

THE GESNERIAD HYBRIDIZERS ASSOCIATION  
*NEWSLETTER*

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DIRECTOR'S MESSAGE

CROSSWORDS is now at the cross-roads. After almost two years of producing it, Peg and I have decided that our original idea of sharing hybridizing experiences by this type of co-operative Newsletter has merit, but there is too much work involved for just the two of us to cope with. At the coming AGGS Convention in New York, (L.I.), there will be a meeting of GHA members. Here we hope to resolve this problem by spreading the work load over a larger group of volunteers. Since we are the only ones who have been involved in the production of CW we know how much time and effort it actually takes. We suggest the following breakdown for division of the work, with the hope that in this manner the Newsletter and the Association will go on, rather than halt abruptly in December. A system of chairmen-specialists who could work together to produce CROSSWORDS could be set up as follows:

1. Membership-Financial Chairman...duty...collect dues and pay the expenses of the other chairmen.
2. Editorial Chairman...duty...edit offerings from members, and correlate the best material for publication. Send rough copies to the typesetting chairman,...proofread and correct final type proofs...paste up type into page format.
3. Printing Chairman...duty...see to the printing and mailing of the Newsletter quarterly.
4. Typesetting Chairman...duty...see to the typing or typesetting of the Newsletter, furnish proofs to the Editorial Chairman, make corrections as indicated by him and furnish final type copies.

We would like to hear suggestions from those who are not able to attend the convention. A quick answer will be necessary so we can bring your views before the group at the meeting.

.....CO-OPERATION COULD KEEP CROSSWORDS IN THE MAIL CONTINUOUSLY.....

We would like to take this opportunity to thank the commercial members who have sent us their catalogs. Our mail brings many questions about the availability of plants needed for hybridizing, and it makes it easier for us to name a source when we have the catalogs for reference.

## ASEXUAL HYBRIDIZATION OF SAINTPAULIA AND EPISCIA\*

Peter C. Bilkey and Brent H. McCown, U. of Wisconsin, Madison, WI

Bilkey and Mc Cown report that they have successfully produced HYBR cells of Saintpaulia and Episcia using asexual hybridization techniques. They have not yet obtained a hybrid plant, but since both Episcia and Saintpaulia have a high capacity to regenerate plantlets from leaf, petiole, and callus cultures, they are confident of eventually obtaining hybrid plants.

Asexual hybridization is accomplished by aseptically isolating single cells and removing their cell wall by an enzyme treatment. The cell wall is a barrier to fusion of cells and must be removed for asexual hybridization to occur. The result of the enzyme treatment is a suspension of "naked" cells called protoplasts. Spherical and amoeboid in structure, the protoplast is able to engulf and absorb all sorts of debris, chloroplasts, nuclei, etc., and is an integral part of recombinant DNA experiments involving plants. Protoplasts are most frequently obtained from leaf tissue and occasionally from flower petals.

Since protoplasts from the same plant are just as likely to fuse with each other as with protoplasts from different plants, hybrid selection techniques are necessary. Using brightly colored flower petal protoplasts as a visual indicator of the hybrids is one technique which can be employed. Several other indicator techniques have been developed and can be used simultaneously for proper identification of the hybrids. Saintpaulia flower petals appear to be excellent candidates for asexual hybridization experiments. Not only are the colors useful as a visual indicator of hybridization but flower petals have proven their ability to regenerate viable plantlets.

These initial hybrid plants may have no immediate economic value, but will give access to genes which were NOT otherwise available for use in STANDARD BREEDING PROGRAMS. Thus these "test tube" hybrids may lead to the production of the first true reds, oranges, and yellows in the genus Saintpaulia.

WE ARE FORTUNATE THAT THE GESNERIACEAE WAS CHOSEN FOR THIS IMPORTANT WORK. (ed.)

\*These excerpts were reproduced with the permission of the African Violet Magazine, Mr Bilkey, Graduate Student and Dr. Mc Cown Associate Professor, Department of Horticulture, University of Wisconsin.

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From Peggy Conner, Huntington, NY

I am a relative newcomer to hybridizing, so I don't have a great deal of news. I have seeds from a Sinningia canescens x S. cardinalis cross which are germinating just now, and am very excited about a fat green seed pod on a Gloxinia perennis which I crossed with a Smithiantha hybrid. I am keeping my fingers crossed that it doesn't turn brown and self destruct before it is ripe. This seems to happen with about half my efforts.

## EMPIRICAL USE OF COLCHICINE\*

Report by Art Belanger, Warwick, RI

The process through which vegetative cells divide is called mitosis. The peculiar action of colchicine is to interfere with the division process just at the point when the chromosomes have become duplicated. The cell is made to cease its activities and return to a resting condition, carrying the double number of chromosomes. Since the cell was originally diploid and then doubled its chromosomes, it is now tetraploid. When the effects of colchicine wear off, the cell begins the division process over again, but now as a tetraploid cell. This time the doubled number of chromosomes (tetraploid) duplicate themselves, but then the cell divides as usual, maintaining the tetraploid number of chromosomes per cell. Thus a stable tetraploid cell line has been created. Guided by observation of the results of countless experiments, I can now use this powerful alkaloid on plant material with self-assurance.

The primary use of colchicine for the hybridizer is to double the chromosome number in the cells of sterile diploids, thus enabling the chromosomes to find a like mate when pairing in meiosis. Another use is to take advantage of the fact that colchicine can cause the flowers of diploids to become approximately one third larger. An example of this is the Tetra-Snapdragon which is popular commercially. A third use is to change diploid species plants into colchicine induced tetraploids so they may be crossed with existing tetraploids, thus avoiding the sterility usually associated with such crosses.

Starting with one gram of colchicine powder, divide it into ten equal parts before mixing, then store all but one part in black paper wrapped in foil. Colchicine may be stored at room temperature but will deteriorate in light. Now mix one tenth gram with 10 cc distilled water, which makes a stock solution of approximately 1%. This stock solution then may be varied in strengths and length of exposure times as dictated by the reaction of the plant material you are treating. Too strong and too long will burn plant tissue. Adjust the treatment by adding more water or shortening the length of treatment.

I prefer to treat seeds. I found I could use straight stock solution on them. First soak the seeds in water for 24 hrs., then in colchicine for 24 hrs., rinse and plant by spraying them out of the container into the seed flats with more water. My very first try produced three Sinningia cardinalis plants with slow growing stiff leaves and flowers one third larger than the parent plant. You may expect some distorted plants. The explanation in the first paragraph is too simplified. At times the cell resting period is repeated and the doubling is repeated, causing visible bunching in the growth habit. Sometimes this fault can be helped by self pollination and growing on of the plants. Perhaps an easier way to cure this problem is the compost pile. If you decide to try the seed treatment, plant an equal number of untreated seeds as a control. The control plants come in handy all the way through your experiment, and it is an experiment. Now you will be judging the effect of colchicine treated plants against untreated plants of the same age, grown under the same conditions. The first noticeable effect is that the treated seeds do not

COLCHICINE... (cont.)

germinate along with the controls, not even two weeks late, but more often four to six weeks later. It is probable that this stop and go phenomenon described in paragraph one is the cause of the slow germination and growth of treated seeds.

In the treatment of growing tips of plants and seedlings the solution should be diluted 10 fold. Even at this dilution a treatment of 24 hrs. will burn many plants. I would suggest this strength for 12 hrs. on Sinningias but the growing tip of a Columnea will stand a stronger (one to five) dilution of the stock solution for a longer time. You must establish your own treatment, these are merely hints.

Tubers and rhizomes are best treated by painting the known growing area of the tuber with stock solution. Paint once and let plant sprout normally. The tuber seems to absorb the colchicine and this method of applying the chemical keeps it away from the roots. Roots are particularly susceptible to colchicine damage, resulting in slow growth or death of the plant.

In a report of this nature, members of our organization should be given the facts. I must now mention the many seeds, seedlings and tubers that I have killed by treatment too long or too strong. Don't treat your only tuber or seed, you will most likely lose it. The temptation is to use longer and stronger treatments in order to insure polyploidy, for there is a long wait ahead to see the effect of the experiment.

Although I have not had a plant treated with colchicine that was good enough to introduce, I feel encouraged by the positive reactions I have obtained with species. I now treat seeds from each of Peg's Sinningia crosses even before we know if they are sterile or not. The first seeds of S. 'New Zealand' x S. canescens have been treated and planted. The resultant plants are slower growing than the control plants; they are more brittle and when they bloom I expect to find some of them with enlarged blossoms and fertile.

Some sterile diploids are apparently beyond the help of colchicine. I have repeatedly treated S. 'Tinkerbells' tubers trying to achieve fertility, but without success. Sterile triploids simply resist all attempts, eg. S. 'Zoe'. I have induced this one to stay dormant for double the normal amount of time, still no fertility. Dr. Nixon had a tremendous success in the treatment of S. 'Cindy', a sterile diploid, and brought out S. 'Cindy-Ella' which is definitely fertile and has a larger flower, this from a painted tuber. He also produced S. 'Hircon' using colchicine. Dr. Clayberg used S. pusilla x S. canescens + colchicine to produce S. 'Pink Petite'. He also treated S. pusilla x S. eumorpha to produce S. Xpumila 'Tetra'. I know of a Columnea 'Stella Nova' which was C. crassifolia + colchicine. There is record of an xAchimenantha 'Diamond Lil' that was treated. These may not be all but are the most prominent colchicined introductions.

Either it is quite difficult to produce acceptable treated plants or there are few attempts being made at the present time.

\*Colchicine is a poison which warrants the rubber glove and extreme care treatment. It is available from the Sigma Chemical Co., PO Box 14508, Saint Louis, MO 63187.

## STREPTOCARPUS

Sterling Levy, Windsor Jct., Nova Scotia, Canada

About two years ago I obtained some Streptocarpus seed from Kartuz, S. rexi mixed hybrids. The seedlings matured without mishap and while noting the variations in plant size, blooms and the number of blooms per stem, I thought... Why not cross my own plants? Not knowing where to start, I took the smallest plant and the plant with most blooms per stem (4 to 6 flowers per stem). These plants were selfed and crossed. (Later I discovered GHA and record keeping).

Needless to say I am swamped with seed and seedlings coming along. None of my "creations" have bloomed yet but I have great expectations. This hybridizing is addictive. I am now eagerly peeking into Episcia, Columnnea, etc. looking for pollen and places to dab it.

Regarding radiation of seed and plant material, I am setting up some experiments with the help of a radiation physicist to study the amount of radiation to use and the level and types of mutation or damage caused. We will be using Streptocarpus initially, then possibly Episcia and Saintpaulia. More on that later.

## CANADIAN CAPERS

Ruth Zavitz, RR2 Ilderton, Ontario, Canada

I can sympathize with Georgina Bull, Regina, Sask (Winter '77 issue). Even when the plants you buy are labelled, they seldom prove to be what the labels say. For instance: Sinningia 'Cindy Ella' which so far will neither self nor cross, even though I grew it from seed. Macrantha Compacta seed turned out to be dwarf S. cardinalis. A purchased S. Cardinalis bulb whose selfed seeds produced every shade of flower from orange to ivory. (most of them pretty sickly shades).---Crossed with an unnamed purple mini Sinningia this same S. cardinalis produced a replica of S. 'Patty Ann' much to my surprise. I selfed this new seedling; now waiting to see what surprises that will produce.

---Crossed an unnamed flat-growing coral miniature Sinningia with S. concinna which produced a replica of the coral mini but with flowers in clusters of three and many more of them, but no spots. Have just planted second generation of this.

Also, a Sinningia 'Dollbaby' whose selfed seeds produced about 10% plants with darker flowers and spotted throats. Either it was not a pure strain, S. 'Dollbaby' does not come true to seed or some winged critter had visited S. concinna first. I'm inclined to believe the last because these spotted flowers won't self and the S. 'Dollbaby' type are producing seed.

---Crossed a pink Streptocarpus 'Netta Nymph' hybrid with a dark red giant flowered Streptocarpus, (whatever that is) trying for stiffer stems and all were a deep pink with fine lines in the throat. Have three flats of the second generation coming along. It should be an interesting summer.

These are my adventures so far, as well as collecting as many plant types as I can find that can be grown under lights.

REPORT ON PLANT AND SEED PATENTS

Peg Belanger, Warwick, RI

From Paul Arnold's article in CROSSWORDS, Spring, 1978, we learned that registration of a plant name protects the name. In this article we will find the information that a plant patent protects the plant and that a TRADEMARK is the commercial name or symbol which is protected by its registration in the U. S. Patent Office.

In 1930, the time of the grant of exclusive right to propagate under the Plant Patent Act was 17 years, with the restriction that the plant must be asexually propagated, distinctive, and new to cultivation. The present cost of patenting a plant is: \$65.00 for filing fee, \$100.00 on issuance, and \$1.00 for the certificate. The price for drawings or color photos of the plant must be included, along with attorney fees, which could be as much as \$1,000.00. For further information on protecting plants which must be reproduced asexually (clonal), contact the U. S. Department of Commerce, Patent-Trademark Office, Washington, DC 20231. Since December 24, 1970, legal protection (for 17 years) has been provided by the Plant Variety Patent Act, to developers of new varieties of plants which reproduce by seed. More information can be obtained by writing to the Plant Variety Patenting Office, Grain and Seed Division, Agricultural Marketing Service, U. S. Department of Agriculture, National Agricultural Library, Beltsville, MD 20705, and asking for their pamphlets on the subject. For protecting a plant which reproduces by seed, the 1977 PVPO booklet lists charges of: \$500.00 for the application and search fees, paid when a viable sample of seed of the new variety is submitted and \$250.00 for issuance of certificate. Legal charges no doubt would be close to the ones for the patenting of the clone type plant.

The most important information gained from the research on the subject is that neither the Plant Patent Act nor the Plant Protection Act should be considered an automatic protection for the owner of a certificate, since the Federal Government does not enforce either Act. Instead, like all U. S. Patents, a Plant Patent or Certificate is AN INVITATION TO SUE. The proof of any infringement on plant protection rights, whether clonal or in regard to seed lines, would appear to be very much up to the patent owner. Since the suit must be for monetary damages, the patent violation must have enough financial resources to make it worthwhile for the owner to claim and prove financial damages in his suit.

And if anyone has the thought that the terms which we see so often on manufactured articles, "Patent Applied For" or "Patent Pending", are used indiscriminately on plants, think again. If used, it must be proven if challenged, or a fine of at least \$500 must be paid. If you are seriously considering patenting a plant, read the supplement from the GLOXINIAN, Vol. 12, Number 4, 1962 "Concerning Patents on Plants". If not available from the AGGS Membership Secretary\*, borrow a copy from the AGGS Library (National)\*\*. It is written in a Q & A format in plain English, not Governmentese.

\* \*\* See inside front cover of any current GLOXINIAN.

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Sterling Levy, Box 70 Site 14, RR#2 Windsor Jct, Nova Scotia, Canada - BON ZVO --- reports that there are openings in the Canadian Hybridizer's Round Robins.

MINIATURE STREPTOCARPUS  
Lyndon Lyon, Dolgeville, NY

My first introduction to the fascinating miniature *Streptocarpus* species was at an AGGS convention where I saw *S. cyanandrus* exhibited by Iris August. It was several years later after much searching and many failures that I first planted seed of *S. erubescens* x *S. cyanandrus* and recorded it in book "M", page 71, 8/3/72. The resultant fertile seedlings from these crosses were extremely free flowering and we named some of the better selections 'Cape Beauties' because the small striped flowers resemble our 'Spring Beauties' plus the original species come from near the Cape of Africa. We call the light blue violet colored ones 'Cape Beauty', the white ones 'White Cape' and the pink ones 'Pink Cape'. There is still a great deal of variation from seed and we are trying to improve them. Different people have tried them with varying degrees of success.

Many of the plants tend to act like annuals, growing quite well during the cool months, setting seed freely, then tending to die off in the hot months. To help prevent this, many attempts were made to cross with the miniature species *S. rimicola* and seed was finally planted 4/4/74. Only one seedling 054A survived. This seedling proved more persistent and still survives. 054A accepted mixed pollen of 'Cape Beauties' but the resulting seedlings were only partially fertile. However, more seed has been produced and planted by again back-crossing with the 'Cape Beauties'. As delightful as these little plants are, they are still not for everyone.

Another line of endeavor was to try to combine the small size and multiple flowering characteristic of our 'Cape Beauties' with the more durable and larger flowered *S. rexii* hybrids. Much crossing was done before any viable seed was produced and surprisingly it was from pollen of 'Cape Beauties' on the *rexii* types that we got some viable seed, rather than the other way around. Seed was planted 3/9/74 and one of the very few resulting plants was named *S. "Blue Streaker"*. This plant is free blooming with tubular flowers about 2 inches long by 1½ across the face; color is light blueviolet with deeper stripes turning to a deep violet patch on the floor of the corolla tube. *S. "Blue Streaker"* is male sterile but by diligently back-crossing to the 'Cape Beauties' we finally got a small amount of seed which we planted 5/5/77. Only 10 plants matured which had flowers ranging from light blue to wisteria blue.

*Streptocarpus* 'Love Is' is the name of one that we consider a breakthrough, and is named for the theme of the AGGS Show and Convention to be held a Hempstead, LI, June 29 through July 2, where it will be introduced. It is a small growing multiple flowered plant, rosulate, with leaves only four inches long. The flowers are 2½ inches long by 2¼ across the limb, and are lilac-purple with darker stripes in a light throat, with a patch of aureolin yellow on the floor of the corolla tube. They are freely produced 4 to 7 to a stem. 'Love Is' is male sterile but has accepted pollen from several different sources. Seed has been planted and the seeds look good and healthy.

We now have the opportunity to breed and produce small sized multiple flowered streps with the many colors and ruffled edges of the best of the beautiful large *Streptocarpus* hybrids. Who knows, maybe we can even cross them with some of the scented species. *S. elysii* and *S. fanniniae* are two that we have acquired for this purpose.

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In answer to the inquiries about the Nickerson Color Fan, it is still out of print. Which leaves us with only the Royal Horticultural Society Color Charts.\* We received ours and know of four others who have received theirs. It is reasonably priced and a very well done chart. The delivery is quite slow, 3-6 months.

\*See CROSSWORDS, Volume 1, Issue 3, Page 15

SINNINGIA EUMORPHA X SINNINGIA 'REX'  
Alice Schwartz, Syosset, NY

From my first serious hybridizing attempt, beginning in June, 1977, I have come to some interesting and informative conclusions.

S. eumorpha x S. 'Rex' was a take! The seeds were planted several weeks later with prolific results.....a zillion seedlings. With Spartan discipline I discarded all but twenty-five of the most vigorous. (I'm certain that the ones in the trash were destined to be the jewels of the collection.) I compared the leaf shape of the ones remaining to those of the parents. My husband took slides in each stage of development. I fantasized a great deal and with breathless anticipation waited for the first bloom.

And bloom they did! Some had the shape of S. eumorpha, with a light pink tube having light lavender flared lobes like S. 'Rex'. Others were a rather dark pink with very dark magenta or purplish blotching on the lobes. Two dominant traits were constant: (1) Each inflorescence had red hairs all along the outside of the tube to the lobe flare, (2) The distinct throat markings of S. eumorpha showed through in all seedlings. The colors varied in different blossoms, but not markedly so.

As the seedlings grew, secondary shoots bloomed, and the leaves kept getting larger, truly detrimental. I was not fond of the leaf characteristics of either parent, but how to eliminate them in the following generations? Although the flower of the F1 is attractive, it is no better than several others of that type, and certainly not lovelier than S. 'Rex'.

After appraisal of this first attempt at hybridizing, I can make several observations. Although I liked the bloom of S. 'Rex', and both it and S. eumorpha were the best plants in bloom at the time, that was not reason enough, according to Frances Batcheller. Parents should be selected with considerable thought because of the time spent in a hybridizing project. I also thought that this experience made a perfect case for methodical storage of pollen, so that when the super plant which you want to cross is ready, the right pollen is in the freezer.

Not wanting to flatter myself by saying that I'm more than just a dabbler, I selfed the plants which I thought were the most attractive, and back-crossed others with S. 'Rex'. Now there are some seedlings of insufficient size to make any determination of characteristics, and I am anxious to see the result. If there is no improvement, I will either place them in the trash, or give them to my Swedish Ivy growing friends. In the second generation, some of the recessive qualities may appear, as Frances suggests, and just maybe a small turgid leaf may appear amidst ever-blooming two toned blossoms. There is much to learn about hybridizing, and I have found it a humbling experience.

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#### SEEDS

Ruth Pavlovich, 5424 North 12 Street, Philadelphia, PA 19141

I am using gesneriads in a recreational horticulture program conducted by volunteers under supervision at the psychiatric facility of a local medical center. If anyone would care to donate seeds, described as to expected size at maturity, I will try to provide some feedback.



SHORTENING THE STYLE OF LINEATA  
Ted Bona, Reading, PA

In hybridizing, while using the very tiny *Sinningia* pollen on the very large *Sinningias*, I usually ended with a big zero. I have always been very fond of *S. 'Dollbaby'* and have used it for many crosses. I had tried putting its pollen on *S. lineata*, but the small grains of pollen probably died before they reached the ovary of *S. lineata*. It occurred to me that if the style of *lineata* were shortened, perhaps the pollen grains could reach the ovary. I had heard that this might be possible, and I did have the plants---the space ---and week-ends to give it a try. 'Dollbaby', in my estimation, is one of the best little ones, and I do love this plant. If we had more like it, in a variety of colors, how happy we would be. I am not saying that I do not appreciate the others, but---there usually is a *S. 'Dollbaby'* available when you want it.

*S. lineata* is another of my favorites. It is ideal in the greenhouse; on the benches it just grows and blooms for a long time. The umbels of flowers are a joy to behold. That is why I used these two plants. I emasculated the flowers on *S. lineata* when they were about half open, then waited till the stigma was receptive. (Looking at the stigma with a magnifying glass, you can see that it is receptive when it is wet with what resembles a sticky honey-dew.) I USED SEVERAL FLOWERS AT ONE TIME TO MAKE THIS CROSS. Using a razor blade, I cut the style to about the size of that of 'Dollbaby', then applied the pollen from 'Dollbaby' to the cut end of two *S. lineata* stigmas. As it was difficult to keep the pollen on the stigma, I used the exudate of the *S. lineata* and applied it to three other blossoms. From the crosses using no exudate, I had no success. From the three flowers that had received the sticker: nothing from one, a false seed capsule from another, and from the third came one pod containing very few seed. Out of this pod came *S. 'Love Song'*. Five other seedlings resembled *S. 'Dollbaby'*

This was the only time that I tried using the exudate on the shortened style. Do not give up if you do not succeed with your first attempt. Be careful and clean when using a razor blade. DO NOT SOW ALL THE SEED AT ONCE. I am sure that *Gesneriad* seed should have an after-ripening period before it is sown. With a cross where there are very few seeds, I take half a teaspoon of crushed perlite and add this to the seed in a packet and shake well. From one little pod of seed you will be able to get two or three sowings. You may have some trouble with the first planting, but all is not lost if you have more in reserve. I have also learned that if the seed is sown immediately, as soon as it is taken from the plant, you may have to wait several weeks before germination...YET...if the seed had 'after-ripened' for a week to ten days, they come up in a much shorter time.

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SINNINGIA

John Mc Clellan, Prince Edward Islands, Canada

After reading Peg's article in the recent issue of the *GLOXINIAN*, I think it is time for me to stop dabbling and find out more of what hybridizing is all about. Her comments about hundreds of *S. 'Dollbaby'* plants certainly struck home. Last year I crossed *S. cardinalis* with *S. 'Cindy-ella'* with visions of a red 'Cindy-ella'. The result was a few dozen *S. 'Cindy-ellas'*. More recently I crossed *S. 'White Sprite'* with *S. macropoda* but I have a sinking feeling that I will be getting an abundance of *S. 'White Sprites'*.

COLUMNNEA STUD LIST  
 Art Belanger, Warwick, R.I.

The material in the following list is dated, February 1, 1978. This Columnnea stud list was compiled for the convenience of the members of GHA. Its purpose is to provide a guide for the hybridizer in an extremely large genus. All material used was that supplied by the hybridizer when there were conflicting reports. I must thank all who helped compile it. They were:

Paul Arnold	Mike Kartuz	Bill Saylor
Frances Batcheller	Lyndon Lyon	Peter Shalit
Judy Becker	Henry Peterson	Jim Watson
Hugh Eyerdorn	Bill Richardson	Patrick Worley
Vincent Flanders		Jim Wyrzten

COLUMNNEA	SEED PARENT	POLLEN PARENT	HYBRIDIZER
'Aflame'.....	C. hirta .....	C. zebrina.....	Wiehler
'Adark Horse'.....	'Magic Lantern' .....	C. erythrophaea .....	Richardson
'Alpha' .....	'Yellow Dragon' .....	'Yellow Dancer' .....	Lyon
'Anna C.' .....	Xvilmoriniana .....	C. linearis.....	Kartuz
'Aurora' .....	C. verecunda 'Florence Carrel'..	C. illepidata .....	Cornell U.
'Autumn Leaves' .....	'Pixie' .....	C. erythrophaea.....	Saylor
'Autumn Blaze'.....	C. nicaraguensis .....	C. arguta .....	Granger
'Autumn Dawn' .....	C. nicaraguensis .....	C. arguta .....	Granger
Xbanksii .....	C. schiedeana .....	C. oerstediana .....	G. H. Banks
'Betty Stoehr' .....	C. arguta .....	'Yellow Dragon'.....	Lyon
'Bill Saylor' .....	C. fawcettii .....	C. jamaicensis .....	Morley
'Bonfire' .....	'Fang' .....	C. erythrophaea .....	Lyon
'Brighter Dawn' .....	C. nicaraguensis x 'Early Bird'..	'Constant Flame' .....	Granger
'Butterball' .....	'Yellow Dragon' .....	'Cornellian'.....	Kartuz
'Butterfly' .....	C. arguta .....	'Yellow Dragon' .....	Lyon
'Calypso' .....	'Constant Flame' .....	'Brighter Dawn' .....	Granger
'Campfire' .....	'Early Bird' x 'Othello'.....	C. erythrophaea.....	Saylor
'Campus Favorite' ....	C. affinis .....	C. sanguinolenta .....	Cornell U.
'Campus Gem' .....	C. tulae 'Flava'.....	C. hirta .....	Cornell U.
'Campus Queen' .....	C. moorei .....	C. linearis .....	Cornell U.
'Campus Sunset' .....	C. verecunda 'Florence Carrel'..	C. arguta .....	Cornell U.
'Canary' .....	C. verecunda 'Florence Carrel'..	C. moorei .....	Cornell U.
'Cannonball' .....	C. rubricaulis x erythrophaea...	C. erythrophaea .....	Richardson
'Capella' .....	'Stavanger'.....	Xvedrariensis .....	Haualand
'Cardinal' .....	'Yellow Dragon'.....	Xvilmoriniana x C. gloriosa...	Kartuz
'Cascadilla' .....	Xeuphora 'Ithacan' .....	Xwoodii 'Harvard Window' ..	Cornell U.
'Cayugan' .....	C. crassifolia.....	C. hirta .....	Cornell U.
'Cornellian'.....	C. verecunda 'Florence Carrel'..	C. crassifolia .....	Cornell U.
'Chanticleer'.....	'Yellow Dragon' .....	C. tulae 'Rubra' .....	Bona
'Cherokee' .....	'Ramadan' .....	'Cornellian' .....	Kartuz
'Chippewa' .....	C. nicaraguensis .....	'Early Bird' .....	Granger
'Christmas Carol' ....	'Red Spur' .....	C. mertonii .....	Saylor
'Chocolate Soldier' ...	'Oneidan' .....	'Evlo' .....	Granger
'Cinnamon Toast'.....	'Gold Spice' .....	C. erythrophaea .....	Richardson
'Constant Flame' .....	'Cayugan' .....	C. gloriosa .....	Granger
'Christy' .....	C. zebrina .....	'Oneidan' .....	Wyrzten
'Crimson Banner' .....	'Ithacan' .....	'Yellow Dragon' .....	Kartuz
'Dart' .....	C. arguta .....	'Yellow Dragon' .....	Lyon

COLUMNEA	SEED PARENT	POLLEN PARENT	HYBRIDIZER
'Dennis Adams'	C. urbanii	C. rutilans	Natural hybrid
'Dragon Fire'	C. magnifica x C. gloriosa	C. magnifica x C. gloriosa	Lyon
'Eagles'	'Ithacan'	'Yellow Dragon'	Kartuz
'Early Bird'	C. arguta	'Yellow Dragon'	Lyon
'Elfin'	'Robin'	C. teuschleri	Saylor
'Elmiran'	C. crassifolia	C. moorei	Gay
'El Dorado'	'Pixie'	'Yellow Dancer' x 'Flamingo'	Saylor
'Embers'	'Chocolate Soldier'	C. erythrophaea	Richardson
Xeuphora	C. gloriosa	C. lepidocaula	Moore
'Evlo'	C. gloriosa	C. nicaraguensis	Hammond
'Fanfare'	'Joy'	C. moorei	Saylor
'Fang'	'Early Bird'	'Dragon Fire'	Lyon
'Firecracker'	'Dennis Adams'	C. erythrophaea	Richardson
'Gold Rush'	'Oneidan'	'Betty Stoehr'	Granger
'Firedragon'	C. arguta	C. microphylla	Brown
'Flamingo'	'Yellow Dragon'	C. linearis	Kartuz
'Flash Fire'	'Flipper'	'Yellow Gold'	Lyon
'Flipper'	'Evlo'	'Yellow Gold'	Lyon
'Giltedge'	C. crassifolia	C. zebrina 'Cerro Jefe'	Wiehler
'Glasnevin Promise'	C. harissii	C. hispida	Morley
'Glasnevin Prospect'	C. hirsuta var. fawcettii	C. argentea	Morley
'Gold Finch'	'Great Horned'	'Horned'	Lyon
'Gold Spice'	'Great Horned'	'Horned'	Lyon
'Gold Wing'	'Oneidan'	'Betty Stoehr'	Granger
'Golden Showers'	'Yellow Dragon'	'Ithacan'	Kartuz
'Goldie'	'Evlo'	'Yellow Gold'	Lyon
'Grangers Bountiful'	'Constant Flame'	'Brighter Dawn'	Granger
'Great Horned'	'Twiggy'	'Chocolate Soldier'	Lyon
'Harvard Window'	C. crassifolia	C. nicaraguensis	Wood
'Horned'	'Twiggy'	'Chocolate Soldier'	Lyon
'Inca Gold'	'Twiggy' x 'Yellow Dancer'	'Great Horned'	Lyon
'Indian Summer'	C. nicaraguensis	C. moorei	Cornell U.
'Inferno'	'Moonglow'	C. erythrophaea	Lyon
'Ithacan'	C. gloriosa	C. lepidocaula	Cornell U.
'Joy'	C. arguta	'Yellow Dragon'	Lyon
'Kay'	'Evlo'	'Yellow Gold'	Lyon
'Kaye'	'Mary Ann'	'Constant Flame'	Becker
'Katsura'	C. linearis	C. nicarguensis	Cornell U.
'King Midas'	'Ithacan'	'Yellow Dragon'	Kartuz
'Lemoinei'	C. magnifica	C. glabra	Garnier
'Lyndon Lyon'	C. linearis	Xbanksii	Lyon
'Little Colonel'	C. minor	'Dart'	Granger
'Magic Lantern'	'Mary Ann'	'Robin'	Kartuz
'Malvina'	C. zebrina	'Oneidan'	Wyrzten
'Mary Ann'	'Yellow Dragon'	C. linearis	Kartuz
'Mia'	'Early Bird'	'Dragon Fire'	Lyon
'Miami'	'Oneidan'	'Betty Stoehr'	Granger
'Mildred'	C. linearis	Xbanksii	Lyon
'Moon Glow'	'Great Horned'	C. erythrophaea	Lyon
'Nelly'	'Butterball'	C. erythrophaea	Becker

COLUMNNEA	SEED PARENT	POLLEN PARENT	HYBRIDIZER
'Oneidan'	C. crassifolia	C. allenii	Cornell U.
'Onandagan'	C. tulae 'Flava'	C. nicaraguensis	Cornell U.
'Orange Banner'	'Ithacan'	'Yellow Dancer'	Kartuz
'Orange Beauty'	C. tulae 'Flava'	C. querceti	Cornell U.
'Orange Fire'	Xvilmoriniana	C. gloriosa	Lyon
'Ontario'	C. nicaraguensis	'Early Bird'	Granger
'Orange Princess'	C. verecunda 'Florence Carrell'	C. gloriosa	Lyon
'Orange Wing'	'Oneidan'	'Betty Stoehr'	Granger
'Orange Zing'	'Yellow Gold'	'Dragon Fire'	Lyon
'Oriole'	'Yellow Dragon'	'Ithacan'	Kartuz
'Othello'	C. gloriosa	C. lepidocaula	Cornell U.
'Ottawa'	C. illepida	C. mortonii	Sherk
'Pinnocchio'	C. minor	'Dart'	Granger
'Pixie'	'Yellow Dragon'	C. percrassa	Saylor
'Ramadan'	'Mary Ann'	C. raymondii	Kartuz
'Red Arrow'	C. nicarguensis	C. hirta	Cornell U.
'Red Ball'	'Evlo'	'Red King'	Easterbrook
'Red Emperor'	C. nicaraguensis	C. arguta	Granger
'Red King'	'Betty Stoehr'	'Dragon Fire'	Lyon
'Red Spur'	'Ithacan'	'Joy'	Granger
'Red Stripe'	C. urbanii	C. rutilans	Natural hybrid
'Red Start'	'Cardinal'	Xvilmoriniana	Kartuz
'Red Zebra'	C. purpusii	C. zebrina 'Cerro Jeffe'	Wiehler
'Robin'	'King Midas'	'Cascadilla'	Kartuz
'Scarlet Banner'	'Ithacan'	'Yellow Dancer'	Kartuz
'Snake Charmer'	C. gloriosa	C. microphylla	Lyon
'Seagull'	'Yellow Dragon'	C. linearis	Kartuz
'Splendide'	C. arguta	C. gloriosa	Morel
'Stavanger'	C. microphylla	Xvedrariensis	Haualand
'Stella Nova'	C. crassifolia+colchicine		Haualand
'Sun Dance'	'Yellow Gold'	'Dragon Fire'	Lyon
'Sun Glo'	'Evlo'	'Yellow Gold'	Lyon
'Sunny'	'Yellow Dancer'	C. teuscheri	Saylor
'Sunset'	'Horned'	'Sun Glo'	Lyon
'Sylvia'	'Yellow Dragon'	C. linearis	Kartuz
'Tigridia'	C. minor	'Dart'	Granger
'Tiogan'	C. linearis	C. hirta	Cornell U.
'Tomahawk'	'Cherokee'	C. erythrophaea	Richardson
'Twiggy'	'Flipper'	'Yellow Gold'	Lyon
Xvedrariensis	C. magnifica	C. schiediana	Vilmorin
'Vega'	Xvedrariensis	'Stavanger'	Haualand
'V. Covert'	C. tulae 'Flava'	C. linearis	Covert
Xvilmoriniana	Xvedrariensis	C. gloriosa	Meunissier
'Waterfall'	'Multiflora'	'Early Bird'	Kartuz
'Witchcraft'	'Yellow Gold'	'Dragon Fire'	Lyon
'Wonderland'	'Yellow Dragon'	'Ithacan'	Kartuz
'Wooly Bear'	C. mortonii	C. erythrophaea	Richardson
Xwoodii	C. crassifolia	C. nicaraguensis	Moore
'Yellow Bird'	'Great Horned'	'Horned'	Lyon
'Yellow Dancer'	'Orange Fire'	'Yellow Gold'	Lyon
'Yellow Dragon'	C. gloriosa	C. verecunda	Lyon
'Yellow Gold'	C. arguta	'Dragon Fire'	Lyon
'Yellow Hammer'	'Butterball'	'Twiggy'	Kartuz

## INTERGENERIC HYBRIDS

Frances Batcheller, Durham, NH

Almost all the intergeneric hybrids reported for gesneriads belong to the scaly-rhizomed group. xGloxinera (Sinningia x Rechsteineria) is no longer valid since the species of Rechsteineria used in the crosses were transferred to Sinningia. xHypotanthus is no longer valid since the species of Hypocyrtia have been transferred to Nematanthus or Alloplectus. xRhytidoneria is the hybrid genus formed between species of Gesneria and Rhytidophyllum.

Among the scaly-rhizomed genera, 13 intergeneric hybrids have been reported. Solenophora, a large woody gesneriad, does not have scaly rhizomes, but the flowers have some resemblance to Kohleria.

xAchimenantha (Achimenes x Smithiantha) formerly (xEucodonopsis)

There are a number of named hybrids including 'Kuan Yin', 'Tammuz', 'Arundel', 'Tintagel', 'Diamond Lil' (a colchicined tetraploid), 'Mary Anne', 'Mitsu', 'Cerulean Mink', and the Cornell series, 'Treasure', 'Aristocrat', 'Royal', 'Sterling', and 'Sunshine'.

xDiaskohleria (Diastema x Kohleria)

xGloxinantha (Gloxinia x Smithiantha) formerly (xSmithennis)

'Evlo' (Smithiantha hybrid x Gloxinia perennis)

xGlokohleria (Gloxinia x Kohleria)

'Emberglo' (Kohleria 'Rongo' x Gloxinia sylvatica)

xGloxinopyle (Gloxinia x Monopyle)

xHeppiantha (Heppiella x Smithiantha)

xHeppigloxinia (Heppiella x Gloxinia)

xHeppimenes (Heppiella x Achimenes)

'Tezli' (Heppiella viscida x Achimenes dulcis)

xKoellikohleria (Koellikeria x Kohleria)

'Rosea' (Koellikeria erinoides x Kohleria spicata)

xMoussogloxinia (Moussonia x Gloxinia)

xMoussokohleria (Moussonia x Kohleria)

xMoussoniantha (Moussonia x Smithiantha)

xMoussonophora (Moussonia x Solenophora)

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Coming in the Fall issue:

INTERGENERIC CROSSES IN GESNERIACEAE... Paul Arnold - Binghamton, NY

An article on mutations by Peter Shalit - Seattle, WA

CLONAL VARIATION IN SPECIES AND HYBRIDS... Ron Myhr - Toronto, Canada

## SAINTPAULIA

Harold Rienhardt, New York

I enjoy every word in the hybridizer's newsletters and I do hope it will continue. I have learned so much already. I find Peter Shalit's articles especially helpful.

Up to now I have dabbled with Saintpaulia crosses and in 1971 was successful in getting a cross on S. 'Tommie Lou'. This was a very popular clone with variegated foliage and a small off-white flower. It proved very difficult to cross on but eventually I introduced four plants with the distinctive 'Tommy Lou' foliage. These seedlings have been very receptive to crossing and hundreds of progeny have come from them since.

I am now working on variegated trailers. If you think there is interest enough I will be glad to write of my trailer work. (Thank you for the offer Harold, you write it and we will print it.) ed.

## SAINTPAULIA x STREPTOCARPUS

From Warren Weston, Needham MA

I have been working for several years on producing good stick-tight blossoms on Saintpaulia and feel that I have succeeded with pinks and blues. Now I hope to come up with a good stick-tight single white. I found that working with Blue Boy, which contains fewer mixed up genes than most of our present day hybrids, worked very well when crossed onto some Germanstrain African Violets. The F1 generation gave me a number of good stick-tights and now the F2 and F3 generations look promising.

Recently I tried the wide cross of Streptocarpus stomandrus X Saintpaulia 'Blue Boy' F1 plants. When the seed pods on S. stomandrus were ripe they produced nothing but chaff. However the S. stomandrus crossed onto the Saintpaulia seems to have taken and the seed pods appear to be large and plump. Will let you know how all this comes out in the future.

## REPORT ON HYBRIDS OF EPISCIA 'PINK BROCADE'

Otto Richter, Alexandria, VA

In the early part of 1977 I was successful in setting seed on Episcia 'Pink Brocade' by a hybrid of mine from earlier work. At the present time one plant is in a six inch pot with over thirty stolons formed. It has flowered continuously for over three months. I have selfed several buds and have six seed pods, one of which should be ripe in a few weeks.

Some observations: The plants do well in a forty percent humid atmosphere and a temperature range of seventy to eighty degrees. Terrarium culture does not work well, (the plant slows down in growth and exhibits a browning of the leaves). Stolons root in two weeks with no problems. The plants are being grown on a twenty four hour light schedule.

My goal is to continue to improve the seed line to enable the plant to carry the pink variegation from seed. I feel that this plant does not have any of the shortcomings of the original Episcia 'Pink Brocade'.

QUESTIONS

May we note here that many questions posed in past issues remain unanswered. It seems unlikely that no one in this group knows THE ANSWER or at least the theory pertaining to the problems. (ed.)

From Fran Baschnagel, Tewksbury, MA

Has anyone tried hybridizing the available Petrocosmea species? If so, with what results?

From Tim Ross, Walled Lake, MI

Ted Bona---In your experience of X-raying gesneriad seed I believe you have only worked with Sinningias. If one were to X-ray seeds of other genera do you feel that the number of rays would have to be lowered for smaller seeds and raised for larger seeds or would all seeds need the same amount of 150 rays?

From Sterling Levy, Windsor Jct., Nova Scotia

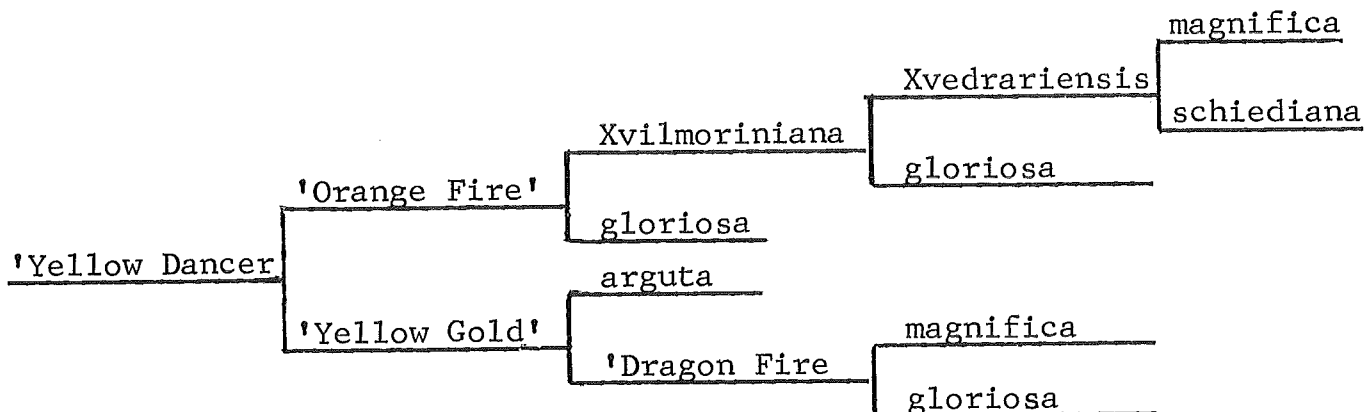
Do low temperatures and or humidity effect pollen production in some gesneriads?

Is there a list of Columnnea hybrids with an indication of whether the plants are sterile or not?

(See page 10, this issue. By using the stud list you can tell that a plant is seed or pollen fertile when it is listed in the parent group. However you can't tell if it is only weakly fertile, which will require more persistence to achieve a successful cross. An example of a weakly fertile Columnnea is C. 'Early Bird')(ed.)

I have C. 'Early Bird' and the stamens dry up long before the blooms open. Is this normal? Cultural problem? (See above).

Below is an example of what can be done with the help of the STUD LIST on pages 10 thru 12. You can trace the heritage of any Columnnea that interests you.



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