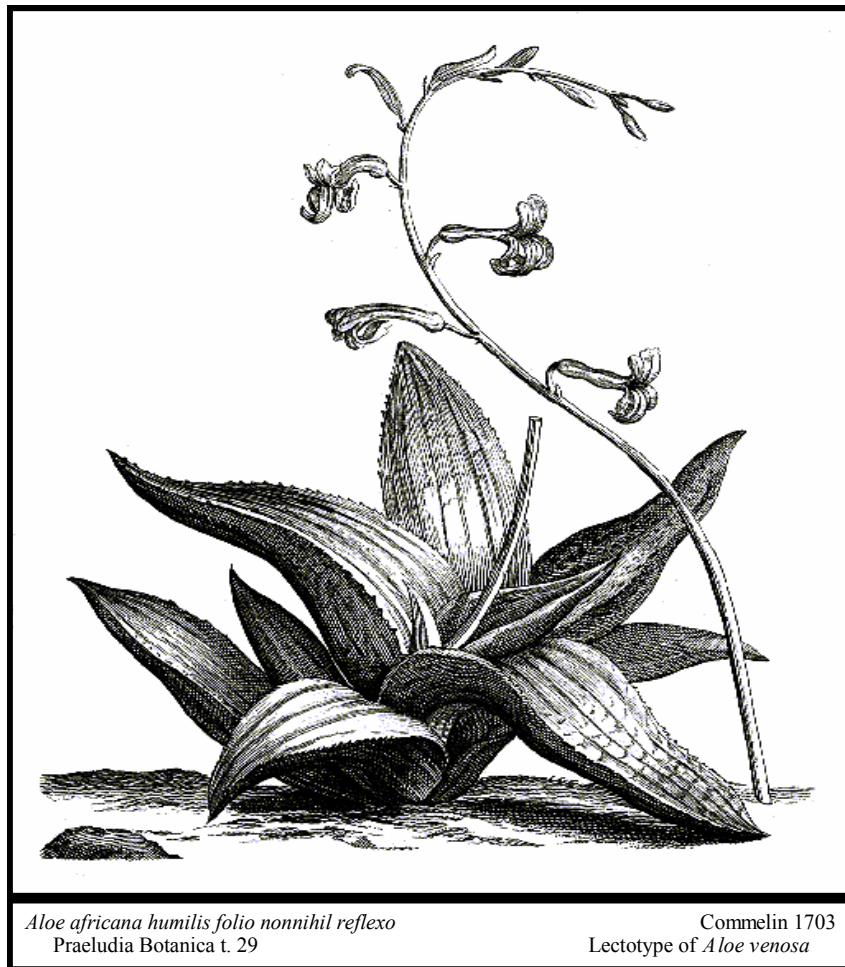


# ALSTERWORTHIA INTERNATIONAL

The  
SUCCULENT ASPHODELACEAE  
journal



Volume 1. Issue 3.

November 2001

ISSN: 1474-4635

# ALSTERWORTHIA INTERNATIONAL

Editor: Harry Mays

Woodsleigh, Moss Lane, St Michaels on Wyre, Preston, PR3 0TY, UK

Tel/Fax: National 01995 679295. International: +44 1995 679295

E-mail: HMays@freenetname.co.uk

## RENEWAL OF SUBSCRIPTIONS FOR 2002

**General.** This issue brings Volume 1 to a close. Volume 2 will commence with the March 2002 issue, which will be sent to all subscribers who have sent in their subscriptions for 2002. We hope that you have found Volume 1 informative and enjoyable and that you will wish to renew promptly.

Alsterworthia International was initiated in March 2001. The first issue was distributed on 29/5/01. From July, all issues have been, and will be, on time (March, July & November).

**Renewal form & methods of payment.** The renewal form for 2002 is enclosed. For those countries with honorary local representatives (Australia, Italy, France and South Africa), the renewal form gives the name and address of the local representative and the renewal subscription in local currency. Please make your cheque payable to your local representative and send it direct to him with the renewal form.

For all other countries, please pay your renewal subscription in British pounds by cheque drawn on a British bank, by International Postal Order, by UK/Scottish bank notes rounded up to the lowest value note (£5 UK, £1.00 Scottish) or by any money transfer system, including Giro, available in your country (for example, International Moneygram Transfer offices are found throughout the USA). **Please ensure that all bank charges are paid at your end so that the amount due is**

**credited to the Alsterworthia International account without any deductions.**

USA dollar & Euro bank notes are also accepted rounded up to the nearest available note.

The cost of operating a credit card payment facility is too high to make it a realistic method of payment and to arrange credit card payments through another retailer would contravene his Merchant Server Agreement, be illegal and provide an enhanced potential for credit card fraud. Regrettably we cannot accept credit card payments.

**Book list.** A book list is enclosed. Books may be ordered on the renewal form in order to keep down bank charges.

**Special offers.** Whilst stocks last, the book on offer for 2002 is *Variegated plants in color* - please see page 13-14. Normal price £40. Offer price £32.00 if ordered and paid for with the 2002 subscription.

There is also a discount of £2.00 on Harry Mak's new CD-Succulent Version 2.0 (2001) - please see page 15.

### Aloe africana humilis folio nonnihil reflexo

Prior to Linnaeus introducing the binomial system, descriptive names were used for plants. The drawing on the front cover was published in 1703 under the descriptive name *Aloe africana humilis folio nonnihil reflexo* (low growing African Aloe, leaf not much reflexed) by Commelin in *Preludia Botanica*.

In 1783 Lamarck described *Aloe venosa*. In 1804 Haworth described *Aloe tricolor*, which Willdenow reclassified as *Apicra tricolor* in 1811.

Haworth reclassified *Aloe venosa* as *Haworthia venosa* in 1821. *Aloe venosa* is, therefore, the basionym (= epithet-bringing synonym) for *H. venosa*, but no type specimen could be found for *A. venosa*. Col. Scott designated the 1703 drawing of *Aloe africana*..... as the lectotype (i.e. the type

based on a drawing, not the original preserved plant) for *Aloe venosa*, as they are considered to be the same species. Thus the 1703 drawing is the lectotype of *H. venosa*.

*Aloe/Apicra tricolor* are generally regarded as coming within the range of the description of *H. venosa* and both names are recorded as synonyms of *H. venosa*, though some authorities just ignore the names.

The precise delimitation of *Haworthia venosa* is still not agreed upon. Published works show that Bayer and Breuer both include *tessellata* as a subspecies of *venosa*, Esterhuizen and Hayashi as a separate species, *Haworthia tessellata*. Current taxonomic work will certainly result in reassessments.

## CONTENTS

Renewal of subscriptions for 2002.....	2	The aesthetic appeal of variegation .....	13-14
Aloe africana humilis folio nonnihil reflexo .....	1, 2	Help – I'm only a beginner! by Richard Harrison .....	14
Noble aloes: a case study of <i>Aloe</i> 'Spiraal' by Gideon F. Smith & Elsie M.A. Steyn.....	3-4	CD-Succulent Version 2.0 (2001) Compiled & published by Harry Chi-King Mak .....	15
A tribute to Charles Leslie Scott 1913-2001 .....	4-5	<i>Aloe haemanthifolia</i> in Baviaanskloof .....	15
Ingo Breuer - a portrait.....	5		
Haworthia correctea (Poelln.) - Notes, observations and comments by J. M. Esterhuizen.....	6-7, 10		
Colour photographs (26) .....	8-9		
In vitro micropropagation of the endangered <i>Aloe haemanthifolia</i> by Robert Wellens.....	10		
Conserving genetic diversity by Harry Mays.....	11, 12		
A challenge from Gordon Rowley .....	12		

### Errata Vol. 1. Issue 2. July 2001.

Page 6 (flower photos) and figs. 14 & 15 page 8. IB2839 is *H. pephlemanniae*, NOT *H. globosiflora*. IB2837 is *H. globosiflora*, NOT *H. pephlemanniae*.

As correctly indicated in the text, figs 16-19 page 9 are *H. viscosa*.

Both plants in figs. 17 & 20 come from Sandvlakte farm, Studis.

# Noble aloes: a case study of *Aloe* ‘Spiraal’

Gideon F. Smith & Elsie M.A. Steyn

Office of the Research Director, National Botanical Institute, Private Bag X101, Pretoria, 0001 South Africa

Photographs page 8 by Gideon Smith

At first, most collectors of aloes are fascinated by the immense morphological variation displayed by the 400-odd taxa included in this genus of magnificent rosulate leaf succulents. Indeed, a large variety of different growth forms, from 20 m-tall trees to miniatures only a few centimetres high, occur in this predominantly Old World genus. So, shortly after starting a hobby of collecting aloes, collectors usually set a goal to obtain as many of the species as possible to satisfy their desire to have a large number of taxa in cultivation. However, one soon learns that many species have very specific cultivation needs and that it is not so easy to keep them thriving in a single location. Only then would some collectors turn to the hybridisation of suitable species to enhance their collections. Most of these hybridisers soon realise that a surprisingly large percentage of their newly created plants hold the additional fascination of being superior to the parental stock in growth form, habit, pest and disease resistance and, most of all, in terms of the impact of their floral displays: the hybrids have brighter colours, longer flowering periods and larger flowers. And usually only now will the average gardener get excited.

One of the pioneers in the field of aloe hybridisation was Mr Arthur (At ) Koeleman (14 February 1915-17 July 1994) of Pretoria, South Africa (Smith & Van Wyk 1996). In this country he virtually single-handedly initiated the hobby of producing superior strains of aloes for the domestic and amenity gardener. This paper reports on one of the hybrids that Oom At (English: Uncle At), as he was affectionately known, produced many years ago, and which has survived in the garden of one of us (GFS).

When Oom At started with this rewarding expansion of his hobby, he was frowned upon as, at best, somewhat eccentric and, at worst, as interfering with nature and its well established natural processes. He had few followers and for many years attempted to convince the purists that the hybrid off-spring were in fact superior to the pure species in many respects. However, in spite of the problems he experienced, he persisted and in the 1970s regularly published descriptions of his new hybrids in *Aloe*, the then fledgling journal of the Succulent Society of South Africa.

Over the years, the senior author obtained a number of his registered, superior aloe cultivars from him. The last one was a plant of *Aloe* ‘Spiraal’. This cultivar was produced from a cross between *Aloe pluridens* Haw. and *Aloe mutabilis* Pillans. The word “spiraal” is the Afrikaans for “spiral” and refers to the twisted, spiral arrangement of the leaves of the plant. This no doubt reflects on a characteristic that the cultivar inherited from *A. pluridens*, the leaves of which tend to be arranged in a

spiral whorl that is almost invariably tilted to one side. This arrangement prevents snout beetles, the curse of aloe growers in South Africa, and nowadays world-wide, from gaining easy access to the centres of the crowns of leaves where they bore into the heart of the crown and lay their eggs, which hatch into destructive larvae.

In general appearance, *Aloe* ‘Spiraal’ very much falls between the two parents. The plants tend to be predominantly single-stemmed, like *A. pluridens*, with only a few robust secondary stems as is generally encountered in *A. mutabilis*. The flowers have an exceptionally “tidy and neat” appearance and are certainly closer to those of *A. pluridens*. The buds and open flowers are a uniform orange-red colour (Figs. 1 & 2 page 8), not showing the bi-coloured floral trait commonly encountered in *A. mutabilis*, in which the flowers turn from red to yellow upon maturity. Somewhat paradoxically, another cultivar, *Aloe* ‘Struik’ (English: shrub), obtained from a cross between *A. arborescens* and *A. pluridens*, both of which usually have monochromatic flowers, has been recorded as having buds and flowers that differ slightly in colour (SAATV/SAABA 1975b). At least one more cross between *A. pluridens* and *A. mutabilis* is worth mentioning, namely *Aloe* ‘Rooi Ivoor’ (English: red ivory). This registered cultivar was produced by hybridising *A. petricola* × *A. arborescens* with *A. pluridens* × *A. mutabilis* (SAATV/SAABA 1975a).

To indicate the colours of the flowers and buds of his cultivars, Oom At referred to the colour charts of Biesalski *et al.* (1957). Since these charts are nowadays not generally available, we have used, as a supplementary standard, the colour charts of the Royal Horticultural Society (RHS CC) for describing the flowers and buds of cultivar Spiraal. The descriptions that Oom At and most creators of hybrids published for their newly registered cultivars are, to say the least, cryptic. For this reason *Aloe* ‘Spiraal’ is here described in full and its flowers illustrated.

*Aloe* ‘Spiraal’ A. Koeleman in SAATV/SAABA in *Aloe* 11: 47, 48 (1973).

**Parentage:** *A. pluridens* × *A. mutabilis*

**Breeder:** A. Koeleman

**Registration number:** C70-1

**Identification number:** S107/S108 **Recorded on:** 11 June 1973

**Description.**—Arborescent to somewhat shrubby, slow-growing, succulent perennial. 1.8–2.0 m tall. *Stem* erect, with few branches produced low down; upper part covered in papery remains of dead leaves. *Roots* terete to slightly linear-obclavate. *Leaves* 50–70, densely rosulate, spirally arranged, curved, lanceolate-attenuate to

ensiform, light dull green, up to 0.6–0.7 m long, 45–60 mm broad at base, spreading to slightly recurved, upper surface flat to slightly convex; lower surface convex; margin sinuate-dentate; teeth deltoid, stout but harmless, white, up to 3 mm long, 5–8 mm apart; curved towards apex, more crowded near base of leaf, more distant towards apex; leaf sap translucent, slowly drying, light pinkish. *Inflorescence* 2-branched with 1 branch weaker developed, 0.7 m high including the racemes. *Peduncles* dark green, 0.2–2.5 m long, with several irregularly spaced, broadly deltoid, light brown, papery, sterile bracts about 12 mm long. *Racemes* unicoloured, conical, 0.20–0.25 m long, 0.10–0.12 m diam. at base, apical buds densely packed to form an attenuate apex. *Fertile bracts* light green with brownish tips, keeled, many-veined, up to 17 mm long, partly obscuring the apical buds. *Flowers* laxly arranged, pendulous, long-pedicelled, trigonous-cylindrical, pale orange-red (*Tropaeolum majus* L. C6:4:1 *sensu* Biesalski *et al.* 1957; RHS CC 33C), 35 mm long, 6 mm in diam. *Perianth* free to base, apices slightly spreading, sub-acute; *outer segments* pale orange, 35 mm long, 5 mm wide, slightly keeled except at apex where keel turns dark green; *inner segments* membranous, translucent white except at keel, 2 mm wider than outer, prominently keeled, keel pale orange turning dark green at apex. *Stamens* exerted 10 mm, the inner lengthening in advance of the outer; filaments yellow-green (*Primula elatior* Jacq. D1:5,5:1,5 *sensu* Biesalski *et al.* 1957; RHS CC 153C), inner whorl filiform, outer whorl flattened; anthers brownish orange before dehiscence, turning brown when dry; pollen grains orange. *Ovary* trigonous-

cylindrical, light green, 7 mm long, 3 mm diam., style at length exerted 10 mm, slender, filiform, greenish yellow, stigma minute with translucent papillae. *Fruit* not seen. *Seed* not seen. *Flowering time* June–July.

#### References

- BIESALSKI, E., MAATSCH, R. & BENARY, F.E. 1957. *Horticultural colour chart for horticulture, agriculture and forestry with colour signs to DIN 6164*. Muster-Schmidt, Göttingen.
- SAATV/SAABA. 1973. Registration of aloe cultivars. Registrasie van aalwynkultivars. Lys van aalwynkultivars Nr. 8. List of aloe cultivars No. 8. [C70-1. *Aloe* cv. Spiraal]. *Aloe* 11(4): 46-49.
- SAATV/SAABA. 1975a. Registrasie van aalwynkultivars. Registration of aloe cultivars. Lys van aalwynkultivars Nr. 16. List of aloe cultivars no. 16. [C104-1. *Aloe* cv. Rooi Ivoor]. *Aloe* 13: 92-94.
- SAATV/SAABA. 1975b. Registrasie van aalwynkultivars. Registration of aloe cultivars. Lys van aalwynkultivars Nr. 17. List of aloe cultivars no. 17. [C106-1. *Aloe* cv. Struik]. *Aloe* 13: 124-126.
- SMITH, G.F. & VAN WYK, A.E. 1996. Arthur Koeleman (1915-1994). *Bothalia* 26: 77-80.

---

## A tribute to Charles Leslie Scott 1913-2001

Essie Esterhuizen

---

Though the genus *Haworthia* is experiencing an exiting period as far as new material, written contributions and taxonomic reasoning is concerned, an era nevertheless came to an end when Col. Scott passed away peacefully in his sleep on February 22<sup>nd</sup> 2001. His outstanding contribution to the genus was the years of research involving numerous articles, descriptions, photographs, herbarium material, personal field knowledge and collectors' information to come up with an extensive taxonomic revision, surely a monument in the history of the genus.

Colonel Scott was born in Oudtshoorn in 1913. For much of his life he served with the South African Police and was the officer commanding the S.A. Police Radio Station at the Headquarters in Pretoria from 1963-1973. He was regarded as the father of radio in the police due to his pioneering work on installing radios in police vehicles.

Much of his spare time was devoted to the study of haworthias. He found his first *Haworthia* in 1945 in the Calitzdorp area. That was the start of an affair, which lasted all his life. Whilst he did a lot of work on the genus, he maintained that there was still a lot to be done and he looked forward to reading about the studies

people undertook and their views right up to the end. Being the gentleman he was, he always found time to share his views and extensive field knowledge unselfishly with others and to give a second opinion. Never did he insist on his view as correct as he always said "You've got a right to your opinion and it is not for me to decide who is right and who is wrong". He explored the field as well as one-man could in a lifetime and was always concerned that localities may become extinct due to over collecting. His views on collecting were as uncomplicated as his views with regard to the genus. They were expressed as "There are enough for everybody, but not enough for the greedy."

In his study of haworthias, Col. Scott travelled widely. He not only carried out a great deal of field research, but, when making periodic visits to the UK and Europe, he took the opportunity to visit some of the older herbaria and libraries to obtain information on the historical aspects of haworthias. He was also fortunate to have met and built up a relationship with nearly all the collectors who did fieldwork between 1925 and 1950, the period when Von Poellnitz and G.G. Smith described approximately 250 plants. This relationship placed him in a position to obtain many of their collecting records,

(Continued on page 5)

## Ingo Breuer - a portrait.

---

Ingo Breuer (photograph page 8) was born on the 22nd June 1955 in a small town in West Germany. He was educated as a Biology teacher for secondary schools, but he is working as an IT-consultant for SAP software. He is married to Maria. They have no children, but they do have four cats, 3 Abyssinians and 1 Maine Coon.

Ingo's interest in growing succulents started 35 years ago, his special interest in growing haworthias in 1983, when he obtained several offsets from the Botanical Garden at Bonn. His private collection of haworthias now contains about 6000 items from about 1700 different recorded localities.

In pursuance of his special interest in haworthias, Ingo has searched out, and made a thorough study of, the relevant literature. By 1988 he completed his library of all *Haworthia* literature, which now contains about 1100 articles and books. He has also made extensive studies of Herbarium records and material, particularly those at the herbarium of the Botanical Museum Berlin-Dahlem, where the older records are to be found and he has brought to light information not located by previous researchers. All this research has provide material for a number of books and articles

In 1998 he published his first book "The World of Haworthias Volume 1", which presents his compilation and detailed analysis of the known *Haworthia* literature, a bibliography and annotated index. No other genus has such a wealth of information available about the literature of the genus in one readily available publication.

In 1999 he published "Notes on *Haworthia*" compiled by Stephen Holloway. It contained all J.R. Brown's articles, which were published over a period of more then 35 years in the *Cactus and Succulent Journal* (US).

In 2000 he published "Haworthia photographs used to typify taxa described by Dr. Karl von Poellnitz". These were photographs of von Poellnitz' plants taken before the plants were preserved, which proved to be fortuitous as virtually all the preserved specimens were destroyed during the second world war. These photographs were

used by Breuer et al to typify the many *Haworthia* taxa which, up till then, had not been typified in accordance with the ICBN.

In 2000 Ingo also published "The World of Haworthias Volume 2" which contained the original description, with English translations as necessary, of 495 *Haworthia* taxa, including the type photographs, published over many decades in many different publications in many languages.

In the last 10 years he has published several articles about haworthias in different journals such as "Taxon", "Kakteen und andere Sukkulente", "Cactus & Co", "Haworthiad", "Alsterworthia International" and "Avonia". For a time he was editor of the last mentioned Journal, "Avonia".

In 1995 he began to visit South Africa to study haworthias in habitat and has made four visits since. Ingo's studies of habitat material have benefited from correspondence with, and the support of, Prof. Gideon Smith, National Botanical Institute of South Africa and David Cumming, Essie Estehuizen and Vincent de Vries, South Africans who regularly study haworthias in habitat. They have, as have several other collectors all over the world, supported Ingo's work with information and material.

His current project is the investigation of the floral characters to be used for a new infrageneric classification and the preparation of a new status concept with the description of several new taxa.

Ingo's time consuming studies of haworthias have already benefited the *Haworthia* enthusiast, with a number of important publications and articles. These contain much interesting and useful information. Certainly, there is more yet to come.

---

(Continued from page 4)

information which he later made available to the public in his publications. He published some 28 papers on haworthias, (which included the description of 12 new species and 2 new varieties) in a variety of journals in European, American and Africa. His major work was his book *The Genus Haworthia, a taxonomic revision* published in 1985, which still has a great deal of relevance to an understanding of the genus. Another important paper was *A Revision of the Genus Haworthia, Section Retusae*, which was published in 1973.

He will be remembered as a well-respected and

recognised authority with a lifetime of passion for the understanding of the genus – a real roll model for the genus.

Col. Scott is succeeded by his wife, Mrs J. (Joey) Scott and their three children, to whom our heartfelt condolences are extended.

# Haworthia correcta Poelln. -Notes, observations and comments

J. M. Esterhuizen. P.O. Box 1454, Secunda, 2302, R.S.A.

E-mail: jmemest@mweb.co.za

Photographs by the author

## Introduction

*Haworthia correcta* has been the topic of discussion for many years, but not much has been written about it. Most authors except Scott, only refer to it when addressing *H. emelyae* or *H. bayeri*. In his article *A Revision of the Genus Haworthia, Section Retusae* in 1973, Scott considers *H. correcta* to be a synonym of *H. willowmorensis*, but in *The Genus Haworthia* he regards *H. picta* (*H. emelyae* sensu Bayer) and *H. correcta* (*H. bayeri* sensu Bayer) as separate species. *H. correcta* is seen as the same plant as the recently described *H. bayeri*, which Bayer recognises as a separate species after he previously regarded it as *H. emelyae*.

This article must be read together with the article *Haworthia emelyae* Poelln. and *Haworthia helmia* Poelln. *What is the real identity of these two contentious species?* *Haworthiad* 14(2)61-69 (April 2000). The full description of *H. correcta* and a few historical notes, on which the reasoning for this article is based, are published in order to make the discussion easier.

## Description:

Von Poellnitz described *H. blackburniae* in *Kakteenkunde* 9:132 (1937), but the name was changed to *H. correcta* v. Poelln. when it was found it had just been used for another species. The photograph published with the description is reproduced here. *Rosette acaulescent, few leaves. Leaves erect, brown-green, dull, tip almost rectangular or somewhat obliquely truncate, very shortly mucronate, margins and keel smooth or with*



*H. correcta*  
Triebner 978

Poellnitz 1937  
Calitzdorp [3321DA]  
Lectotype

*scattered minute teeth; face towards the tip somewhat pellucid, somewhat shining, tubercles small, concolorous, numerous decorations and (3-) 4-5 inconspicuous lines, sometimes irregularly reticulate. Flowers not seen. Rosette stemless, leaves few, about 40 mm wide. Leaves erect, about 30 mm long, 12-15 mm wide, brown-green, not shiny, face nearly plane or slightly concave, smooth, frequently with a more prominent centre-line, nearly right-angled or only a bit obliquely truncated at the tip, underside convex, keel nearly in the centre, uniformly coloured, rarely with a*

*few somewhat translucent spots at the tip, soon shed, whitish, about 1 mm long end-bristle, the margins and the keel smooth, more rarely with very small indistinct whitish teeth towards the tip of the keel; end-area somewhat translucent and somewhat shiny, 12-13 mm long, 12-15 mm wide at the base, triangular, tapered, nearly plane or a bit concave towards the base and somewhat swollen towards the margins and the tip, with (3-)4-5 indistinct, sometimes somewhat interrupted longitudinal lines and with many, very short, roundish, unicoloured, a little shinier tubercles.*

**Additional notes:** Named in honour of the discoverer. Our new species is distinguished from *H. pygmaea* POELLN. by the tapering end-area carrying short end-bristles on younger leaves and its tubercles being very much shorter. In my mind no significance can be placed on the teeth appearing on the top of the keel on some leaves only as well as the bright spots at the tip of the back present only rarely; the latter develop when the brighter end-area arches somewhat around the margin and intermixes at this point with some green tissue.

**Origin:** Calitzdorp, collected by Mrs. E. Blackburn (= Triebner 978)

## Von Poellnitz' view of *H. correcta*.

Further to the photograph and description of *H. correcta*, von Poellnitz made the following remarks: In both the descriptions of *H. pygmaea* and *H. correcta* the colour of the plants is described as brown-green with tubercles on the leaf surfaces (See also the picture of *H. pygmaea* by von Poellnitz on page 657 of the *World of Haworthias* Vol. 2). When describing *H. pygmaea* von Poellnitz compared it with *H. asperula* and when he described *H. correcta*, he compared it with *H. pygmaea*. Although von Poellnitz described *H. emelyae* in 1937 and *H. correcta* in 1938, he never referred the three species to each other, but rather compared the three scabrous retused haworthias namely *H. correcta*, *H. asperula* and *H. pygmaea*.

When he described *H. badia* later during 1938, the same year in which he described *H. correcta*, he referred to *H. correcta* by saying that it is distinguished from *H. correcta* Poelln. by the long, pointed end-area.

## Other historical notes

In *A revision of the Genus Haworthia, Section Retusae* *Aloe* Vol. 11 no 4, 1973, Scott regarded *H. correcta* as synonym of *H. willowmorensis*, but in *The Genus Haworthia* he regards it as a separate species and wrote "*H. correcta* is well illustrated in *Kakteenkunde* p.132 (1937) and can be matched with plants with similar characters which are found at a number of localities between Uniondale and west of Oudtshoorn. It is also known (private communication from Mrs. Blackburn) that the original plants were collected close to

Uniondale.”

In his Additional Comment on Scott's article *A revision of the Genus Haworthia, Section Retusae* Aloe Vol. 11 no 4, 1973, Bayer wrote in Aloe Vol. 12 no 3, 1974 “Scott has excluded *H. correcta* from his revision which is a great pity as it originates from the collecting of Mrs. Ferguson and Scott holds her collecting records. The correct locality for this species may reveal that it is also allied with *H. emelyae*.” In *National Cactus and Succulent Journal* Vol. 34 (1979) Bayer wrote “However *H. correcta* was said to have been collected by Mrs. Blackburn in the Calitzdorp area and the comparison with *H. pygmaea* v. Poelln. by von Poellnitz strongly suggests that it could not have been a form of *H. turgida*”.

With the description of *H. bayeri*, J.D. Venter and S.A. Hammer in *Cactus and Succulent Journal (US)* Vol. 69 (1997), No 2, state that “In Bayer's interpretation (1982), *H. correcta* Poelln. is a synonym of *H. emelyae* sensu stricto, as witness the scattered pellucid spots on the lower leaf surface, never seen in *H. bayeri*, but explicitly mentioned by von Poellnitz (1937) and very commonly seen in *H. emelyae* (and related taxa as well). In Scott's interpretation (1985), that feature is neatly elided: *H. correcta* sensu Scott is exactly the same as our *H. bayeri*. However, the habitat given for *H. correcta*, “Calitzdorp”, fits well within the known range of *H. emelyae*; *H. bayeri* does not extend so far west, if present records serve correctly.”

In *Haworthia Revisited* (1999) it is written “Robert Kent's discussion of this species in *Haworthiad* (7:15,1993) under the title *H. emelyae*, deals with the original description of *H. correcta*. His view is that while Mrs. Blackburn may have collected *H. bayeri* at Uniondale as Scott contends, it was not the element described and illustrated by von Poellnitz. The photograph in *Kakteenkunde* is not the species from Uniondale and shows the leaves as pointed as they are in *H. emelyae*.”

### Remarks

Just looking at the description and the remarks pointed out in the historical notes, the question arises which plant complies with the following:

- grows near Calitzdorp (mentioned by von Poellnitz)
- has pointed leaves like *H. picta*, (argument of Robert Kent)
- shows a relationship with *H. pygmaea* (note by von Poellnitz); and
- is at the back of the leaves uniformly coloured, rarely with a few somewhat translucent spots at the tip, soon shed, whitish (argument by Venter and Hammer).

The only plant growing near Calitzdorp and to some degree meeting the description of *H. correcta* and the remarks in the historical notes, is the scabrous *H. picta*-like plant (the plant Bayer refers to as *H. emelyae*) growing just south of the Rooiberg to the south of Calitzdorp. The plant grows along the same road as where Mrs. Blackburn collected *H. blackburniae*, which

was described the same time as *H. correcta* (*H. correcta* was accidentally also named *H. blackburniae* before it was changed to *H. correcta*).

This area is also the home of Bayer's *H. emelyae*. The plants here, however, are not comparable with the picture and description of *H. emelyae*. The picture of *H. emelyae* in the Berlin Herbarium and the picture *H. emelyae* published in *National Cactus and Succulent Journal* Vol. 34(2) page 28 named “*Haworthia Emelyae* v. Poelln. GGS 5437 received by Smith from Mrs. Ferguson, from near Van Wyksdorp” are not of the same plant.

Col. Scott and Mrs. Blackburn knew each other very well and the author has no reason to doubt what Scott wrote about *H. correcta* and the fact that she mentioned to him the place where she collected *H. correcta*. Recently Vincent de Vries of Oudtshoorn discovered two *Haworthia* populations about 10 km east of Eseljacht, South East of Oudtshoorn. The plants completely correspond with the description of *H. correcta* as well as with the remarks and photograph published with the description of *H. correcta* (see Fig. 4 page 8).

Plants from this area are not something new. A photograph of G.G. Smith 5809 in the Compton herbarium is labelled *H. asperula* with the following note “from Arthur Taute's farm Erfpact, Herold, George. Growing among small pebbles, flush with surface, in open & under scrubs, per Mrs. Taute.” Also a photograph Fourcade 34 is of a plant from Molen River and labelled *H. asperula*.

The author considered describing this plant, but he realised it would only be a re-description of *H. correcta*. The author examined numerous plants from this locality to make sure about the general features of plants growing at this locality. Von Poellnitz' remark that it has few leaves is very appropriate because about 90% of the plants inspected had only seven leaves. There is no doubt that it belongs to the *H. bayeri/H. correcta* complex which is also found to the north at Koutjie/Leeublad.

### Conclusion

The author comes to the following conclusion: The plants found by De Vries correspond 100% with von Poellnitz description of *H. correcta* and his remarks and photograph and are supported by Scott's remark that the original plant was described from this complex. There may be other localities like this with similar looking plants within the distribution area of *H. correcta*. Scott's interpretation of the name *H. correcta* seems valid.

### Bibliography

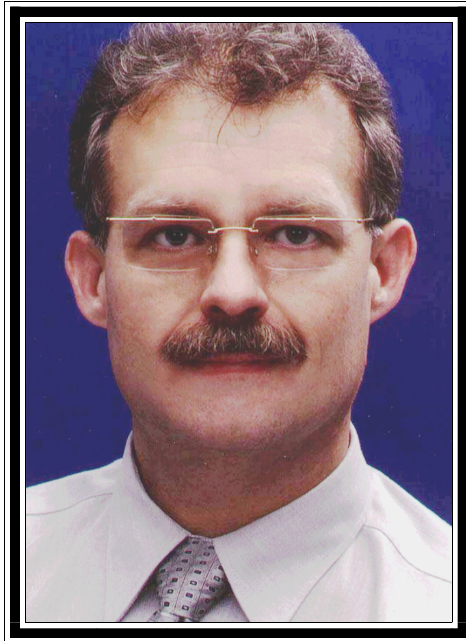
- Bayer M.B. 1974. *Haworthia* Duv. Section *Retusae* fide Scott - Additional Comment Aloe Vol. 12 No 3.
- Bayer M.B. 1975. The retuse haworthias, *Excelsa* No. 5.
- Bayer M.B. 1979. Natural variation and species delimitation in *Haworthia* Duv. Part 4 *Haworthia emelyae* v. Poelln. and a new variety; NCSJ 34:28.
- Bayer M.B. 1982. The new *Haworthia* Handbook, Cape Town.
- Bayer M.B. 1999. *Haworthia Revisited*, Umdaus Press.
- Breuer I. 1998. *The World of Haworthias*, V. 1 Niederzier and Homburg/Saar
- Breuer I. 2000. *Haworthia* photographs used to typify taxa described by Dr Karl von Poellnitz, Niederzier and Homburg/Saar.

(Continued on page 10.)





Figure 1.  
Raceme of *Aloe* 'Spiraal' showing the  
laxly arranged, pendulous flowers at  
maturity.



Ingo Breuer



Figure 2.  
Flowering sequence of *Aloe* 'Spiraal'  
showing the very 'neat' appearance of the  
flowers and buds.



Fig. 3.  
*Scabrous H. picta (H. emelyae sensu Bayer)* just  
south of the Rooiberg to the south of Calitzdorp.

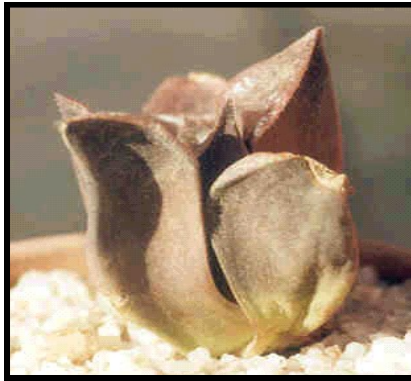


Fig. 4.  
*Side view Haworthia correcta*  
10 km east of Eseljacht, S E of Oudtshoorn.



Fig. 5.  
*Face view Haworthia correcta*  
10 km east of Eseljacht, S E of Oudtshoorn.



Fig. 6 (above left)  
*Haworthia 'Sikinjoh'*.



Fig. 7 (above right)  
*Haworthia maughanii 'Omurasaki'*



Fig. 8 (left)  
*Haworthia truncata 'Akakage'*

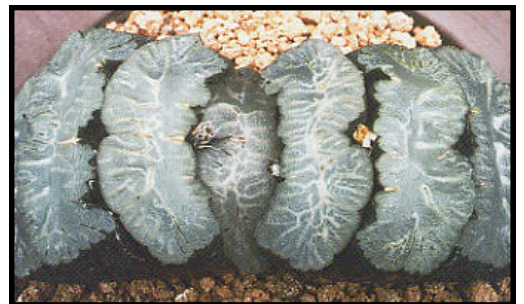


Fig. 9 (right)  
*Haworthia truncata 'Tsukahara Jumbo'*



# ALSTERWORTHIA INTERNATIONAL

## Index of plants Volume 1, 2001

<u>Taxon</u>	<u>Volume(issue)page.</u>
<b>Adenium</b>	
<i>boehmianum</i> .....	1(2)12
<i>multiflorum</i> .....	1(2)12
<b>Aizoaceae</b> .....	1(2)12
<b>Aloaceae</b> .....	1(2)12
<b>Aloe</b> .....	1(1)15. 1(2)12,15. 1(3)15
<i>africana humilis folio</i>	
<i>nonnihil reflexo</i> .....	1(3)1,2
<i>albiflora</i> .....	1(3)14
<i>antandroi</i> .....	1(3)14
<i>arborescens</i> .....	1(3)3. 1(3)13
<i>aristata</i> .....	1(3)14
<i>asperula</i> .....	1(2)11
<i>attenuata</i> .....	1(1)15
<i>barbadense</i> .....	1(3)12
'Bella Bella' .....	1(3)14
<i>boylei</i> .....	1(2)15
'Cha Cha' .....	1(3)14
<i>clariperla</i> .....	1(1)1, 15
<i>corallina</i> .....	1(2)12
<i>decoingsii</i> 'Kobito Nishiki' .....	1(3)9,13
<i>dewettii</i> 'Saijo' .....	1(3)9,13
<i>distans</i> variegated .....	1(3)9,13
<i>ecklonis</i> .....	1(2)15
<i>dhufarensis</i> .....	1(3)14
<i>fasciata</i> .....	1(2)1,2
<i>ferox</i> .....	1(1)5,9
<i>ferox</i> variegated .....	1(3)9,14
'Flurry' .....	1(3)14
<i>greatheadii</i> .....	1(3)14
<i>haemanthifolia</i> .....	1(1)14. 1(3)10. 1(3)15
'Lizard Lips' .....	1(3)14
<i>mitriformis</i> .....	1(3)13
<i>modesta</i> .....	1(2)7
<i>mutabilis</i> .....	1(3)3
<i>nobilis</i> 'Fuyajo Nishiki' .....	1(3)9,13
<i>perfoliata</i> .....	1(3)13
<i>petricola</i> .....	1(3)3
<i>pluridens</i> .....	1(3)3
'Rooi Ivoor' .....	1(3)3
'Sikinjoh' .....	1(3)8
'Spiraal' .....	1(3)3,8
'Struk' .....	1(3)3
<i>suprafoliata</i> .....	1(1)5
<i>thorncroftii</i> .....	1(1)5
<i>transvaalensis</i> .....	1(3)12
<i>tricolor</i> .....	1(3)2
<i>vanbalenii</i> variegated .....	1(3)9,13
<i>variegata</i> 'Chiyoda no Hikari' .....	1(3)9,14
<i>venosa</i> .....	1(3)1,2
<i>vera</i> .....	1(3)12
'Zebra Stars' .....	1(3)14
<i>zebrina</i> .....	1(3)12
<b>Anacampseros</b> .....	1(2)15
<b>Apicra</b>	
<i>fasciata</i> .....	1(1)15. 1(2)2
<i>thorncroftii</i> .....	1(1)5
<i>tricolor</i> .....	1(3)2
<b>Apocynaceae</b> .....	1(2)12
<b>Asclepiadaceae</b> .....	1(3)15
<b>Asphodelus</b> .....	1(2)5
<b>Asphodeline</b> .....	1(2)5
<b>Asphodelaceae</b> .....	1(2)12,13
<b>Asphodeloideae</b> .....	1(2)5,13
<b>Astroloba</b> .....	1(2)12. 1(3)12,15
<b>Bayerara</b> .....	1(3)12
<b>Bulbine</b> .....	1(2)5. 1(3)15
<i>annata</i> .....	1(3)12
<i>bulbosa</i> .....	1(3)12
<b>Taxon</b>	<b>Volume(issue)page.</b>
<i>semibarbata</i> .....	1(3)12
<b>Bulbinella</b> .....	1(2)5,13
<i>barkeriae</i> .....	1(2)13
<i>cauda-felis</i> .....	1(2)13

<i>chartacea</i> .....	1(2)13
<i>ciliolata</i> .....	1(2)13
<i>divaginata</i> .....	1(2)13
<i>eburniflora</i> .....	1(2)13
<i>elata</i> .....	1(2)13
<i>elegans</i> .....	1(2)13
<i>gracilis</i> .....	1(2)5,13
<i>graminifolia</i> .....	1(2)13
<i>latifolia</i>	
ssp. <i>denticulata</i> .....	1(2)5,13
ssp. <i>doleritica</i> .....	1(2)5,13
ssp. <i>latifolia</i> .....	1(2)13
ssp. <i>toximontana</i> .....	1(2)5,13
<i>nana</i> .....	1(2)13
<i>nutans</i>	
ssp. <i>nutans</i> .....	1(2)13
ssp. <i>turfosicola</i> .....	1(2)5,13
<i>potbergensis</i> .....	1(2)5,13
<i>punctulata</i> .....	1(2)13
<i>trinervis</i> .....	1(2)13
<i>triquetra</i> .....	1(2)13
<b>Cactaceae</b> .....	1(3)15
<b>Ceropegieae</b> .....	1(2)12
<b>Crassulaceae</b> .....	1(2)12. 1(3)15
<b>Eremurus</b> .....	1(2)5
<b>Euphorbia</b>	
<i>cooperi</i> .....	1(2)15
<i>schinzii</i> .....	1(2)15
<b>Euphorbiaceae</b> .....	1(2)12. 1(3)15
<b>Gasteria</b> .....	1(1)15. 1(2)12. 1(3)12,15
<i>armstrongii</i> 'Gagyu Nishiki' .....	1(3)9,13
<i>bicolor</i> .....	1(1)15
<i>croucheri</i> .....	1(1)15
<i>disticha</i> .....	1(2)3,4
'Gagyu Ryu' .....	1(3)9,13
<i>nitida</i> v. <i>armstrongii</i> .....	1(1)15
<i>pillansii</i> .....	1(2)4
<i>pillansii</i> variegated .....	1(3)9,13
<b>Haworthia</b> .....	1(1)10,11,12. 1(2)12. 1(3)12,15
<b>Sections</b>	
Coarctatae .....	1(1)11,12,13
Fenestratae .....	1(1)11,12,13
Fusiformis .....	1(1)11,12,13
Haworthia .....	1(1)11,12,13
Limifoliae .....	1(1)11,12,13. 1(2)14
Limpidae .....	1(1)11,12,13
Loratae .....	1(1)11,12
Margaritiferae .....	1(1)11,13
Retusae .....	1(1)11,12. 1(2)14
Scabrae .....	1(1)11,12,13
Tessellatae .....	1(1)11,12,13
Trifariae .....	1(1)11,12,13
<b>Species</b>	
<i>angustifolia</i> .....	1(1)12
v. <i>altissima</i> .....	1(1)12
v. <i>angustifolia</i> .....	1(1)12
v. <i>baylissii</i> .....	1(1)12
<i>arachnoidea</i> .....	1(1)7, 8,11, 12,13
v. <i>arachnoidea</i> .....	1(1)7,13
v. <i>aranea</i> .....	1(1)7,13
v. <i>aristata</i> n.n. .....	1(1)13
v. <i>gigas</i> .....	1(1)13
v. <i>nigricans</i> .....	1(1)7
v. <i>scabrispina</i> .....	1(1)7. 1(2)7
v. <i>setata</i> .....	1(1)7, 13
<b>Taxon</b>	<b>Volume(issue)page.</b>
<i>archeri</i> .....	1(1)12,13
v. <i>archeri</i> .....	1(1)13
v. <i>dimorpha</i> .....	1(1)13
<i>asema</i> .....	1(1)12
<i>asperula</i> .....	1(1)12. 1(2)10,11,14. 1(3)6,7
v. <i>asperula</i> n.n. .....	1(1)12
<b>Haworthia</b>	
<b>Species continued</b>	
v. <i>dekenahii</i> n.n. .....	1(1)12
v. <i>major</i> n.n. .....	1(1)12

v. <i>maraisii</i> n.n. .....	1(1)12
v. <i>splendens</i> n.n. .....	1(1)12
<i>atrofusca</i> .....	1(2)10
<i>attenuata</i> .....	1(1)11,12,13,15
v. <i>attenuata</i> .....	1(1)13,15
v. <i>glabrata</i> n.n. .....	1(1)13
v. <i>radula</i> .....	1(1)13. 1(2)6,8
<i>badia</i> .....	1(3)6
<i>bayeri</i> .....	1(2)10,1(3)6,7
<i>blackburniae</i> .....	1(1)11,12,13. 1(3)6,7
v. <i>blackburniae</i> .....	1(1)13
v. <i>graminifolia</i> .....	1(1)13
<i>bolusii</i> .....	1(1)12, 13
<i>bruynsii</i> .....	1(1)12, 13
<i>chloracantha</i> .....	1(1)11,12
v. <i>chloracantha</i> .....	1(1)12
v. <i>denticulifera</i> .....	1(1)12
v. <i>subglauca</i> .....	1(1)12
<i>clariperla</i> .....	1(1)15
<i>coarctata</i> .....	1(1)11,12,13
v. <i>adelaidensis</i> .....	1(1)13
v. <i>coarctata</i> .....	1(1)13
v. <i>tenuis</i> .....	1(1)13
<i>comptoniana</i> variegated .....	1(3)9,13
<i>cooperi</i> .....	1(1)7,11,12
v. <i>blackbeardiana</i> n.n. .....	1(1)13
v. <i>cooperi</i> .....	1(1)7,8,13
v. <i>venusta</i> .....	1(1)7,9
<i>correcta</i> .....	1(1)12, 15. 1(3)6,7,8,10
'Daikokuten' .....	1(1)15
variegated .....	1(3)9,14
<i>cymbiformis</i> .....	1(1)5, 12,13
v. <i>cymbiformis</i> .....	1(1)13
v. <i>obtusa</i> .....	1(1)13
v. <i>ramosa</i> .....	1(1)13
v. <i>transiens</i> .....	1(1)13
variegated .....	1(1)5,9
'David Grigsby' .....	1(1)15
<i>decipiens</i> .....	1(1)12,13
v. <i>cyanea</i> .....	1(1)13
v. <i>decipiens</i> .....	1(1)13
v. <i>minor</i> .....	1(1)13
v. <i>pringlei</i> .....	1(1)13
<i>emelyae</i> .....	1(2)10. 1(3)6,7,8
<i>fasciata</i> .....	1(1)12, 13, 15. 1(2)2, 6
f. <i>variabilis</i> .....	1(2)6
f. & v. <i>browniana</i> .....	1(2)2
<i>floribunda</i> .....	1(1)12
v. <i>dentata</i> .....	1(1)12
v. <i>floribunda</i> .....	1(1)12
v. <i>major</i> .....	1(1)12
<i>geraldii</i> .....	1(2)11
<i>gigas</i> .....	1(1)7
<i>glauca</i> .....	1(1)12,13
v. <i>glauca</i> .....	1(1)13
v. <i>herrei</i> .....	1(1)13
<i>globosiflora</i> .....	1(1)7,12,13. 1(2)6,7,8. 1(3)2
<i>gordoniiana</i> .....	1(1)12,13
<i>gracilis</i> .....	1(1)12,13
<b>Taxon</b>	<b>Volume(issue)page.</b>
<b>Haworthia</b>	
<b>Species continued</b>	
v. <i>gracilis</i> .....	1(1)13
v. <i>isabellae</i> .....	1(1)13
v. <i>incurvula</i> n.n. .....	1(1)13
v. <i>picturata</i> .....	1(1)13
v. <i>tenera</i> .....	1(1)13
v. <i>viridis</i> .....	1(1)13
<i>granulata</i> .....	1(1)12,13
<i>habdomadis</i> .....	1(1)12,13
'Hakuteijoh' .....	1(1)9,15
<i>heidelbergensis</i> .....	1(1)12
v. <i>heidelbergensis</i> .....	1(1)12
v. <i>scabra</i> .....	1(1)12
v. <i>toonensis</i> .....	1(1)12
<i>helmae</i> .....	1(1)12. 1(3)6

<i>v. helmiae</i> n.n. ....	1(1)12
<i>v. outeniquensis</i> n.n. ....	1(1)12
<i>herbacea</i> .....	1(1)7,9,12,13
<i>v. herbacea</i> .....	1(1)13
<i>v. lupula</i> .....	1(1)13
<i>integra</i> .....	1(1)12,13
<i>v. integra</i> n.n. ....	1(1)13
<i>v. standeri</i> .....	1(1)13
<i>v. unicolor</i> n.n. ....	1(1)13
<i>intermedia</i> .....	1(1)13
<i>v. intermedia</i> n.n. ....	1(1)13
<i>v. maculata</i> n.n. ....	1(1)13
<i>v. notabilis</i> n.n. ....	1(1)13
<i>v. livida</i> n.n. ....	1(1)13
<i>kingiana</i> .....	1(1)12, 13
<i>koelmaniorum</i> .....	1(1)12, 13. 1(2)9,14,15
<i>v. koelmaniorum</i> .....	1(1)13
<i>limifolia</i> .....	1(1)11,12,13. 1(2)6,8,9,14,15
<i>v. gideonii</i> n.n. ^ .....	1(2)6,8
<i>v. gigantea</i> .....	1(2)6,8
<i>v. limifolia</i> .....	1(1)13
<i>v. keithii</i> .....	1(1)13
<i>v. striata</i> .....	1(2)6,8
<i>v. ubomboensis</i> .....	1(1)13. 1(2)6,8
<i>lockwoodii</i> .....	1(1)12, 13
<i>longiana</i> .....	1(1)12, 13. 1(2)6,8
<i>maculata</i> .....	1(1)7,12
<i>magnifica</i> .....	1(2)9,10, 11
<i>v. atrofusca</i> .....	1(2)10
<i>v. magnifica</i> .....	1(2)10
<i>v. maraisii</i> .....	1(2)10
<i>marginata</i> .....	1(1)12,13,15. 1(2)6,8
<i>marginata</i> 'Zuikaku Nishiki' .....	1(3)9,15
<i>marumiana</i> .....	1(1)12,13
<i>v. batesiana</i> .....	1(1)
<i>v. marumiana</i> .....	1(1)13
<i>v. reddii</i> n.n. ....	1(1)13
<i>v. viridis</i> .....	1(1)13
<i>maughanii</i> .....	1(1)12,13,15
'Manzo Nishiki' .....	1(3)9,13
'Millennium' .....	1(1)15
'Ohmurasaki' .....	1(3)8,13
'Rainbow' .....	1(1)15
'Sisigami' .....	1(1)15
<i>maxima</i> .....	1(1)11, 12, 13
<i>mcmurtryi</i> .....	1(2)14, 15
<i>meiringii</i> n.n. ....	1(1)12
<i>v. flaccida</i> n.n. ....	1(1)12
<i>v. meiringii</i> n.n. ....	1(1)12
<i>minima</i> .....	1(1)12, 13
<i>mirabilis</i> .....	1(1)12. 1(2)10
<i>v. badia</i> .....	1(1)12
<i>v. beukmannii</i> .....	1(1)12
<i>v. minor</i> n.n. ....	1(1)12
<i>v. mirabilis</i> .....	1(1)12
<i>v. sublineata</i> .....	1(1)12
<i>modesta</i> .....	1(1)12
<i>v. modesta</i> .....	1(1)12
<i>v. petrophila</i> .....	1(1)12
<i>monticola</i> .....	1(1)12
<i>v. bronkhorstii</i> n.n. ....	1(1)12
<i>v. monticola</i> .....	1(1)12
<b>Taxon</b> .....	<b>Volume(issue)page.</b>
<b>Haworthia</b>	
<b>Species continued</b> .....	
<i>tuberculata</i> .....	1(2)14
<i>turgida</i> .....	1(1)6,8,12. 1(2)10. 1(3)7
<i>v. acuminata</i> .....	1(1)12
<i>v. caespitosa</i> n.n. ....	1(1)12
<i>v. compacta</i> n.n. ....	1(1)12
<i>v. longibracteata</i> .....	1(1)12
<i>v. suberecta</i> .....	1(1)12
<i>v. turgida</i> .....	1(1)12
<i>variegata</i> .....	1(1)12
<i>v. hemicrypta</i> .....	1(1)12
<i>v. variegata</i> .....	1(1)12
<i>venosa</i> .....	1(1)11,12,13. 1(2)14. 1(3)2
ssp. <i>tessellata</i> .....	1(1)6,8
<i>venteri</i> .....	1(1)7
<i>viscosa</i> .....	1(1)6,11,12,13. 1(2)6,9*. 1(3)2
<i>v. beanii</i> n.n. ....	1(1)13
<i>v. viscosa</i> .....	1(1)13
<i>vlokii</i> .....	1(1)12
<i>willowmorensis</i> .....	1(3)6,7
<i>wittebergensis</i> .....	1(1)12, 13
<i>woolleyi</i> .....	1(1)12, 13
<i>xiphopylla</i> .....	1(1)12, 13
<i>zantmeriana</i> .....	1(1)12
<b>Subgenus</b>	
<i>Haworthia</i> .....	1(1)11, 12
<i>Hexangulares</i> .....	1(1)11, 12, 13
<i>Robustipedunculares</i> .....	1(1)11, 12, 13
<b>Subsection</b>	
<i>Attenuatae</i> .....	1(1)11, 12, 13
<i>Coarctatae</i> .....	1(1)11, 12, 13
<i>Retusae</i> .....	1(1)11, 12
<i>Muticae</i> .....	1(1)11, 12
<b>Jodrellia</b> .....	1(2)5
<b>Kniphofia</b> .....	1(2)5
<b>Liliaceae</b> .....	1(1)5, 1(3)15
<b>Mesembryanthemaceae</b> .....	1(2)12
<b>Montagnella</b> .....	1(2)4
<i>maxima</i> .....	1(2)4
<b>Passifloraceae</b> .....	1(2)12
<i>Placoasterella</i>	
<i>rehmii</i> .....	1(2)4
<b>Poellnitzia</b> .....	1(2)12. 1(3)15
<b>Portulacaceae</b> .....	1(2)12
<b>Stapelia</b> .....	1(2)15
<b>Stapelieae</b> .....	1(2)12
<b>Trachyandra</b> .....	1(2)5
<b>Xerophyta</b> .....	1(2)15

\*Figures 16-20, 1(2)9 are all *Haworthia viscosa*  
+Figure 24, 1(3)9 is *Haworthia obtuse*.  
^ Published as *H. limifolia* v. *arcana* by G.F. Smith & N.R. Crouch, *Bradleya* 19/2001  
n.n. = nomen nudum

Erratum  
Vol. 1. Issue 3. Nov. 2001  
As correctly stated in the text, fig. 24  
page 9 is *Haworthia obtusa*.

# Index of colour photographs—Volume 1, 2001

Colour photographs are on pages 8 & 9 of each issue. Issue 1 was not month dated as it was only conceived in March and issued on 29/5/01. The first issue of each year will be March dated from 2002.

- Aloe**  
*descoingsii* 'Kobito Nishiki'. (November)  
*distans* variegated. (November)  
*dewettii* 'Saijo'. (November)  
*ferox*. Flowers with different colours at two locations north of Grahamstown. (Issue 1)  
*ferox* variegated. (November)  
*nobilis* 'Fuyajo Nishiki' (November)  
'Spiraal' raceme showing the laxly arranged, pendulous flowers at maturity. (November)  
'Spiraal' flowering sequence showing the very 'neat' appearance of the flowers and buds. (November)  
*vanbalenii* variegated. (November)  
*variegata* 'Chiyoda no Hikari'. (November)
- Gasteria**  
*armstrongii* 'Gagy Nishiki'. (November)  
'Gagy Ryu'. (November)  
*pillansii* variegated. (November)
- Haworthia**  
*arachnoidea* 40 km E. of Laingsburg. (Issue 1)  
*arachnoidea* Matjiesfontein. (Issue 1)  
*arachnoidea*. Oude Muragie, W. of de Rust. (Issue 1)  
*arachnoidea* Ouberg, W. of Sutherland. (Issue 1)  
*attenuata* v. *radula*. Patensie. (July)  
*attenuata* v. *radula*. NE of Hankey. (July)  
*comptoniana* variegated. (November)  
*cooperi* v. *livida*. Tablefarm, NW. of Grahamstown. (Issue 1)  
*cooperi* v. *venusta* Kenton on Sea. (Issue 1)  
*correcta*. Side view. 10 km east of Eseljacht, S E of Oudtshoorn. (November)  
*correcta*. Face view. 10 km east of Eseljacht, S E of Oudtshoorn. (November)  
*correcta* variegated. (November)  
*cymbiformis* variegated. ISI 94-28. (Issue 1)  
'Hakuteijoh'. (Issue 1)  
*herbacea*. Bosfontein, SE. of Worcester. (Issue 1)  
*herbacea*. Between Worcester and Robertson. (Issue 1)  
*herbacea*. Brandvlei Dam outside Worcester. (Issue 1)  
*koelmaniorum*, Maleoskop. (July)  
*koelmaniorum*, near type locality. Two photos. (July)  
*koelmaniorum*, *Haworthia limifolia*, *Haworthia venosa* group in cultivation. (July)  
*limifolia* v. *ubomboensis*. 3 Sisters, Barberton. (July)  
*longiana*. Draagtekloof, beside Gamtoos River. (July)  
*longiana*. Draagtekloof farm, 10 km S of Patensie. (July)  
*magnifica* Riversdale. (July)  
*marginata*. E of Riversdale. (July)  
*marginata*. Droë. (July)  
*marginata* 'Zuikaku Nishiki'. (November)  
*maughanii* 'Omurasaki' (November)  
*maughanii* 'Manzo Nishiki'. (November)  
'Moori Nosono' (Issue 1)  
*obtusa* variegated. (November)  
*picta* (*H. emelyae* sensu Bayer. Scabrous. Just south of the Rooiberg to the south of Calitzdorp. (November)  
*pygmaea*. Great Brak. (Issue 1)  
*pygmaea*. Great Brak. (July)  
*pygmaea*. NW of Klein Brak. (Issue 1)  
*reticulata*. Buitenstekloof. (Issue 1)  
*reticulata*. Walfkloof. (Issue 1)  
*reticulata*. Terras. E. of Worcester. (Issue 1)  
*scabra*. 5 km SE of Oudtshoorn. (July)  
*scabra*. Schoemanskloof, N of Oudtshoorn (July)  
'Sikinjoh'. (November)  
*truncata* 'Akakage' (November)  
*truncata* 'Tsukahara Jumbo' (November)  
*truncata* v. *crassa* 'Congesta'. (November)  
*turgida* Riversonderend, SE of McGregor. (Issue 1)  
*turgida* N2 bridge across Breede River. (Issue 1)  
*turgida*. Brakfontein, SW of Heidelberg. (Issue 1)  
*turgida*. Valschrievier, NE of Albertinia. (Issue 1)  
*turgida* NW of Albertinia. (Issue 1)  
*turgida*. Brandwag, NE of Mossel Bay. (July)  
*venosa* ssp. *tessellata*. 5 km S. of Ochta, RV. (Issue 1)  
*venosa* ssp. *tessellata*. Lady Grey. (Issue 1)  
*venosa* ssp. *tessellata* N. of Fullerton, 40 km NE of Willowmore. (Issue 1)  
*venosa* ssp. *tessellata*. Molteno Pass, N. of Beaufort West. (Issue 1)  
*viscosa*. Sandvlake farm, Studis. (July)  
*viscosa* 10 km NE of Patensie, TL. (July)  
*viscosa* SW of road to Floriskraal Dam. (July)  
*viscosa* Near Sandvlake farm, Studis. (July)  
*viscosa* N of Koup Station, NE Laingsburg. (July)
- Ingo Breuer** (November)
- Index of other illustrations.**
- Aloe**  
*clariperla*. Salm-Dyck 1836 photo. (Issue 1, page 1)  
*fasciata*. Salm-Dyck 1837 photo. (July, page 1)  
*africana humilis folio nonnihil reflexo*. Commelin 1703 drawing. (November, page 1)  
*asperula* Salm-Dyck 1836 photo. (July, page 11)
- CD-Succulent Version 2**  
Overview page tabs. (November, page 15)
- Haworthia**  
*correcta*. Poellnitz 1937 photo. (November, page 6)  
*fasciata* f. *variabilis*. Long 443. (July, page 6)  
*globosiflora* flowers. (July, page 6)  
*pehlemanniae* flowers. (July, page 6)
- Maps**  
1. Distribution of *Haworthia venosa* ssp. *tessellata* with locations of specimens illustrated. (July, page 6)  
2. Distribution of *Haworthia turgida* with locations of specimens illustrated. (July, page 6)  
3. Locations of *H. nortieri*, *H. globosiflora*, *H. pehlemanniae* & *H. scabrispina*. (July, page 7)
- Table 1**  
Representation in tabular form of the connections between the 4 taxa in terms of flower and leaf characteristics – Map 3. (July).

# ALSTERWORTHIA INTERNATIONAL

## Subject index Volume 1, 2001

### 1. Classification of plants

#### **A framework for Haworthia** by JM Esterhuizen.

The species concept used is defined and also the relationship of species. All the species are tabulated so that relationships can be determined. This is the basis for a series of articles based on field research. (Issue 1, page 10-13)

#### **Aloe africana humilis folio nonnihil reflexo**

The use of the 1703 Commelin drawing as the "type" for *Haworthia venosa* is outlined. (November, page 1 & 2)

#### **Aloe clariperla (Haw.) Roem. & Schult.**

Salm-Dyck's 1836 drawing is published with brief notes explaining the fate of the name. (Issue 1, page 1 & 15))

#### **Aloe fasciata (Willd.) Salm-Dyck**

Salm-Dyck's 1837 drawing with supporting notes on the current use of the species name. (July, page 1 & 2)

### 2. Habitat

#### **Aloe haemanthifolia in Baviaan's Kloof**

Russell Scott records observations made in habitat with a view to deducing best cultivation methods. (Issue 1, page 14)

#### **Aloe haemanthifolia in Baviaanskloof [Alsterworthia International 1(1) 14]**

Brief note relating to difficulty in locating a site referred to in Reynold's *The Aloes of South Africa* 1974. (November, page 15)

#### **Haworthia correcta Poelln. - Notes, observations and comments.**

Poellnitz 1937 photograph and two photographs of plants from two new *Haworthia* populations recently discovered by Vincent de Vries are compared and discussed. (6-7,10)

#### **Haworthia koelmanorum (Oberm. & Hardy) and Haworthia mcmurtryi (Scott) - Mpumalanga's contribution to the Genus Haworthia** by Essie Esterhuizen.

Records the extensive habitat study conducted by Johan Bronkhorst and the author including growth conditions. (July, page 14-15)

#### **Notes on Haworthia asperula (Haw.)**

Essie Esterhuizen records his field experiences and discusses the relationship of this plant with others and the original Salm-Dyck 1836 illustration to arrive at a conclusion about identification. (July, page 10-11)

#### **Toxic Soils** by A. Bulworth

Deals with adaptations to two types of toxic soil in SA with horticultural implications. A few aloes are found on these soils. (Issue 1, page 5)

### 3. Other articles

#### **A challenge from Gordon Rowley**

Brief note centred on the name *Alsterworthia*. (Nov., page 12)

#### **A tribute to Charles Leslie Scott 1913-2001** by Essie Esterhuizen.

(November, page 4-5)

#### **From around the world**

Records brief details of articles about plants in the Asphodelaceae published in other journals. (Issue 1, page 15)

#### **Ingo Breuer - a portrait.**

Photograph and details of the work of this *Haworthia* author. (November, page 5)

#### **Notes for submitting articles.**

In order to encourage people, whose first language is not English, to contribute (and indeed any others) a facility for articles to be ghost written from notes and photos is available. (Issue 1, page 2)

#### **Subscriptions & special offers.** (November 2001, page 2)

### 4. Plants

#### **Aloes - Africa's Pride**

A short contribution from a dealer in SA. dealing with the use of aloes in cultivation. (July, page 7)

#### **Bulbinella - a synopsis**

This is a brief synopsis based on *Strelitzia* 8 dealing with the genus, the SA species, cultivation requirements and suitability for cultivation. (July, page 13)

#### **Haworthia 'Moori Nosono'** by Harry Mays

Description of this uncommon cultivar + a comparison with *H. obesa* variegated. (Issue 1, page 4-5).....

#### **Noble aloes: a case study of Aloe 'Spiraal'** by Professor Gideon F. Smith & Dr. Elsie M.A. Steyn.

The hybridisation work of Arthur Koeleman, South Africa is introduced. *Aloe 'Spiraal'* is covered in detail with a full description published for the first time. (November, page 3-4)

#### **The aesthetic appeal of variegation**

20 photographs of Japanese hybrids/cultivars are presented with supporting notes. Photographs and basic information supplied by Yoshimichi Hirose and Dr. M Hayashi. (November, page 13-14)

#### **Variability within and between species Part 1** by Ingo Breuer, Germany.

Variability is covered with implications for classification. Colour photos and maps are used to reinforce points made. (Issue 1, page 6-7)

#### **Variability within and between species. Part 2.**

Ingo Breuer continues with the variability in *haworthias*, discusses the implications for identifying and classifying plants and indicates areas for further study. (July, page 6-7)

### 5. Plant problems

#### **All that is known about Black Spot.**

Covers aloes, gasterias and *astrobobas*. Based on contributions from amateur and professional cultivators, habitat observations and a Royal Horticultural Society Plant Pathology Dept. case study of black spot in a *Gasteria*. (July, page 3-5)

#### **Help - I'm only a beginner!** by Richard Harrison

Deals with root rot in a number of aloes and an attempt to reduce the problem. (November, page 14)

#### **Pests and diseases - insecticides and fungicides**

Latest developments in the EU will result in a decreased range of insecticides etc for home use. There are implications also for overseas markets in due course. (Issue 1, page 7)

#### **Reflections on the relief of stress** by Lucio Russo.

How to deal with plants which have suffered, particularly in the post. (Issue 1, page 4) .....

#### **Stroke your plants**

A brief look at an experiment conducted in the USA to ascertain if some plants could benefit from being stroked. (Issue 1, page 3)

### 6. Cultivation & Propagation.

#### **Conserving genetic diversity** by Harry Mays

Based on the Millennium Seed Bank project at Kew. Seed types, their storage and germination are discussed and problems outlined. Examples of dormancy and non-dormancy in *Bulbine* and *Aloe* seed are given. *Haworthia* seed is all non-dormant. (November, page 11-12)

#### **In vitro micropropagation of the endangered Aloe haemanthifolia** by Robert Wellens.

Procedures and problems are outlined and discussed. (November, page 10)

### 7. Reviews

#### **'Bulbinella in South Africa'** by Pauline L. Perry.

Reviewed by Paul I. Forster. (July, page 5)

#### **CD-Succulent Version 2.0 (2001)** produced by Harry Mak.

Scope of this CD is outlined. It contains more photographs than version 1 and improved search facilities. (November, page 15.)

#### **Succulent Flora of Southern Africa, Revised Edition (2000)** by Doreen Court.

Reviewed by Paul I. Forster. (July, page 12-13)





Fig. 10  
*Aloe nobilis* 'Fuyajo Nishiki'



Fig. 11  
*Aloe distans* variegated



Fig. 12  
*Aloe decoingsii* 'Kobito Nishiki'



Fig. 13  
*Gasteria pillansii* variegated.



Fig. 14  
*Aloe vanbalenii* variegated.



Fig. 15  
*Aloe dewettii* 'Saijo'



Fig. 16  
*Gasteria* 'Gagyū Ryū'



Fig. 17  
*Gasteria armstrongii* 'Gagyū Nishiki'



Fig. 18  
*Haworthia truncata* v. *crassa* 'Congesta'



Fig. 19  
*Haworthia maughanii* 'Manzo Nishiki'



Fig. 20  
*Haworthia comptoniana* variegated



Fig. 21  
*Haworthia correcta* variegated



Fig. 22  
*Aloe variegata* 'Chiyoda no Hikari'



Fig. 23  
*Aloe ferox* variegated



Fig. 24  
*Haworthia obtusa* variegated



Fig. 25  
*H. marginata* 'Zuikaku Nishiki'



# In vitro micropropagation of the endangered *Aloe haemanthifolia*.

Robert Wellens

STC (Succulent Tissue Culture), Sint Felixstraat 13, 4411 DB Rilland, The Netherlands

*Aloe haemanthifolia* is an extremely endangered plant with limited distribution. It grows generally on the south, but also on the northern, slopes of the Cape folded mountains of the south-western Cape in South Africa, at altitudes of 1000 to 1500 meters. It grows in very wet places. In winter plants can be subjected to snow and in summer the mountains are not necessarily warm. Its inaccessibility may have benefited its survival in habitat until now, but its habitat requirements seem to have made it extremely difficult to grow by collectors worldwide. Therefore, in 2000, STC started experiments on the in vitro micropropagation of this remarkable plant.

A single small shoot was the starting material in 2000. Carefully the outer leaves of the plant were removed under running tap water until a piece of 1 cm tissue, containing the meristem tip, could be cut out. This piece, containing the meristematic tissue, was then sterilised in a household bleach solution of 2% for 30 minutes. After that, the tissue was washed three times in sterile demineralised water. Under a dissecting microscope the tiny meristem was isolated and placed on a petri dish containing modified MS-medium and sucrose (3%), without any growth regulator. The culture-plate was placed in the dark for the first week and then transferred to dim-light conditions (cool-white tube lights) at 20 degrees Celsius.

Within a few weeks the meristem started to grow out and formed a tiny new shoot. This first shoot was transferred to multiplication medium with a mixture of cytokinins as growth regulators. After 4 weeks the shoot was transferred to fresh multiplication medium. After another 4 weeks the first signs of multiplication were visible; 2 new shoots arose de novo from the existing first shoot. The whole procedure was repeated every 4 weeks with a final result of numerous new shoots after 12 months. The newly formed shoots were then placed upon a rooting medium with different auxins. After 4 weeks no root

formation was observed and shoots were put on fresh rooting medium. Even after 8 weeks on rooting medium the number of roots formed was very low, therefore, rooting this *Aloe* species is termed "recalcitrant". To date no efficient rooting medium has been developed; when single plants are repeatedly transferred to fresh rooting medium, only a very few fragile roots are formed.

Plants that did form a few fragile, little roots were planted ex vitro under greenhouse conditions. Adaptation to these conditions proved to be extremely difficult with high losses of rooted plants. There is still much research to be done on the in vitro rooting and ex vitro transfer of these delicate plants in order to establish a good multiplication protocol. Further research will be focussed on better rooting conditions, new rooting growth-regulators and better control of the ex vitro environment. Studies of literature on how these plants grow in habitat hopefully will teach us more about growth conditions of these plants, which are far from easy in cultivation, even for mature, greenhouse-adapted plants.

## References:

Guide to the Aloes of South Africa by Ben-Erik van Wyk and Gideon Smith. ISBN 1 875093 04 4.

Flora of Southern Africa Vol. 5. Part 1 Fascicle 1: Aloaceae (First Part); Aloe by H. F. Glen and D. S. Hardy. ISBN 1-919795-49-9

*Aloe haemanthifolia* in Baviaan's Kloof. *Alsterworthia International* 1(1)14. See also page 15 this issue.

(Continued from page 7)

- Brown J.R. 1999. Notes on Haworthias, Niederzier and Homburg/Saar.  
Esterhuizen J.M. and Breuer I. 2000. *Haworthia emelyae* Poeln. and *Haworthia helmiae* Poeln: What is the real identity of these two contention Species? *Haworthiad*.  
Poellnitz, K. v. 1937. *Kakteenkunde* 9:132.  
Scott, C.L. 1985. The Genus *Haworthia*, Johannesburg .  
Scott C.L. 1973. A revision of the Genus *Haworthia*, Section *Retusae* *Aloe* Vol. 11 No. 4.  
Smith G.G. 1945 *Journal of South African Botany* Vol. X1  
Smith G.G. 1946 *Journal of South African Botany* Vol. X11  
Venter J.D. and Hammer S.A. 1997 New and old species of *Haworthia* Duval from the little Karoo. *Cactus and Succulent Journal (US)* Vol. 69. No. 2.

# Conserving genetic diversity

Harry Mays  
A Friend of Kew\* (Number 1097709)

Conservation is a popular topic. Many collectors are enthusiastic, because they recognise the need to protect habitats and their species. Conservation measures employed by collectors usually relate to the careful documentation of plants derived from habitat material, vegetative propagation of those plants and, where more than one clone of a self-sterile plant is available, the cross pollination of them to produce seed. Botanical gardens also use the same methods, but on a much larger scale though, regrettably, the number of plants available to the public at large is not great and is often confined to sales at source. In fact, only the Huntington Botanical Gardens in California has a regular, international-plant-distribution facility via its non-profit *International Succulent Introductions* (I.S.I.) programme. All these measures are worthwhile as they make more documented plants available to collectors and offer at least some relief to the urge to collect plants direct from habitat, but none conserve genetic diversity. Vegetative propagation preserves the genes of that clone only. Cross pollination of clones does mix genes and provide for new combinations. However, the gene base of the few parent plants is so small, compared with that normally found in habitat, that what is developed over succeeding generations is probably a cultivar, particularly where the original parents were selected for a more enhanced characteristic only occasionally found in a wild population.

Protecting large areas of natural habitat is an ideal way of preserving genetic diversity, because all the plants and animals are free to interrelate and develop. At a practical level, the demands of expanding human populations, the provisions (elected) governments make to meet their needs (and ensure re-election) and the demands of industry for resources to increase production, all combine to make the conservation of large areas of natural habitat difficult, perhaps impossible. Faced with the destruction of habitats and the reduction (elimination) of species, a method of conserving genetic diversity without involving large areas of land is essential if genetic diversity is also not to be lost. A method of doing this is seed storage. Each seed is a source of genetic diversity just as is each plant, but seed takes up a minute amount of space compared with that required for plants. Kew has pioneered the use of seed banks since the 1970s to help conserve the genetic diversity of wild plants.

Kew's Millennium Seed Bank (MSB) project is a massive undertaking involving specialised buildings, research, lots of money and more. The Millennium Commission, supported by funds from the National Lottery, provided £30 million and The Wellcome Trust, one of the UK's largest sponsors of science, over £9 million. Friends of Kew\* (subscribing volunteers) helped to launch an appeal for funds in 1996 which has raised some £7 million, including a donation of £2.5 million by Orange plc. Further funds are required.

The Wellcome Trust Millennium Building houses high tech, underground seed storage vaults with strict control of temperature and humidity, research laboratories, accommodation for overseas scientists and a public exhibition. The exhibition contains a "seed wall" representing the diversity of seeds from that of the dust-like orchid to the massive seed of the coco-de-mer. Glass walls allow views into the laboratories where seeds are cleaned, processed and tested to assess suitability for storage. There are interactive displays which provide visitors with a feel for the range of work the seed collectors and scientists undertake and there are living plant displays to highlight the work of the MSB, one of which is a desert species display.

The MSB aims to store seed for some 10% of the world's plants by 2010. Seeds are great survivors, often for long periods in habitat. After cleaning and drying to 5-10% moisture content, most seeds can be stored at -20°C and remain viable for variable periods ranging up to centuries, but some are killed by this process. Not surprisingly, seeds from some tropical plants, which are not subject to a dormant, dry period in habitat, cannot be stored by normal drying and freezing. Perhaps surprisingly, seeds of some species from dry areas, where rainfall is low and dry periods are the norm, also cannot be stored by this method. Even in dry areas where rainfall is low there are rainy seasons, variable from year to year, but nevertheless rainy seasons. Some dry habitat plants are adapted to producing seeds to coincide with and germinate in the rainy season, not to producing seed to survive long periods of drought. If rain is adequate the seed germinates and a few seedlings survive. If it is not, none do and the seed loses its viability. Only a minute number of seedlings need to survive to adulthood during the life of the parent plants to maintain the population. The consequence is that the seeds of these dry habitat plants are not adapted to dry periods and cannot, therefore, be dried and frozen. Research into the best methods of storing such seeds is ongoing.

There are two broad categories of seeds: those subject to dormancy and those which are not. Most non-dormant seeds (termed orthodox), those which are not killed by drying and freezing, germinate satisfactorily after storage. Drying and freezing slows down the metabolic process to a very low level. All that is needed to kick-start the seed into germination is water, oxygen and the right temperature. However, some species' seeds are put naturally into a state of dormancy (suspended animation, not just reduced metabolic processes) by virtue of the germination inhibitors they contain. In some, chemical inhibitors within the embryo or in the seed coat (some cacti) may prevent germination (morphophysiological dormancy). In others, structural inhibitors may be present such as an impervious seed coat preventing water and

(Continued on page 16)

oxygen getting to the embryo or a layer of oxygen absorbing tissue may prevent oxygen reaching the embryo (morphological dormancy). Seeds which have dormancy require special treatment to break that dormancy if germination is to take place. This does not occur during storage, consequently seed which is subject to dormancy do not germinate following storage by drying and freezing. In habitat, seeds are naturally subjected to a variety of processes which break down dormancy over time. Some are subjected to abrasion, which eventually breaks down protective seed coats. Some are subjected to wetting from time to time, which eventually washes out the inhibiting chemicals, but a lot is not known.

At the present time Kew knows about the storage behaviour of just over 7,000 species. Over the next 10 years they anticipate collecting 24,000 species. Research is therefore being carried out to establish better storage procedures for difficult seeds and also to identify the precise mechanisms behind dormancy so that methods can be devised to readily germinating these seeds.

The MSB project is concentrating on plants from endangered habitats by storing their seeds to preserve genetic diversity, but there is a limit to what they can do with the time and money available and priorities have to be established. The genera of the Asphodelaceae are hardly featured in the project. Some haworthias are now confined to small, endangered populations and a few are the subject of a thriving medicinal and cultural trade in South Africa, which is endangering species in habitat. The South African authorities are aware of this and are considering remedial measures. Some aloes have pharmaceutical and commercial properties, which are being researched at Kew outside the MSB project, with commercial support.

No *Astroloba* or *Gasteria* seeds have been considered for storage, consequently no information is available about their requirements. Haworthias are not stored, but as they do not have dormancy their germination requirements are simple: a warm and moist environment with a 12/12 photoperiod. They should germinate in a few days. The information available for the seed of bulbines indicates that they can be orthodox or have morphophysiological dormancy. *Bulbine semibarbata* is orthodox and germinates in 7-10 days at 15-20°C, *Bulbine annata* germinates in light in 7-14 days at 21°C. *Bulbine bulbosa* has morphophysiological dormancy. Optimum germination is obtained at 20/10°C. Some *Aloe* seed can be orthodox (*Aloe transvaalensis* now included in *Aloe zebrina*), but some such as *Aloe barbadense* (= *Aloe vera*) have morphological dormancy. *A. barbadense* germinates at room temperature or in light at 21°C and takes from 30-180 days. In due course, Kew's research should reveal much new information about storage, dormancy and germination.

---

\*The Foundation & Friends, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, UK (e-mail friends@rbgkew.org.uk) can be contacted for further

information. They will also be happy to receive donations for the Millennium Seed Bank project.

---

Kew Botanical Gardens, Richmond, Surrey have excellent gardens and glasshouses and are well worth a visit – and do not forget to visit the MSB project at Wakehurst Place, Ardingly, West Sussex RH7 6TN, UK.

---

Acknowledgements for information received:

Dr. Hugh W. Pritchard, Head of Research, Seed Conservation Department, Kew.

Anna Dudley, University of Manchester student training at Kew.

---

References:

*Kew*. Autumn 2000 (Published for The Foundation and Friends.)

Hong, T.D., Linnington, S., & Ellis, R.H. (1998) *Compendium of information on seed storage behaviour*, Royal Botanic Gardens Kew. UK. 901 pp.

Baskin, C.C. & Baskin, J.M. (1988) *Seeds: ecology, biogeography and evolution of dormancy and germination*. Academic Press, San Diego. 666 pp.

---

## A challenge from Gordon Rowley

Alsterworthia! With a name like that, it throws out a direct challenge: who can be first to come up with a triple hybrid of *Aloe* x *Gasteria* x *Haworthia*? David Cumming will probably beat me to it!

## And an answer from Errol Goodwyn

He has! See the Illustrated handbook of Succulent plants: Monocotyledons, 2001, p. 189. However, David Cumming named the triple hybrid X *Bayerara*, not X *Alsterworthia*.



## The aesthetic appeal of variegation.

The subtlety and contrast of colours provided by variegation and the form that the contrast takes have provided a branch of science devoted to the study and development of variegation. The results are there for anyone to see, assess and appreciate. Many in the plant kingdom have been recorded in the photographic reference work *Variiegated Plants in Color* by Yoshimichi Hirose and Masato Oki. This book has over 1400 colour photographs of variegated plants suitable for glasshouse and garden cultivation. Where you live determines what is suitable for the garden. A number of the photographs used to illustrate succulent plants from the Asphodelacea (Liliaceae in the book) are shown in Figs 10-25 page 9. Yoshimichi Hirose took most of the photographs in the book. With the kind permission of Dr Hayashi, four photographs (Figs. 6-9, page 8) published in *Haworthia Study No. 5*, the Japanese journal, are also included.

### Fig. 6 *Haworthia*. 'Sikinjoh'.

The parents are not known, but it may not be a simple hybrid. Two of the parents are thought to be *Haworthia wimii* and *H. splendens*. The plant is striking and the pattern very rare. It is incredible, almost indescribable! The basic leaf colour is a reddish brown, but it is largely obscured by grey, white-edged, quite broad, slightly raised, longitudinal stripes of "callosity".

### Fig. 7 *Haworthia maughanii* 'Ohmurasaki'

A special clone bred by Mr Okano. The leaf centre is roundish to elongate with a short to long, broad, white line. From the centre, blocks of white radiate to the leaf edge. Between the blocks are thick, purplish lines.

### Fig. 8 *Haworthia truncata* 'Akakage'

(Red shadow) It has a reddish, irregular, elongated leaf centre with white lines radiating into the grey-green leaf face, which is suffused with white. Breeder Mr. Harada

### Fig. 9 *Haworthia truncata* 'Tsukahara Jumbo'

Breeder Mr Tsukahara. The grey-green leaf-end is suffused with white. Distinct white lines radiate and bifurcate from the crest like centre, which is made up of solid white lines and elongated white loops.

### Fig. 10 *Aloe nobilis* 'Fuyajo Nishiki'

*Aloe nobilis* was published by Haworth in 1812 in *Synops. Pl. Succ.* It is not like any *Aloe* found in habitat and was classified by Reynolds as a "Doubtful Species". He assessed it as a probable hybrid between *A. arborescens* and *A. mitriformis*. *A. nobilis* 'Fuyajo Nishiki' has medium green and yellow longitudinal stripes with yellow teeth along the leaf edges. It is regarded in Japan as one of the most beautiful, variegated aloes and described as a brocade (= richly dressed).

### Fig. 11 *Aloe distans* variegated.

*Aloe distans* was also described by Haworth in 1812. It has a narrow distribution range on the coast of the Western Cape. Reynolds accepts it as a good species, but in 2000 Glen & Hardy made it a synonym of the wide spread *A. perfoliata*, which is found in the Western, Eastern and Northern Cape. The light, almost bluish, green leaves have longitudinal, white stripes of varying width with whitish teeth on the leaf edges and keel. The white striped variegated is said to be very rare. The

species seems to have very specific horticultural requirements and does not do well in cultivation.

### Fig. 12 *Aloe decoingsii* 'Kobito Nishiki'

The dark green leaves generally have broad to narrow, yellow leaf margins. There are many yellow tubercles, which are prominent on the green, but less so on the concolorous yellow parts. Marginal teeth are yellow. This diminutive Madagascan *Aloe* has been used in hybridisation experiments and can be used as the variegation donor when crossed with a non-variegated species. Kobito Nishiki means "richly dressed pygmy".

### Fig. 13 *Gasteria pillansii* variegated.

The medium green leaves have a mixture of broad and narrow longitudinal yellow stripes, some of which are interrupted to form a series of dashes.

### Fig. 4 *Aloe vanbalenii* variegated.

*Aloe vanbalenii* was described by Pillans in 1934 in *South African Gardening and Country Life* and has remained a good species to this day. The cultivar leaf edges are pale yellow and more or less broad. The centre is a pale green with thin, pale yellow, longitudinal stripes. The small teeth are yellow. The species comes from KwaZulu-Natal and Mpumalanga and is easy to cultivate.

### Fig. 15 *Aloe dewettii* 'Saijo'

Light green leaf, with variable width, white stripes and white flecks. The marginal teeth are brown to whitish. This cultivar was named by Yoshimichi Hirose. Saijo means intelligent woman. The species comes from KwaZulu-Natal, Swaziland and Mpumalanga. Cultivation is not difficult.

### Fig. 16 *Gasteria* 'Gagyū Ryū'

This is an unknown hybrid with dark green leaves with prominent white margins. The meaning of "Gagyū Ryū" is recorded as "Laying Dragon"

### Fig. 17 *Gasteria armstrongii* 'Gagyū Nishiki'

This rough leaved plant has a mixture of dark and light green, longitudinal striations with some yellow ones. The meaning of "Gagyū Nishiki" is recorded as "richly dressed laying cow"

### Fig. 18 *Haworthia truncata* v. *crassa* 'Congesta'

The sides of the blackish green leaves have longitudinal narrow and broad yellow stripes with some yellow flecks. The ends of the leaves are variable with prominent to subdued, short, yellow stripes running from the indentations around the edges

### Fig. 19 *Haworthia maughanii* 'Manzo Nishiki'

This cultivar is very similar to *H. truncata* v. *crassa* 'Congesta' in markings, but the leaf is different in shape.

### Fig. 20 *Haworthia comptoniana* variegated.

The grey, prominently reticulate leaves have broad to narrow, pink stripes on the back. Pink suffuses the reticulate lines to a lesser or greater extent.

### Fig. 21 *Haworthia correcta* variegated.

The dark green leaves have yellow striations down the sides and yellow reticulate lines on the face.

### Fig. 22 *Aloe variegata* 'Chiyoda no Hikari'

A number of leaves have yellow, horizontal stripes in place of green, which contrast with the leaves having the green stripes. In some leaves the yellow finds a place

(Continued on page 14)

# Help – I’m only a beginner!

Richard Harrison

While on holiday in the south of France I came across some aloes and was instantly attracted to them. This interest has led to much book reading and to the slow build up of a collection of aloes and their hybrids. Despite all the reading and warnings about over potting and over watering, I have suffered a number of losses due to “rotting off” of the roots. It seems that aloes can be house plants, but cannot be treated like house plants!

My collection is housed in a greenhouse and from time to time I have been tempted to buy plants on offer in supermarkets. After purchase I have been impressed by the quantity of healthy roots growing in pure peat which is often water sodden. In contrast, my own plants are grown in a carefully concocted mixture of ingredients made to a formula taken from a popular “How to” book, but they never have such luscious roots. I began to think about the growing conditions in my own greenhouse compared with the commercial growers’ conditions. There are few similarities. The supermarket plants are raised in a totally controlled environment. They never dry out, never become too cold or too hot and they are shaded from direct sunlight. My own plants are not so protected. They are only partially shaded, subjected to great temperature variations and dry out between waterings. I lose plants from “rotting off” but the commercial growers seem not to do so.

I also thought about plants growing in habitat. There the plants are also subjected to great temperature variations and variable light intensities, also erratic water supplies, more like the plants in my collection. That applies only to the above ground parts. In habitat the roots experience a different regime. Being underground, they are insulated by gravel mulches or rocks and so protected from wide temperature variations. The much greater volume of soil in habitat dries out more slowly compared with that in a plant pot.

This has led me to conclude that aloes, and no doubt other succulents, thrive when their roots are kept neither too hot nor too cold. I believe the roots of my own aloes suffer when the pots are heated up due to direct exposure to the sun. This results in root tip death and later, when the pot is watered, decay bacteria attack the roots, which rot off. This is confirmed to some extent from observations when large potted plants are exposed on one side only, the roots are subsequently found to have rotted faster and more completely than on the shaded side where they remain intact for longer.

Some of the plants I have lost to “rotting off” are: *A. greatheadii*, *A. dhufarensis*, *A. aristata*, *A. antandroi*, *A. albiflora*, *A. ‘Bella Bella’*, *A. ‘Flurry’*, *A. ‘Lizard Lips’*, *A. ‘Cha Cha’*, *A. ‘Zebra Stars’*. There have been others and many of the above I have subsequently saved and got going again. It is interesting that I have never lost any gasterias this way using the same soil medium (approximately 60% peat or coir, 20% sharp sand, 10% grit, 10% vermiculite/seramis). The difference is the gasterias are always grown in the shade and never exposed to the direct rays of the sun. However, it could be that gasterias are less susceptible to “rotting off”.

If these observations are correct then it would seem wise to insulate the roots in their pots. To try to do this I have started to grow my plants in double pots with the outer layer being a mixture of vermiculite and peat for insulation, but it is too early to know if I have managed to protect my plants from “rotting off”. We shall see.

(Continued from page 17)

along the edges of the leaves. The contrast between yellow and white horizontal stripes may not be as attractive to some as the conventional green and white.

### Fig. 23 *Aloe ferox* variegated

The species was described in 1768 and has since collected a number of synonyms. This seedling of *Aloe ferox* has longitudinal stripes of grey-green and yellow with light brown leaf margins and teeth. A potentially attractive adult plant.

### Fig. 24 *Haworthia obtusa* variegated.

The light green leaves have narrow to broad, bright to somewhat dark, yellow stripes on the sides, with yellow lines extending on to the leaf ends between the chlorophyll areas.

### Fig. 25 *H. marginata* ‘Zuikaku Nishiki’

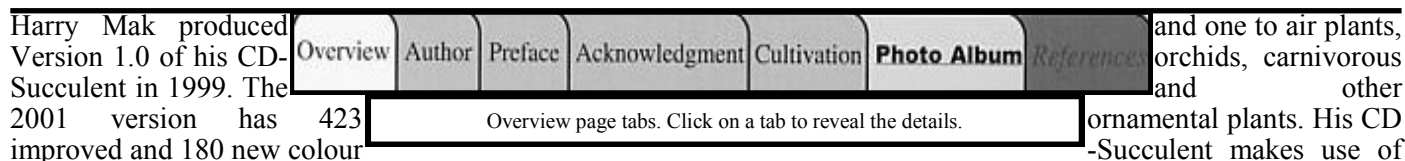
Dark green leaves with broad and narrow, yellow stripes and short lines. The variegated form was found in a batch of normal plants imported into Japan about 1967.

Acknowledgements and references.

Yoshimichi Hirose & Dr. Hayashi for permission to use the photographs. Variegated Plants in Color. Yoshimichi Hirose & Masato Yokoi Haworthia Study No. 5 Editor Dr. Hayashi. Flora of Southern Africa Vol. 5. Part 1 Fascicle 1: Aloaceae (First Part) Aloe. Glen & Hardy. Guide to the Aloes of South Africa. Ben-Erik van Wyk & Gideon Smith.

# CD-Succulent Version 2.0 (2001)

Compiled & published by Harry Chi-King Mak  
20 Walsingham Ave., Middleton, Manchester, M24 1SR, UK  
E-mail: Harrymak@care4free.net



Harry Mak produced Version 1.0 of his CD-Succulent in 1999. The 2001 version has 423 improved and 180 new colour photographs. There are 1154 photographs of 1007 different plants in 41 families (Aizoaceae 49, Asclepiadaceae 55, Cactaceae 302, Crassulaceae 109, Euphorbiaceae 151, Liliaceae 158 and other families 183.)

Click on a tab on the opening overview page to produce the details of the item listed and further selections. Clicking on the Photo Album tab produced a list of families. Clicking on a family name produces the list of species included on the disc. A click on a species name will produce the colour photograph. The photographs are generally of good quality. An alternative to scrolling through lists is provided by a smart search facility, which provides for partial matching as well as exact.

With each photograph is a list of headings such as Growth form, Feature, Propagation, Light, Water, Temperature, Soil, Growth types, Horticultural value, Notes and Origin. Against each heading are codes in the form of letters or number. By clicking on the heading, a table is produced revealing the meanings of the codes. These are brief and should be interpreted in the light of your prevailing conditions.

A tab headed Cultivation provides helpful, general information on that subject. This too should be interpreted to suit your circumstance as these will vary, perhaps considerably, from place to place. Harry Mak rightly stresses that we must learn from experience.

Within the Liliaceae, there are 15 *Aloe* colour photographs, 3 *Astroloba*, 1 *Bulbine*, 9 *Gasteria*, 115 *Haworthia* and the 1 *Poellnitzia*. Some species may have more than one photograph. By clicking on the flower button, when present, a photograph of the flower appears; by clicking on the question mark button, when present, an alternative photograph of the species is presented.

Buttons are provided for a manual tour where you progress from photograph to photograph at your leisure or for an automatic tour at one of three speeds: slow, medium or high. A "Skip" button is provided.

The Reference tab gives access to information on CITES, a check list on genera, the structure of plant names, a bibliography, a list of societies and a selected list of suppliers of plants, seeds and books. A print facility is provided for the information under this tab. Harry Mak has published three books as photo albums, two of which were devoted to cacti and other succulents

and one to air plants, orchids, carnivorous and other ornamental plants. His CD-Succulent makes use of modern publication technology and should appeal to anyone with a general interest in succulent plants. If you specialise in a limited area such as a genus or family you may wish to take note of the number of photographs applicable to your area of interest. For example, there are only 15 photographs of aloes, but 115 of haworthias.

The CD is IBM PC compatible. System requirements: MS Windows 95, 486DX4-100 MHz or higher, 16MB RAM, VGA display 640 x 480 true colour, mouse. Installation is simple if you follow the simple instructions accurately. I mention this because I inadvertently hit an incorrect key whilst installing. The problem was easily cured when I realised my keying error was THE problem.

An update for CD-Succulent Version 1 is available from Harry Mak for £15.00 or US\$30.00, provided the Version 1 front cover is returned with the order.

The price of CD-Succulent Version 2.0 is £30 in the European Union and £32 for all other countries, p & p included. However, subscribers to *Alsterworthia International* may order a copy of Version 2.0 on the membership renewal form for 2002 for £28.00 EU, £30.00 elsewhere, a discount of £2.00 per copy.

---

## ***Aloe haemanthifolia* in Baviaanskloof. [*Alsterworthia International* 1(1)14]**

On page 156 of *The Aloes of South Africa* 1974, Reynolds records "...and Slanghoek Mountains (Bain's Kloof, Baviaans Kloof);..." in the distribution area of *Aloe haemanthifolia*. Reynolds description is based on plants from these two locations.

The location visited by Russell Scott was in fact Bain's Kloof, not Baviaans Kloof. Though both these places are recorded in the Slanghoek Mountains, it has so far not been possible to locate the latter. The Baviaanskloof of Reynolds is clearly not the Baviaanskloof of the Eastern Cape, which is a large Conservation Area.

Acknowledgements: Gerhard Marx and Russell Scott for information supplied.

# THE EUPHORBIACEAE STUDY GROUP



**THE ONLY GROUP DEDICATED TO THESE PLANTS**

**THREE BULLETINS PER YEAR  
ILLUSTRATED WITH COLOUR PHOTOS**

**ALL ENQUIRIES TO: Mrs D. Pritchard, 11 Shaftesbury Avenue,  
Penketh, Warrington, Cheshire, WA5 2PD, England  
E-mail: 101723.3005@compuserve.com**

## CACTUS & Co. INTERNATIONAL SOCIETY

**THE FULL COLOUR QUARTERLY JOURNAL IS DEVOTED  
TO THE SUCCULENT PLANT WORLD**

**[www.cactus-co.com](http://www.cactus-co.com)**

Minimum of 48 pages in A4 format, around 100 detailed, exquisite colour photographs in each issue. Dealing with cacti and other succulents, cultivation, taxonomy, scientific studies, reports from habitat. Free seeds of choice species each year. All articles in English, international authors, and much more.

World-wide subscription: Lira 70,000 (36.15 Euro). Delivery by priority mail.

Payment: Eurocheque, International Money Order, Visa and MasterCard accepted or transfer to National Giro Account N. 30202204 addressed to the secretary:

Mariangela Costanzo, viale Piave 68, I-20068 Pessano (MI), Italy.

For more information contact: Alberto Marvelli, via Colombo 18, I-21040 Venegono Sup. (VA), Italy.  
Fax ++39-0331842921. E-mail: amarvel@tin.it

## A.Di.P.A.

### (Association for the Diffusion of Plants for Enthusiasts)

Members can participate in a free seed exchange through the A.Di.P.A.'s Index Seminum (over 700 species to choose from!).

They will also receive Notiziario, a Journal in full colour with articles, special pages, cultivation tips, etc. about many unusual plants from all over the world.

Members can additionally participate in botanical travels, meetings, plant exchange, local branch activities. They can ask for free advice about any plants.

A.Di.P.A. is the organiser of Murabilia, in Lucca, Italy: an important show where many nurseries from all over the EU sell unusual plants.

A.Di.P.A.  
Via del Giardino Botanico, 14  
I-55100 Lucca,  
Italy.

Website: <http://www.adipa.org>

E-mail: [adipa@adipa.org](mailto:adipa@adipa.org)