CLIVIA

SIXTEEN

Editor
Joubert van Wyk

EDITORIAL

Report to the May 2015 Annual General Meeting of the Clivia Society by the Editor of the Clivia News and Yearbook 16

It has been a reasonably successful year from a publication's perspective, having published a total of 248 pages over the past year, consisting of three editions of the Clivia News and Yearbook 16.

The lack of 2014 Conference presentation contributions for the Yearbook was disappointing. Our publication is entirely dependent on the contributions of Society members. If the number of Yearbook submissions continue to decline, I would suggest that we consider to move to four editions of the Clivia News and periodic publication of the Yearbook. We can then reserve the Yearbook for years when there are a meaningful number of appropriate articles. Show photos and similar contributions can be accommodated in the Clivia News.

2014 Conference Show Prize Winners

For those members who wish to write for our publications, I would strongly suggest having a look at Clivia News Volume 23 Number 3 page 19, in terms of style guidance when preparing contributions. Trying to adhere to such as closely as possible assists greatly, in reducing the rewriting and editing required when compiling the publications.

It has been an honour to serve *Clivia* for the past three years – as editor of the Clivia News and editor of the Yearbook. The greater focus on the visual through more and also larger format pictures continues. For future editions, in addition to the steady flow of other very interesting contributions, submissions on the following broad topics, will be greatly appreciated: the use of less poisonous chemicals; bios on significant contributors to *Clivia*; special breeding techniques; simplified record keeping ideas; and thoughts on the various tensions that at times develop between parties involved with *Clivia*. Such tensions include the commercial interests of members versus the hobby interests others may have in *Clivia*.

I would like to thank all the people who have played a role, however small, in helping produce the two Society publications over the past year. My thanks also goes to the various article contributors, as well as Helen S, Helen M, Sue, Sakkie, Glynn, Fréda, Annatjie and Anita. Thank you for your time and your valuable advice. Without you the publications would not be possible.

I would also like to express my gratitude to Glynn, as Chairperson of the Society, for all his words of encouragement and his guidance during the past year.

Being the Editor continues to be fun!

Joubert van Wyk
2 May 2015

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2014 CLIVIA SOCIETY CONFERENCE - PAPERS

Grouping *Clivia*: Reviewing current information

By Felix Middleton

Many enthusiasts and researchers have contributed to our present understanding of the differences between and therefore the grouping of wild *Clivia*. For example, the No 14 (2011) Yearbook of the Clivia Society which was dedicated to revisit species description and classification greatly enhanced our understanding of groupings as well as the reasoning behind the grouping of *Clivia* populations. The present contribution is aimed at summarising, in laymen's terms, the current knowledge on *Clivia* species classification. Many of the assumptions and conclusions are taken from past Yearbook and newsletter articles and I would therefore like to acknowledge the exceptional research and summaries of past contributors before I begin.

It is in our nature to organise everything that we observe or experience. We set specific parameters for groupings and then classify variation into one or another group. Consider the levels and definitions for grouping *Clivia* growing in the wild as noted in Table 1.

Often we use expressions such as usually,

Fig. 1. "Bulbous" thickening of the base of *C. gardenii* (Ngome form)

commonly and generally to describe the expected type within a grouping. For instance, plants are perceived to consist of leaves, stems and roots. However, several epiphytes such as the Spanish moss plant do not possess roots, many plants such as *Streptocarpus* have no stems and others like some *Euphorbia* do not have leaves. These we regard as exceptions to the rule in order to simplify or facilitate classification. The fewer exceptions to the rule, the better we manage to group and therefore describe the variation we see. *Clivia* belong to the subfamily Amaryllidoideae which is characterised by plants

Table 1. Taxonomic classification of *Clivia*

Group	General features of group
Order: Asparagales	Plants have a rosette of leaves (tight cluster of leaves), either at the base of the plant or at the end of a more-or-less woody stem. The flowers are of a general "lily type", with six tepals.
Family: Amaryllidaceae (Amaryllids)	Herbs with flowers arranged in umbels. Leaves linear, strap-shaped or elliptical in two rows. Flowers usually bisexual and symmetrical. Flower petals and sepals are undifferentiated as tepals.
Subfamily: Amaryllidoideae	Perennial plants, usually with bulbs or rhizomatous bulbs. The fleshy leaves are arranged in two vertical columns and flowers are large.
Genus: *Clivia* (Bush Lily)	Evergreen plants, with strap-like green leaves. Individual bell-shaped flowers occur in umbels on a stalk above the foliage. Flower colours range from yellow through orange to red.

with bulbs or bulbous-looking rhizomes. The only member of the *Clivia* group that might be regarded as a plant with such a structure is the Ngome form of *C. gardenii.* Refer to Fig. 1. Some *C. caulescens* plants from Magoebaskloof also show a slight thickening but this is not typical to all plants in the area.

Why classify

The reasons why we need to group collections of kinds into species varies for different professions. An ecologist needs an accurate method of identifying particular species for stating and testing biological theories and for measuring biodiversity. A conservationist uses classification in decisions when offsetting the advantage of land development to that of species conservation. A nurseryman or landscaper will use the classification to determine which type should be planted in a given environment. Finally, a breeder or enthusiast uses the classification to anticipate the response of a type or even predict the outcome of a cross between types. Although we use taxonomy for different reasons we require a single grouping to facilitate discussions among professions.

How to classify

A species is the most elemental unit of biological classification. It is often defined as the largest group of organisms capable of interbreeding and producing fertile offspring. The benchmark for grouping species into a genus is based on the assumption that they all developed from a single ancestor. Although classification into species can be based on morphological differences and where available molecular fingerprinting, the foundation for classification should still be tested against the principle that a group can or in recent past had the potential to interbreed and therefore develop collectively.

It is important to consider only wild or exhabitat plants when describing species; domesticated *Clivia* should be noted as hybrid *Clivia* as their genetic makeup and therefore distinctive attributes have been contaminated by interbreeding and artificial selection.

The following is a systematic partitioning of the *Clivia* group based on information currently available:

1) Morphology or mode of pollination

It is generally accepted that there are two basic types of *Clivia*: those with open flowers and those with pendulous flowers. A recent study on *Clivia* ecology conducted at the University of Kwazulu-Natal has implicated a pendulous ancestor for the *Clivia* group. The open flower type developed out of this ancestor as a result of adaptation towards a butterfly and moth mediated mode of pollination whereas the pendulous species is generally pollinated by hummingbirds. Inheritance of the open flower characteristic is not as complicated as most think. An interspecific hybrid between any pendulous species and a *miniata* type produces semi-pendulous progeny. The first generation backcross to the pendulous parent produces progeny with flowers that closely resemble the pendulous species. Similarly, backcrossing the F1 to the *miniata* type produces progeny showing the open flower trait. Self-pollination of the F1 produces a whole range of flower types, however many are of the *miniata* type or pendulous in appearance.

It is therefore easy to imagine the rapid development of an open flower *miniata* type from a pendulous population, especially as this open flower type is preferred by a pollinating agent that in most environments are more abundant than hummingbirds.

2) Distribution

The majority of *Clivia* are found in forests along the Eastern side of South Africa. The distribution spans from just North of Port Elizabeth in the Eastern Cape all the way up through Swaziland and into the Northern parts of the Limpopo province. Although there are small sections of this environmental strip that do not contain forests and therefore *Clivia*, especially in the Northern Natal section, we can still regard it as a historically continuous ecological environment where *Clivia* could until recently interbreed and develop. In addition to

Fig. 2. Interspecies hybrid between *C. miniata* and *C. gardenii*

Fig. 3. Backcross of a *C. miniata* x *C. gardenii* F1 to the *C. miniata* parent

Fig. 4. Backcross of a *C. miniata* x *C. gardenii* F1 to the *C. gardenii* parent

these Eastern populations, there are a few small pockets of *Clivia* that grow in forests more to the West of the country. These *Clivia*, which were only recently described as *C. mirabilis*, are ecologically separated from the *Clivia* in the East. This separation and isolation cannot be described as recent. Variation between these few populations of *C. mirabilis* is high due to their relatively recent ecological isolation from each other. However, the small number of plants in the total population, similarity among plants in this harsh environment and the differences compared to other *Clivia* in the East precludes any further differentiation within the species.

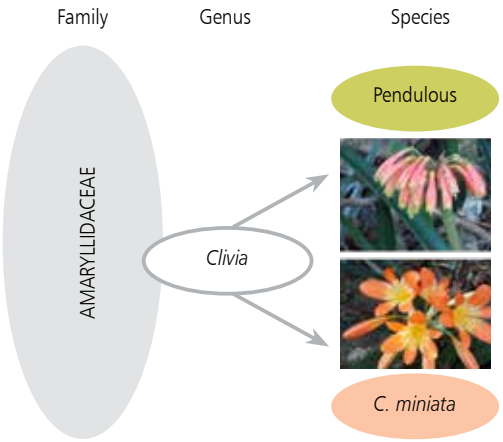


Fig. 5. Classifying *Clivia* based on pollinating agent

3) Flowering time

Let us consider for now only the pendulous groups growing in the strip along the east of South Africa. The populations growing to the south and those growing to the far north of this strip flower in spring, from October to December. These are separated by a group that flowers in autumn. The separation is distinct with no overlap in spring or autumn flowering populations. To the south we find *C. nobilis* which is adapted to harsher environments, thrive in bright light and generally grow in sandy soils. The leaves of these plants are tough and often V-shaped when drought stressed, an adaptation to possibly funnel water to the roots. Furthermore, leaves are serrated along the edges and typically notched at the tip. To the north we find *C. caulescens* which grow in shade and prefer leaf litter and humus rich substrates in order to thrive. Although leaf morphology of this group is variable, the leaf tip has a slight bulge, in contrast with the notch of *C. nobilis*. The group growing in the Natal area is variable in morphology but flowers in autumn to early winter. The distribution of *C. miniata* overlaps with all of the pendulous populations in the East. Very few natural hybrids have been recorded most likely due to the flowering time that seldom overlaps as well as the mode of pollination which differs. In contrast to the

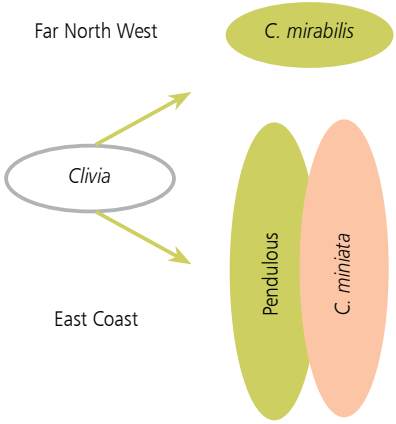


Fig. 6. Classifying *Clivia* based on distance

Fig. 7. Leaf tip morphology of *C. nobilis* (left), *C. caulescens* (right)

pendulous *Clivia* in the East, *C. mirabilis* flowers in summer.

4) Adaptation

C. robusta is regarded as a robust form of *C. gardenii.* Many ecologists believe that the motivation and decision to class it as a different species is not warranted. This seems to be a valid point if we only consider the three criteria for limiting interbreeding, namely pollinating agent, isolation and flowering time. In nature most mature *C. robusta* plants are large as vigour is a requirement for survival in the marshy environments where they occur. We often find that many habitat collected *C. robusta* plants do not set seed when self-pollinated. Furthermore, those that do set seed after selfing produce offspring that do not exhibit the rapid growth or large plant size of the parent plant but have the typical appearance of *C. gardenii.* A cross pollination between two different *C. robusta* clones yields many seedlings which quickly grow into outsized specimens. The assumption is therefore that this species is surviving by maintaining hybrid vigour gained from outcrossing. Outcrossing is assisted by pollination self-incompatibility.

Fig. 9. A *miniata* type, but would it survive in *C. miniata* habitat?

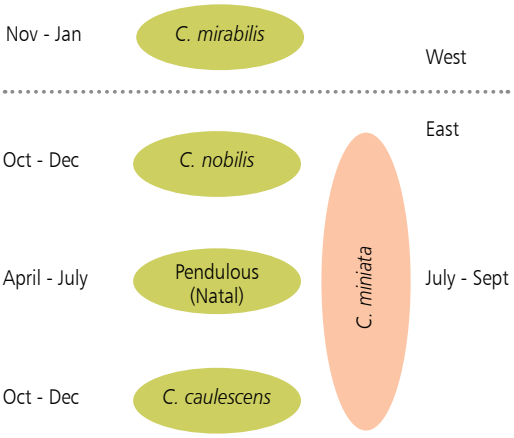


Fig. 8. Classifying *Clivia* on flowering time

Plants in the wild are regarded as species

Mature plants in nature have survived natural selection and can truly be called representative of the species. If we

Table 2. Summary of Clivia classification based on potential to interbreed

Species	Mode of pollination	Spatial separation	Flowering time	Adaptation
C. miniata	Moths & Butterflies	East	July-Sep	Self-compatible
C. nobilis	Hummingbirds	East	Oct-Dec	Self-compatible
C. robusta	Hummingbirds	East	Apr-June	Self-incompatible
C. gardenii	Hummingbirds	East	Apr-June	Self-compatible
C. gardenii (Ngome)	Hummingbirds	East	June-July	Self-compatible
C. caulescens	Hummingbirds	East	Oct-Dec	Self-compatible
C. mirabilis	Hummingbirds	West	Nov-Jan	Self-compatible

take seed from these plants and grow them in a garden or greenhouse environment most survive to adulthood but many do not possess the attributes that would have allowed them to survive in their natural habitat. The preceding discussion on *C. robusta* presents a good example of this. Most seedlings from a selfing and even cross between *C. robusta* clones would not have survived in the natural marshy environment where the species occurs. We can even go so far and assume that a "wilding" or seedling collected from nature may not be a true representative of the species as the plant still has to survive to adulthood.

Only mature habitat collected plants and offsets taken from these can be regarded as species. Most of our *miniata* type *Clivia* are separated from the *C. miniata* species by several generations of open pollination or directed breeding. Many even have the odd pendulous parent concealed somewhere in their seemingly noble lineage. Plants that originate from seedlings grown out of habitat are to be regarded as domesticated *Clivia* and be called hybrid *Clivia* as is the norm in many other ornamental plants and crops in cultivation to discern them from their habitat-collected counterparts.

Supporting molecular evidence for *Clivia* species classification

Molecular phylogeny studies have shown that the *C. mirabilis, C. nobilis* and *C. caulescens* groups can easily be distinguished from each other. *C. gardenii, C. robusta* and *C. miniata* form a super-group with very little DNA evidence that supports differentiation into separate species. Furthermore, DNA analysis shows that *C. miniata* more than likely developed out of the *C. gardenii* super-group. The natural interspecific hybrid (*C.* x *nimbicola*) plants that we find at the Bearded Man site in Limpopo are the advanced generation progeny of hybridisation between *C. caulescens* and *C. miniata* and not a new open flower *miniata* type forming out of the *C. caulescens* species. Past gene exchanges from *C. nobilis* and *C. caulescens* into *C. miniata* has also been revealed by DNA analysis. This supports the observed variation that we see at numerous *C. miniata* locations. For instance the leathery leaves of Pondoland *miniata* are likely the result of a historic hybridisation event with *C. nobilis*. Similarly, the thick rhizome-like stems of *C. miniata* from Northern Limpopo is the result of a past hybridising event with *C. caulescens.*

Further grouping

Clivia in the wild grow mostly as isolated patches in certain indigenous forests of Southern Africa. Even within a forest, *Clivia* form groups in ravines and on river banks. These patches are becoming smaller, fewer and far between due to deforestation, development and habitat destruction. Many of these populations have become so isolated that they have started to divert into different types with characteristics that distinguish them from the norm for the species. This differentiation from the standard originates from either mutation or gene contamination from natural hybridisation with another *Clivia* species. The divergence into

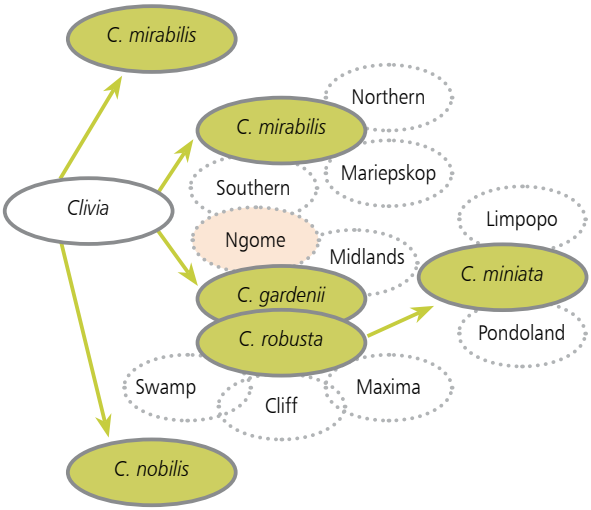


Fig. 10. Recognisable groups within species

C. gardenii

F1: *C. miniata* x *C. gardenii*

Ngome *C. gardenii*

F1: *C. miniata* x Ngome *C. gardenii*

Fig. 11. Characteristics of typical *C. gardenii* and Ngome *C. gardenii*

a different group is driven by natural selection pressure or genetic bottle-necking. Natural selection is based on the concept of survival of the fittest; bottlenecking describes the process where atypical characteristics become more prevalent due to chance selection in small populations. Examples of these discernible groups within a species are depicted in Fig. 10. Many of these groups have been recognized by molecular phylogeny studies. The variation in some of these groups can be explained by gene movement from historic interspecies hybridisation events. For example, *C. miniata* plants from the Northern parts of Limpopo exhibit the elongated stem and bulge on the leaf tip which is characteristic of *C. caulescens.* Other types are due to natural selection within the habitat. For instance, *C. robusta* can be grouped as cliff, swamp or maxima types based on growth habit, positioning or form.

In the taxonomy profession we find those who want to have as few groups as possible and those who believe that diversity needs to be documented by making as many distinct groups as possible. The "lumpers" base species classification on breeding isolation alone. The

"splitters" also base classification on isolation but take dissimilarities for observable traits between populations into consideration.

I personally am partial to the idea of the grouping into species based on breeding isolation only. The current groups that we see may at some point in time become so far separated from the norm that they can then be regarded as populations with distinctive breeding strategies. A subspecies refers to a group within a species that has become reproductively isolated and is developing adaptation strategies that differ from the parent species. In my view, the group that currently has this potential to be classed as a subspecies is the Ngome *C. gardenii* group.

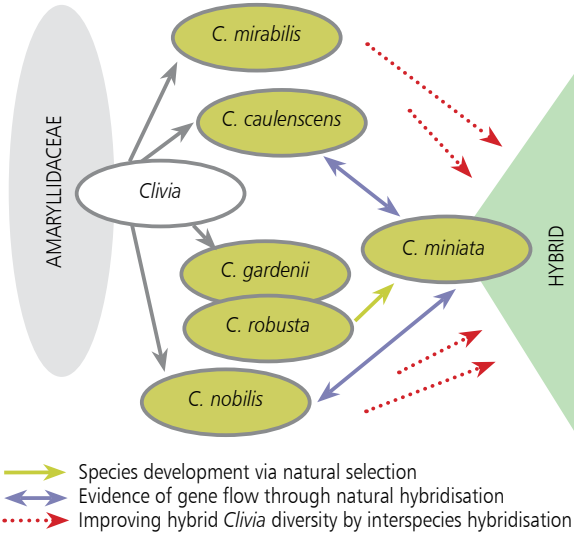


Fig.12. Species classification in *Clivia* and subsequent domestication

Ngome *C. gardenii* are distinguishable from typical *C. gardenii* in that they have a higher flower count, have flowers that are generally lighter in colour and have a characteristic flared tip on the tepals. These characteristics are even present in the interspecific progeny with *C. miniata.* More importantly, Ngome *C. gardenii* flower in July, where most *C. gardenii* flower in April to June. Ngome *C. gardenii* do not form a discernible group in molecular phylogenetic studies; some samples group with the *C. gardenii* cluster, whereas others form a separate grouping with certain *C. caulescens* samples. Ngome *C. gardenii* is therefore either a subspecies from the *C. gardenii* group which has pilfered characteristics from *C. caulescens* through a historic hybridisation event or is an intermediate pendulous form that shares the same ancestor of both the *C. caulescens* and *C. gardenii* group.

Concluding remarks

Refer to Fig. 12 where the development of *Clivia* species is illustrated and gene flow exchanges are depicted.

There is merit in the present classification of the *Clivia* genus into six species as this partitioning adheres to the guidelines of using breeding isolation for grouping into species. Further grouping into types is valuable to the *Clivia* enthusiast and breeder as it facilitates the planning of propagation, husbandry and breeding.

The development of new species is not always a simple linear progression from a single ancestor as many scholars believe. We find that gene flow has and still is occurring between *Clivia* species. This gene exchange is helping *Clivia* adapt by increasing the pool of genetic variation for natural selection to work. However, some traits are being accumulated as a result of chance segregation due to small population sizes.

Clivia in cultivation should be regarded as domesticated *Clivia* and therefore be noted as hybrid *Clivia.* Although the domesticated *Clivia* originated from habitat collected *C. miniata* plants, gene introgression from the pendulous species has played an important role in improving aesthetic value and increasing genetic variation in our plants.

Taking plants from nature - reflections and a warning

By Felix Middleton

The South African Biodiversity Act (BIODIVERSITY ACT 10 OF 2004) forbids picking parts of, cutting, chopping, uprooting, damaging or destroying any specimen of a listed threatened or protected species. This precludes therefore the taking of any *Clivia* plants or parts of plants from the wild as this genus is listed as either threatened or protected (refer to Table 1). Furthermore and more importantly, the Clivia Society does not condone any activities that contravene this legislation!

A species is classed as Vulnerable when the best available evidence indicates that it is facing a high risk of extinction. A species is classed as Near Threatened when available evidence indicates that it is likely to become at risk of extinction in the near future. Species of conservation concern are species that have a high conservation importance in terms of preserving South Africa's high floristic diversity.

We generally motivate our transgressions of this Act by redirecting attention to the decimation of whole populations by unscrupulous muti collectors or by the ever encroaching urban development. There are different reasons for a *Clivia* enthusiast to step over the line; we may want to rescue plants, collect for study, try to improve the germ pool in our collection, retain a keep-sake or worst of all, plunder to sell to others. Let us evaluate these offenses individually:

Fig. 13. Zululand April 2011: Yellow form of *C. gardenii.* This population has been fragmented and is now isolated due to deforestation.

Collecting for herbarium specimens and study

This practise should not be attempted by the novice enthusiast. SANBI has projects in play where plant specimens from different locations

Table 3. SANBI Red list classification of *Clivia* species (http://redlist.sanbi.org)

Species	Category	Ranking	Standing
Clivia caulescens	Near Threatened		
Clivia gardenii	Vulnerable		
Clivia miniata	Vulnerable		
Clivia mirabilis	Vulnerable	Threatened	Conservational concern
Clivia nobilis	Vulnerable		
Clivia robusta	Vulnerable		

Table 4. Clarification of genotype descriptions

Habitat specimen	Plant taken from the wild
Habitat clone	Sucker of, or stem cutting from a wild plant.
Wilding	Often seedlings that are growing close to an exceptional plant in the wild are taken as they may mature to have the attributes of the parent. Ultimately also classed as habitat specimens.
Domesticated *Clivia*	*Clivia* in the wild have undergone cycles of natural selection and are adapted to grow and multiply in a specific environment. We as enthusiasts do not apply natural selection during breeding as we are only interested in enhancing aesthetic attributes. The domesticated *Clivia* can be regarded as superior for these attributes but inferior for ecological adaptability.
Hybrid *Clivia*	A domesticated *Clivia* originating from interbreeding *Clivia* in the garden or greenhouse. Refers to the *miniata* type (open flower) forms of the species.
Clivia hybrid (Interspec)	Generally denotes the outcome from a first generation interspecies cross. Progeny from these interspecies crosses are often classified as *Clivia* hybrids if the flower form permits it. Pendulous and semi-pendulous forms are classed as advanced generation interspecies crosses.

are collected for study. They are meticulous in their data-gathering and will not collect specimens if they are not needed. The general public may help by submitting pictures and details to the official website (http://www.ispot.org.za). To those who submit pictures to I-SPOT, be aware that pictures taken by the newer generation cell-phones are imbedded with GPS coordinates. Although this feature can assist SANBI with pin-pointing populations, this opens up a backdoor for unscrupulous collectors to locate that special plant that you observed in nature. Several universities also collect specimens for study. The red tape to gain permission for collecting is often a problem, even though sampling for DNA or biochemical analysis is seldom destructive.

Fig. 14. Midlands September 2014: Pink *C. miniata* in a remote, seldom visited kloof. This habitat, although surrounded by Eucalyptus forests, is safe due to its seclusion.

Rescuing plants

Many *Clivia* populations are being ruined by development, deforestation for agricultural, forestry and mining interests as well as harvesting for the muthi and landscaping markets. We often hear of and see images of charred trees due to deforestation for agricultural development in far-off locations like Brazil. Many of us are not aware of what is happening in our own neck of the woods. Here in Natal I have seen two small *C. gardenii* populations being destroyed by fires due to deforestation for grazing purposes. In the Transkei, populations of *C. nobilis* are being displaced by mining projects. In view of this we often want to take plants out of these situations and either move them to other sites

Fig. 15. Transkei October 2014: *C. nobilis* in habitat. This population is being visited by collectors; very few mature plants are left.

or just simply keep them. There are formal channels whereby you can obtain permits for such translocations. These permits are not easily obtainable by the general public and the process of approval is slow. An example of this dilemma is here in Greytown where a population of *Aloe boylei* was being bulldozed during the process of widening a road out of town. Concerned residents wanted to remove the plants and move them further away from the roadside only to be told it was illegal without proper permits or environmental assessments. Needless to say, many of these stunning plants were destroyed. Miraculously, a few of the larger specimens did relocate themselves further away from the road shoulder one misty morning.

Fig. 16. Sabi October 2014: *C. caulescens* in habitat. This site is part of a seldom visited walking trail. *Clivia* here are thriving.

Fig. 17. Ngome forest July 2012: *C. gardenii* population pilfered by poachers. Although this site is known to be visited by muthi collectors, they generally take whole plants when pursuing *Clivia*. This is therefore the work of an enthusiast or collector. The insert is that of a picture taken near the site in June 2012.

Improving our *Clivia* germ pool

It is a well-known fact that the progeny from a cross between a hybrid *Clivia* and a wild habitat specimen is often superior in appearance. This phenomenon can be attributed to the potential hybrid vigour of crossing unrelated materials but also due to adding new traits to the germ pool. The term "hybrid *Clivia*" is used here to distinguish the domesticated *Clivia* from its wild habitat counterpart.

There is absolutely no reason to take plants from nature when trying to broaden a specific collection's germ pool. We have many breeders and nurseryman out there who possess legally gained heritage collections of superior habitat specimens. There are very few novel traits still out there in nature, most are either already segregating in our comprehensive germ pool or are locked up in rarely used heritage collections. An enthusiast has many sources of legal germ plasm to draw from as breeders and nurserymen are more than willing to share their knowledge and plant-material.

Collecting just for the sake of having or to retain a souvenir from a visit:

Offsets and even seed-grown plants from all species are currently available at affordable prices. I have seen mature garden variety *C. caulescens, C. gardenii, C. nobilis* and even *C. robusta* at prices similar to those of average yellow *C. miniata*. Contact any breeder and they will be very helpful in supplying or directing you to a retailer that will be able to supply you with such plants. There is therefore no reason for taking a plant from nature just to be able to say that you have a wild specimen. If the urge to keep a souvenir becomes unbearable, take one seed but know that you are accountable if caught. Never take a plant, be it mature or a wilding. A mature plant has survived natural selection and has a right to be there.

Collecting for selling

As explained, we possess a near-exhaustive range of variation already in cultivation. If you are collecting just to sell a specific type (such as Transkei broad leaf orange *C. miniata*), please re-think your actions as these variations are already in cultivation and your actions are highly illegal. I specifically refer to this type and hope those "skoffelaars" disturbing the population along the Qora River will heed this warning. This is one of the few easy accessible *Clivia* populations that many enthusiasts as well as general hikers visit and admire. We cannot

Fig. 18. Hermannsburg August 2014: *C. miniata* in habitat. No two plants in this small secluded population are the same. The plants are protected on a privately owned, well managed farm.

allow it to be pilfered.

I acknowledge that there is a well-established muthi trade and reluctantly accept that we will need to make peace with this practise. But taking plants to sell either to breeders or to landscapers is unacceptable.

For those of you buying plants, make sure you purchase from a reputable nurseryman or breeder. If you are knowingly buying a habitat collected specimen, you are promoting poaching. Remember that if caught, you, as the buyer, are also liable to fines.

Confessions of an overzealous enthusiast

As many enthusiasts, I do have in my collection "one or two" less than legal specimens. These are mainly from the fanatical first years of the hobby when I collected seeds from any spectacular looking wild plant. Most of the seeds germinated and many seedlings made it to adulthood. Unfortunately I am now burdened with numerous inferior looking *Clivia* that are only taking up space or have been translocated to the garden. I still visit natural populations but instead of collecting seeds I only take pictures.

In conclusion, the consequences of our deeds are not always as insignificant as what we assume. By ignoring legislation and laws, we as *Clivia* custodians not only kill plants, we also lower our own ethical standards and more worryingly indicate to those who look up to us that we do not respect authority.

CONFERENCE 2014

Best On Show Gem Wild Flowers

2nd Best on Show Liz Boyd

Best on Show 3rd Sean Chubb Thurlow Farm

Best Akebono Flower Sean Chubb

Best Akebono No Flower Brian Tarr

Best Any Other Colour Sean Chubb

Best Apricot Salmon John Handman

Best Broad Leaf Flower Gem Wild Flowers

Best Broad Leaf No Flower Val Thurston

Best Green Throat Hirao Sean Chubb

Best Green Throat Orange Liz Boyd

Best Green Throat Other Colour Sean Chubb

Best in Fruit Val Thurston

Best Interspecific Brian Tarr

Best Miniature Flower Liz Boyd

Best Miniture No Flower Gem Wild Flowers

Best Most Unusual Flower Sean Chubb

Best Orange Gem Wild Flowers

Best Orange Red Sean Chubb

Best Pastel Sean Chubb

Best Peach European Gem Wild Flowers

Best Peach SA Liz Boyd

Best Picotee Sean Chubb

Best Pink Gem Wild Flowers

Best Plant Member Bred Liz Boyd

Best Pot Plant Sean Chubb

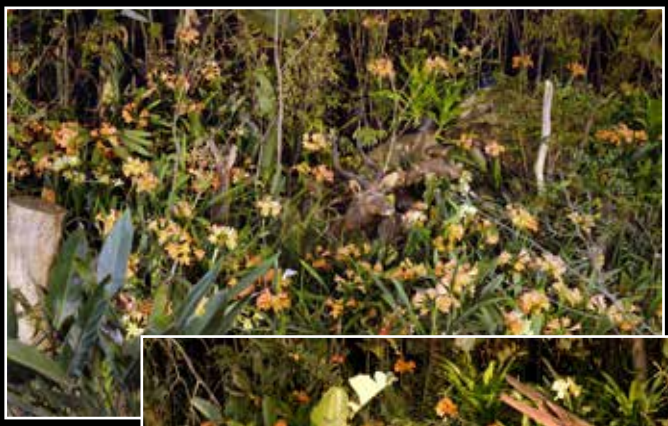
Best Spider Sean Chubb

Best Variegated in Flower Sean Chubb

Best Variegated No Flower Gem
Wild Flowers

Best Versi Colour
Louis Lotter

Best Yellow 2 umbels Sean Chubb



Display 1

Display 2

Prize Winners

Display 5

Display 3

Display 4

Variegated Leaf With Flower Class

CLUB SHOWS

Border Clivia Club Show 2014

By Peter Miles

Glenn Miles won more prizes than anyone else. Our flowering was very late last year and as a consequence, we had less entries than usual and the quality of blooms was also negatively affected.

Glenn Miles (CLASS PINK)

Glenn Miles (CLASS PINK)

Glenn Miles Green (RUNNER UP)

Glenn Miles Appleblossom (Judge's Choice)

Glenn Miles, wife Barbara & grandson, Miles Sansom behind

Wayne Haselau on left

Lovely orange - owner unknown

Rodney Ellis - Best Multipetal

Cape Clivia Club Show 2014

By Felicity Weeden and photos by Claude Felbert

The Cape Show was again successfully staged in the very attractive venue in Tygervalley Shopping Center. Two hundred and eighty five plants were benched by 24 exhibitors. It was encouraging to note that there were new names among the exhibitors and also among the winners.

The judging was interesting as there were three new judges, namely Carrie Kruger from George, Andre Swart and Leon Blom from the Cape, two experienced judges, and Micky Hoctor who ran the whole procedure, providing guidance where necessary. The Cape no longer allows a member to bench plants and also to be a judge, as has been the norm in the past.

People's Choice again proved interesting and popular, and the top five plants, while including two from the Best on Show table, did not include the Best on Show. People's Choice Winners were:

Winners: Dave and Colleen Garriock (also 1st Runner Up), and Clayton Jonkers (Appleblossom), Felicity Weeden (Peach also 2nd Runner up), Tony Trew (Orange), Felicity Weeden (Yellow).

Appleblossom Q5 x Q6 Ian Brown

This year, for the first time in the Cape, a trophy was awarded for Best Leaves on Show and was won by Pieter Kok. Plant sales were brisk and as usual we had some of the George members with us who benched some interesting plants and also had attractive plants for sale.

Andrew Gibson Habitat Dave Garriock

Selection Kirstenbosch 2014 Tony Trew

Selection Kirstenbosch 2014 Ken Smith from Nakamura

Selection Kirstenbosch 2014 Tony Trew

Selection Kirstenbosch 2014 Piet's Bronze Clayton Jonkers

Selection Kirstenbosch 2014 Luke's Special Eric Clur

Many fine plants were on display and the winners were:
Best on Show – Gideon and Lorraine van Zyl
1st Runner Up – Dave and Colleen Garriock
2nd Runner Up – Felicity Weeden
Best Leaves – Gideon and Lorraine van Zyl
Best Own Breeding – Felicity Weeden
Blazer Trophy for Best Peach – Felicity Weeden

Selection Kirstenbosch 2014 Chiffon's Daughter Eric Clur

Selection Kirstenbosch 2014 John van der Linde x G v Wyk Multipetal green throat Ian Brown

'Cameron Peach' x 'Victorian Peach' Ian Brown

Selection Kirstenbosch 2014 'Mbashe River Habitat Pink' John Winter

Selection Kirstenbosch 2014 'Roly Strechan White Throat' x 'Tienies Treasure Green Star' Simon Walker

Selection Kirstenbosch 2014 'Molly' Gideon van Zyl

Selection Kirstenbosch 2014 'Tienies Treasure' Alleta van der Merwe, Clayton Jonkers

Red Gideon and Loraine van Zyl

Red Orange Broad Tepal 35mm+ Gideon and Lorraine van Zyl

Right: Light Yellow Tony & Rhoda Trew

Bronze Green Throat Frans & Elise Mouski

Red Orange Broad Tepal 35mm+ Gideon and Lorraine van Zyl

Multipetal Koos Bredenhand

Peach and 2nd Runner up to Best on Show
Felicity Weeden

Broad Leaf Gideon & Lorraine van Zyl Best on Show Leaves

Compact Variegated Gideon & Lorraine van Zyl

Broad Leaf Variegated Felicity Weeden

Novice Sydney &
Marlene Cywes

Bicolour
Felicity Weeden

Interspecific flared Clayton & Natalie Jonkers

Own Breeding Felicity Weeden with green center stripe

Interspecific *miniata* type Dave & olleen Gariock

Plants displayed at the show

Set-up of the 2014 Cape Clivia Club Show

Winners' Table

Eastern Province Clivia Club Show 2014

By Dawid Botha (Show Chairman)
Photographs taken by Marius Meyer

Our show was held at Sherwood Garden Centre on 27 and 28 September 2014. Pre-show jitters and whispers that most of the *Clivia* were done flowering in Port Elizabeth made us all very nervous on the up-coming show but nerves started to relax as soon as the entries flowed in. I must thank the committee and volunteers who battled to transform chaos into something to be proud of. Although the weather did not play along, no one minded since we needed the rain. The show was well supported by all *Clivia* enthusiasts.

The panel of judges was Peter Miles, Mark Joubert and Dawid Botha. The learner judge attending was Marius Meyer. Congratulations to our winners and great thanks to one and all who entered their plants for the show. Without you there will be no show. We also want to thank all the visitors and friends from other clubs who also showed some of their plants.

Best Beginner - Tienie Williams

2014 Show Winners' Table

A total of 155 plants were entered and the winners table was made up as follows:

Best on Show:	*Miniata* orange broad tepals	Lester De Beer
Runner up to Best on Show:	*Miniata* dark peach	Marius Meyer
Second Runner up to Best on Show	Seedling flowering first time	Johan Mostert
Best Beginner:	*Miniata* orange	Tienie Williams
Runner up to Best Beginner:	*Miniata* orange	Bennie Butler
Judge's Choice:	*Miniata* green (Maud)	Charl Malan
People's Choice:	*Miniata* light peach 2 umbels	Marius Meyer

Judge's choice (Maud) - Charl Malan

A special thanks to all our sponsors and for the donations (plants and seeds) received in aid of the club.

Thanks to Willie Le Roux, our Chairman, who captivated the public with his informative display and talk on "'The germination and cultivation of *Clivia*" and for answering questions from the public that kept him occupied far longer than anticipated. We trust that he will be available for next year's show.

The sales stalls were also brimming with flowering *Clivia* and well supported by the public. As usual the quality and unusual plants were spotted first by the discerning eye and quickly sold at bargain prices. We had 15 exhibitors and the wide variety of quality plants challenged the judge's decisions on who will ultimately walk

People's Choice - Marius Meyer

away with Best on Show. I must take this opportunity to thank all the willing souls who helped before, during and after the show. It is your help that made it a success. We also want to thank the judges for their effort and time invested in our club and in the learner judge.

Runner up Best Beginner Bennie Butler

Runner up to Best on Show - Marius Meyer

As usual we had a lovely function at the Koi-san on the 27th, the Saturday night, that was well attended. The show and the results were discussed over a glass of wine and a display of delicious food, where after the trophy award ceremony followed. The auction was well supported and the highest bidders were announced.

The show ended on Sunday and all plants were safely removed by the owners, without incident. The show was a wonderful event and apart from the array of stunning plants on show to the public, we had a chance to catch up with old friends, made new friends and we are looking forward to the next show with great anticipation.

Finally, we would like to thank Sherwood Garden Centre for making this facility available to us and the caterers for the excellent snacks provided.

Seedling Flowering first time - Johan Mosterd

Show flowers on display and banner

Garden Route Clivia Club Interspecific Show 2014

By Carrie Kruger

The Garden Route Clivia Club Interspecific show took place on Saturday, 26 July 2014. There were some beautiful plants on display and it was a big success. Thank you to all the members who attended and to all who displayed their lovely flowers. We see more exceptionally beautiful hybrids that are emerging from the enthusiastic breeders every year and look forward to the 2015 show.

Interspecific Show Display

Interspecific show winners, from Left, 1st runner up, Silver, Kerneels Buitendag, Best on Show, Gold, Dr. Piet Theron, 2nd runner up, Bronze, Carrie Kruger

2nd Best on Show Kerneels Buitendag

Best on Show 2014
Dr. Piet Theron

Our judges were Koos Geldenhuys and Rita van Vuuren. The 2014 winners were as follows:

1st place – Dr. Piet Theron, with a beautiful versicolour.

2nd place – Kerneels Buitendag with a very unusual green interspecific.

3rd place – Carrie Kruger with a lovely bi-colour.

The show was well attended with more than 50 members present. Dr. Piet Theron gave the club an interesting talk about his aims in breeding *Clivia*. The winners were announced and trophies handed over after the talk. Refreshments were served and everybody admired the beautiful flowers on display.

Members' Favourite and 3rd best on show - Carrie Kruger

Garden Route Clivia Club Show 2014

By Gordon Fraser

Karl Rost

Rickie & Noelia

Best on Show Bronze
Piet Theron

Best on Show Own Breeding Ricky & Noelia Jardim

Piet & Jeannette Theron

Best on Show Gold Gerhard Faber

Best on Show Silver Piet Theron

Gerrit van der Merwe

Show hall

Winners' podium

Joburg Clivia Club Show 2014

By Glynn Middlewick, photographs by Danie Pretorius

The annual show is the highlight of the Joburg Clivia Club calendar. We all look forward to what the members will bring along to the display tables.

Our Show was again held at the Garden World Nursery. The display of various blooms on the show tables was appreciated by the visitors to the show. The judging took place on the Friday evening. The top five plants in the flowering category were of exceptional quality and thus the decision for the winning places was not easy for the judges to decide on.

Best on Show

Flower 3rd best

The Best on Show winner was given to Neil Rossouw. Neil is a relatively new member and this is his second year as an exhibitor. His bloom, Hirao, is the first occasion that the Joburg Clivia Club has awarded the top prize to a green flowering *Clivia*.

A close runner up to the Best on Show was an impressive orange *miniata* bloom of Pikkie and Elize Strumpher.

Second runner up to the Best on Show was awarded to Corra and Dawie van Heerden for an exceptional yellow *miniata* bloom.

Runner up flower

The awards for the non-flowering *Clivia* were to Corra and Dawie van Heerden for both the Best on Show and the runner up to the Best on Show. The second runner up to the Best on Show for non-flowering *Clivia* was to Gerda Gers. The Joburg Clivia Club congratulates all show entrants and thanks them for their participation.

Winner 'Hirao' – Neil Rossouw.

Runner up Orange – Pikkie and Elize Strumpher.

Third best on show Yellow – Corra and Dawie van Heerden.

Lowveld Clivia Club Show 2014

By Greg Jones

2014 was an extraordinarily successful year for *Clivia* Kingdom, having taken all the honours in the Interspecific, pendulous and *Clivia* without flowers sections. Best on Show, 1st and 2nd Runner up in both categories were awarded to Paul and Sue Kloeck.

The annual *Clivia miniata* Show was held at the Lowveld Show Grounds in the Poultry Hall. Head Judge, Henrietta Stroh, heard about the change in venue from the Botanical Gardens to the Poultry Hall and arrived appropriately dressed in a top depicting a guinea fowl! A green-throated pastel with large flowers and a perfectly spherical umbel bred by Paul Kloeck was awarded Best on Show. This plant stood head and shoulders above the rest, not just in beauty, but also in stature. The 1st Runner

Clivia Show 2014

Up was also bred by Kloeck and this was a lime green-throated watermelon-coloured pastel *Clivia*. The 2nd Runner Up was Willem Froneman's 'Bronze Green Boy' offset.

Clivia Show 2014

Clivia Show 2014

Paul & Sue Kloeck

Show winners

New Zealand Clivia Club Shows

By Tony Barnes

The main events of the year for the club, naturally, are the three shows, Auckland, Tauranga, and Lower North Island, which alternates between Palmerston North and New Plymouth. There are usually about 100 – 150 plants on exhibit depending on the season. The club does not have competitive shows, but has a People's Choice Award, which is the bloom that receives the most votes from the public attending the show. The 2014 winners from Auckland (a lovely green throated bronze) and Tauranga (an Hirao Green) were both grown by Jude Coenan of Tauranga, and Kevin Luff of Wanganui took the Lower North Island award with a beautiful

'Green Envy', Jude Coenan People's Choice Tauranga Show

Kevin Luff Red, People's Choice 2014 Lower Nth Island Show

Jude Coenan, People's Choice 2014 Auckland Show

Overberg Clivia Show 2014

By Felicity Weeden

Despite the fact that the show was very late in the season, and that sleepless nights were experienced worrying that there would not be enough plants to put an acceptable display together for the public, we succeeded again. There were also one or two very unusual and interesting plants which added interest for the regular Clivia Club members. We also had an attractive display of single *Clivia* florets arranged in a flat vase (Figs. 19 - 21).

Bearing in mind that we have very few exhibitors, a satisfactory 118 plants were benched. We are grateful to Pieter Kok from the Cape who benched a good number of plants and won 2nd Runner up to Best on Show and also 1st Runner Up – Leaves.

We decided to run a judging school instead of having formal judges. Unfortunately all those who expressed interest in the idea didn't turn up and we were left with a difficult situation of one judge (who had many plants on show). The dilemma was solved when two Overberg members and one member from the Cape, supervised by the resident judge, took turns nominating and all decisions had to be unanimous. Basically, it was consensus judging by experienced *Clivia* growers/enthusiasts. It was an interesting experiment and went very well and quite quickly. The only area of concern was the choice of 2nd Runner Up, but after some discussion, this was also cleared up.

In order to try and encourage members to exhibit, we offered a prize of an embossed glass to each exhibitor. Although the idea was enthusiastically received, it didn't serve the purpose of getting more members to exhibit!

This year, due to the suggestion of a visitor at last year's show, a new poster was produced describing the travels of the *Clivia* around the globe, and also the specialities that the various countries have developed. This proved to be

Fig. 19. Something unusual Overberg 2014

an interesting addition to our collection of informative posters.

The winners at the Overberg Show held at Hermanus were as follows:

Best on Show – Felicity Weeden
1st Runner Up – Felicity Weeden
2nd Runner Up – Pieter Kok
Best on Show – Leaves – Gerrit Rohlandt
1st Runner Up – Pieter Kok
2nd Runner Up – Felicity Weeden
(Fig. 22 and 23)

Peoples Choice:

1st – Felicity Weeden – Yellow
2nd – Pieter Kok – Orange
3rd – Felicity Weeden – Pastel (Fig. 24)

The Overberg members pulled together as a team, but special thanks must go to Alex Sherriff, once again, for his enormous input during the show and Gerrit Rohlandt for getting the staging set up, among other onerous tasks.

Fig. 21. Single Floret Display Overberg 2014

Fig. 23. Winners Overberg Show 2014, Pieter Kok

Fig. 20. Very unusual Overberg 2014

Fig. 22. Winners Overberg Show 2014

Fig. 24. People's Choice Back 1st, Pastel 2nd, Orange 3rd

Free State Clivia Club Show 2014

From left to right: Stef de Swardt, Stefan Ferreira, Kobus Botha

Kobus Botha Runner up

Stefan Ferreira
Best on Show
Pink Pastel

Kobus Botha
Runner up

North American Clivia Society Clivia Show 2014

By Alan Petrovich and Malcolm Shrimplin

Longwood Gardens introductions (from left) *Clivia miniata* 'Longwood Debutante', *Clivia miniata* 'Longwood Sunrise', and *Clivia miniata* 'Longwood Fireworks'

The Huntington and Botanical Gardens: Large Throated Watercolour, entered by Manuel Morales - Plant Horizons

The Huntington: Variegated Yellow, entered by Manuel Morales - Plant Horizons

The Huntington: Non-variegated Yellow, entered by Manuel Morales - Plant Horizons

Best in Division III, Interspecific hybrids, Class 12, Any interspecific hybrid, Entered by Mike Riska *C. miniata* X 'Day Dream'

Longwood Gardens: Best in Division VI Longitudinal Variegation, Class 17, Striped Leaf-Shima-Fu, entered by Damon Smith, *Clivia miniata*

The Huntington: People's Choice Second Runner-up

The Huntington: People's Choice Winner Manuel Morales - Plant Horizons

The Huntington: Best Flower arrangement

The Huntington: Best in Foliage Category, Donald Todd

NACS show at Longwood Gardens

Northern Clivia Club Clivia Show 2014

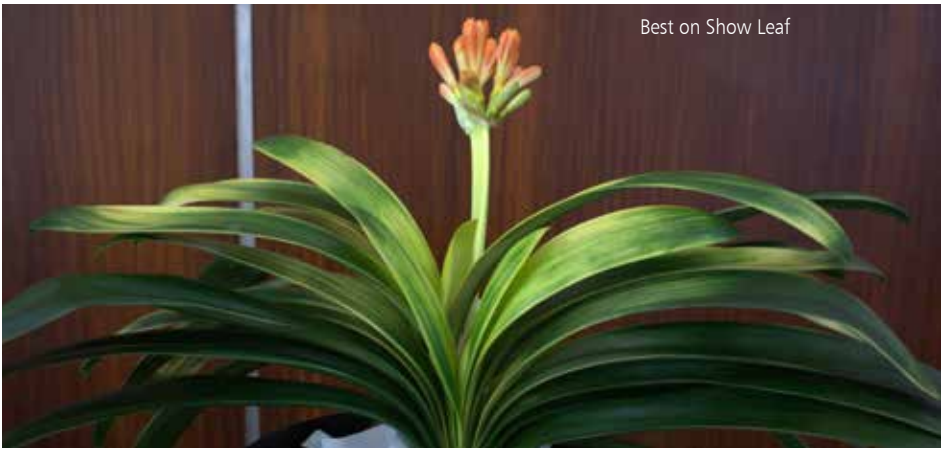
By Rudie Koekemoer

NCC Show winner 2014, 'Frenchy' – breeder R Lotter, grower Pieter Saayman & Michael Holt

2nd Runner up, Leaf

Runner up, Flowering plants

2nd Runner up, Flowering plants



Best on Show Leaf

ARTICLES

Return to the wild – September 2104

By Felicity Weeden (Photos by Felicity Weeden and Hein Grebe)

With the advent of the 2014 Clivia Conference in Pietermaritzburg, KwaZulu Natal, the opportunity presented itself to travel by road to Pietermaritzburg and visit some *Clivia* habitat locations along the way.

The first excursion into the wild was Lalapanzi near Morgans Bay. After a long walk through waist high grass, we entered the forest and a *Clivia* habitat location.

This proved to be a wonderful start to the trip as we came upon an absolutely incredible sight. Here was literally a vast forest glade of *Clivia* in full pristine bloom, a sight of absolutely awe inspiring beauty. Here were *Clivia* growing in full bloom on the huge granite boulders, *Clivia* growing on ancient twisted trees, in dead trees, *Clivia* everywhere, interspersed with enormous clumps of agapanthus unfortunately not in bloom. On the rocks grew all manner of ferns and on the tree branches, orchids. Despite the drought, the little blue and white streptocarpus found only on the rocks, were in full bloom (Figs. 25 - 32).

Along the banks of the river, with palm trees, kiepersol, yellow woods and many others providing shade and cool, grew *C. nobilis* in full bloom. In the rocky river bed tucked between the big blacks rocks grew dainty green maidenhair ferns. It was an absolutely magical setting with the musical tinkling of trickling water. The soft susurration of the trees, birdsong and the occasional harsh cry of a hunting raptor provided peaceful and varied

Fig. 25. Famous Karkloof

Fig. 26. *Clivia* growing on a tree stem

music for us and the *Clivia* (Fig. 33).

Further along we returned to old haunts and were able to recognize plants we had viewed before, flourishing and blooming despite the obvious presence of bush pigs. In this area many excellent clumps of *C. nobilis* in full bloom grew

Fig. 27. Growing on rock

Fig. 28. Wild *Clivia*

Fig. 29. Forest glade - A sight to see

among the countless *C. miniata*, interspersed by dracaena, ferns and various other indigenous shrubs. Because the area had received rain, the *Clivia* were in very good condition and although the river was not in full spate, there were quiet pools of water and a steady stream in the shade of the trees, creating magical spots to sit and enjoy the beauty of the bush (Fig. 34).

The next stop was the *C. nobilis* colony at Kei Mouth. Literally thousands of *C. nobilis* grow in the dune forest right on the seashore. It was interesting to note that the plants grow and

Fig. 31. Beautiful habitat peach pastel. Lalapanzi

Fig. 30. Nature's garden. Lalapanzi

Fig. 32. Nature's landscaping. Lalapanzi

Fig. 33. *C. nobilis*. Lalapanzi

flourish by the sea, enjoying the fresh breeze, while on the more protected river bank, very few plants are to be found. There was a good range of colours evident and there were also full umbels of berries proving that pollination is successfully taking place. This was a quick stop requiring minimal effort to reach and was enjoyable as we were able to cool off in the breeze and walk on the beach (Figs. 35 - 36).

The following stop, after a long hot drive, found us at Port St. Johns where they were suffering a particularly severe drought. Expecting a long hard hike up the mountain,

Fig. 34. Wild landscape. Lalapanzi

Fig. 35. Kei Mouth

Fig. 36. *C. nobilis*. Kei Mouth

Fig. 37. Hein taking photos. Port St. Johns

Fig. 38. Wayne at Port St. Johns

Fig. 39. (From left) Hein, Mfundisi and Andy

Fig. 40. Really tough going. Port St. Johns

Fig. 42. Really steep at Mazmba

Fig. 41. (From left) Hein, Lucky, me and Andy at Mzamba

we were fortunately given a lift on the back of a bakkie (ute) to the top of the mountain. Starting down into the bush, it was not long before the first *C. miniata* appeared. The plants were spread out in drifts down the mountain and the further down we went, the more blooms and plants there were. In this location there were nice pastels and of course oranges. The flower form varied greatly as usual, but tended towards being spidery. The plants were reasonably compact with fairly broad leaves. It was amazing to see these plants with their dark green leaves and fresh flowers looking crisp and lovely in the driest conditions.

As we descended to the lower regions of the

Fig. 43. Giant habitat spider. Mzamba

mountain, we came upon an old storage dam full of water. Directly next to this was a small ravine and on the rocky edge sat a beautiful *Clivia* in full bloom with wild ferns draping down over the ledge, creating a beautiful natural picture (Figs. 33 - 39).

Fig. 44. Umtamvuna Gorge

Fig. 45. Photographer at work again. Umtamvuna

Fig. 46. Natural planter. Umtamvuna

After a really rough climb back up the mountain we connected with the old gravel road and were able to enjoy the beautiful old forest trees on the way down (Fig. 40).

Starting early the next morning, we made our way towards Port Edward and the really glorious habitat location called Mzamba, where we were met by Andy Forbes-Hardinge and Lucky, who would be our guide down the mountain. Our guide on the previous trip was Mfundisi, but the years have taken their toll and his son, Lucky, kindly stood in for him (Fig. 41). To me this location has mystical

Fig. 47. Tree stump planter. Umtamvuna

qualities and the *Clivia* are truly exceptional. I was led to believe that this spot was devastated and all the trees dead, but this was not the case to my huge relief.

It is certainly a very inaccessible spot and dangerous as it is necessary to climb over and around very large boulders and some of the stepping stones are anything but stable. However the diversity of the flowers is such that one is driven to clamber and battle your way through and over the mountain rubble, thorn bushes and thorny lianas in order to get to the next beautiful bloom or colony. Here there are very lovely pastel pinks and dark orange reds, small oranges, spiders and even variegated plants. The climb back up the mountain is very steep, but because it was so dry, not so hazardous. This is the spot where, as you inch your way around a rocky overhang, were you to lose your balance, you would fly into infinity (Figs. 42 - 44).

In the afternoon, after booking into Clearwater Cottages, we climbed down into the Umtamvuna Gorge in the Umtamvuna Nature Reserve. This is a long fairly steep climb on a well-marked rock path. It was worth the effort as there were masses of plants in full bloom. It was interesting because there were lovely clumps of pastels growing side by side with orange reds. The pink pastels, in particular, seemed to come in a number of different forms and sizes. There were also dark orange reds in all shapes and shades. Flitting around and hard at work pollinating the *Clivia* were at least three different butterflies, including a huge black and turquoise beauty.

During the trip, we had kept an eye out for wide leaves and in this locality we were rewarded with the widest leaves which measured 78mm. Here also were seedlings growing in a receptacle created by aerial tree roots on bare rock. There were also clumps of *Clivia* blooming and growing right on the bare rocks with no access to the soil at all. In fact, a fairly common sight is *Clivia* growing on the branches, like orchids, and in the cleft of a tree or a small crack in the rocks. There was also an

Old storage dam. Port St. Johns

old tree stump sporting three *Clivia* artistically arranged by nature (Figs. 45 - 47). This is a beautiful gorge with high canyon walls bedecked with tall trees and a river running along at the bottom. It seems that if you have the time and energy, besides *C. miniata*, there are also *C. gardenii* and *C. robusta* to be found in here.

From what I have observed, these habitat colonies appear to be in good condition, probably because they are fairly inaccessible and in areas unsuited to human habitation or grazing. However, there was still strong evidence of the little fly (some claim it is the Gladiolus Fly, others that it is the Potato Fly) which stings the ovaries and damages the petals and, in time, tiny yellow maggots appear that destroy the umbel and seed capsules and allow secondary infections to set in. Another disturbing item is that the Amaryllis Worm has appeared in the habitat.

Once again Wayne Haselau was our habitat guide. The caring and charming driver and "*Clivia* Buddy" on this trip was Hein Grebe, and it was his first and long-awaited trip to the habitat. A really big "thank you" to both of them as without them I would have missed out on this wonderful experience. I would like to conclude by saying that a trip into the habitat or bush is such a very special experience for me that nothing else can compare with it.

Chinese Clivia, a leaf love story

By Marilyn Paskert

(Printed with permission from NACS) (Photos by M. Paskert)

Imagine arriving at Changchun train station in northern China on an unseasonably warm morning in late March. The station is modern and the light standards (Fig. 48) decorated with a stylized version of your favourite flower: *Clivia*! *Clivia miniata* is the Changchun city flower and nowhere is this plant from South Africa more revered and grown in greater quantity in the world than here. Later in the evening, after touring several growers on the outskirts of town, we returned to the city to streets lined on both sides by flashing neon *Clivia* lights (Fig. 49). Having been taken by these plants for more than three decades, I still never could have imagined the delight and reverence this plant has instilled in so many in China and how much I would come to love their vision in breeding *Clivia* for leaf structure. My education in Chinese *Clivia* has only begun but it is a love story of sorts and I would like to share it with you. In the course of this article I will tell you about important leaf characteristics that have been focused on by Chinese breeders and how their *Clivia* are grown.

Eddie Pang is an Australian businessman who has collected and bred Chinese *Clivia* for many years. He could see that many *Clivia* collectors in the West were attracted to the wide-leaf compact form of Chinese *Clivia* but didn't know enough to separate that which is good from poor quality and plants that appear to be one thing but when grown at home will not maintain desirable characteristics because they don't really have the genetics but have been manipulated (not necessarily with ill intent) in some way. Fortunately for all of us Eddie is writing a book about Chinese *Clivia* but as a businessman who flies around the world on a constant basis, he has been too busy to complete it yet. I was very fortunate to be included in a group Eddie

Fig. 48. Changchun Railway Station Lamp post

Fig. 49. Changchun City Street Lamp

Fig. 50. Entry sign for *Clivia* housing

Fig. 51. Typical *Clivia* housing

Fig. 52. Eddie Pang surrounded by the He family

Fig. 53. Mr. He in his *Clivia* house

Fig. 54. Beautifully grown Chinese plants

took to China for a week of intensive *Clivia* viewing, education and yes, buying. My travelling companions besides Eddie were from South Africa: Joubert van Wyk, Paul Kloeck, and Dawie and Ebeth Strydom. We were also joined by Eddie's good friend Mr. He Shi Zhong and his son Jun Hua from Shenyang, China who treated our group with the warmest hospitality.

Clivia arrived in China in the mid-1800s brought by German missionaries but were confined to the glasshouses of the wealthy. *Clivia* found their way into the general population well after the revolution and that is when the breeding of Chinese *Clivia* became uniquely theirs. The major *Clivia* growing area in China is northwest of North Korea in the cities and environs of Shenyang, Anshan and Changchun. Winters here are harsh so all *Clivia* are grown indoors in glasshouses with heaters. Outside of the cities large

Fig. 55. Leaves with position-correcting silver paper

Fig. 56. Leaf will move towards the side that has light

developments of *Clivia* glasshouses have been built. Imagine large tracts of small living units with attached *Clivia* houses in long rows, each with a small yard in between for livestock, fruit trees, and a vegetable garden. Most of these glasshouses run east to west so the primary sun exposure is south. These developments are for breeders and hobbyists. Some of the *Clivia* development units are owned while others are rented. Some have been divided up inside to be occupied by many growers so there is availability for a range of budgets (Figs. 50 - 51). There was an iron banner over the entrance to one of these subdivisions, I certainly couldn't understand the Chinese symbols, but the *Clivia* in the middle certainly rang a bell!

Mr. He, our host, is a retired engineer and is well known for breeding a favourite variety of table grape in China. He is a real Renaissance man, playing Chinese tunes on his flute, speaking to me in bits of English and sharing his love and knowledge of *Clivia* which he has been collecting and breeding for many years. He and his wife invited us to his home in Shenyang and his *Clivia* glasshouse in a development outside the city (Fig. 52). What was surprising about entering Mr. He's glasshouse for the first time was how hot and humid it was. I could just imagine my own plants melting into a bacterial pile of mush! The leaves were covered with water droplets and the plants were all in tidy rows facing the same way (Fig. 53).

Important leaf characteristic: Unlike the spidery plants I grow, Chinese *Clivia* plants should be grown in one plane with rows of leaves directly over each other and preferably each leaf spaced evenly apart (Fig. 54). This is partially a genetic feature but also controlled with light and manipulation if necessary. Plants are grown with one set of leaf tips facing south and have to be rotated 180 degrees at certain intervals. All is not lost if a plant sends out an askew leaf as long as the leaf is not very old and has stopped growing. The leaf can be nudged back over the leaf under it by attaching a piece of folded cardboard or foil on the side of the leaf farthest from its ideal centerline. Attach the cardboard with a loosened paperclip or bobby-pin. The cells in the leaf that is deprived of light will elongate and pull the leaf back to center (Figs. 55 - 56). To get proper spacing between leaves, growers tuck pieces of styrofoam between leaves. This is not cheating, it is the manipulation of the plant to get an idealized

Figs. 57 - 59. Proud growers

form and such perfect plants are a treat to see! It is also a treat to see the joy and pride in the faces of the growers (Figs. 57 - 59)!

It stands to reason if you want perfectly spaced upright leaves, they must have the important leaf characteristic: thick and rigid. As you can see from the photos, not all Chinese *Clivia* have wide compact leaves. In fact, taller plants are becoming the fashion. What does it take for long leaves to remain upright? Some leaves are short and thick but others have been bred from plants with thick u-shaped leaves, denser in the middle as if they had a spine (Figs. 60 - 62). Fig. 62 is a Big Victory cross that Mr. Liu Ji Yan is rightfully proud of. Very little can be done to correct drooping leaves, the genetics are there or they are not. That said, a plant that already has u-shaped leaves can be given a boost with wires, as you can see in Fig. 63.

An important leaf characteristic Eddie Pang pointed out to us repeatedly is a leaf's shine. Shine can vary from waxy to super reflective and oily looking. This characteristic is called "painter" because it is as if the leaf was painted with oil or shellac. Have you ever looked at the back of your *Clivia* leaves? Plants with shine on the back as well as the front of the leaves are most promising for breeding painter characteristics. The shine on a good genetic painter is far more entrancing than a faked oiled plant. There are many products like MSG in water that can give a leaf a false temporary shine. Like most of the important leaf characteristics it is important to know the integrity of a seller before buying plants because as you have probably realized by now, many leaf characteristics are easy to emulate but are not the real Chinese genetics that are desirable to own and breed with (Fig. 64).

Prominent (or protruding) veins are another important leaf characteristic highly prized and

Figs. 60 - 62. Rigid leaves

Fig. 63. U-clip to make leaf stronger

Fig. 64. Painted Face with shine

bred for by the Chinese. Not only are prominent veins attractive but these reveal something about the future of the plant. Some dwarf plants are not really genetic dwarfs but are kept small by root-pruning and by fertilizer deprivation. This is not "cheating"; it is an art not unlike bonsai. I am very attracted to compact wide leaf plants and would want to buy such plants when I saw them. Eddie Pang would always kindly inform me that the plant I selected would not stay small and pointed out the vein pattern. Not possessing a photographic memory like Eddie's, it took a while for his lessons to sink in. Let's look at some veins (Figs. 65 - 66). Both

Fig 65. Seedlings with vein "cells" close together at the leaf tip

Fig. 66. Seedlings with larger vein cells at the leaf tip

Fig. 67. Elongated vein "cells" that look like bamboo

Fig. 68. Elongated vein "cells" that look like bamboo

of these photos are of seedlings. The plants in Fig. 66 have leaf vein cells that are closer together at the tip of the leaf. These are more likely to stay compact than the seedlings in Fig. 67 with long leaf cells at the tip of the leaf because densely packed horizontal veins at the leaf tip are evidence of Chinese short-

Fig. 69. A 10! Great leaf placement, rigidity, shine and prominent veins

leaf genetics. In fashion now are plants with long leaf cells that look like bamboo (Fig. 67). These long cells mean the leaves will be longer. When the leaf color is pale, even yellow and the veins darker, this is called "painted face" (Fig. 68). This photo is of a painter x painted face, shiny and pale cells with dark veins make this a real beauty. A few market growers use a vein mould to stamp out temporary protruding veins but there are real genetics for these traits out there. That said, not growing plants in the conditions Chinese grow them in may lessen the protruding veins and painted face traits. For optimum protruding veins, the potting medium is drier but the environment humid.

My last leaf photo is of an amazing plant that one could only dream to own (Fig. 69). The form is excellent with leaves on each side directly over the older ones, rigid shiny leaves with protruding veins, so what is not to love? A plant like this is unobtainable for most of us but at least I was able to get a photo of it! None of its traits are manipulated; this plant is the result of years of breeding for such leaves.

Are you still with me? I don't want to be discouraging when I say most of the important leaf characteristics can be fabricated or that growing conditions can affect the shine and painted face characteristics. It is important to know these things if you want to collect

Fig. 70. Chinese *Clivia* potting mix components

or breed with Chinese plants. So how do the Chinese grow their *Clivia*? The growing medium varies from barely rotted oak leaves to well-rotted oak leaf compost (Fig. 70). At the base of the pot a small amount of boiled sunflower seeds, hemp seeds, and well fermented fish scales are blended in. The seeds are boiled because they want to grow *Clivia,* not sunflowers or hemp. The idea is that the seed oils help with the leaf shine while the fish scales give the plants calcium and phosphorus to aid leaf rigidity. As I mentioned earlier, the glasshouses are quite humid and these plants really thrive in that environment. The plants are repotted frequently thus refreshing the nutrients. When my shade house is built I will make sure I have an enclosed humid location for my Chinese plants since our air in California is very dry.

Figs. 71 - 73. Some beautiful flowering Chinese *Clivia*

All this leaf talk, what about flowers? Most breeding efforts in China have been towards improving the leaves. The leaves can be appreciated all year round after all. There is a rising interest in flowers other than orange and Mr. He, our host, has a stunning collection. I will write that article for a future NACS newsletter but here is a little teaser Figs. 71 - 73.

I know everyone in our little group is eternally grateful to Eddie Pang and Mr. He for allowing us to meet Chinese growers and see their collections. Trying to buy a plant in China would have been impossible without them. In my direct western way I normally just ask how much something costs…that simple. In China such a transaction is a lot more complicated. First you have to establish a friendship (in Chinese!) before you do business. If either party doesn't warm up to the other, no sale is transacted. Being a "friend" can get better prices but very special plants are indeed worth more than anyone in the west would normally pay, even at a Clivia Society auction! So how can we get quality Chinese plants here? Most purchases have to be made through middlemen, not directly from growers. It isn't easy for most growers to get phytosanitary certificates in China but that may change in the future. Seeds are probably the easiest way to get a hold of Chinese *Clivia* genetics as long as you know the person you are buying from is honest and that the person he is buying from is honest. Let's just say: "it's complicated!" I am grateful to Li Qiang, a middleman and grower himself, for making it possible to get my plants home.

It is impossible not to fall in love with the leaves of Chinese *Clivia*, the warmth of the Chinese people and REAL Chinese food… don't get me started!

Information from the archives

By Connie & James Abel

While sorting through some files, we came across the following table which will interest growers preparing soil for their *Clivia*.

In September 2002 the caulescens tour visited what must be the best known *Clivia* habitat – God's Window on the Eastern Escarpment. In the bus were Isabelle and Pierre De Coster, well-known enthusiasts and commercial growers from Belgium. They took a composite sample of soil from around the terrestrial *Clivia* and from the leaf detritus surrounding the roots of lithophytic plants. The first photo was taken on that tour. The sample was analysed in Belgium and the results are given in the table.

In requesting Pierre's permission for this publication, given immediately, he commented:

"Our *Clivia* growers' group in Belgium was surprised with the very low pH".

Aart van Voorst, well known plant scientist from the Netherlands, has been on three caulescens tours and requested to comment he said "About the soil the plants are growing

Resultaat chemische analyse 19.09.2002 door teeltinfo voor Pierre De Coster

Description	Result	Ideal	Comment
pH H20	4.95	6.00	
pH KCL	4.31	5.50	
Conductivity	87	400.00	Low
(N-NH3) Nitrate nitrogen	27.12	100	Moderate but good ratio
(N-NH4) Ammonium nitrogen	13.54		
(P) Phosphorus	29	50	
(K) Potassium	122.50	250	
(Ca) Calcium	982.50	1200	OK
(Mg) Magnesium	247.50	250	OK
(Fe) Iron	0.75	1.00	Moderate
(Mn) Manganese	49.05	<8	High
(SO4) Sulphur	14	200	Low
(Na) Sodium	35.00	<50	
(Cl) Chlorine	36.00	<50	

All values expressed in mg/l substrate. Conductivity in µ S/cm

REMARKS: pH OK, nutrition OK, Iron ratio a bit low and we consider the Manganese to be too high and the sulphur low

in, we don't mind the low pH for our plants in the greenhouse. The high manganese is remarkable and the low amount of other nutrients. What can I comment more on these nutrition data: well the plants are not overfed but like we have seen, will be healthy in this environment and grow happily but not too fast." He attached the second photo of a flowering *C. caulescens*, taken in September 2014, with typical snout beetle damage to the leaves evident.

The low pH and poor nutrient status of the soil are due to severe leaching by the heavy rainfall. We have never seen more than 20% of mature stems in flower at the same time, and this can perhaps be attributed to the alternate bearing which results.

Clivia caulescens plaats: Zuid Afrika, God's Window

160 years of *Clivia* breeding in Germany and the rest of Europe

By Theo Suchland
Original text in German, kindly translated to English by Heidi Nerurkar

The *Clivia* is a plant a lot of people know about and one which can be seen quite often. At some point a few plant enthusiasts started to breed with *Clivia*, but it needed a lot of time and work to develop the type of *Clivia* we see in the present day. This article intends to honour all those early pioneers of days gone by, their dedication and skills, without which *Clivia* breeding would definitely not be where it is today.

A modern breed of *Clivia: Clivia miniata* 'White Lips' (Photo: Ian Coates, England)

Belgium and Germany are the "classical" countries of *Clivia* breeding in Europe. In England and The Netherlands as well, the nurserymen were trying to improve the plant and the targets were quite similar in all these countries. Beginning with the introduction of *Clivia miniata*

Clivia miniata (Favourite flowers of garden and greenhouse, vol.4 t. 263 (1896-1897) D. Bois)

Regel around 1850 the *Clivia* breeding slowly took off.

THEODOR REIMERS from Ottensen near Altona, who started with the cultivation of *Clivia* in 1860, was in all probability the first German *Clivia* breeder with international recognition.

The plants he started his breeding with had umbels with only five to six single blossoms. The first crosses from Reimers already displayed 10 and more individual flowers. With success,

Clivia nobilis Lindl., only mentioned around 1862 in the Enzyklopädie from Dietrich

Photograph from 1921 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

he achieved plants with bigger and darker flowers. By 1880 he had bred approximately 15 new types. The multiplication of his *Clivia* was

Gardeninspector Theodor Reimers in Ottensen near Altona. (Photograph TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

exclusively through offsets. At that time THEODOR REIMERS had already observed *Clivia* which flowered in their third year of cultivation.

In Ghent in Belgium the breeding of *Clivia* also began in approximately 1860. The breeders there started with *Clivia nobilis.* REIMERS mentioned in 1879, that he had given some plants of his own breeding to LINDEN and VAN HOUTTE, Ghent. Around 1880 KRELAGE & SONS in Haarlem in The Netherlands also acquired *Clivia* bred by REIMERS. The Belgian *Clivia* originate exclusively from THEODOR REIMERS. This was for a long time in doubt, however, UHINK confirms that the best Belgian *Clivia* originally come from the work of REIMERS.

The famous Belgian *Clivia* were known in the gardening world as *Clivia lindenii.* Their triumphal journey throughout Europe and the rest of the world is attributed to a large extent to REIMERS diligent breeding efforts. *Clivia lindenii* arrived in the commercial venue for the first time in 1879 and received the highest award 1882 in Leuwen, Belgium. These plants showed long, narrow and downwardly curved leaves and were an improvement to the old *Clivia nobilis* (*Immanthophyllum aitonii*). Their blossoms resembled the Vallota in shape and colour.

Around the year 1880 R. H. MÜLLER in Dresden-Striesen achieved remarkable success in the colour and form of his *Clivia*. It has been reported that his plants displayed blossoms in colours ranging from sulphur-yellow to fiery-red.

In Belgium in 1886 many plants with big flowers were advertised and they already had serial numbers. In 1896 MÖLLER refers to Belgian nurseries because they had exhibited

Himantophyllum miniata var. 'Marie Reimers', bred by Theodor Reimers. Photograph from 1880 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

Clivia lindenii. Photograph from 1879 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

magnificient *Clivia* at the 'Allgemeine Gartenbauausstellung der Cerole herticole van Houtte' in Ledeberg near Ghent: G. VAN HERZELLE in Mariakerke, B. FORTIC in Ghent, CH. VERMEIVE in Gentbrugge. The plants displayed had umbels with a diameter of 30 cm and were named as varieties. MÖLLER, the most famous *Clivia* critic of his time, negatively points out the exorbitant use of naming new hybrids, as in the case of *Anthurium scherzerianum*.

Other sources around the turn of the last century speak of a yellow *Clivia* which was discovered in Zululand/South Africa. It was brought to Europe by Captain MANSELL and flowered for the first time in ROGERS Garden, Perrenwall (Cornwall) in England. This plants was named *Imantophyllum miniatum* var. *citrinum* and seems to

have been a novelty. The main aspect in breeding at that time was to improve the colour. STURM notes in 1899 that although most breeders considered the improvement of the mennigrot (orange red) colour as the most important point in their breeding, no real improvement was achieved. The colour was enhanced but remained within the usual colour spectrum.

With "lemon-yellow" a new colour appeared on the scene. Later these yellow *Clivia* disappeared, but from time to time have been mentioned again.

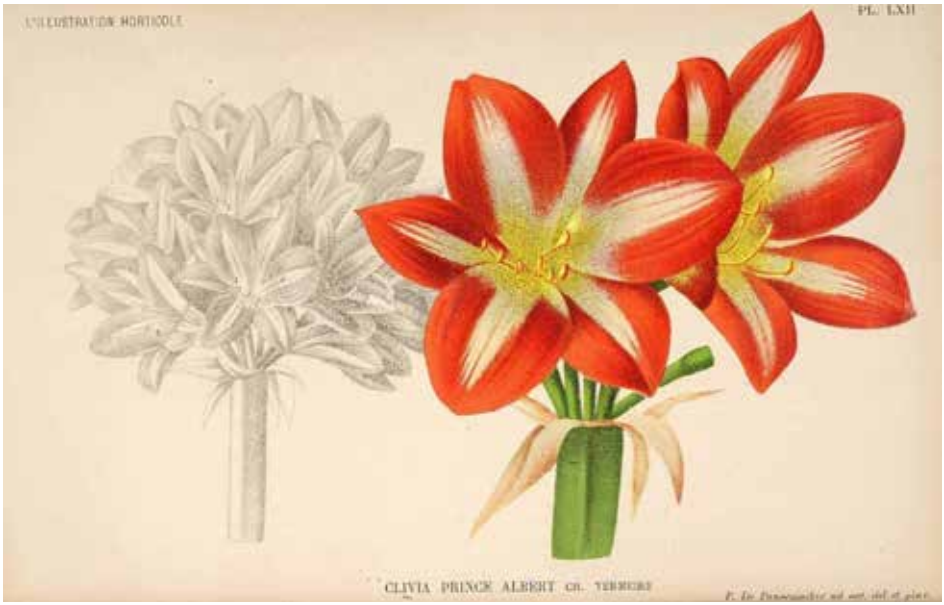
Motivated by REIMER's work, the first to follow as a *Clivia* breeder was NEUBERT in Wandsbek. Later STOLDT in Wandsbek continued the work of these two pioneers. For more than 25 years, STOLDT was involved in the breeding of colourful and floriferous *Clivia*. In 1913 – allegedly due to space restrictions – the *Clivia* were replaced by more profitable cultivations.

Around the turn of the last century G. BORNEMANN in Blankenburg am Harz was one of the most successful *Clivia* breeders and he also had observed three year-old seedlings in flower.

Botanical science was the name giver: Imantophyllum miniatum var. citrinum (Photo: Ken Smith, Australia)

In 1902 KIND from Angermünde points out that the buyers favoured bright coloured *Clivia* with big flowers. At that time people already preferred the darker colours, although this was not the prevailing sentiment. The seeds for these plants were acquired from STRAUSS from Ehrenfeld near Cologne.

The breeding targets of A. STÖGER in Ahrensburg were bright red colours, big and elegant flower shapes and easy flowering. He was able to improve the *Clivia* material from STOLDT



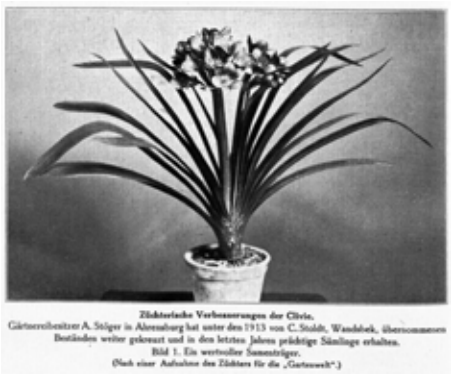
Clivia miniata 'Prince Albert' (L' Illustration horticole, vol: t. 62 (1896))

further. Before WWI, Belgium was to a great extent involved in the breeding development of *Clivia* and was supplying the whole of Europe with plants. Due to economic reasons, during the war Germany started cultivating the *Clivia* by itself and now the target-orientated breeding started here too. The meanwhile developed broadleafed 'Genter Rasse', also known as *Clivia miniata robusta*, began to assert itself. Leading Belgian nurseries were BIER&ANKERSMIT in Melle near Ghent and DELARUYE-CARDON in Ledeberg near Ghent.

Photograph from 1903/04 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

During this period REINHOLD KOENEMANN in Remscheid and most of all MAX LÖBNER in Friesdorf near Bonn (Gärtnerische Versuchsanstalt) became the most successful *Clivia* breeders. LÖBNER started breeding in 1917-1918 probably in Dresden, and later continued his work in Friesdorf. LÖBNER worked with narrow leafed, dark flowering *Clivia* he had got from RUNDE and crossed them with plants from SELZER, which were developed out of *Clivia lindenii.* These plants showed umbels with only a few flowers (amaryllisblütiger Typ) and good colouring. The most significant part in LÖBNER'S work is – because he had seen *Clivia* flowering in their third year after germination – for the first time a breeder included economical aspects in his breeding efforts.

The breeding material from the nursery KOENMANN & MAASSEN, Remscheid, was later to a great extent handed over to SCHÄFERS in Rastatt. Their breeding goal was the middle-



Photograph from 1929 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

to broadleafed type with early flowering. AHRENDS in Ronsdorf as well had plants from KOENEMANN. His breeding work was based on the material from KOENEMANN and the FRIESDORFER *Clivia*.

Most of the breeding and cultivation of *Clivia* was located in the Northwest of Germany. In addition to the already-mentioned nurseries, there were other breeders also working on the improvement of *Clivia*: BAUER in Lemgo, GRATHOFERS in Unna, KLEINZÄCHTIN in Lockstedt, KUHLMANN in Lemgo, and STRACK in Lobberich. Other names are: CONNERT in Wolmierstedt, GEYER in Dresden, ROTH in

Photograph from 1925 (TU Berlin, Universtätsbibliothek, Sondersammlung Gartenbücherei)

Marienfelde and WAGNER in Ludwigsburg. Through their intensive breeding efforts, quite a few valuable types were developed. Compared to the Belgian type, the plants were larger, not as broadleafed, showed darker colours and had a shorter cultivation time.

Due to WWII this breeding material, which was mostly built up after 1920, was to a great extent destroyed. Because of the after-effects of the war, the remaining breeding material was reduced to almost zero in quality and quantity. Around 1948 attempts were made to revive *Clivia* breeding in both the FRG (Federal Republic of Germany, West Germany) and in the GDR (German Democratic Republic, East Germany).

Due to the state planned economical structure in the GDR and the absence of insight into a market economy, the few tentative trials were consequently nipped in the bud. The previously achieved successes in Saxony were lost due to lack of interest and the aforementioned political and economical structure in the GDR.

Neuer Clivien-Typ in Gent. Haus mit blühenden Pflanzen des neuen, besonders gedrungenen Typs bei der Firma Bier & Ankersmit in Melle bei Gent. Aufnahme für die „Gartenwelt".

Photograph from 1929 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

Landwirtschaftsrat Max Löbner (Photo: Landwirtschaftskammer NRW)

The same situation occured in West Germany as well. A few nurseries cultivated *Clivia* as a sideline, however because of time constraints, they neglected the breeding work. The quality of the German *Clivia* rapidly diminished and the market reacted accordingly.

Until the present day the former quality could not be achieved. However, because of the determined elucidation about the cultivation and breeding of *Clivia*, HANS-GEORG PREISSL from Garbsen and THEO SUCHLAND from Isselburg have successfully contributed to recovering the lost heritage of our ancestors by bringing it back once again into the focus of the general public of Germany. Furthermore the successful cultivation and breeding with *Clivia* continues and in some cases has started again.

***Der amaryllisblätige Clivientyp** der Firma Selzer-Bonn wurde in den letzten Jahren durch züchterische Bearbeitung weiter verbessert. Hierzu Text S. 141.* Aufn.: Heinrichs.

Photograph from 1937 (TU Berlin, Universitätsbibliothek, Sondersammlung Gartenbücherei)

PHOTOGRAPH SUBMISSIONS

Photographs by Carrie Kruger

'Black Magic'
Interspecific

'Choco Bronze'

'Desert Rose' Multipetal Interspecific

'Ghoenang'

'Ghost'

'Hirao'

'Hotlips'

Interspecific 'Firefly'

'Lukie's Picotee' x 'Carrie's Picotee'

Miniata 'Estelle'

Multipetal 'Hirao'

'Naude's Peach' x Peach *Robusta*

Nobilis 'Blush'

'Primrose Peach' single flower

'QO8' F1 Seedling

'Star Green Two'

'Secret Rose'

Photographs by Felicity Weeden

Best Green Throat

'Betta Beauty Queen'

'Betta Bronze'

'Dainty One'

Interspecific - 'Pretty Penny'

Interspecific - 'Graceful in Gold'

Koike Green Throat

'Stars and Stripes'

'Symphony in Green'

Photographs by Helen Marriott

'Simplicity'

'Gladys Blackbeard' x 'Oribi Gorge Yellow'

'Mopi Hirt' x 'Oribi Gorge Yellow'

'Oribi Gorge Yellow' x 'Appleblossom'

'Q6' x 'Q2'

Photographs by John Hunter

Apricot Broadleaf

'Cransley Peach' x Pink *Robusta*

Top: *Cyrtanthiflora*

Below: Green and white throat red

Green throat yellow

Green tip pink *caulescens*

Nakamura Interspecific

Ngome yellow *gardenii*

Picotee *cyrtanthiflora*

Red edged Bicolour

Round tipped Akebono 'Light of Buddha'

Salmon Broadleaf

'Surprise No. 1'

'Surprise No. 2'

Two tone peach *cyrtanthiflora*

West Covina Salmon

White throat pink *miniata*

Photographs by Willie & Cynthia le Roux

'Nita'

'Delila'

'Ronel'

'Cloe'

'Milé'

'Nikki'

'Green Mist'

'Abbey'

'Ziva'

'Jolie'

'Dee'

'Adri'