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Fig. 1. “Cat’s Tongue Haworthia”

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GASTERIA STUDY NOTES

Gasteria brachyphylla (Salm Dyck) E.J. van Jaarsveld

Breck Breckenridge.

Fig. 2. *Gasteria brachyphylla*

To many, *Gasteria brachyphylla* is the prototypical *Gasteria*, with its invariably distichous habit, uniformity of colour and markings, and overall leaf morphology. One looks at a *brachyphylla* and could say, as did Mozart condescendingly about Salieri's music*, "That is a Gasteria!".

If those not devoted to gasterias never saw any other species save *brachyphylla*, I might agree that ignoring the genus is understandable. And yet, once one becomes a True Gasteriaphile one is capable of seeing in such a modest species some very satisfying and subtle aspects!

For myself, *Gasteria brachyphylla* really comes into its own when it is grown well, with good light and plenty of water when it wants it. Then the dark lustrous background coloration of the leaves begins to shine, accentuating more fully the various light spots scattered here and there across the leaf surface. Mature specimens also display the typical distichous leaf arrangement of *brachyphylla*, uniformly arranged along a definite axis with the leaf bases stacked upon each other like little chevrons. When this kind of *Gasteria brachyphylla* is seen by the newcomer to the genus, exclamations of appreciation are usually forthcoming!

This species is quite common throughout its bastion in the Little Karoo, that arid locale that is home to so many other interesting succulents. *Gasteria brachyphylla* is particularly common in the area in and around Oudtshoorn. It is usually found growing modestly underneath woody shrubs and grasses where it is shaded from the hottest sun and cryptically hidden from any would be herbivores. And yet it gives itself away when it flowers. These bright pinkish blooms are held far above the foliage, inviting visits from the little sunbirds that pollinate it.

Fig. 3. CD-ROM: Pictures of African Succulents. Details page 2.

As Ernst van Jaarsveld (1995) explains in his chapter on *brachyphylla*, this species was long known under an illegitimate name, *Gasteria nigricans* Haw. During his studies, Ernst discovered that this name could not be upheld because both it and *Gasteria disticha* were based upon the same type. The epithet *brachyphylla* then was accepted as the next oldest name, based upon Prince Salm-Dyck's *Aloe brachyphylla.*

I invite readers to seek out a *brachyphylla* and enjoy it for its subtle, but classical beauty, for it is quite easy to cultivate.

* "One hears such music and all one can say is, 'Salieri'!"

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van Jaarsveld, Ernst. 1995. Gasterias of South Africa. Fernwood.

What's in a name – the case of *Aloe* 'Doran Black'

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Aloe 'Dorian Black' R. Wright ex P.I. Forster & D.M. Cumming was published in Haworthiad 12(1)12, 1998. Whilst collecting information for the Alsterworthia International Special Issue on hybrids and cultivars, Harry Mays came across this note by Duke Benadom in his regular feature *Superb Succulents* in the CSJ (USA) March-April 1999, "*Aloe* 'Doran Black' (sometimes erroneously listed as 'Dorian Black') is a popular hybrid created by Dick Wright…………" The difference between the two names is one letter "i". A spelling or typographical error?

Duke stated that the correct spelling was Doran and this has been confirmed by John N. Trager of the Huntington Botanical Gardens. John was in contact with Dick Wright (Clarence Burdick Wright as opposed to his father Clarence Bullard Wright who was known as Clarence), and was therefore able to supply valuable information. He confirmed that the hybrid had been created by Dick Wright who had given it the name *Aloe* 'Doran Black' in honour of Doran Black the former proprietor of Black's House of Cactus in Stanton, California. Dick presented the plant to Doran at a "going away party" in April, 1988. Doran was ill with terminal cancer and the gathering was a way for him to see many of his friends before he died and to receive the plant which had been named after him. Beverly Desena, daughter of Doran Black recalls her father telling her about the new hybrid named in his honour and that he was "proud as punch". He died in July of that year.

The name *Aloe* 'Doran Black' was never published by Dick Wright, as he did not publish a plant list after the fire that destroyed his nursery in 1985. In a sense, A. 'Doran Black' arose from the ashes of that fire as it was produced shortly after that traumatic event. Wright gave plants to Cooper's and Grigsby's nurseries for distribution under the name *Aloe* 'Doran Black'. Mary Cooper of Cooper's Cactus confirmed that she understood the plant to be named for Doran Black and that it should be spelled accordingly. Unfortunately, Cooper's never published any plant lists so they have not published the name *Aloe* 'Doran Black', though they have used that name. Grigsby's published the name as *Aloe* 'Dorian Black' (shades of Dorian Gray) in their catalogues and have continued to use that name on their plants. The first publication of this cultivar's name by Grigsby's is not just a spelling or typographical error but a clear violation of the expressed wish of its originator and, therefore, it is invalid by virtue of the ICNCP. Art. 26.6 of the Code states "A new cultivar epithet is not established if its publication is against the expressed wish of its originator or his assignee, unless the originator or his assignee had knowingly distributed that cultivar without a proposed cultivar epithet." The originator, Dick Wright, did most certainly distribute the cultivar with a proposed cultivar epithet. Accordingly, we now publish the correct name:

Aloe 'Doran Black' C. B. Wright ex H. Mays & J.N. Trager
(*Aloe* 'Dorian Black' apparently originally published in Grigsby's plant catalogue, invalid by virtue of Article 26.6 of the ICNCP.
Aloe 'Dorian Black' R. Wright ex P.I. Forster & D.M. Cumming, Haworthiad 12(1)12, 1998 also invalid by virtue of Article 26.6 of the ICNCP.)

While Forster and Cumming stated that the parentage of Aloe 'Doran Black' was unknown, further information has come to light in conversations with Dick Wright (personal communication, 2004). Dick's pollination methods have been informal. When two or more promising parents are in flower simultaneously pollen is transferred by hand without written record. In addition, hummingbirds come and go freely through the open doors of the greenhouse. Viable fruits are crumbled into the pots of their parent or other nearby plants and the progeny are gradually culled and selected over time. Therefore, determining the precise parentage of any given selection is impossible. However, Dick confirmed that he received some of John Bleck's hybrids early on and used pollen from these in his hybridisation. Bleck's hybrids involve primarily the dwarf Madagascan species such as A. descoingsii, A. parvula and A. rauhii. Dick remembers that one of the seed parents he used was A. juvenna. Presumably one of the progeny of this cross resulted in A. 'Doran Black' explaining its unusually tuberculate nature.

Aloe 'Doran Black' is one of the finest dwarf aloe cultivars available. It has dark green leaves with white cartilaginous margins and is liberally endowed with large white flecks and tubercles that stand proud on the leaf surface. It produces offsets. For a photograph see Alsterworthia International 2(3)16, but please remember to alter the name to *Aloe* 'Doran Black' so that the name correctly represents the person honoured by the cultivar epithet proposed by its originator.

Editor's note: This article illustrates the problems surrounding the determination of the correct names for (many) cultivars of all genera. These problems are magnified for older names for which there are few people around with knowledge of the proposed epithet if any and epithet publication. Further problems arise from locating publication in different languages in a variety of forms from books, through journals to nursery lists.

Field observations on the genus *Aloe* (Alooideae, Asphodelaceae) in Northern KwaZulu-Natal (South Africa)

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Summary.
New field data on the distribution of the genus *Aloe* (Aloaceae, Asphodelaceae) in the north-eastern corner of the KwaZulu-Natal province (South Africa) are presented. Relations to geology, vegetation and biogeography are presented with special emphasis on *Aloe marlothii*. The northern habitat of *Aloe umfoloziensis* is described and the differences with other maculate *Aloe* are discussed.

1. Introduction.

In the course of August 2002, three French geologists, guided by a South African colleague, started new field investigations in northern Zululand in KwaZulu-Natal province, South Africa. I was one of them. The main aim of the trip was to analyze the palaeomagnetic signature of the Cretaceous sedimentary rocks that constitute most of the flatlands, north of the Mkuze River, from the north of False Bay toward Swaziland and Mozambique. However, our geological research is far outside the scope of the present paper. Nevertheless I can tell you that we have drilled more than 320 cores and collected lots of fossils and rocks, the whole exercise being very promising .

Another good thing about the field trip was that while my fellow geophysicists were drilling hard rocks, it left me with plenty of time to look at the plants and to take a good few pictures (more than 400 by the end of it). Luckily enough as well, it quickly turned out that my favourite plants, e.g. the succulents, are also growing very well on Cretaceous sediments. In addition to the fine fossils and sedimentary features, each locality we investigated had an amazing diversity of species of *Aloe*, *Euphorbia*, *Kalanchoe*, *Sansevieria* and many other genera.

As the Zululand succulent flora is largely overshadowed by the far more spectacular and better investigated floras of the Karoo, Namaqualand and Richtersveld, I hope that the following paragraphs will bring more people to appreciate the fantastic people, scenery and wild life of the area I visited.

2. The Maputaland Endemic Centre: geography, climate and geology.

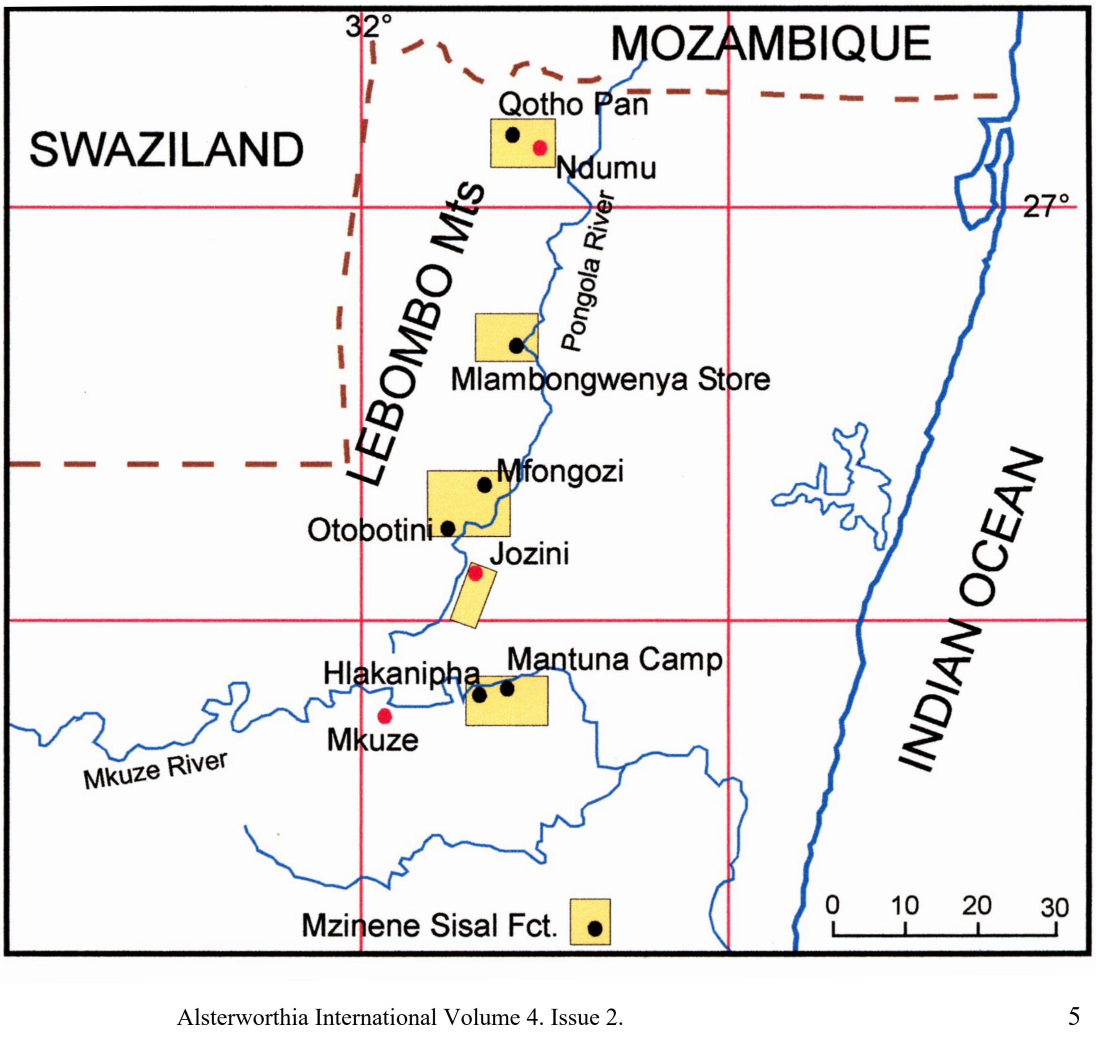
Map 1.
(location map)

Red dots indicates main cities/village.

Black dots indicates main localities studied.

Yellow rectangle show maximum extension of observations around the main localities.

Scale is in kilometers.



In a most recent contribution, Van Wyk and Smith (2001) have pointed out that southern Africa, the part of the continent south of the Cunene, Okavango and Zambezi rivers, encompasses one of the highest floristic diversities in the world with more than 30,000 species, 60% of which are endemic to the area. Three floristic regions and 18 centres of endemism were identified for southern Africa, most of which are limited to South Africa itself. The area I visited belong to the Maputaland Centre (MC), recently identified as an endemic centre within a complex floristic unit of higher rank named the Maputaland-Pondoland Region (Van Wyk, 1994, 1996).

Historically, the name Maputaland has been applied to the coastal plains between Maputo in Mozambique and the Mkuze River in northern KwaZulu-Natal (South Africa). As understood by Van Wyk (1994, 1996), the geographic extension of the Maputaland Centre includes the area limited to the west by the foothills of the Lebombo Mountain Range, to the north by the Inkomati -Limpopo River, to the east by the Indian Ocean, and to the south by the St Lucia Estuary. The boundaries of the centre are clearly defined, except in the north, where the line drawn is preliminary.

Most of the area is a flat low-level coastal plain with a maximum elevation of 150 m, with the exception of the Ubombo and Lebombo Range which rises locally to 500/600 m. The climate is mostly tropical to subtropical with no frost in winter, the dry season, and summer rainfalls. Annual average rainfall is about 1100 mm along the coast and on the crests of the Lebombo Range, but drops to 500/600 mm on the western flatlands, defining a fairly arid area. Mist is fairly common on the plains in winter originating from the Lebombo Mountains. The southern boundary of the MC corresponds quite closely to the 18°C mean winter isotherm. Poynton (1961) already pointed out that this zone marks the changes from a predominantly tropical to predominantly temperate faunal realm. To a lesser extent this observation also applies to floristic distribution patterns.

The Lebombo Mountains are composed of volcanic rocks (rhyolithe lavas and basalts) of Jurassic age. The Lebombo Volcanics also represents the substratum of the Cretaceous sedimentary rocks (siltstones, sandstones and conglomerates) that characterize most of the flatlands and inland coastal plains (Kennedy & Klinger, 1972; Dingle *et al*., 1983). Toward the Indian Ocean, Cenozoic deposits include both marine and non-marine sediments, among which Early to Late Pleistocene sands are the main constituent of the coastal dunes (Maud & Botha, 2000). The coastal plain was repeatedly exposed and submerged as the southern African continental margin flexed and worldwide sea levels rose and fell. Recurring marine transgressions and regressions resulted in cycles of sedimentation and erosion, with marine deposits being laid down then eroded and redistributed by wind and water.

Thus most of the Maputaland coastal plain is covered in recent, infertile, wind-distributed sands. The result has been the formation of a series of north-south aligned dune ridges parallel to the present day coastline. Incised coastal river valleys filled as sea levels rose during the late Holocene, resulting in the deposition of fertile alluvial material along drainage lines and the formation of pans. In South Africa, the soils of western Maputaland are fertile, especially along the west bank of the Pongolo River, because they are derived from alluvium, river terraces and Cretaceous sediments (Maud 1980). On the other hand, the weathering of lavas in the Lebombo range has produced soils with fairly high clay content.

3. Maputaland biomes, phytogeography and vegetation types.

The vegetation of the MC is diverse and includes different types of grassland, bushveld, thicket, forest and swamp areas. Several different approaches are possible

Table 1.

Locality number	Locality Name	Ecozone	Habitat
LGB-Z.001A	Mzinene Sisal Factory	Bushveld-Savannah	Grassland
LGB-Z.003A	Emshopi	Bushveld-Savannah	Woodland
LGB-Z.003B	Mantuna Camp	Coastal plain	Sand Forest
LGB-Z.006	Road Jozini-Otobotini	Bushveld-Savannah	Rocky slopes
LGB-Z.007	3km N. Otobotini Store	Bushveld-Savannah	Rocky slopes
LGB-Z.008	7km N. Otobotini Store	Bushveld-Savannah	Thickets
LGB-Z.009A	Mfongozi loc.168 base	Bushveld-Savannah	Thickets
LGB-Z.010	Edge of Jozini Pan	Bushveld-Savannah	Rocky slopes
LGB-Z.011	Ubombo Mountains	Bushveld-Savannah	Rocky slopes
LGB-Z.012	Hlakanipha	Bushveld-Savannah	Rocky slopes
LGB-Z.013	Road Emshopi-Kwamalibala	Bushveld-Savannah	Rocky slopes -Thornveld
LGB-Z.015	Makhane	Bushveld-Savannah	Thickets
LGB-Z.016	Zamimpilo	Bushveld-Savannah	Thickets
LGB-Z.020A	Nkwambosi loc.170 base	Bushveld Savannah	Woodland -Thornveld
LGB-Z.020B	Nkwambosi loc.170 top	Bushveld-Savannah	Thickets
LGB-Z.022	N. side Quoto Pan	Bushveld-Savannah	Thickets

when it comes to map the plant life. If emphasis is made on growth form of plants regardless of their identity, one comes to the definition of biomes. According to the map of Rutherford and Westfall (1986), which has been updated since by Low and Rebelo (1996) and Rutherford (1997), Savannah is the main biome of the MC. Forests of limited extension are also recognized. The classification of vegetation can also be based on total geographic range of selected taxa, regardless of their growth form. The result is the subdivision of the world into phytogeographic regions (phytocoria), each with its own species complement. Several different classifications have been proposed for southern Africa. According to Takhajan (1986), the MC is part of the Uzambara-Zululand floristic region, a part of the Paleotropical Floristic Kingdom. Nevertheless, the non-hierarchical phytogeographic system of White (1983, 1993) has been preferred by most authors for southern Africa. White (1983) treated the MC as a Transition Zone in the Tongaland-Pondoland regional Mosaic. Later modifications by Van Wyk (1994, 1996) have resulted in the establishment of Maputaland as a centre of endemism. According to Van Wyk and Smith (2001), the MC is characterized by a total number of about 2500 species/infraspecific taxa, 9.2% of which are endemics/near-endemics (about 230 taxa).

It also should be kept in mind that the classification of vegetation is scale-related. As explained above biomes of South Africa were mapped at a relatively small scale. At larger scales, the broad vegetation units represented by the biomes can be differentiated into smaller units. Acocks (1953) applied this approach to South Africa, Lesotho and Swaziland. He classified the vegetation into 70 main "veld types" and a further 75 variations based on agronomic potential. It should be noted that for this purpose only the presence/absence and frequency of particular species are considered regardless of the total distribution range of the taxa (as in phytocoria). A simplified system, derived from Acock's work, and inspired by the classification in ecozone and habitats used by Grant and Thomas (1998), has been adopted herein.

4. The localities investigated and their vegetation

Because our geological field work was carried out in the northwestern corner of the Maputaland Center (Map 1, page 5), the localities investigated are located in two main areas. The first and larger one is limited to the west by the Swaziland border, to the north by the Mozambican border and to the east and south by Pongola River. It includes the Ndumo Nature Reserve and the southern edge of the Pongolapoort. Others are centred on the Mkuze National Reserve and its immediate surroundings, including the Ubombo mountain range south of Jozini. Even if none of the species observed is threatened at the scale of South Africa, I consider it wiser not to publish the precise coordinates of the localities investigated. Nevertheless, I

Fig. 4 *Aloe marlothii* typical morphotype. LGB-Z.007.
Rocky volcanic slopes 3km N. Otobotini Store.

Fig. 5. *Aloe marlothii* (*spectabilis* morphotype). LGB-Z.022.
Acacia thickets on silts. N. side Quoto Pan.

am prepared to send them on request to any person involved in the study of aloes. *Aloe* species were observed at a total of 16 different localities shown on Map. 1 and are listed in Table 1, page 6.

As already mentioned above, the vegetation of Maputaland is complex and exceptionally diverse. Moll (1978, 1980) identified and described at least 15 major vegetation types in the South African part of the ecoregion and similar studies were carried out in southern Mozambique by Myre (1964).

The vegetation types we explored included Sand Forest, open woodland and bushveld-savannah habitats. Each contains its own species composition and several of the vegetation types possess a significant level of species endemism. The most notable of these different types is outlined below.

The vegetation on the slopes and foothills of the Lebombo Range is highly variable depending on topography, substratum, soil depth and drainage. It tends to be an open or closed tree community (bushveld-savannah), with the amount of grass cover dependent on soil depth. When present, trees may reach 10 m and include *Acacia nigrescens* Oliv. (Knob Thorn), *Acacia burkei* Benth. (Black Monkey Thorn) and *Combretum apiculatum* Sond. (Red Bushwillow).

In areas with shallow soils, single-stemmed aloes and tree *Euphorbia* (*E. tirucalli* L., *E. tetragona* Haw., *E. ingens* E. Mey. and *E. triangularis* Dest.) can be very common. Very steep and stony slopes tend to support a dry woody community including *Olea africana* Mill. (Wild Olive) and *Combretum* spp. In transformed areas (burned and/or overgrazed), the open tree communities develop into thickets most often dominated by *Acacia gerrardii* Benth. (Red Thorn Acacia), *Euclea divinorum* Hiern (Magic Guarri), *Dichrostachys cinerea* (L.) Wright Arn. (Sickle Bush), *Tarchonanthus camphoratus* L. (Camphor Bush) and *Hyperanthus amoensis* (Sims) Bridson (Spiny Gardenia).

The Sand Forest is particularly interesting and unique (Moll, 1980; Van Wyk 1994; Kirkwood & Midgley, 1999). Occurring primarily on inland paleo-dunes, Sand Forest is species rich, with a high number of woody endemics. *Cleistanthus schlechteri* (Pax) Hutch. and *Newtonia hildebrandtii* (Watke) Torre (Lebombo Wattle) consistently dominate the canopy, although the under storey trees *Hymenocardia ulmoides* Oliv., *Psydrax obovata* (Eckl. & Zeyh.) Bridson, *Croton pseudopulchellus* Pax and *Drypetes arguta* (Muell. Arg.) Hutch. are characteristic. Species endemic to this forest type include *Hyperacanthus microphyllus* (K. Schumm.) Bridson and *Combretum mkuzense* Carr & Retief.

The Sand Forest tends to occur as patches surrounded by open savannah with woody species such as *Terminalia sericea* Burch. ex DC. (Silver Cluster-leaf), *Strychnos madagascariensis* Poir. (Black Monkey Orange), *S. spinosa* Lam. (Green Monkey Orange), *Acacia burkei* (Black Monkey Thorn) and *Combretum molle* (Velvet Bushwillow). The common grass genera in the savannah are *Aristida, Digitaria, Themeda, Urochloa, Pogonrhria,* and *Perotis* (Moll, 1980). In the area of the Mosi drainage system (Ndumo Game Reserve and Tembe Elephant Park) open to close woodlands exist which are similar to the savannahs of the Sand Forest matrix. In addition to the trees listed for Sand Forest savannahs, *Albizia adianthifolia* (Schumach.) W.F. Wright (Flat-crown), *Dialium schlechteri* Harms (Zulu Podberry), *Afzelia quanzensis* Welw. (Pod Mahogany, an excellent source of timber) and *Hyphaene coriacea* Gaetn. (Lala Palm) are common. *Acacia robusta* Burch. (Ankle Thorn) and *Spirostachys africana* (Sond.) Talbot tend to occur in low-lying areas. The composition of the grass layer is also similar to that of the Sand Forest matrix.

5. The *Aloe* species and their distribution

The aim of this paper is not to give an exhaustive overview of the species of *Aloe* of the MC. The most common species have already been described and illustrated by Pooley (1995, 1996). A working list of the *Aloe* that occur in the MC was compiled from the literature before the field trip and is given as an addendum at the end of this paper. As a matter of fact, some species are fairly rare and I was only able to investigate some of them. Unless otherwise mentioned, the systematic nomenclature retained herein is directly derived from Glen & Hardy (2000).

Nevertheless, one of the most striking features of the succulent flora of the MC is the high diversity of the Aloaceae compared to other succulent plant families. Among Crassulaceae, the genus *Kalanchoe* is fairly well represented. Euphorbiaceae and Asclepiadaceae are also quite diverse and occur in a wide range of habitats. As a result of their bright flowers and large size, compared to other succulents with the exception of *Euphorbia*, most *Aloe* species are easy to spot in the vegetation of Northern KwaZulu-Natal.

At the species level, *Aloe marlothii* spp. *marlothii* Berger was the most common species observed on our field trip. It occurs at all localities except the grassland at LGB-Z.001 and the dense *Acacia* thickets at LGB-Z.009A and LGB-Z.020B. Two different forms occur in the populations. The typical *A. marlothii* is characterised by its single much branched flowering head with up to 40 racemes held horizontally (Fig. 4, page 7). In contrast, the forms formerly distinguished as *Aloe spectabilis* Reynolds show a single to multibranched inflorescence with erect or sub-erect racemes (Fig. 5, poage 7). The two forms are impossible to distinguish if not in flower. According to Pooley (1997) they merge in Swaziland and eastern Mpumalanga and as outlined by Viljoen & van Wyk (1996) their leaf chemistry is identical. Since then these two species names have been regarded as synonyms by most authors (Van Wyk & Smith, 1996; Glen & Hardy, 2000).

Nevertheless the respective distribution of the "*spectabilis*" and "*marlothii*" morphotypes seems to be strongly linked to environments and substratum. The typical *Aloe marlothii* predominates on volcanic rocky slopes (LGB-Z.003A, 006, 007, 008, 011 and 012, Fig.

Fig. 6. *Aloe marlothii* LGB. Z.013. Rocky slopes - Thornveld along dirt road Emshopi-Kwamalibala.

Fig. 7. *Aloe spicata.* LGB-Z.003B.
Edge of Sand Forest, Mantuna Camp, Mkhuze Nature Reserve

Fig. 8 *Aloe rupestris.* LGN Z.020A.
Thomveld at Nkwambosi loc. 170 base.

4) while the "*spectabilis*" morphology grows on silts at the edge of *Acacia* thickets (LGB-Z.015, 016, 020A and 022, Fig. 3). Open thornveld populations are dominated by the typical form but some "*spectabilis*" morphotypes may occur (LGB-Z.013, Fig. 6, page 9). My observation suggest that lumping of *A. spectabilis* and *A. marlothii* in a single species may overshadow this environmental preferences and that the two taxa may rather be treated as different subspecies in the future. It should also be noted that except for some dubious plants at loc LGB-Z.022, I did not observe *Aloe marlothii* spp. *orientalis* Glen & D. S. Hardy.

In contrast to the above mentioned former species, *Aloe spicata* L. seems to be mainly restricted to rocky outcrops in dry areas of the bushveld. Spot occurrence of the species has been observed on steep cliffs of the Ubombo mountain range along the Mkuze-Jozini Road (LGB-Z.011). A single blooming plant was found close to the camp headquarters at loc LGB-Z.003B (Fig. 7, page 9). It is most probably a cultivated specimen. Nevertheless, occurrence of the species in the close-by southern edge of the Ubombo mountain range cannot be ruled out. *A. spicata*, a very attractive plant whose leaves are green in moist conditions, turns to almost entirely red in hot and dry spots. Adult plants may reach a height of 2 meters and can be solitary or multi-stemmed. The inflorescences are dense, with 1-5 stems, 300-400 x 40-50 mm, with a distinct yellow colour. Outside South Africa, the species is also known in Swaziland and Mozambique.

Another fairly uncommon species in the MC is *Aloe chabaudii* Schönland. The species is known to grow in dense groups of many individuals in low-lying area. This feature was observed at the edge of the Sand Forest at locality LGB-Z.003A (fig. 9, opposite) where a fairly large population occurs. When we first visited the locality (08.16.2002), the flowering period was almost over. The rosettes had the typical pinkish red colour of dry conditions. Some unidentified maculate *Aloe* and *Euphorbia ingens* are the only other succulents observed at this locality. Even if *A. chabaudii* is not very common in the MC, it should be noted that it shows the largest geographic range of all species treated herein. Outside KwaZulu-Natal, its distribution includes the Limpopo Province of South Africa and Swaziland, but it also extends to parts of Tanzania, Zambia, Malawi, Mozambique, Zimbabwe and the Democratic Republic of the Congo.

Aloe rupestris Baker was also observed at a single locality (LGB-Z.020A). It is fairly common and the main population grows between sandstone concretions on a rocky slope. The largest individuals were observed at the top of a cliff (Fig. 10, opposite) and a limited number of plants were in full bloom when we visited the locality from August the 20th to the 25th (Fig. 8, page 9). The vegetation type is a thornveld with dominant *Acacia nigrescens*, *Euclea racemosa* Murray and shrubby *Hibiscus calyphyllus* Cav. The succulent flora also includes *Huernia zebrina* N.E. Br., *Senecio barbertonicus* Klatt, *Sansevieria guineensis* Willd. (= *S. hyacinthoides* Hort. ex. Stud.), *Euphorbia tirucalli* L. and *E. grandicornis* Goebel. Toward the top of the slope, the Thornveld makes place for disturbed grassland and *Acacia* thickets (LGB-Z.020B).

Maculate aloes (Section *Pictae sensu* Glen & Hardy, 2000) were observed at all but one locality (LGB-Z.022). As already outlined by many authors, distinction among the different species could be very difficult when the plants are not in flower. Three different taxa are known to grow sympatrically in the area studied (*Aloe umfoloziensis* Reynolds, *A. parvibracteata* Schönland and *A. greenii* Baker) and two other species (*Aloe greatheadii* Schönland var. *davyana* (Schönland) Glen & Hardy and *A. dewetii* Reynolds) were reported from close-by areas (Reynolds, 1986, Van Wyk & Smith, 1996 and Glen & Smith 2000). It should be noted that in agreement with Van Wyk & Smith (1996, p. 226), I consider that *A. umfoloziensis* is distinct from *A. maculata* All. [= *A. saponaria* (Aiton) Haw.].

The flowering season for *A. greenii* is March-April and the flowers are dark pinkish. Flowering time for *A. parvibracteata* and *A. umfoloziensis* is different. Both flower in July-August and have orange to bright red flowers. All maculate Aloes I saw were either in flower or about to bloom. I believe, therefore, that *A. parvibracteata* and *A. umfoloziensis* are the only two species that occur at the locality visited. The purple form with few spots of *A. umfoloziensis* was found at locality LGB-Z.020B in *Acacia* thicket (Fig. 11). The orange flower form was abundant at locality LGB-Z.009A (Fig. 12). Most plants were suckering freely, had bright red flowers and were forming large groups. What I regard as the typical form of *A. umfoloziensis* was found in numbers at locality LGB-Z.001 (Fig. 13). I believe that similar forms also occur in the Otobotini area (LGB-Z.007 and LGB-Z.008), but I did not have enough time to have a close look at the population. *A. umfoloziensis* can be distinguished from *A. parvibracteata* by its round-topped racemes. When growing together *A. umfoloziensis* and *A. parvibracteata* hybridize freely (Reynolds, 1986, p. 223-224). I am very sure that I saw some of these hybrids, but again, due to lack of time, I could not study them in detail. It should be noted that sap test is useless to distinguish the two species as in both case the leaf sap dries purplish (Reynolds, 1986).

6. What's next (if more to come)?

I am aware that the field data presented in the above paragraphs is preliminary. Two problems prevented me from a more detailed work: lack of experience with South Africa flora and lack of time (as usual). Since last August I have benefited from the help of many experts and I have been able to bring together quite a large library on the subject. Hopefully I shall be able to visit northern KwaZulu-Natal again latter this year. There are at least two problems I wish to investigate more thoroughly.

1. Are *A. marlothii* and *A. spectabilis* clearly distinct in terms of environment as my preliminary observations suggests?
2. What is the morphological variation among the various species of maculate *Aloe* in northern KwaZulu-Natal?

Fig. 9. *Aloe chabaudii* LGB Z.038. Edge of Sand Forest, Mantuna Camp, Mkhuze Nature Reserve.

Fig. 10. *Aloe rupestris*. Tall adult specimen. LGB-Z.020A. Thornveld at Nikwambosi loc. 170 base.

Fig. 11.
Aloe parvibracteata..
Purple leaf form.
LGB-Z.020B.
Acacia thickets at
Nkwambosi
Loc 170 top.

Fig. 12 bottom left.
Aloe parvibracteata.
with orange flowers.
LGB- Z.009A.
Acacia thickets at
Mfongozi.
Loc. 168 base.

Fig. 13 bottom right.
Aloe umfoloziensis.
LGB. Z.001A.
Grassland at Mzinene
Sisal Factory.

I therefore plan to extend my observations to more localities in the Lebombo and Ubombo mountains and also to investigate new areas to the South. Another objective is also to see more species with special reference to the grass aloes.

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Addendum
An annotated checklist of Aloe species for KwaZulu-Natal

***Aloe aristata* Haw.** In KwaZulu-Natal, this stemless *Aloe* with tuberculate leaves occurs mainly in the northern Drakensberg. Throughout its geographic distribution it occupies a wide range of habitats from sandy soil of dry karoo areas to the rich soil of riverine grassland in Lesotho. This species is now considered as a natural hybrid between *Haworthia* and *Aloe* (Gideon F. Smith, personal communication, June 2003).

***Aloe arborescens* Mill.** This widely distributed and much branched species occupies a wide range of environments bordering on the sea to the Drakensberg in KwaZulu-Natal. It seems to favour pockets of rich soil on rocky outcrops.

***Aloe barberiae* T. Dyer**. This is the tallest species of *Aloe* in southern Africa and the tallest specimens occur in the Lebombo foothills near the KwaZulu-Natal-Mozambique border. It grows in dry forest. The synonymy of this species includes *Aloe bainesii* T. Dyer (Glen & hardy, 2000, p. 143-144).

***Aloe chabaudii* Schönland.** Northern KwaZulu-Natal is the southernmost occurrence of this species that usually grow on granitic domes farther north, but seems to be able to occupy any type of shallow soil pockets.

Aloe cooperi* subsp. *cooperi Baker. This grass *Aloe* occurs throughout KwaZulu-Natal towards Mpumalanga and Swaziland. It is the only species which often occurs in marshy places.

Aloe cooperi* subsp. *pulchra Glen & Hardy. The subspecies is known from a limited number of localities in Swaziland and central to north KwaZulu-Natal. Differing from the subsp. *cooperi*, it occurs in grasslands at the edge of thorny forest.

***Aloe dewetii* Reynolds**. A very large maculate aloe that grows in the grassland of the middle veld from northern KwaZulu-Natal (Mkuze River Valley) to the Mpumalanga and Swaziland borders.

***Aloe nominally* Reynolds**. Much branched grass aloe that occurs in Swaziland and western KwaZulu-Natal where it grows between rocks in grassland.

***Aloe ecklonis* Salm-Dyck**: An almost stemless grass aloe that occurs on very heavy soils, which pack hard on drying. *Aloe kraussii* Baker, *Aloe boylei* Baker and *Aloe hlangapies* Groenew. are considered as synonyms by Glen & Hardy (2000, p. 19), but distinct species by Van Wyk & Smith (1996, p. 252 & 264). In KwaZulu-Natal, *A. hlangapies* is only known from the Vryheid area (Reynolds, 1986, p. 138).

***Aloe ferox* Mill.:** As understood by Glen & Hardy (2000, p. 133-134), the species also includes *Aloe candelabrum* Berger in its synonymy. It grows in vast number in the Midlands and southern part of KwaZulu-Natal on rocky hillsides and grasslands. Environmental differences between the "*ferox*" and "*candelabrum*" morphotypes, similar to those observed between "*marlothii*" and "*spectabilis*" should be investigated in detail (Gideon F. Smith, personal communication, June 2003).

***Aloe gerstneri* Reynolds**. The species occurs in rocky grassland in northern KwaZulu-Natal (south of Vryheid). It withstands rather cold winters and reasonably high rainfall.

***Aloe greatheadii* Schönland var. *davyana* (Schönland) Glen & Hardy**. In KwaZulu-Natal, the main populations of this maculate aloe are known from the foothills of the Drakensberg. Most recently it was also reported from the Pietermaritzburg District (Smith & Crouch, 2001).

***Aloe greenii* Baker**. Another maculate *Aloe* endemic to KwaZulu-Natal where it grows often in deep shade in dry thorny woodland. Records from the Eastern Cape are very doubtful (Glen & Hardy, 2000, p. 58-59).

Aloe inconspicua **Plowes**. A rare small grass *Aloe* endemic to the thornveld and open woodland of central KwaZulu-Natal.

Aloe kniphofioides **Baker**. A grass *Aloe* that occurs mainly in Swaziland, but is also known from southern and northern KwaZulu-Natal. *Aloe marshalii* J.M. Wood & M.S. Evans from Glencoe (KZN) is a synonym.

Aloe linearifolia **A. Berger**. Stemless grass *Aloe* whose largest populations occurs in south and central KwaZulu-Natal.

Aloe maculata **All.** As herein understood *A. maculata* includes *Aloe saponaria* as a synonym, but *A. umfoloziensis* is considered as a distinct species (see discussion in Van Wyk & Smith, 1996, p. 226). In KwaZulu-Natal the species usually grows in grassland from sea level to high altitude in the Drakensberg (1800m at Giant's Castle).

Aloe marlothii **subsp. *marlothii* Berger**. If including *Aloe spectabilis* Reynolds, the species occupies a wide variety of habitats. The typical form predominantly occupies rocky hills and slopes on the highveld (see above for details).

Aloe marlothii **subsp. *orientalis* Glen & Hardy**. The type is from Mtunzini District in KwaZulu-Natal but most voucher specimens are from adjacent Swaziland and Mozambique. Unlike subsp. *marlothii*, it can grow on beach sands and favours sandier soils at lower altitude than the typical subspecies. A hybrid origin and therefore a distinct status cannot be excluded (Gideon F. Smith, personal communication, June 2002).

Aloe micracantha **Haw.** A grass *Aloe* that mainly occurs in the Eastern Cape. A single population has been reported from southern KwaZulu-Natal by Glen & Hardy (2000, p. 20). The species grows in well-drained, dry, sandy or stony places.

Aloe minima **Baker**. Another grass *Aloe* that grows in grassland on fairly heavy soils in Central Natal. Aloe *parviflora* Baker is now considered to be a synonym.

Aloe modesta **Reynolds**. A single population has been reported in northern KwaZulu-Natal (Glen & hardy, 2000, p. 11). As with most other grass aloe it occurs in grassland and grows on rather heavy soil.

Aloe mudenensis **Reynolds**. This maculate aloe occurs in valley bushveld on sandy loam and is able to survive in overgrazed areas. The main populations are to be found in south central KwaZulu-Natal (Muden, Mooi River and Tugela Valley).

Aloe myriacantha **(Haw.) Roem. & Schult.** This is a widespread grass aloe that grows among rocks in grassland throughout KwaZulu-Natal.

Aloe parvibracteata **Schönland**. A widespread maculate aloe whose typical habitat is the hot thorny lowveld and thorny woodland. In KwaZulu-Natal the species is very common in the Lebombo Mountains and surrounding lowlands.

Aloe pluridens **Haw.** In KwaZulu-Natal, this close ally to *A. arborescens*, is mainly found on the southern coast (Pondoland to Durban). A single record from the northern coast would probably need to be better documented.

Aloe pratensis **Baker**. This *Aloe* belongs to the Section *Rhodacanthae*. It occurs mainly among rocks in montane grassland in some of the coldest parts of Drakensberg in KwaZulu-Natal.

Aloe prinslooi **Verdoon & Hardy**. A recently discovered maculate *Aloe* endemic to the dense grass under storey of open woodlands in the Midlands of KwaZulu-Natal. It can easily be distinguished from other species by its almost white flowers.

Aloe pruinosa **Reynolds**. This maculate *Aloe* is also endemic to the Midlands (Pietermaritzburg area) of KwaZulu-Natal. It occurs mainly on heavy loam under the shade of *Acacia* woodland in high summer rainfall areas.

Aloe reitzii **Reynolds var. *vernalis* Hardy**. Apparently found in a single small isolated area in Northern KwaZulu-Natal (Vryheid District). *Aloe gerstneri* Reynolds which belongs to the same Section and looks almost the same is found just further south, also in a small area. There could be an argument that these two species are just varieties of the same species.

Aloe rupestris **Baker**. In northern KwaZulu-Natal, the species occurs in thornveld, sometimes in dense bush on rocky outcrops. *Aloe rupestris* is most likely the inland counterpart of the coastal *Aloe trashkii* and Eastern Cape *Aloe africana* Mill. (Gideon F. Smith, personal communication, June 2003).

Aloe saundersiae **(Reynolds) Reynolds**: a grass *Aloe* found in few localities of central KwaZulu-Natal.

Aloe spicata **L. f**. As herein understood, the species concept also includes *Aloe sessiliflora* Pole Evans as a synonym. In KwaZulu-Natal, it occurs on a wide variety of soils in the lowveld and adjacent areas of the costal plain.

Aloe suffulta **Reynolds**. This species grows in thick bush and thorny scrub in northern Natal towards Swaziland and Mozambique. It prefers sandy soils with loose humus in very hot places. Despite being spotted, *A. suffulta* is considered to be a close ally of *A. chabaudii* and is therefore placed in Section *Chabaudia* by Glen & hardy (2000, p. 89-90).

Aloe suprafoliata **Pole Evans.** Usually occurs in rock cracks or near sheer cliffs, in montane grassland or in places were the soil is absent or too shallow to support other vegetation. In northern KwaZulu-Natal the species is mainly documented from the Ngome Mountain and Ubombo district.

Aloe tenuior **Haw.** The limited populations of this predominantly Eastern Cape species are known from southern and northern KwaZulu-Natal. It usually occurs in open country on sandy soil.

Aloe thraskii **Baker**. Endemic to KwaZulu-Natal, this is one of the few aloes to occur on beach sand dunes close to the see.

Aloe umfoloziensis **Reynolds**. This species is typical of savannah-like vegetation on river valleys of north-eastern KwaZulu-Natal.

Aloe vanbalenii **Pillans**. This distinctive stemless and suckering plant of Section *Arborescentes* grows on flat rocks with minimal amount of soil in the KwaZulu-Natal Thornveld.

Aloe vryheidensis **Groenew.** Originally considered to be

A new *Haworthia* from the Jansenville area

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In 2000 I wrote an article for a British journal to introduce some new haworthias, but, because of unlucky circumstances within the board of the society, publication was kept waiting for far too long. Finally, I decided to publish the article in 2002 in the new journal Alsterworthia International.

In that article I introduced 18 new taxa. Subsequently, all of them have been described validly except one, *H. jansenvillensis* n.n., some of them under new names by other authors, see Breuer (2003). There are two reasons why I have waited till now to publish *Haworthia jansenvillensis*:

1. Bayer (2002) described, among others, *H. decipiens* var. *virella*, which includes *H. jansenvillensis* n.n. That means his new taxon includes all decipiens-like plants from Klipplaat over Jansenville to the Pearston area as well as plants from the Steytlerville area to Darlington Dam area. Plants from the Steytlerville area I named as *H. tretyrensis*. Plants from Darlington Dam area are also different from *H. jansenvillensis* and *H. tretyrensis*.

2. Hayashi recognised several more elements from this group of plants and described them all under own names. In his first attempt Hayashi (2003) recognised 4 taxa: H. jansenvillensis n.n. I. Breuer, H. virella (M.B. Bayer) M. Hayashi, H. kemari M. Hayashi and H. azurea M. Hayashi. In his second attempt Hayashi (2003) recognised a further 15 taxa.

It is easy to recognise that Bayer and Hayashi follow completely different methods in their classification work and my way seems to be a third one. As my system is different from the two others I need, consequently, to establish the name *H. jansenvillensis* as part of my system.

***Haworthia jansenvillensis* I. Breuer spec. nov.**

Latin Diagnosis:

A *Haworthia decipiens* differt rosulae latae et foliis latioribus, planioribus, intervenis translucidis.

Description:

Growing solitary. Rosette: acaulescent, 80-150 mm Ø. Leaves: very numerous, 60-120, fleshy, erect incurved, 25-40 mm long, 10-16 mm broad, 3-4 mm thick. Leaf colour: yellowish green. Margins: translucent, teethed. Teeth: translucent to whitish, 3-5 per cm, 2-4 mm long. Back with 1-2 toothed keels. Teeth: translucent to whitish, 3-5 per cm, 2-4 mm long. Apical parts: with 3-4 parallel translucent lines. Leaf-tip: with end-bristle, 7-20 mm long.

Origin:

CAPE [3224DC]: North of Jansenville, Ingo Breuer (= IB6996).

Type:

IB6996. Holo in [GRA].

Remarks:

The main distribution area of this taxon may be more to the north of Jansenville. I chose this name because I recorded several observations in habitat here, and north of Jansenville I observed very spectacular specimens. This new taxon is a very large growing plant, I observed specimens 15-20 cm Ø at the Jansenville locality, not offsetting, with very strong bristles at the margins and keel (1-2). The leaves are also very broad as in *decipiens* (maybe this is the reason why Bayer put it there) and flat. It develops a very strong and long inflorescence with many flowers.

Literature:

Bayer, 2002: New Names and Combinations in Haworthia; Haworthiad 16: 62-71
Breuer, 2002: Introduction for some proposed Haworthia taxa; Alsterworthia International 2(3)2-7
Breuer, 2003: Beschreibung einiger neuer Haworthia-Taxa; Avonia 21: 45-64
Hayashi, 2003: H. decipiens and its relatives; Haworthia Study No.9:14-12
Hayashi, 2003: “H. decipiens” Complex; Haworthia Study No.10:6-14.

Figures 14 opposite above and 15 below.
Haworthia jansenvillensis I Breuer

Two different clones

(Continued from page 15)

endemic to the Vryheid area in northern KwaZulu-Natal (Reynolds, 1986, p. 429), the range of the species now extends to the Mpumalanga and Limpopo Province since *Aloe dolomitica* Groenew. is considered as a synonym (Van Wyk & Smith, 1996, p. 70; Glen & Hardy, 2000, p. 117). It usually occurs on alkaline soils derived from shales or dolomite.

Fig. 14

Fig. 15


Fig. 16


Fig. 17


Fig. 18


Fig. 19

International Succulent Introductions for 2004

Harry Mays, ISI Honorary EU Representative.

The plants distributed by the non-profit ISI are generally new or rare and well documented. They are not propagated on a commercial scale for repetitive selling, consequently they are available from the ISI only in the year of the offering. Each annual offering is different. Because of the excessively burdensome export permit process in the USA, the ISI no longer exports CITES listed plants. Relative to the genera covered by this journal, the 2004 offering contains four haworthias, one xGasteraloe and 8 aloes. Haworthias and gasterias are not CITES listed, aloes are. Visitors to the Huntington may of course obtain CITES listed plants to bring back personally to their county of residence. You may also be able to obtain them via a USA friend. The usual requirements of export and import permits and phytosanitary certificates will apply. As some ISI CITES listed plants may well find their way to countries outside the USA, the aloes are also listed below.

Haworthia truncata Schoen., fig. 16., is well known and is commonly found in Haworthia enthusiasts' collections. It is easy to propagate from offsets, leaves, roots and by seed, consequently it is quite readily available, but rarely with any reliable documentation. The plants on offer by the ISI, ISI 2004-28, have been grown from seed produced by the controlled pollination of plants collected Oct 8, 1998, by Dunne & Parisi (# 98–09), at Dysseldorp, W Cape, S Africa. This is another opportunity to obtain plants with known wild genes rather than plants which have been produced in cultivation over many generations without any available history. In 1963 plants from near the type locality, Oudtshoorn, were offered (ISI 425) and in 1996 plants from private property at Vanwykskraal (ISI 1996-42).

Haworthia truncata has been used extensively in producing excellent hybrid cultivars. The opportunity to obtain new habitat derived stock may be welcomed by anyone wishing to use the species in a hybridisation programme. Who knows what unexpressed genes they contain, which could be released by crossing?

Haworthia reticulata* var. *hurlingii (Poelln.). Bayer, fig. 17, is a small, vigorously offsetting variety forming delightful, mounding, emerald green colonies. In the clone on offer, **ISI 2004–27,** the plump leaves are speckled with pale spots that tend to line up along the length of the leaves. The clone from which this offering has been propagated by vegetative means was collected Aug 8, 1990, by J. Berdach (11285), 15 km SE of Robertson, W Cape, S Africa where it grew well-shaded under bushes.

Fig. 16. *Haworthia truncata* Oudtshoorn, SA

Fig. 17. *Haworthia reticulata* var. *hurlingii*

Fig. 18. *Haworthia maxima*

Fig. 19. *Haworthia magnifica* var. *splendens*

Haworthia maxima (Haworth) Duval. Fig. 18. This favourite species has long been known as *H. margaritifera*, referring to the prominent, white, pearl-like tubercles studding the leaves. More recently, the synonym *H. pumila* has been in fashion. The latter epithet, meaning dwarf, is an ironic one for the largest species of the genus producing rosettes to 15 cm or more across. This is a historical artifact from the time when haworthias were included in the genus *Aloe*. Relative to most members of that genus, *H. pumila* is indeed a dwarf. It is now realised that the earliest name (1809) unambiguously applied to this species is the most appropriate one: *H. maxima*. In addition to the hard, beautifully tuberculate surface, this population can also blush a lovely reddish hue when grown in bright light with a lean watering regime. The plants on offer, **ISI 2004–26**, have been produced from seed from the controlled pollination of M. B. Bayer s.n., collected at Lemoenpoort, W Cape, S Africa.

Haworthia magnifica* var. *splendens Venter & Hammer. Fig. 19. The two superlative epithets of this variety give a hint of the subtle beauty of this taxon. Within a highly variable species, this variety alone is enough to keep aficionados of the genus engaged for generations, selecting from a seemingly vast potential of degrees of glossiness and translucence, lineate patterns and papillae: hence, the difficulty of separating some forms from related species such as *H. magnifica* and even *H. pygmaea.* **ISI 2004–25** have been grown from seed from the controlled pollination of plants from the "ambiguous" population (showing characteristics of *H. magnifica* var. *major* and *H. emelyae*) referred to by S. Hammer in the original description in the C&SJ USA, 70 (4): 180–182 (1998), which were collected Nov 3, 1994, by Ed Dunne and Mary Parisi (# 94–01), E. of Albertinia, Western Cape, S. Africa.

Both Ingo Breuer and Dr Hayashi regard this taxon as a distinct species. Dr Hayashi published it as *Haworthia esterhuizenii* in Haworthia Study No. 7 page 14 (2002) after "The real re-discoverer of *Haworthia splendens* at field." Breuer had put forward the provisional name *Haworthia albertinensis* n.n which should now be discarded as *H. esterhuizenii* is validly published. Dr Hayashi points out that *Haworthia esterhuizenii* is characterised by spring flowering and spots on the back of the leaves. *Splendens* blooms only in the spring and has no pellucid spots on the back of the leaves.

×*Gasteraloe* 'Goliath', figs. 20 & 21, is an *Aloe variegata* hybrid. *Aloe variegata* hybrids are popular for their compact, beautifully mottled foliage, showy

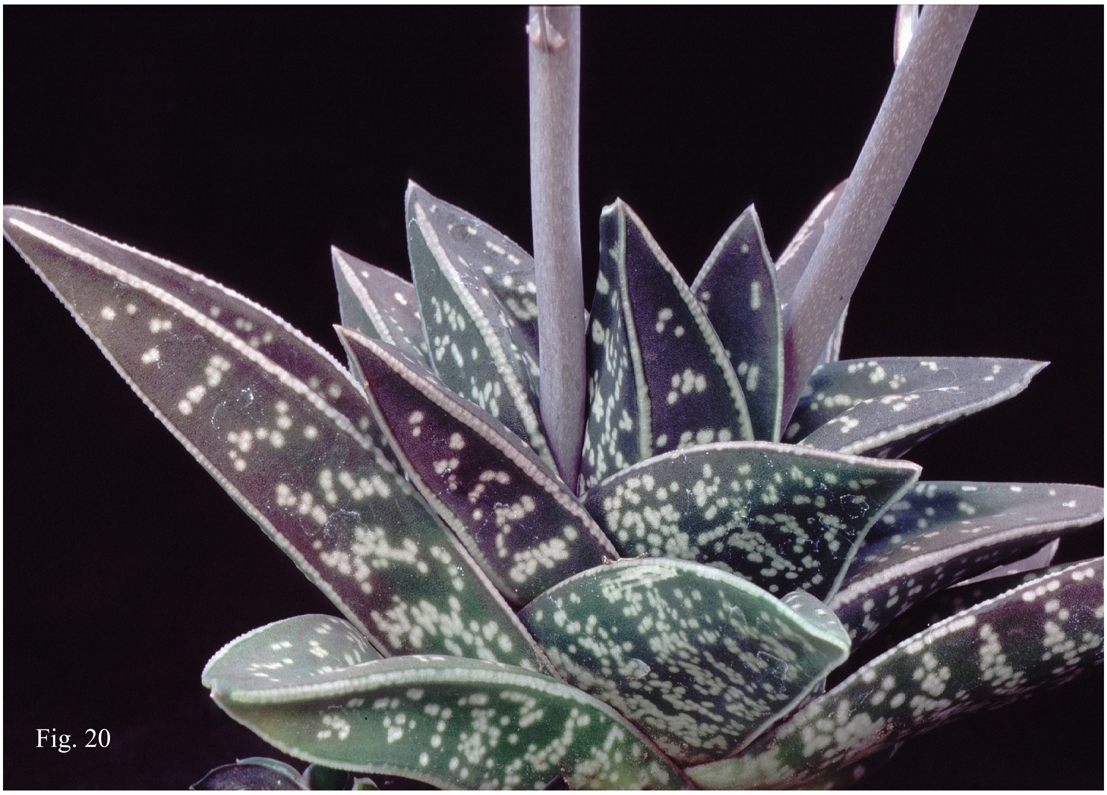

Fig. 20

Fig. 21

Fig. 22

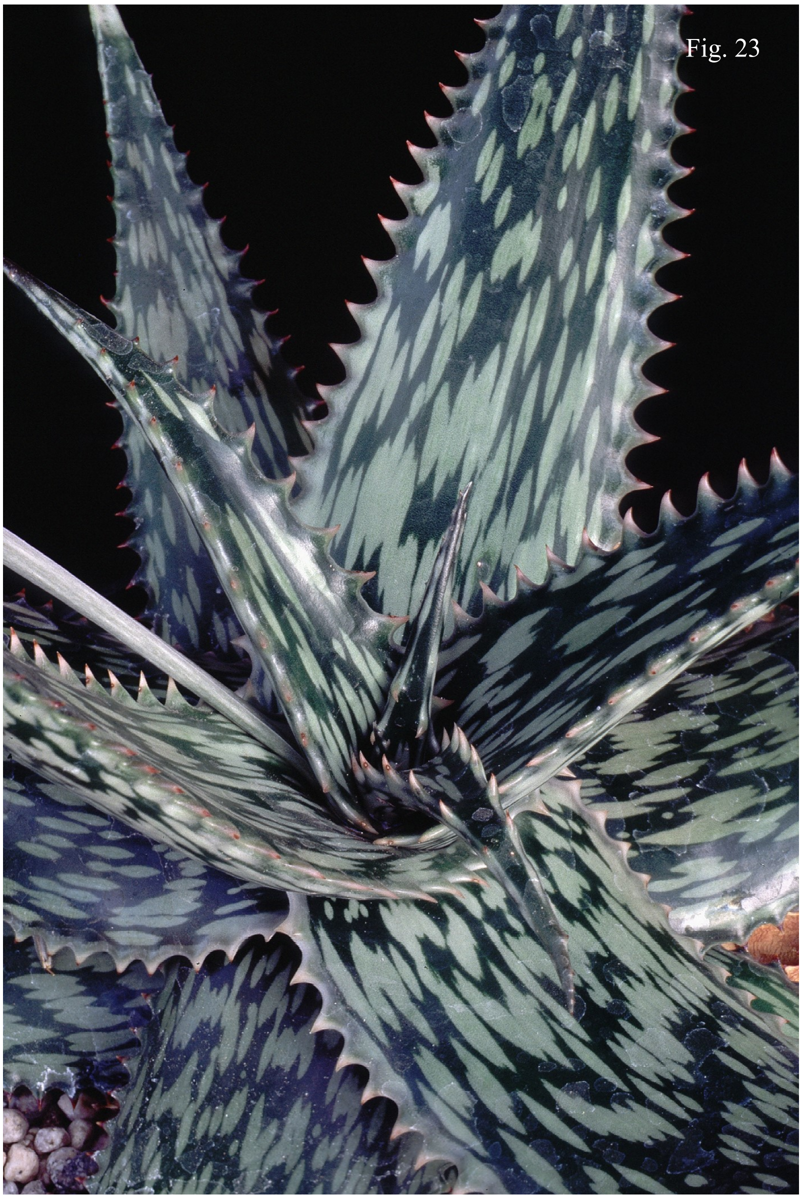

Fig. 23

inflorescences and, in California at least, garden durability. ×*Gasteraloe* 'Goliath' displays all of these features and regularly elicits requests for plants from visitors to the Huntington Botanical Garden nursery. It is slow-growing. The *Gasteria* parent is uncertain, but several features indicate that it may be *G. brachyphylla*: compact, slow growth; dark green, purple-blushed, smooth-surfaced leaves with few tubercles on the margins; floriferous, unbranched inflorescences bearing colourful red-orange, green-tipped flowers. The buds are distinctive with slender, ascending tips reminiscent of the early stages of the fruiting structures of *Pilobolus*, the Zygomycetous fungus familiar to all biology students who have seen it in the lab and which has even inspired the eponymous modern dance troupe. It might well have inspired a name for this cultivar, but the more obvious appearance of its stocky, muscular-looking rosettes won out. **ISI 2004–22** are rooted offsets of a plant received in Dec., 1977, from J. Catlin who obtained the clone from Alwin Berger's son Fritz when he lived in Pasadena.

Aloe delphinensis Rauh. Fig. 22. This species displays a crane-like combination of leggy awkwardness and grace. In the original description, Rauh related it to *A. bakeri*, but it differs from that dwarf Madagascan species in its lax rosettes of unspotted, strappy leaves. The flowers are similar, however, though more slender and colourful. These are borne in few-flowered racemes that are often subcapitate by virtue of abortion of the apex. The name is a Latinization of Ft. Dauphin, the French name for Tolanaro. **ISI 2004–10** are rooted cutting of the type clone, a plant from A. Razafindratsira collected near Tolanaro, Madagascar where it grows with *Pachypodium cactipes* and *Aloe schomeri* on rocks.

Aloe hemmingii Reyn. & Bally, fig. 23 and 24 page 22, is native to Somalia and, therefore, not quite hardy. The flowers are a subdued dusky pinkish. Reynolds relates it to the similar but smaller *A. jucunda.* After many years of cultivation, the Huntington managed to catch two plants in simultaneous flower to produce the seed for this offering **ISI 2004–11**. One parent is ISI 793 (distributed in 1973), Lavranos 6816, collected in the Daloldo Hills, N of Hargeisa, Somalia. The other is a propagation of the type collection made by P. R. O. Bally (B7146), June 1, 1949, near Sheikh Pass, some 300 km. West.

***Aloe krapohliana* var. *dumoulinii*,** figs. 25 & 27 page 22, is one of the choicest dwarf South African aloes. It superficially resembles a small, plump *A. brevifolia.* The flowers are much showier, a richer orange and large for the size of the plant. They are arranged in dense racemes, several of which may be produced from a single mature rosette, though these tend to clump compared with the typical variety. These features recommend it as a parent for hybridisation to produce small landscape or rockery subjects. Work is under way toward this end, but in the meantime the Huntington has produced true seedlings, **ISI 2004–12,** through the controlled pollination of plants from several sources. The variety is known from only a couple of populations in the N Cape Prov. of S Africa on white quartzite hills SE of Alexander Bay.

Fig. 20. ×*Gasteraloe* 'Goliath'

Fig. 21 ×*Gasteraloe* 'Goliath' inflorescence.

Fig. 22. *Aloe delphinensis*

Fig. 23. *Aloe hemmingii*

***Aloe* 'Rooikappie'** Giddy. Fig. 26 page 22. One of the best results of aloe hybridisation so far is realised in A. 'Rooikappie' (pronounced roy-copy, Afrikaans for Little Red Riding Hood). If one were to choose the characteristics of the ideal landscape aloe, many of them would be represented in this plant. First, its 30 cm rosettes are large enough to make an impact in a small landscape (or can be massed for larger-scale displays) yet are small enough to be easily handled and transplanted as needed. Second, its foliage is attractively spotted and is not prone to the tip dieback or other blemishes that seem to plague many other medium-sized aloes. Third, and perhaps most importantly, it is a repeat bloomer, deriving it floriferousness from *A. sinkatana*, its only known (probably open-pollinated) parent. There seems to be no month of the year when some flowers are not present on *A.* 'Rooikappie' in the Huntington nursery or garden. South African horticulturist Cynthia Giddy offered a number of Aloe hybrids and cultivars in the catalogues of her Umlaas Aloe Nursery—this one as early as 1974. **ISI 2004–13** plants have been tissue-cultured by Rancho Soledad Nursery, but there are some offsets from Huntington stock.

Aloe vaotsanda Decary. This imposing Madagascan aloe not only sounds like *A. vaombe* but also shares several features with it as well. Both form large solitary rosettes up to 1.5 m across of recurved leaves atop a trunk reaching 4 m or more. In fact, the two are so similar as to be indistinguishable when not in flower. In flower they are quite distinctive, the racemes of *A. vaombe* being erect, those of *A. vaotsanda* with an unusual drooping aspect in bud, then oblique at anthesis (an excellent photo may be found on page 239 of the Nov–Dec 2003 issue of the C&SJ USA). The ranges of the two species overlap, further complicating identification of non-flowering plants in the field. **ISI 2004–14** have been produced from seeds collected Nov 20, 2001, by Röösli & Hoffmann (2401), at Lac Anony, Amboasary, Madagascar.

Aloe vogtsii **Reynolds.** Figs. 28-30 page 24, This species belongs to the saponaria group of aloes, and its leaves bear prominent H-shaped spots elongated along and connected by lineations. The inflorescences are open panicles with spreading, bicolored buds that open into pendent, bright red-orange flowers usually with paler tips of white or yellow. **ISI 2004–15** plants have been produced from seed from controlled pollination of plants grown from seed collected May 30, 1995, by C.

Fig. 24

Fig. 25

Fig. 26

Fig. 27

Craib s.n. at the summit of the Soutpansberg, ca. 20 km W of Mountain Inn, N Prov., S. Africa.

***Aloe* 'Wunderkind'** Kemble. Fig. 31 page 24. Brian Kemble, curator at the Ruth Bancroft Garden in Walnut Creek, CA and noted aloe and agave expert, selected this vigorous cultivar published here for the first time. It is derived from a choice form of *A. deltoideodonta* (distributed as var. nov. by Abbey Garden). An attempted cross with pollen of *A. somaliensis* var. *marmorata* was unsuccessful, but the plant apparently selfed. 'Wunderkind' is characterised by beautiful, white -spotted, tuberculate leaves with marginal teeth joined into elongate, molar-like groupings as in the parent, but it offsets prolifically while the parent is largely solitary. In addition, its showy upright inflorescences of pinkish flowers make it a worthy addition to the range of dwarf container specimens or rockery subjects. **ISI 2004–16** are rooted offsets.

The full ISI list and order form may be viewed at, and down loaded from, www.cactusmall.com/isi/index.html A copy may also be obtained from Harry Mays as a file attached to e-mail. If you require a printed copy please send an addressed envelope stamped for the UK, or with two International Reply Coupons for other countries to Harry Mays. **For the European Union, orders for non-CITES plants can be accepted to the end of March 2005 with the final shipment of plants to customers in the spring, but early ordering is advised.**

Fig. 24 *Aloe hemmingii* inflorescence

Fig. 25. *Aloe krapohliana* var. *dumoulinii* in habitat.

Fig. 26. *Aloe* 'Rooikappie'

Fig. 27. *Aloe krapohliana* var. *dumoulinii* in cultivation.

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Alsterworthia International Special Issue No. 1. June 2002. Breuer. ISBN 0 9534004 2 5.
Haworthia Study No. 7. Page 14 and No. 8 page 7. Dr. Hayashi.

Photo credits - John Trager.


Fig. 28

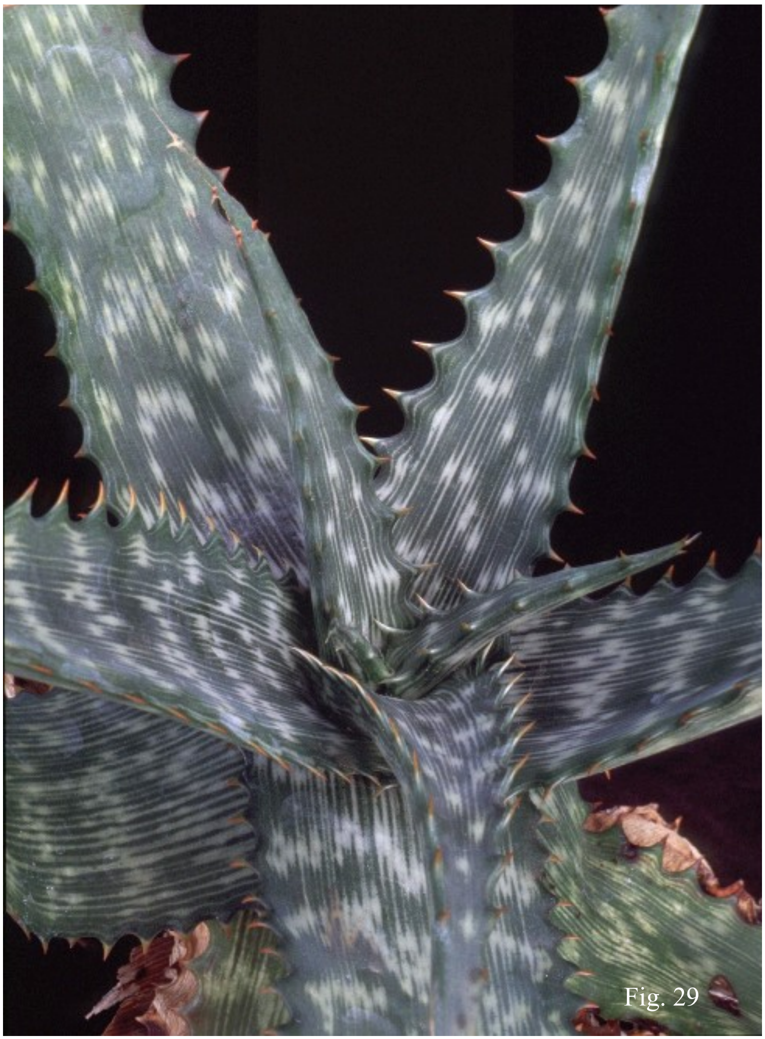
Fig. 29


Fig. 30


Fig. 31

Philosophical views about the intergradation of species.

Norbert Göbl
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Since Linne (or as he called himself in the latinised form Linnaeus) introduced binary nomenclature, people have tried packaging everything they could find into boxes. Frequently they used bigger boxes with more compartments, similar to those devised for Russian wood-dolls. Unfortunately nature does not always play the same game as that perceived by humans. From time to time, we detect poulations of plants which do not really fit into our box-system. Think on the good old *Echinopsis*. The genus primary attributes are essentially nocturnal flowers, big and mostly white (to pale pink). The flowers of Lobivia, however, are diurnal, small in comparison with Echinopsis, have a much shorter tube, and have bright colours. So far so good, but then we detected plants which did not fit into either box, though they were obviously related to both genera. What did we do? We readily created a new intermediate box and called it Pseudolobivia. Today, lumping-tendencies are prominent (Lobivia and Pseudolobiviea have been incorporated into Echinopsis), but at species and variety levels it is still not an easy task to differentiate.

All life forms are in constant change, adapting to the surrounding environment, which exerts selective pressure on all living things, though some may have reached a permanent advanced state of adaptation, leaving little room for further adjustment. This constant acclimatisation to changing environmental conditions generally progresses so slowly that we cannot recognise it for what it is. Did you ever ask yourself why grey Lithops are growing between grey pebbles and red ones between reddish ones? Now the answer is partly contained in the question. In addition to the native wildlife in South Africa and Namibia, where the Lithops are native, countless sheep and goats graze and browse. They, together with the native wildlife, exercise an enormously selective pressure on the populations of native plants. In a district where the average precipitation is between 20 and 200mm, the vegetation is not really close, so animals cannot be too selective, they eat almost everything they can detect. Every plant which is reproducing generation after generation by cross-pollination varies in its descendants (one more than another perhaps). The ones which accidentally mimic their surroundings in the best way, have the best chance of surviving, because they will be overlooked and eaten less frequently. Therefore they can reproduce more efficiently than those plants which do not fit into the landscape so well, are more obvious and are eaten. So the camouflaged ones can bequest their genes and the adaptive process, which started many, many generations before, will continue.

Natural processes, which change environmental conditions, that is those which are not induced by humans, generally proceed slowly and adaptation to them also proceeds slowly. Ridges will be lifted, river valleys will be washed out and edges of mountains will slide down and upset the distribution of plants. At the foot of the mountain environmental conditions different from those at the top will prevail and particularly so for high mountains. If a disturbed population of plants is to survive it will have to adapt to the new environmental conditions. It is clear that adaptation can be achieved much faster in animals like flies, which quickly reach maturity, allowing each generation to breed when only several weeks old, than in animals or plants which take a much long time to reach maturity and then breed only once a year or less frequently (i.e. elephants). When adaptive changes reach a certain degree (over more or less generations), a new variety may be produced or, if the changes are pronounced, a new species.

Fig. 28. *Aloe vogtsii.* Leaves little lineation.

Fig. 29. *Aloe vogtsii*. Leaves lineate

Fig. 30. *Aloe vogtsii* inflorescence.

Fig. 31 *Aloe* 'Wunderkind'

But now back to the assignment of species and the box-system. How far must a population develop away from a species to be called a new species or variety? A species is a (healthy) population of plants, which must endure over its area of distribution by handing down its attributes, which differentiate it from other species of the same genus, to successive progeny. Within this population certain genetic changes will take place because of cross-pollination by pollinators or wind. If the population is physically divided by means of changing environmental conditions, but those conditions remain about the same for all the plants, there will be little if any pressure for change for adaptation. But if, say, one half of the population is subjected to changing conditions the first step to the evolution of a new species (or variety) has been taken. The only question now is how does the development of the new population differ from the original. How do we treat genetic differences which are invisible? They produce no visible differences to the eye. How do we treat the production of more acridity, which results in protection from predation, when optically there is no difference between this population and the original? The original population may be higher up the mountain where there are no selective pressures for acridity to develop because the animals cannot reach it. Are we still dealing with the same homogenous species or is there now a new variety, differentiated by "30 percent more acridity in its leaves"? How do we deal with an on-the-top-of-the-mountain population which can tolerate 20 percent more cold (through means of cold-selection) than the population in the valley? In the valley the temperature may be degrees higher than on the mountain and individuals which would die on top because of cold may survive in the valley. Some generations later the average coldness tolerance will be much lower in the valley than on the mountain. Do we now have a new variety differentiated by 20% more cold tolerance at the top of the mountain? When does a species cease to be the same species? Let us imagine both segregated populations will develop in the same direction but at different rates. The faster one may develop a characteristic which will differentiate it from the slower one. Since both populations are developing in the same direction, the day will come when the slower population

(Continued on page 27)

Comments on some Haworthia Hybrids

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Fig. 32. *Haworthia truncata* x *H. maughanii* hybrid, clone 1 by Jan Gray, now deceased, of New Zealand. This is a magnificent, chunky plant about 70mm diameter. So far it has not produced any offsets for me.

Fig. 33 *H. truncata* x *H. maughanii*, hybrid clone 2 by Jan Gray. Main head is similar to clone 1 but two of its offsets have thrown back to the *H. truncata* form. A 3rd offset is of rosette form but the leaves are a little slightly elongated at the tip.

Fig. 34. *H. maughanii* hybrid I brought to New Zealand from Australia in 1965. The other parent is not known. Unlike many *H. maughanii* hybrids, it produces an abundance of offsets and makes a nice clump, but if not kept growing steadily and evenly it is prone to developing splits in some leaf tips.

Fig. 35. *H. maughanii* same as fig. 34, but as a single plant, close up in profile showing the leaf shape.

Fig. 1. Front cover photograph. “Cat’s Tongue Haworthia”. A plant I picked up in Australia in 1960s, origin not known. The leaves feel like they are made of very coarse sand paper. It is a pig to grow well. If kept too dry it shrivels up and turns red. If it is kept lush and its leaves get wet it develops patches of fungus as brown spots on outer leaves, black at the base of the leaves. Grown well it is a beautiful plant, but it needs great care. I must try various fungicides on it.

(Continued from page 25)

will also develop this characteristic, but it does not posses it in the meantime. In the meantime you see two different populations. Are we dealing now with two different species (or varieties) where the only real distinction is that of time? Classification is much easier if the second population is developing not only at a different rate but also in different direction. Then it is only a matter of time before a new species is borne.

Do we encounter two different species where two populations overlap and, at the area where they meet, produce intermediate forms as a result of hybridisation (This is only possible if they are compatible and the flowering times overlap too.)? But how do we deal with "species" when apparently different populations have intergrading plants between them? If, because of the intergrading plants, you cannot differ A from B and B from C etc but A is completely different from Z, where does species A end and where does species B etc begin? Or are we dealing only with one visibly variable species? What would be the result if the third group in the populations linked by intermediate forms died out because it was destroyed by fire or killed by intensifying cold at the top of a ridge? Would we now have one species on one side of the mountain/fire area and another on the other side?

A definite conclusion how two population of plants are related is surely possible, but only with the help of genetics and a mathematical multi-part diagram. I think these two aids are not used enough to clarify the complicated relationship of different taxa. The terms species, subspecies, variety, subvariety and the seldom-used forma are not, as used at present, clarifying the complicated relationship of taxa. If evolution ran in a straight line, in one direction, and points along the line represented grades of taxa, how accurate would these points be for the establishment of the founding population for a taxon? And up to now we have still not considered that evolution is going in so many different directions, where even retrogressions are possible. How should we depict the measure of relationship of two populations of plants? Which system should we need? In no case should we create new terms. This would only complete the confusion. There would not be enough names to represent the different kinds of relation found in the wild. Up to now we have (the system depending on the person who is using it) only changed the amplitude of the taxonomic grid into which we classify plants, but one thing we have not done until now is to recognise that nature impertinently does not grow according our grid.

An Aloe Garden

by
Andy de Wet, South Africa.

Fig. 36. Back cover photograph.

Mainly Aloe 'Charles' with *Aloe marlothii* ♀ x *Aloe vogtsii* ♂ in flower in the foreground.