CLIVIA

TWELVE

The Clivia Society

www.cliviasociety.org

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CLIVIA CLUBS

Cape, Eastern Province, Free State, Garden Route, Joburg, KwaZulu-Natal, Lowveld, New Zealand, Northern and Northern Free State

INTEREST GROUPS

Northern KwaZulu-Natal, Overberg and Waterberg

CLIVIA

TWELVE

EDITORS

Roger Fisher & Roger Dixon

Contents

Editorial

It was decided by the Executive Committee that the Clivia Society's Yearbook for 2010, CLIVIA 12, would comprise of papers delivered at the 5th International Clivia Conference held in Cape Town, and that the production would be done in Pretoria. Claude Felbert informed the Executive that he would not be available to perform editorial duties for this issue. We wish to thank him for his past editorial services, and especially for the photographic content and layout of all eleven preceding Yearbooks. He has done sterling duty for the members of the Clivia Society as a member of the editorial team since the inception of the Yearbook series in 1998.

Starting at the beginning, Greig Russell revisits Dr Hooker and the early nomenclature of the genus *Clivia* and in a style all his own does some posthumous ticking off of the good Doctor for getting so much wrong! Greig also takes us on a visit to South Africa's earliest hybridiser of the genus, Miss Blackbeard, and uses the opportunity to reprint early articles on her breeding and collection, here for the first time illustrated with the watercolour depictions done by Miss Cythna Forssman [later Letty] which, for all these years, have mouldered in the collection of the South African National Biodiversity Institute. This is truly a privilege.

The potential offered by two of the pendulous species to those who breed and ennoble the genus are expanded upon, Wayne Haselau for *Clivia nobilis* and Francois van Rooyen for *Clivia gardenii* – although the question as to how long we will have all the plants at present included in this species definition is an open question.

Helen Marriott of Australia takes a broad view of the heritage and developments of the genus *Clivia* in its distinct cultivated forms in Asia and looks at the trends and directions the breeding has taken and is being followed in Japan and China respectively.

The Photographic Competition was chaired by Peter Lambert and adjudicated with the assistance of Roger Dixon. They observe the following:

More than 150 entries were received in the various categories and a sincere word of thanks to all of those who participated.

There were beautiful flowers to be seen, but the judges were of the opinion that a great numbers of these images were not up to standard as they were either out of focus or the colours had been over intensified (especially the reds and greens). There were also a number of white balance, compositional and background mishaps. These factors led to the affected images not being considered for the competition.

In the end it was those images where the photographers had taken extra effort to get the composition, balance, lighting, exposure and backgrounds correct that were the successful images.

Congratulations to Helen Marriott who secured the top three places in the competition.

Congratulations too, from the rest of the editorial team and Executive of the Clivia Society. The only reward entry to the competition brings is that of seeing your photographs in print. We value those who make time and take effort to record and submit photographs for the competition and ask that you feel inspired to add to the contributions for 2011.

With the limited space there are therefore many papers still to be published. It is envisaged that those of a more scientific nature be published under separate cover as occasional papers of the Clivia Society. This should be available with the AGM in 2011.

The Editors

Roger Fisher [Lead Editor] and Roger Dixon

Cape Clivia Club 2009 Show

PHOTO: CLAUDE FILBERT

Winner Best Own Breeding - Mick Dower.

Lowveld Clivia Club 2009 Show

Paul Kloeck, grower and shower of all show winners.

First Runner Up breeder, Col Pitman (Yellow).

Best in Show, *C. miniata* (Orange). Breeder, Felicity Weeden.

Second Runner Up 'Lime Green Throat Watermelon', Breeder, Les Brown.

PHOTOS: ANDRÉ SPIES/HEIN

Imatophyllum? ... Tut-tut, Dr Hooker

Greig Russell – South Africa

October 1, 1828 was a red-letter day for the genus *Clivia*. All of a sudden, like bats out of hell, two names appeared in print for one and the same plant. As far as I am aware, this is a unique event in the annals of botanical nomenclature. Both names, *Imatophyllum aitoni* and *Clivia nobilis*, deserve study and comment, and to set the ball rolling I am going to examine the name *Imatophyllum aitoni* here, the one coined by Dr William Hooker.

William Jackson Hooker (1785-1865) was indeed a great man; learned, a good scientist, a fine leader, a hard worker and a man with huge curiosity about the world around him. Within a few years of naming our plant he would be knighted for his contributions to Botany (although definitely not because of naming this plant!). My judgement, although not to be depended upon much, says that he was a good Latin scholar – his Latin descriptions of plants are readily and clearly understandable in most cases. I am only going to point a finger at his Greek here and I base this entirely upon his handling of the naming of this plant.

One tends to associate the name Hooker with the Royal Botanic Garden, Kew; and for good reason. In 1841, W.J. Hooker would become director of this institution and his son would follow in his footsteps. However, from 1820 until he went to Kew, Hooker was the Regius Professor of Botany at the University of Glasgow. Hooker took over the editorship of *Curtis's Botanical Magazine* in

William Jackson Hooker (1785–1865) in 1834 as depicted on Plate 12 from the *Makers of British botany* (1913).

1826, and for the next number of years, the intellectual properties of this publication were developed in Glasgow. Hooker was a skilled draughtsman, so aside from writing up the plant descriptions, he became the chief illustrator of the magazine for nearly a decade. Even the copper plate engraver, Joseph Swan, practised his art in Glasgow.

Thus Dr Hooker was probably in Glasgow when he addressed the material of the plant that he was to name *Imatophyllum aitoni*.

This material included a drawing of the plant that had flowered in the garden of

The plate of *Clivia nobilis* from the *Botanical Register* of 1828, accompanying John Lindley's description of the species, from a drawing by M. Hart, engraved by J. Watts.

Syon House in 1827, some dried flower and leaf material forwarded by James Bowie to Hooker in a letter in 1827, and a drawing and specimen of the fruit from William Townsend Aiton of Kew. Regarding the latter, Aiton was closely associated with Richard Forrest, the head gardener at Syon House, as the latter had trained at Kew under the former; and possibly the fruit and drawing thereof that Aiton forwarded had come via Forrest from the 1827 Syon House flowering.

For some reason Hooker decided that it was the leaves that were the most defining feature of this plant, and thus he chose to base his generic epithet on these leaves. Now it seems that generic names based on leaf characteristics are usually created in Greek, ie. *Something-phylum*, rather than in Latin, ie. *Something-folium*, whereas similarly related specific epithets may quite happily be rendered in either Greek or Latin. Perhaps to others, as it does to me, the Greek form sounds more impressive and

The plate of *Imatophyllum aitoni* from *Curtis's Botanical Magazine* of 1828, accompanying William Hooker's description of the species, from a drawing by Hooker, engraved by Joseph Swan.

one does, after all, want a good impressive name for a genus.

As a descriptor for this leaf, Hooker decided that 'strap' or 'thong' would be his word. At this point I feel the need to question this judgement, although that will not change it. A 'strap' to me is quite a narrow strip of material; and as for 'thong', well it is sufficient to say that I have grown *Clivia* seedlings with first leaves that are considerably broader than the thongs that I saw on Ipanema Beach in Rio de Janiero back on that day in September 1996 that I remember oh so well. So I do not think of clivias as having strap-like or thong-like leaves, but as Lindley in his original description of *Clivia nobilis* also described the leaves as "strap-shaped", I think that the definition of 'strap' may have changed over time; as is the case with many other concepts. Their 'strap' is my 'belt'. At this point, Dr Hooker reached for his Greek and in his own words named the plant "From **ιμας**, **ιματς**, a thong, or strap, and **φυλλον** a leaf, from the shape of the foliage"; **ιματος** transliterating as 'imatos'. And thus *Imatophyllum* was born which would prove to be a flawed and crippled child.

In 1830, in what would soon prove to be the autumn of his years, the German botanist Kurt Polycarp Joaquim Sprengel (don't you just love these names!) (1766-1833) published the then current edition of Linnaeus's *Genera plantarum*, which he had edited and rewritten as necessary. Sprengel was the author of a great number of works; but then what could you expect from someone whose one name was Polycarp (= many fruit Gr.). He was also a brilliant man and as a lad he had distinguished himself as a linguist, not only in Latin and Greek, but also in Arabic. Precocious too, at the age of fourteen (1780) he had published a small work called *Anleitung zur Botanik für Frauenzimmer* (tr. *Guide to Botany for Women*). There was possibly no living scholar in the world then better placed to review Hooker's botanical Greek. Sprengel must therefore have uttered 'yeeurtsch' or some other appropriate piece of German invective upon surveying Hooker's construction. If Hooker had done his homework properly, he would have found out that it was **ιμαντος** ('imantos') that would have been the correct form to use in combination; not **ιματος**. This is then the first strike against Dr Hooker.

Sprengel immediately corrected the name in his *Genera plantarum* to *Himantophyllum*. Undoubtedly this resulted in a rather less than happy Hooker. He probably nevertheless smirked a bit to find that even the flawless Sprengel was but human – aside from admitting *Himantophyllum* to his list in *Genera plantarum*, Sprengel had also included the *Clivia* of Lindley as a separate entry, not realising that these were two names for exactly the same plant.

You may ask how the initial 'H' in this form of the genus name arises? An initial Greek vowel has an aspirate nature about it, and thus an 'h' is often judged to precede such a vowel (or as the International Code of Botanical Nomenclature [ICBN] says it – "60A.2. The Greek *spiritus asper* (rough breathing) should be transcribed in Latin as the letter *h*.") Take the example of the name for 'Greece' in Greek – it is **Ελλας** (transliterating as 'Ellas') and it is always rendered in Latin script as 'Hellas' and hence the more commonly-used word 'Hellenic' to describe things Greek. Another plant genus which incorporates **ιμαντος** in its name is an orchid with a strap-like lip, the name of which is rendered as *Himantoglossum* and certainly not ~~*Imantoglossum*~~. Leaving out the 'H' is thus strike two against Hooker.

The French and the Germans particularly were quick to take up the name

The plate of *Imantophyllum? miniatum* from *Curtis's Botanical Magazine* of 1854, accompanying William Hooker's description of the species based upon Lindley's *Vallota? miniata*, drawn and lithographed by William Fitch.

Himantophyllum, but *Imatophyllum* satisfied those on the British side of the Channel who did not think that *Clivia* was in fact the valid name. Coming as I do to clivias from cymbidiums, I initially found it quite confusing that *Himantophyllum* could be a synonym of *Clivia* because I knew *Himantophyllum* as the section in the genus *Cymbidium* that contains the one species *Cymbidium dayanum* – a species noted for its narrow (c. 10 mm wide), flat, strap-like leaves (a perfect use of the name by my judgement). There is of course nothing wrong with such an application of an identical name at another rank.

Changing the spelling of a name because it is wrong for some reason is known as correcting the orthography (literally 'straight writing' Gr.), and the ICBN speaks to this in articles 60 and 61. Where orthographic variants exist, the authorship of such variants is attributed to the origi-

nator – so, as I see it, Sprengel is not the author of *Himantophyllum*, Hooker is.

There is, however, nothing at all wrong with the name *Himantophyllum*, and it has no less precedence than the name *Clivia* just because Hooker couldn't get his Greek right. So how does one sort out the conundrum of which name to use out of a perfectly parallel pair?

If one sees this as some sort of competition, then Hooker lost it quite rapidly. Whereas Lindley used the name *Clivia* at every available chance, as soon as four years after the initial publication of *Imatophyllum aitoni*, a short description of the fruit and seed of this plant authored by Hooker was published by Lindley in *Edward's Botanical Register* of 1832 under the heading "NOTE upon *Clivia nobilis*, fol. 1182." It seems to me that Hooker had capitulated at this point, losing the courage of his convictions. Third strike and out, Willie Boy.

Perhaps Hooker felt brow-beaten by such comments as that offered by the contemporary French botanist, Jean Baptiste Antoine Guillemin (1796-1842), who said the following in 1829 in reference to the *Clivia*/*Imatophyllum* affair: "*Les botanistes seront sans doute fort embarrassés pour l'adoption de l'un des deux noms proposés, puisque la publication en a été faite, non seulement la même année, mais encore le même mois et le même jour (1er oct. 1828). Il faudra que l'un des auteurs donne l'exemple, en abandonnant lui-même la dénomination qu'il a imposée à ce genre; espérons que cette question se résoudra promptement dans l'intérêt de la science*"; which, if you trust my dubious translating abilities, says: "The botanists will without doubt be very embarrassed by the adoption of one of the two proposed names, since they were published not only in the same year, but in the same month and on the same day (1st October 1828). One of the authors is required to set an example by abandoning the name he has imposed on this genus; hoping thereby that this matter will be resolved promptly in the interest of science". In my mind's eye I can see the smoke coming out of Guillemin's ears as he puffs up with righteous Gallic indignation at the doings of '*les deux idiots anglais*'.

It has often been mentioned that Anna Amelia Obermeyer (Mrs Mauve – 1907-2001), botanist at the National Herbarium, Pretoria, in writing the description of *Clivia gardenii* for the *Flowering Plants of Africa* (1972), said: "In 1830 Roemer and Schultes (Syst. Veg. 7: 892) chose the name *Clivia* and reduced *Imantophyllum* to synonymy." There are two minor problems in this quotation; *Systema vegetabilium* vol. 7, part 2, was authored by J.A. & J.H. Schultes (a father and son team), as J.J. Römer had departed this mortal coil in 1819, so it would have been highly irregular for the latter to have had anything to do with this choice; and as the name *Imantophyllum* would not appear until 1854 (see below) – the reference must be to *Imatophyllum*. My 'orthographic' rendition of this is thus: "In 1830, Schultes and Schultes f. (Syst. Veg. 7(2): LII-LII, 892-893) used the name *Clivia*, reducing *Imatophyllum* to synonymy." This is then precisely what Schultes and Schultes f. did. ICBN 11.5 says "When, for any taxon of the rank of family or below, a choice is possible between legitimate names of equal priority in the corresponding rank, or between available final epithets of names of equal priority in the corresponding rank, the first such choice to be effectively published establishes the priority of the chosen name, and of any legitimate combination with the same type and final epithet at that rank, over the other competing name(s)." Phew! So Anna Amelia Obermeyer's interpretation is completely correct.

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Other interpretations offered are thus incorrect. For example in his book *Clivias*, Koopowitz says: "It was not until 1864 that E. Regel clarified matters and designated *Clivia* as the proper name in a German journal *Gartenflora* giving the credit to Lindley because Lindley had actually written his description several months before Hooker." This much-referenced paper by Eduard Regel is, however, a dog. Regel didn't get it at all, saying: "*Clivia ist der von Lindley zuerst gegebene Name für die in Rede stehende Gattung und muss daher nach dem Rechte der Priorität festgehalten werden. Lindley stellte solchen nach der Clivia nobilis (Bot. reg. tab. 1182) auf. Erst einige Monate später legte Hooker der gleichen Pflanze den Namen Imatophyllum Aitoni bei*.", which I translate (with help this time) as: "*Clivia* Lindley is the first name given for the genus in question and therefore must be maintained in accordance with the rights of priority. Lindley created this genus in the description of *Clivia nobilis* (Bot. reg. t. 1182). Only a few months later, Hooker named the same plant as *Imatophyllum Aitoni*." Regel wrote this not knowing, as he should have, that the Lindley and Hooker names were published on exactly the same day and he is patently hardly one to follow in this regard. This is strike one against Regel. Koopowitz obviously did not understand what Regels had said. Furthermore, nowhere in the paper did Regel say that "Lindley had actually written his description several months before Hooker," as Koopowitz crafts his words to suggest. As the Lindley description of *Clivia nobilis* was based on the 1828 flowering of the plant and the Hooker description of *Imantophyllum aitoni* on a drawing of the 1827 flowering, I believe Koopowitz is completely wrong in suggesting a Lindley headstart in this matter. Is now then the time for strike one and two against Koopowitz?

But now this tale twists even further.

Hooker at some point obviously decided that his *Imatophyllum* was a dead name, so when he was confronted in 1854 by a plant that Lindley called "*Vallota? miniata*" and which Hooker knew was not a *Vallota*, he decided that this plant was similar to *Clivia* but had certain characteristics such as open, upright flowers that indicated that the plant belonged in new genus. So he resurrected his now 'dead' name, but as *Imantophyllum* this time – a spelling which had never been used prior to this time, and applied it as *Imantophyllum? miniatum* (yes, he did put that question mark after his generic epithet!). Through this action, he broke the then as yet uncodified rules which today dictate that this name is illegitimate. This, however, did not stop the hordes from applying this half-fish-half-fowl name to anything that looked like a *Clivia miniata* and *Imantophyllum* became a very popular name well into the twentieth century. William, William, William... get into the corner and put on your dunce's cap.

Imantophyllum 1854 of Sir William Hooker, even though it is an illegitimate name, needs to be considered from a nomenclatural point of view, which may appear rather perverse. It represents a new genus name and is not an orthographic variant of *Imatophyllum*; so species that have been transferred into it require separate listing as synonyms in works that cover the nomenclature of *Clivia*.

The species epithet applied to our plant by Hooker – '*aitoni*', commemorated William Townsend Aiton (1766 – 1849) who was then the superintendent of all the Royal gardens and after 1830 of Kew Garden only. Certain authors, as for example William Herbert, preferred the form '*aytoni*', probab-

ly to satisfy some orthographic argument, and today the name would be rendered *'aitonii'*. This epithet was chosen by Hooker because James Bowie requested in his 1827 letter to the former (this letter mentioned above) that the new species be named for Aiton, who was Bowie's patron at that time. It was then common practice for collectors to honour their patrons in this way. Bowie supplied a small amount of the material examined by Hooker and probably supplied plants of this species to Kew, although there is no indication that he had had anything to do with the plants at Syon House, nor that any Bowie plants had flowered at Kew in time to contribute towards Hooker's description.

Interestingly, volume 55 of *Curtis's Botanical Magazine*, the one in which the original description of *Imatophyllum aitonii* appeared, was dedicated to W.T. Aiton. It was only the second volume of this publication to be dedicated, a practice commenced by Hooker in 1827.

Readers who have arrived at this paragraph are to be congratulated on their tenacity. If you have not understood this piece sufficiently, but enjoy the challenge, re-read it after a good night's sleep. Remember that it took me a few weeks to get my mind around this all and I needed outside help in some areas. The next piece will deal with the name *Clivia* and its variants. This work aims towards the compilation of a complete and considered, fully-corrected, annotated nomenclatural list for the genus *Clivia*, which will clarify the properties of every relevant name that I have encountered. Although such a list will not make for scintillating reading, it will represent an indispensible basic reference source.

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Clivia nobilis – out of obscurity

Wayne Haselau – South Africa

Clivia nobilis is a profoundly interesting species as not only was it the first species described in the genus but it has proven to be an extremely good candidate for creating hybrids, especially when crossed with *C. miniata*.

Clivia nobilis is the most southerly occurring *Clivia* species and like it's recently described cousin, *C. mirabilis*, it is drought tolerant and can stand very high light intensities. Up until fairly recently colour forms i.e. yellows, blushes and other pastel forms of the species have been extremely rare. All this changed a few years ago when East London plantsman and 'tswele' (herbalist), Mike Onions, located a superb colony of *C. nobilis* near the coast south of East London. Mike heard rumours about unusually coloured *C. nobilis* from local sangomas. I was asked to accompany him on the inaugural trip in September 2005.

The bush in this area is extremely thick and thorny, more suited to buffalo and rhino, which used to frequent this habitat. Nowadays referred to as sub-tropical transitional thicket, this is a low growing xeric (dry) thicket. *Clivia nobilis* loves this habitat and typically grow along the stream banks ensuring that they get great drainage and higher humidity. On this first exploratory trip it was decidedly hot in the valley, once out of the wind on the hilltops. We struggled to find our first plants. However, once we found them, they

C. nobilis in sub-tropical transitional thicket habitat.

seemed to be everywhere – what a joy to see so many lovely plants in full flower. Initially we found no unusual colour forms and after many hours of sweat and blood (thorns) we managed to turn up two potential yellow plants.

The rest is history. However, as is so often the case the whereabouts of this colony became known to others and most of its unique clones have subsequently been plundered.

Since *C. nobilis* was first discovered and described in the 1800's it has been cultivated

Pink *C. nobilis* ex habitat.

C. nobilis ex habitat.

Yellow *C. nobilis* ex habitat.

Pearl *C. nobilis* ex habitat.

in Europe for almost two centuries. *Clivia nobilis* was the first pendulous *Clivia* to be crossed with its showier sister species, *C. miniata*. The results of these early crossings were not only successful but often spectacular and one has to admit that a really good *Cyrthanthiflora* is a superb plant. A number of authors have written most eloquently on the early history of *Clivia*, most notably Harold Koopowitz in his treatise *Clivia* and John van der Linde and Charl Malan in the Clivia Society yearbooks. *Clivia nobilis* occurs in large numbers in certain localities throughout its distribution range and certain localities contain thousands of individual mature plants. Places where the distribution of *C. miniata* and *C. nobilis* overlap are extremely rare and form what are known as mutating colonies (often with unusual plant and or flower forms), where plants have had the opportunity to interbreed over a long period of time.

Almost all known forms of *C. nobilis* are orange or red and mostly of inferior horticultural form. These plants have been utilized in breeding past hybrids. Despite the recent discovery of a fabulous yellow-blush colony, good quality *C. nobilis* forms are still rare. As a result serious hybrid breeding programmes using the best forms of this species have only recently begun or have yet to be undertaken. I have embraced this and made it my mission. In addition to this, *C. nobilis* is also underutilized in breeding programmes, largely as a result of ignorance, as there is a general persistent belief amongst the *Clivia* fraternity that *C. nobilis* just takes too long to flower from seed (see new growing techniques). All this despite a number of good articles by certain authors to the contrary in a valiant attempt to dispel this deeply entrenched myth, as such I believe *C. nobilis* gets a bad

Red form of *C. nobilis*.

rap. Charl Malan of Grahamstown is a prominent Eastern Cape breeder, who has led the charge in attempting to promote *Clivia nobilis* in popular articles and by using his *C. nobilis* in extensive breeding programmes, with spectacular results. Charl was one of the first South Africans to make the pilgrimage to Japan to investigate new trends in *Clivia* breeding and visited the now famous Clivia Breeding Plantation of Yoshi Nakamura. Mr Nakamura is the first modern *Clivia* breeder to use *C. nobilis* extensively in his hybrid breeding programmes. Charl was impressed by Nakamura's success and came back to South Africa intent on using *C. nobilis* more seriously in his own breeding programmes. The Lotter family in Gauteng have also been actively breeding interspecific clivias for many years and have produced some fabulous crosses to date.

In addition to the many magnificent new flower colour forms, a large number of new leaf forms have been discovered, such as short-broad, robust, semibroad, miniature and variegated, which are also bound to have a positive effect when utilized correctly in any breeding programme.

Distribution

The historical distribution of *C. nobilis* is fascinating and many questions are still a mystery. Why does the distribution stop abruptly just north of Port Elizabeth? Why does it fade into obscurity in the central Transkei near Coffee Bay? It is highly likely that *C. nobilis* was more populous during the last ice age when the coastal plain was far more expansive (extending to the currently submerged continental shelf) due to a significant drop in sea level along the eastern coast of South Africa.

Red form of *C. nobilis*.

Presently *C. nobilis* still has one of the most extensive distribution ranges, extending almost 500 km along the eastern coast of South Africa from the Alexandria district just north east of the port city of Port Elizabeth to Coffee Bay in the Central Transkei. This area of distribution falls within the mainly warm/temperate transition zone lying between the temperate Fynbos biome in the south, the xeric Karoo biome in the West and the Subtropical biome in the North East. There are three or more significant spikes inland where this species can be found up to 70 or more kilometres from the sea. These occur in the Grahamstown District in the south of its range and the King Williams Town and Butterworth Districts in the centre of the distribution area.

Throughout its range *C. nobilis* occurs in a wide variety of habitat types and can be found in dry coastal dune scrub, in warm inland valley thickets and in deep forest. This makes it the most habitat tolerant species and lends credence to the fact that it is perhaps one of the most ancient forms of *Clivia* i.e. one of the oldest and most successful. *Clivia* colonies are often found near water and are normally also associated with rocks and this holds true for this species as well. The ongoing genetic study at the University of the Free State will hopefully throw some light on phylogeny of this species and place it once and for all in its correct place on the *Clivia* family tree (I believe it is a ancient form).

C. x cyrtanthiflora hybridised out of *C. nobilis*

C. nobilis on the sparsely vegetated floor of the forest thicket.

Habitat

Clivia nobilis occurs in a wide range of habitats often close to water which ensures a fairly constant range in both temperature and humidity.

An interesting phenomenon occurs annually in *Clivia* habitat. Due to the deciduous nature of many tree species in the forests of southern Africa, trees lose some or all their leaves during the dry winter months. This increases light intensity to the understory plants and associated with this comes a reduction of photoperiod and colder temperatures. The fallen leaves accumulate on the forest floor forming a mulch which helps insulate the roots, keeping them warm and moist. At the onset of the first summer rains in spring these leaves begin to decay and provide a sudden release of nutrients

C. nobilis in full fruit.

which fertilizes the plants, initiating and assisting with the flowering.

Recently during a drought, I was surprised to note that many *C. nobilis* plants in habitat were not flowering as normal and many had, or where in the process, of dropping (aborting) their flowers. This is an obvious strategy for conserving vital stored reserves and moisture as due to the lack of rain the flowering process had been terminated half way. This proves the importance of the spring rains in the *Clivia* life-cycle.

In some years there is a definite winter (July) early flowering spike in this species that is, I believe, brought upon by radically fluctuating temperatures and moisture levels. This happens occasionally in the Eastern Cape when in some years a winter rainfall pattern predominates. Cold fronts pushing up from the Cape are preceded by hot dry berg winds blowing towards the coast from the interior of the country are then replaced shortly thereafter by the rapidly dropping temperatures and moisture (rain) associated with these fronts.

Growing requirements

As many of us who spend time in *Clivia* habitat have realized, the current methods of growing *Clivia* are somewhat archaic and based on the established horticultural techniques developed for other myriad species in horticulture. This is a gross simplification, as clivias are unique and should be grown accordingly. The fact that almost all *Clivia* species can be found growing as epiphytes under the right conditions proves my point. Many innovative growers are experimenting with new mediums and fertilization regimes.

Most pots currently in use for clivias are too deep and have insufficient drainage for the aerobic roots of *Clivia* plants. *Clivia* species with xerophytic tendencies such as *C. nobilis* and *C. mirabilis* benefit from the use of

Ripening *C. nobilis* fruit.

Germinating *C. nobilis* seed.

porous pots such as clay which breathe and dry out more quickly. Shallow clay pots, albeit expensive, are ideal for specimen plants of these species and it is possible to cut extra breathing slots up the side of the pots using an angle grinder.

All *Clivia* require a myccorhizal root fungus in order to absorb inorganic nutrients effectively. In a healthy plant this myccorhiza and associated aerobic bacteria assist the plant at a cellular level by providing a degree of protection against pathogens as well (somewhat like an immune system). *Clivia nobilis* and *C. mirabilis* (and indeed all *Clivia* species) are extremely dependent on healthy myccorhiza, if they are to achieve optimum growth as they both have very large individual root systems (storage mechanism in the absence of a bulb) under natural conditions. *Clivia nobilis* differs markedly from *C. mirabilis* in the type of root system in that that the roots of *C. nobilis* forms a large adventitious mat around the plant. In *C. mirabilis* there is distinct tendency for the roots to penetrate downwards, only moving sideways when blocked by rocks.

I believe this to be an extremely important and often overlooked aspect of part of their successful cultivation; this is especially true for their germination and growth of seedlings. As I grow large numbers of *C. nobilis* from seed, I make a point of inoculating each new seed tray and seedling container with soil from the pots of mature *C. nobilis* plants. I find that this makes a huge difference as is the importance of not spraying fungicides regularly on these plants. I only treat pathogens when absolutely necessary and then with minimum doses initially.

Clivia nobilis seedlings germinate rapidly, however they then endure a seemingly agonizing two year growth stage that seems to the grower to be ridiculously slow. What they are in fact attempting to do is build up root mass as this is their only protection during drought years. Both *C. mirabilis* and *C. nobilis* are guilty of this, although in my experience this takes longer in *C. mirabilis*. I grow large numbers of select *C. nobilis* seed annually and have strived to achieve faster growth rates in cultivation (myccorhiza). I find that higher light intensity and warmth in combination are critical to ensure faster growth. As *C. nobilis* is a shallow rooting species, growing seedlings in shallow trays is also a very good idea. Using finely chopped composted leaf litter as mulch also benefits growth enormously, as does fertilizing regularly with organic fertilizer such as well rotted cattle or horse manure.

Decaying mulch releases nutrients to forming *Clivia nobilis* seedling roots.

C. nobilis germinated seedlings. Note some variegated.

I am experimenting with a number of alternative types of containers for *C. nobilis* plants and have so far had the best results with plastic wash basins. By cutting slots up the sides and drilling holes in the bottom it is possible to make a really functional relatively cheap container for specimen plants. Fired clay bonsai pots also make superb, albeit expensive, containers for specimen plants. The large basins have the added advantage of helping to keep plants well spaced.

Mixes are important when growing xerophytic Clivias, as they need to be free draining, assuring that the roots get plenty of air and also that they provide a degree of nutrition. Jaco Truter and I recently discussed this very point at length. To facilitate lightness in his mixes and to prevent binding, he adds polystyrene granules (balls). I think this might just be the way forward for creating a superior *C. nobilis* potting mix. Polystyrene is inert (cannot break down) so maintains critical aerobic processes. Binding, i.e. the rapid decomposition of a mix, often exacerbated by earth worms, can be fatal to plants as this prevents oxygen from reaching the roots freely, causing anaerobic (rotting) bacteria to increase dramatically.

Using crusher dust, finely crushed dolomite (blue shale), seems to benefit the plants enormously (some growers use dolomitic lime), providing plenty of essential inorganic trace elements to the plants. I now incorporate this into all my mixes; however, it is advisable to use this material in small quantities as it can make the mix heavy. Coarse quartz sand is another good material to add for drainage but again I feel one should only use small quantities.

Natural history

In the wild *C. nobilis* may flower at any time, although 90% of flowering occurs in the Southern Hemisphere spring (Sept/Oct). I have noticed a distinct early flowering spike in mid-winter (June/July) both in habitat and in collections and I believe this coincides with the first cold winter weather and associated rain. In the warm/temperate zone the severity of the cold and whether it rains or not varies from year to year so that in some years little or no flowering occurs at this time.

All pendulous *Clivia* are primarily pollinated by sunbirds. I can tell you this with certainty as I have problem sunbirds in my garden that insist on pollinating my pendulous Clivias. I have to go to great lengths to prevent them from doing so. The culprits are easy to spot as they often

have pollen covered yellowy ceres. In my experience the number one *C. nobilis* pollinator is the Greater Double Collared Sunbird, closely followed by the larger and more secretive Olive Sunbird. In the southern part of the range of *C. nobilis*, Grey Sunbirds are common and they undoubtedly also play their part. In a recent article I wrote about small bees in the family Anthophoridae, which are also important pollinators of *Clivia* in the wild in my area. I believe they are invaluable in that they move pollen between species (interspecific) which results in mutating colonies, i.e. *C. miniata* to *C. nobilis* and vice versa.

Clivia seed dispersal is a fascinating subject and one that I often ruminate about. Ever notice how *Clivia* seeds bounce when they are dropped inadvertently, like when you are trying to clean them in the kitchen? I believe *Clivia* seeds have evolved to bounce. Take a few cleaned *Clivia* seeds and drop them on to rocks, you'll be amazed to see how far they travel, especially if they are on a slope and have gravity as assistance.

They bounce high (proportional to the height from which they are dropped) and in a great many different directions. In nature this assures that most of the seed falls down slope. So how do plants move upslope and long distance? They use seed dispersers of course and in the case of *Clivia* these are most often fruit eating birds, although monkeys and in some areas certain rodent species also avidly, albeit unwittingly play a part. The berries of *Clivia* are most often bright orange or red, occasionally yellow, and cover the seeds with a highly visible nutritious wrapper that shouts food to all frugivores (fruit eaters) even in the deep shade of the forest. I believe birds such as bulbuls, loeries (Turacous) have the ability to move *Clivia* seeds long distances in the wild, as they may pick a fruit and then fly a considerable distance before finding a suitable perch on which to clean it.

Monkeys undoubtedly also move seed around especially during the dry winter months when there is little food. They may pick a *Clivia* fruit out of curiosity, especially the young ones and carry it for some distance before dropping it. *Clivia nobilis*, like all *Clivia*, grow extremely well as epiphytes especially in Forest or Dune Forest and can only find their way into the trees buy using birds and monkeys to get there. Fruit eating bats, such as the common Walhberg Fruit Bat may also play a part in *Clivia* seed dispersal. Although this would be extremely hard to prove, it is likely as similar genera like *Haemanthus* and *Scadoxus* also have highly visible seed, which in the case of *Haemanthus membranaceous* gives off a strong odour when ripe.

Clivia nobilis releases its seed reluctantly as seed is often trapped in the leaf axils of the mother plant. These seeds often find their way onto the ground close to the mother plant, where they germinate readily, assisted by the mother plants mychorriza. Like all clivias, rain falling on the leaves is funnelled down to the base of the plant where it is absorbed by the roots. Any small seedlings growing here would then obviously benefit from this rainfall funnelling effect.

New forms / varieties

I believe *C. nobilis* is hugely underestimated currently as a parent in hybrid breeding programmes largely due to ignorance. Very few people are aware of how many wonderful new forms and varieties are now available. This should not be the case when one looks at its marvellous track record both internationally – Nakamura's breeding programme and locally with people such as Charl Malan who has bred some fabulous interspecifics

using *C. nobilis* as a reciprocal parent. Charl was undoubtedly heavily influenced by Yoshi Nakamura after he visited Japan some years ago. Recent research has shown the hidden potential for colour breeding as certain chemicals found in some pendulous species have the ability to block the standard anthocyanin pathways, potentially leading to the development of new colour varieties.

Clivia nobilis is now known to have a much broader colour range. I recently viewed a DVD compilation of photographs taken over two flowering seasons by the wife of a friend when visiting a local *C. nobilis* population. It was profound – the amount of flower variation displayed by individuals within this one population is remarkable. Only by viewing these pictures at home is the true degree of variation apparent.

Over the years I have made a concerted effort to seek out new and rare forms that are horticulturally significant and can honestly say that variegates, true pinks, yellows, blushes, party colours, deep reds, plum and bronze *C. nobilis* are now being utilized in my breeding programme. I recently acquired a plant that can only be described as an apple-blush. Some plants also have a very high flower count, I have one with 96 flowers recorded. I am aware of another that has 92.

Conservation

So much is said about clivias and their obvious decline. A lot has been said about the importance for conservation of all species and populations. Most is just lip service, as to date very little or nothing has been done to protect clivias in the wild. I propose that the Clivia Society gets more involved with the protection of clivias both in habitat and in heritage collections (which form an extremely important *ex situ* conservation role) and I propose that a *Clivia* conservation portfolio be established as soon as possible by the Clivia Society to promote these goals for future generations.

Clivia numbers are declining throughout their range as more and more suitable *Clivia* habitats are impacted upon by humankind in one way or another. There is in fact very little pristine *Clivia* habitat left, so if we do not act now there will be little or nothing left for future generations to enjoy. *Clivia nobilis* is a good benchmark species as it inhabits the narrow coastal plain of the Eastern Cape. This area is facing large scale development as it is in a zone easily accessible to people and much sought after for industrial and housing development, i.e. the huge Coega Industrial Development on the Albany Flats outside Port Elizabeth and surrounding areas and ongoing coastal holiday developments along East Cape estuaries, which is often in prime *C. nobilis* habitat.

I believe that one way forward is to actively promote the cultivation of *Clivia* from seed, especially naturally rare and or slow growing species, much like what John Winter achieved when growing *C. mirabilis* from seed for Kirstenbosch. *Clivia nobilis* is a naturally slower maturing species than say *C. gardenii*, and it is therefore understandable that growers are reluctant to wait a long time for plants to mature. It is far quicker and easier to either collect mature plants or buy them from other growers or nurseries. The sad part about this is that these mature plants have often been removed directly from the wild. Unfortunately, there are plenty of unscrupulous collectors and growers out there eager to make a quick buck and who will stop at nothing to get large quantities of desirable plants. The illegal cycad trade is a good example of this.

Growing large numbers of good quality *C. nobilis* plants from seed will, I believe, ultimately take a lot of pressure off the wild stocks if they are made available to growers in reasonable quantities and at fair prices, i.e. flooding the market lessens the demand and forces the price down (this is basic economics). This is all of our responsibility so when next you see good first class *C. nobilis* seed advertised you will hopefully purchase a few to try.

Pests

Clivias generally suffer the unwanted attentions of a vast array of pests. *Clivia nobilis is* largely immune to the ravages of the destructive lily borer caterpillar, although I did notice an affected plant in a local collection recently. I believe this is largely due to the inherently tough nature of the *C. nobilis* leaf. The greatest threat to *C. nobilis* plants is over-watering and binding of the potting mix soil leading to anaerobic conditions and associated rotting.

Many *C. nobilis* plants have what looks like a mosaic virus and this is especially obvious on young leaves. Most growers, myself included treat their plants for nutrient deficiency when plants start showing these signs however if symptoms persist I move the plant to secluded sickbay area. I believe this is wise as some forms of virus are definitely transferable from one plant to another. Occasionally, scale insects and mealy bug affect *C. nobilis* plants and to prevent their spread one should treat affected plants with a strong systemic insecticide. Ants are a nuisance, as they are the main vectors (movers) of these pests so I spray for them too.

Recently, I have noticed a marked increase in a form of pustular rust which forms unsightly wart-like lesions on the underside of *Clivia* leaves. This rust occurs naturally in the habitat and in many collections as well. To treat it, I break off the effected leaves and treat the damaged area with flowers of sulphur. Virikop and other copper based fungicides seem to work well in preventing this scourge.

There is a small white beetle larva that bores into the rhizome of *Clivia* plants that is becoming more common in collections and I strongly advise people to take it seriously. This is also a pest that occurs in the habitat and seldom affects adult plants fatally; however it is pernicious and can attack seedlings fatally. It can be treated by soaking affected plants in a strong systemic insecticide overnight. I then place a teaspoon of Karbaryl granules, which dissipate slowly, at the base of the plant and they seem to do the trick.

Recently, while walking in the dune forest near my home, I came upon a large striped African land snail devouring a mature *C. nobilis* plant. At first I was surprised that the snail would actively seek out and eat the tough foliage of *C. nobilis*, but once I started looking it became evident that this is a regular feature in this area.

Future

The future for *C. nobilis* horticulturally, looks bright, as more and more growers become interested in the pendulous species and their breeding potential. *Clivia nobilis* holds wonderful promise for *Clivia* breeding especially the breeding for colour as it is a vigorous parent and genetically it undoubtedly holds some of the greatest possibilities for colour breeding.

It is essential that we also grow more *Clivia* species, especially pendulous plants and promote the slower growing forms amongst younger growers, who will ulti-

mately really derive the most benefit from growing these plants. *Clivia* numbers are rapidly declining in the wild due mainly to habitat loss and the increased demand for wild *Clivia* plant matter in the muti (traditional medicine) trade. The wholesale destruction of *Clivia* colonies by unscrupulous collectors, out to make a quick buck, is also a very real threat and it's high time that such individuals be taken to task for such practices.

The heritage potential of this species is unsurpassed. Let's help this often maligned species to take its rightful place once and for all – meanwhile nurture what you have and pass some on.

Eastern Cape Clivia Club 2009 Interspecific Show

Carrie Krüger's pink mingard was voted the best on show with Gert Esterhuizen's double headed orange cyrtanthiflora as second choice. The pink interspecific is a cross between a Group 2 yellow *C. miniata* and a yellow *C. gardenii*. Gert's orange came from seeds which were obtained from Yoshikazu Nakamura.

Gert Esterhuizen's cyrtanthiflora.

Carrie Krüger's mingard.

Clivia gardenii – a new dawn

Francois van Rooyen – South Africa

Clivia gardenii was discovered and collected by Major Robert J. Garden in 1855, while stationed in the colony of Natal with the 45th Regiment. In the collection of Major Garden's paintings, there are quite a few representations of the KZN Table Mountain area. In his diary of his campaign in Pondoland he seems more interested in the indigenous people and their use of plants. Therefore it is fair to suggest that the live specimen collected came from the Table Mountain area near Pietermaritzburg. This live specimen, presumably collected there, was packed in a Wardian case with other living plants, and sent to the Royal Botanical Gardens, Kew in London, UK. In 1856 when flowering for the first time the new species was named by Sir W. Hooker in honour of the collector.

I was first made aware of *C. gardenii*, when we were phoned by a local doctor friend of ours about some flowers he had collected on our farm the year before. We knew about the *C. miniata* that grew there and the amazing flush of orange flowers that bloomed in September. According to the doctor the *Clivia* he collected looked different and sick. Needless to say these plants were *C. gardenii*, and yes, they did look sick. Plants with narrow untidy leaves and short peduncles with only a few hanging flowers. A lot has changed since then. Below I will discuss the diverse, wonderful beauty and potential of this pendulous complex of Kwa-Zulu Natal and Pondoland.

Kwa-Zulu Natal, northern Pondoland (Transkei), have three pendulous *Clivia* species. Although *C. gardenii* (Ngome) is still seen as a form of *gardenii*, hopefully it will in future be recognized as a new species. The traditional *C. gardenii* [*C. gardenii* (sensu stricto) or the Midlands form] consists of the most incredible variation in leaf, shape, size and colour. I think the distribution of this species is much larger than originally thought. Then lastly three other forms/species occur, swamp *C. gardenii*, *C. robusta* and *C. gardenii (maxima* form). These three forms/species are probably the most controversial and confusing, due to its DNA make-up, but definitely the most interesting.

This article is to introduce you to a plant that is amazing, beautiful and filled with talent. It is a 'must have' in any collection to be able to create new and exciting things as well as a beauty on its own.

Clivia gardenii (Ngome)

This is visually one of the most attractive *Clivia* species. The 'onion-like' base is quite unique, and grows bigger with age. The proud, strong peduncle stands high above the plant, making it ideal for interspecific breeding. The colours are very different from any other pendulous species I know – yellow, yellow-blush, pink, luminous orange to predominantly green with a faint blush. I have also seen two blood-red forms, very rare.

C. gardenii 'Gem's Hobbit'.

Clivia gardenii (Ngome) has also got one of the neatest arrangements of leaves, perfectly fan shaped and balanced. Leaf width varies but I have seen plants with a leaf width of 70 mm – ideal for breeding. The original description says 20 – 35 flowers but I've seen plants in collections with 45 to 60 flowers.

I think as a display plant and a garden plant, *C. gardenii* (Ngome) is a must. As a breeding plant to create world class interspecifics, it's an absolute necessity.

Clivia gardenii (Midlands)

These plants never cease to amaze me. Probably the *Clivia* species that has been criticized the most, but hopefully no more. This species has the most variation in size, leaf and colour. Plants were observed with the size of *C. robusta*, with leaves up to 80 mm wide. Then another with a leaf length of 20 cm, and a leaf width of 20 mm.

The colours are truly amazing: creamy white, yellow, blush to pink, peach, pastel, orange, red, bronze, and predominantly green. Then there are colours that even the colour chart does not capture. The flower count also far exceeds what was originally thought. Umbels with 40 flowers are not uncommon and I have seen some with up to 50 flowers.

Clivia gardenii flowers first of all the pendulous species, in April/May. Its vast colour range makes it a must for every collection. Its breeding potential for creating interspecifics makes it invaluable. A little more patience will be needed as the best results will be in the F2 generation.

C. gardenii 'Ngome Yellow'.

C. gardenii 'Ngome Blush'.

C. gardenii Ngorme.

C. gardenii Ngorme Bronze.

C. Gardenii pearl

C. gardenii pink

C. gardenii salmon.

C. gardenii watermelon.

C. gardenii

C. gardenii Orange-Red.

C. gardenii Orange Bronze.

Swamp *C. gardenii, C. robusta* & *C. gardenii* (maxima)

Of all the *Clivia* species, this complex of plants is the most mysterious and intriguing. I have seen plants 2 m high and a leaf width of 90 mm; also some with beautiful variegation. Medium size plants with olive green leaves, others with dark bluish leaves similar to *C. miniata* (Mzamba). Lately, I have been fortunate to have seen mature plants standing only 35 cm high. The variation and "unknown factor" in these plants, makes them exciting for future cross breeding.

The colours also vary substantially, from cream, blush, pink, orange, red and bronze.

PHOTO: SEAN CHUBB

C. robusta 'S0'.

PHOTO: SEAN CHUBB

C. robusta 'Munster Peaches & Cream' ex habitat.

C. gardenii Orange Bronze.

Swamp *C. gardenii, C. robusta* & *C. gardenii* (maxima)

Of all the *Clivia* species, this complex of plants is the most mysterious and intriguing. I have seen plants 2 m high and a leaf width of 90 mm; also some with beautiful variegation. Medium size plants with olive green leaves, others with dark bluish leaves similar to *C. miniata* (Mzamba). Lately, I have been fortunate to have seen mature plants standing only 35 cm high. The variation and "unknown factor" in these plants, makes them exciting for future cross breeding.

The colours also vary substantially, from cream, blush, pink, orange, red and bronze.

PHOTO: SEAN CHUBB

C. robusta 'S0'.

PHOTO: SEAN CHUBB

C. robusta 'Munster Peaches & Cream' ex habitat.

PHOTO: SILVIA CHUBB

C. robusta 'Notched leaf' - ex habitat.

PHOTO: SILVIA CHUBB

C. robusta 'Pink Blush' - ex habitat.

The flower count in some of these plants can also be extremely high, up to 75 per umbel.

Visually swamp *C. gardenii*, *C. robusta* and *C. gardenii* 'Maxima' are a definite for your collection and in your garden. For crossbreeding with other *Clivia* species, a big yes, you cannot do without.

In conclusion, the heritage of *C. gardenii* or to put it simply, what we are going to inherit, is what we do with *C. gardenii* from now, into the future. How we look at them, select them and partner them with other *Clivia* species will be the essential key to creating a masterpiece. A new dawn has arrived.

Clivia robusta? ('Maxima') ex habitat.
Fred van Niekerk's collection.

PHOTOS: ROGER FISHER

Clivia robusta? ('Maxima', yellow form) ex habitat.
Fred van Niekerk's collection.

Gladys Ivy Blackbeard – *Clivia* Pioneer

Charl Malan & Greig Russell – South Africa

One always marvels at those among us who are the pioneers, quietly going about their work with tenacity and determination, setting new standards for others to follow. As the interest in *Clivia* grows in leaps and bounds, interest increases in the early *Clivia* pioneers who actively hybridized and raised different species and varieties.

In South African *Clivia* folklore the name Gladys Blackbeard is foremost. She was the pioneer who worked on *Clivia* for many decades; from the 1920s until 1962 when she was forced to sell off her main collection. She created both intraspecific *Clivia miniata* and interspecific hybrids and built up an impressive number of varieties through exchange and hybridization.

Very little information on Gladys Blackbeard and her activities and interests is available and this article attempts to reveal what can be discovered about her, following extensive investigation, to share with all *Clivia* lovers.

Family History

Gladys Ivy Blackbeard is usually said to be the great granddaughter of Francis Blackbeard, 1820 Settler and silversmith, who arrived in Algoa Bay aboard the *Nautilus* with Rowles' Party. Careful genealogy has proven this to be incorrect. Gladys's grandfather, George Francis, born in 1815 in London, lived there through two marriages until he came out to South Africa in about 1854 with his second wife and four children, including Gladys's father, George Francis Jr., who was born in London in 1849. After their arrival in South Africa, the family continued to grow; so large indeed, that Gladys would be able to boast of having 54 first cousins on her father's side alone. In 1856, George Francis Sr. signed the Death Notice of Francis's son, Robert, as "Cousin of the Deceased". Since George Francis's father, John, was a silversmith like Francis, it can be assumed that these two were brothers. The parents of these brothers were possibly the silversmith Francis Blackbeard from Marchington, Staffordshire and Mary Titley of London who had married in 1775.

George Francis Sr. had worked in the shoe business in London since his youth, and when he arrived in Grahamstown, he opened the G.F. Blackbeard Boot & Shoe Warehouse at 27 Bathurst St, importing most of his stock from England. Upon his death, the business was taken over by Gladys's father and upon the latter's death at a relatively young age in 1902, Gladys's mother assumed the reigns. Later the business was passed to Luke, one of the twin brothers of Gladys's father. Dennis Blackbeard was the last of the family to own Blackbeards' Shoes and he sold the business in 1984. It is still trading today at the same address under the same name.

Gladys Ivy was the youngest child of George Francis Blackbeard and Elizabeth Harriet, née Marshall. She had three sisters,

Maud, May and Gertrude, and a brother Henry.

Apart from the third sister Gertrude, none of the others married, and as Gertrude had no children, this branch of the Blackbeard family ceased to exist upon Gladys's death on the 11th September, 1975.

Scott's Farm

This land, on which Gladys and her family lived for many happy years, would eventually bring them great heartache and sadness.

It was first acquired by Lt. Col. Hugh Maurice Scott, then Commander of the Eastern Frontier, as an Imperial Grant in 1822. Scott, born in 1779 of an Irish-English military family, had fought on the Iberian Peninsula in the Napoleonic Wars, was part of the force that occupied France at the end of these wars and was then sent to the Cape, arriving in 1821. In Grahamstown, Scott put his talents into designing buildings like the new Scott's Barracks, laid out the foundations of what would become the Cathedral of St Michael & St George and designed and built Scott's Cottage on Scotts Farm which would become the Blackbeard family home. Scott also founded Fort Beaufort. At the end of 1823, Scott became the Commander at Simonstown and was then posted to Bombay in India, where he died in 1828 of cholera.

Scott's Farm passed through many hands until it was purchased by Gladys's maternal grandfather, Mr. Edward Henry Marshall. Her mother Elizabeth inherited the entire property upon his death following payment of £400 into his estate, and when she relinquished hold on the Blackbeard Shoe business, the family went to live there permanently.

Upon their mother's death in 1932, Gladys and her siblings inherited the property, and continued to live there until 1966 when the property was purchased by the Grahamstown City Council.

Urbanization after the Second World War saw a significant immigration of particularly farmworkers to Grahamstown. Most of these families settled in the Valley in which Scott's Farm is situated, until by 1955 the entire property was surrounded by "an arid location of dirty streets, shops and jig-saw puzzle houses".

It was also at this time that the Government of the day started in earnest with the implementation of the cornerstone of Apartheid, the Group Areas Act of 1950.

Although the Grahamstown City Council vehemently opposed the introduction of the legislation, by 1955 a plan had been foisted upon them in terms of which Scott's Farm was included in the Coloured Group Area. As the Blackbeards were European/White, the harsh reality was that they had to vacate the property and move to the White Group Area.

The inevitability of the eventual move became clear to them as early as 1955, and Gladys offered the property to the City Council no less than four times up to 1963, when the offer was eventually accepted. They were bought out for the princely sum of R9 000, moving out in 1966.

On 28th October 1957 in one of her letters to the Town Clerk of Grahamstown, Gladys describes the property and improvements thereon as follows:

"The property is entirely fenced and netted and the poles are good sneezewood poles; it is subdivided into small and large camps. It is fully surveyed consisting of thirty (30) plots, has permanent and unfailing water, electric pumps, 23 delivery taps into tanks, municipal water laid on to nine (9) upright taps, numerous cottages, buildings and two sheds and housing for 22 cattle."

The main homestead erected by Scott

Gladys Blackbeard and Hardy, her famous pet Hadedah Ibis, photographed in the late 1950's

was considered of historical importance but in the end could not be retained, as it did not fit in with the Municipality's plans for the area.

Scott's Farm was transferred to the City Council on 28 April 1966. Later the Cottage was dismantled and re-erected behind Temlett House in the City.

Two sub-economic housing schemes were eventually developed on the property, and Blackbeard Street in this suburb, Scott's Farm, is named after the Blackbeard family. Gladys and her sister May moved in with their sister Gertrude at 1 Trollope Street, Grahamstown.

Gladys was eventually to inherit the house which was then bequeathed on her death in 1975 to her Alma mater, Kingswood College.

Gladys Blackbeard: Naturalist and Plantswoman

Gladys was born in Grahamstown on 19 May 1891. She attended the Wesleyan Girls High School, now part of Kingswood College, but unfortunately never received any higher education.

According to her article in the 1939 *Herbertia*, the original handwritten versions of which are kept in the Cory Library for Historical Research at Rhodes University, Gladys's early interest in *Clivia* was awakened by her mother. In this article she describes some of her early hybridisation attempts and the results thereof. She used *Clivia nobilis* and *Clivia miniata*.

Apart from *Clivia*, Gladys was a grower of various other plant genera such as *Aloe*,

Encephalartos, *Nerine* and a wide variety of succulents.

It is obvious from correspondence between her and the staff at the then Botanical Research Station, Grahamstown, that she supplied information and plants to succulent collectors and workers on Amaryllidaceae worldwide. She was a great help to Drs. Paulus Lotsy and Wouter Goddijn, visitors from Leiden University, Holland during 1926/7. They worked on the relationship between hybridisation and speciation in *Euphorbia* and *Cotyledon* in the Fish River Valley. While studying plant hybrids, they also saw the opportunity to study the "human hybrids" that constituted the neighbours of the Blackbeards. Their conclusions were published in the Dutch Journal, *Genetica*.

Gladys seems to have initially grown flowers such as carnations and was Grahamstown's first florist, well-known for her arrangements of plants and flowers. She was also a regular participant in the Grahamstown Natural History Society's Exhibitions.

Two plants were named for her: *Huernia blackbeardeae* – now considered a synonym of *H. zebrina* var. *magniflora*; and *Haworthia blackbeardiana* now generally seen as *H. bolusii* var. *blackbeardiana*.

Mr M.J. Wells, who was the head of the Albany Museum Herbarium in Grahamstown from 1961 to 1969, got to know Gladys well during his stay in Grahamstown and visited her often, both at Scott's Farm and after she moved, at 1 Trollope Street. He recalls that she was a tall person of spare build with intense penetrating eyes, reflecting a keen intellect.

He has vivid memories of the *Clivia* collection, particularly the amazing variety of form and colour. From the moment he first set eyes on it, he was in no doubt about its unique quality and the dedication necessary to create it. Gladys's goals with her breeding programme was to create as wide a variety of form and colour as was possible in the genus. He fondly remembers her indomitable spirit and her love for all animals and birds. She often tempted fate in the street at Scott's Farm by confronting donkey cart owners who were whipping their donkeys in an attempt to get them and their load up the steep and rutted road. She would disarm the owner and whip him instead, quite fearless in her pursuit of protecting the donkeys.

The *Clivia* work represented the quiet side of her nature and was a peaceful form of recreation for her. She discussed her decision to part with the clivias with him and he made representations to the relevant bodies at the time to acquire the collection. For various reasons this did not materialize.

Dr R.A. Dyer, the well-known botanist, who had come to know Gladys during a five year stay at the Albany Museum Herbarium in Grahamstown, commissioned Cythna Letty to paint Gladys's Clivias for posterity. She visited Scott's Farm in 1947, the visit being written up for publication in the *Herbertia* of 1948. Today these paintings, which concentrated on capturing colour, are in the custody of the South African National Biodiversity Institute in Pretoria and have been published for the first time in this issue, from pages 41-47. Unfortunately there is only one flower painted in this group that was the product of Gladys's own breeding.

By the time Gladys sold her *Clivia* collection to Gordon McNeil in 1962, it was without doubt the foremost collection of *Clivia* hybrids in South Africa. The collection was freighted off in a whole train truck.

She had taken the decision to sell very deliberately, under the cloud of having to

Gladys Blackbeard's *Clivia* collection in flowering season on the verandah, photographed by Gordon McNeil in the early 1960's, showing some of the quality and variation that was available in the Blackbeard collection.

leave Scott's Farm, and not being able to accommodate the plants elsewhere.

Gladys and her sisters Maud and May established an animal and bird sanctuary at Scott's Farm, and had a large collection of birds and animals, including a particularly fine collection of tortoises. People would bring injured and orphaned birds and animals to the farm from all over the district where they would be nursed back to health or cared for.

Gladys hosted many eminent personalities at Scott's Farm, particularly in connection with *Clivia*. These included Sir Arthur Hill, Curator of Kew Gardens as well as Dr Hutchinson also of Kew.

Conclusion

Gladys Blackbeard was a modest woman with a great love for the genus *Clivia*. She had an enquiring mind which led to her hybridization experiments. The beauty and variety of the McNeil collection is testimony to her work, and many collectors treasure those special plants which they know are Blackbeard plants. Not many hybrids have been registered which come from the McNeil collection, and thus secondarily from the Blackbeard collection. Two hybrids with very interesting colour from this source are *Clivia* 'Four Marys' and *Clivia* 'Gladys Blackbeard'.

Much other material has been distributed from the McNeil stock, but there is little information available on where and how this has ennobled our present day clivias. Thus it is impossible to evaluate how Gladys Blackbeard has contributed to the *Clivia* of 2010. Whilst Gladys's plants may not form much of the basis of modern *Clivia* breeding, it is her spirit that will forever live on in the hearts of generations of South African *Clivia* breeders.

Gladys lies buried in Grave No. 552 in the Blackbeard Family Plot in the Wesleyan Section of the Old Cemetery, Grahams-

Photo: Peter Saayman

Pieter Saayman & Michael Holt's plant of *Clivia* 'Four Marys'.

town. This historically important cemetery has been much neglected by the current municipal authorities, and sadly Gladys's tomb stone has disappeared from what is now a very unsafe locality to visit.

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Acknowledgements

Mr. M J Wells of Froggy Farm, Simonstown, Erstwhile Officer in Charge of the Albany Museum Herbarium, Grahamstown for sharing his recollection of Ms. Blackbeard and her *Clivia*.

Mrs. Edith Blackbeard of 20 Riverside Drive, Port Alfred for sharing her knowledge of the Blackbeard family.

Photo: Mick Dower

Mick Dower's plant of *Clivia* 'Gladys Blackbeard', acquired by him from Margot McNeil in February 1994.

Sandy Rowoldt, Librarian of the Cory Library for Historical Research, Rhodes University, Grahamstown, for making available information on Ms. Blackbeard.

Craig Peter of Rhodes University for acquiring copies of the material from the Cory Library for Historical Research, Rhodes University.

Ms Estelle Brink of the Selmar Schönland Herbarium, Grahamstown for making available information on Ms. Blackbeard.

Mick Dower of the Cape Province Branch of the Clivia Club for initiating this article, for sharing information on Ms. Blackbeard and for his support in general.

Roger Fisher for all sorts of help and especially for his work on unearthing the Letty paintings.

Clivia Breeding

Gladys I. Blackbeard – South Africa

Scott's Farm, Grahamstown. Cape Province

[Reprinted from *Herbertia* 6: 190-193, 1939.]
The original draft of this article was published in *Clivia* 2: 43-45.

Of the many interesting flowering plants of South Africa, the Genus *Clivia* is worthy of special mention. It consists of handsome plants with dark green leaves and strong erect stems which carry massive flower heads in brilliant shades of nasturtium red to copper and gold. Even in winter they are most attractive pot plants with evergreen leaves and brilliant red fruits.

My early interest in the genus *Clivia* was awakened by my mother, who was deeply interested in South African flowers and gardening generally – an art almost neglected by women folk at that time. Gardening brought her into contact with many flower lovers and gardeners of the old type. She was fortunate in making the acquaintance of an old English gardener, who came to South Africa. He soon saw the possibilities of exporting bulbs, etc. to England. He collected the very handsome Red *Clivia*, *C. miniata*, (see p. 45 E) and presented my mother with one plant. As a child I well remember the joy of seeing it bloom each year. It increased and after many years has come to be considered almost as a family heirloom. I was fortunate in securing another

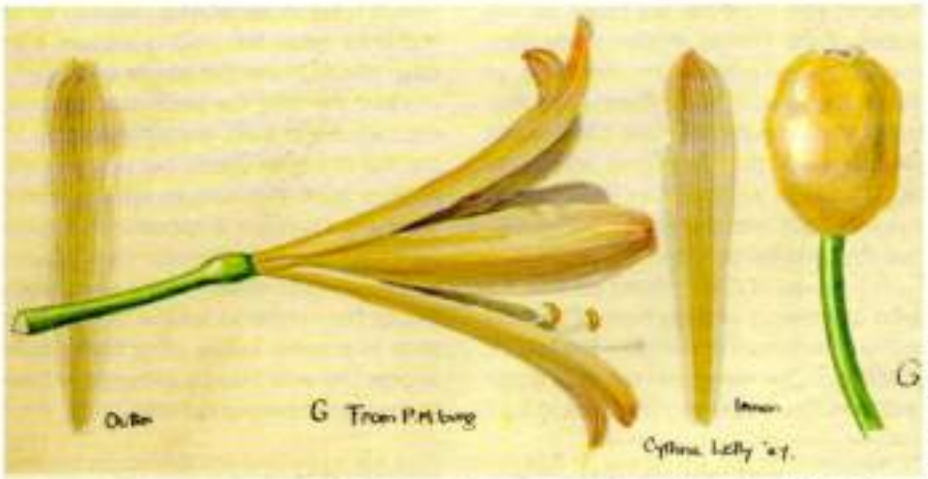


IMAGE: SANBI PRETORIA

A painting by Cythna Letty Forssman of Gladys's second breeding *Clivia miniata*, the one in which the flowers are of pale apricot tint.

plant from a friend, the origin of which she could not give. The flowers are of pale apricot tint, having broader and more widely spreading perianth lobes (see page 41).* This gave me an inspiration and soon I made a cross between these two. Some five and a half to six years later the progeny flowered. The cross had considerably enhanced colour and form, from the palest to deep shades, with larger flower heads and broad petals truly a brilliant show. Year after year I made crosses from the best plants and today those early crosses have multiplied to a family of some 2000 plants, from flowering plants to year-old seedlings.

Branching out from this family and making a fresh cross, I took again as my pollen parent the pale apricot one, and as the seed parent, a species that is indigenous to this part, *Clivia nobilis* (see page 43). The flowers of this species are tube like and hang down in a massive cluster, being supported by a strong peduncle. This is in nature a very hardy and robust species – growing under various conditions in shaded moist kloofs some thirty-six miles away from the sea, down to within a few hundred feet from the sea shore, on the slopes of the hillside, in part shade from the tall tree Euphorbia on the banks of Bushmans River in the eastern Cape Province. In this particular spot *Clivia nobilis* has survived the damaging effects of man. Whereas most of the undergrowth has faded out with the advance of civilization the *Clivia* has persisted.

The flowers of *Clivia miniata* var *flava* are erect or sub-erect whereas those of *C. nobilis* droop or hang their flower bells. The hybrids in this cross are somewhat varied in shade and form. The shades vary from dark to light apricot pink. They flower out of season, that is to say my general collection flowers in the spring, late August to September, whereas the *C. miniata* var *flava* – *C. nobilis* hybrids flower in May and a few in July, the flowering period having completely changed. If this will continue season after season is yet to be proved. This may be of immense value for making crosses with other related plants that bloom at this time.

Photo: Greg Russell

A selfed seedling of *Clivia miniata* 'Blackbeard's Yellow', recently donated to Sean Chubb's Heritage Collection.

From the time the seeds start to form, the capsules or fruits gradually develop to the size of a large cherry, but pear shaped. As they ripen they turn to brilliant scarlet and have a handsome appearance. It takes from ten to twelve months for them to ripen and they would remain on the plant much longer, but I prefer to remove the seeds as soon as possible before other flower buds appear. The seed may be gathered as soon as the fruits show any red colouration. After

* It is probable that this is *C. miniata* var *flava* Phillips, which was figured and described for the first time in 1931 *Flowering Plants of S. Afr.* t. 411. It was discovered in North Natal about 1888 and a number of plants were distributed from the originals.

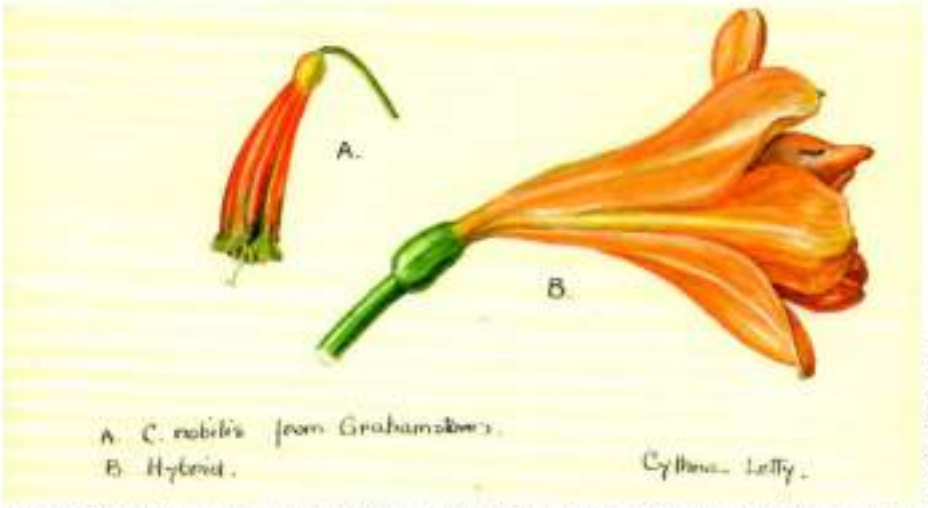


Image: SANBI Pretoria

A painting by Cythna Letty (Forssman) of Gladys's *Clivia nobilis* from the valley of the Bushmans River, together with what appears to be one of Gladys's complex interspecifics, based on this species.

removing the pods I leave them for about ten days to two weeks after which I peel them and remove the seeds. The fruit contains an average of 5 to 7 seeds. One should not leave the seeds in their fruit pods too long for they will probably start growing and the delicate shoots may be broken off when removing the seeds.

When planting the seeds I use flat pans or boxes with moss at the bottom as drainage and then fill up with a light mixture of one part each of sand and leaf mould to two of good light garden soil, well mixed. Place the seeds in rows one inch apart, cover them with soil and give the seed pans a tap down by lifting up a little and dropping on the bench. Tap down at least twice. This settles the seeds into position. The pans or boxes can be their home for some time up to eighteen months or two years. When transplanting never give the seedlings much pot room, and never transplant until the roots are pressing above and over the side of the pot. They will flower well in 9 inch pots. Never "over-pot" *Clivia* plants as they will not flower, but only increase in leaf and root system. The secret of flowering them is rather to starve the plants than to over feed them. The general cry from most people is "my *Clivia* will not flower in spite of the fact that I keep potting it on." I always reply "Starve it." To enhance the bloom, when buds show, sprinkle round each plant a little well decayed mixture of horse and cow manure. This is all I have ever done for mine. For cultivation I have a "bush house" with flat roof, but before flowering it is advisable to put the plants under more shelter such as a glass house or verandah to protect the blooms from damage. Plants can be broken up and subdivided.

It must be remembered that all details given in this brief summary are purely the result of my own personal experiments, unaided in any way. Therefore my experiments have not advanced as rapidly as I should have wished. However many things have small beginnings, and the joy and keen interest shown in my collection has more than repaid me.

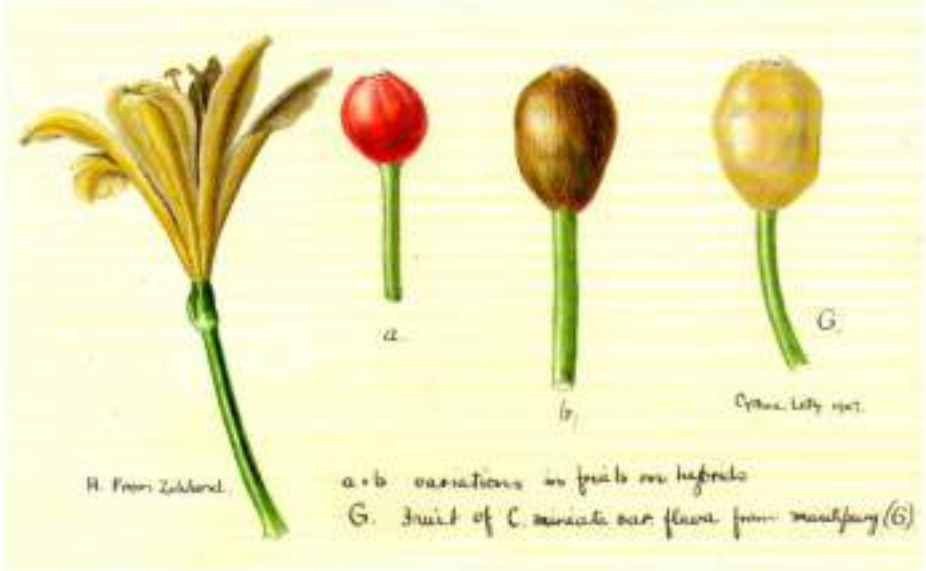
The Clivias at Scott's Farm, Grahamstown

Cythna Forssman – South Africa

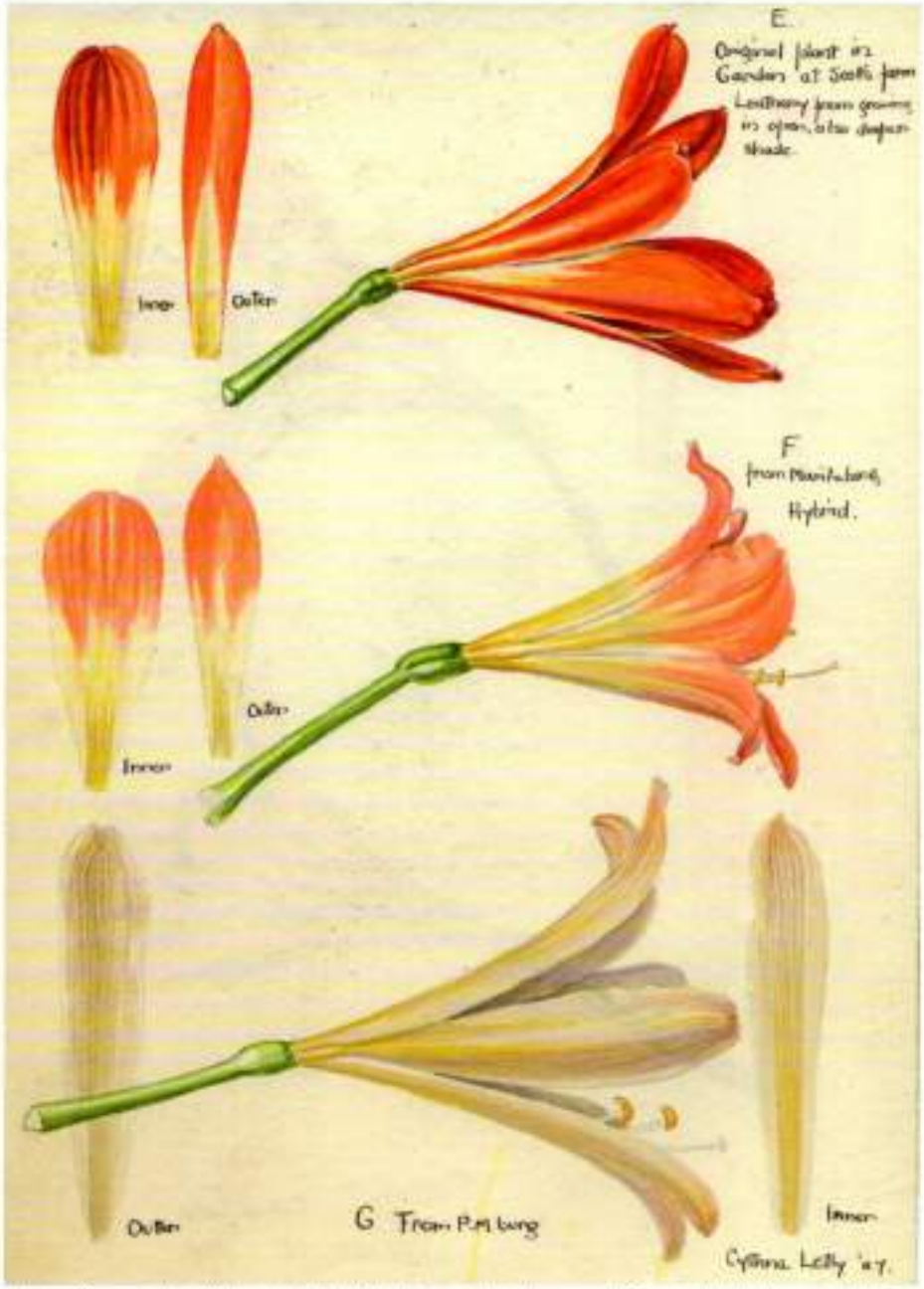
Division of Botany and Plant Pathology, Pretoria

[Reprinted from *Herbertia*, 15: 59-63, 1948, in response to the afore-going publication, here illustrated for the first time with the original watercolours, courtesy of SANBI, Pretoria, with our grateful thanks.]

In the 1939 volume of *HERBERTIA*, Miss Blackbeard of Scott's Farm, Grahamstown, gave a short introduction to her *Clivia* collection. It seemed desirable to have some of her results recorded in colour and it fell to my lot to do the work. It seemed fitting also that the second volume of *HERBERTIA* to be dedicated to South African *Amaryllidaceae* should continue the story of the Scott's Farm Clivias, and it is hoped that use may be made of my colour impressions. Miss Blackbeard's Clivias must be seen to be believed. It was on a grey day that Mr. R. Story (Botanical Survey Officer) drove me down to Scott's Farm and the rain clouds were hanging heavily over Grahamstown. On our arrival, a tall woman of about my own age detached herself from a group of coloured men who were arguing and gesticulating over the corpses of



The fruit on the right is that of the "pale apricot tint" flower. The flower is recorded as being from Zululand.



The top flower is that of the original dark Blackbeard plant. The second flower is labelled as a hybrid from Petermaritzburg. The bottom flower is the second plant of *Clivia miniata* that Gladys used - the "pale apricot tint" flower.

Two flowers from clones that Gladys had received from Zululand and Pietermaritzburg respectively.

three enormous Cycads (*Encephalartos*). She came towards us with outstretched hand and we were surrounded by and included in the warmth of welcome extended to any man, beast or plant, irrespective of degree of colour, who arrived at Scott's Farm. She had rescued the Cycads, she told us, from a garden which was being modernized. Nine men were needed to lift the branched veteran, seven had been enough for the others. Although they had been hacked off above their roots, she hoped they would again strike roots if she planted them in sand.

Then Hardy introduced himself by giving me a good bite on the ankle. He is a quiet, self-possessed bird with a nip for everyone except his beloved mistress. He had been brought to her by some urchins as an unprepossessing Hah-di-dah chick which had fallen out of its nest, and now he owned the place. The pair of owls, which had both turned out to be females, who were contentedly hatching some Bantam eggs, the wild duck on its nest among the reeds, the numerous dogs, fowls and geese did not dispute ownership with Hardy.

And then the Clivias, which in their off season live in a large rambling rush-house, were presented to us. They all started from *Clivia miniata*, a stout hardy specimen planted in the garden by Miss Blackbeard's mother. The flowers are a deep orange-red and the petals are thick and leathery. Then *Clivia miniata* var. *flava* was introduced from Pietermaritzburg, Natal, and then the crossing began. After that, various hybrids were procured from Natal and Zululand and the result is the wonderful show of exquisite blooms, ranging in colour from deep orange-red, through every shade of apricot and salmon-pink to pure cream. Some have white centers, some have striped centers and they have all been arranged on the stoep of the farmhouse. With their dark green and shining strap-shaped leaves they made a picture that will live with me forever.

The painting of the Clivias.

My first feeling was of utter bewilderment. The weather was unpropitious and the time allotted to me would not allow of my ambitions scheme, so I decided to do one flower from each of the six main parents and then two or three of the most striking hybrids.

The editors of the original publication noted: *Unfortunately, due to post war conditions, it was not possible to reproduce the very beautiful color plate submitted by Mrs. Forssman. It is hoped that it may be possible to interest the Editor of LIFE magazine so that this fine color plate may be given to the public.*

The whereabouts of the original painting submitted by Cythna Letty Forsmann for publication with her article is unknown, however the original description of the painting is used here, relettered to correspond with the SANBI collection of Letty paintings. It shows [E - p. 45] a flower of the original plant of *Clivia miniata* in the garden at Scott's Farm; [F - p. 45] a flower of a hybrid, from Pietermaritzburg, Natal; [G - p. 45] a flower of *Clivia miniata* var. *flava*, from Pietermaritzburg, Natal; [C, D - p. 46 & H - p. 44] flowers from Zululand and Pietrmaritzburg; [G - p. 44] fruit of *C. miniata* var. *flava*, and [a & b - p. 44] fruit of hybrids, showing variations in shape and color. *All of these are done most beautifully in color.*

The other Eden

André P. Brink – South Africa

(Translated into English by Greig Russell and published with permission of the author and LitNet.)

One of South Africa's foremost authors, André P. Brink, who had visited the "Misses Blackbeard" in the early 1960's, wrote a piece on them in Afrikaans published in Wegbreek of April 2008 (the Afrikaans language equivalent of Getaway magazine) as the last quarter of the article "Grahamstad - stad van wors en oorlog", which is available on the Internet in Afrikaans on the Afrikaans literary website, LitNet: http://www.litnet.co.za/cgi-bin/giga.cgi?cmd=cause_dir_newsitem&nws_id=34898&cause_id=1270 .

One Sunday, a particular friend, Laurie Graham, also one of Grahamstown's "unusual" Afrikaners, took my wife and me to meet the Misses Blackbeard; two ancient little women, both just this side of 80, who lived in a dilapidated, but charming old house in the township. Earlier there had been a third sister, sickly and bed-ridden, who lived with them, but of whom there was now no trace. Was she dead? Did she still live? Or do the two just keep the corpse in a bed in the passage, dressed and tended daily, even bringing her breakfast in the morning which is in fact eaten? Perhaps by a monkey from outside, or an ancient, stone-deaf servant, while they carry on undisturbed?

The little farm is encircled by smoking huts and hovels, clamorous children, an occasional outburst of sonorous song, a confusion continuing through day and night. A high fence surrounds the farm, patched with rusty galvanised sheeting and planks, woven through with branches and barbed wire. Within lies a few morgen of eden - one thick thicket which forms a foliage ceiling above; under it flame-red Clivias grow in earthenware pots, tubs, drums and galvanised baths, encircled by old spades, disintegrating chests and rolls of wire. Everything lies around in disarray, right up to the walls of the old house, even tumbling over onto the veranda. Everywhere are narrow paths where you dodge and dive between aloes, trees and shrubs. For the rest there is a planless labyrinth of cages like some organism which has developed in all directions by cell division: binding wire, barbed wire, chicken wire, fencing wire, full of holes plugged with planks and galvanised iron sheeting. In the cages is a collection of birds – dikkops, cranes, owls. Over the years they have arrived there with injured legs or wings, whereafter they have been made whole with love and care. And then they have just stayed, in a refuge amidst the clamorous, destructive township. Inside you feel closed off amongst the thick foliage, the flaming flowers, the warble and twitter of the birds, the twilight of the house.

For thirteen years they had a hadedah which was inseparable from them, and a duck which had become blind yet was nevertheless able to find his way faultlessly

along the paths to the water trough. The hadedah flew away, but returned a year later to show off his wife and two children. Two owls have lived for many years in a tree at the front door.

The youngest of the two Misses is the talker, as she tells of everything, the small grey head leans forward, her nose large and bony, the skin like rice paper with blue ink blotches. The skin of her throat hangs loose and around the mouth and eyes the skin is wrinkled with age; her hands are knobbly and veined and blotched. But the eyes still live clear and blue within their pink borders. Her sister is stouter; her petticoat seam does not stick out from under the pale blue dress. Her face is full of haste, downy, long hair and her eyes are small and suspicious.

They have come to a fork in the road; the Group Areas Act will not allow them to remain there. The City Council is going to expropriate the property for a song and they must go. These two, who for their entire lives have offered sanctuary to sick birds, now have no refuge. Just a year or three or five, then in any case they would no longer be there: but civic affairs can't wait. The bird reserve, that cool oasis in the township, must be cleared away. This news they tell us in their little house furnished like an overflowing museum with antique furniture, ornaments and bric-brac: delicate crochet work, paper flowers, painted dead flowers and grass seed, and the most delicate miniature bouquets.

Two people who have floated out of their own time on this island. And who now suddenly do not know where they are to go: life is not what it once was. In their own melancholic way they have become foreigners. Only in Grahamstown is there, in a sense, place for everything and everybody. And that is why it was, certainly in the years that I was there, a place like no other in the country.

Cape Clivia Club 2009 Show

1st Runner Up - John & Meg Winter - *C. miniata* 'Peach Apricot'

2nd Runner Up - Ian Brown - *C. miniata* 'Dark Pastel'

PHOTOS: CLAUDE FILLIET

Photographic Competition Winners

Best Photograph

Overall 1st - Helen Marriott - *Clivia miniata* (polytepal).

Overall 2nd - Helen Marriott - interspecific 'Mandala'.

Overall 3rd - Helen Marriott - *C miniata* (orange x yellow) x 'Vico Yellow' x' Vico Yellow.

Best Photograph *Clivia miniata*

Above: 3rd - Gordon Frasier - *C. miniata* - 'Peachmint'.

Left: 2nd - Joubert van Wyk - *C. miniata*.

Above: 1st - Gordon Fraser - 'Ngome Blush'.

Left: 2nd Helen Marriott - *C. gardenii* (Midlands).

Above: 3rd - Helen Marriott - *C. gardenii* 'Hobbit'.

Left: Short-listed - Joubert van Wyk.

Above: 2nd - Helen Marriott - interspecific *(C. miniata x C. nobilis).*

Left: 3rd - Helen Marriott - C interspecific *(C. miniata x C. caulescens)* x 'Vico Yellow'.

Novelty

1st · Joubert van Wyk.

Above: 2nd - Bridgit Randall - *C. miniata.*

Left: 3rd - Helen Marriott - *C. miniata* (Conway Particolor).

Habitat

Red form of *C. nobilis*.

2nd - Rod Randall - *C. nobilis* in habitat.

Above: Gerhard Faber - 'Greenboy's Child'.

Left: Gordon Fraser - *Clivia miniata* - 'Orient Joy'.

Joubert van Wyk - *Clivia miniata*.

Clivia miniata - Joubert van Wyk - 'Georgi'.

Above: Sakkie Nel - *Clivia miniata* - 'Coba'.

Right: Rina van der Merwe - *Clivia miniata* - 'Hirao'.

Above:
Jan Pohl -
Clivia miniata -
'Cinnamon'.

Left: Carrie Kruger -
Interspecific -
'Tricolour'.

Everett Hayward : *Clivia miniata* - 'Alida' ex Lionel Bester.

Everett Hayward - *Clivia miniata* - 'Cameron Caramel' ex Felicity Weeden.

Rina van der Merwe - *Clivia miniata* - 'Roly's Chiffon'.

Felicity Weeden - *Clivia miniata* - 'Green Throat'.

Rina van der Merwe - 'White lips'.

Rina van der Merwe.

Joubert van Wyk.

Joubert van Wyk.

Felicity Weeden - Orange.

Felicity Weeden - Multi petal yellow.

Jan Pohl - 'Banana Smoothie' - *Clivia miniata*.

Rina van der Merwe.

Bridgit Randall - *Clivia caulescens*.

Gordon Fraser - *Clivia miniata* - 'Irish Lass'.

Helen Marriott - *Clivia miniata* 'Gladys Blackbeard' pastel x 'Lotter Peach'.

The Heritage of *Clivia* in Asia

Helen Marriott – Australia

Introduction

The eminent Japanese plants man and breeder, the late Shuuichi Hirao[1], said of plant breeding in general:

> When we want to create flowers, we can either aim at "beauty" or "the unusual". It does not mean that we are just aiming at one of these objectives and sometimes we aim at both. Individual preferences vary so I think it is appropriate to follow what you think is beautiful or what seems new to you. (Hirao, 2007, p.90)

In this paper I will examine how *Clivia* have been transformed in different cultural settings in Asia in accordance with what others have considered to be beautiful and/or new. Already much has been reported on *Clivia* in Japan and China in the Yearbooks but I will attempt to summarize a few of the past, current and future trends, illustrated with photos. I will give a brief overview first, and then look at some of the specific developments and include examples of the work of a sample of *Clivia* breeders in these countries.

Clivia in Asian locations

Although "Asia" spans a very broad geographical area, from the perspective of *Clivia* attention invariably falls upon north-eastern China and Japan. A common characteristic linking China and Japan seems to be the relatively early initial introduction of *Clivia* from Europe to both countries. According to a Chinese reference, some *Clivia* plants were taken by a German to Qingdao after 1840, and referred to there as German-Lan. The same kind of flower was also taken by a Danish missionary to Liaonan around the same time (T'ao & Wang, 1997). Given the timing, we can surmise that *C. nobilis* was involved. Reports tell us that further introductions of *C. miniata* took place from Japan to China in the 1930s when, for example, a Japanese trader presented gifts of *Clivia* to the Chinese emperor. At that time, Changchun was established as the seat of government of the Japanese puppet state, and today, as the capital of Jilin Province, it remains the principal centre of *Clivia* cultivation in China (*Clivia 3*, p.20).

Apart from north-eastern China and Japan, *Clivia* appear to have some limited presence elsewhere in Asia. Although I had no access to information on North Korea, in South Korea a small investigation by S. K. Sung in late 2009 and early 2010 revealed the existence of some smallish nurseries propagating orange and red-flowering *C. miniata* in the metropolitan area of Seoul, though he is also aware of other larger nurseries in the south. He visited three of the metropolitan nurseries and reports that the growers tend to be old and their nurseries smallish. Two of them grow only *Clivia* and have been in the business for 22 to 30 years. At one of

Clivia in Asia, S K Sung

the nurseries he visited, he spotted some yellow-flowering *C. miniata* as well as several non-*C. miniata* species. Apparently these plants were obtained by a Korean missionary in South Africa. The retail price for a mature plant in Seoul is KRW25,000-30,000 (R162-195; US$22-26), though at a flower wholesale market, Sung recently purchased variegated *Clivia* for about one-fifth of this price. After growing an orange-flowering *Clivia* for some years, Sung purchased his first *Clivia* seed from two internet sites in China and New Zealand and now, after retirement, is beginning to breed *Clivia* and *Amaryllis* himself.

An Internet search on Google using Korean and Chinese languages failed to identify any Clivia club or society in Korea, Hong Kong or Taiwan, and nor were any specialist Clivia websites located. However, in both Hong Kong and Taiwan some general websites on gardening or online discussion forums did contain references to *Clivia*. In addition, a news article on the annual Hong Kong Flower Show (held since 1987) where *Clivia*, among other flowering plants were exhibited and sold, reported that 3000 pots of *Clivia* were sold by the eighth day, with the pot of *Clivia* which achieved the Best Exhibition Award being sold for HK$8000 (R7,600; US$1,000). The search also found that popular online shopping sites in Korea, namely Auction and C-market, sell *Clivia*.

Although I have gathered a little evidence of the movement of *Clivia* material between Japan and China during the past two to three decades, either on a one-way or

two-way basis, probably the breeding and growing of *Clivia* in these two countries has been undertaken relatively independently of each other, and in the beginning, from a narrow genetic base. Furthermore, while there may be some interest by certain individuals in one country in the other's developments in *Clivia*, for me, the linking of both China and Japan into the one grouping of "Asia" (or the "Orient" or the "Far East") is not particularly useful so I will deal with them separately.

At the outset, it is useful to try to put the cultivation of *Clivia* in China and Japan in perspective. Van der Linde (*Clivia* 3, pp. 20-23) has described the growth and spread of *Clivia* in China post-1945 as being slow at first but increasing in the 1960s through seed propagation. It is noteworthy that despite political turmoil in China, *Clivia* were reportedly found in around one-half of Changchun households by 1980. During the early years of that decade, "*Clivia* fever" occurred in three provinces in the north-eastern region with astronomical prices being asked for some plants, prior to the boom collapsing in 1985. Indeed, in 1984 *C. miniata* became the official emblem of Changchun. Since that time, some vestiges of "*Clivia* fever" seem to have continued, even if on a smaller scale.

China is a very large country with an equally large population of 1.3 billion inhabitants in 2008, so we probably need to be cautious about making generalizations concerning interest in *Clivia* for the country as a whole. Nevertheless, it appears that *Clivia* do hold a prominent position as an ornamental pot/house plant, at least in some areas of China. The National Parliament is said to order plants from Changchun (Clivia 9, p.109), and on a visit to China in the late 1990s, Graham Duncan saw many pots of dwarf-flowering *C. miniata* inside the Chairman Mao Memorial Hall on Tiananmen Square, Beijing (Duncan, 2008, p.17). Hein Grebe, when on a tour of western China in 2003, also observed pots of "ordinary" *C. miniata* in all the temple grounds he visited, though on one occasion he identified it as a type of cyrtanthiflora (*Clivia* 6, p.74). (For reports on Grebe's visit to China see *Clivia* 6, pp.74-80 and *Clivia* 9, pp.95-107.)

In giving more detail of his observations of *Clivia* in China, Grebe reports as follows:

> I have travelled to many places in China, from Hong Kong, Macau, Tibetan plateau, South-West, Mid-West, North-West, North-East, Mid-East and South-East of China including Hainan Island and have a pretty good idea where *Clivia* are popular and where to find the different types of *Clivia*. Most *Clivia* in China, especially in the Western parts of China you will find what is called the Australian *nobilis* or a cross of *nobilis* x *miniata*. You will find them in temples, churches, restaurants, shops etc and the colours vary from orange to the most beautiful one I have seen – a dark yellow gold in a modern cinema in Beijing. They also grow indoors in the entrance halls of modern apartment blocks in Beijing and are much hardier and disease resistant than the Chinese hybrids. There are also collectors who have old fashioned *miniata* which can be described as an early type of Belgian hybrid with semi broad leaves. I have also seen at many Beijing flower markets *Clivia* that can be described as caulescens and many yellow-flowering *miniata*. In the Western parts of China orchids are the most popular flower and most *Clivia* growers are based in the north-eastern section of China with Beijing the most

southern growing area for commercial growers. Six years ago only a few commercial growers could be found in Beijing whereas today there is at least 10 times more.

In attempting to explain the attractiveness of *Clivia* to the Chinese, Grebe suggests that in certain areas people of 40 years of age and above have *Clivia* in their homes and in the case of the Beijing area, which is not the centre of *Clivia* growing, he estimates that more than 50% possess *Clivia*. On the other hand, he believes that the younger people now prefer big ornamental plants for their homes/apartments, which need less attention and which are hardier than *Clivia*.

The popularity of *Clivia* in China is further confirmed by Eddie Pang (a Melbourne resident who regularly visits China), especially in northern cities like Changchun, Jilin, Shenyang, Liaoyang, Anshan, Dalian, Harbin, Qingdao, Yantai, Tai Yan, Tianjin and Beijing. In Changchun City itself, on average, he expects there to be at least one *Clivia* per family home.

The suitability of *Clivia* as long-lived pot/house plants with perennial green leaves also accords with several important cultural features in China. Pang reports that it is one of the most popular selling plants during the Chinese Lunar New Year Period (late January to mid-February), which is the most important traditional Chinese holiday. Furthermore, he states that in ancient Chinese culture red is associated with luck and happiness, hence reddish-orange flowering *Clivia* are favoured. In contrast, Pang notes that cream/white symbolises death. Thus, "even though the Changchun Imperial[2] cream/yellow hybrids have been in the Chinese *Clivia* world for a long time, they have never gained much popularity in the Chinese *Clivia* market" (Pang).

Grebe also confirms the popularity of the plant during the Chinese Spring Festival/New Year and further elaborates on how he sees the genus being positioned in China:

> Only enthusiasts and growers will pay high prices for special *Clivia*. The general public will go for the cheapest ones which are in flower as decoration and gifts for the Chinese Spring Festival and Chinese New Year when they are in flower. Millions are sold every year at flower markets and they are also displayed in parliament and conference rooms, restaurants etc. It looks like it is something that you must buy during that time of the year, like buying fireworks for instance. During the Spring Festival it is a very happy time of the year, where everyone celebrates and gives gifts to each other and it just happens to be that *Clivia* is one of the few plants that are in flower at that time of the year. As you move further away from the north-east of China, the popularity of *Clivia* becomes less. For instance, in the West and South of China orchids are more popular than *Clivia*.

As in most *Clivia*-growing communities, it is necessary to differentiate between the commercial-level *Clivia* and specialist hybrids, as noted above by Grebe. In the case of China, Pang reports that the general public purchase commercial-grade Anshan Daruma and Changchun *Clivia* hybrids (Guo Lan)[3] at flower markets. In northern China the retail prices range from RMB 20.00-100.00 (R22-109; US$3-15), depending on the quality, but these same *Clivia* can be sold for at least double the price in cities like Beijing and Shanghai. In those cities, apparently, *Clivia* enthusiasts will pay RMB1,000-2,000 (R1,086-2,171; US$146-293) for better-looking *Clivia*. Not surprisingly,

the top (exquisite) quality *Clivia* are not sold through this channel. (Pang also states that some inexperienced *Clivia* enthusiasts can be cheated by market resellers as they may pay high prices to acquire *Clivia* with features which have been artificially manipulated.)

According to Pang, the specialist Chinese *Clivia* hybrids which are highly priced are usually sold to three groups of buyers: (1) Breeders who wish to invest in order to acquire the genetics for their breeding program, from which they hope to earn future revenue; (2) Wealthy individuals; and, (3) People who wish to make special gifts to certain public figures or bosses for favours and benefits, with the recipients able to obtain a very high resale value.

The industry in China which supports this widespread distribution of *Clivia* is substantial. Some facts were reported by the leader of the delegation from Changchun to the *Clivia* 2006 conference, including the industry's economically profitable profile (*Clivia* 9, pp.108-109). Based upon data available in March, 2008 Pang relates that during 2006 and 2007, *Clivia* achieved the most annual sales in Changchun City's flower industry. Here, more than 20 *Clivia* cultivation bases exist, and at one of these – Hongda *Clivia* Base, at the end of 2008, there were 60 hectares of established greenhouses. In addition, more than 10,000 small-scale *Clivia* growers (each with more than 50 mature breeding *Clivia* plants) were scattered throughout the city. Another 700 greenhouses exist outside of the above-mentioned cultivation bases. An estimated 150 million pots of *Clivia* were said to be found in Changchun in 2008, with an estimated total value of RMB2,500–3,000 million (US$366-440 million). Six research institutes support the development of the *Clivia* cultivation industry, and a workforce of 100,000 people are involved in the industry.

Clivia arrangement by Shigetaka Sasaki.

In contrast with China, the situation in Japan today is very different in terms of the popularity and visibility of *Clivia*. *Clivia* are not listed in Masashi Yamaguchi's list of popular plants in Japan nowadays (http://homepage3.nifty.com/plantsandjapan/), though he does suggest that *Clivia* have been considered as a traditional pot plant in Japan, despite their origin from elsewhere. The early introduction of *Clivia* to Japan, possibly around the middle of the Meiji period (1868-1912) when contact with other countries increased, and the fact that these plants were given a Japanese-like name (Kunshiran) written in characters (as was the common practice at the time for increasing the lexicon) and which remains in use today, may have contributed to some peoples' impression of familiarity with the plant. Indeed, we are able to find small illustrated publications on *Clivia* in three separate series on ornamental plants which cover a

wide range of genera, but the existence of these books is perhaps indicative of the well-established horticultural industry growing ornamentals and other plants in addition to the strength of the Japanese publishing industry, rather than to any special societal interest in *Clivia*.

Not surprisingly, the earliest introduction to Japan from Europe was *C.* x *cyrtanthiflora* (incorrectly referred to as *C. nobilis*), to be later followed by *C. miniata*. Yamaguchi reports that *C. miniata* became popular in Japan during the historical Taisho period from 1912-1926. Later, in the 1960s, Yamaguchi explains that some breeders imported Belgian strain cultivars from Germany, selecting out small plants for breeding dwarf cultivars. From these, they have bred the Daruma cultivar group with short and broad leaves (http://homepage3.nifty.com/plantsandjapan/page074.html). Some current Japanese growers also refer to the breeding from long-leafed plants of Shimoda Hime Daruma, a cultivar which is said to have become the basis for the subsequent breeding of many Daruma plants, despite its uninteresting flower by current standards. The introduction of this cultivar on TV in the early 1980s apparently also led to considerable interest among the public at the time.

Shigetaka Sasaki observes that these days *Clivia* do not sell well in Japan: there is no variety in colour (with only orange available in the marketplace in the main); they are regarded as an "old" flower; and they are fairly widespread because of their longevity and are easily distributed from person to person via offsets. When strolling around the side streets of Tokyo, for instance, I have sometimes seen the long leaf, older orange-flowering *Clivia*, although Sasaki suggests that some people may be keeping a smaller Daruma plant inside their home. He reports that fashions change, with Daruma not appearing on the market much any more, a main reason being that the grower cannot charge much for *Clivia*. In early 2010, mature, compact orange-flowering *Clivia* retailed for only 1,300 yen (R105; US$14) at the beginning of the flowering season, but could be expected to fall to 800 yen or even to 300 yen in some cases as the season progressed.

Herbertia/Plant Life, the journal of the International Bulb Society (formerly *Amaryllis* Society), the early Clivia Club newsletters and some Japanese garden magazines or journals provide evidence of the sharing of *Clivia* seed and plants around the world in the 1970s and early1980s between plants people and nurserymen who often possessed a broad interest in bulbs and other flowering plants. Included in this literature is reference of the movement of new *Clivia* material from South Africa to Japan. For instance, in 1981 Hirao describes his receipt 10 or so years earlier of two small offsets of yellow-flowering *C. miniata* sent to him by Gordon McNeil who had collected the plant from the Natal habitat. In turn, Hirao made pollen and subsequent offsets (from this and other plants) available to others. In the later 1970s, Hirao also visited McNeil's property in Ofcolaco, Limpopo, accompanied by another Japanese person (Hirao, 1981b). Also in 1981 Hirao mentions having received a small offset of a yellow-flowering *Clivia* from a South African friend (May van Eeden) many years earlier (Hirao, 1981a, p.151). He thought that he also had *C. gardenii* in his collection, grown from seed sent by a South African friend, as well as *C. caulescens*, though he was somewhat unsure about the identification of both cases.

As a further example, a yellow cultivar named 'Oogonkaku' was sent from Cape

Town by an Englishman in 1975 (Mori, 1998, p.10), and we know that Isamu Miyake was growing several yellow-flowering *Clivia* around the mid-1970s, though the origin of these is unclear (Clivia Club newsletter 5, 5, p.19-20). Jim Holmes, South Africa, reports that at the end of the 1970s he shared a small number of the first 15 seedlings which he propagated from seed and which subsequently flowered yellow with someone in Japan who had contacted him (Holmes, 1992, p.8; (http://www.capeseedandbulb.com/). (He later learned that it was the Takii seed company.) Holmes was also contacted by Yoshikazu Nakamura, perhaps around the mid-1980s, and send *Clivia* material to him. Furthermore, we know that the late Cynthia Giddy sent (group 2) yellow-flowering plants to Japan around this time but are unsure of the date when this interaction commenced (Clivia Newsletter, 1994, p.2).

In more recent times, we can identify other individual networks which have been the channels for the introduction of important new *Clivia* material to Japan, including Hirao's receipt of 'Vico Yellow' from the late Sir Peter Smithers in the early 1980s (*Clivia 2*, pp.13-14; *Clivia 8* p.7). Yoshikazu Nakamura's ambassadorial-like role in the 1990s in introducing Japanese-bred material to South Africans and others, and his – and more recently Sasaki's – importation to Japan of important *Clivia* material from overseas sites is also of significance.

Toshio Koike purchased his first yellow-flowering *C. miniata* (which we now identify as a Group 2 yellow) around 1986 when it first became available from Takii seed company which, in turn, had obtained the material from Satoshi Komoriya. Koike is thus one Japanese hybridizer who has been propagating Group 2 yellows which have been circulating in Japan for 25 or so years (but of course not under this category).

Apart from rare examples, *Clivia* breeders and growers in China and Japan are not utilizing the English-based information and communication technology that has brought together many with interests in *Clivia* in overseas countries in recent years, or becoming individual members of the South African-based Clivia Society itself. On the other hand, domestic networks in the form of Clivia clubs or societies have emerged in these countries and have exhibited phenomenal growth in the case of China, no doubt due to the commercial value of the plant in that country, as described above (also see *Clivia* 9, pp.108-109). Pang, for instance, lists 18 known Clivia associations in China. Of these, the Clivia Association of Jilin Province was founded in 2000, and both the Changchun City **Clivia** Association and Beijing Clivia Society in 2006. Two small Clivia clubs previously existed in northern Japan (Yamagata and Kushiro) in the mid- to late-1990s (http://www8.plala.or.jp/Clivia/index1.htm), and a formal Japan Clivia Society (http://www.Clivia.jp/) was established in 2006, reaching a membership of over 70 members in early 2010.

Development of plant characteristics: shape and form

While it must be acknowledged that the Europeans (and perhaps others) have also worked on the further development of more compact and broader-leafed *Clivia* in recent decades, including an emphasis on plants that flower early, remarkable development of the plant's shape and form has taken place in China and Japan. One principal commonality between these two countries (and Europe) is the focus upon *Clivia* for pot/house plant culture, a necessity to suit the climatic conditions of these counties, especially north-eastern

China, as well as the limitations of domestic house or garden space. As briefly noted above, there has been some, even if limited, historical exchange involving *Clivia* from Japan to China, or *vice versa*. Nevertheless, overall, the breeding in these two countries seems to have been undertaken independently and has advanced in quite different ways, to the extent that in some cases certain developments in one country are not necessarily regarded positively in the other.

As mentioned above, breeding was undertaken in Japan of smaller plants with increased leaf width in an earlier period. Hammett (2003, pp.6-7) describes this development as follows:

> In Japan the squat broad-leafed Daruma forms have been developed. Much emphasis has been placed on a strict distichous habit, broad downward curving leaves and perfect precise interlacing of the leaf bases.

The ideal proportion of a Daruma plant is said to be a ratio of 1:3 (width to length) (*Clivia 7*, p.89), though the term often seems to be used loosely in reference to shorter, broad-leafed *Clivia* plants. There are many named cultivars in the Daruma cultivar group and various variegated forms also exist (*Clivia 3*, pp.21-25).

One contemporary grower of Daruma in Japan is Tetsuro Miyazaki, who grows broad-leafed plants with thick leaves. Sasaki reports that many members of the Japan Clivia Society are currently interested in yellow Daruma and yellow Akebono Daruma, though this may be a case of growers/collectors seeking the unusual, since such plants are still in the process of being developed. Sasaki suggests that the majority of plants on the Japanese retail market these days are small, orange-flowering *C. miniata* plants which are bred to mature early (eg grown by Hattori and others) and that these are quite different from the earlier-developed Daruma form(s).

Most of the Chinese, as well as the more limited English-based, literature on *Clivia* in China provide copious evidence and illustrations of the emphasis of Chinese breeders and growers on plant characteristics. Xueguan Song, for instance, claims that the city of Changchun has developed more than 10 good Clivia Cultivar Groups, including Da Sheng Li (Great Victory), You Jiang (Painter) and Ran Chang (Dye Factory). The characteristics he gives for high quality Changchun *Clivia* are as follows:

> ... fine glossy leaves, with good leaf vein contrast and well-balanced proportions between length and width of leaves, and flowers in good taste, held on sturdy stems. (*Clivia 9*, p.108).

In 2000, the China Association of *Clivia* (or China Clivia Association) published a set of judging standards. These are found in a bilingual booklet as well as in a 2002 translated version of another text by Wen-Chang Guo, also published in 2000 (China Association of *Clivia*, 2000; Northern Clivia Club, 2002, pp.69-71). These standards confirm the overwhelming priority upon plant, rather than flower, characteristics. The principal features (maximum of 98 points) – all relating to leaves or to a lesser extent plant shape – are brightness, smoothness, rigidity, thickness, veins, colour, ratio of length and width, form/head shape, seat shape and head tip shape. Flower and fruit, and other features (eg no damage) each attract a maximum of one point only (Northern Clivia Club, 2002, pp.69-71).

Pang has supplied a detailed description of these 10 Principal Criteria for the appreciation and appraisal of the quality of *Clivia*:

Venation texture - leaf of Malian.

Low Gold Ingot Shape - Pseudo Bulb.

Round Head hybrid.

1. *Brightness*: the degree of light reflection off the leaf surface. Judged as superior to inferior in decreasing order from oily/waxy bright – shiny bright – bright – lightly bright – non-bright.
2. *Texture*: the degree of smoothness of the leaf surface. Ranging from very smooth – relatively smooth – average smooth – relatively coarse – coarse.
3. *Rigidity*: the leaf's overall ability to resist bending; related to, but not identical with leaf hardness; long and short-leafed plants to be assessed about 10 cm from the leaf tip. Relatively higher rigidity means more superior, while relatively lower rigidity means more inferior.
4. *Thickness*: the degree of thickness measured at a cross-section of the leaf. The more superior plant has a smaller difference in the thickness of the margins of the leaf and the centre. Judged as superior to inferior in decreasing order: 1.6 mm – 1.4 mm – 1.2 mm – 1.00 mm - <1.0 mm.
5. *Venation (arrangement/pattern of veins)*: excellent venation means leaves with thick, wide, prominent and protruding longitudinal and transverse veins which form a continuous network of square wells across a large part of the leaf surface. If this pattern is uniform and extends from the leaf tip to ≥three-quarters of the leaf surface, it is ranked as an exquisite grade of venation. It will be more superior if the protruding transverse veins are concentrated at the leaf tip. If all leaves have excellent venation, it will result in a plant with a more superior venation characteristic.
6. *Colour contrast*: the colour contrast be-

tween the veins and leaf background. Leaves with a bigger colour contrast are more superior. Dark green veins on a yellow/lime green leaf background are considered as the most superior.

7. *Width and length ratio*: length is measured from the leaf tip to the leaf base adjacent to the pseudo bulb and width is the measurement at the widest part of the leaf. A ratio of 1.3 is the most appropriate, and above or below would be considered as inferior. The width and length ratio readings should be taken from six leaves and averaged.
8. *Overall shape*: actually refers to the leaf arrangement. A *Clivia* with an excellent overall shape should appear like a straight line when viewed from one side of the plant (controlled by genetics), and should also appear like an opened Chinese fan (so that a line could be drawn to join the leaf tips and form a smooth semi-circular arc) when viewed from the front of the plant (determined by cultivation technique by controlling the uniform growth of leaves – similar in length and evenly spaced).
9. *Pseudobulb shape*: the shape formed by the layers of the leaf base and leaf sheath. There are four main categories, in decreasing order, each with a low (preferred) and high form: (a) Chinese gold ingot shape (b) Tower shape (c) Wedge shape, and (d) Column shape. Superiority/inferiority is determined by (a) space between the layers of the leaf sheaths, and (b) the magnitude of the angle formed between the leaf sheath and the leaf base. A bigger angle and narrower space would result in a better looking pseudobulb shape.
10. *Head shape*: the shape of the leaf tip. If the leaf tip has the shape of a semi-circle it is more superior. More than half of the total leaves should be considered in the evaluation. In decreasing order, the criteria range from semi-circular shape – elliptic shape/flat shape – acute shape – gradually sharp shape – lancet shape.

Criteria adopted for the Fifth China Changchun *Clivia* Exhibition in 2008 only very slightly altered the previous allocation of marks for the judging criteria. The above-listed 10 criteria account for 100 marks, and the five categories into which *Clivia* are allocated on the basis of the total score remained the same as before: treasure ≥80, exquisite 70-79, excellent 60-69, good 50-50 and average ≤50 marks. Where there are two or more equal scores based upon the 10 principal criteria, two auxiliary criteria (20 marks in total) are used to determine the winner. The first of these auxiliary criteria (scoring 1-16 marks) covers large flowers and fruits, flower colour being bright and attractive, and appropriateness of length and width of peduncle; the second (1-4 marks) involves the lack of visual physical damage, and absence of disease or pest infestation.

When summarizing the most important features of the Chinese development of *Clivia*, Pang states that "It would be the development of the leaf features and quality from the poor leaf appearance of the originally introduced *Clivia* hybrids like Qingdao Dai Ye (Qingdao Big Leaf), which was very similar to the western world's commercial grade *Clivia miniata*". In explaining what attracts him to Chinese seed and plants, Pang states:

> The 60 plus years of selective and systematic breeding with specific concentration on leaf features and the quality development that various reputable Chinese *Clivia* breeders have made available to the Chinese and international *Clivia*

Nakayama's variegated polytepal.

enthusiasts with the impressive phenotypes which can be kept as a house plant. I believe that most of us are attracted to the following leaf characteristics of the Chinese-*Clivia* hybrids:

(a) obvious protruding transverse and longitudinal veins;
(b) rigidity of the leaf;
(c) texture of the leaf;
(d) colour contrast of the veins and the leaf background;
(e) brightness of the leaf surface; and,
(f) thickness of the leaf.

Grebe highlights what interests him and other South Africans in Chinese *Clivia*:

I like the short broad leaves, the different patterns on the leaves and the colours on the leaves. The Chinese refer to variegated *Clivia* as coloured *Clivia* with a wide variety of colours that vary from white, grey, silver, yellow, light green to dark green. Mr Zhu called a variegated *Clivia* that has five distinct colours on its leaves "five colour orchid". The Crinkle Face, Fukurin, Mandarin Duck, Love Bird, Painted Face, different types of LOB (Light of Buddha) make Chinese *Clivia* very colourful and interesting... I think South African *Clivia* enthusiasts like broad leaf variegated, different types of LOB, super broad leaf (16cm and wider) and miniatures the most... The ordinary South African who has *Clivia* in their garden has not seen these plants and will not recognise it as *Clivia*.

A Japanese Fukurin in bud.

Furthermore, when outlining the features which attract non-Chinese and the Chinese themselves to *Clivia*, Pang responded as follows:

> Internationally, there is growing interest in the leaf characteristics of the Chinese *Clivia* hybrids. However, genuine genetics are still not readily available to the western world; most of the enthusiasts in the western *Clivia* world are mainly attracted to the flower colour and shape. On the other hand, the majority of the Chinese enthusiasts are only interested in the leaf features in which they follow the guidelines (described above). Furthermore, venation, rigidity and texture of the leaves would be the most important features to the Chinese.

Pang has provided some details of Chinese breeders with whom he has contact as well as photos of their plants. For instance,

Nakamura's (orange x yellow) x yellow Akebono.

Feng Yi Guo of Changchun is well known for his miniatures, the Phoenix Crown series and short leaf hybrids. He became famous in the 1980s when offered in exchange for

his best and multi-prize winning Phoenix Crown hybrid (a Painted Face Short Leaf hybrid) a new imported Toyota Crown sedan. Xiao Yu Liu of Shenyang specialises in variegated hybrids of Guo Lan and Japanese Daruma. Some resellers pass on Liu's seed and plants to overseas customers.

A new phenotype arose in Changchun City about seven years ago, as represented by the Upright Sword series of Chun Ming Wang. It became very popular and was expensive, and some Changchun growers adopted it as the direction of their breeding. Pang reports, however, that market demand has dropped rapidly in the last couple of years.

Another significant form of progress with *Clivia* plant characteristics in both China and Japan is the development of variegated forms, including propagation for commercial purposes, either on a small or larger scale. While all forms most likely arose spontaneously due to mutations in the first place, it is the targeted development and production of *Clivia* with a variety of variegation patterns which makes China and Japan leaders in this area. While variegation in many plant species is not uncommon and is sought after by numerous plant lovers in many countries, the international *Clivia* community continues to draw upon the Chinese and Japanese advancements in variegated *Clivia*.

Nakamura reports that variegated *Clivia* have been in Japan for over 50 years and in 1994 he described four types of variegation existing in Japan in addition to a combined pattern (Clivia Club 1994, p.5). Since then, patterns of variegation have been described more fully by Sasaki (*Clivia 3*, p.24-25; *Clivia 5*, pp.52-56; *Clivia 10*, pp.59-62). It is noteworthy that certain Japanese terms for variegation (eg Akebono, Fukurin, Negishi) and translations of Chinese terms (Light of Buddha, Mandarin Duck) have been adopted in some cases by the international *Clivia* community where suitable English terms have not existed or have not been widely known or utilized.

Among the longitudinal types of variegated *Clivia* grown in Japan, Miyazaki and others, albeit on a small scale, cultivate broad-leaf Daruma with striata variegation, the most commonly-occurring variegation type. Negishi variegation with thin or broken lines (very occasionally dots) running lengthwise through lighter or yellowish green leaves is a sub-type of striata variegation which was recognised in Japan and some plants are available to specialist collectors.

A second type of longitudinal variegation available in Japan is Fukurin (margin/margined variegation or albomarginated/aureomarginated) variegates. This type needs to be propagated vegetatively and it is reported that three growers in the Chiba area produce these in small quantities and then market them to specialist growers or retailers through a middleman.

Several main kinds of horizontal variegates are being propagated in Japan. Nakamura's fine specimens of long-leafed Akebono are well-known and are the result of deliberate breeding (*Clivia 6*, pp.54-56). Nakamura reports that *Clivia* with Akebono variegation first appeared on the Japanese retail market 30 to 35 years ago, and that he has worked with them himself for around 25 years, improving and stabilizing the variegation pattern and also breeding yellow flowers (*Clivia 8*, pp.16-17). Another breeder, Hiroki Tsuruoka, grows fine, short- or shorter-leafed Akebono with orange flowers.

Nakamura, Hiroshi Mitsuhashi and Wakao Tsuruya have imported Light of Buddha variegates from China – plants and seeds –

and are now propagating them and further distributing this material in Japan. Nakamura, for instance, is working to improve the flower by hybridizing them with 'Vico Yellow' and other superior parents.

Finally, in recent times a new variegation-like pattern named Tiger has appeared on the specialist Japanese market which has horizontal, tiger-like bands (*Clivia* 10, pp.59-62). Mitsuhashi is said to have spotted this feature among his seedlings of a cross of a Daruma x Belgian hybrid in 1990 and he has been breeding with it during the past decade or so. The amazing feature of this particular pattern is that contrary to all the other kinds of variegation in *Clivia* which can be propagated by seed and which possess maternal inheritance, this Tiger pattern is primarily characterized by paternal inheritance. Mitsuhashi suggests that the Tiger pattern can be paternally inherited in 30% to 70% of cases, rising to 90% if Tiger is crossed with Tiger. He reports that the pattern is also recessive. Furthermore, it can be combined with certain variegation types, notably striata or Akebono types. In recent years Mitsuhashi has combined the Tiger pattern with various other flower characteristics, including polytepalled Tiger and Ghost Tiger, and in 2011 expects to have his first yellow-flowering Tiger.

Pang reports that Chinese *Clivia* hybrids with variegated leaves appeared as early as the 1960s but that they were mostly dis-carded as an abnormality at the time. By the late 1970s, however, the attractiveness of variegated leaves was recognised and selective breeding commenced. Representative of striata variegation, the collective name given to variegates in the late 1970s was Jinsi Lan, but subsequently the collective name of Dao Lan was attached to variegated hybrids developed during the 1980s and 1990s. The most well-known grower of Jinsi Lan during the early 1980s was De Ren Dai of Changchun City. Since that time, more growers have joined in the development of variegated Guo Lan (Changchun Clivia) series. In contrast, Ji Fu Zhu of Shenyang is notable for his development of variegated Daruma in China. Pang reports that in the early 1990s, Zhu successfully sold a number of short-broad leaf variegated hybrids at a very high price.

Because of the potential revenue, more Chinese breeders proceeded to breed variegated *Clivia*, with two types of developments emerging. One consisted of the development of variegated hybrids with pure Guo Lan genetics, and the other followed Zhu's development of variegated Japanese Daruma hybrids. Consequently, Jinsi Lan with a better variegation pattern, colours, leaf quality, leaf shape and overall shape and size were developed.

Pang also describes some hybrids as exhibiting a mixture of coloured lines of variegation like white, cream/yellow, green, lime green, dark green, blue and grey on the leaves. As a result of this colourful characteristic, some Chinese breeders started to name and market them as Cai Lan (Coloured Orchid), with variations according to whether there are five or seven contrasting colours. Nowadays, Cai Lan is the most commonly used collective name for all variegated hybrids, and Cai Dao is more commonly used than Jinsi Dao for describing variegation.

Overseas, it is the Chinese Light of Buddha (LOB) variegation which is probably the best-known variegate type from China (see http://Clivia.topcn.cn/New%20Cultivars1.htm). According to Pang, some other selected variegates with stable phenotype in China are Yuan Yang (Mandarin Duck), with 50/50 (left and right) of green and yellow/white stable variegation,

Fulun (marginal variegation, cf. Fukurin in Japanese), and Yi Xian Tian in reference to median variegated hybrids.

While it is easy to overgeneralise the spread and/or popularity of variegated *Clivia* in China, Grebe cautions that "LOB and variegated *Clivia* are not popular with the Chinese public. Most people who grow *Clivia* must make a living from the sales and thus grow plants which sell and are in demand from the general public". I feel that the same generalisation probably applies to Japan as well.

Clivia seeds from China, and in some cases, plants, have been available to overseas customers in recent years. Ken Smith, for instance, has coordinated a seed order for Australian members of the Clivia Society for some years now, starting around 2002. The seed is supplied to him by Jin Wu (commonly known as Wu Jin in the *Clivia* community) and Lily Wang. In 2005, for instance, 10 batches of seed were available, all covering either short and/or broad-leafed forms or variegates. Smith notes that Australian buyers have been attracted to the small size of the Chinese forms, with either green or variegated leaves, including Light of Buddha Daruma plants. At an earlier stage, 50 to 60 Australians took advantage of this service, though he expected the number to be around 20 in late 2009, reflecting the availability of seed from other sources as well as the fact that once members have some Chinese stock, they can propagate their own plants. Smith also reports that the list has changed over the past five or so years to now include "saleable" yellow, apricot, peach and picotee material, as a result, he believes, of Chinese breeders obtaining new genetic material from overseas to produce these new flower colours.

Development of flower characteristics

When we look at some of the advancements of the *Clivia* flower breeding which have been undertaken in Japan, I suggest that it adds substantially to improvements in *Clivia* even if great progress has been made in other countries as well – especially, but not only, in South Africa, where extraordinary habitat plants are also continuing to emerge. Sometimes I have the impression that generalisations made about *Clivia* in Japan are too dismissive of the importance of, and the development of flower characteristics in that country, especially during the past two to three decades. Although there are others who grow *Clivia* about whom I have no information, a number of leading breeders, such as those to be mentioned below – Kasumi Hattori and Atsushi Nakayama in addition to Koike, Mitsuhashi and Nakamura – have been hybridizing *Clivia* for 30 or more years. In the cases of these breeders, the breeding of flower characteristics sometimes has been undertaken in conjunction with the development of the plant form, but not necessarily. More recently, Sasaki is extending or building upon earlier developments in the improvement and diversification of flower characteristics (principally, but not exclusively), so new hybrids can be expected in the near future.

Although advancement of the *Clivia* flower has mainly focused upon *C. miniata* in various countries during the past two decades or more, including Japan, Nakamura's extensive breeding with *C. miniata* 'Vico Yellow' continues to deserve the highest praise. Utilizing as seed parents a large group of orange-flowering plants which were bred by Miyake from orange

Nakamura's Vico Yellow hybrid.

C. minata x yellow *C. miniata* and which exhibited much variation, Nakamura crossed them with 'Vico Yellow'. The outcome has resulted in many plants with superb umbels of orange or pastel flowers, apart from the yellow hybrids themselves. Variations such as Ghost, striped petals, picotee-like types and others have also appeared. Nakamura's hybridization of Akebono and polytepals, and more recently Light of Buddha variegates with 'Vico Yellow', are further instances of his innovations, as noted above.

Nakamura has also improved the flower form of peaches by crossing 'Chubb Peach' with, for example, 'Vico Gold', and his interspecific hybridization has resulted in many magnificent outcomes. Furthermore, he has also propagated and distributed polytepals. Whereas other breeders and growers have tended to specialize, from the outset Nakamura undertook a diverse hybridization program and so he deserves to be singled out for his remarkable contribution (see *Clivia* 8, pp.6-18). Sasaki continues a similar multifaceted approach.

Japanese breeders have also contributed to the development and diversification of group 2 yellows. After his purchase of a yellow-flowering *C. miniata* around 1986, mentioned above, Koike, for instance, propagated this material and while increasing these yellows crossed them on to smaller Japanese Daruma plants and from the F2 hybrids he has produced plants which are referred to as TK Original, a cultivar group of shorter-leafed, more compact yellows (*Clivia* 7, p.86). As smallish to medium-sized plants, they possess either yellow flowers or yellow flowers with green throats. Koike started to sell these plants in Japan around 1996. Koike is also working on the de-

Nakamura's Vico Yellow hybrid orange.

Nakamura's Vico Yellow hybrid orange.

velopment of broad-leaf, compact yellows and in about three years time we can expect to see even smaller plants than what he has achieved to date.

In terms of colour development, a significant recent contribution from Japan has come from Koike's production of the green-flowering *C. miniata* cultivar group, Hirao (see photos *Clivia 10*, p.65; *Clivia 11*, p.91). As a horticulturalist, in his early years Koike had crossed orange-flowering *C. miniata* with green centres and obtained darker orange (or bronze) with strong green centres in the F2s and F3s (*Clivia 7*, p.87). When in the process of increasing his stock of yellows, he found four yellows with green centres and used this pollen on his darker orange plants. After crossing the F1 siblings, he was able to obtain Hirao. Importantly, this green colour is maternally inherited but when crossed to TK Original plants with green centres, a portion of green-flowering Hirao have appeared.

In his hybridization, Koike has found that if he uses Hirao as the pollen parent on a TK Original Yellow with no green centre, he can obtain some yellow flowers with green centres as well as yellow flowers with no green centres. Koike himself has multiplied his green-flowering plants through the cross of Hirao x Hirao, but Sasaki has also produced a green flower by using Hirao pollen on a yellow flower involving a cross of TK Origi-nal Yellow (without a green centre), thus pointing to the recessive nature of that characteristic.

Fully utilizing the Group 2 yellow at his disposal, alongside his development of the smaller yellow- and green-flowering *Clivia*, Koike also cultivates yellow-flowering variegates and occasionally a variegate will arise spontaneously from his Hirao plants. Like others such as Nakamura and Hattori, Koike has also been breeding a compact plant with picotee-like patterning, and has already produced his F3s. In addition, Koike has also bred some interspecifics crossing Group 2 yellow with (*C. miniata* x *C. gardenii*) or *C. gardenii*, from which peach has reportedly arisen (*Clivia 7*, p.87-88). From all of these examples, it is clear that the importance of hybridizing with Group 2 yellow has certainly been established in Japan.

Hattori has also developed smaller, compact or dwarf plants in conjunction with interesting colouration and patterns. Starting with the aim of producing an early flowering variety, Hattori first obtained Belgian *C. miniata* seed from a Japanese seed company in 1983 and selected out promising early maturing plants from which he developed small compact plants, with 70% flowering in three years (*Clivia 10*, p.62-64; *Clivia 11*, p.90). Recently, due to cost pressures, he no longer uses winter heating so these compact plants take around four years to flower. As mentioned above, these compact plants are now commonly found in retail stores throughout Japan.

While excellent bronzes have been bred in other countries, Hattori has also produced some deep bronzes on compact plants. By 1995 he had selected out two plants with bronze and deep red-coloured flowers respectively, both with green centres, and he crossed these to produce a dark, bronze-coloured strain with green centres which he has called UQ (*Clivia 10*, pp.62-63). 'Maroon', 'Red Queen' and 'Chocolate' are excellent samples of this breeding.

In addition, significant progress has also been achieved in relation to developing red-coloured *Clivia* in Japan. In this regard, Hattori has produced a strain called Kooyoo which are compact red plants (without green centres). Quite a few breeders around the world are currently working at improving reds and no doubt Hattori's

Koike's 'Hirao'.

Nakamura's Vico Yellow hybrid pastel.

Koike's 'Hirao'.

Koike's 'Hirao'.

Koike's 'Hirao'.

Koike's 'Hirao'.

breeding will be important to them.

From the Belgian hybrids Hattori has also developed other colours and coloration patterns. Although Nakamura and Koike have worked on the picotee-like flower form, mentioned above, Hattori's progress seems to be the most advanced with bicolours and picotee-like small plants. I was surprised to learn that Hattori has achieved this without the use of yellow-

Nakayama's polytepal

flowering plants in his breeding program. Hattori has given the name Tanchoo to the group of plants which have a cream or white throat assuming 90% of the inner flower, with 10% orange tips on the tepals. Another group, Sakibeni (or Saki beni) has a 70% cream or white throat and 30% orange on their tepal tips. (In Japan, the latter pattern is also often described as sokojiro.) A further group display yellow flowers but may develop a blush of pale orange irregularly spaced on the tepal tips as the flowers age. Needless to say, some other colouration patterns fall outside of the above-mentioned groups. On his website in early 2010 (http://www13.ocn.ne.jp/~baijyuen/home.html), Hattori displays many photos of these special plants which are available to Japanese customers through mail order. Not unsurprisingly, his plants have recently also gained the attention of the overseas *Clivia* community.

The development of flower form in Japan is not limited to *C. miniata*. Complimenting the interspecific breeding undertaken by others in South Africa, Nakamura has led in the development of many highly worthy interspecifics in Japan. This is not to say that he has been the only person working with interspecifics in that country. Some other Japanese nurserymen have utilized *C.* x *cyrtanthiflora* in their interspecific hybrids, such as Mitsuhashi, producing, for example, 'Chiba Shoden' and 'M M Joy', while others, such as Koike, used *C. gardenii* or (*C. miniata* x *C. gardenii*) as well as *C.* x *cyrtanthiflora* in further hybridization, as mentioned above (*Clivia 7*, pp.86-90). Nakamura, on the other

Hattori's 'Chocolate'

Hattori's 'Red Queen'

Hattori's 'Red Queen'.

Hattori's bicolor.

Nakamura's interspecific (*C. miniata* x *C. caulescens*) x yellow.

hand, initiated a varied interspecific breeding program, using *C. caulescens*, *C. gardenii*, *C. nobilis* as well as *C.* x *cyrtanthiflora* in his breeding in various innovative ways, including crossing the pendulous species between themselves (See *Clivia 8*, p.13-16).

For instance, Nakamura's use of *C. caulescens* in interspecific hybridization in the 1990s was particularly exemplary and has resulted in many superior outcomes, which have been reported previously (*Clivia 8*, pp.13-16). In particular, *C. miniata* x *C. caulescens* interspecifics are valuable because of their re-blooming capability, with many producing a second bloom during summer or occasionally autumn, in addition to their main late winter flowering. They also typically produce a long peduncle, even in summer.

Nakamura's interspecific 'Venus'.

Nakamura frequently selfed his F1 interspecifics to bring out excellent recessive characteristics in the F2s (as in 'Clementina' see *Clivia 7*, inside cover; *Clivia 8*, p.14). The interspecific hybrids where the inside of the flower remains pale throughout the period of flowering may be due to this kind of hybridization. In addition, Nakamura sometimes utilized an interspecific in a further complex cross, as in [(orange *C.*

Nakayama's 'Kiyou no Mai'.

Nakayama's 'Kiyou no Mai'.

miniata x yellow *C. miniata*) x 'Vico Yellow'] x 'Day Dream'. A cross such as this produces a lot of variation, including orange, orange with a prominent whitish/cream throat, yellow and even greenish flowers, while at the same time the flower shape shows the influence of 'Vico Yellow'. The shape of these and other flowers represents yet another worthwhile development of interspecific breeding.

In February this year, Nakamura flowered a beautiful interspecific which he has named 'Venus', where the flower exhibits a kind of 'Appleblossom'-like colouration. Labelled as coming from his "breeding mix", he believes that this flower may have arisen from a hybrid involving *C. gardenii*. On a limited scale, Nakamura has also produced variegated interspecifics, including variegated *C. miniata* x *C. nobilis*, *C. miniata* x *C. gardenii* and *C. miniata* x *C. caulescens*.

Sasaki is now extending the work of Nakamura in interspecific hybridization by drawing on a wide variety of Japanese as well as overseas plant material and is in the process of creating new hybrids, such as his cross of a Nakamura interspecific and a Vico Yellow hybrid which resulted in a larger, softly striped interspecific called 'Inspirational'. Recently, he has crossed a Nakamura (*C. miniata* x *C. caulescens*) x Chubb Splash, targeting an 'Andrew Gisbon'-like colouration in the F1. Another is a cross of a pastel

Vico Yellow hybrid x C. 'Fairy Felicity', one of his own interspecifics. Here he aims for a new pale inner interspecific flower with a darker outside. His hybrid of (*C. miniata* x *C. caulescens*) x Hirao targets a more greenish colour in the new interspecific hybrid. He believes that the future hybridization of interspecifics must involve new and innovative crosses so he himself is combining a variety of parents with specific goals in mind.

Another area in which Japanese breeders have advanced the development of the *Clivia* flower substantially during the last two decades is in relation to polytepalled flowers. Nakayama is a nurseryman who grew *Clivia*, first as cut flowers, among other plants, from around 1960 and took an interest in this form after a polytepal first appeared among his plants about 30 years ago. He subsequently increased his polytepalled *Clivia* from several other sources, and along with Nakamura, received a couple of plants from Mrs Hirano (who lived in the same prefecture and who grew *Clivia*), when she was finishing up around 1990. Nakayama has now amassed a large collection of excellent orange-flowering polytepals, many of which could probably be described as medium-sized plants. He has only named a small number of outstanding plants, such as 'Tadai', 'Hanyae' and 'Kiyou no mai' which he frequently uses in his breeding program. It is not uncommon for his polytepals to have nine to 10 tepals, sometimes even 12 to 14, and in many instances, all flowers in the umbel will have this number of tepals, though, of course, there is variation. Tepal shape and flower size also varies, with flowers ranging from smallish through to large. Nakayama is continuing to improve the size of the flower and also the tepal density (See *Clivia 10*, p.54-58; *Clivia 11*, p.93-94).

Nowadays, some individuals and specialist breeders in overseas *Clivia* communities are working on further developing polytepals and in some (perhaps many) instances it seems that their original breeding material came from Japan, especially from Nakamura seed (directly or indirectly) from the mid-1990s to the early 2000s. Splendid examples include Ian Brown's (South Africa) 'Woodlands Grande Multipetal' (see *Clivia 3* cover & inside page) and numerous plants grown by Laurens Rijke (Australia) (see *Clivia 7*, p.31; *Clivia 8*, p.6, 13). More recently, polytepal material from Nakayama and Mitsuhashi has also become available to collectors overseas.

In his breeding, Nakayama has invariably crossed polytepal x polytepal, hence has developed plants that have a strong inheritance of this characteristic. In his earlier years, Nakamura also typically undertook the same kind of cross. In more recent years, however, Nakamura has been working towards the production of an improved form of yellow-flowering polytepal so he has also been crossing a good yellow, such as 'Vico Yellow', onto superior orange-flowering polytepals and the outcomes are now starting to emerge. Both Nakamura and Nakayama have also been cultivating variegated polytepals, and excellent plants with these combined features are not uncommon.

Another Japanese breeder of yellow polytepals is Mitsuhashi, the current chairman of the Japan Clivia Society, who also is the breeder of the Tiger pattern. Mitsuhashi is currently building up his collection of petaloid-type yellow polytepals, which he reports are crosses of 'Vico Yellow' and a Solomone yellow polytepal.

While Nakayama continues to develop orange polytepals, and both Mitsuhashi and Nakamura – particularly the former – strive

Hattori's C. miniata 'K-Rex'.

Mitsuhashi's new yellow polytepal.

to further improve yellow forms, Sasaki is aiming at broadening the characteristics possessed by polytepals, either by crossing different types of polytepals together, such as a petaloid-type with a non-petaloid type, or else crossing a polytepalled parent with a non-polytepalled one. For instance, by crossing a Vico Yellow hybrid with large orange flowers x 'Haniyae', he targets a large flower with excellent polytepals on a compact plant in the F2 generation. He is also utilizing a 10-tepalled yellow flower of Mitsuhashi and by hybridizing it with peach, aims to develop a peach polytepal.

Sasaki is also breeding interspecifics with polytepalled flowers. For instance, he crossed a Nakamura *C. nobilis* interspecific, 'Helleborus', onto a red 11-petalled polytepal. As can be expected, the F1 has only six tepals, but it possesses an orange/bronze colour with a green centre. In this case, Sasaki argues that the green centre has been influenced by the pollen of the F2 interspecific hybrid (Sasaki, 2009). He will then cross the F1 siblings and expects a percentage of new hybrid polytepals in the F2s.

In another example Sasaki has combined a dark eight-petalled red *C. miniata* with 'Jazz Shuffle' (a Nakamura deep red/bronze *C. miniata* x *C. caulescens* hybrid), with the aim of producing a very dark ("black") red-coloured and polytepalled interspecific hybrid in the F2. In addition, he crossed another Nakayama 15-tepalled *C. miniata* with 'Ambitious', a polytepalled interspecific bred by Miyake, expecting to produce a new polytepalled interspecific.

While there still remains a real shortage of data relating to polytepal breeding and cultivation available to the international *Clivia* community, Sasaki has already shared with us some of the expertise developed by Japanese breeders. For example, polytepals can be bred from either the seed or pollen parent, that good fertilization is essential for the regular production of polytepalled flowers, and that petaloid-type flowers are recommended for the development of double flowers (*Clivia* 6, pp.57-60).

Building upon what has already been achieved in Japan, we can expect to see further progress in polytepal breeding around the world in the coming years – from Japan as well as from other countries – and this will no doubt include the production of plants with a consistently higher tepal density, the development of different coloured forms as well as progress with interspecific polytepals.

In the case of China, while it is reasonable to conclude that attention has been focused principally upon plant characteristics in the past, more recent developments reveal some interest in flower breeding there, as mentioned above. Grebe reports seeing a variety of *Clivia* flower colours and forms at markets in Beijing (*Clivia* 9, p.101) and he suggests that Chinese breeders/growers have become more interested in flower colours.

When asked about Chinese breeders who have an interest in non-orange Chinese hybrids, Pang provided a number of examples of growers who are breeding non-orange hybrids and who have large collections of these plants. He lists six growers in Changchun City, including Dian Chun Wang, who has established his series of yellow and cream flowering Changchun hybrids, as well as Dao Lu Zhang, who has developed the Imperial cream (near white) hybrid with a green tip from the Changchun Imperial cream hybrid (also called the Changchun white hybrid) and who possesses a collection of yellows grown from seed imported from Japan and the

Miyake's polytepalled interspecific 'Ambitious'

USA. Also in the area is Ying Hua Zhang, who has a large collection of yellow/cream hybrids grown from seed imported from Japan and South Africa.

Pang reports that Shenyang City includes three growers with large collections of non-orange hybrids who have also imported seed or plants from the USA, Japan, Australia or New Zealand. He identified the presence of *C. gardenii* (yellow blush; near white), *C. nobilis* and *C. caulescens* (yellow) in some of these collections. Shi Zhong He, for instance, started hybridizing Liu Laohen Monk hybrid with Changchun imperial cream and yellow blush broad leaf Daruma in 1992. From these he has developed some beautiful bicolour hybrids which have the leaf features of the Chinese hybrids. He also possesses Hirao and *C.* 'Caroline's Pride' (*C. robusta*), both grown from seed, in addition to other yellow/cream hyrbids.

Pang is also able to identify three to four growers with large collections of non-orange hybrids in Anshan City, including Xue Guang Ying, the major breeder for the yellow blush Anshan Daruma which have relatively darker and average quality leaves, and Er Zhao, the other breeder of yellow blush Daruma which have short broad leaves and good colour contrast on the leaf surface. Several other growers also have good collections of the Changchun Imperial cream/yellow hybrids and yellow/cream hybrids from imported seeds.

Despite these examples, Pang acknowledges that yellow-flowering *Clivia* are still not very common in China. Nevertheless, apart from the growers he has identified,

He's Guo Lan Yellow.

He's Picotee Guo Lan.

he suggests that it is sometimes possible to see a couple of yellow/cream hybrids when one walks into the glass houses of growers.

In relation to other developments, Pang describes the first recorded polytepal in China which was announced in 1980 as an eight-petalled hybrid of an offset mutation of Dong Yang Zhou's Changchun hybrid. Apparently little interest was shown in this at the time, due to the focus on leaf development. However, after the exposure of Yong Bao Wang's eight-petalled Anshan hybrids with beautiful short broad leaves, large dark red flowers and a beautiful over-all shape, growers' interest changed. Wang developed this polytepal from an offset mutation in one of his Anshan hybrids. Currently, polytepal Chinese hybrids with 10-18 tepals are available but only in relatively small quantities.

Combination of plant and flower characteristics

Assuming that the trend to increase the variation in colour and other flower characteristics in *Clivia* in China continues, we can expect to see more exemplary combinations of plant characteristics along side of different coloured flowers and different flower forms on small plants. The combination of certain plant and flower characteristics is already well advanced in Japan, especially in relation to combinations of variegated foliage with different flower characteristics. Variegates with yellow flowers were produced some time ago – both group 1 and group 2 yellows, and now peach and other coloured variegates are being bred. Nakamura's yellow, long-leafed Akebono certainly constitute one of the splendid Japanese achievements to date. In addition, the feature of variegation has been combined with polytepalled flowers and also with interspecifics in Japan, even if the latter is on a limited scale to date. Variegated Ghost with broadish leaves and numerous other combinations also exist.

Japanese smaller-sized compact plants, whether a Daruma-type or otherwise, which have special flower characteristics, such as Hattori's bicolours or deep bronzes or reds, and Koike's medium-sized, green-flowing Hirao plants or his yellow Daruma/compact plants, which are currently being further developed, represent other plants which are of current interest to overseas collectors. The development of these new colours and colouration patterns on smaller plants, or new colours in polytepals as well as polytepalled interspecifics are other significant results of breeding in Japan.

The past, present and future

Outside their natural habitats, *Clivia* have proven to be strong plants which are characterised by longevity when in cultivation and have been grown in a wide variety of climatic conditions, given appropriate management. They have proved to be eminently suitable as pot/house plants, and have yielded an amazing amount of variation through hybridization outside of South Africa up until the present.

Over the past 50 or so years, Chinese breeders have pursued new directions in breeding *Clivia* by developing a range of plant characteristics, in particular, small-sized, well-proportioned plants with various kinds of leaf characteristics. In Japan, some growers or hybridizers may have focused upon plant characteristics but others have made enormous progress with the development of the flower, with certain breeders achieving a combination of plant and flower features, a pattern that is now also emerging in China.

Some of the progress in *Clivia* breeding in China and Japan up until the present

does indeed parallel developments also being undertaken elsewhere. Nevertheless, China and Japan have made their own substantial contributions to the development of the genus, rather independently of outside communities and also of each other (though the degree of this latter claim is difficult to specify), in the advancement of both the plant and the flower, and especially in relation to pot/house plant cultivation.

It is true to say that some of the outcomes achieved in China and Japan represent enormous achievements in the development of the genus *Clivia*, which, as a result, have received much acclaim in the international *Clivia* community. It is thus not surprising that in this new millennium we are witnessing an intensification of acquisition of some of the "new" material from China and Japan by overseas collectors and breeders. Chinese small, compact broad-leafed plants, with or without variegation and/or special leaf features are sought after, and from Japan, polytepals – including yellow-flowering ones, interspecifics, green Hirao flowers, variegates, and more recently, Hattori's compact deep bronzes, reds and various bicolours are also highly desired.

In earlier periods *Clivia* reached China and Japan from Europe, and may have been transmitted in smallish numbers from Japan to China up until the present, with some movement of Chinese material to Japan in current times. On the basis of available evidence, we can state that during the last 30 to 40 years, at least in the case of Japan, *Clivia* did move directly there from South Africa and from other places, and this may also be the case with China. Now, however, individuals or groups from various countries visit China or Japan for buying and/or viewing purposes, and a limited number of individuals act as mediators between their own countries and overseas collectors or nurserymen, with plants and seeds from these countries appearing on e-Bay from time to time, and in some cases, direct buying and selling via websites or other channels also occurs. The situation has thus been reversed, with *Clivia* from China and Japan moving back to South Africa and to other overseas countries where there is demand for new and beautiful *Clivia*.

In relation to the preserving of cultivars, Hirao has noted:

> Anyone can produce a cultivar that they enjoy, and though it is good if such a flower can be spread throughout the world, it is impossible for all of these to be preserved permanently.
>
> Ultimately, it is the fate of the cultivars that those which are supported by the public survive while the others end up disappearing. We can say that the flowers of the old cultivars that still exist have survived under a lucky star.
>
> (Hirao 2007, p. 91)

I feel sure that the legacy of the Chinese and Japanese breeders will be appreciated by the international *Clivia* community for a long time to come and that there will be many special *Clivia* from these areas – individual cultivars as well as cultivar groups – which will survive in the foreseeable future in their own countries as well as in various overseas locations. Furthermore, more exciting developments await us as the blending of the best material that is available from South Africa, China, Japan and other countries accelerates.

Notes

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1. Here, Japanese names are used following an anglicised order, where the surname comes last. For the sake of consistency in this English text, I have also converted the Chinese names so that the surname appears last.
2. Cultivar names are shown with single quotation marks, while cultivar groups are shown without quotation marks.
3. According to Pang, Guo Lan means Chinese *Clivia* and it is the common name for Changchun *Clivia* hybrids which do not have any genetic influence from the imported Japanese Daruma. Nowadays, Chinese simply refer to Changchun *Clivia* hybrids as Guo Lan.

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Gui Chang Cui: http://www.Clivia.net.cn/n167c45.aspx (see photos on standards etc)
Cheung & Wang: http://www.Civiacollection.com/onews.asp?id=140
Jin Wu: http://Clivia.topcn.cn/
Kasumi Hattori: http://www13.ocn.ne.jp/~baijyuen/home.htm (2010 sales etc)
Toshi (Toshiyuki Hosoya): http://www8.plala.or.jp/Clivia/index1.htm
Toshio Koike: http://www.koikenouen.com/sgn/Clivia.html
(http://www.koikenouen.com/sgn/hatuhana2010.html first flowers in 2010)
Hiroshi Mitsuhashi: http://www.mitsuhashi-Clivia.com/cat2.htm
Shigetaka Sasaki: http://members.jcom.home.ne.jp/Clivia.3/
Masumi Uno: http://www7a.biglobe.ne.jp/~Clivia/
Masashi Yamaguchi: http://homepage3.nifty.com/plantsandjapan/
Some Clivia society websites:
Beijing Clivia Society: http://www.bjjzl.cn
Japan Clivia Society: http://www.Clivia.jp/

Joburg Clivia Club 2009 Show

The top three of the "Flowering Clivias" on show. The central plant is an orange broad tepal flower. The plant is owned and grown by Corra and Dawie van Heerden. The plant on the left is a yellow broad leaf flower. This plant receiverd the award of the runner up to the best on show. This plant is owned and grown by Henry Slabbert. The plant on the right is grown and owned by Chris Viljoen. This plant was awarded the third best on show. This plant of Chris Viljoen was the winner in the "Display Plant" category as well.

The Clivia Society www.cliviasociety.org

The Clivia Society caters for *Clivia* enthusiasts throughout the world. It is the umbrella body for a number of constituent Clivia Clubs and interest Groups which meet regularly in South Africa and elsewhere around the world. In addition, the Society has individual members in many countries, some of which also have their own Clivia Clubs. An annual Yearbook and quarterly Newsletters are published by the Society. For information on becoming a member and / or for details of Clivia Clubs and Interest Groups contact the Clivia Society secretary or where appropriate, the International Contacts, at the addresses listed in the inside back cover.

The objectives of the Clivia Society

1. To coordinate the interests, activities and objectives of constituent Clivia Clubs and associate members;
2. To participate in activities for the protection and conservation of the genus *Clivia* in its natural habitat, thereby advance the protection of the natural habitats and naturally occurring populations of the genus *Clivia* in accordance with the laws and practices of conservation;
3. To promote the cultivation, conservation and improvement of the genus *Clivia* by:
   - 3.1 The exchange and mutual dissemination of information amongst Constituent Clivia Clubs and associate members;
   - 3.2 Where possible, the mutual exchange of plants, seed and pollen amongst Constituent Clivia Clubs and associate members; and
   - 3.3 The mutual distribution of specialised knowledge and expertise amongst Constituent Clivia Clubs and associate members;
4. To promote the progress of and increase in knowledge of the genus *Clivia* and to advance it by enabling research to be done and by the accumulation of data and dissemination thereof amongst constituent Clivia Clubs and associate members;
5. To promote interest in and knowledge of the genus *Clivia* amongst the general public; and
6. To do all such things as may be necessary and appropriate for the promotion of the abovementioned objectives.

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PHOTOGRAPHIC COMPETITION - WINNERS IN THE *C. miniata* SECTION

Best Photograph

FRONT COVER: Overall 1st – Helen Marriott – *Clivia miniata* (polytepal).
(Also Best Photograph overall and Photographic Competition Winner)

BACK COVER: 2nd – Joubert van Wyk – *C. miniata*.

TITLE PAGE: 3rd – Gordon Fraser – *C. miniata* – 'Peachmint'.

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