Editorial

Plant propagation - the multiplication of plants by asexual or sexual means, has been carried out by mankind since civilization began. Man originally had a nomadic life-style, eternally seeking new areas for hunting and gathering. By about 10 000 years ago, ancient peoples began planting and growing plants for feeding themselves and their animals. Their lifestyle therefore had to change and they had to remain in one place, at least for the duration of a growing cycle. Perhaps one can therefore speculate that plant propagation is a civilising influence! Plant propagation was initially concerned with agriculture, but gradually this changed to include species used for fibres, medicines, shade and beauty; and plant propagation also changed, becoming a pastime of recreation as well as of need. Combined with plant propagation came plant improvement, either by

- selection – a grain that was found to be resistant to an insect pest was selected, or a tree that consistently produced more fruit was propagated, or by
- hybridisation of plants, creating things like maize, wheat and strawberries, none of which has a single species parent.

Obviously the first hybrids were purely “accidental” as, until our knowledge of genetics and DNA became more advanced (starting with Mendel in the 1860s), no one really understood what was happening. But however plants were “improved” – by selection, hybrids or sports, they all had to be propagated in one way or another, as otherwise they would be lost. The method of propagation chosen depends largely on what one is trying to achieve. So if one is trying to propagate an olive tree which bears bigger and better fruits than all its neighbours, one would choose to propagate it by cuttings. In time this led to the development of techniques such as budding, grafting and tissue culture, all of which produce “clones” of the original plant. However, if one is looking for genetic diversity for example, then seed propagation is the method one would choose.

With bulbous plants, we have both asexual and sexual methods of propagation at our disposal. Cormous plants such as Gladioli and Moraeas frequently produce offsets or cormels which can be separated and grown. Bulbous plants, those with a basal plate and bulb scales, can be propagated by the separation of offsets, or by “scaling”. This involves the separation of individual bulb scales (scaling) or pairs of bulb scales plus a piece of basal plate (twin-scaling), and allowing these pieces of bulb to produce bulbils. A third method is the use of leaf cuttings which is very successful for Lachenalias. An entire leaf is cut from a plant and sections of the leaf are placed in growing medium until small bulbils form on the base of the leaf. All these methods are examples of cloning – the resultant plants are all identical to the parent. One major disadvantage of all of these methods is that if the parent plant is diseased, the offspring will be as well. One needs to be very sure of the cleanliness of the original parent material before propagating it.

For anyone who is interested in diversity of plants, whether it is for pleasure, for conservation or for plant selection, sexual propagation is obviously the method of choice. Seeds contain the genetic information from two parent plants, and this genetic variability

allows the continued adaptation of a species to changes in its environment. It also allows the amateur to dabble in plant selection – I am sure we have all felt the excitement when a pot of seedlings flowers for the first time, and one of them produces a flower that is bigger or better coloured than its siblings. Another advantage of growing bulbs (and indeed all plants) from seeds is that diseases are not transmitted in seeds, so one can free one's plants from viruses for example.

Members of organisations such as IBSA have at least two things in common – firstly, we all love plants, and in our case, bulbous and cormous plants, and secondly, we are all plant propagators. Whether we prefer to sow seeds or grow our plants from offsets and leaf cuttings, we all need to know something about soil, drainage, plant diseases and methods of propagation. All of us have something to share – a source of good sand, an easy method of germinating Clivia seeds, a wonderful new snail remedy, some Gladiolus corms; and that is the strength of the Association. Be prepared to share this information

- either by attending IBSA meetings and telling members about your discovery or by speaking at monthly meetings
- or by writing articles for the monthly Bulb Chat or the annual Bulletin
- and by bringing cormils, bulbils, divisions and seeds to the AGM or to monthly meetings for distribution to all our members

Remember that one of the main aims of IBSA is "conservation through cultivation" and as plant propagators, we are all well able to comply with this.

Tuberous Rooted Pelargoniums

David Victor

One of the hall-marks of villages and towns throughout Europe in the summer months are balconies smothered with bright red pelargoniums, or "Balcon Geraniums" as they are often called. At the same time, in borders and pots on patios there are million upon million zonal pelargoniums flowering the summer through.
To most people, these plants represent the genus *Pelargonium* in its entirety and, in one sense that view is close to the truth: They do represent a very high proportion of the plants in cultivation today. However, in terms of the genus overall, they have mainly been developed from a handful of the two hundred or more species that exist.

In recent years there has been a growing awareness in Europe of this wider picture. The combination of holidays being taken in South Africa, and growing leisure time and wealth, has encouraged people to explore genera such as Pelargonium in a way that has not been done since Victorian times. Whilst some have chosen to concentrate on breeding new hybrids, others have developed their interest by growing species plants. The main interest of this latter group has mainly been in the shrubby red and white flowered species close to the well-known garden varieties. However, there has been a growing

interest from bulb growers and others, in those species in the genus that are tuberous rooted.

Few people realise just how important a part tuberous roots play in the genus. The genus is divided by taxonomists into a dozen or so botanical "Sections" of closely related species and seven of these contain tuberous rooted plants. More strikingly, perhaps, amongst the 200 or so total species there are over 80 with tuberous roots, roughly 40% of the total. Of course, in many ways it is not surprising that this is so, bearing in mind the very low rainfall in many parts of the country. Two of the botanical sections are dominated by tuberous rooted plants, these being sections *Polyactium* and *Hoarea*.

Section *Polyactium* consists of eleven species which are found in three groups across the country. One group is found in the winter rainfall area of the south-western Cape area and typically has black and yellow flowers that are night scented for moth pollination. The other two groups are found in the summer rainfall area, with some species ranging from Tanzania southwards to the Eastern Cape. Amongst the species that make up section *Polyactium* there are some very striking plants. *P. lobatum* (SW Cape) has very large tubers and enormous, softly felted leaves, up to 30cm long. Its flowers are sweetly scented at night and strikingly gold and black. *P. bowkeri* (E. Cape) has the most extraordinary leaves which are up to 20cm long, with the leaflets along their length tri-pinnately divided, so that they appear feather-like. Its flowers are a pale yellow, flushed with purple on the lower petals. *P. schizopetalum* (E. Cape) is perhaps the most unlikely and bizarre of all. Whilst it has fairly conventional pinnately-divided leaves, its flowers are far from conventional. Each of the flushed-red, pale yellow petals is deeply cut into narrow segments, reminding one more of a fringed pink than of a pelargonium

Section *Hoare*a is totally dominated by tuberous rooted plants and consists of over seventy species, mainly found in the Western Cape area. Like many other geophytes, these species are often found in relatively small communities in remote places and enjoy the shade of small shrubs, with their long flower stalks rising through them.
Most species follow a growth pattern well adapted to the difficult growing conditions. Foliage forms in the autumn or early winter and fades before the flower stems emerge in early spring. Following flowering and seed set, the plant becomes dormant and stays so through the hot, dry summer months. Thus, it is almost impossible to view flowers and leaves at the same time in nature and often plants will stay dormant through particularly difficult seasons. As a result, many species are little known or understood and new species are still being discovered at fairly regular intervals. Over the years, much taxonomic confusion has reigned over this section, with many synonyms being allocated to species. However, much of this has now been clarified by the major taxonomic revision carried out by Dr Betti Marais as her dissertation for her PhD (reference below).

Two features of this section are particularly noteworthy and unusual. Whilst our normal picture of a pelargonium would be a red-flowered plant, many, if not most, species here vary from that. In particular, many have cream or yellow coloured flowers, which are often enhanced by splashes of scarlet, often on the upper petals. Secondly, foliage is very unusual. For a start, there is a very wide range of leaf shapes across the section and, perhaps more importantly, there can be a wide range of variation across a single

species. What is more, each plant proceeds through a similar cycle of leaf development each year. Typically this starts with entire leaves but as new leaves emerge, each is more incised.

Species in this section tend to have rather small individual flowers. However, in addition to their colour range, they also make up for this by the number of scapes that they may carry at one time and the number of flowers on each scape. At the extreme, some species may carry up to 60 flowers in a pseudo-umbel and have a number of them on a scape. The result in a mature plant can be a plant entirely covered in flowers, without the dilution of leaves at the time of flowering.

Probably the most widely grown member of the section is *P. auritum*, which comes in two varieties: *var. auritum* is probably best known, with its almost black flowers, whereas *var. carneum* has white to pale pink flowers. However, for all the strangeness of the almost black flowers, this is a rather less exciting member compared to some others. *P. triandrum* is an interesting species with, as the name suggest, only 3 anthers, compared to the more normal five. More interesting is the way that these bend upwards to form what looks like a landing pad for its pollinator – a feature shared by two other species, *P. curviandrum* and *P. punctatum*. *P. incrassatum* is a beautiful species which originates from Namaqualand, where large populations grow in various areas. Its shockingly bright sugar-pink flowers provide a fine example of the heavily flowering species mentioned earlier.
At the time that Dr Marais produced her dissertation, she knew little of *P. ochroleucum* other than what she could glean from limited herbarium specimens, so she did not write a full analysis of it. However, subsequently, the species has become better known and is now in cultivation. It has one very unusual characteristic: the two upper petals are yellow, whilst the lower three are white. What is more, the flowers are arranged in the pseudo-umbel in a circle, with the upper petals backing onto each other. As a result, the group of individual flowers echoes a single flower of the *Scabious* family. This case of mimicry is probably associated with its pollination needs. Finally, as mentioned earlier, many of these species have rather small individual flowers, *P. oblongatum* is an exception, as its can be up to 2 inches in diameter. What is more, a mature plant may bear a couple of hundred individual flowers – a quite stunning sight!

In cultivation in England, these plants seem to offer few problems other than those normally associated with other South African geophytes. They demand a very well drained mix and careful watering. Luckily, pests seem to be few, if any. They are relatively easy from seed, if seed can be obtained and that is a real problem. This is exacerbated by the fact that they seem to hybridise relatively easily, so keeping stock pure is an ongoing problem for the enthusiast. Coming as they do from desert and similar areas, most are able to take cold winter temperatures without too many problems: I find that I can grow them very well in a greenhouse that is barely frost free and I have grown some in houses that fall to below freezing. Try some and I am sure that you will soon be looking for more.

Reference: “Taxonomic Studies in *Pelargonium* Section *Hoarea (Geraniaceae)*, by E Marais (1994). Reprinted by the Geraniaceae Group, March 2000. ♣

The African Potato *Hypoxis hemerocallidea* (*Inongwe*- Xhosa)

Cameron McMaster

This well known and controversial plant bears no relationship to the potato we eat. It is important because it is traditionally one of the most widely used medicinal plants and has allegedly been recommended by our Minister of Health as a cure or palliative for HIV/Aids. The harvesting and trade of plant (and animal) material from wild populations for medicinal purposes has been, and remains, a controversial issue, particularly with regard to biodiversity conservation.

The "African Potato" has until recently been a common plant in the grassland in the eastern summer rainfall region and is probably familiar to most landowners in this region. It is a member of the family *Hypoxidaceae* and is one of the larger species in the genus *Hypoxis*. It is a tuberous, deciduous perennial with broad, slightly hairy leaves arranged in three distinct groups spreading outwards from the centre of the plant. It has bright yellow star-like flowers borne throughout the summer on long stalks. There are many other smaller members of the genus most of which are common and widespread throughout South Africa, but it is only the African Potato that is harvested and traded for medicinal purposes. A concoction made from the bulb is taken orally to treat high blood pressure, and applied as a paste to treat acne. However, a host of other ailments are reputed to be cured by this plant (See "Medicinal Plants of South Africa" by Van Wyk, Van Oudtshoorn and Gericke and "Peoples Plants" by Van Wyk and Gericke, both published by Briza Publications).

Tony Dold (M.Sc. Botany) and Michelle Cocks (PhD. Anthropology) are a dedicated husband and wife team in Grahamstown who have made an extensive study of the harvesting and use of wild plants for both medicinal and cultural purposes. Tony is Curator of the Selmar Schonland Herbarium at Rhodes University. He is a taxonomist with a strong leaning towards ethnobotany. Michelle is a researcher at the Institute for Social and Economic Research (ISER) at Rhodes University. In a paper entitled "The trade in medicinal plants in the Eastern Cape" published in the South African Journal of Science No.98 in 2002, they estimate that approximately 80% of the Black population in South Africa make use of traditional medicines and there are over 100 000 traditional healers practising in the country with a contingent industry worth approximately R500 million per annum. More than 700 plant species are traded for medicinal purposes in this country and it is acknowledged that intensive harvesting of wild material is a serious threat to biodiversity in the region.

Traditionally harvesting medicinal plants was done by individual Healers for treating their own patients and was probably sustainable. However, harvesting is now a commercial enterprise and undertaken on a large scale. Dold and Cocks estimate that 11 000kg of African Potato is traded annually and it sells for an average of R29.30 per kg. A trend of increasing harvesting pressures on traditional supply areas has led to a growing shortage

in supply of many popular medicinal plant species. Several plant species have been exploited to such an extent that they are now seldom found in unprotected areas.

How does this affect the farmer and landowner. It is very likely that excessive and unsustainable harvesting is being done without the knowledge of the landowner. I am aware of cases where farm workers have been enlisted by traders to harvest the plants – the landowners only becoming aware of this practice after hundreds have been dug up. The irony of the matter is that a permit from Nature Conservation is required, as well as the landowner's permission before harvesting can take place, but in practice this legal requirement is never observed. When illegal harvesting of this nature occurred in the Cathcart district last year it was brought to the attention of the local Farmer's Association who, with the assistance of the local Nature Conservation officers, were able put a stop to it.

Because of the value of this plant in traditional medicine and the diminishing wild populations there is a strong case for cultivation. In reality however, while wild plants are still available the people involved do not seem to be inclined to go this route. It is far too arduous and long term. Being slow growing, it might take eight to ten years to produce a bulb of usable size. However, propagation is the only long term solution for a sustainable supply. The African Potato is extremely hardy and drought resistant and once established will need little maintenance. Seed can easily be harvested from wild plants and while viability is low, successful germination can be achieved if correct procedures are followed. Best results are achieved if seeds are exposed to 6-8 weeks of cold (mixed with vermiculate in the refrigerator) before sowing in well prepared seed boxes. The cold exposure emulates Nature where seeds would normally be exposed to regular winter frosts before germinating the following spring. When plants are 1-2 years old they can be planted out into their permanent beds.

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Protect your flowers against slugs and snails

John van der Linde

Many of us have our plants out in our gardens, either in pots or in the ground. When they flower the blooms are often at the mercy of slugs and snails. Despite putting out snail bait, magnificent petals and even umbels are chewed to pieces and ruined. After many years of frustration, someone this year told me of a fool-proof solution. Shortly before the plants show signs of flowering, smear about 2cms of Vaseline all around the stems, below the flower buds. This provides an effective barrier to slugs and snails - they cannot cross the Vaseline and so the flowers can bloom in all their natural glory without being disfigured. I also make sure that the stem is absolutely free-standing, with no contact from the leaves of an adjoining plant for the creatures to crawl across, above the Vaseline. This method really works. Why not try it?

Pauridia: small but not insignificant

Dee Snijman

Compared with the many highly ornamental species in monocot families such as the Iridaceae and Amaryllidaceae, most species of the Hypoxidaceae are easily overlooked. Despite this, some of the most inconspicuous plants in this family featured recently in a highly rated publication on floral evolution.
It may come as a surprise that the plants in question belong to one of the Cape's most humble groups, the genus *Pauridia*.

Pauridia is one of nine genera of the Hypoxidaceae, a mostly pantropical family that extends into the temperate climate of the Cape Floristic Region. The name *Pauridia* is most appropriate for these Cape plants, being derived from the Greek 'pauridios', which means diminutive. Not only are the plants themselves minute, but the genus too is small and comprises only two species. *Pauridia longituba* is endemic to the West Coast around Vredenburg. *Pauridia minuta*, however, is more widespread and extends from Langebaan to the Humansdorp District in the Eastern Cape. Both species flower profusely from April to June whereafter their tiny leaves become hidden by the surrounding vegetation. Their most favoured habitats are damp places, especially the margins of exposed rock sheets and loamy or shaley depressions.

Close inspection of the flowers shows that they vary from cup-shaped in *P. minuta* to tubular in *P. longituba*. They are typically white and what they lack in size is more than compensated for in their numbers. While studying the natural populations of *P. minuta* on the seasonally inundated flats around Stellenbosch in 1928, Dr Erika Markötter counted on one day as many as 450 flowers in an area of just 643.5 cm^2. That is one open flower for every 1.43 cm^2. Sadly, these populations no longer exist due to the growth of Stellenbosch, but elsewhere, away from human settlements, one can still chance upon these miniscule plants. William Harvey, Colonial Treasurer at the Cape, who first described the genus in 1838, wrote about the plants' habit as: 'the flowers snow-white and covering the ground like a shower of brilliant little stars'.

Apart from their inherent charm they have recently come to hold a special place in the taxonomic world for the new insights they have provided into the evolution of the much more complex and showy flowers of the huge family Orchidaceae. In so doing our interest in *Pauridia* has been significantly raised.

The flower in *Pauridia* shows several unusual characteristics. Unlike the relatively simple, star-shaped flowers of all the other Hypoxidaceae such as the well-known *Hypoxis* and *Spiloxene* that typically have six stamens, those of *Pauridia* bear only three fertile stamens. The filaments of these are fused for most of their length to the perianth tube at the base of the flower. The style too is unusual in having three characteristic appendages which Mary Thompson of the Government Herbarium, Stellenbosch, studied in detail. These appendages have come to be seen as staminodal in origin. In other

words, they represent the 'lost' three outer stamens. As evidence of this phenomenon in *Pauridia*, she cited the occasional presence of anthers on the stylar appendages.

On the basis of having only three stamens, *Pauridia* was originally placed in the Iridaceae. But its placement there was too anomalous so it was later assigned to the Amaryllidaceae and then the Haemodoraceae, before being transferred back to Hypoxidaceae.

Since the 1990's, great strides have been made in understanding the relationships of monocot families, mainly through the development of molecular systematics. Recent molecular analyses of the monocots have shown that Hypoxidaceae is closely related to the large and highly diverse Orchid family. As a result, the Hypoxidaceae moved into the limelight for botanists seeking answers as to why the orchids have become such a successful group. In terms of their species numbers they are rivalled in the monocots only by the grasses. *Pauridia*, in particular, was regarded as especially interesting because it has a gynostemium ('stamens' are fused to the style), a characteristic comparable to the highly complex column (technically a gynostemium) found in orchids, which is also formed by the fusion of the stamens to the style.

In South Africa the flowers of all the indigenous orchids have the remains of only one stamen that is fused to the style and stigma. Not surprisingly, the gynostemium in several genera is highly diverse and complex. But elsewhere in the world there are some orchids that have three stamens fused basally to the style, forming a relatively simple gynostemium. One of the key innovations associated with the fusion of reproductive parts in the orchid flower is the shift to strong zygomorphy (bilateral symmetry). In general, this is regarded as having been an important innovation in the evolution of flowering plants and one that has prompted subsequent radiations in their evolutionary history. In the orchids, for instance, zygomorphy is associated with the development of a gynostemium and a very showy lip (one petal that is usually markedly different from the others), a condition which is commonly thought to have been vital for attracting pollinators. The lip has two likely functions: as a visual attractant and as a landing stage. Apart from its functional importance, the structure of the gynostemium is also critical in orchid classification. Indeed, for the past few centuries most of orchid taxonomy has revolved around its structure.

One of the main challenges facing orchid specialists is the attempt to reconstruct the ancestral species (or prospecies) of Orchidaceae and to decipher whether the lip or the gynostemium evolved first. This can be done by analysing the position of these characters on a molecular phylogeny (the tree that reflects the evolutionary relationships among a group of species based on molecular data). The choice of outgroup (the most closely related species outside the study group), however, is critically important in evaluating character evolution. *Hypoxis* has been regarded as a credible outgroup by some botanists because, like the orchids, it possesses many small seeds per ovary, and is unusual among potential outgroups in having an inferior ovary similar to the orchids. However, the most recent proposal is that *Pauridia*, with some degree of fusion of the

staminodes to the style, may resemble the immediate ancestors of Orchidaceae. This would imply that stamen-style fusion preceded the evolution of a lip and hence the lip is a more advanced characteristic. Further evidence to support this hypothesis is based on the pollen structure of *Pauridia*. Its bisulcate pollen is unusual in the Hypoxidaceae but shows similarities with certain orchids.

To establish the relationships of *Pauridia* to the Orchidaceae more accurately however, further study is needed on the family Hypoxidaceae itself. Currently the relationships of the genera within Hypoxidaceae are poorly understood. Only one molecular study of the group has been published so far and this was based on very few species within the family. A more detailed analysis of the family is currently underway and the position of *Pauridia* in the evolutionary tree will be of huge interest to the botanical community.

Looking ahead it seems that *Pauridia* will remain a 'wildcard' and may not prove to be the closest extant relative of the Orchidaceae. Instead, Dr Paula Rudall who has led this enquiry at the Jodrell Laboratory, Kew, believes that *Pauridia* will serve the purpose of providing a 'credible morphological analogue' for the orchid ancestor in future comparative studies.

Although the quest to find the orchids' immediate ancestor still eludes botanists, their studies on *Pauridia* serve as a strong reminder to South Africans of their huge responsibility to conserve even the smallest representatives of our flora for these species may yet reveal important clues about the evolutionary history of plants elsewhere in the world.

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Cyrtanthus obliquus

Rod Saunders

Early in 2008 Rachel and I were fortunate enough to accompany Cameron McMaster on one of his wild flower trips to the Eastern Cape. We spent 12 wonderful days doing no more than going from one flower site to the next on various farms and mountains. Each site held some speciality, be it rare bulbs, cycads or just fine untouched veld, in many ways just as the early explorers must have seen it.

The highlight of the trip for me was seeing *Cyrtanthus obliquus* in full flower, especially since it was so unexpected and in such a beautiful spot. We spent two days in the Stutterheim district and on the second day we went on an excursion to Moonstone Mountain, situated on a farm overlooking the Kei Valley. Getting to the top of the mountain involved a rough journey on indifferent tracks on the back of a 4 wheel drive vehicle, and then a stiff walk up 150m to the summit of the mountain. The main purpose of the trip was to see various cycad species growing on the krantzes.

Heading across the summit plateau in a northerly direction, we eventually came to a point where the slope fell away steeply into the Kei River. Below us were the cycads we had come to see – what a wonderful sight to see undisturbed viable populations of cycads in the wild, as in more accessible sites in South Africa, they have almost all disappeared. Our attention was quickly drawn to the large quantities of a red flowered bulb amongst the rocks below us. We scrambled down the steep and rocky slope to find *Cyrtanthus obliquus* in full bloom. The plants were growing in a perfect setting overlooking the valley with views in every direction. Some of the clumps of bulbs had as many as 6 flower spikes, and they were magnificent. It has one of the largest flowers in the genus and the pendulous bi-coloured red and green trumpets are most elegant. The flowers were so perfect that they could have been made of wax!

The plant was first described by Aiton in 1789, probably from plants collected in South Africa by Francis Masson who sent specimens of this plant to England in 1774. Since then it has figured largely in many horticultural publications, an indication of its immense appeal.

For me it was the “Plant of the Trip”, and seeing it under perfect conditions in a majestic setting, made it even more special. ♣

Floral Discovery

Rogan Roth

A flash of golden yellow out the corner of an eye, the dust and smoke of hastily applied brakes, the final shuddering halt of the trusty 'Coroda' 1300 beside the blackened verge of a *Pinus patula* plantation – this was my introduction to yet another exciting trip of floral discovery.

Botanizing at 120km/hr can lead to many surprises, one of the most obvious being misidentification! On this occasion my confused brain sings loudly 'daffodils!' Daffodils beside a country road in South Africa! Well, not quite – probably *Moraea*, beautiful cousin to the Iris, and goddess of the dawn, rearing golden bloom bravely against the drought and chill of a midwinter's day. Back home the reference books proclaimed it most likely to be *Moraea hiemalis*, a species of short stature and large golden flowers with the unusual habit of flowering in mid-winter – in fact the specific epithet says just that.

I must add at this point that I am completely besotted with daffodils, *Narcissus* species – all *Narcissus* species (probably because I can't grow them very well where I live) and my first impressions of *M. hiemalis* was the bright daffodil-yellow of the blooms. When it comes to beauty, *M. hiemalis* owes nothing to *Narcissus* as it is a very striking and interesting plant in its own right.

Obviously closely related to similar golden-flowered *M. spathulata* and *M. huttonii*, *M. hiemalis* only produces a single long, tough leaf annually at ground level and nothing more. The short inflorescence, bearing a succession of solitary flowers, appears when the plant is dormant and, with little else flowering at that time of the year, is very conspicuous.

M. hiemalis seems to have a preference for seasonally wet areas and on one occasion was seen flowering above a thin layer of snow in the foothills of the Drakensberg while the surrounding areas were saturated by meltwater – quite an unusual sight in sunny South Africa!

Due to its rarity and thus obscurity, *M. hiemalis* is difficult to obtain in the trade and fresh seed is only offered occasionally by specialized nurseries. This is a pity as this charming plant deserves to be better known and could be 'naturalized' in short turf in a similar manner to daffodils where the gorgeous flowers could be seen and appreciated to best advantage. ♣

The Genus *Gethyllis* Plum ex L.

David Victor

This is a little known genus, endemic to South Africa, the name being derived from the diminutive of the Greek *gethuon*, literally “a little leek”.

Some 33 species are currently recognised, with about 19 coming from the winter rainfall area, many from Namaqualand and the Karoo. As might be expected from this, most species grow in semi-arid habitats, although two, *G. afra* and *G. kaapensis*, grow in seasonally moist sites.

The genus is closely related to an even lesser known genus, *Apodolirion*, the two being distinguished from each other by the arrangement of their stamens and a number of other small differences. It is thought by some that it would be better to merge the two, but it is accepted that there is insufficient knowledge for this to be properly done today.

Why grow Gethyllis?

There are three major reasons for growing these interesting bulbs, each linked to their three-stage annual cycle. Firstly, their foliage, which emerges early in the winter and grows on for some months before dying back in late spring. Secondly, their flowers which emerge when they are without foliage in mid-summer. Finally, their autumn fruits, which are attractive, pleasantly scented and tasty!

Whilst the leaves of most species are linear and narrow, the overall effect of the foliage of nearly every species is attractive and unusual in some way or other. In many of the species, leaves are attractively coloured silvery-grey or deep green. In many, the leaves are twisted, curled or set in closely twisted spirals. In five of the species, the attractiveness is enhanced by the presence of stellate hairs or flat trichomes attached to a raised spot of the leaf surface, which give a glistening effect to the surface – see note below.

The attractiveness of the foliage is also often enhanced by the presence of a basal sheath, referred to as a cataphyll. This has a turned over top and is often attractively marked with splashes and dots of various colours. It may be used as a mean of identification (see later).

The flowers are beautiful, though somewhat fleeting. Each bulb produces one salver-shaped flower which lasts for 1 to 5 days. They are either pure white or pale pink and can be up to three inches (7.5cm) in diameter. They are often scented and writers say that the perfume of the flowers is jasmine like.

There are some doubts as to how they are pollinated. One school suggests night-time pollination by moths, although John Manning has suggested that it is more likely that they are pollinated by bees.

Bulbs of a particular species show a notable degree of synchronicity in flowering, whether in the wild or cultivation. Marloth related how six bulbs of *G. ciliaris* had been apparently dormant for four months until, one day in December, there was a shower of rain. The next day five buds appeared, opening a few hours after sunrise.

Fruits are fragrant and sweet tasting and are widely enjoyed as a sweet-meat by children, where they go by the name of "Kukumakranka". Writers say that the taste of the fruit is somewhere between banana and pineapple. They emerge through the ground as an elongated, club-shaped berry with a semi-transparent skin and are often coloured yellow or red. The outer covering of the fruit quickly breaks down allowing the seeds to spill out. These then germinate quickly, to allow the young plants to establish before the end of the season.

Historical development of the genus

Linnaeus published the first species (*G. afra*) in 1753, though little was known about the genus until Thunberg's visit in 1772 – 5. He collected three more species (*G. ciliaris, G. spiralis* and *G. villosa*), describing them under the generic name *Papiria*. In his book *"Amaryllidaceae",* Dean Herbert included two more species (*G. verticillata* and *G. undulata*) and two more questionable species. It was only late in the nineteenth century that the first and only monograph on the genus was prepared, by J. G. Baker at Kew. This recognised ten species, of which three were only known from drawings based on collections made by Masson in the Cape in the 1790's.

There was then a lull in new reports concerning the genus until the late 1920's. Then, over a period of four years (1929-33), nine new species were added to the list. Louisa Bolus, at Kirstenbosch, described a further six species and Rudolf Marloth described three.

Very little then happened with the genus until 1986, when Professor Dr. D. Müller-Doblies of the Institüt für Biologie, Berlin published a first paper covering a new revision of the genus. In this he published the names and diagnoses of 14 new species, 3 new sub-species and 2 changes to sub-specific rank. However, although promised in that paper, he has not yet published the full revision, pending "the completion of critical studies on some doubtful taxa". So, there is something of a continuing hiatus.

Identifying the plants

One thing that is missing from the Müller-Doblies revision is an identification key for the species and whilst Baker included some information of this type it covers less than half the species known today. However, in 1999, Alan Horstmann published some identification notes in the IBSA Bulletin.

Horstmann divided the genus into four groups, for identification purposes only, as follows (NB this is a highly condensed version of his note):

- **group 1** – Those with a cataphyll above ground level: *G. britteniana, cavidens, ciliaris, grandiflora, gregoriana, latifolia, namaquensis, verticillata* and *undulata.* If it is not group 1 then:
- **group 2** – Those with narrow, prostrate leaves arranged in a rosette: *G. barkerae, lata, pectinata, roggeveldensis* and *uteana.* If it is not group 2 then, if it has hairy leaves group 3 or alternatively group 4.
- **group 3** – with hairy leaves - *G. fimbriatula, lanuginosa, longistyla, multifolia, oligophylla, setosa, unilateralis, verrucosa* and *villosa*.
- **Group 4** – with non-hairy leaves – *G. afra, campanulata, hallii, kaapensis, linearis, oliverorum, pusilla, spiralis* and *transkarooica*

Deliberately omitted from the above list are the little known *G. heinzeana, G. kaapensis, G. longituba* and *G. marginata*.

Cultivation

As mentioned earlier, most Gethyllis originate from the western part of South Africa and, as such, are essentially winter-growing, with a requirement for a dry summer rest. Bulbs of the genus lie deeply in the ground, with the flower being erected on a long perianth-tube and the ovary resting at the top of the bulb. I have heard that they mainly come from limestone areas, though I am by no means certain of this.

With the above in mind, I grow the bulbs (which are small by nature) in deep pots. I use a proprietary mix, similar to a John Innes 3, split 50:50 with a sharp Cornish grit. Pots are topped with a good layer of granite chippings. I grow them in a cold greenhouse during the winter months, giving them an extra cover of horticultural fleece on particularly cold nights.

I water only very occasionally, if at all, during the coldest part of the winter, but in the warmer periods of growth I water every few days. Watering is probably best done from below, to avoid damage to the foliage and the bulb. However, practicality leads me to mainly water from above, even though it takes a steady hand! During the summer months they are given a rest from watering, although I occasionally give them a short spray to ensure they are not totally desiccated.

Conclusion

The genus Gethyllis contains many attractive species which, although being a little tricky, are quite growable in the United Kingdom. Whilst not commonly available, most South African bulb and seed suppliers have one of two species available each season. With their attractive foliage, beautiful flowers and interesting fruit they would make a positive contribution to most collections of South African bulbs and I strongly recommend you try some if you do not already grow them.

If you are interested in learning more about the taxonomy, a check-list with full synonymy can be found on the Kew web-site at *http://www.kew.org/wcsp/home.do*.

Note: Whilst in many plants hairs on the leaves protects against sunlight or transpiration that is not the case here. In 1931, Dr Marloth, the creator of "Flora of South Africa", described experiments which showed their purpose was to collect dew at night in the very dry habitats that they occupy: Each plant could absorb as much water in a single night as they would lose in transpiration in a week.

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Boophone disticha (Amaryllidaceae) Gifbol, Seeroogblom, ishwadi (Xhosa)

Cameron McMaster

A member of the *Amaryllidaceae* family*, Boophone disticha* is a large bulbous plant characterised by attractive and distinctive leaves which spread into an erect fan when they develop after flowering. It is widespread throughout South Africa and is adapted to a very wide range of habitats from the winter rainfall region of the West Cape through the dry Karoo to the moist summer rainfall grassland regions where it occurs from sea level to fairly high altitudes in mountainous regions. The large bulb is always partially exposed above the ground.

Flowering occurs in spring in the summer rainfall region and in mid summer in the winter rainfall region. The very attractive mass of flowers in various shades of pink, form a dense umbel which expands as the flowers mature and the seed capsules develop. When ripe the umbel detaches from the bulb and rolls along distributing seed as it is propelled by the wind. In common with many other members of the Amaryllid group, *Boophone disticha* has fleshy recalcitrant seeds which germinate spontaneously and will only take root and grow if they happen to land in a favourable place in a good season.

The rolling and tumbling method of seed dispersal sometimes results in seed heads being caught against fences resulting in a concentration of young plants along fence lines. The leaves develop after flowering and persist for about five months after which the plant goes dormant until the next spring or summer

Boophone disticha is most widely known for its poisonous and medicinal properties. The name has been derived from this characteristic: *Bous* (Greek) = Ox; *phonos* (Greek) = slaughter; alluding to the poisonous properties of the bulb, capable of killing an ox. The Xhosa name *ishwadi,* a respect word for *incwadi* which means book or paper, refers to the arrangement of the bulb scales like pages in a book. The Afrikaans names are self explanatory. The well known botanical artist, Dr Auriol Batten recounts how when painting the plant from a fresh flower, she developed a headache, drowsiness and sore eyes. The bulb is extremely poisonous and was used as an ingredient in the arrow and fish poison concocted by the San and Khoi Hunter-Gatherers in past eras. Although I have often noticed that leaves are cropped by livestock I have not heard reports of poisoning. It seems that the poison is concentrated in the bulb and numerous cases of poisoning of patients to whom incorrect dosages have been administered, have been reported

It is extensively used by traditional healers to treat a variety of ailments. The toxic and medicinal properties and uses of the plant are set out in a book entitled “Medicinal Plants of South Africa” by Ben-Erik van Wyk, B. van Oudtshoorn and Nigel Gericke, published in 1997 by Briza. In her book “Indigenous Healing Plants” published in 1990 by Southern Book Publishers, Margaret Roberts gives a very useful description of the plant’s healing properties and uses, as well as warnings about its toxicity. In a further very useful book entitled “People’s Plants” by Ben-Erik van Wyk and Nigel Gericke, published in 2000 by Briza, the authors report that the plant has a reputation as a powerful hallucinogen, a decoction of the bulb scales sometimes being used by diviners to induce visual hallucinations or visions in the patient or client, facilitating communication with ancestral spirits in the cultural tradition of African people. They warn that since an overdose can be fatal, great care needs to be exercised under the supervision of experienced traditional practitioners. In my personal experience, having grown up and lived in a rural community in the Eastern Cape, the bulb scales are most often used as a dressing for circumcision wounds in Xhosa initiation ceremonies, or to treat septic wounds and boils, and are very effective. As a result of over-exploitation for this purpose the bulbs are becoming increasingly scarce in the wild. Perhaps the frequently reported complications that have arisen recently after circumcision are due partly to a shortage of this natural remedy.

The remarkable properties of this bulb were highlighted by the discovery by Johan Binneman of a mummified body of a San hunter in the Kouga mountains in 1998. As reported in the organ of the Archaeological Society of SA, “The Digging Stick” Vol.16 No.2 in April 1999, he discovered the body in a cave carefully wrapped in the scales of *Boophone disticha* bulbs. The wrapping had clearly kept the 2000 year-old body in a well preserved state, protecting it from insects and flesh eating organisms. The mummy is now housed in the Albany Museum.

Boophone disticha is fairly variable. The smallest plants with very wavy leaf margins occur in the South Western Cape and here they can occur in dense populations. There

are large stands of these bulbs near Cape Infanta where they are valiantly resisting the invasion of alien Acacias. The largest forms that I have observed occur in thicket vegetation in the Kei valley and near East London, and these populations have longer and straighter leaves and also flower much earlier than plants in the grassland and Karoo areas. Boophones grow to a very old age, as can be judged by the massive size of some of the older bulbs. Many could be in excess of 100 years of age and for this reason they are sometimes referred to as "Century Plants".

They are extremely slow growing, taking 12 - 15 years to reach flowering size. There is no question of sustainable harvesting since bulbs are removed and destroyed when harvested. In addition to their use by traditional healers, they are offered for sale at Muti markets. Michelle Cocks and Tony Dold in a paper entitled "The Trade in Medicinal Plants in the Eastern Cape" published in the SA Journal of Science in 2002 report that it ranks 23rd amongst the most frequently traded plants. They have calculated that an average of 111 kg per annum of Boophone disticha is sold by each trader at an average price of R17.20/kg. Given the increasing demand and the large and growing number of traders, the volume of material traded is enormous, which means that a staggering number of these bulbs are being harvested. This is despite the fact that according to environmental legislation it is a protected plant and it is illegal to harvest it without a permit.

At the current rate of exploitation, the slow recruitment of young plants and habitat destruction, the fate of this valuable plant seems to be sealed. Our dilemma is that despite legislation and all our efforts at conservation, we are powerless to prevent the decimation of this and many other species. There is a very strong case for commercial cultivation. Seed can be harvested and germinates and grows readily in horticultural situations. It is only the slow rate of growth that discourages commercial cultivation, but for far-sighted entrepreneurs there are attractive long term possibilities. *Boophone disticha* is also a very attractive garden and rockery subject and is extremely hardy and drought resistant. Young plants are available from registered wild flower nurseries.

The only other member of the *Boophone* genus that occurs in South Africa is the huge bulb, *Boophone haemanthoides* which occurs up the West Coast and adjacent interior. There is no record of medicinal use of this bulb but many have been lost as large areas where it previously occurred have been cultivated. It can be observed in the Postberg Wild Flower Reserve near Langebaan.

Since these spectacular bulbs are increasingly rare in the wild, it is a remarkable privilege to come across one in flower in spring. Even the distinctive fan-shaped leaves are very beautiful. As farmers and landowners we have a vital role in the preservation of these rare and beautiful plants. If we find these plants on our properties we must take steps to guard, preserve and protect them so that they may flower, set seed and continue to thrive on our land.

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The Cultivation and Propagation of *Namaquanula bruynsii*

Charles Craib

Namaquanula bruynsii is an unusual species described recently in Bothalia (Snijman, 2005). The plants occur on the summit plateaux of the Tiras Mountains in south western Namibia. They are so far known from the type locality and its vicinity on the farm Landsberg. They are likely to be found elsewhere on the Tiras Mountains in the same or similar habitat at about 1800 – 1900 metres.
The plants grow in and around sandy washes with a very slight gradient. These areas retain moisture for the longest periods after rainfall. The habitat is subject to prolonged and frequent droughts and the plants probably remain dormant for several years in succession during dry periods. The scattered populations of bulbs consist mostly of well established mature plants with some young ones. The younger plants have much thinner foliage and they sometimes occur in groups at the edges of the washes. They are likely to be bulbs that germinated simultaneously from seeds set after good rainfall.

The species has many similarities to dwarf Brunsvigias with respect to their autecology and this is discussed in more detail in Herbertia 59 (in ed.).

CULTIVATION AND PROPAGATION
The plants have been cultivated and propagated for a few years in Johannesburg. They are grown in red sandy loam from the Magaliesberg, a mountain range in the North West Province. The soil is very similar to that found in the *N. bruynsii* habitat. The pots used for cultivation of flowering size bulbs are terracotta whilst those used for propagation are terracotta and plastic. The terracotta pots are 20 cm deep and 25 cm wide and the bulbs are planted 3 – 6 cm apart.
The terracotta pots are exposed to natural rainfall and watered at regular intervals when the weather is dry, from the third week in December until early to mid August when the leaves start to turn brown and bulbs enter dormancy. During dormancy the pots are stored in an elevated, well ventilated, hot sunny position.

The first flower buds usually appear 7 days after the initial exposure to rainfall. Bulbs that do not flower in a given season usually sprout leaves within 7 – 14 days after receiving water. Those that produce flower buds either do so together with the new foliage or else a few weeks later. Only 40 – 50 per cent of flowering sized bulbs produce flowers in a given season and preliminary indications are that some mature bulbs miss at least one flowering season before flowering again.
The umbels of flowers are usually well developed by early January and the first flowers generally open between 1 and 3 January. The number of flowers per inflorescence varies between 8 and 18 with an average of 12.
The flowers are individually pollinated with the use of cotton buds. In the 2007 flowering season a total of 10 umbels of flowers produced 69 fertile seeds by 28 January. At the time the seeds are ripe the stem supporting the umbel detaches from the bulb and is easily blown about in the slightest breeze.

The entire flowering period from the time the bulbs are first watered until the last seeds have ripened is about 6 weeks in cultivation, but may well be a week or two shorter in habitat.

The seeds are kept on tissue paper in an open plastic dish until they start to produce a root. At this stage they are sown individually 3 – 4 cm apart in the same red sandy loam in which the adult plants are cultivated. The young root is placed in a small hole in the soil and the seed covered up with about half its surface exposed. The ground is kept well watered throughout a 2 – 3 week period while the initial leaf emerges and develops.
The seedlings are grown in identical sized terracotta pots used for cultivation of the mature bulbs. Plastic pots 21 cm deep and 24 cm wide are also used. It was at first thought that seedlings might develop more quickly in white plastic pots that absorb less sunlight than terracotta, and also as the soil in plastic containers tends to retain moisture for longer than terracotta. It has been found that the young bulbs develop equally well in plastic or terracotta containers.
The juvenile leaves are very thin and grass-like for the first few months after they emerge. The mature foliage starts to develop about three months later and the leaves resemble those of the adult plants except that they are much thinner. They also develop the habit of dying back from the tips very early on. This is a diagnostic character of leaves produced by this species.
The young bulbs grow and develop throughout the second half of summer and through the autumn and winter. They start to show signs of entering dormancy at the end of July or in early August and at this time water is withheld.
The rooted seeds are sown about 3 cm apart so there is no need to transplant the young bulbs as they mature. All the seeds sown produced young bulbs which is typical for smaller Amaryllids such as Hesseas and Strumarias.

DISCUSSION

N. bruynsii is readily cultivated and propagated provided its dormancy requirements from about mid-August until the second half of December are observed. If it were ever deemed necessary or desirable to introduce propagated plants to the wild this could easily be achieved with minimum outlay. The very long growing period for mature bulbs and seedlings in cultivation, namely 7 – 8 months is unusual and parallels that of other species in different genera from the summer rainfall parts of South Africa. These, such as *Daubenya comata*, respond to late summer and early autumn rains, flowering in autumn or late winter and continuing to grow through the cold rainless winter months. *N. bruynsii* is likely to grow throughout the winter in its habitat on the Tiras Mountains. It has been observed in full growth there in early June after good rains later the previous summer and in the early autumn. In years when there is insufficient moisture to bring the bulbs into flower, they are likely to remain dormant for that season. It is not known as yet whether winter rainfall after a late summer and autumn drought would cause the plants to produce leaves.

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A View on Cultivation of Daubenya, Massonia, Polyxena and Whiteheadia

Gordon Summerfield

It would be very presumptuous (and ill-advised) for me to prescribe how the various species within the four genera should be grown, particularly as experience has taught me that there is no *hard and fast rule* to the successful cultivation of all the South African geophytes. Soil composition, light, temperature, natural precipitation and aspect all play a part to one degree or another, depending on where the bulbs are in cultivation. The accounts of both David Victor and Pieter Knippels in IBSA bulletin No.55 confirm this to be so. However, I am very happy to share my own methods and observations. Being neither a trained horticulturist nor a technical individual, I opted for a "common sense" approach – "Keeping it simple stupid" works for me! I believe there are three crucial elements and these are soil mix, habitat and maintenance, each of which will be dealt with in more detail.

1. Soil Mix

The composition of the soil must provide an element of nutrition, bearing in mind that Western Cape, Karoo and Namaqualand soils are generally nutrient deficient. I avoid the use of superphosphates and highly nitrogenous fertilizers. An issue that I largely overlooked, to my detriment, was the pH of the potting mix I used. I raised this at the last IBSA symposium in 2006. Most soil throughout the Cape floral region is of an acidic nature and can vary from 3.3 to 5.5 and very occasionally to between 6.0 and 6.5. Since lowering the pH on some new plantings I have done this season, the improved results have been quite noticeable and very encouraging. To achieve a lower pH, one can apply Aluminium sulphate, finely powdered sulpher or specific fertilizers such as ammonium sulphate or ammonium nitrate. However be **very wary of the latter two**, as too strong an application can cause severe burning with quite disastrous results.

I have used a locally manufactured compound marked for the application to Azaleas, Camellias and Rhododendrons. The composition of the 500 gram container is by mass; Al - 35g per kg, Fe - 78g per kg, S -196g per kg.
For an 18cm diameter pot, I add approximately ½ teaspoon to the potting mix before planting, for 20cm or less a level teaspoon and for 30 cm about 1½ teaspoons.

A further negative that I have had to contend with, is the chlorination of our domestic tap water. Although the pH of the water is normally around 6.5 to 7.00 it has on occasions exceeded 8.00! So this is an issue that I have had to manage, again with results that are encouraging.

Good drainage is of course fundamental to the successful cultivation of all geophytes. I am fortunate to be able to acquire good gritty "Berg river" sand to which I add a commercially available potting soil with a neutral pH, in a ratio of 3 to 1. Alternatively I am also experimenting with sieved acidic mushroom based compost but beware of any fungi which could be present.

2. Habitat

The majority of winter rainfall geophytes in the natural habitat will be found growing in a South to South East aspect through to a neutral elevation ie. a level aspect. I have therefore tried to replicate this in my nursery – resulting in most of my plants receiving morning/midday sun through to about 3 pm.
The heavy evening dews and higher rainfall experienced at the coast tend to play havoc with many inland species creating problems such as rust, mildew, crown rot etc. So much so that I cultivate these under cover. The exceptions to this are those which occur naturally along the coastal region which are obviously more tolerant of the damp conditions. These are *Massonia depressa* and *pustulata, Polyxena brevifolia* and *corymbosa*, and *Daubenya zeyheri*.

3. Maintenance

My pots tend to dry out quite quickly due to the soil composition I use. It requires greater vigilance to ensure they do not dry out completely thus impairing the growth cycle. However, I believe this to be advantageous as the regular watering overcomes any excessive toxic buildup of fertilizers, insecticides and fungicides which are then leached out of the soil.

A preventive rather than a curative regime of a fungicide and insecticide application should be practiced although this is often easier said than done! However, an application, preferably systemic of both, should be made at least twice, once early in the season and once late. It will certainly assist in the control of crown rot, rust, mealy bug, thrips etc.

Finally as I have indicated before, the Cape floral region is very nutrient deficient, so our subjects require really little additional feeding. However, I recommend repotting in a fresh soil mix at least every third year and a twice yearly application of Potassium sulphate, at a rate of one level teaspoon to 5 litres of water, during the growing cycle to assist in maintaining good healthy bulbs and corms. Should there be any signs of a lack of chlorophyll in the leaves or the tips dying back this could indicate a lack of nitrogen, which can be overcome with a ***LIGHT*** but regular drench of Magnesium sulphate and Ammonium sulphate (½ level teaspoon to 5 litres water)

List of bulbs of the four genera currently in cultivation:-

Daubenya alba, aurea, aurea var coccinea, capensis, comata, marginata, namaquensis, stylosa, zeyheri, sp.nova (recently discovered near Sutherland)
Massonia echinata, hirsuta, jasminiflora, pustulata, pygmaea ssp pygmaea, pygmaea ssp kamiesbergensis
Polyxena corymbosa, ensifolia, ensifolia var maughanii, longituba, paucifolia, pygmaea
Whiteheadia bifolia

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Some Thoughts on our Cape Bulbs and their Cultivation

Margaret Fox

I have been growing our Cape bulbs for over 7 years and find them a never-ending source of interest and variety. The origins and the evolution of our Cape Flora and the past events that brought about/caused their variety are aspects that hold our attention. I like to imagine the experiences of the first Western explorers and naturalists such as Carl Thunberg during their travels. The early scientists formed the basis of what we know today, and we are now able to study the DNA of plants. Then there is the question of the future evolution of our geophytes, provided that the human population will ever give them the chance to evolve. Our activities, exacerbating global warming, as well as successive ice ages, are all part of the equation. During this process, we were told in Bulb Chat of April 2007, that we were to expect that *Gladiolus, Freesia, Romulea, Tritonia* cormous genera would very quickly vanish. How depressing to speculate that there will one day be a time when these genera will have disappeared from our country.

At least in the mean time we can cultivate an ever increasing number and variety of bulbs. There is a seemingly unlimited choice, (personally I have been amazed at the depth of choice) and they include not one plant family but several, comprising corms, bulbs, tubers and others. A unifying feature is that they require more or less similar conditions and are winter-growing and spring-flowering. Even here there is no limitation: consider the summer flowering ones! The exceptions make it all more interesting. If *Nerine* becomes too ordinary, *Hessea* could become a challenge to cultivate, or if *Lachenalia* were not esoteric enough, one could always try *Polyxena*.

The real challenge of course, is how easy or difficult the different species are to grow and bring to flower. *Gladiolus alatus* I have found quite easy to grow and sums up my experience thus far. I am not sure if other growers find it unproblematical. It is robust, is happy in a medium sized pot, fast growing. Slight neglect, like letting the pot overheat or overcool, let it dry or overwater, is not to its liking. It has a medium to narrow range of requirements, not too forgiving of abuse. The flowers last well, do not need staking although the plant in flower can reach 30cm in height. The large bracts, being structured to protect the buds and enclose them in a hooded shape, do however harbour aphids. This annoying visitation can be countered by exposing the pots to August cold, so temperature has its uses. Many of my Gladiolus species: *G. carinatus*, *G. liliaceus* and *G. tristis*, are similarly "easy". In addition they all flower together, making a real flowering feast. *Gladiolus abbreviatus* flowered for the first time in its 5th year last year. With eagerness and even impatience I awaited its flowering. The swollen bracts seemed to hold much promise. One day it finally opened to reveal a curiosity of laughable proportions, and drab colouring. The individualistic species' adaptations have nothing to do with aesthetic appeal; I have not yet seen the species in its natural surroundings in the Overberg.

Truly easy species, those with an obviously wide tolerance of heat, drought and waterlogging, are likely to become weeds. *Tritonia securigera, Geissorhiza aspera* and *Chasmanthe bicolor* are examples in my garden and pots. I have learnt that something

unexpected appearing in a pot is not special, and now recognise the culprits before they flower.

Two *Lachenalia* species, i.e. *L. rosea* and *L. orchioides var. glaucina* have succumbed to a virus within two seasons. I managed to collect seed before it was too late and am cultivating the seedlings already from one. It brought home to me what I had until now disregarded, that bulbs are not like giant Californian redwoods which go on forever, but need renewal. Collecting seed from the *Gladiolus* species that flower all in a heap still needs some work to prevent hybrids. I am sure I am not alone in this dilemma. ♣

A Practical Method of Germinating Bulb Seeds

Diane Whitehead

I devised this method because of problems I had doing things the accepted way. If you don't have my problems, then don't copy me! Most of my problems arose if seeds didn't germinate quickly, then one of the following things would occur:

- the pots would dry out in the summer
- all the soil and seeds would wash out when the rains started in the fall
- or the rains would be just enough to germinate whatever was flying around, and by the next year each pot would contain a little forest of conifers and ferns.

So, if I know seeds will germinate quickly or if they are tiny, I sow them in pots or in closed containers if they require high humidity. However, for larger seeds and those that take longer to germinate, I do the following:

If they are big enough to pick up individually (like all bulb seeds), then I sow them with a spoonful of damp sterile seedmix in a small plastic ziplock bag. I write all the information on a self-stick label (name, source, number of seeds, date of sowing, temperature regime to follow) which is stuck on the outside of the bag.

Then I put all the ziplocks with the same temperature regime together in a sandwich bag and label it. This method makes it really easy for me.

- I won't need to check the bag in the fridge very often.
- The bag that has warm-germinating seeds needs to be watched from the first week.
- The one that goes outside won't need to be looked at till spring etc.

As soon as I see the first radical, I dump the whole lot into a pot (unless I am doing a germination study, in which case I will remove just the germinated seeds). I dump out most bags into a reserved area in the garden after 4 years, unless I know that a genus is really slow. This year, for example, I had 8 year old colchicum seeds germinate. If they had been sown into a pot originally, they would never have survived to germinate. Oh, one more thing I sometimes did: when we used to go sailing all summer, I would unwind some wire coathangers and slide all the ziplock bags onto them, then I would hang them from the top of a north-facing window. In case something germinated, it would get enough light to grow till I got home.

This article was written for the Pacific Bulb Society discussion forum, and is published with the permission of the author. ♣

Drainage in pots – Myths dispelled

Paul Cumbleton

I was so pleased to see the discussion on this and especially delighted to see the correct answers being given. The old myth of adding a layer of grit or other material to the bottom of a pot "for drainage" seems never to die, despite the science that disproves its efficacy being known for over a hundred years.

I have regarded it as something of a personal mission to correct this old misunderstanding. Each intake of trainees here at the RHS Wisley Garden where I work has a lecture from me specifically on this subject, trying to explain the science behind drainage in reasonably simple terms. If you will excuse a long posting, I here present an edited version for those of you who are interested. If this is not your thing, please just scroll on down! Note, although these notes talk about alpines, the same things apply to bulbs or any other plants requiring good drainage:

" What is Important in a Compost Mix?

In the wild, many alpines grow in situations where water drains away very quickly and easily - this is known as "sharp" drainage. This results in many air spaces around the roots. When growing in a pot, we need to provide similar conditions and make a mix that while holding sufficient water to supply the plant, drains excess water very rapidly to leave lots of air spaces. Before looking at how to achieve this, let's first ask:

Why is it important to have lots of air spaces?

Roots not only take up water, they take up and need oxygen too. Roots are normally covered by a thin film of water. Oxygen has to diffuse across this before it can enter the root. Oxygen diffuses through water relatively slowly. So the thicker the layer of water around the root, the longer it takes oxygen to diffuse through it to get to the root, which may result in the roots being starved of oxygen. Without it, they cannot metabolise and perform their functions - one of which is to take up water. This explains why the symptoms of plants being over-watered or under-watered are the same:
If under-watered there is insufficient water to supply the plant and so it wilts.
If over-watered, there is plenty of water around but the roots cannot take it up due to being short of oxygen.
So the result is the same – the plant may be sitting in water but it wilts because it cannot take the water in.

The reason for going into all this is that plants vary on just how sensitive they are to the amounts of oxygen in the growing medium - and alpines are among those plants that require a high degree of aeration. This is why when growing alpines we aim to produce a mix which is very free-draining, so leaving plenty of air spaces in the medium. The percentage of the volume of a medium that contains air after it has been saturated then allowed to drain is called the Air Filled Porosity (AFP). For the majority of plants, a figure

between 10% and 20% AFP is aimed at; for alpines this figure needs to be at the higher end of this range or even above.
So when we say a plant needs good drainage, it may be more informative to say that what they need is good aeration (which is created by good drainage).

What factors affect drainage?

1. Pore Size - Pores are the spaces between (and within) the solid parts of a medium and they contain the air and water required by the plant for growth. Pores vary enormously in size. The relative numbers of large and small ones, the way they are grouped and how interconnected they are will determine the rate of water movement through the mix and also determine how much air and water are retained. It is these factors that you can alter by adding drainage material such as grit, and the extent of the effect will vary depending on the particle size of the grit you use and the amount you add to a mix.

The most important factor is the relative proportion of big pores to little ones. This is because of a key point: small pores hold onto water more strongly than large ones - due mainly to capillary action. This means that small pores (called micropores) retain water, which leaves no room for air, while big ones (called macropores) tend to drain most of their water, leaving air in its place. It follows that fine sands are not suitable as drainage components - the fine particles simply fall into the larger air spaces, clogging them up and producing smaller pores that hold on to water – in other words you get poorer drainage, the opposite of what you want. So, use only coarse grits as drainage material - in practise, this means ones with most of the particles larger than 1.6mm diameter.

2. Quantity of Grit used - If you add a very small amount of grit to a medium it will not help the drainage, it will simply displace some of the medium. For grit to work as a drainage medium there must be enough of it so that it exceeds what is called the threshold proportion. The threshold proportion is where there is just enough grit that the particles touch each other. At this point, the pores between the grit are still filled with soil and humus and no new macropores have been created. More grit must be added to further "dilute" the medium so it exceeds the threshold. At this point, new macropores are created that drain readily and provide aeration. In practice, most alpine growers achieve this by using between 30% and 50% (by volume) of grit in their mixes.

3. Pot Depth and Perched Water Tables - When you water into a pot and excess starts coming out the bottom, it is coming out due to a mix of gravity pulling on it and the weight of water above pushing down on it (the "hydraulic head"). As water drains, there is a point at which gravity or the hydraulic head are insufficient to push any more water out. So at the bottom of each pot there is a layer where ALL the pores are filled with water. This is called a perched water table. This is true of all pots whatever mix it contains - at the bottom of every pot there is always a perched water table. Wouldn't it be good if we could prevent this?

This brings us to the old myth. "Put a layer of grit or other coarse material at the bottom of pots and containers to provide drainage". You will hear such advice repeated again

and again in books, on websites and TV programmes. Materials recommended for such use may include gravel, grit, sand, broken up clay pots or polystyrene bits, all to be added "for drainage". If you ask the person giving this advice as to EXACTLY why they think this will work, they often don't know - it's just something they have been taught or read about and they have never stopped to think why it might work. If they do have an explanation, it is usually to point out that coarse materials have large air spaces that drain more easily than small air spaces. This is of course correct as we saw earlier. HOWEVER this applies to the materials ALONE. They don't stop to think what happens if you start putting materials in layers. What actually happens is that drainage is HINDERED by this practice and water tends to accumulate at the boundary between the two layers. This happens for two reasons:

a) As we learned earlier, small pores hang on to water more strongly than large ones. Because of this, when you have a medium with smaller pores above one with larger pores, the water has difficulty crossing the boundary. There is insufficient "strength" in the larger pores to pull the water out of the smaller ones above where they are held more strongly by capillary action. So instead of the water draining evenly from the pot, it drains to the interface between the two layers then slows down or may even be stopped altogether until a sufficiently large hydraulic head has built up again to force it across the boundary. This of course means when the compost above is completely saturated! Since the stated goal for using a layer of coarse material is "to improve drainage", it is ironic that this practise actually causes the very state it is intended to prevent!

b) Secondly, the natural "perched water table" we learned about has now been forced to form higher up the pot giving what is called a RAISED perched water table. This leaves even less of the volume of the pot which contains well-drained and well-aerated compost.

There is however a way to remove the perched water table from a pot, so that the whole volume of the pot is well drained: Plunge the pot in a sand plunge. For this to work, ensure that the compost in the pot makes good contact with the sand beneath. This has the effect of greatly increasing the length of the pot so that the perched water table doesn't form until the water reaches the bottom of the plunge. Sometimes people put a piece of broken pot over the drainage hole of clay pots - but this will break the continuity between the compost and the plunge so this will not then work. A good modern alternative is to cover the drainage hole in clay pots with a piece of plastic net. This will help stop compost trickling out but not entirely break the continuity between compost and plunge. Removing the perched water tables from pots is probably the most important function that a plunge serves, so it is strange that this aspect is rarely mentioned these days when the functions of a plunge are discussed.

Thus endeth the lesson...!

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Reminiscences of Margaret Thomas

Graham Duncan

I came to know Margaret Thomas as a newly qualified horticulturist in the 1980's during the latter part of her life when for a period of about 10 years, she was the propagator and later nursery supervisor at Kirstenbosch. Born on 5th August, 1917, she passed away on 15th December, 2006, at the age of 89. Her career in horticulture began at Kirstenbosch in 1937 where she spent two years as an apprentice, one of which was in the nursery under Miss Bina Martin. The other year was spent as an 'improver', which meant having a section in the garden under her control - in her case this was the erica section, and she spent much time and energy experimenting with the vegetative propagation of *Erica* species. Her first love, however, was always bulbous plants. No-one seems to recall when she left Kirstenbosch for the first time, or the exact sequence of events that followed before she re-joined the Kirstenbosch staff, but over the course of several decades, she worked intermittently at the former Breezand mail-order bulb firm and at Harry Goemans nursery in Bergvliet, and started her own bulb nursery at her home in Constantia, which she named 'Bulbinella'. In total, she was associated with Kirstenbosch for over 50 years, finally retiring from there in the early 1990's. She was also an honorary Life Member of the Botanical Society of South Africa.

According to Johan Loubser, the initiative in establishing IBSA was entirely that of Margaret Thomas. She invited five people [Mrs L. Richfield (owner of the former Bloem-Erf indigenous bulb nursery outside Stellenbosch), Mr Harry Goemans (owner of Harry Goemans nursery in Bergvliet), Mr J.E. Retief, his son Mr J.D. Retief, and Johan Loubser] to a meeting held in Bellville at the home of Mr J.E. Retief on 15th April, 1961, although only four persons were present, as Mrs Richfield and Mr Goemans were unable to attend. Margaret became the first chairperson, and Johan Loubser the secretary.

A highly skilled plantswoman, she belonged to the 'old school' ethic where extremely hard work, dedication to one's profession and respect for those older than oneself, were the order of the day. In those early days, formality was strictly enforced, and us young horticulturists were allowed to address her either as 'Mrs Thomas' or 'Auntie Thom', although in later years, some of us graduated to a more relaxed 'Ma Thomas'. She had a mischievous sense of humour but became increasingly hard of hearing in later years, often getting the 'wrong end of the stick' in conversation (particularly over the telephone) that culminated in bouts of great hilarity at teatime. On one occasion, while visiting the type locality of *Lachenalia arbuthnotiae* with her at Isoetes Vlei in the Edith Stevens Wildflower Reserve at Wetton (she collected the type material there in 1966), her clothing got stuck in the rusty barbed wire perimeter fence, requiring considerable extrication, amid shrieks of laughter. A familiar sight in her well-worn nurseryman's apron in the old Kirstenbosch potting shed, her expertise in getting cuttings of even the most intractable species to strike, led one of the nursery foremen to exclaim (in Afrikaans) 'Here man, Mrs Thomas, sy kan wortels maak op 'n dröe besemstok' ('God man, Mrs Thomas, she can get roots to grow from a dry broomstick') - the latter recounted by Dr John Rourke, former

Curator of the Compton Herbarium at Kirstenbosch. Many of the propagation techniques established by her at Kirstenbosch continue to be followed here today, and scores of horticultural students came under her relentless tutelage in every aspect of propagation and nursery work, although her methods in achieving this did not always meet with convention. Once, having undergone a rigorous course in pest control as part of my horticultural studies, in which the dangers of organophosphates had been made abundantly clear, I looked on in dismay as Margaret, having added the required dose of chlorpyrifos to a large bucket of water, proceeded to stir it with her bare hands. She strongly believed in growing plants from seed and cuttings, and developed a strong back from hours of bending over nursery beds whilst sowing, hauling out weeds and lifting dormant bulbs. Her horticultural genes continue today in her son Robbie, a highly skilled propagator of rare Proteaceae, while her daughter-in-law Vicki Thomas's outstanding watercolours of indigenous plants continue to inspire a growing number of budding young artists.

Margaret became an excellent field collector, returning year after year to localities to check on the well-being of the plants and bringing back seeds to grow at Kirstenbosch. She discovered a number of new species, several of which bear her name, including *Ixia thomasiae, Moraea thomasiae* and *Tritonia flabellifolia* subsp. *thomasiae,* and became the first person to have two *Lachenalia* species named after her (the second being Neil McGregor and his family, in *L. neilii* and *L. macgregoriorum*), both endemic to the Cederberg. She discovered the dwarf *L. margaretae* in October 1965 when she and Miss Winsome Barker stopped in the Pakhuis Pass to search for the species later named *L. esterhuysenae*. *L. margaretae,* a rare, late-flowering species was described by Miss Barker in 1979 and has subsequently been collected on very few occasions. The plants in cultivation at Kirstenbosch originate from a few specimens collected by Fred Paterson in the mid 1980's, a member of IBSA who died tragically in a cycling accident many years ago. Margaret discovered her second Lachenalia, the exceptionally attractive *L. thomasiae,* in October 1986 along a rocky bank south of Clanwilliam, just a few hundred metres from the N7, which I described in *Flowering Plants of Africa* in 1993 (see photograph by Rodney Saunders in IBSA Bulletin 55 of 2006).

One of the most successful *Lachenalia* collecting trips I ever went on was a week-long expedition in the spring of 1985 with Margaret and a horticultural colleague at Kirstenbosch, Bridget Meier. Our route took us up the N7 to Springbok, east to Gamoep (where the type material of *L. inconspicua* was collected) and south towards Kliprand where I discovered the species later described by Miss Barker as *L. duncanii*. From there we headed south to the Nardouwsberg and the Pakhuis Pass, the latter area one of Margaret's favourite stamping grounds, and from there, to Nieuwoudtville and Calvinia, where the type material of *L. neilii* was collected. A lifelong smoker, Margaret's obligatory box of Peter Stuyvesant 30's cigarettes was never far from reach, yet her incessant smoking seemed not to affect her health in the slightest. Arriving in an icy Calvinia that evening, Margaret got busy cooking a stew for dinner, the inevitable cigarette dangling from her lips. While slaving away over the cauldron, Bridget and I noticed with increasing alarm, the steadily lengthening ash of Margaret's cigarette, but in keeping with our junior

status, we said nothing. Having glanced away just momentarily, we realized, to our consternation, that the ash had suddenly vanished. Bridget refused dinner, but cold, tired and starving, I threw caution to a freezing wind blowing that night. The trip continued down the west coast where the three of us were eagerly anticipating our first sighting of *Lachenalia mathewsii* flowering in habitat, having been rediscovered there in 1982 by Queenie Paine and Hertha Bokelmann, after almost four decades of supposed 'extinction'. Nothing could have prepared us for the spectacle we were greeted with as we came around a bend in the gravel road - thousands upon thousands of plants in full flower on a marshy slope, illustrated on the back cover of *The Lachenalia Handbook*.

Margaret Thomas was indeed one of those individualistic people whose unconventional way of life, and not inconsiderable achievements will be remembered by many, and we are the poorer for her passing.

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Katharine Saunders lived from 1824 to 1901. She was born in England and after her marriage in 1851, she and her husband sailed for South Africa on the East Indiaman ship, the "Hotspur". The journey took 54 days, and finally they arrived in Cape Town where the family stayed for 3 weeks. They then travelled to Durban, and finally to Tongaat Estate where her husband became the manager, and later the proprietor of the sugar estate. The journey to Tongaat was by ox-wagon, and took 3 days. She was an excellent artist and began painting flowers shortly after her arrival. She corresponded with many botanists, including Harry Bolus in Cape Town. She travelled widely in South Africa, and always took her paints and paper with her, painting as she went. Most of her paintings contain notes about the localities of the plants, the date she painted the flower, and any other interesting facts that she noticed. Sixteen folios containing about 700 of her paintings have survived and are preserved today. Her primary interest was not in plant collection or in building up a Herbarium – she painted because of the beauty of the flowers. Several species were named after her, including *Anthericum saundersiae, Ornithogalum saundersiae, Drimiopsis saundersiae* (now *Resnova humifusa*) and *Haemanthus katharinae* (now *Scadoxus multiflorus ssp katharinae*).

A bitter note on Conservation in South Africa

Allan Hill

A few months ago an IBSA member from the UK read in a botanical magazine about a colony of Gladiolus that was never able to set seed, as the municipality of Cape Town cut the vegetation at that site at the same time every year. The member wrote to IBSA committee proposing that we do something to stop this practice by the municipality.

For a number of years I had a permit from Cape Nature Dept. to rescue plants for my collection specifically from **areas under destruction**. Then Cape Nature appointed a new director, Kas Hamman, and a new permit officer, and when I phoned to enquire why I had not received a renewal of the permit I had had for about a decade, I was told "It will not be forthcoming". An appeal to the new director resulted in a permit to rescue plants for my collection from **areas under destruction**, but subject to impossible conditions viz:

1) I had to apply to Cape Nature beforehand with the localities where I intended to rescue the plants – not possible as I only become aware of a site when I see earth-moving vehicles in the process of flattening everything
2) I had to list the species I intended rescuing – not possible as we have some 22,000 species in S.A., and thousands more local variations. In addition with most plants it is only possible to identify them when in flower, and somehow I can't imagine developers removing their equipment from a site for a year or 2 to enable me to identify what I want to rescue!
3) I had to advise the number of each species I intended rescuing – what happens if I applied for 20 and in 1 spadeload uplifted 50 – would I have to return 30 to the earth so the bulldozer could demolish them?

Cape Nature has no problem with the wholesale destruction of our unique flora – but try and rescue something! For the record I am referring to rescuing plants for my collection, and not the relocation of plants, as this requires an environmental impact assessment to ensure that the relocated plants don't impact their new environment in any way (at least Cape Nature have got something right!). On this point I must stress that it is critical that plants are not relocated without a thorough environmental impact assessment – imagine if a species is relocated into an environment where a closely related species occurs (our flora can remain dormant/not flower for decades). 1 grain of pollen could result in hybridisation- which is **irreversible**- and instead of losing a species, we could lose 2 species in the process. Somehow I don't have much faith in Cape Nature to ensure that environmental impact assessments are done properly.

About 2 years ago, the IBSA committee became aware that the only known colony of *Haemanthus lanceifolius* was about to be ploughed so that the farmer could establish commercial crops. When the importance of conserving this species was explained to the farmer, he readily set aside a conservancy area of about 2 hectares for the species. A few members of IBSA trekked the 300 km to Vanrhynsdorp one Saturday and relocated all the *H. lanceifolius* plants we could find outside the perimeter into the safety of the conservancy (as well as a number of other plants to maintain some biodiversity). The

colony is doing well. I visited it twice last year and was pleased to note that numerous seeds had managed to penetrate the red clay and I am satisfied that this colony is sustainable, with a population of over a thousand plants.

My concern is that in the event of the death of the benevolent farmer, the farm could change hands and before we become aware, the colony could be bulldozed into extinction. World Wide Fund For Nature South Africa (W.W.F. South Africa) had assisted IBSA previously with the conservation of *Daubenya aurea*, so we requested that they erect a plaque recognising the farmer for his contribution to saving this species, and recognising the site as a conservation area. The rationale being that any farmer would (hopefully) think twice before destroying a conservancy recognised by a body as distinguished as W.W.F.

W.W.F. South Africa replied that "… we unfortunately cannot simply allow the use of our logo on plaques" and recommended that the site should become part of the stewardship programme with Cape Nature. A number of emails and phone calls to Cape Nature throughout the province confirmed that they had been involved with getting this site onto the stewardship programme for about 2 years, but still have not finalised this as they simply don't have the capacity!

W.W.F. South Africa's "decision is based on the fact that we are engaging with several national processes to pursue stewardship and revitalizing the old National Heritage Programme which recognizes areas of special concern." That is admirable but reality is that numerous species are localised to very small areas and species are becoming extinct in nature on an ongoing basis. If anybody has any link to W.W.F. International please advise me urgently as we desperately need assistance with conserving individual species, as opposed to biodiversity areas. It's comforting to know that W.W.F. South Africa are looking at heritage sites but we critically need a quick process to conserve localised species. I can't think of a more cost effective and quick-fix process than getting a body with the reputation of W.W.F. to recognise small conservancies until (if) our conservation authorities can put a more permanent solution in place. The stakes are simply so high that we have to pursue this avenue.
p.s. We even offered to pay the cost of a plaque!

You may recall that about a year ago I appealed to all IBSA members to send objections to Northern Cape Nature Conservation, as a farmer on the plateau of Vanrhyns pass had ploughed a colony of *Haemanthus amarylloides*. Hands up those who lodged objections! I did, and I received a letter of thanks for my concerns from the director. Last October I followed up with the director, Mr A. Mabunda to establish what had transpired – Mr Mabunda admitted that his department had done absolutely nothing.

Unfortunately, the active members of IBSA in S.A. are all too familiar with our Conservation authorities. ♣

New Species

The South African flora continues to surprise botanists with new species, often described from areas which are visited by taxonomists frequently. How these species evade detection for so long, one never knows!

Bothalia (2006) Volume 36 part 1

The first article which may be of interest to IBSA members is by Y Singh and is entitled "Hypoxis in Africa: list of species and infraspecific names". This article provides a consolidated list of 69 species and 21 infraspecific taxa, showing all synonyms. The taxonomy of Hypoxis is extremely confusing due to the profusion of names for various species.

An article by Peter Goldblatt and John Manning on Tritonias is next. In this, the authors re-examine various species which were not originally included in Tritonia due to lack of sufficient information.

Two short articles on Clivias – one on a natural hybrid found near Barberton, and one on a variety of *Clivia robusta*. The hybrid, *Clivia x nimbicola*, is intermediate between *C. caulescens* and *C. miniata* and one feature of interest is its long flowering period – from July through to December. *Clivia robusta var citrina* is a yellow form of *Clivia robusta* found near Port Edward in a swampy area.

A new Drimia is described – *D. montana*. This small species is found in large clumps on sandstone rock slabs near Fort Beaufort, and has white flowers in mid-summer.

And finally, a new Ornithogalum species (*O. kirstenii*) is described from the Malgas area near Swellendam. Plants have 2 erect leaves and produce pendulous bright yellow faintly scented flowers in autumn. The plants grow on shale cliffs with the bulbs partially exposed.

Bothalia (2006) Volume 36 part 2

Two new species of Spiloxene are described here by Dee Snijman, *Spiloxene nana* from the Nieuwoudtville area, and *Spiloxene pusilla* found nearby on the Gifberg. Both species grow in similar habitats, ie both are shale-loving plants and inhabit rock overhangs. They differ from one another in floral structures.

From the same area, the Bokkeveld escarpment near Nieuwoudtville, John Manning has described a new species of Romulea. *Romulea singularis* appears to be rare and has been described from only 2 plants that were found in flower. It is a long-tubed species and superficially is similar to *Romulea syringodeoflora, R. hantamensis* and *R. kamiesensis. R. singularis* is readily distinguished from all the other species by its narrow funnel shaped mauve to purple flowers with white throat.

From the Sutherland area, John Manning has described a new species of Ixia, *I. amethystina*. It is a lovely species with amethyst-coloured flowers borne on reclined spikes so that the individual flowers face directly upwards.

Another new species from the same area is *Moraea marginata*. This also appears to be a rare plant and is known only from one small population near Sutherland. This species represents a third member of the group *Roggeveldia* consisting of *Moraea fistulosa* and *M. monticola*. All have purplish flowers on 1 plane with free stamens and filiform style branches. *M marginata* has a trailing slightly twisted leaf, longer than the stem, but the leaf is 7mm wide, channelled and with conspicuously thickened hard margins. The flowers appear in early summer and are only open for a short period in the late afternoon.

The next article is by Graham Duncan, and he describes 3 new species of Lachenalia:
L. lutea with greenish yellow sweetly scented flowers from heavy clay soil in renosterveld of the SW Cape,
L. cernua with creamy white flowers from Worcester and Simonstown, and
L. nardousbergensis with magenta flowers from the Nieuwoudtville & Cederberg areas.

Bothalia (2007) Volume 37 part 1

A new species of Cyrtanthus is described by Dee Snijman, *C. aureolinus* from the Swartberg Mountains. The leaves are either absent at flowering, or are just emerging, and each plant has a 4-10 flowered inflorescence of sulphur-yellow flowers. The plants are evergreen and flower after fires.

Two new Trachyandra species are described, *T. montana* from the Riviersonderend Mountains, and *T. arenicola* from Namaqualand. Both species have white flowers, *T. montana* has firm twisted leaves and flowers in late spring/early summer, while *T. arenicola* has soft succulent leaves, and flowers in very early spring.

Graham Duncan describes *Lachenalia lutzeyeri* from a nature reserve near Gansbaai. The species has scented yellowish cream flowers very late in the season in November, and is stimulated to flower by fire.

Bothalia (2007) Volume 37 part 2

The first article in this Bothalia is by Manning et al, and is a revision of the section Aspasia of Ornithogalum, the “chincherinchees”. The group is characterised by a rosette of lanceolate to oblong leaves, large boat-shaped bracts, moderately sized white, yellow or orange flowers, ellipsoid seed capsules enclosed by a papery perianth, and angular seeds. There are 12 species in this group:

O. conicum	O. synanthifolium	O. leeupoortense
O. corticatum	O. strictum	O. puberulum
O. thyrsoides	O. ceresianum	O. maculatum
O. dubium	O. pruinosum	O. rupestre

Next are some new Hesperantha species:
Hesperantha longistyla, from Namibia, 30cm tall with falcate leaves, purple flowers with yellow in the tube, flowers in spring in rock crevices in the mountains near Rosh Pinah,
Hesperantha helmei from the Graaff-Reinet area, 25cm in height, 3 grooved leaves, 1-2 pale-mauve flowers darker at the mouth of the tube.

Hesperantha lithicola found in the sandstone rock pavements in the Swartruggens Mountains of the Koue Bokkeveld, 20cm, 4 falcate leaves sometimes loosely coiled, 1-4 white flowers with red reverse opening in the evening and having a citrus fragrance.

Then John Manning and Peter Goldblatt describe 3 new Drimia species, previously identified as *Drimia marginata*.
D. vermiformis – small round bulb, leaf withered at flowering, leathery dark green & sub-erect, dense inflorescence of 5-20 campanulate flowers, pale brownish with darker keels open late afternoon (Oct/Nov), found in exposed shale flats of arid areas in the SW Cape.
D. pulchromarginata – evergreen/deciduous, prostrate/erect leaves, fragrant brownish flowers open late afternoon (Oct/Nov), in granite outcrops in Namaqualand.
D. ligulata – deciduous, prostrate leaves, fragrant brownish flowers (Dec/Jan), in the mountains in the Cederberg area.

And finally, an Aristea and a Nivenia:
Aristea nigrescens, an evergreen species in tussocks. It has an erect slightly winged stem, leaves in a fan, actinomorphic flowers, white to blue glossy blackish on reverse, open at 10ish and fade late afternoon. The species uses the black petal reverse to attract the pollinators, monkey beetles. It is a rare and endangered species found at the foot of the mountains in the Breede River valley and it flowers after fire.
Nivenia inaequalis is a rounded evergreen shrub to 80cm, and has congested racemes of salver-shaped blue flowers in mid summer – found in arid fynbos in the Ladismith area. ♣

Botanical Terms – “aff” and “cf”

Affinis, abbreviated Aff., means quite clearly and simply, 'akin to, bordering' (see Stearn's 'Botanical Latin'), and this is the sense in which it is used by botanists. Anyone who attempts to identify wild (or even garden) plants will inevitably come across specimens that do not quite seem to match a description, or a comparative specimen, but seem to be akin to, or bordering on it. These can be annotated as aff. species X. It indicates that further study is required, perhaps to reveal a wider variation than previously recorded in a species' morphology, or perhaps indeed suggesting that it is a hitherto undescribed taxon - that's when aff. becomes fun.

John Grimshaw

I would like to follow up on the discussion on “affinis” by mentioning the term "cf." (literally = "compare with"). It is also a staple of botanists and plantsmen and serves a similar but different purpose. My interpretation and experience of "affinis" is that it is used where the entity in question is decidedly or most probably does not belong with the name given, such as Narcissus aff. bulbocodium, but represents an allied or affiliated taxon that is in need of further study and could prove to be new to science. By contrast "cf.", as in Narcissus cf. bulbocodium, indicates that the plant in question could very well be this species but needs confirmation. Both cf. and aff. are temporary designations, though they can be appended to a plant for many years, and they serve mainly to bring attention

to the fact that taxonomic sleuthing is needed. They are steps in a process that have led to important increases in knowledge and understanding and can also prevent plants being named incorrectly. Both of these designations are very useful when the name of a plant is in doubt. Since this uncertainty is an unavoidable condition for plant aficionados at times it is well to take advantage of these abbreviations that are normally more a vexation to data bases than to growers. The alternatives range from using the mystic "?" in connection with a doubtful name or abandoning the nuances of plant identification altogether.

Dylan Hannon

This article is written from a discussion on the "PBS discussion forum" and is reprinted with permission from the 2 authors. ♣

From The Archives

From the IBSA Bulletin number 24 of 1974 comes the following article:

"Vanishing Bulbs of the Veld – III
***"Gladiolus aureus* Baker"** by T T Barnard

Gladiolus aureus was named and described by Baker in the Addenda to the 6th Volume of the Flora Capensis. The first recorded collection was made by CB Fair on hillsides near Kommetjie, in the Cape Peninsula, in August 1894. Bolus collected it again "beyond the farm, Chapman's Bay" on August 30th, 1896. He sent material to Baker at Kew suggesting that if it proved to be a new species, it should be named "*Gladiolus fairii*" after its discoverer. Baker however named it very aptly *Gladiolus aureus* for its small flowers are a beautiful clear golden yellow.

The species has probably always been confined to a few damp sandy pockets on the hills between Fish Hoek and Kommetjie. There are only 3 or 4 recorded collections during the first half of this century – one sheet in S.A.M. containing specimens bought from flower-sellers in Adderley Street, in 1912. I failed to find it in 1931 and 1932 though I must have passed within a few hundred yards of one population. I was looking for it on the open drier slopes, at a time (September) when it was probably already over. I enquired about it again when Sir Frederick Stern and I were in South African in September 1955. Miss J Lewis, who had collected it again in 1950, told me it would be over, so once again I failed to see it in the wild.

Back in England in 1957 I was surprised to receive a letter from Sir Frederick offering me seeds of *Gladiolus aureus* which had been sent to the Royal Horticultural Society by Mr Emblem from his garden in Natal. I received 11 seeds which were sown in August 1957

in my greenhouse in Dorset, nine of which germinated. Meanwhile I had heard from Miss Lewis that Mr Emblem had sent her specimens for identification and that they were *G. aureus*, apparently doing quite well in Natal. My seedlings did not flower until March 1961, by which time they had increased considerably by cormlets. By 1964 I had several pots and I exhibited the species at the RHG spring shows, and took pots in flower to Kew, where they were painted by Margaret Stones for the Botanical Magazine. Her beautiful plate (Bot. Mag. Vol 175, t. 479) was published in November 1967. Mr Emblem has since denied the story there published that he himself purchased a bunch of flowers with the corms attached in the streets of Fish Hoek. He received his corms from a correspondent at the Cape who had obtained them from the owner of the farm on which the plant grew.

By 1968 I had 100 *G. aureus* flowering in my greenhouse, and I distributed a number of corms and hand-pollinated seed. My daughter still grows at Furzebrook some 12 to 20 corms: whether any others still survive in England, I do not know. Here, a few corms flowered this year at Kirstenbosch and in the gardens of some of our members. It is not a difficult plants to grow and flower, but, like nearly all species of Gladiolus, it requires care and attention if it is to be maintained in health.

As far as is known, the species in the wild is now reduced to one small population in a rather vulnerable state. It may survive there for years, or it may shortly become extinct. There is nothing that can reasonably be done, or in my opinion should be done, to prolong its existence in its native habitat. Nor has it sufficient horticultural appeal to guarantee its survival in cultivation. One can only hope that it will be kept growing in specialist collections for a little longer.

Taxonomically the species has been a problem, It was omitted from the Revision of SA Gladiolus species and relegated to Homoglossum as *H. aureum* (Baker) Oberm. Certainly, in corm, leaf and seed it is very similar to that other endemic plant of the Southern Cape Peninsula, *Homoglossum merianellum*, but its flowers are very differently shaped, and its hairy leaves, as well as its corm and seed, are also very much like those of *G. punctulatus*. The genus Homoglossum is at present being revised and the position of *Gladiolus aureus* may become clearer.

In the latest revision of Gladiolus by Goldblatt and Manning "Gladiolus in Southern Africa", the authors note that this species is one of the rarest of the southern African species. It is known only from a small reserve at Ocean View near Kommetjie where the plants grow in peaty sand in seeps that remain damp well into the spring. ♣

Book Review

Field Guide to Fynbos

By John Manning with photographs by Colin Patterson-Jones & John Manning
Published by Struik, Cape Town in 2007
Paper back, 508 pages, 210 x 150mm, ISBN

A number of books have been written on the fynbos, or more correctly, the Cape Floristic Region, but this is the first that enables the layman to get an understanding and knowledge of the region and the diversity of its plants. It is a true "field guide" and it will fit into a pocket, albeit a substantial one!

If you are to get a true understanding of the book, you must read the introductory chapters on definitions, topography, soils, pollinators, origins, evolution, etc of the flora. To me, they made fascinating reading. They are written in a way that always holds your attention and the text is scattered with pertinent facts.

The book is illustrated throughout with superb colour photographs taken by Colin Patterson-Jones and John Manning. We have come to expect a high standard from these two photographers and the pictures have lost little in being committed to print.

The text is easy to follow and it always opposite the relevant photograph. To economise on space, use is made of distribution maps and calendar diagrams which show flowering times. This makes a welcome addition to the field guide and is more obvious than text.

The families are dealt with in the correct botanical order and at the start of each family there is an introductory paragraph dealing with its characteristics. In the more extensive families and genera, a key is included for ease of use. Where relevant, common names have been included.

For bulb lovers, 95 of the 451 pages of text are devoted to geophytes. Considering they are a major part of the Cape Floral Kingdom, this is entirely to be expected, but is often neglected in other field guides. Iridaceae, as one of the three biggest families in the Cape Floral Region, is particularly well represented in the guide. And this means that every IBSA member should have a copy! Should you encounter any difficulties with understanding the text, there is an excellent glossary of terms at the end of the book, while at the front of the book there is an illustrated glossary.

My only personal criticism of the book is that it has an index split into two, one of botanical and one of common names. I much prefer a single index, but this is a minor detail in a guide of this magnitude. At R190 the guide is affordable, especially considering how lavishly it is illustrated. We are all grateful to the Parker Family and Mia Karsten Bequest for sponsoring the book. ♣