

20. Glass House 2, HAWORTHIA.



Glass house GH2 has our Genus *Haworthia* collection. There are five large benches and two large raised beds for this collection. The plants of this genus from South Africa have been named in honour of one of the leading English authority on Succulent plants of the early nineteenth century, ADRIAN HARDY HAWORTH (1768-1823). The plants of this genus, which can be easily propagated locally, are quite popular with most of the growers of succulent plants. These small succulent perennial plants form small or large clusters. Leaves of most of the species are attractively marked in different shapes and forms and in fact are the main source of

attraction. They are mostly arranged in small rosettes and small columns. The flowers are small, borne on paniced racemes and are not very attractive to look at. Culturally this genus does not present any problems. A porous humus soil mix, with freely draining texture is all that is needed. In this climate they tend to go dormant during extreme cold or dry hot months. During dormancy one should be careful about watering and the soil should not be allowed to go completely dry. When the plants are in growth they should be watered freely. During the rainy season or winter one should be careful that the rosette is not soaked with water for any length of time. Extreme humidity during rainy season can render a beautiful plant a rotten mush in no time. I have observed that to achieve the most natural effect of these beautiful plants you need to cultivate them in a position with preferably filtered sunlight and an open airy location. I am growing a lot of Bonsai plants. Two years ago, I started growing different species of *Haworthias* in the Bonsai trays. The plants were planted on the borders near the rim of the trays. All Bonsais are grown in full sun. *Haworthias* in these trays get the same cultural treatment as the Bonsai. Bonsai plants are never allowed to go bone dry and get regular fertilisation. The *Haworthias* in these trays get full sunlight and plenty of free circulation of air. Even the most delicate species of *Haworthias* have thrived in these locations bringing out their natural beauty. *Haworthias* belonging to *Retusae* Section show

wonderful compact growth with prominent marking on the terminal flat truncated areas of the leaves. During very hot summer days when the outdoor temperature hovers around 40° to 44° C, the margins of the leaves of the leaves of some of the species may get scorched. *Haworthia setata*, looks like a bunch of dried grass ball after a very hot dry spell. But as soon as the rains start these plants come back into their natural beauty rapidly. The photographs of some of these species, as growing in Bonsai trays, bear testimony to these charms.



The Bonsai Collection: most trays have at least one Haworthia in them.

The Genus *Haworthia* comes from South Africa where it has a wide distribution. Most of the species are found in the coastal belt, South Western Cape region, the Little Karoo, the Great Karoo, the Eastern Cape Province and there a few species in Natal and Zululand, Orange Free State and Transvaal Highveld. Most of the work on Genus *Haworthia* in recent years has been done by M. B. BAYER and CHARLES L. SCOTT. In this genus a large number of species show a great variation in shape and forms and that has led to the description of a plethora of species and varieties in the past. These two authors have cleared most of the confusion but still do not agree on some species. In this garden C. L. SCOTT's work, which is very comprehensive, has been adopted for the classification of the collection. C. L. SCOTT has divided this genus into 17 Sections taking into account their root system, leaf character and floral anatomy. Moreover in his monumental work "*The Genus Haworthia*" SCOTT has given the field conditions of their habitats in detail. *Haworthia* collection in this garden is very comprehensive covering over 70% of the species described by SCOTT plus a large number of forms and varieties received under different names.

C.L. SCOTT has described the various species of *Haworthias* under 17 Sections and has given detailed characters of plants in each section. As

Genus *Haworthia* is very popular with succulent growers, a brief description of each Section and some of the commonly grown species follows.



Section I *Fusiformis* BARKER is characterised by fusiform roots and long linear leaves. This collection has the Type species, *Haworthia blackburniae* BARKER and a hybrid of *Haworthia graminifolia* x *Haworthia retusa*

Section II *Scabrae* BERGER has ovate lanceolate or nearly triangular leaves with rough minutely tuberculate surface. The garden collection has *Haworthia scabra*, *Haworthia scabra* v. *morrisiae*, *Haworthia sordida* and

its variety *Haworthia sordida* v. *lavrani*, a beautiful species. The garden is looking for *Haworthia granulata* and *Haworthia starkiana*.

Section III *Marginatae* UTTEWAAL. This garden has a beautiful specimen of *Haworthia marginata*. The plant leaves are ovate lanceolate, rigid with a distinct whitish margin.

Section IV *Margaritiferae* Haw. The plants of this section are well known in practically all succulent collections. The plants are stem-less or very short-stemmed. Leaves are spirally arranged, ovate, triangular tuberculate on both upper and lower surface. Practically every collection has large plants of *Haworthia pumila* (sometimes labelled as *Haworthia papillosa*) and *Haworthia margaritifera*. JOHN PILBEAM in his book on *Haworthias* has described various forms of *Haworthia attenuata* and quite naturally most of these forms have come to this collection as well. *Haworthia attenuata* and its forms develop into good specimens provided they are in a bright airy position, and are not allowed to dry when in growth. Unfortunately we lost our only plant of *Haworthia fasciata* last year due to negligence of our staff. This collection has all the species of this section except *Haworthia tuberculata* and *Haworthia smitii*.

Section V *Trifariae* Haw. Plants in this section have elongated stem with leaves in three somewhat twisted longitudinal series. Leaves are more

or less triangular, thick with rough dark green surface. The two species in this Section, *Haworthia viscosa* and *Haworthia nigra*, form beautiful groups but to achieve this target they need regular care and good positioning of plants as far as light and air circulation are concerned. Both these species are quiet variable and this garden has three clones of *Haworthia viscosa* and five clones or forms of *Haworthia nigra*.



Section VI *Limifoliae* G. G. SMITH. Plants of this section are to be found in every succulent collection. Plants offset profusely through stolons. They form stem-less rosettes with leaves which are ovate lanceolate, pointed, and slightly curved with transverse rows of small tubercles.

Haworthia limifolia belonging to this group is a variable species. The garden has plants coming as var. *gigantea*, var. *major*, var. *schuldtiana*, and var. *striata*. Under similar growing conditions, except for var. *striata*, all are more or less similar. A plant grown in a large pan with regular feeding and removal of stolons will become a very big gigantic specimen. *Haworthia limifolia* var. *striata* on the other hand is an attractive variety with white tubercles on the leaves forming beautiful striations. The plant of this variety in our collection has white striations but not so prominent as witnessed by me in some collections in U.S.A.

Haworthia limifolia var. *ubombensis* is also a distinct plant. *Haworthia koelmaniorum* is much sought after beauty with purplish brown leaves. It does not easily offset and has to be propagated from leaf cuttings, and is likely to remain rare in collections.

Section VII *Tessellatae* (SALM-DYCK) BAKER. The plants of this section have rigid triangular pointed leaves, end surfaces transparent with longitudinal lines. This section is well represented here with *Haworthia venosa*, *Haworthia tessellata*, *Haworthia wooleyi*, as well as a couple of other species allied to this section.

Section VIII *Coarctatae* BERGER. Plants belonging to this section are very popular with growers. Stems elongated, densely spirally leafy,

leaves erect somewhat curved upwards, smooth or tuberculate on both or only the lower surface. *Haworthia reinwardtii* is a variable species and is much sought after. The garden has *Haworthia reinwardtii* var. *reinwardtii*, *Haworthia reinwardtii* var. *kaffirdriftensis*, *Haworthia reinwardtii* var. *chalumensis* and *Haworthia reinwardtii* var. *zebrina*. We are still looking for *Haworthia reinwardtii* var. *brevicula* and *Haworthia reinwardtii* var. *bellula*. Being a variable species there are several clones which have come under different names. The other members of this section are very well represented here along with their numerous variants.



Section IX *Loratae* (SALM-DYCK) BERGER. Plants in this section are freely off-setting rosettes which make small groups in reasonably short period. Leaves are narrow, triangular-lanceolate, and rather firm often with small teeth. *Haworthia chloracantha* and its variety *liliputana* as well as *Haworthia angustifolia* are quite popular. These two species offset freely and form good groups, filling a fifteen centimetre pot in two to three years. Other species in this section do not offset so freely. *Haworthia pulchella* is another species sought after by growers but has the tendency to rot during winter and the monsoons. Except for *Haworthia wittebergensis* and *Haworthia serrata* all other species are in growth here.

Section X *Haworthia*. This section has some very interesting species. The plants form stem-less rosettes, with uniformly coloured leaves more or less transparent towards the apex, narrow with a short terminal bristle, margins and keel with small bristles or teeth. The species belonging to this section are very attractive, and some showing marked degree of variability in plants received from different sources and locations. *Haworthia arachnoidea* and its various forms received under different names show marked variations. This garden has field collected clones of *Haworthia setata* sent by JOHN LAVRANOS. These plants stand out from those supplied by other renowned sources. *Haworthia translucens* plants from

four sources also show variability. *Haworthia bolusii* is another attractive species. We have been unable to show its variety *Haworthia bolusii* var. *areana*. A plant received as *Haworthia bolusii* var *blackbeardana* comes nearest to var. *areana*. Plants received as *Haworthia decipiens* have been reduced into a synonym of *Haworthia pearsonii* by C. L. SCOTT. Plants of *Haworthia decipiens* from two sources are more robust than *Haworthia pearsonii* with prominent marginal teeth. All the other species listed in this section except *Haworthia pehlemannii* are present in this collection.

Section XI *Denticulatae* BAKER. Plants in this section form stemless rosettes with oblanceolate tapering leaves, soft, margins smooth or dentate, gradually colourless-transparent towards the tip. *Haworthia mucronata*, the type species is beautiful. The most notable and praiseworthy species in this section is *Haworthia lockwoodii*. The garden has a field collected plant of this species sent by JOHN LAVRANOS. This plant requires a lot of care during cultivation. During dormancy the terminal part of leaves dry up and curl on the top of the centre. We find it difficult to propagate. The only successful method has been to section the plant into four equal quadrants through its short stem. This is a delicate operation. The sectioned quadrant wound is allowed to callous and subsequently the quadrant is set to root. Each quadrant generally develops one or two small

plantlets, which are separated only when they too are firmly rooted. *Haworthia altilinea* is the other attractive species from this section in our collection. The other members of this section are still elusive.

Section XII *Obtuosatae* BERGER. The plants of this section are most popular with succulent growers. The plants are stem-less and freely suckering. Leaves are numerous broadly ovate and shortly tapering, thick, keeled towards the apex. *Haworthia cymbiformis*, the type species is highly variable and in the past a large number of names have cropped up. Most of these are now invalid according to SCOTT and other *Haworthia* botanists. But for a succulent collector, they are a great attraction. The garden has a large number of these variants. At my residence, I am growing several forms as companion plants in my Bonsai plant trays. Under bright semi shaded positions, these *Haworthia cymbiformis* varieties and forms develop into beautiful compact groups, which easily withstand very hot summers and extremes of winter. One clone of *Haworthia cymbiformis*, in this garden originally from a clone collected by M. B. BAYER forms large rosettes with big succulent leaves. *Haworthia cymbiformis* var. *translucence* is another beauty. Its variegated form *Haworthia plainfolia* fa *variegata* also forms beautiful compact groups.

Section XIII *Muticae* BERGER. The plants form small stem-less rosettes, offsetting slowly from the base. The leaves spirally arranged, upper surface flat near base and somewhat inflated towards the apex which appears recurved, uniformly coloured somewhat transparent towards the apex. Margins with small teeth and a short terminal bristle. *Haworthia reticulata*, its type species is highly variable. In the garden we have five different clones. In this section *Haworthia botesiana*, a freely offsetting species with small rosettes is very attractive. Apart from *Haworthia baylissii*, all other species belonging to this section are present here.



Section XIV *Limpidae* BERGER. Forms freely offsetting stem-less rosettes, leaves spirally arranged, lower part green, upper part transparent, with few longitudinal lines in transparent area *Haworthia cooperi*, its type species is quite variable. The garden has *Haworthia cooperi* var. *maxima*, and *Haworthia cooperi* var. *blackbeardana*. Out of these *Haworthia cooperi* var *maxima* stands out with large swollen slightly incurved transparent leaves. We have quite a large number of plants of this species propagated from leaves. *Haworthia cooperi* itself forms wonderful companion plants in Bonsai plant trays. *Haworthia leightonii* also forms beautiful plants in sunny position, the leaves turning reddish purple during winter. *Haworthia batteniae* belonging to this section is still highly sought after.

Section XV *Planifoliae* BERGER. This section has only one species i.e. *Haworthia aristata*. Plants form stem-less rosettes freely offsetting. Each rosette is about four to nine cm diameter. Leaves are uncoloured, rigid, incurved and firm with an end-awn. Margins and keel have small teeth.

Section XVI *Retusae* Haw. Plants of this section are most popular with succulent growers. Leaves spirally arranged in stem-less rosettes, erect, firm, more or less with minute teeth on margins are truncated recurved,

somewhat transparent with few or several green stripes. End area may be smooth or tuberculate with minute teeth. Most of the species show a wide range of variability resulting in a plethora of names. *Haworthia retusa* (L) DUVAL is the type species. Leaves are in five vertical tiers, truncate end area smooth with eight to ten green lines. Grown in a bright location, the linear markings on the end areas become very prominent. The plants offset freely from the base. This garden has a very comprehensive collection of species and their forms of this section. Most commonly sought species are *Haworthia comptoniana* with beautiful linear, reticulate lines on shiny end area; *Haworthia springbokvlakensis* with glossy end areas; *Haworthia geraldii* forming large groups with beautiful markings on end area; and *Haworthia multileneata* and *Haworthia picta* are always in demand. However, *Haworthia atrofusca* and *Haworthia bruynsii* have still eluded our collection.

Section XVII *Fenestrate* V. POELLN. Plants in this section always pleasantly surprise a new comer to the succulent hobby. Plants are stemless, with leaves distichous or spirally arranged, erect ovate-triangular or ovate-elongate, and horizontally truncate above, the truncate portion transparent, covered with, tiny, transparent tubercles.

Haworthia truncata SCHOUL is the type species. Plants are stemless with leaves distichously arranged. Leaves seven to nine in two exactly opposite rows, abruptly truncate at the tips, 2.3 to 3.5 cm long, 1.5 to 3 cm broad, 5 to 7 mm thick, slightly incurved. Faces of the tips are transparent with tubercles. The plants have thick roots which draw the plants into the soil in natural habitats, and only the truncate ends are visible above the ground. It offsets slowly forming nice groups in cultivation. Plants in cultivation growing under protected conditions do shrink during dormancy but do not pull themselves completely into the soil. This species along with its two varieties---*Haworthia truncata* var. *tenuis* - with thin narrow leaves and *Haworthia truncata* forma *crassa* is very much in demand. In this garden a limited number are propagated every year from leaf cuttings. Nowadays it is commercially propagated by tissue culture due to its tremendous demand.

This specie has also been freely hybridised. JOHNSON'S hybrids with *Haworthia truncata* and *Haworthia retusa* parentage are also popular. *Haworthia maughanii* V. POELLN is the only other species in this section. It forms stem-less plants about five to eight cm in diameter. Leaves about twelve, spirally arranged, firm, semi cylindrical, erect rounded near the end with truncate rounded near the end, with truncate end area. End area

transparent with minute tubercles. Like *Haworthia truncata* this species too is in great demand but unfortunately due to limited propagation from leaf cuttings is always in short supply.

C. L. SCOTT has described *Haworthia mcmurtryi* as an addendum in this book. He considers this species allied to *Haworthia koelmaniorum*. This garden has two seed grown, small plants. Attempts at propagation from leaves have not succeeded so far as it is difficult to sacrifice a truly turgid leaf form a small plant.

Glass House 2, ALOES.



In this same glass house there is also a small collection of Aloes. One small bench and a raised bed are given to this collection. This collection consists of smaller growing Aloes of Africa and Madagascar. Most of these plants are hybrids with unknown parentage.

Amongst the African *Aloes*, *A. jucunda* is most popular with growers as it forms good specimen plant in four to five years. A hybrid, 'Hey Babe' is another beautiful plant. *Aloe jucunda* appears to be one of its parents.

Aloe sladeniana is another species. We face quite a few cultural difficulties with this beautiful species. While some of the potted plants in this collection do very well, others in the same soil and lying next to the robustly growing plant may show no growth. In such cases we have to resort to re-potting to save the plants. There are plants of *Aloe jacksonii* hybrids as well.



Smaller growing species from Madagascar are also there. We lost *Aloe haworthoides* some years ago, but a hybrid with *Aloe haworthoides* as one of its parents is equally attractive and due to its profuse proliferating habit forms good specimen plants within four to five years. *Aloe parvula*, *Aloe*

albiflora, *Aloe descoingsii*, *Aloe rauhii*, and *Aloe bakeri* are other attractive dwarf species from Madagascar. There is an attractive form of *Aloe rauhii* named *Aloe rauhii* ‘Snow Flakes’. *Aloe antandroi* is another attractive dwarf. We are using the bed to grow seedlings of Aloes. It is hard to get seeds of good species of *Aloes*. Whenever we procure such seeds, the seedlings are planted in the bed when they are about a year old. Here they have robust growth and form mature plants much earlier. For our landscaped Aloe plantation we are looking for seeds of “Tree Aloes”.