). This is a common biological stain. During 1977, a coworker of mine at Cornell tested Neutral Red and found it to be highly mutagenic, though it is not very toxic to cells. However, the fact of its mutagenicity is not yet widely known, and the substance is still unregulated, to my knowledge. It has the advantage of being a strong dye, so you know if you spill any or get it on your fingers. Try soaking some seeds in Neutral Red before planting, if you want to get some mutant plants. Use various dilutions.

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MUTATIONS, Shalit (cont.)

Another, safer (to you) method of producing mutations is X-rays. Bombardment with these rays damages DNA. In fact, that is why doctors are now being careful not to use too many X-rays on people. X-rays cause mutations; X-rays cause cancer. But X-raying a piece of plant material should pose no hazard to you; it is done in a shielded box, you can walk out of the room while the X-rays are on, and no residual X-rays remain in the material afterwards. X-rays, incidentally, can often produce mutations that lead to dwarfing of a plant, so for this purpose they may be especially useful.

If you are interested in irradiating some seed or plant material, you might contact a radiologist at a local hospital. The same X-ray machines that are used for human diagnostic and therapeutic purposes can also be used to produce mutations in plants. You might try dosages similar to the ones used by Dr. Broertjes to produce mutants of Streptocarpus 'Constant Nymph' (see below). Bob Stewart (Crosswords, Spring 1978) asked about the origin of these mutants. They were produced by irradiating not seed, but leaves. There is a good reason for that. A seed already contains a many-celled embryonic plant. If you X-irradiate seed, not all of the cells in the embryo will be hit by the X-rays, and the ones that are hit will develop different mutations, so the plant that grows up will have a mixture of types of cells, and will be unstable. In contrast, plants grown from leaf cuttings arise from a single cell. If you irradiate a leaf and then grow plants from it, each plantlet will have only one type of cell, and any mutant plant will hence be stable; the whole plant will be a mutant.

The complete procedure used to create the Streptocarpus 'Nymph' mutants was described in The Gloxinian eight years ago. Since many GHA members may not have access to this issue, the article is reprinted below. It answers some of the questions that Bob Stewart brought up in the Spring 1978 Crosswords.

If you are interested in using X-rays to produce mutations, you should use this article as a guide. You might try leaves from Streptocarpus, Boea, Petrocosmea, Chirita sinensis, etc.; you might also try individual rhizome scales from Achimenes, Smithiantha, Gloxinia, or Kohleria. Good luck! Whatever your results are, won't you please report them to Crosswords for publication, so that others may learn from your mistakes or successes. If the X-rays kill all your plant material, or if they produce no mutations at all, that is as interesting as if they produce a double-flowered Streptocarpus for you.

THE ARTICLE REFERRED TO IN THE ABOVE PASSAGE APPEARS ON PAGE 8...

DID YOU NOTICE?

The feature article in the magazine House Plants & Porch Gardens, September, 1978, is titled "HOW TO HYBRIDIZE HOUSE PLANTS". This is an excellent article on basics, and that particular issue will be added to the "Suggested Reading List" for all GHA members.

GHA will be added to the list of Plant Societies, which HPPG publishes annually in the early Spring. We sincerely thank Peter Johnson, Associate Editor for this publicity, which should be instrumental to an increase in our membership. We consider House Plants & Porch Gardens to be the leading publication in its field.

A&P

New Streptocarpus Varieties

Carl D. Clayberg

From The Gloxinian, September/October 1970

In a recent article in the Netherlands journal of plant breeding, Euphytica (v. 18: 333-339. 1969), Dr. Cornelis Broertjes described five new Streptocarpus varieties that he developed with X-rays. Using a procedure he had already found successful with African violets, chrysanthemums and dahlias, he irradiated whole, mature leaves of an already outstanding variety, 'Constant Nymph' in this case, in order to induce changes in plant or flower type. After irradiation, he removed the midrib and placed the leaf halves in a rooting medium in a box covered with polyethylene to induce plantlet formation along the cut leaf edge. The technique is based on the fact that X-rays induce stable mutations in individual somatic (leaf) cells and that the plantlets obtained from the leaf halves in Streptocarpus each originate from a single cell. Thus, when a plantlet originates from a mutated leaf cell, the entire plantlet possesses the mutated trait and can readily be increased by vegetative propagation. Dr. Broertjes found that the optimal X-ray dose for producing the most mutants in 'Constant Nymph' while least retarding root development of the plantlets was 3 krad. At 3.5 krad, which highly retarded plantlet root formation, the mutation frequency was 59.4% (205 mutants observed out of 345 plantlets obtained). Different dosage levels are likly to be optimal for other Streptocarpus species or other genera of gesneriads.

Most of the 1,650 mutants he observed affected flower color or size. Of these, five were named, after being awarded a certificate of merit during spring 1969 exhibitions at the Experimental Station for Floriculture at Aalsmeer. The Arnold Arboretum of Harvard University is now growing the five varieties and plans to release them to commerical growers soon. The following descriptions are based on information kindly provided by Dr. Broertjes.

'Blue Nymph': light blue (Royal Horticultural Society Colour Chart 640) flower color with dark venation on the three lower corolla lobes and a pale greenish yellow blotch in the throat; corolla 4.5 cm long, 4.5 cm wide, tube 2.5-3 cm long; leaves slightly smaller than 'Constant Nymph'.

'Cobalt Nymph': dark blue (R.H.S. 738/1) flower color with darker reticulate (netted) venation on the three lower corolla lobes and a greenish yellow blotch in the throat; corolla 4.5 cm long, 4-4.5 cm wide, tube 3.5 cm long; a compact growing tetraploid.

'Mini Nymph': flower color of 'Constant Nymph' (R.H.S. 738/1, with three dark veins on each of three lower corolla lobes, yellow blotch in throat); corolla 4 cm long, 4 cm wide, tube 3 cm long; plant compact growing and very free flowering, particularly when young.

'Netta Nymph': dark blue (R.H.S. 738/3) picotee flower with distinctive dark reticulate venation on the three lower corolla lobes and on the margins of the two upper lobes; corolla 3.5-5 cm long, 4 cm wide, tube 3 cm long; plant extremely free flowering.

'Purple Nymph': purple (R.H.S. 37) flower color with darker reticulate venation on the three lower lobes and a yellow blotch in the throat; corolla 5 cm long, 5 cm wide, tube 3-3.5 cm long.

CLONAL VARIATION IN SPECIES AND HYBRIDS

Ron Myrh, Toronto, Ontario

It has often struck me that too little attention has been paid by growers and hybridizers of gesneriads to the selection and proper use of outstanding clones of species and variable hybrids. Rarely does one see reference to the use of particular clones in hybridizing to specific goals. This is in marked contrast to the situation that prevails within other plant families. With the orchids, for instance, there are numerous clones of both species and hybrids that are well established as outstanding breeding material. Individual plants of a species may show considerable variation in color, vigor, fertility, flower size and substance and so on. The selection of clones possessing useful or outstanding characteristics enables the hybridizer to efficiently move towards specific goals in his or her breeding program.

While there are a number of reasons why there is unlikely to be as much dependence on the use of selected clones in hybridizing of gesneriads, principally the speed with which seedlings may be brought to flower, and the possibility therefore of developing relatively stable seed lines, a good case can be made for some attention to this procedure. Take for instance Sinningia eumorpha. Few of the Sinningias have been as useful in the development of hybrids as has this lovely species. It is not often recognized, however, just how variable it can be. I have grown plants of S. eumorpha whose flowers vary from pale lavender with purple lines in the throat to the purest white you are likely to see. Some plants have various amounts of yellow in the throat or as lines on the lower parts of the corolla, and there is a pink form of the species. Flower size also varies considerably---I have one pure white clone which has flowers close to twice the size of the norm. It is reasonable to expect that similar variations will occur on other factors, such as floriferousness and fertility, of interest to the hybridizer.

The implications of this variability are considerable. S. 'Dollbaby' is the result of the cross S. eumorpha x S. pusilla. It is interesting to consider how the results might have differed with different characteristics in the S. eumorpha parent. Would we have a larger flowered, more floriferous S. 'Dollbaby' if a different clone of S. eumorpha had been used? The possibilities are numerous. What about a cross between a pure white form of S. eumorpha and S. 'White Sprite' to yield a pure white S. 'Dollbaby'? Has this been done? I hope to do it as soon as my white S. eumorpha flowers again.

There is also considerable variation in hybrid seed lines and even in the supposedly all-but-identical tetraploid forms of sterile hybrids. My good friend Gustav Ciamaga has collected a number of different forms of S. 'Cindy-ella'. Variations can be seen to occur in the shade of the upper two lobes, the extent of spotting on the lower portions of the corolla, the patterns formed by the spots, floriferousness and general vigor. Proper attention to the selection of clones exhibiting characteristics considered important in a particular breeding program

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should prove very useful.

While the selection, maintenance and propagation of outstanding breeding clones should be a high priority for hybridizers, the development of species seed lines with desirable characteristics is another worthy task hitherto mostly ignored. In the case of S. eumorpha, there should be no difficulty over a few generations in establishing a seed line exhibiting specific desirable characteristics. I personally hope to do some work in the direction of developing large flowered whites, but I also see possibilities in the development of plants with purple and yellow lines in the throat and perhaps out to the lobes. It may even be possible to obtain fairly dark lavender flowers with markings. This kind of work does not have the sex-appeal of interspecific hybridizing, with all its talk of F1 and F2 generations, but it is likely to result in considerably greater and more lasting good than most of the random efforts apparently characteristic of much of the gesneriad hybridizing of the past. It is the kind of work which, with more commercial crops, is commonly carried out by Universities or seed companies because of its importance. Until gesneriads become considerably bigger business than they are, though, we will have to do it ourselves.

I would appreciate hearing from anyone who has done or is doing work in this area. I also would like to hear about significant and interesting variations observed in species. Perhaps the sharing of developing seed lines will facilitate our work.

MEETING OF GHA, June 30, 1978 at the AGGS convention, LI, NY
Judy Becker, Salisbury, CT

About forty members assembled for the annual meeting, with Peter Shalit in charge. Judy Becker volunteered to take notes on the meeting in the absence of Lee Linnett.

CROSSWORDS is now considered a valid publication for new cultivars.

The primary purpose of the meeting was to find new volunteers to take over the jobs that the Belangers have done for the past two years. The folowing volunteered:

Co-ordinator	Peter Shalit
Printing and mailing	Martin Mines
Editors	Ann Crowley and Ron Myrh
Membership	Jeanne Morton
Treasurer	Peg Conner

There are about 225 members at this time. With the current dues, that means about $900.00, which just meets expenses. With consideration of inflation, it was voted to raise the dues from $4.00 to $5.00.

Although there was discussion of the possibility of becoming affiliated with AGGS, the decision was deferred.

xCODONATANTHUS 'FIESTA' AN EXCITING NEW INTERGENERIC HYBRID

W. R. Saylor, Brewster, MA

In the late Fall of 1976 I "was looking around for something to do" (as the saying goes) and I decided to re-examine the chromosome number records published in the Brooklyn Botanical Gardens gesneriad handbook. Once more I was impressed by the fact that the genera Nematanthus and Codonanthe are characterized by a haploid chromosome number n=8 and no other genus listed shares that distinction. As a matter of fact it seems that all the other members of the tribe Columnea have n=9.

All the Nematanthus species in cultivation are diploid and grow wild in the southeastern Brazilian states of Sao Paulo and Santa Catarina. Codonanthe on the other hand has both diploid and tetraploid species that are native to Panama, Venezuela and Peru in addition to widely separated regions of Brazil. Candidates for an intergeneric breeding program should first of all be diploid but if any of these diploids were native to southeastern Brazil the prospects of there being a close relationship between the species of the two genera would be just so much brighter. It turns out that Codonanthe devosiana and C. gracilis both come from Sao Paulo and are diploid. I suspect that C. carnosa and C. sp. 'Frances Batcheller' will also fit into this category.

C. gracilis has a nice large flower (as compared with other Codonanthe species from the same area). It was selected as the pollen parent, I believe, because of my familiarity with the handling of Nematanthus blooms.*

The pod parent was an unnamed Nematanthus seedling #3131B with the formula N. wettsteinii x ('Green Magic' x 'Black Magic'). This selection had genes from the two large flowered Nematanthus, N. longipes and N. fritschii together with a good dose from N. wettsteinii. The plant is very much like N. 'Bambino' but with slightly larger leaves. The flower is about the size, shape, and color of N. wettsteinii but with less yellow in the limb. The style is short enough for the Codonanthe pollen tubes to reach the ovary.

Pollinations were made, seed pods did develop, and on March 19, 1977 the seed was planted. Almost exactly one year later the first seedling came to bloom. Since then five or six siblings have flowered, showing surprisingly little variation from seedling to seedling. The very first of these hybrids to come to flower appears also to be the the most ornamental when grown in strong light inasmuch as it displays a strong uniform dark red flush on the back of each leaf leaving only about a 2 mm border of light green.

The new hybrid genus will be designated xCodonatanthus and the selection with the ornamentally marked leaves will be known as cultivar 'Fiesta'. In habit this hybrid is similar to but much more compact than its Codonanthe parent with neat shiny ovate leaves arranged in equal pairs on short internodes that range from 10 to no more than 25 mm in length. It remains to be seen whether 'Fiesta' will be everblooming, although all of its ancestors bloom off and on throughout the year.

(cont.)

xCODONATANTHUS 'FIESTA' (cont.)

The flower of xC. 'Fiesta' is shaped very much like its Codonanthe parent although it is a little smaller and has a smaller limb. The tube of the corolla is a bright moderate or rose red almost identical with that of the flower of N.'Stoplight'. The lobes of the limb are, in pleasing contrast with the rest of the flower, a light cream color with a very faint infusion of red.

And now, after all this, there is still perhaps an even more exciting piece of information to report. The pollen of xCodonatanthus 'Fiesta' has been found to be about 50% stainable. This implies that the F1 generation should not necessarily be the "end of the line". There may be great things just over the hill. Who knows?

* Possibly the choice was also dictated by earlier frustrations in attempts to produce interspecific Codonanthe hybrids and F2 offspring from Gary Hunter's hybrid C. 'Gina'

SINNINGIA HYBRID WINS GHA AWARD
Martin Mines, Brooklyn, NY

The $25.00 GHA Special Award (For hybrids introduced within the last 2 years) was won by my entry of Sinningia 'Molly L', which was hybridized by Bartley Schwarz of Berkley, CA.

Within miniature classification, measuring 4 inches wide by 2½ inches tall, it grows and flowers well in an unprotected environment. The attractiveness is mainly in the shape of the plant and the foliage. The leaves are dark green, flat and flexible, with shape very much like S. 'Hircon' but twice the size. The plant grows as a single stem, sharply pyramid in silhouette, very precisely rosette in leaf arrangment, with ½" internode spacing, which gives it an attractive open appearance. Flowers are slipper type, about an inch long, dark purple-blue top, inside corolla shading to much lighter on floor of tube. There are usually 4 to 8 blossoms at one time, long lasting and held attractively from the leaf mass on 1½ inch pedicels.

Although pollen is produced, no one to my knowledge has produced seed from this new miniature, whose parentage is S. 'Hircon' x S. 'Mother of Pearl'

PRE-REGISTRATION CHECK LIST

When requesting assignment of a cultivar name, it would please any registrar if the plant breeder would proceed with the following steps, preferably in order.

1. Make sure the hew hybrid is distinct from other plants and can be described in words that convey the distinction.
2. Choose a cultivar name that is in accordance with the International Code. *
3. Check the name with the Gesneriad Register to see if it is already in use for another plant. Then write the Registrar to insure that it is not already in use somewhere but not yet in a published register.
4. Publish a description of the plant with a full description and its breeding history, preferably with an illustration adequate to show its unique characteristics. (cont.)

CHECK LIST(cont.)

5. After that, register the name, especially if the hybrid will be made available commercially.

* CROSSWORDS, Volume 2/issue 1, pp.3 "Registration Facts and Fancies"---By Paul Arnold.

BATCHELLER HYBRIDS---descriptions by Frances Batcheller, Durham, NH

XAchimenantha 'Kuan Yin' (Achimenes longifolia x Smithiantha zebrina hybrid) Trailing stems to 20 cm. Small bronze-green leaves in whorls. Pale yellow flower (7.5YR 8/8) tube 5 cm. long, wide lobes, 4 cm. in diameter, flushed with purple, spotted throat. Reg. #6111

XAchimenantha 'Tammuz' (Achimenes mexicana x Smithiantha 'Carmel') Erect habit, stiff stem to to 20 cm. or more. Large deep green cordate leaves. Campanulate flower (10 P3/9) contrasting white throat. Tube 5 cm. long, lobes 4 cm. in diamter. Flower similar in shape to A. mexicana but with redder color. Smithiantha type foliage. Reg. # 66089

Achimenes 'Isis' (Achimenes andrieuxii x A. dulcis) Trailing habit, olive green ovate leaves. White flower with lavender lobes (2.5: 5/8) yellow patch in throat. Tube 3.8 cm. long, 2.5 cm. in diameter. Flower larger than A. andrieuxii, but similar in shpae and color, foliage resembles A. dulcis. Reg. # 66088

Gloxinia 'Medusa' (G. sylvatica x G. gymnostoma) Robust stems 30 to 60 cm. long. Leaves light green, pale underside, 16 cm. long x 7 cm. wide. Two flowers per axil. Sepals long and narrow, corolla tube (2.5R 5/12) 3.8 cm. long, spreading lobes (5R 4/10). Throat white marked with red spots and warts. Numerous aerial propagules. Foliage resembles G. sylvatica, plant habit resembles G. gymnostoma, flower intermediate. Fertile. Reg. # 76143

Gloxinia 'Turan' (G. sylvatica x G. lindeniana) Decumbent stems to 20 cm. or less. Tapered leaves dark olive green with bright green veins, red underside, 8 cm long by 4.5 cm. wide. Corolla campanulate, 2.8 cm. long by 2 cm. wide, tube (7.5YR 9/4), lobes 7.5Rp 3/9) Reg.#76144

XHeppimenes 'Tezli' (Achimenes dulcis x Heppiella viscida) Decumbent stems, usually with close internodes, but occasionally sends out slender long shoots with widely spaced bract-like leaves. Dark green ovate leaves 5 cm. long by 3 cm. wide. Corolla (5 RP 3/9) tube 2.5 cm. long, spreading ruffled lobes 2.5 cm. in diamter, often with 6 to 8 lobes. Throat white. The hybrid resembles the Heppiella parent much more than the Achimenes parent. It is not floriferous

Kohleria'Kapo' (K. 'Longwood' x Sciadotydea hybrid) Robust stems to 30 cm. but more compact in habit than K. 'Longwood'. Medium olive green ovate leaves. Large flowers, similar in size and shape to 'Longwood' but a darker red purple. Tube (5Rp 4/10) lobes (10RP 3/10).

Kohleria 'Modron'((K. eriantha x K. amabilis) x K. amabilis) Robust stems, 30 cm. or more. Leaves grey-green with red underside. Large flowers, 6 to an axil. Tube (2.5R 6/11) Lobes darker (10RP 3/10) heavily marked with stripes and spots.

Kohleria 'Pamola' (K. amabilis x K. longifolia) Congested growth with leaf clusters in axils. Dark green leaves, 7 cm. long by 4.5 cm. wide. Corolla tube 2.5 cm. long, (7.5R 5/13), lobes 3 cm. in diamter, (7.5RP 4/11). Not very floriferous.

Kohleria 'Rongo' (K. amabilis x Sciadotydea hybrid) Robust stems to 30 cm. or more. Leaves dark green with some reddish motling, 10 cm. long by 7 cm. wide. Medium-sized flower, 4 to an axil (5Rp 4/10) heavily lined with deeper color. Very floriferous. Male sterile. Reg.#64054

Kohleria 'Tane'((K. eriantha x K. hirsuta hybrid) x K. amabilis) Erect stems to 30 cm. or more. Leaves dark green with red-orange hairs on edge, 10 cm. long x 7 cm. wide. Corolla (2.5R 6/11) with darker lines. Tube 5 cm. long, wide lobes 3.5 cm. in diamter. Corolla covered with dense red-orange hairs. Floriferous

Nautilocalyx 'Dekla' (N. villosus x N. melittifolius) Erect stems to 20 cm. or more. Medium green leaves with bronze edge, 8 cm. long by 5 cm. wide. Corolla (2.5RP 6/10) with darker patch and lines in thraot. Tube 4 cm. long, spreading lobes 3 am. in diameter. Six flowers per axil. Reg. #76142

(cont.)

BATCHELLER HYBRIDS, --- descriptions (cont.)

Sinningia 'Benten' (S. 'Ramadeva' x S. barbata) Erect stem. Elliptic leaves, dark olive green, red central vein, deep maroon underside, 10 cm. long by 6 cm. wide. 1 - 3 flowers per axil. Corolla tube bent, 4 cm. long (10P 6/9) lobes 1.5 cm. in diameter. Throat white. Outside of corolla covered with long white hairs. Forms poor tuber, best propagated by tip cuttings. Blooms almost continuously. Reg. # 73125

Sinningia 'Erda' (S. eumorpha x S. canescens) Rosette habit, large leaves covered with white hairs. Corolla (2.5RP 8/5) tube 5 cm. long, lobes 2.5 cm. in diamter, projecting forward. Leaves enlarge considerably after flowering.

Sinningia 'Kore' (S. 'Ramadeva' x S. richii) Rosette habit. Bright green ovate leaves, 7 cm. long by 4 cm. wide. Corolla (10RP 5/10) white throat. Tube 3.8 cm. long, lower side swollen. Rounded spreading lobes, 2 cm. in diameter. Reg. # 73124

Sinningia 'Krishna' (Spontaneous tetraploid of S. 'Ramadeva') Very similar to S. 'Ramadeva' but with slightly larger flower of a deeper pink. Fertile.

Sinningia 'Merlin hybrids' A seed line of hybrids involving S. canescens, S. cardinalis, S. eumorpha, and S. pusilla. Similar in plant habit and flower to S. 'Dollbaby', but with red markings in throat. Color varies from pale lavender to deep purple or pink with white throat. Fertile.

Sinningia 'Oengus' ((S. concinna x S. schiffneri) x S. 'Krishna') Rosette habit. Very dark green leaves, maroon underside, 4 cm. long by 3 cm. wide. Corolla (10 RP 3/9) deeper on upper lobes, tube 3.5 cm. long, wide spreading lobes 2.2 cm in diameter. Throat white, speckled. Reg. # 73126

Sinningia 'Ramadeva' (S. pusilla x S. canescens) Small flat rosette, leaves dull olive green, maroon underside, 4 cm. long by 3 cm. wide. Corolla (2.5RP 5/10) tube 3 cm. long, small lobes 1.1 cm in diameter. Throat white. Male sterile. Reg. # 73127

Sinningia 'Yarilo' (S. 'Ramadeva' x S. tubiflora) Erect habit, slender stems to 20 cm. long. Elliptic leaves, 10 cm. long x 6 cm. wide, red veins on reverse side. Inflorescence terminal, 2 pendant flowers per axil. Corolla (2.5RP 6/10) tube long and narrow, 5.5 cm, lobes 2.3 cm. in diameter, sometimes with extra lobes. No fragrance. Reg. # 76145

AGGS CONVENTION 1978
A&P Belanger, Warwick, RI

Frances Batcheller and Bill Saylor gave back to back lectures Saturday morning. It was the grand finale to the Friday flower show, which was truly a superior one.

Frances helped us all to a better understanding of Taxonomy and managed to keep this difficult subject on an entertaining level. We need more lectures of this caliber.

Bill Saylor's lecture and slide program exhibited the progress of a new intergeneric hybrid from the beginning of an idea to the triumphant emergence of a new entity. The final slide showing the flower of the new hybrid xCodonatanthus 'Fiesta' was greeted with a spontaneous, hushed exclamation from the entire audience. We realized at that moment that Bill is quite a showman as well as a leading hybridizer.

Lyndon Lyon exhibited a new miniature hybrid, Streptocarpus 'Love Is', in his commercial exhibit. It is an extremely desirable plant, compact and pleasing in appearance.

Gary Hunter had a prize winning exhibit which featured his new Streptocarpus 'Essu' hybrids. Gary told us that the hybrids are quite heat resistant.

In the show proper, once again, the Sweepstakes winner was the excellent grower and arranger, Jessie Crisafulli. Many other GHA members received awards also.

HYBRID SEED EXCHANGE ???

We have received several requests for a GHA Seed Fund... Since we do not wish to compete with other Seed Funds, and as it would require a volunteer worker to maintain order in such a project, we suggest a GHA-SEED EXCHANGE, with only the interested participating. Anyone with seed to share can send CROSSWORDS the names of the parent plants of the hybrid. If the parents are also hybrids, a short description would help everyone judge the approximate size of the plant at maturity.

At the other end of the Exchange, members interested in a particular cross listed could send a SASE to the hybridizer along with the name of the hybrid seed desired. Feedback to the donor would be optional, depending on the seed and the supplier's desire to know "What happened?", and could be so noted when the seeds were sent out. We will start the project by offering the following seeds:

If you would like seeds of Sinningia 'Silhouette'...write Belanger, 140 Howie Ave. Warwick, RI 02888. This hybrid of S. 'Cindy-ella' x S. 'Pink Imp' is described in Volume 1, issue 2 of CROSSWORDS, 1977. The seeds of this miniature Sinningia are 4th generation, and while most of the resultant plants will be the true named hybrid with deep red-purple, wide limbed, large flowers, showing a darker silhouette of S. 'Cindy-ella' spots in the throat, some variations will occur. Include Self Addressed, Stamped Envelope.

COMING IN THE WINTER ISSUE

MUTATIONS BY RADIATION...Walter J. Pickett, Douglas, KS
GLOSSARY FOR HYBRIDIZERS-PART III...Frances Batcheller, Durham, NH
ARTICLES...by members discussing hybridizing experiences...if any are received before November 1, 1978.

NOTE! NEW MEMBERSHIP CHAIRMAN!! Address listed on Renewal Form. NOTE!!!

GESNERIAD HYBRIDIZERS ASSOCIATION MEMBERSHIP APPLICATION/RENEWAL
Please enroll me as a member of the G.H.A. Enclosed find $5.00 for one years membership and CROSSWORDS, the quarterly newsletter.
(based on the calendar year, 1979.)

Name Address City State Zipcode
Make checks payable to Jeanne Morton, 75 Sandy Pond Rd. Ayer, MA 01432

G. H. A.
140 Howie Ave.
Warwick, RI 02888

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