CROSSWORDS

The Gesneriad Hybridizers Association

NEWSLETTER

Volume VII, Issue 2, 1983

Editorial Comments

We were happy to see the large turnout at the annual meeting of the GHA in Nashville this year. We feel we accomplished a great deal in the brief time allotted for the meeting.

It was voted unanimously that GHA become a special interest group of the American Gloxinia and Gesneriad Society — our host for the annual meeting and for many future ones. Our method of operation remains the same; we are simply affiliating with a society that shares our interest in gesneriads.

The mail ballots for the 1983 GHA Hybrid Award sent in by members doubled in number from last year; this year we received two. Articles for "CrossWords" are arriving at the same pace. A special committee was formed to oversee the award nominations. Your nominations will still be welcomed, but we feel this is the best solution to a continuing problem. We were very pleased that there were so many excellent choices for the award, and would like to announce that this year's award went to Bartley Schwarz for his beautiful *Sinningia* 'Super Orange.' It was difficult to choose one hybrid from so many worthwhile hybrids. In our opinion, all of them are winners! Meanwhile, why not order some of the nominated hybrids and try them for yourself. Then keep them in mind for possible nomination next year. (See Page 6 for full details of all nominated hybrids.)

Our seed fund is now defunct. With this issue, we introduce a substitute for the seed fund, a Want List column (Page 11). If you have plant material you would like to request in the column, just send a card to Dave Zaitlin listing what you are seeking, and what (if anything) you have to exchange for it. Members can then contact the person directly and arrange the exchange themselves.

— *Anne Crowley and Al Wojcik*

Index

GHA Financial Report

By Meg Stephenson
— Treasurer

MAY 31, 1982 - MAY 31, 1983

BALANCE AS OF MAY 31, 1982	**$1818.85**
INCOME	
DUES	**$1430.00**
INTEREST	**98.21**
	1528.21
EXPENSES	
PRINTING AND POSTAGE FOR "CROSSWORDS"	
MINES PRESS VOLUME 6, #1	**$187.86**
MINES PRESS VOLUME 6, #2	**227.41**
MINES PRESS VOLUME 6, #3	**228.75**
RETURNED CHECKS	**10.00**
AGGS FUND FOR PROGRESS	**100.00**
POSTAGE - DUES RENEWALS MEG STEPHENSON	**33.80**
POSTAGE AND PHONE CALLS ANNE CROWLEY	**20.28**
CHECK ORDER CHARGES	**11.11**
	$819.21
BALANCE AS OF MAY 31, 1983	**$2527.85**

Calling All Florist Gloxinia Growers!

By Ron Cansdell
Lot 260, Aumuna Rd., Terrey Hills, Sydney, New South Wales, Australia 2084

I would like to contact a non-commercial grower of florist gloxinias (*Sinningia speciosa*) who is interested in breeding double, prolific-flowering plants and also improving the single varieties by creating consistantly abundant-flowering, compact plants.

The advantages of this are that two generations can be grown in one year by exchanging seed with one another. I would especially like to exchange with someone involved in the double-flowering types.

Gloxinia 'Medea' and *Kohleria* 'Dido'

By Frances N. Batcheller
Durham, New Hampshire

Gloxinia 'Medea' (*G.* 'Arion' X *G.* 'Medusa') is a hybrid involving three different species of Gloxinia — *gymnostoma, perennis* and *sylvatica.* As *G. sylvatica* is represented in both parents, the hybrid resembles this species more than the other two. It has a short, upright stem. The elliptic leaves are deep green, with a narrow serrate margin. The lower leaves are 9 cm. long by 5 cm. wide. Leaf size diminishes towards the apex. Two flowers are borne in the leaf axil, but have the appearance of a terminal inflorescence because of the reduced upper leaves.

***Gloxinia* 'Medea'—hybridized by Frances Batcheller. Photo taken at the AGGS Convention in Nashville.**

The plant begins to bloom at about 15 cm. in height or less. The flower pedicels are 5 cm. long, so the blooms are held up from the leaves. The calyx is ridged, the linear sepals are 1 cm. long. The corolla is 3 cm. long by 2 cm. wide. The tube is RHS 50A, claret rose. The wide open throat is RHS 10B, barium yellow. The very small lobes, which may number 5, 6 or 7, are RHS 60A, ruby red. There are red glands on the edge of the throat and red color patches deep in the throat. The stigma is stomatomorphic (mouth-shaped). The four stamens are joined in pairs. The plant produces aerial propagules, making vegetative propagation feasible. The fertility of the hybrid has not yet been fully tested. *Gloxinia* 'Medea' differs from *G.* 'Medusa' in a much more compact growth habit and in the much wider throat opening. It differs from *G.* 'Arion' in the red, rather than purple, corolla tube and in the absence of red pigment in the leaves. Because the flowers are long-lasting and the plant size is suitable for the home grower, this hybrid has horticultural potential.

Kohleria 'Dido' (*K.* 'Longwood' X *K. eriantha*) is a tall plant, growing to 45 cm. or more. The dark olive-green leaves are 8 cm. long by 6 cm. wide. There are two flowers to a leaf axil. The small green calyx has triangular sepals. The corolla is 6 cm. long, 4 cm. in diameter, with a tube 2 cm. wide. In color the tube is RHS 49A, dawn rose. There is a narrow even border of this color all around the lobes. The rest of the lobes and the throat is RHS 11C, Naples yellow. There are very small dots of deeper pink on the lobes. The throat is unmarked. The edges of the lobes are somewhat ruffled and irregular. This hybrid has the large flower size of *K.* 'Longwood,' but the pale pink and cream color combination is quite distinct.

As soon as propagating material can be spared, these hybrids will be distributed to some of the commercial growers for testing, and if the plants prove worthy, will become available. Applications for registration have been made.

Current Hybridizing Efforts

We asked AGGS conventioneers what they were working on this year. Here are a few of the answers:

- Peg Belanger — a *Gesneria pumila* X *G. pedicellaris* cross which produced flowers of rose/yellow-/pink, resembling the coloring on the 'Talisman' rose.
- Dave Masterson — a way out of dead-end hybridizing!
- Kikuye Shimomura — developing a double-flowering *Sinningia* 'Wood Nymph.'
- Walter Schroeder — Goal: Multi-flowering miniature Sinningias and Columneas.

Recent Advances in Biotechnology

By Harold M. Schmeck, Jr.
Courtesy of The Associated Press

(Much work has been done lately in the field of gene-splicing or recombinant DNA technology. Researchers are now attempting to use this technique on gesneriads and this could have a significant effect on the search for different colors in gesneriads as well as the creation of new intergeneric hybrids. The following is a report on the latest advances in this new and pioneering field. — Eds.)

The field of biotechnology includes a broad range of subjects in basic and applied research, notably the field popularly known as gene-splicing, in which genes of humans, animals and microbes can be cut, spliced, rearranged and transplanted from cell to cell, even from species to species. The research techniques are known more formally as recombinant DNA technology, because DNA, for deoxyribonucleic acid, is the active material of the genes of all living things.

The work has produced a revolution in understanding of the chemistry of genetics. Its applications so far have included the production of valuable human substances like insulin, growth hormone and interferon, in bacteria. Interferon, a natural antivirus substance that seems to retard cell proliferation, is being tested as a treatment for some infectious diseases and a broad range of cancers. Human growth hormone is being tested for its growth stimulating properties in children who are in danger of dwarfism from lack of growth hormone activity of their own. Human insulin produced in bacteria has been approved by the Food and Drug Administration for use by diabetics.

Applications of biotechnology to the plant sciences and agriculture have lagged behind other areas of biology, but today are undergoing a period of rapid development.

Another report in the first issue of "Bio-Technology," a new publication affiliated with the science journal "Nature," describes research at Rockefeller University that has achieved the first total analysis of two genes that play an important role in an enzyme crucial to wheat's use of photosynthesis. The enzyme, for which the genes provide part of the code of instructions, is thought to be the most abundant protein in plants and therefore probably the most abundant protein in the world. The scientists are studying it to gain a better understanding of the genetic controls governing photosynthesis, the process on which most life on earth ultimately depends.

One technique that has been crucial to gene-splicing research in general has been the use of circular pieces of DNA, called plasmids, as vehicles to put foreign genes into living cells. Plasmids are naturally present in some bacteria and sometimes confer important traits on the bacteria, including resistance to antibiotic drugs. Plasmids, modified to include foreign genes, have been used widely to make common laboratory bacteria produce human substances such as insulin, growth hormone and interferon. The human genes are spliced into the plasmids, which are then put in the bacteria, where they go to work, compelling the bacteria to produce the foreign substance.

Similar ability to transplant genes of plants would make it possible to transfer traits between species that cannot be crossbred by conventional methods. Until recently, however, no plasmids have been available to perform the same kind of gene transplantation into plant cells that can be done routinely in bacteria. But new research has brought one plasmid close to the point of practical usefulness in the genetic engineering of plants, according to scientists involved in the research. This is a plasmid carried naturally by a bacterium called *Agrobacterium tumefaciens*, which causes cancer-like growths in plants.

The growths, called crown gall tumors, are actually produced under the influence of genetic instructions carried by the plasmid, which is inserted into plant cells during the bacterial infection. Using this plasmid, *Agrobacterium tumefaciens* long ago evolved a natural process of genetic engineering similar to the techniques recently developed by scientists. Not only do the bacteria use a plasmid as their vehicle, but they use it for a purpose similar to those of the human genetic engineers. In addition to causing tumors, the plasmid forces the plant to make substances called opines that the bacteria must have to live, but cannot make by themselves.

Scientists have recently used the bacterial plasmid to transplant foreign genes into plant cells so

(Continued)

effectively that the foreign genes actually functioned. They used genes for resistance to antibiotics, because this trait is readily detectable in the experiments, showing that the transfer has worked.

Success in using the plasmids to transplant genes into plant cells has been reported by one European team and two in this country. The research in Europe was led by Dr. Jozef Schell and Dr. Marc Van Montagu, who work at the State University of Ghent, Belgium, and at the Free University of Brussels. Schell is also a director of the Max Planck Institute for Plant Breeding in Cologne.

In the United States, comparable work was done by Dr. Mary-Dell Chilton's laboratory at Washington University at St. Louis and by scientists led by Dr. Robert Horsch at the Monsanto Company of St. Louis.

In all of these experiments, however, the plasmid's tumor-inducing traits were transplanted as well. But in related experiments, Schell's and Dr. Chilton's groups managed to delete the tumor-inducing properties and grow whole, normal plants from cells infected by the modified plasmids. Dr. Chilton credited her team's success in this effort to the contributions of Dr. Michael Bevan, who is now at the Plant Breeding Institute in Cambridge, England.

Dr. Chilton said the next step, already being attempted in research, is to show that mature plants grown from the genetically engineered cells can actually put the foreign genes to use as the individual cells have done. Once this has been accomplished, plant scientists will have their first plasmid to serve as a vehicle for the genetic engineering of plants by transplantation of specific individual genes.

The possible meaning of such developments as these for genetic engineering in plants was described in a recent issue of the journal "Science" by Dr. Kenneth A. Barton and Dr. Winston J. Brill of the Cetus Madison Corp., a Wisconsin affiliate of the genetic engineering company Cetus Corp. of Berkeley, Calif.

Once gene transplantation in plants becomes practical, Barton and Brill said, applications could be expected in such diverse areas as improvement of the nutritional quality of crops, reduced need for fertilizers, increased resistance to environmental stresses, such as cold or drought, and resistance to disease.

Many technical difficulties and gaps in knowledge stand in the way of all of these goals, their report noted, but they also suggested some future strategies to help overcome key problems.

For example, one possible advance, discussed for decades, would be the transplanting into such major food crops as wheat, rice or corn of the ability to fix atmospheric nitrogen. If this could be done, it would greatly reduce the need for nitrogen fertilizer. But the problem is complex and far from a solution. Nitrogen fixation is done naturally by bacteria that have set up symbiotic relationships with the roots of some plants, such as alfalfa and other legumes. The bacterial side of the process alone is known to involve at least 17 different genes, and transplanting all of them would be a huge task, far beyond the present state of the art. But some nitrogen-fixing bacteria live free in the soil, independent of close cooperation with plants.

"Evidence now suggests that free-living nitrogen-fixing bacteria can be encouraged to associate with roots of cereals, enabling the plant host to receive some nitrogen through bacterial nitrogen fixation," the scientists said. "It may be possible to genetically alter the nitrogen-fixing bacteria to bind more tightly to the roots of the cereal and thus create a more beneficial association," they added.

They also suggested that crop plants such as maize could some day be genetically engineered to carry important nutrients they now lack.

The two scientists also said some of the surprising toughness of common weeds that allows them to prosper despite environmental stresses might also be transplanted to crop plants by gene-splicing techniques. "While such plants are incompatible for breeding with cultivated species," the scientists said, "it is tempting to consider transfer of resistance traits by genetic engineering."

"The potential for improvement of crop plants through genetic engineering seems vast," they said, but suggested that other applications would probably be found even more revolutionary than those that can be imagined today.

"The future of plant genetic engineering will be exciting," they said, "as much because of applications we cannot yet predict as because of those already expected."

1983 GHA Hybrid Award Nominations

By Frances N. Batcheller
Durham, New Hampshire

This year, the Gesneriad Hybridizers Association Award for Outstanding Hybrid was chosen from a slate of nominations prepared by a committee and nominations from the floor. This procedure was adopted because only two mail ballots had been received at the time of the meeting held during the 1983 AGGS convention in Nashville, Tennessee.

By a vote of the members present, the 1983 award went to Bartley Schwarz of California for his hybrid ***Sinningia* 'Super Orange.'** This miniature represents an important color break, with an abundance of large flowers and soft green leaves.

The other nominations for the award were:

***xCodonatanthus* 'Springtime'** (*Codonanthe digna* X *xCodonatanthus* 'Fiesta'). This trailing, everblooming plant has pale pink lobes with a deeper pink tube and small leaves. It was hybridized by William Saylor of Massachusetts.

***xDaltrichantha* 'Golden Bea'** (*Trichantha brenneri* X *Dalbergaria sanguinea*). Strong, upright and spreading pale brown stems. Leaves extremely anisophyllus (pairs are unequal in size), obovate, 7 cm. wide by 17 cm. long, glossy deep green on top, pale maroon on the bottom. Entire leaf covered with fine, short, stiff white hairs. Calyx maroon, darkening at the tips, finely toothed, slightly spreading. Corolla tubular, 5 mm. diameter by 20 mm. long, bright yellow with radiating white hairs turning maroon at the lobes. Three to six flowers per leaf node, exceptionally floriferous and everblooming. It was hybridized by David Masterson of California.

***xGlokohleria* 'Scarlet Letter'** (Gloxinia X Kohleria). This compact plant has dark, coppery, tapered leaves. The corolla has a light red tube and brilliant lobes. It was hybridized by Patrick Worley of California.

***Kohleria* 'Red Ryder'** This compact plant has clusters of very large, fiery red flowers with deeper red spots. The foliage is marbled. It was hybridized by Patrick Worley.

***xNiphimenes* 'Lemonade'** (*Niphaea oblonga* X *Achimenes flava*). A compact, trailing plant that has clusters of short-tubed, lemon yellow flowers and puckered leaves. It was hybridized by Patrick Worley.

***Nematanthus* 'Black Gold'** This trailing plant has small purple-black, glossy leaves and deep gold flowers. It was hybridized by Bartley Schwarz.

***xSmithicodonia* 'Denise'** (Smithiantha X Eucodonia). Rose-pink, slipper-shaped flowers with densely spotted throats are held high above compact, textured foliage. It was hybridized by Patrick Worley.

***xSmithicodonia* 'Elizabeth'** (Smithiantha X Eucodonia). The foliage has the shape and coloring of a Smithiantha, the violet-purple, nodding flowers are heavily spotted in the throat. It was hybridized by Patrick Worley.

***Sinningia* 'Little Venus'** (*S.* 'Modesta' X *S.* 'White Sprite'). This miniature plant has long-lasting white flowers, with a touch of pink in the throat. It was hybridized by Patrick Worley.

All of the above hybrids, with the exception of *xDaltrichantha* 'Golden Bea,' are available from Kartuz Greenhouses.

For more information on some of the nominated plants, see:

"CrossWords," Volume V, Issue 1, March 1981, "A Non-Traditional Breeding Chart for xCodonatanthus," W. R. Saylor.

"CW," Volume III, Issue 2, Summer 1979, "In Search of the First White *S.* 'Dollbaby,' " Patrick Worley.

"CW," Volume III, Issue 4, Winter 1979, "Ron Gets an Answer," Patrick Worley.

Aeschynanthus . . . Australian-Style

By Mike Marriott
Enoggera, Queensland, Australia

I would now like to familiarize "CrossWords" readers with the work I have done so far with Aeschynanthus. The table below, which I have assembled, shows only those species and hybrids which I have managed to collect. (I would dearly like to receive fresh seed of species not listed. Hint, hint.)

This type of table has the advantage of showing quickly those species or hybrids which will produce pods of viable seeds, or have very productive pollen.

POLLEN PARENT

POD PARENT		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R
A	'Black Pagoda'	x		y	y			y	y		x	y					x	x
B	'Coral Flame'		x	x	x			x	x								x	x
C	'Fireworks'			z	z	x	y	z	x	x	x	z	z		z	z	z	x
D	fulgens		x		z	z										x		
E	hildebrandii			x	x	x	x				x						x	x
F	lobbianus	x										y						x
G	longicaulis	x	x		x	z							z			x	x	
H	'Mandalay'			x	y	y	y		x	x		z				x	x	x
J	micranthus			z	z	z	z	z	z?		z	z				z		x
K	'minima'					x					x		x					
L	parasiticus			y	z		y		x	z		z				y	z	
M	albidus		y	x	z	x				x		y	z			y		
N	obconicus																	
O	parviflorus			x					x									
P	parvifolius																	
Q	pulcher	x	y	z	y	z				z	z	y	y			z		x
R	speciosus	x		y	z	z	y	z	x	x		z	x				x	x

LEGEND: x = **cross attempted** y = **seed, but none viable** z = **germinated**

So far, I have had only two of my crosses flower, but even with this lack of blossoms, I would like to make the following comments:

A. **'Black Pagoda'** — As a pod parent, it has produced plenty of seed — but none viable. It is also pollen sterile, so it is obviously a waste of time continuing to attempt crosses with it. But wait! Bill Saylor has successfully crossed it with *A. evrardii* ("CrossWords" Vol. VII, #1). So perhaps it's worth a little more persistance after all.

(Continued)

***A.* 'Coral Flame'** — Last year I had my first flowering with this plant, but an extreme cold snap caused total bud drop. This year I have had quite a lot of blooms which I have selfed in order to obtain a plant with more cold tolerance.

A. fulgens — This has the nearest-to-orange blooms of any species I have worked with so far. The leaves are a pleasant, fresh green. However, this species is too large for indoor growing.

A. hildebrandii — This one interests me because of the problem it presents. Obviously it must set seed in the wild, but it hasn't done so for me in cultivation. The pollen is apparently O.K., as it can be used as a pollen parent. It has been said ("CrossWords" Vol. VI, #3) that it matters little from a breeding standpoint if a plant will not set seed as long as the pollen can be used. However, there is a possibility that, even though it will not set seed or produce viable pollen for me, it could set seed under different cultural conditions. These conditions may involve a difference in humidity, light, temperature or even soil composition.

A. lobbianus — This might actually be *A.* 'Pullobia' (*A. pulcher* X *A. lobbianus*) because crosses with *A. pulcher* have produced flowers mostly like *A. pulcher.* This was my very first cross.

A. micranthus — This is the only species I have which sets seed without my interference. This was something which I didn't allow for, as it was new to me when I first used it. So it is quite possible some of my crosses using this one were actually self-pollinations.

A. 'minima' — Sold under this name in Australia. (I have even seen printed nursery labels with "Columnea 'minima' "). I don't know the correct name for this one. It has the smallest leaves of any Aeschynanthus I have, the flower being like that of *A. pulcher* but with a pinkish tone. There is also a variegated form.

A. albidus — I'm looking forward to seeing the results of this cross with *A. fulgens.* This one wouldn't be for the indoor plant grower, but there is a demand for this type of plant in coastal Queensland, where there are many shade house growers.

In the future, I will be more selective in my crosses, even though my haphazard crossings have been interesting and have given me much pleasure.

From time to time, I see comments made about the production of look-alike hybrids being a waste of time and effort. Surely the search for new flower colors, shapes and sizes alone is not all that hybridizing is about. I shall also be looking to breed plants that have the following qualities:

1—Vigorous root systems.
2—Can perform well in extremes of temperatures (mainly lower).
3—Grow well in low humidity.
4—Have good disease resistance.
5—Have lower light requirements for flowering.

Interestingly enough, my friend Leong Tuck-Lock in West Malaysia (another GHA member), will be seeking Aeschynanthus that flower in conditions of high humidity and temperatures. So it matters a great deal which growing conditions your hybrids will likely have.

Introducing . . . New Hybrids from the West

By David R. Masterson
San Francisco, California

***xDaltrichantha* 'Domination'** Seed parent, *Dalbergaria polyantha;* Pollen parent, *Trichantha sanguinolenta* 'Feather Ball' (G-382); Date crossed, 7/16/78; Ripened, 9/1/78; Sown, 9/10/78; Number of seeds, 61; Percent of germination, 50%.

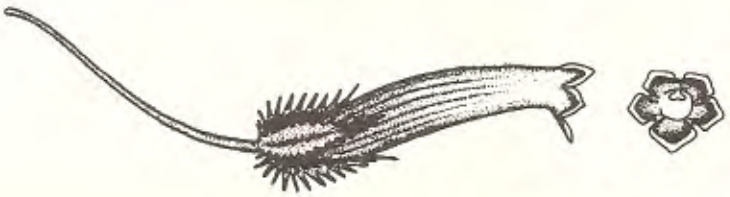
Intent And/Or Purpose: To produce an intergeneric hybrid with the flowering characteristics of *D. polyantha* combined with the coloration of *T. sanguinolenta* 'Feather Ball.'

Results: The intergeneric hybrid resulting from this cross can best be called a true intermediate. The combining of radically different species can produce very interesting plants and in this case *D. polyantha*, with its stiff upright stems and *T. sanguinolenta* 'Feather Ball,' with thin vining stems, yielded a hybrid with small upright stems spreading gracefully with age. Both species and the hybrid have anisophyllus (unequal) leaves and the drawings below illustrate the combining of the calyx and corolla.

Description: Plants intermediate with greenish-brown upright and spreading stems, leaves anisophyllus, obovate (oval-shaped, with a narrow stem), glossy dark green top and pale green below with random red spots. Pale green pedicel to 4 cm. in length. Calyx pale green, fringed with red tips. Corolla tubular 1 cm. in diameter by 4.5 cm. in length, red-orange at calyx to bright yellow at throat, spreading lobes are bright red-orange with yellow edge. Very floriferous, but sterile.

(Continued)

***Trichantha sanguinolenta* 'Feather Ball'**



***xDaltrichantha* 'Domination'**

Dalbergaria polyantha

Note: There are two collections of *Trichantha sanguinolenta* in cultivation. 'Feather Ball' (G-382) with plain green leaves from Costa Rica and 'Black Frill' with red-spotted leaves from Panama. It can only be assumed that 'Feather Ball,' although not obviously, carries a recessive gene responsible for the red leaf spots on *xD.* 'Domination.'

***xColtrichantha* 'Wonderlust'** Selected seedling between *Columnea erythrophaea* and *Trichantha* 'Tigerpaws.' Medium upright to spreading greenish-brown stems. Leaves slightly unequal, oval, 5 cm. wide by 12 cm. long, dark green above, pale maroon on the bottom. Calyx pale green, toothed (similar to *C. erythrophaea*) on pendent green and maroon pedicel 5 cm. long. Corolla tubular, 1.5 cm. diameter by 8 cm. long, deep red on top, yellow with red stripes below, flaring red lobes marked with a yellow design. One to three flowers per major leaf node. Very floriferous.

***xColtrichantha* 'Dark Skies'** Intergeneric hybrid between *Columnea bilabiata* and *Trichantha tenensis.* Decumbent (ground-hugging) and spreading greenish-brown stems to 5 mm. diameter. Leaves equal, elliptical, 2.5 cm. wide by 10 cm. long, deep glossy green on top, glossy deep maroon on reverse. Small, pointed, finely-toothed, deep green calyx on a maroon pedicel 10 mm. long. Corolla tubular, .5 cm. diameter by 5 cm. long, maroon red, spreading lobes with fine radiating maroon hairs. One to four flowers from each node, very floriferous.

***Dalbergaria* 'Serria'** Intermediate hybrid between *D. polyantha* and *D. vittata.* Stems erect, decumbent with age, dark brown at base to pale green at terminal, covered with thick maroon hairs. Leaves extremely anisophyllus, obovate, 6 cm. wide by 16 cm. long, dark green top, finely serrated margin, medium green underside. Entire leaf covered with short, thick maroon hairs giving it a halo appearance. Short 1 cm. long, pale green pedicel and pale green frilled calyx with maroon markings on the mid-vein, covered entirely with maroon hairs. Corolla tubular, 9 mm. diameter by 45 mm. long, bright ivory yellow with five faint orange stripes, slightly constricted at mouth with flaring lobes each marked with maroon at the center of the lobe. Floriferous.

***Trichantha* 'Cleo Kohm'** Intermediate hybrid between *T. filifera* and *T. pulchra.* Thin greenish-brown decumbent stems with thick radiating, 3 mm. long, red hairs. Leaves extremely anisophyllus, obovate, 4 cm. wide by 9 cm. long, medium green above, pale green below. Calyx pale green, toothed, covered with short stiff bright red hairs. Corolla tubular, yellow, 8 mm. diameter by 50 mm. long, closed lobes, tube covered with bright red radiating hairs that yield an overall orange appearance. One to three flowers per major leaf node. Very floriferous.

***Columnea* 'Sundowner'** Intermediate hybrid between *C. erythrophaea* and *C. schiedeana.* Medium pale green to brown smooth stems to 5 mm. diameter, semi-upright to decumbent with age. Leaves unequal, elliptical, 3 cm. wide by 8 cm. long, deep green above, maroon underside with smooth surface and margin, oblique base, internodes at 1 to 1.5 cm. Pedicel thin, pale green to rose, 3 cm. long. Large leafy, toothed pale rose, green tipped calyx. Corolla tubular to 9 cm. long, with flaring lobes (similar to *C. erythrophaea*) deep red-orange above to yellow below with pattern of opposite color throughout. Recurrent bloom, self-branching, attractive plant. Hybrid pollen stainability, 100%.

Did you know . . .

Miniature Sinningias, like *S. concinna* and *S.* 'Snowflake,' are more likely to self or cross-pollinate during the Fall and Winter. If they refuse to set seed during hot, muggy weather, try it during the cooler months of the year.

Prof. Robert E. Lee reports that he learned during the Symposium following last year's AGGS Convention in Sarasota that the ovules of *Titanotrichum oldhamii* are non-functional, so no one needs to try to self-pollinate it to get seeds. He also reports that no one seemed to know if the pollen was functional or not.

Dr. Larry Skog writes that a combined list of all the gesneriad chromosome counts (which were published in "CrossWords" last year) will be appearing, along with some additions and corrections, in "Selbyana," Volume 6. More details when available.

A Way to Differentiate Look-Alike Episcias?

By Leong Tuck-Lock
24 Jalan Johore, Canning Garden Estate, Ipoh, Perak, West Malaysia

Hybridizing Episcias and then raising new varieties from seed is fun. From my efforts to create or improve them, I have raised quite a large number of seedlings. As they grow, as is always the case, the seedlings display a wide variation in color, leaf pattern and variegation. Also, many look-alikes emerge from the many batches of seed sown that are often very difficult to tell apart. But, because they are seedlings, I know that each one is of a different clone. Genetically speaking, each seedling has its very own gene pool.

Just for the sake of interest, I kept two clones of look-alikes because both were good bloomers and strong growers. After a few months, the two clones could hardly be distinguished from each other. No names were given or even a label to tell me which was which. A result of sheer laziness on my part! All I know is that one clone is more receptive to pollen than the other.

A few months ago, while I was pollinating more flowers on the two clones, I noticed the different colors of the seed capsules — a nice dark ruby-red on one, while the other was less pretty, only a light greenish-brown. The capsules also differed in shape. Thus growers of Episcias might be able to identify their look-alikes by fruit characteristics should there be a mix-up. Growers could pollinate the flowers of look-alikes and note the colors and shapes of the capsules. Fruit information could be used in addition to what is available on varieties now grown. Descriptions frequently are based only on shape and color of flowers as well as on leaf colors, patterns and variegation. This information perhaps could eliminate some confusion in the future. Why not try to differentiate *Episcia* 'Cleopatra' and *Episcia* 'Pink Brocade' by fruit characteristics? I would love to try this but these cultivars are not yet available in Malaysia.

Want List:

(Requests should be sent to David Zaitlin, 1441 Drake Dr., #3, Davis, Calif. 95616. Do not send plant material to Dave. Please list what you are requesting, and what (if anything) you have to exchange for it.)

Chirita asperfolia

— Margaret Waguespack
334 Halsey Dr.,
Harahan, Louisiana 70123

Fresh pollen of *Gasteranthus atratus* or any Besleria species. Will exchange for pollen or plant of *Gasteranthus acropodus.*

— Al Wojcik
1300 E. Lafayette, Apt. 1010
Detroit, Mich. 48207

Seed of *Streptocarpus polyanthus* (Burtt) and seed of Saintpaulia species. Will exchange for seed of *Streptocarpus mucosus, S. caulescens* and *S. thompsonii.*

— William Hutchinson
52 Jeffrey Lane
Amherst, Mass. 01002

(Eds. note: If you would like to exchange with Bill, send a note to Dave Zaitlin, also. Dave has the seed of these Streptocarpus species. He also has fresh seed of *Sinningia* 'Patty Ann'-type hybrids as well as *Sinningia* 'Silhouette' and 'Cindy-ella'-type hybrids. Contact Dave if you're interested in this seed).

Meet the Hybridizer: An Interview with Bartley Schwarz

(Bartley Schwarz is probably best known for his work with Sinningias. He has produced some excellent Sinningia hybrids, which are characterized by unusual colors and large, flaring blooms. He has also worked with Columneas, Streptocarpus, Nematanthus and many other gesneriads. His *Sinningia* 'Super Orange' was recently honored with the 1983 GHA Hybrid of the Year award. This is the first of a series of interviews with some of the best-known gesneriad hybridizers. — *Al Wojcik*)

What have you been doing lately?

I've moved, and I've split up my partnership. I'm leasing out my greenhouse to someone else and I'm trying to relocate in the Half Moon Bay (Calif.) area. So, I spent six weeks moving all my plants, all my furniture.

Congratulations on receiving the GHA Hybrid Award this year for your *Sinningia* 'Super Orange.'

Thank you. Thank you very much.

Can you tell us how you developed 'Super Orange.'

Well . . . you've asked me about my most complex hybrid. On one side of it is 'Coral Baby,' way back — about five or six generations.

I've always thought 'Coral Baby' was sterile.

Like a lot of Sinningias, it's only partially sterile. If you keep applying pollen to a lot of these supposedly sterile plants, you will get, in the next generation, maybe one or two seedlings, and if you take those plants and apply pollen from a fertile plant you will often regain fertility. You just have to select out. You can do that with a lot of things. I've done that with a lot of Sinningias and regained fertility.

'Super Orange' is mostly 'Mother of Pearl,' which they've figured out is a sibling of 'Modesta' or something, and that one ('Mother of Pearl') was applied to 'Coral Baby' and the plants were carried two generations beyond that. I then bred into it with my . . . this group of plants that I'm going to discuss is where most of my reds come from . . . it's really complex. It's 'White Sprite' crossed with one of Lyndon Lyon's xGloxineras (*S. eumorpha* X *S. cardinalis*), which was a sibling of 'Rex,' but one that was much more fertile and not necessarily a small grower. I grew a bunch of them about six or seven years ago and I selected out a few. It was a reddish-coral color. Ted Khoe did the cross ('White Sprite' X Lyon's xGloxinera). He got this little seedling that wasn't very fertile. It was a tiny pink plant, kind of like the plant that everyone wanted at that time. Then, that plant had 'Mother of Pearl' pollen put onto it. That whole side then gave me, in the first generation, a kind of muddy pink. When selfed, it gave me a line of reds, and also 'Hot Pants,' 'Super Red' and some lighter oranges which I'm working with now that have big flowers. They were all fertile and tended to line-breed.

One of the interesting things about gesneriads and especially the Sinningias and Streptocarpus, is that sometimes when you have a complex hybrid and you get a plant in the next generation, they come true in that generation. The reds from that cross, like 'Super Red,' now come true and are very fertile. I also got a lot of pinky-oranges from that cross. One of those was combined with a 'Coral Baby' X 'Mother of Pearl' hybrid which had also been selected out for a couple of generations. So those two sides were fused, and then carried on for another three generations, just selecting for the most intense oranges. I have not had a lot of luck with 'Super Orange' in getting it to really seed freely. I consider it one of my weaker hybrids.

That's unusual, because the 'Super Orange' I have is quite generous in setting seed, and so far the majority of seedlings have come true. I got my original seed from The Glasshouse Works in Stewart, Ohio, who received theirs from someone in the New York area, who originally got the plant from Marty Mines.

Will you send me some seed? I'm having a hard time with it. The plant that I gave Marty was one of the better ones, and I lost the plant. I've got some others coming along now, but that one that Marty got was really an intense orange, and it even had a yellowish tinge to it.

I'd be glad to send you some seed. Do you think you'll ever develop that true yellow miniature Sinningia that everyone is looking for?

Well, like I said, I have not had a lot of luck. It's been one of my weaker plants. I'd like to grow a whole bunch of them and select out again for the yellow.

Back to 'Super Red.' You remember 'Hot Pants'? There was a big white one, that I called 'Giant White' or 'Premiere White.' That one had a very large flower, and when bred with 'Scarlet Red' produced in the first generation kind of a muted pink color. In the second generation I got beautiful red flowers and I carried that on. Those all bred true and I've been carrying those on for awhile. There's no variation now. Nice, vibrant red, as nice as 'Scarlet Red,' big flowers that have a picotee or ruffled edge around it.

(Continued)

Where did the ruffled edge come from?

That comes from the xGloxineras, the eumorpha-cardinalis crosses. Also, out of that sibling of the giant whites, I line-bred some salmon ones and those are very much like the reds, but with a beautiful salmon color and a magenta blotch in the throat. Really striking. That one I call 'High Voltage.' It also comes true.

Have you done any crosses with *Sinningia sulcata* yet (the yellow-flowered species)?

No, I lost my *sulcata*. I've got *Sinningia peruviana* growing in a basket outside for two or three winters now, that looks real good. It's got buds on it.

I've done so many Sinningia crosses, that I figure if they're not fertile, they just fall by the wayside. I don't really have the time or the room to take the tops off, etc. I got some really interesting things when I crossed my fertile 'Cindy' with 'Mother of Pearl'. In the second generation, it scattered and recombined and I got some really nice, bright pinks with spots. But it was only in the second generation. They weren't very strong plants and not very fertile. But it's interesting . . . always grow the F2's.

You've referred to a fertile 'Cindy,' as opposed to 'Cindy-ella.' Can you give us some background on this fertile 'Cindy' of yours?

Some years ago, I was raising a number of 'Cindys' by cuttings, and I looked at one of them and it looked a little hairier, etc. This was just about the time that 'Cindy-ella' was being developed, but before it was out. And I looked at that plant and I thought it must be a spontaneous polyploid. I don't know if it's any different than 'Cindy-ella.' I'm just going on the theory that when they did 'Dollbaby,' and then the spontaneous polyploid 'Dollbaby' occurred, that the polyploid one was a little easier to grow. All my 'Cindys' have been the fertile form of 'Cindy,' which may or may not be exactly the same as 'Cindy-ella,' but they came about differently.

I just had that same thing happen to one of my mini-Streps. I used my Streptocarpus 'Might Mouse' to create those. I have one that seeds true now.

I've crossed 'Super Orange' with your fertile 'Cindy' and gotten some nice plants out of it.

That's a good move.

But the flower buds start out orange, then the purple of 'Cindy' takes over and washes the orange color out.

Yes, you'll get that kind of in-between color. Go to the next generation. I think that 'High Voltage' is almost what you can anticipate getting. It's a big flower that's already a pure color. It's really difficult when crossing 'Dollbaby' and 'Cindy' with the oranges and pinks to get that nice, dark, flat foliage like 'Cindy.' But that's the approach I had.

I've got some really nice Gloxinias that I'm working on. I took *S. speciosa* 'Lavender Queen' and I crossed it with a Lyndon Lyon's red and white Gloxinia, like 'Slippertime,' that's real tiny and fertile. In the first generation I got purples. But I got one plant that was very vigorous, yet with small dark purple blooms. I selfed it and got some small-growing, free-blooming plants out of it, more like 'Lavender Queen.' I also have the results of that crossed with another of Lyndon's Gloxinias. I selected a nice red and white one, a miniature, a lot more vigorous than a regular Gloxinia, held the flowers a lot better. Also regained the peloric flower shape. They really do well, perform well.

Have you had any success getting stable peloric flowers on the miniatures like 'Wood Nymph' or 'Bright Eyes'?

It's a very unstable gene. I do have a peloric Columnea called 'Starburst.' I'm continually trying to improve my plants, to create something new, but I don't really carry on some of the older hybrids, especially if they're sterile. Like *Sinningia* 'Black Light', which is really a nice plant, but it's so sterile . . . even though I did get some seedlings out of it, but they were really nothing, really poor.

My plant of S. 'Black Light' easily sets seed, and they do come true for the most part.

What must have happened is that somewhere along the line, one of them must have become a polyploid. That happens sometimes.

Two years ago, your *Aeschynanthus* 'Big Apple' was given the GHA Hybrid Award. When will it be released?

Here's the situation. I've developed two *Aeschynanthus hildebrandii* hybrids: *A.* 'Big Apple' and *A.* 'Flash.' I've released 'Flash' — that's *A. hildebrandii* onto *A. evrardii*. 'Big Apple' (*A. hildebrandii* onto *A. micranthus*) I'm going to patent. Then we'll see what happens. I've got tons of it, but due to the partnership split, my hands are a little tied on it. It will be out.

(Continued)

We've had comments printed in "CrossWords" from GHA members who have had some difficulty using *A. hildebrandii* in crosses.

Oh, it's easy. As a pollen parent. The pollen will travel down the stigmas of much larger flowers. But always try it both ways. I tried it on *Aeschynanthus* 'Kew Pink' — it didn't work. I've tried it on some of the New Guinea varieties and gotten seed, but it never germinated. I tried it on 'Red Cascade,' it didn't work. I tried it on *A. lobbianus* once — it didn't work, but I'm going to try it again. My next step is, I'm going to have some sort of polyploid made of 'Big Apple' and my other *A. hildebrandii* hybrids, and start intercrossing those. They're sterile. Boy, are they sterile.

Has *hildebrandii* ever self-seeded for you?

Once, yes. I got kind of weak seedlings. My feeling is it might be a natural hybrid. Or there might be more than one clone out there, and it might have to inter-pollinate with this other clone, which we don't yet have. It's got to grow cool.

I have good luck with *hildebrandii* under lights.

Well, 'Big Apple' will bloom continuously from July to about January in natural light. It'll go six months, but not a full year. 'Flash' is about the most spectacular thing. It has flowers as large as *evrardii* but real intense colors, compact, like a super-*Aeschynanthus evrardii* species, just spectacular. But it likes good light, too. It blooms even longer than 'Big Apple.'

Have you ever used non-traditional hybridizing techniques like cell fusion or gene manipulation?

No, but that's wonderful, that would be great. I can see a lot of things being done with that. But I don't have the technology, nor the time, but I'd love to see someone do that.

I work a lot with orchids, too. But that's a whole other ballgame. It has its good and bad points. But I am not giving up gesneriads for orchids, contrary to rumors.

I'm glad to hear that. Are you working with any other gesneriads, like Achimenes?

No. I'm going more for plants that will be more commercial in the broad sense. Even in the Streps — I felt I had done as much as I could bringing them down in size, but the problem is they don't hold up as well as the African Violet, especially in the Summer. If you develop new plants, like Achimenes, I think you've really got to compare them to the plants that are already out there. How do you sleeve them, how do you get them out on the market? Some of these plants are almost doomed to be collector's items to people in the AGGS, for example.

Have you ever tried a Saintpaulia-Streptocarpus cross?

I did some work with the Streptocarpellas. They're really great plants for hanging baskets outdoors, not indoors. I tried crossing some of those with the Violets, but got nothing. I'd try using *Streptocarpus variabilis*, the Madagascar Streps and some of the Streptocarpellas.

What advice would you give to a beginner hybridizer?

My first advice would be: Don't listen to anyone who tells you it can't be done. People will tell you they tried it, and it didn't work, but just try it yourself. You've got nothing invested but the time. Second, try crazy things. My first cross was insane. I tried to take 'White Sprite' and cross it with an African Violet. The Violet flower was larger than the plant!

Your Questions and Comments Are Welcomed

A member at the recent GHA meeting in Nashville asked your editors why we publish "CrossWords" three times a year, instead of four, as we did in the past. The answer is that we MUST depend on the members of GHA for articles, questions and comments to fill these pages. We would gladly publish monthly, if possible, but there is just not enough material being submitted for publication to warrant more than three issues a year.

We try to avoid reprinting previously published material whenever possible. Sometimes that cannot be avoided. "CrossWords" cannot exist without the support of all the members of GHA. We cannot depend on the generosity of only a few members for articles — we must hear from more of you!

Please, if you have any questions or comments concerning gesneriad hybridizing, send them along to the editors. If we cannot answer the questions ourselves, we will pass them on to an expert. What may seem like a simple question to you could be the basis of an excellent article.

***xGlokohleria* 'Scarlet Letter'**

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CrossWords is published three times yearly by the Gesneriad Hybridizers Association, a non-profit organization established to facilitate the sharing of information about the hybridizing of gesneriads and to further the appreciation of the results of that hybridizing. Subscription is by membership in the G.H.A. Membership fees are $5.00 per year and applications, along with checks, should be sent to Meg Stephenson at the address below.

Editorial correspondence may be sent to the editors. Editorial deadlines are February 1, June 1 and October 1 for publication two months later. All editorial content is copyrighted by the G.H.A.

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