CROSSWORDS

The Gesneriad Hybridizers Association

NEWSLETTER

Volume VIII, Issue 1, 1984

EDITORIAL COMMENTS

Al has accepted a new job offer and will be moving to the Chicago area in early March. This will mean some changes in the way CrossWords is put together. You'll notice our "new look" in this issue.

We'll print Al's new address when he finds an apartment. He found one: 228 Glen Ellyn Rd. Apt 202, Bloomingdale IL 60108.

The GHA Hybrid Award Ballot is included in this issue. Let's see if we can better last year's abysmal voting record of 2 mail ballots. A committee will be selected to review meritorious hybrids at the AGGS convention. Your vote will count but you have to send it.

We hope to see many of you at the annual GHA meeting on Friday, July 6, 1984 at the Dunfey San Mateo Hotel, 1770 South Amphlett Blvd., San Mateo, California 94402. Our meeting is scheduled for 9:30 A.M. and is part of the activities of the American Gloxinia and Gesneriad Society convention (July 3 - 8, 1984).

We'll close with a special thanks to Lyndon Lyon for his contributions to the last two issues.

-- THE EDITORS

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CORRECTIONS AND INSPIRATIONS

Lyndon Lyon
Dolgeville, New York

I received the January 1984 issue of CrossWords and I enjoyed it very much. There were however, a couple of goofs (Meet the Hybridizer: An Interview with Lyndon Lyon).

On page 10, the term "show genes" should be "snow genes". On page 11, don't know why I said, ". . . all roses are tetraploid." MANY roses are tetraploid, not all.

Inspired by your interview with Bartley Schwarz, I have lined up a bunch of miniature sinningias: 'Mod Imp", 'Super Red', 'Laura', etc. I am applying pollen to them from my S. speciosa 'Dwarf Glox' mixed strain.

I dream of little Sinningias, the size of 'Mod Imp' in all of the colors and shapes of Sinningia speciosa. Just imagine upright star shaped flowers in all colors, double and single with added vigor and tolerance to adverse conditions.

As Bartley said -- "Try it anyway!" We will see.

BOOKS

Selbyana, Volume VII is now available for $35. (including postage) from the Marie Selby Botanical Gardens, 800 South Palm Avenue, Sarasota, Florida 33577.

How to Grow and Select African Violets and Other Gesneriads, Theodore James, Jr., HP Books, 1983, $7.95 has simple, well illustrated advice for the beginning hybridizer.

LISTING METHOD

Judy Becker,
Salisbury, Connecticut

Several years ago Art and Peg Belanger worked on a Columnea list, giving parents of hybrids where known. My listing is somewhat different, to indicate what crosses have been made with a particular parent. e.g.

Columnea erythrophaea

x 'Magic Lantern' = 'Adark Horse'
x 'Pixie' = 'Autumn Leaves'

with reciprocal entries. If you thought it desirable, more information could be included, such as hybridizer.

UPDATES

Georgie Bull
White Rock, B.C., Canada

Sinningia F2's from S. cardinalis x S. canescens.
Germination was about eighty percent, transplanting resulted in the loss of all but four seedlings.

Plant #1 - S. 'Tanisha' - has medium green leaves, is compact with a wide spaced cone shape, bloom is long, tubular and a bright glowing pink, not gaudy. The plant booms in leaf axils as the central stem elongates, with many of the pink flowers developing at the top. This plant has been propagated by cuttings many times for interested growers. A good feature of this tuberous plant is that it loves to produce flowers and good leaf growth about three times a year. It has been doing this since the tuber enlarged and matured. In 1984 what will it do?

Plant #2 - S. 'Stacatto' - has slightly darker medium green leaves with white hairs, habit is larger miniature. Flower is a dusty rose with lines and dashes of darker rose in the throat and is produced two per peduncle. This tuberous plant renews growth and bloom twice yearly.

Plant #3 - named ? S. 'Peachy' maybe. The little plant and tuber is slow to renew growth and although the leaves are medium green, they are very noticeably white haired. Bloom is spare, once a year, but the colour is breathtaking. This year, I will save some pollen and try to introduce the colour into some of the mini sinningias from the selfing of S. 'Carefree's Regina'.

With no knowledge of colour dominance or any other dominant genes in Sinningias, it will be an awful lot of trial and error and by guess or by golly hybridizing. Where, oh where, will I ever find the room to grow the F2's? Now, there's thinking positive for you.

Results of Selfing S. 'Carefree's Regina'

Many of the seedlings were much like the parent plant with flowers very close to the plant selfed although slightly lighter in colour. There were several seedlings with larger leaves covered in white hairs, growing to the size of the larger miniature Sinningias. Only two set buds. One was a horror of flat, dull colour. The second was a S. 'Little Imp' look-alike. All were send to the BGP. Some of the tiny seedlings have been kept to use in backcrosses and to cross with siblings. There is one small growing, white haired, medium green leaved F2 that has been kept. No bloom yet, but there is a hint of bud showing and growth is good and it does not mark or mar or show blemish as easily as the usual leaf of miniature sinningias. (Will report on this later and will send photos, IF it is worth the effort.)

UPDATES (cont'd.)

Smithiantha 'Abby' -

Have had this very soft coloured plant for some time but it does not want to cross with anything I have here. Unfortunately, there are no other Smithianthas to try crossing with it. Have tried with Kohlerias, some species and some hybrids but without luck, as the crossings were attempted later in the plant's growing time. I have resolved to attempt crosses in the fall, as soon as the first flowers open, to obtain viable pollen.

Questions:

How long does pollen remain viable if dried and placed in the freezer compartment of the fridge?

Will pollen store and keep better in a freezer?

If pollen keeps well and long in a freezer, should the pollen be placed on dessicant before attempting a cross?

Is pollen from any hybrid gesneriad harder to keep a long time in freezer than the pollen of species Gesneriad?

Should pollen be dried before placing it into a freezer?

(I think the answers are somewhere in the back issues.)

COLCHICINE TREATMENT

Carl Clayberg

Here is a technique for treating Sinningia seedlings that is quite effective and simple. Germinate the seed on moist filter paper in petri dishes. About 24 hours after germination, when the seedlings leaves have flattened out, transfer the seedlings to small petri dishes containing filter paper kept moist with a one percent aqueous solution of colchicine. Keep the tiny seedlings in contact with the colchicine-moistened paper by their cotyledons only - that is, with the root sticking up into the air, as roots tend to be burned by contact with colchicine and it is only the stem tip that needs treatment. After 24 hours, the seedlings are then transferred to whatever seedling growing media you prefer. Keep them in plastic boxes under fluorescent lights for several weeks, as the colchicine tends to set them back, and they need the high humidity to get going again. I have doubled the chromosome number of a variety of species and hybrids with this technique. About 30% of the treated seedlings will be tetraploid, the other 70% remaining diploid. All of the necessary supplies can be obtained from any good scientific supply house, such as Fisher Scientific Co., 52 Fadem Road, Springfield N.J. 07081 They are also a source of colchicine. Their equipment and chemical catalogs are separate.

Counting chromosomes is not difficult, but it does require some practice. A little personal instruction is a help, but probably not necessary. The standard "bible" on procedure is "The Handling of Chromosomes" by C. D. Darlington and L. F. LaCour, George Allen and Uniwin Ltd., London. It should be available in the U.S. and is not expensive.

SOME HYBRIDIZING HAZARDS

Larry Hodgson
Sillery, Quebec

Some people are true hybridizers. Locked away in dark and humid basements, their skin paled by the lifeless glare of Cool White fluorescents, they work with such advanced techniques as radiation bombarding, gene-splicing and black magic (or so it is claimed) in performing their art. These are the people who bring us orange mini-sinningias, double streptocarpus and african violets that glow in the dark. Most members of GHA, however, are not yet at that stage. They're still on-again, off-again hybridizers. Whenever the urge hits them, they pollenize whatever is in flower. They are the ones who market nondescript purplish mini-sininigias and all those columneas that won't flower under household conditions. I belong to the latter group, being just as capable of producing ordinary looking hybrids and monstrosities as anyone else.

Now, most of us are aware of the more obvious pitfalls in hybridizing: crosses not taking, seed capsules aborting early or reaching maturity but containing no seeds, zero germination, recessive genes that hide the traits we want, difficulty in obtaining flowering or that dead end of dead ends, sterility in the F_1 generation. Why then talk about all those? Most of us already take those problems in our stride, and, other than a bit of cursing, hairpulling, screaming, nervous depression, or all of the above, we show no outward reactions. These however, are only the minor problems in hybridizing and I feel that future hybridizers should be warned of the other hazards that await them.

Hazard No. 1 Domestic Disputes. Perhaps this is the most commonly ignored hazard in the hybridizing, yet it causes more problems than any other. Spouses rarely seem to appreciate that hybridizing is an art and that, as artists, we hybridizers need to concentrate our efforts on our work. This means we are not available for such mundane tasks as outside work, housecleaning, or taking care of the lawn or the kids. Neither can we spare the time to go out for dinner for our 10th wedding anniversary or make it to P.T.A. meetings or go to funerals or weddings, even of close family members. After all, why did we get married if not to get someone else to do these things for us?

Now a truly irate spouse will go to any length to get attention. For example, prize aeschynanthus hybrids have been known to accidently fall into the garbage compactor ... situated some 20 feet away ... and small seedlings have mysteriously disappeared into vaccuum cleaners or the alfalfa sprout salad. An amazing number of household fires actually start in the hybridizer's office during his absence, burning all records and notes. Some spouses take quite a different approach to the problem. Under the guise of "just helping you clean up your plants, darling!", they manage to cut off all seed capsules, throw out tubers and rhizomes resting in their pots ("But honey, I didn't see anything but a pot full of dirt!"). Of course, to really rub things in, they usually smilingly show off their handiwork ("Now, doesn't that look better!") and, as we stammer out our protestations, explain that they are so sorry but it is still not too late - after all, the prized tubers and seed pods are still "in the garbage bag in over in the corner".

SOME HYBRIDIZING HAZARDS (cont'd.)

Obviously, the only solution to this problem is divorce, which either of you can easily obtain from a sympathetic judge on the grounds of gross negligence and mental cruelty. However, never make the mistake of remarrying a fellow hybridizer the second time around, thinking to avoid the pitfalls of the first marriage. Hybridizers make the most inattentive, lazy and conceited spouses imaginable and are impossible to live with. Worse still, they are not above stealing your hybrids and claiming them as their own! You will just have to face the fact that an artist has to suffer for his craft and try to make it through life on your own.

Hazard No. 2. Moving into the Doghouse (No, this is not a continuation of the discussion about domestic disputes but an entirely different problem.) When we dream about hybridizing, we always see ourselves walking away with ribbons and compliments - not to mention a sizeable check from an internationally known producer -- for having created the first purple flowered asechynanthus or the world's only pink polka dot nematanthus. No one ever tells you what to do with all the extra plants you have to grow along the way in order to get there. I mean, what do you do when all 6 streptocarpus seed pods ripen after you did as told and repeated the cross several tmes "to be sure that it takes"? All together, that means some 2 or 3 thousand seeds and all of them will germinate. You know perfectly well that should you throw so much as one spindly little seedling, it will be the one the whole world has been looking for. (Murphy's law, remember?) I shudder to think that I have held in my hands what was certainly the elusive yellow-flowering saintpaulia and that I threw it away in a moment of desperation! What's worse, I just know that it has happened to me several times! No, you have to grow them all to flowering size, which means that you must find space for them all.

Some ingenious Florida hybridizers have been known to sneak into a farmer's fields by night to pull out his lettuce plants, replacing them with "Laura's cabbage" (Didymocarpus hybrids) or by filling abandoned cars in dumps with artificial soil and kohleria seedlings, closing the windows for a greenhouse effect. Of course, this is useless to us northerners.

Others are willing to go whole hog and sell their souls to the devil (and the power company) in order to be able to have a greenhouse, which inevitably fills. Most of us, however, are stuck with ordinary fluorescent lighting. My solution has been to fill the house with floor to ceiling plant shelves, leaving just enough space so that I can squeeze through in order to water the plants. I have moved myself, and the few belongings that were left to me after the divorce, into the doghouse, which is too cold for gesneriads, in spite of Fido's body heat. I understand that many of the world's great hybridizers are presently living in sheds, cabins and tents, so this would obviously seem to be the ideal solution to an otherwise sticky problem.

SOME HYBRIDIZING HAZARDS (cont'd.)

Hazard No. 3. Naming your hybrids. As simple as it may seem, naming your hybrids is not at all simple. First of all many names are already taken. For example, just about every gesneriad genus I can think of has at least one 'Chocolate Soldier' (Heaven knows why!). Secondly, to find out if the name has already been taken, you pretty well have to propose it and see if anyone complains. Therefore, you should choose an unusual name so that it is unlikely that you will have to wait around for months only to find out that you have to change it. Thirdly, there is a very unfortunate custom that says that cultivar names should consist of only two words, or at the most, three. This stupid rule rule has completely ruled out the ingenious 'French cuisine' series of streptocarpus that I was working on. You know, 'Escargots a la sauce a l'ail' or 'Crepes Suzette a la niceoise' and other such cultivated sounding cultivar names. After all, if I couldn't call the world's first orange strep 'Canard a l'orange' ("l" counts as a word, unfortunately) what is the use of even trying to create it?

While wracking your brains for a good name, think of the possibility of being truly honest about the plant. This would be a first in hybridizing! For example, I know many hybrid episcias that would seem to merit the name 'Plain Jane' or 'Ugly Duckling;, but as far as I know, these never have been used. For a mini-sinningia, I think 'Boring Pink', 'Dull Purple' or 'Identical Twin' would be appropriate, but you had better register them quickly before I use them for a couple of my hybrids. Or you could describe the plant's form or habits, such as 'Rots-a-Lot', 'Flower-Less', 'Slim Pickings', or 'Double Trouble'. A lot of hybridizers like to create a series of hybrids with related names. You know, all the state capitals or woman's names beginning with an 'X'. Having your own series means that you have really 'arrived' as a hybridizer, so I think that everyone should have one. Inspiration is often hard to find. Just look around the house and you'll find plenty of ideas. For example, if breakfast inspires you, how about a series names after popular breakfast cereals, or the ingredients in Cheez Whiz? Kid's T.V. shows offer quite a variety of names: 'Incredible Hulk', 'Pac-Man' and 'Scrappy Doo', just to name a few, but of course, it means having to get up early on Saturday mornings in order to be able to take notes and not all of us are ready to make that sacrifice. Of course, tradition has it that african violets should have cutesie-poo names. For starters, I do believe that 'Cutesie-Poo' itself is still available. If not, what about 'Hunny Bunny' or 'Snookums'? Even better, how's about 'Ain't She Sweet?", including the question mark, or 'Mom's Little Darling'?

If any of you out there have trouble picking names, just write to me! I have loads of them to share! Just send me a stamped, self-addressed envelope and 25¢ in coin (quarters preferred), plus a vague description of what you hope your creation will look like if ever it does flower and I will be gladly supply you with a name that I'm sure no one else has ever thought of! Think about it!

COLUMEAS

Judy Becker
Salisbury, Connecticut

This is not intended as a scientific approach to the Columnea or Dalbergaria Alliance. I am not a taxonomist, or even a botanist. Although I was a biology major, the orientation was toward the pre-med students and relegated botany to the second half of freshman year. It would not have mattered much as I had yet to develop any interest in plants. My current plant interests are not limited to the gesneriads, but include begonias, orchids, cacti and succulents, peperomias, and even primroses. With these interests, I end up not being an expert or specialist in any one plant family. On the other hand, it does give me a broader approach to the question.

Columnea was established by Linnaeus in 1753 based on Columnea scandens, collected by Charles Plumier in the late 1600's. The genus honors Fabius Columna (1567-1640) for his book, published in 1592, which had the first copper-plate illustrations in a botany book.

Extensive explorations since then have brought many new species into cultivations. The number of species are estimated at various figures. 160-170 according to Skog, and 240+ according to Wiehler. Since new material is still being discovered, perhaps the higher estimate is closer. It should be noted that there has long been confusion and disagreement in considering this group of plants. For those who would like everything to be clear-cut, and think that science should provide one answer, sorry. At one time, the Columneas were divided by vegetative and floral characteristics into 9 or 10 taxonomic sections. Wiehler divides the group into 5 Genera, Bucinellina, Columnea, Pentadenia, Dalbergaria and Trichantha, on the basis that hybrids between the groups are sterile and that 240 species is a rather large number of plants to consider within one genus. However, sterility of hybrids within a genus is not unusual, e.g. Sinningia with its breeding groups. Furthermore, 240 isn't a very large number of species compared to an estimated 1,000+ for Peperomia nad over 1,200 for Dendrobiums. Other evidence can balance out. Helen Beaufort Murphy's seed work shows the overall similarity of structure. Norris Williams found 5 different types of pollen, one for Bucinellina, one for Columnea and three shared by Pentadenia, Dalbergaria and Trichantha.

Why the similarities and why the differences? The answer is evolution, and in particular, what Steven Stanley refers to as the punctuational model of evolution. Darwin's theory of evolution assumed gradual change over a long period of time, particularly on islands where isolation of small groups of organisms occurs. But isolation, particularly where plants are concerned, can involve very little physical separation. In some cases, plants can be next to each other, with different pollinators, or perhaps blooming at different times of the year. The punctuational theory, first proposed by Ernest Mayr, points out that important evolutionary transitions have taken place rapidly in small, local populations, where in-breeding can occur. The Columneas are generally found as epiphytes, and it is sometimes felt that each population may represent the

vegetative reproduction of a single plant. In any case, self-pollination is highly likely to occur, yielding the maximum amount of in-breeding, and the greatest chance that any mutation that happens, has a chance to establish itself. In a large populations, any changes are apt to be diluted by the "normal" condition. To be remembered is that characteristics that no longer serve any function may be retained as long as they don't hurt the survival of the individual. The example frequently given is of the human appendix. Also, according to my reasoning, changes can also occur that don't affect the survival of the individual one way or the other. Ultimately, the important part is the reproduction of the species, not the survival of any particular individual. Changes in plants that increase the likelihood of pollination, increase the likelihood of survival in the long run. Speciation, Stanley points out, is an unsettling condition, with a haphazard quality, representing a kind of experimentation, but experimentation on a trial and error basis without a definite plan.

In Applying this to Columneas, one assumes that the ancestral form was probably a small, tubular flower, with a plain calyx, and plain leaves. The variation that we see today is the result of the different adaptations over a long period of time that have favored pollination and spread of the plants. The fleshy berries are also involved in the spread of plants as they are eaten by birds, pass through their digestive system and are dropped at a distance from the original plant. The same adaptive mechanisms have been followed by plants in the different sections or genera of the alliance. Physical similarities do not necessarily reflect close genetic relationship.

In the 1960's hybridization work was done at Cornell to investigate the relationships between species and between sections in Columnea. Generally, the more closely related two species are, the more fertile the hybrid between them. In all, 110 hybrids were made, 83 within the section Columnea, 3 within the section Trichantha, 27 intersectional, mainly Columnea and Trichantha. For most of the crosses, 25 plants were raised to blooming size. The fertility of the hybrid was mesured by the stainability of the pollen. Some species within the section Columnea are very close genetically as crosses between linearis, quercetti and verecunda 'Florence Carrell' had pollen stainability of 99%. Somewhat puzzling is the fact that when each of these species were bred to crassifolia, the resulting hybrids had pollen stainability of 90%, 0 and 47%. About 10% of they hybrids within the section Columnea has pollen stainability of 0. Although hybrids between Columnea and Trichantha (mainly moorei) formed fairly readily, the pollen stainability was in all cases, 0. The hybrids of moorei and minor (teuscheri) both classed as Trichantha, had a pollen stainability of 0. It would seem that other factors may be involved, and further work might be done on the relationship of hte species in this group of plants. The intersectional or inter-generic hybrids done since that time, mainly by Wiehler, have all confirmed the sterility of the hybrids.

Since all the species and hybrids were not raised under the same conditions, statistical analysis of the hybrid populations was not feasible. However, in all cases where reciprocal crosses were made, there was no visible difference in the two populations. In regard to the plant habit; size, shape, and pubescence of leaf; toothing of calyx; color, size and pubescence of corolla; vestiture of filaments; and number of flowers in an axil, the hybrids were intermediate between those for the parents. For complete discussion, see Sherk & Lee's article in Baileya, Vol. 15, p. 89-96 1968. It would seem that the genetic information for various morphological characteristics in Columnea species is compatible for many hybrids. The problem comes with the genetic information for the formation of eggs and pollen, or the process of meiosis which leads to their formation.

The Columneas have a chromosome number of 9, with the exception of ambigua (formerly listed as Alloplectus) and sanguinea, which are tetraploids with a chromosome number of 18. Columneas are separated from other members of the tribe by their fruit, a fleshy berry, frequently white or lavender. The nectary is a single, bi-lobed dorsal gland for most of them, but with 5 glands in the Pentadenias.

Their geographical distribution ranges from Mexico, with at least 3 Columnas (schiedeana, erythrophaea and crassifolia) and 1 Pentadenia (matudae) to as far south as Peru and Bolivia. The major concentration of species is from Costa Rica to Ecuador. Panama, for example, has 50 species or sub-species. Venezuala has only a few species reported along the coast, and yet the area is suited to epiphytes as many orchids are native to Venezuela. Furthermore, a few species are found in Brazil and Surinam or French Guiana. This may reflect interest in gesneriads and opportunities for collecting. Political and physical obstacles can be almost insurmountable.

The Caribbean Islands have a widely scattered distribution of a few Columneas, 2 on Trinidad, 1 on Puerto Rico, 2 on Hispaniola, 3 on Cuba. Jamaica has 10 or 11, and is the only place where a naturally occuring hybrid has been reported, a hybrid of urbanii and rutilans. Far from being tropical, moist islands, there are few habitats for Columneas on most of the islands. In addition, a dry period of several months may occur which makes it difficult for epiphytes to survive.

The Columneas are generally found as epiphytes, only occasionally as terrestrials. They lack the size and the root system to compete with the trees of the tropical forest. As epiphytes they have access to light that they would otherwise lack in dense forest. This can present problems in collecting material. Even with extension poles, it is difficult to reach plants much higher than 40 feet in a tree. Above that height, if climbing is not possible, collecting is easy only if a branch falls or a trees falls and one reaches it before the plants die. Rain forests have a wide variety of trees and plants, unlike the temperate forests that most of us are familiar with, and a low frequency of any one species. This makes each area, or indeed perhaps each tree, a unique

environment, differing from others in amount of light, moisture, and other species of plants both on it and around it. This serves to further the scattered distribution of gesneriads and thus to increase the rate of mutations and changes.

Evolutionary changes in the Columneas that have affected foliage are those that increase the size of the leaves or where one leaf increases greatly in size and the other remains reduced, or is readily deciduous. The vestiture or hairiness of the leaves, particularly of the new growth, can change the appearance of the plant. In many cases where the flowers have remained small, and yellow, the leaves have red tips and/or spotting on the lower surface which serve to attract pollinators. This can be seen in Columnea, Dalbergaria, Pentadenia and Trichantha.

Flower colors of red and orange are more noticeable, as are larger flowers. Increase in over-all size and zygomorphic flowers seen in Columnea, section Columnea. Flowers will also seem larger when covered by dense hairs, as in T. pulchra, and in some cases the hairs mask a pale flower. In many of the Trichanthas, there are extra hairs and glands at the corolla lobes, which are assumed to have some function in pollination. The calyx has become very elaborate, strongly toothed, and even brightly colored. It may serve to attract hummingbirds for fertilization, as well as displaying the berry. In a few cases the bracts can be colorful.

My information on the species is far from complete, at best a "Harris Poll" of about half or so of the species. In some cases, I have only a name, while in others, thanks to Skog's Flora of Panama and Wiehler's articles in Selbyana, the description is quite complete. Since much of the newer material has only been described by Wiehler, it is easier for the purposes of this discussion to stick to his separation of the genus.

Bucinellina (Bucinella) is a small genus of 2 species from the Pacific coast of the Andes in Colombia. They are found about 1100-1200 m in rain forests, B. paramicola along with the T. minor 'Firebird'. Bucinellina nariniana has thin stems, spreading or pendent or scandent. The small leaves are shaped similarly, serrate, but unequal in size. Small yellow, inflated flowers appear singly in the axils. B. paramicola has very unequal leaf pairs, the larger leaf 6-11 cm x 2.5-4.5 cm, the smaller leaf about a third its size. Flowers are in a 4-8 flowered cyme, held above the leaves. The corolla is 2.4 cm long, spurred, curved, inflated, orange above with red dorsal lobes. Only the first species has been available commercially as Wiehler felt that there was better material of the second species.

Columnea includes about 75 species found from Mexico to Bolivia and Peru according to Moore, although his book did not indicate which species was in Bolivia. By Wiehler's classification C. dodsonii in Ecuador is the farthest south. Some species are found at low elevations, others at altitudes of 2800m or more. C. microphylla requires a cool treatment (50 F nights in order to

bloom) as do several other hybrids and species. Some species may tolerate, but do not require, cool conditions to bloom, a factor of interest to energy conscious people. For other varieties, the requirement may not be for cool conditions, but the avoidance of high temperatures. For instance, after a heat wave, where temperatures have been over 90F, I expect to find stress and damange, usually the shedding of leaves of even the die-back of stems. The larger leaved Columneas may be even more subject to stress, having a larger leaf surface for the heat to build up, although there did not seem to be any corollation between leaf size and altitude where they are found. The flowers are all zygomorphic, with a tendency to be red or red-orange. The flower size ranges from 2 cm to 8.5 cm, with an average of about 6 cm. (2 1/2"). Generally the leaves are equal or almost equal, but there are a number of species with very unequal leaves. The smallest leaves are seen in microphylla; the largest leaves in gallicauda. (30 cm or about 12" long). The Columneas are concentrated in Costa Rica and Panama.

Dalbergaria is a group of about 70 species, found as far north as Costa Rica (with 4 species) and as far south as Ecuador. One species is found in the West Indies. The flowers are mainly tubular, with a few zygomorphic flowers, yellow to orange, and in clusters of 2 or more in the axils. Flower size is from 1.6 cm to 5.0 cm, averaging 3-4 cm or about 1 1/2". The leaves of all of the species for which I had descriptions (18) are strongly unequal in size, the larger ones often over 25 cm (10" long). Generally, the species come from lower elevations of under 1,000 m. Polyantha, however, is found up to 3600 m.

Pentadenia includes about 30 species. One, matudae, is in Mexico, a few in Central America, and most are in Colombia and Ecuador. The tubular flowers are usually yellow, some are red, ranging in size from 2.4-5.3 cm (1-2"). The foliage varies from species with equal or almost equal leaves to very unequal leaves. P. angustata ranges in color from orange to yellow and even pink. The nectary, in contrast to the other genera, consists of 5 glands.

Trichantha, another large group of about 70 species, is found as far north as Guatemala, and as far south as Peru. One species, calotricha, is in Surinam and French Guiana, ambigua in Puerto Rico, and domingensis on Hispaniola. Most of the species described are in Panama. The flowers are for the most part tubular, and have contrasting lobes. A characteristic of the group is the presence of glands and hairs at the sinuses of the lobes. This is sometimes seen in other genera if only in vestigal form. Some zygomorphic flowers are found.

CHARACTERISTICS OF A GESNERIAD

120 genera - 2000 species, divided into 2 subfamilies; old world (Cyrtandroideae); new world (Gesnerioideae).

The family has unusual capacity for vegetative reproduction by tuber, scaly rhizome, stolon, leaf or tip cutting. It is an advanced family with specialized adaptation to pollination by insect, bird, or mammal.

The majority of genera are tropical, but some occur in temperate or alpine habitats; usually perennial, but with a few annual species; herbaceous or woody, often epiphytic. Growth habit erect, with simple or branching stems, pendent, or forming a flat rosette. Roots, fibrous, in some cases tubers or scaly rhizomes are developed. Simple leaves, smooth and leathery, wrinkled, or hairy; opposite in arrangement, rarely whorled or alternate. Leaf pairs may be very unequal in size. Inflorescence may be terminal or axillary, flowers solitary or in clusters. The flower is complete, with calyx or 5 sepals usually fused at base; corolla with 5 petals fused at base or tubular, usually irregular (zygomorphic), often 2-lipped, rarely regular (rotate); 2 - 4 stamens, often joined; stigma bilobed or mouthshaped. Nectary may be an annular disk or separate glands. Ovary a single chamber (loculus). Fruit a dry or fleshy capsule or berry; seed minute.

The following listing of some of the genera now in cultivation provides pronunciation, approximate number of species, geographic range, and haploid chromosome number.

Alpines

Ramonda (ra MON da) 3 sp. Pyrenees, Balkans, n 18 24 36

Haberlea (ha BUR lee a) 2 sp. Balkans, n 22

Jankaea (JAN kee a) 1 sp. Mt. Olympus, n 28

Conandron, (ko NAN don) 1 sp. Japan, n 16

Opithandra (o pith AN dra) 5 sp. Asia, n 17

Briggsia (briggs EE a) 14 sp. Asia, n 17 34

Temperate - Pacific Group

Mitraria (mi TRARE ee a) 1 sp. Chile, n 37

Sarmienta (sarme AN ta) 1 sp. Chile, n 37

Asteranthera (aster AN the ra) 1 sp. Chile

Rhabdothamnus (rhab do THAM nus) 1 sp. New Zealand, n 37

Fieldia (feel DEE a) 1 sp. Australia, n 40

Negria (neg REE a) 1 sp. Lord Howe Isl. n 45

Tropical - Old World

Aeschynanthus (ess kin ANTH us) 80 sp. Asia, n 14 15 16 32

Lysionotus (lie see o NO tus) 3 sp. Asia, n 16

Agalmyla (aggle MY la) 3 sp. Asia, n 16

Cyrtandra (sir TAN dra) 600 sp. Asia, Pacific Isl inc. Hawaii, n 17

Titanotrichum (tie tan o TRIKE um) 1 sp. Taiwan, n 20

Rynchoglossum (rin ko GLOSS um) 15 sp. Asia and C. Amer.

Saintpaulia (saint PAUL ee a) 20 sp. Africa, n 15

Streptocarpus (strep to KAR pus) 135 sp. Africa, Madagascar, n 15 16

Petrocosmea (pet ro KOS mee a) 20 sp. Asia, n 17

Boea, (bo EE a) 20 sp. Asia to Australia n 8 9 16 17

Chirita (cheer EE ta) 90 sp. Asia, n 4 9 14 16 17 18

Didymocarpus (did ee mo KAR pus) 100 sp. Asia, n 4 9 11 16 18 22 27

Tropical - Old World
Scaly rhizomes

Achimenes (a KIM e nees) 25 sp. C. Amer., Jamaica, n 11 22
Eucodonia (u ko DOE nee a) 3 sp. C. Amer., n 12
Smithiantha (smith ee AN tha) 4 sp. Mexico, n 12
Diastema (die a STEEM a) 30 sp. C. & S. Amer. n 13
Heppiella (hep ee ELL a) 15 sp. C. & S. Amer. n 13 26
Gloxinia (glox IN ee a) 10 sp. S. Amer. n 13
Koellikeria (kur li KER ee a) 1 sp. C. & S. Amer. n 13
Kohleria (ko LEER ee a) 20 sp. C. & S. Amer. n 13
Monopyle (mo no PIE lee) 15 sp. C. & S. Amer. n 13
Parakohleria (pa ra ko LEER ee a) 20 sp. C. & S. Amer. n 13
Niphaea (nif ee a) 4 sp. C. & S. Amer. n 11
Phinaea (fin NEE a) 9 sp. C. & S. Amer. n 13 26
Pearcea (peers EE a) 1 sp. S. Amer.
Capanea (ka PAN ee a) 7 sp. S. Amer. n 13

Tubers

Chrysothemis (kri so THEEM is) 6 sp. C. & S. Amer., W. Ind. n 9
Nautilocalyx (naw til o KAY lix) 20 sp. C. & S. Amer. n 9 18
Paliavana (pay lee a VA na) 7 sp. S. Amer. n 13
Lietzia (LEETZ ee a) 1 sp. Brazil
Sinningia (sin INN gee a) 60 sp. C. & S. Amer. n 13
Rhoogeton (rhu GET on) 5 sp. C. & S. Amer.

Fibrous-rooted

Gesneria (jez NER ee a) 60 sp. W. Ind. n 7 14 28
Rhytidophyllum (rye tid o FILL um) 20 sp. W. Ind., n 14
Napeanthus (n pee AN thus) 11 sp. C. & S. Amer.
Bellonia (bell OWN ee a) 2 sp. W. Ind. n 13
Solenophora (so len OFF or a) 15 sp. C. Amer. n 10
Besleria (bes LEER ee a) 170 sp. C. & S. Amer., W. Ind. n 16
Gasteranthus (gas ter AN thus) 25 sp. C. & S. Amer.
Nematanthus (nee ma TAN thus) 25 sp. Brazil n 8
Codonanthe (ko doe NAN thee) 15 sp. C. & S. Amer. n 8 16
Episcia (e PISH ee a) 8 sp. C. & S. Amer. n 9
Alsobia (al so BEE a) 2 sp.
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Paradrymonia (pa ra dry MON ee a) 20 sp. C. & S. Amer. n 9
Cobananthus (ko ba NAN thus) 1 sp. Guatemala n 9
Neomortonia (nee or mor TON ee a) 2 sp. C. & S. Amer. n9
Corytoplectus (ko ree tow PLEK tus) 8 sp. S. Amer. n 9
Bucinellina (bu sin el EE na) 2 sp. Colombia n 9
Columnea (ko lum NEE a) 200 sp. (wide sense) C. & S. Amer., W. Inc. n 9 18
Dalbergaria (dal bur GAR ee a) 60 sp.
Pentadenia (pen ta DEEN ee a)
Trichantha (tri KAN tha) 60 sp.
Moussonia (moos OWN ee a) 10 sp. C. Amer. n 11
Rufodorsia (ru fo DOR see a) 3 sp. C. Amer. n 9

AMERICAN GLOXINIA AND GESNERIAD SOCIETY

Prepared for the Greater New York Chapter by Frances N. Batcheller

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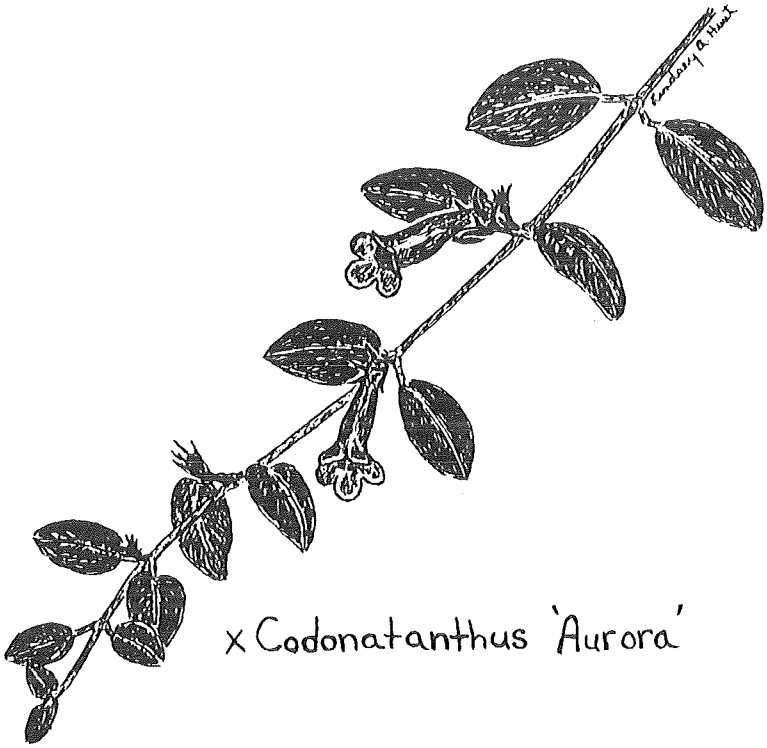

x Codonatanthus 'Aurora'

1984 G.H.A. HYBRID AWARD NOMINATION BALLOT

Nominations for meritorious hybrid will be voted on at the annual GHA meeting at the AGGS Convention on July 6, 1984

If you are unable to attend, please submit your recommendation for best new hybrid to Anne Crowley, 88 Maynard St., Roslindale MA 02131

Hybrid: _____

Hybridizer: _____

Year of Introduction (if known): _____

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