ALSTERWORTHIA INTERNATIONAL

THE SUCCULENT ASPHODELACEAE JOURNAL

Gasteria batesiana var. *batesiana* 'Sifula' in cultivation.
Sifula is the name of the location of the population chosen to be named as a cultivar.

Contents.

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Alsterworthia International
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Printed Journals.
Printed journals are published to meet specific demands. Libraries, Botanical Gardens and individuals, both professional and private, require printed journals. They represent a more permanent form of publication, an easy form for reference and are the best means of publishing new cultivars, ensuring that they comply with the provision of the International Code of Nomenclature for Cultivated Plants (ICNCP).

Back issue of Alsterworthia International are also on the Web and are free to download by everyone To access, go to https://alsterworthia.wordpress.com/ and click on "Journals" at the head of the page. Current year journals will become back issues the year following publication, with an occasional exceptions e.g. July, 2016 which can be purchased only from Ingo Breuer and Alsterworthia International until further notice.

Please note that the International Cultivar Registration Authority for Haworthia (including Haworthiopsis & Tulista), Astroloba and Chortolirion is the Haworthia Society of Japan. Registrar: Dr. M. Hayashi. Harry Mays is their representative for the Western World.

Haworthia Study, journal of the Japanese Haworthia Society.
The cost of this journal outside Japan is the equivalent in yen of £20.00 plus postage, which is destination dependent. Please send your order with your name and address to:

Harry Mays < hmays@feenetname.co.uk >.
He will advise you of the sum due in Yen.

Payments in Japanese Yen only should then be made by PayPal direct to < m-hayashi@nausica.jp >.
Haworthia Study (Japanese) will be sent to you direct from Japan when payment is received or when the journal is published if later.

We have permission to translate Haworthia Study, the journal of the Japanese Haworthia Society, into English.

Haworthia Study is usually published twice a year each with 16 A4 pages. The majority have colour photographs so the amount of text to be translated is minimum.
Could you possibly recommend someone to undertake the translations? Or would anyone like to volunteer?
Please contact Harry Mays. Tel: 01995 679295. e-mail: hmays@freenetname.co.uk

Gasterhaworthia battenkoel - a new cultivar

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Young , dichotomous plants

Parentage. *Haworthia koelmaniorum* x *Gasteria batesiana.* I pollinated selected plants, raised the seedlings and selected the best for cultivar status. **The** *Haworthia koelmaniorum* mother plant has narrow, somewhat lensed leaves and neatly fills a 5 inch pot. The *Gasteria batesiana* pollen plant is a typical clone that clumps well and turns fiery red under stress**.**

Name. *Gasterhaworthia battenkoel* was named after the "Tour of the Battenkill," a very rough and challenging road cycling race in Upstate New York. This was chosen because of the rugged nature of the leaf surfaces of this hybrid and how fittingly similar it is to the combination of parent plant names.


Gasterhaworthia battenkoel. Mature, rosette plant.

Description: Description: Low, open rosette spreading to over 6 inches with somewhat keeled leaves. Seedlings initially grow linearly and then slowly begin spiralling. Leaves are dark green, gradually tapered from the broad base to a minute spine tip. Plants are well covered with small, pale tubercles, which are finer on the underside of leaves. A faint, midline channel, is present on the upper surface of some leaves. It can be seen from the photographs that the dark green of the leaves becomes more pronounced with strong sun. Senescing leaves become red and then gradually fade to white. This cultivar can change from deep green to red-purple in response to seasonal variations in temperature and light. Roots resemble *Gasteria batesiana* and are light yellow. Flowers have yet to be observed, but are expected to develop in the coming year.


Gasterhaworthia battenkoel. Reverse side of a mature leaf tip showing marginal teeth, tubercles & keel.

Propagation. Cuttings root easily from any part of the leaves, so it is not necessary to have tissue from the leaf-stem junction to

Gasterhaworthia battenkoel
Reverse side of a mature, recurved leaf showing marginal teeth & tubercles.

produce roots. It is not known whether these hybrids are fertile. The seedling are shown at 10 months old. Seed was sown May 21st 2015, so current photographs show plants at 30 months.

Right. Upper surface of the adult plant showing emergent dark green leaves with tubercles and toothed (serrate) leaf edges. **Below.** The leaves below show the gradual change in colour with (mild) sunlight and the final change in colour of a basal leaf in decline. During this stage nutrient are withdrawn and recycled.

Gasterhaworthia battenkoel. A complete plant.

Gasterhaworthia battenkoel - stages of development.
Above bottom right. Young dichotomous leaves.
Above bottom left. Plant developing into an adult rosette.
Above top right. Adult plant showing signs of exposure to sun with the oldest leaf (red) showing old age and decline.
Top left. An adult plant which has had exposure to more sun than that at top right.
Below. Adult plant exposed to limited sun.

The Succulent Liliaceae League of America and the Haworthia Review 1946 to 1948

The "Succulent Liliaceae League of America and the Haworthia Review" was set up to meet the needs of members of general societies (Cacti and Other Succulents) who felt that their interests, Aloe, Haworthia etc, were not being given enough attention. At that time there were no low priced, comprehensive books with colour illustrations available but there was limited, scattered information in libraries, journals etc.

At that time, travel and exploration was possible, but not so comfortable as at present, and new species were frequently found and reported. There was a flow of new plants, without the present day formidable restrictions, which were later put into operation to protect plants in habitat.

The Succulent Liliaceae League of America and the Haworthia Review was set up by a small group of U.S.A. enthusiasts intent on assembling information for public usage. They started with no resources but a lot of enthusiasm. Some, in later years, set up the International Succulent Institute (ISI) which made low priced plant available in variety. Later, as the operatives became older and had more to do, the ISI was transferred to the Huntington Botanical Gardens as the "International Succulent Introductions (ISI)" which continues to this day.

Resources for journal production as known today just did not exist in those days. To print a journal in small quantities a stencil (special paper) had to be cut on a typewriter. Letters, etc were individually cut by typewriter keys, in appropriate order, which cut the stencil with the individual outlines required for each letter, word, number etc for the text of articles to be produced. There were no spell checkers. Mistakes had to be located by sight and corrected by hand using stencil correction fluid. This could be a messy process and might even involve retyping.

When the stencils had been cut they were put on ink rollers which, when turned, often by hand, left imprints of the letters etc cut in the stencil on the paper to be used for the article. Ink passed through the spaces cut in the stencil to produce a replica of the letters, numbers etc cut in the stencil by the typewriter. Thus, journal pages were created. Photographs, usually black an white, were then pasted in. There was no storage system for the stencils & photos to be saved and stored indefinitely for future usage. (A stencil could be used more than once, but its life was short.)

Compare all that with current day preparation of articles and printing. Computer produced articles are simply typed with colour photographs, maps etc being added to the text on demand by the computer. Spelling is checked automatically and then all is saved on a storage device by the computer. To print, it is only necessary to click "Print" for the computer to transfer the file to the printer for printing in full colour and on many printers, but not all, to store the print file on the printer for future usage.

Myron Kimnach, Jay Dodson, Bill Hague and Paul Hutchison were among those who were responsible for initiating the Succulent Liliaceae League of America and the Haworthia Review. Alas, most, if not all, except Myron Kimnach, are now deceased but they live on in the pages of the journal they created.

This reprint of the "Succulent Liliaceae League of America and the Haworthia Review" was computer produced and printed so its appearance is more attractive than that of the original, otherwise contents are the same. Locating an original copy of Succulent Liliaceae League of America and the Haworthia Review may well boarder on the impossible. The last time the editor saw a copy for sale was decades ago and the price was £20.00. As the pound has decreased in value since then, a second hand copy, if available, could demand a much higher price today. This superior reprint provides you with the same information as in the original and it costs only £5.00 + postage. Orders should be sent to hmays@freenetname.ci.uk

The Haworthia Review gives a remarkable view of the situation at that time when the concept of a species was very much concentrated on differences. If a wild plant looked different in some respects it was a different species notwithstanding that it may also have some features in common with others. Furthermore, publications on the subject in English available to hobbyists were noticeable by their absence. The Haworthia Review started to remedy this. It contained articles from Desert Plant Life, Transactions of the Linnean Society, Synopsis Plantarum Succulentarum, Flora Kapensis, Journal of South African Botany, Prof. Flaio Resende, Karl von Poellnitz and more such as lists of species and plant descriptions but you can immerse your self in "The Succulent Liliaceae League of America and the Haworthia Review 1946 to 1948" to appreciate the developments of that period.

Of course, nothing ever is, and nothing ever was, without

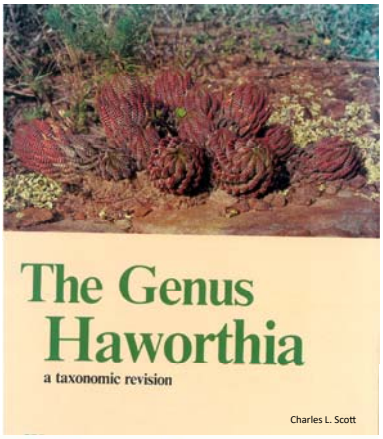
some controversy - see 'A reply to Mt Uitwell by G.G. Smith' on pages 12-13 of this journal'.

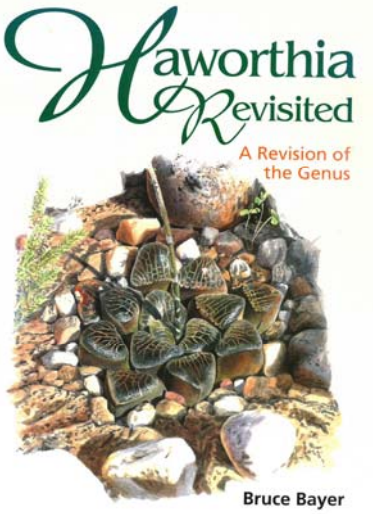
Now, to move on. As times progressed, researchers took an interest and carried out mammoth surveys of haworthias in habitat over many decades. In 1984 Charles L. Scott , South Africa, published "The Genus Haworthia - A Taxonomic Revision". This was based on field work and updated the species. It is worth reading if you can find a copy. Essentially, it records progress to date of publication but species are largely classified as being plants different from others by some visual factor.

The next significant publication was "Haworthia Revisited - a Revision of the Genus" by Bruce Bayer published 1999. This was some 15 years after Scott's important work, during which time Bayer had done much field work. This reinforced his view that species were groups of related populations which showed common features but also some different features. However, his classification still complied with the International Code of Botanical Nomenclature.

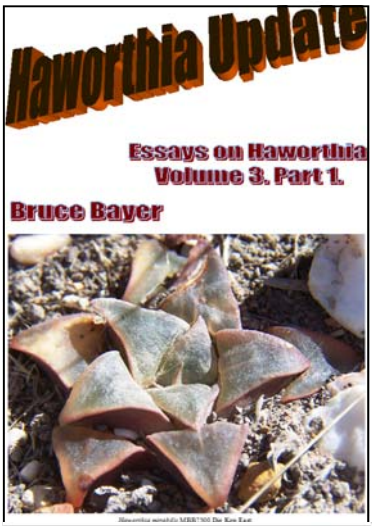
Following the publication of "Haworthia Revisited - a Revision of the Genus", Bayer continue his field research almost right up to the present. He published his results from time to time in Haworthia Updates 1 to 11 (2-11 published by Alsterworthia International). Each update revealed more habitat detail and plants illustrated with large colour photographs. All this added justification to his view of species covering large areas with some features in common and some with varying variability. From a scientific point of view he had a strong case but unfortunately his naming system did not comply with the International Code of Botanical Nomenclature, so the Scientific Community did not recognise his species.

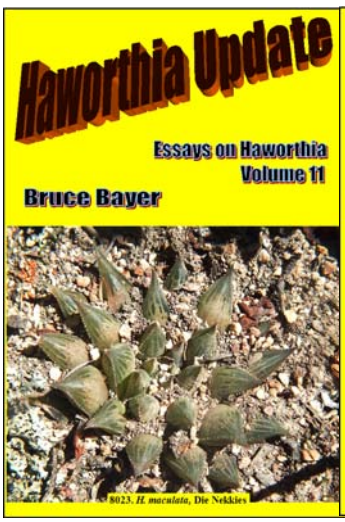
Whilst all this was going on, Ingo Breuer, Germany, was making a very serious study of the Genus *Haworthia*. He started at the beginning - by doing a thorough search of scattered literature deposited in many different places in several countries. This will be covered in the next issue of Alsterworthia International. For the present, suffice it to say that he published several books comprising all the information and photographs he accumulated from the start to the then current date for public consumption. It was a world library in one place. This had never been done before.

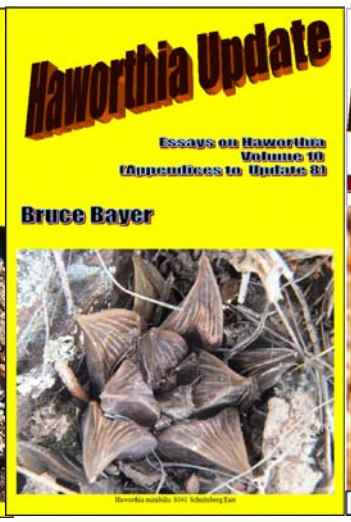


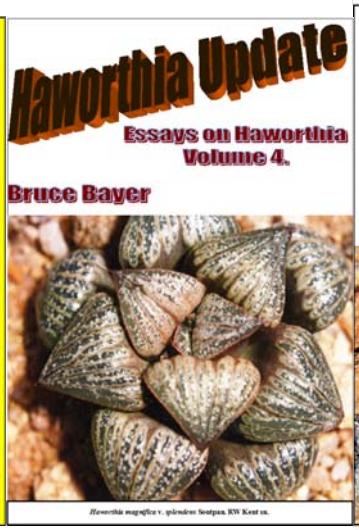


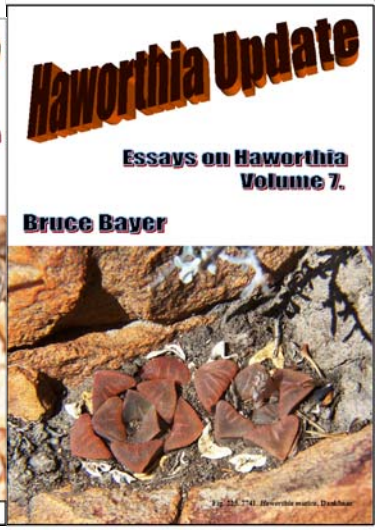
Ingo Breuer made many visit to South Africa to collect information about plants in habitat. He was assist by a wide range of con-tacts. His field experience, the large collection of documented plants he accum-ulated & studied, his literature research etc all made substantial contributions to his preliminary concept of the genus haworthia (Haworthia book 1) to be revised when further material became available. He disagreed with both Bayer's and Hayashi's species concepts. He continues, as they did, to divides Haworthia into three Subgenera, Subgenera into sections and sections into species but introduced a new

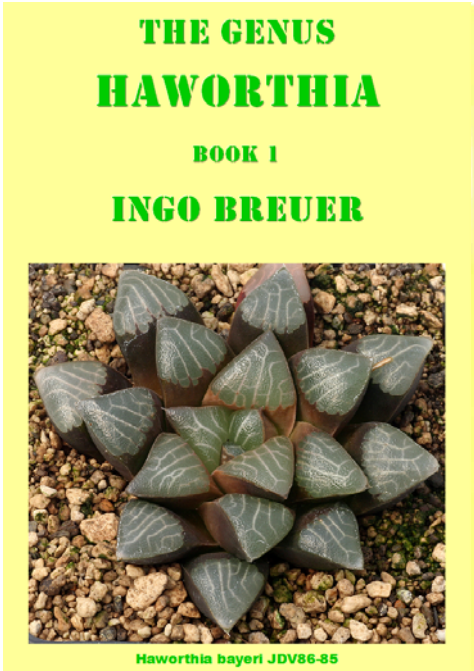




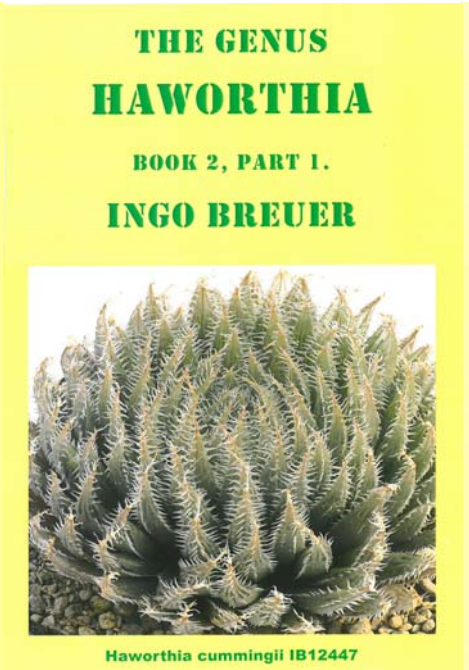




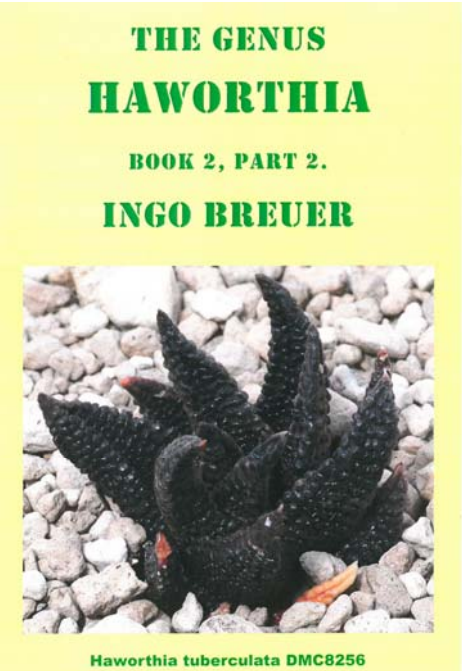




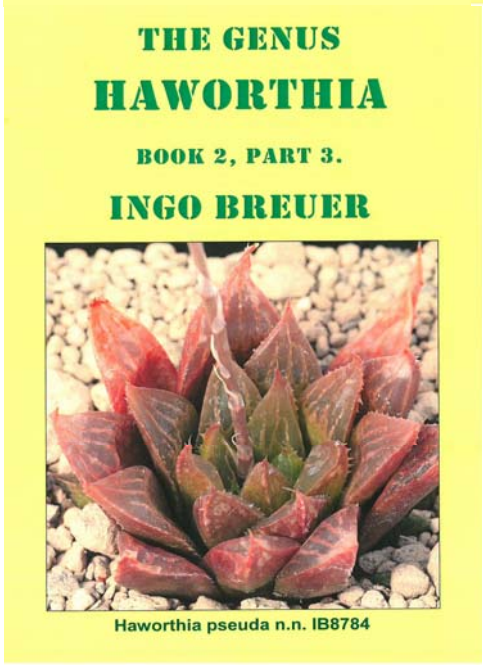
Haworthia bayeri JDV86-85



Haworthia cummingii IB12447



Haworthia tuberculata DMC8256



Haworthia pseuda n.n. IB8784

concept "Aggregates" which are made up of species and are similar to Bayer's Super Species. All plants are illustrated in colour and have location maps and discussion.

He then published on 1/8/11 "The Genus *Haworthia* Book 2 in three parts, total pages 188" In brief, Book 2 brought Book 1 up -to-date and used larger photos than Book, 1.

Whilst all this was going on DNA studies were being carried out in South Africa, which helped to throw more light on the evolution of haworthias and related genera. The time had come for a new classification to be published. New classifications are simply revisions of old updated in the light of the discovery of new information. So what classification was to be modified by the new information? Species names used in Bayer's Updates (2 to 11 in particular) did not comply with the International Code of Botanical Nomenclature, consequently an up-to-date classification had to be devised which did. This was done by Bayer and Manning (South African National Biodiversity Institute) who produced "A Rationalisation of Names in Haworthia. A list of species with new combination and new synonyms". See Alsterworthia International Volume 12, Issue 1 March 2012, One example will illustrate the nature and extent of the "rationalisation". *Haworthia mirabilis* now includes 17 other species which, before, had been species in their own right, but are now regarded as varieties of the super species e.g. *Haworthia badia* became *Haworthia mirabilis* v. *badia*; *Haworthia magnifica* became *Haworthia mirabilis* v. *magnifica* and so on. This prepared the way for the revision required by the DNA study.

The new evolutionary classification of the alooids was published by Manning, Boatwright and Daru, South Africa in Alsterworthia International, Volume 14, Issue 2, July 2014, under the title "Aloe & goodby". *Haworthia* was divided into three genera: *Haworthia, Tulista* & *Haworthiopsis.* The species in "A Rationalisation of Names in Haworthia. A list of species with new combination and new synonyms" (above) formed the basis for the new species and varieties based on DNA studies.

Dr Hayashi, Japan, who has been studying and classifying haworthias for many years has expressed reservations about this revised classification. Please see "Alooideae Classification" by Dr. M. Hayashi in Alsterworthia International Vol. 14, issue 3 (Nov. 2014).

Ingo Breuer accepted the three new genera but he takes a more liberal view of the number of species in each genus. He includes more species in the genera than Manning, Boatwright and Daru but many less than are included by Dr Hayashi, who still includes them all in the Genus *Haworthia*.

Following on from the DNA classification, it became necessary for Ingo Breuer to publish a new classification, "Some New Combinations in Haworthia, Haworthiopsis

and Tulista" published in Alsterworthia Volume 16. Issue 2. July issue 2016, distributed 25 June 2016. See page 18 of this publication for an example. It may be purchased from Ingo Breuer (15.00€) or Harry Mays (£13.00) (Alsterworthia International subscribing members in 2016 will have had the copy free.)

So far Ingo Breuer is the only one to have published the names of the species he accepts for the genera *Haworthia*, *Tulista* and *Haworthiopsis* and illustrated each in colour.

Two different classifications are likely to continue side by side. Nurseries and collectors have one thing in common, they want names to identify and mean the same to everyone so that they can trade in confidence. Differences mean more species. When one or more populations of plants have ceased to develop they have become stable and are a species no matter how many populations they have.

For scientist, populations spread over space with some features in common including DNA, and some different as they are still evolving. Only one super species name is all that is required. This is quite common in haworthias. This may be fine for scientists but not of much help for buyers and sellers of plants who want names to identify different plants.

The International Code of Nomenclature for cultivated plants (I.C.N.C.P) makes provision for cultivar names to be linked to appropriate genera/species names which comply with the International Code of Nomenclature for plants etc (I.C.N.).

The I.C.N.C.P. provides for a wild plant to be given cultivar status if it exhibit a feature(s) not found in the rest. Such a plant can be given a cultivar name attached to the correct genus/species name.

A population of plants having features which enable them to be included in a genus, may also have an additional feature(s) which enable them to be separated from that genus. In the early days, it was customary to give these plants separate species status, then later varietal status. A growing number now want to classify them all as one variable species but, for the time being at least, published classifications regard them as varieties of the appropriate species. This may also give some satisfaction to sellers and buyers because varietal names distinguish plants in that variety from others in the rest of the species. However, for some there are still not enough species names to ensure that a name clearly defines a plant for both sellers and buyers.

The ICNCP makes provision for a **population of plants** with a feature(s) not found in the rest of the genus/species to be given cultivar status instead of a variety name. Very few botanist make use of this provision. One exception is Ernst Van Jarrsveld. See Alst. Int. Vol. 2008, Issue 3 for Gasteria populations being made cultivars.

It is interesting to compare the situation as it existed in 1946-1948 with the present day. If you would like to do this please see "Aloe and Goodbye: A new evolutionary classification of the Alooids" by Manning, Boatwright & Daru, all professionals, (South African National Biodiversity Institute) in Alsterworthia International Vol. 14, Issue 2 (July), 2014. This is based on the observation diligently pursued by Bruce Bayer that species are variable over space whereas in the past plants were regarded as species if they differed in some respect from others but were similar to them in some.

In comparison see "Some New Combinations in *Haworthia, Haworthiopsis* and *Tulista*" by Ingo Breuer, Alsterworthia International Vol. 16, Issue 2 (July) 2016. Ingo Breuer is a serious researcher of haworthia literature and avidly studies haworthias in habitat and in cultivation - he also follows the ICN when naming plants. Whilst he is appreciative of the current broad species concept of present day scientists for scientific work, he also recognises the need for a more liberal classification for nurseries and hobbyists, which restricts names to identify plants. This is the current classification for the narrow species concept which allows plant names to identify plants, making it possible for a name to mean the same for nurseries and purchasers.

FLORA CAPENSIS

being a Systematic Description of the plants of the CAPE COLONY, Caffraria and Port Natal (and Neighbouring Territories)
by : Various Botanists

Edited by: W.T. Thiselton-Dyer, C.M.G, C.L.E., LL.D., F.R.S. Director, Royal Gardens, Kew.

Published under the authority of the Governments of the Cape of Good Hope and Natal.

Volume VI - *Haemodoraceae* to *Liliaceae*.

London
L. Reeve & Co., 6 Henrietta Street, Covent Garden, Publishers to the Home, Colonial and Indian Governments.
1896-1897.

IX. APICRA Willd.

329. Perianth oblong-cylindrical, with a straight tube and 6 short oblong sub-equal segments spreading at the tips, with 3 green stripes down the keel. Stamens 6, hypogynous, shorter than the perianth; filaments filiform; anthers oblong, small, versatile, dehiscing introrsely. Ovary sessile, oblong-trigonous; ovules numerous, superposed; style short, subulate; stigma capitate. Capsule oblong-trigonous, coriaceous, loculicidally 3 valved. Seeds compressed; testa brown; albumen fleshy.

330. Leafy stem always elongated; leaves shorter, thick, fleshy, multifarious or quinquefarious; flowers small, whitish, arranged in simple or compound lax subspicate racemes; pedicels short, ascending; bracts small, ovate. Distribution: Endemic.

Leaves arranged in five straight or spirally twisted rows:
- Leaves lanceolate deltoid ..... (1) PENTAGONA
- Leaves deltoid;
  - Upper leaves flat on face..... (2) TURGIDA
  - Upper leaves concave on face.... (3) DELTOIDEA

Leaves multifarious, the spirals quite obliterated:
- Perianth smooth ..... (4) SPIRALIS

Perianth rugose:
- Leaves smooth on both back and face.
  - Leaves deltoid.....(5) FOLIOLOSA
  - Leaves lanceolate-deltoid .....(6) CONGESTA
- Leaves rugose with tubercles on the back:
  - Leaves lanceolate-deltoid $\frac{1}{6}$" thick. (7) BICARINATA
  - Leaves deltoids $\frac{1}{4}$ -$\frac{1}{3}$" thick ..... (8) ASPERA

1. *A. pentagona* (Willd. in Ges. Naturf. Fr. Berl. Mag. V 273); leafy stem $\frac{1}{2}$ - 1' long, $2\frac{1}{2}$ -3" diam. leaves included; leaves lanceolate-deltoid, arranged in five regular rows, $1\frac{1}{4}$-$1\frac{1}{2}$" long, $\frac{1}{2}$ - $\frac{3}{4}$" broad, $\frac{1}{4}$-$\frac{1}{3}$" thick, bright green, flat on the face, rounded on the back, scabrous on the margins, with two obscure keels and a few scattered, whitish tubercles on the back, the lower spreading, the upper ones ascending; peduncle $1\frac{1}{2}$ ' long including inflorescence, simple or forked; racemes 6-9 " long; pedicels erecto-patent, $\frac{1}{6}$ -$\frac{1}{4}$" long; bracts small, ovate; perianth $\frac{1}{2}$ - $\frac{5}{8}$" long, smooth on the outside. Haw. Suppl. 62; Baker in Journ. Linn. Soc. XVIII. 217. *Aloe pentagona* Haw. in Trans. Linn. Soc. VII. 7; Ker in Bot. Mag. t. 1338; Jacq.. Fragm. t. 111; Salm-Dyck, *Aloe* sect. i. fig. 4. *Haworthia pentagona* Haw.. Syn. 97.

Var. 1. *spirella* (Baker loc. cit.); leaves smaller, more deltoid, about an inch long, irregularly quinquefarious. *Haworthia spirella* Haw. Syn. 97. *Aloe spirella* Salm-Dyck *Aloe*, sect. i. fig. 3.

Var. 2 . *bullulata* (Willd. in Ges. Naturf. Fr. Berl. Mag. v. 273); leaves irregularly quinquefarious, with more numerous tubercles on the back. Haw. Suppl. 62. *Aloe bullulata* Jacq. Fragm. t. 109.

Var. 3.*Willdenowii* (Baker, loc. cit.); more robust; leaves about 2" long, arranged in five spirally twisted rows. *Apicra spiralis*, Willd. in Ges. Naturf. Fr. Berl. Mag. v. 273. *Haworthia spiralis* Haw. Syn. 97. *Aloe spiralis*, Haw. in Trans. Linn. Soc. VII 7; Salm-Dyck *Aloe* sect. I. fig. 58 non Linn.

South Africa; without locality, living cultivated plants. Introduced into cultivation about the beginning of the present century.

2. *A. turgida* (Baker in Journ. Bot. 1889, 44); leafy stem 6-9" long, 2-$2\frac{1}{2}$" diam, leaves included; leaves arranged in five spirally twisted rows, deltoid, 1" long, $\frac{3}{4}$" broad, smooth in the face scabrous on the margin, quite free from spots or tubercles, the lower spreading, dull green, tinged on the face rounded on the back, $\frac{1}{2}$ - $\frac{1}{3}$" thick in the middle, the upper pale green with several indistinct vertical ribs of darker green, flat on the face; flowers not seen.

331 Coast Region; Albany D V. Hutton. Introduced into cultivation in 1872. Described from living plants in the Kew collection. A near ally of *A. deltoidea*.

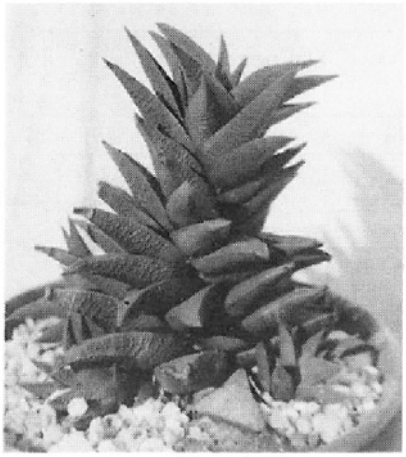
3. *A. deltoidea* (Baker in Journ. Linn. Soc. XVIII. 217); leafy stem $\frac{1}{3}$-1' long, 2" diam, leaves included; leaves arranged in five regular rows, all except the uppermost spreading, deltoid, $\frac{3}{4}$-1" long, $\frac{1}{6}$ - $\frac{1}{4}$" thick in the middle, bright shining green, slightly concave on the face, except in the oldest leaves, rounded on the back, distinctly keeled towards the apex, serrulate on the keel and edges, entirely without spots or tubercles; peduncle $1\frac{1}{2}$ ' long including inflorescence; racemes 1-4; pedicels very short; bracts lanceolate-deltoid; perianth $\frac{1}{2}$ " long, smooth. *Aloe* (*Apicra*) *deltoidea* Hood. fil. in Bot. Mag. t. 6071.

Coast Region, Alexandria Div. Zuurberg Range, stony places at Hell Poort, 2000 ft. Bolus, 2687.

Described from living, cultivated plants introduced by Cooper about 1860.

4. *A. spiralis* (Baker in Journ. Linn. Soc. XVIII 217). Leafy stem $\frac{1}{2}$ -1' long, $1\frac{1}{2}$ -$1\frac{3}{4}$ " diam. leaves included, leaves multifarious, lanceolate-deltoid, 1-$1\frac{1}{4}$" long, $\frac{1}{2}$ - $\frac{3}{4}$ " broad, bright shining green, smooth, flat on the face, rounded on the back, obscurely crenulate on the margin, all except the lowest ascending, peduncle $1\frac{1}{4}$' long including the inflorescence, simple or branched, racemes

Description No. T22-1



Dodson Plant #T22-1

Leaves in three very twisted rows. The young leaves concave on the face, the older ones flat at the base but concave at the tip. The face is rather sandy, the tubercles being quite small and in no particular pattern. The tubercles on the back are larger, and in definite cross bands. The keel is rather indistinct and placed to one side of the centre line. Along both the keel and margins there is a row of fine tubercles. All tubercles are the same colour as the leaf. The leaves are mostly upright in growth and very few if any recurve. Leaves are $1\frac{1}{4}$" to $1\frac{1}{2}$" long, $\frac{3}{8}$" to $\frac{1}{2}$" wide. The plant is from $3\frac{1}{2}$" to 4" tall and $2\frac{1}{2}$" across. Light green.

This plant has been observed in many collections and seems well distributed here in the United States as *Haworthia tortuosa*. However, it would seem to be too light a green to qualify as any described variety that I know of. The fact that the plant has been received from a number of widely separated sources, would seem to indicate that it is not of deliberate hybrid origin. It is very close to my No. T17-1 also pictured in this issue, but is a much smaller plant and the leaves are in more twisted rows. In fact, in the plant pictured, a row of leaves twists entirely around the plant. It is, however, best distinguished from all the other varieties by the fact that the leaf tips are paper-thin. In the older leaves these wither or die off. In the younger leaves the tips are shaded from yellow to orange and seem to have very little life in them. For this reason the plant always has a ragged or unkempt appearance. It is nevertheless, an interesting plant, as the withering of the leaf tips would seem to demonstrate a method of drought resistance by, perhaps, lessening the evaporation area.

Dodson Plant No. T19-4

Description No.T19-4

Leaves in three very twisted rows, $1\frac{1}{2}$" long $\frac{5}{8}$" wide, 3/16" thick. All leaves deeply concave on the face from the base to the tip. All recurving. Both the face and the back of the leaf closely covered with very small concolorous tubercles, the tubercles on the back being somewhat larger. The back of the leaf is prominently keeled, the keel being to one side of the centre. (The keel on all leaves of this plant is on the left side, whether this is a growth characteristic, or is confined to this species is a matter of conjecture.) The plant is a blackish green, 3" tall, 2" wide.

In colour and texture of the leaf, the plant is very close to my number T19-1, however the leaves are deeply grooved on the face in this plants while in T19-1 they are either flat or rounded. This plant would seem close to *Haworthia tortuosa* var. *tortella* (Haw.) Baker. Of *Haworthia tortuosa* var. *tortella*, unfortunately I have only a very short, incomplete description from Flora Capensis which is as follows, "leafy stem very twisted branched at the base; leaves blackish-green". From this description it is extremely difficult to tell what the variety should be. Needless to say I would greatly appreciate whatever information anyone may have on this variety.

Dodson Plant No. R40-1

Description No. R40-1

Leaves in many rows, numerous, the young leaves recurving, the older ones more upright in growth. The face of the leaf is rough with many fine tubercles the same colour as the leaf. The back of the leaf is rough with somewhat larger tubercles that are also the same colour as the leaf, with the exception that the tubercle along the keel and leaf edge are whitish. The leaf is V shape on the back with the keel in the centre. Occasionally an indistinct keel may be found generally to the left of this centre keel. The plant is light green in colour, except that when dry or dormant when it is red-brown in colour. Plant is $3\frac{1}{2}$" tall, 2" wide. The leaves are about 1" long, ½" wide, ¼" thick at the base, somewhat ovate and pointed. The plant offsets from or near the base. There would appear to be two interesting characteristics worthy of note. One is the fact that the offsets seem to produce aerial roots while still attached to the parent. The other is the curious effect on the face of the leaf caused by a centre line of tubercles that is bisected by one or two other lines. This effect is rather hard to describe but when once seen is easily recognised, and seems confined to this species.

The plant here pictured would seem to agree quite well with the description of *Haworthia rigida* v. *expansa* (Haw.) Bak. It is of interest to note that Willdenow in Naturf.

A REPLY TO Mr. UITEWAAL

By G. G. SMITH

In your Journal, January, 1949, Mr. A. J. Uitewaal criticises some remarks in my article "Views on the naming of *Haworthias*," but passes over the glaring instances I gave of careless work.

He writes :—" the history of science generally, or of any branch of science, is often regarded by certain students as an amusing, or even interesting tale of errors and blunders." Does he agree with the publishing of descriptions and photographs of plants so distorted through being in a parcel for a month or more that it is quite impossible to determine the normal plant ? Does he agree with the method of making up " fairy tales " when the facts are unknown, but can be ascertained ? These are not errors or blunders, but shoddy work. Or does he agree with Dr. Resende (Port. Acta Biol. 1949 : 5). " There is not the slightest doubt that, however great the deficiency of the initial description, in a short time the universal recognition of the strain was much more perfect, due to all the possible criticism and improvements, than what occurs with the strains described up to the present date by Mr. G. G. Smith." In other words, that my taking time to study the plants, photographing and describing them only when in a healthy and normal condition, even waiting for them to flower, is not necessary. A truly extraordinary attitude to adopt.

Mr. Uitewaal continues " This is all that can be found in Smith's article on the supposed ill effects of Von Poellnitz' work on the state of knowledge of *Haworthia* but a good number of lines are devoted to such irrelevant points as the space of time it took Von Poellnitz to draw up the diagnosis of a form he intended to publish as a " nova species." So Mr. Uitewaal considers that the points I raised about (1) *H. Venteri*—a description and photograph of a very abnormal plant and (2) *H. Parksiana*—and the fairy tale, are irrelevant ? It seems to point to Mr. Uitewaal agreeing with Dr. Resende's statement.

Mr. Uitewaal then refers to my criticism of Mr. Farden's work. Mr. Uitewaal's question as to why I should use certain characteristics and object to Mr. Farden using them, is very easily answered. It is not a question of merely using the characteristics, but how and when to use them. In your Journal, 1939 : 34, Mr. Farden, in regard to the forms of *H. attenuata* he published, writes :—" through searching in all sources, in Europe and S. Africa, I have got together others as well, as specified below." Again, 1948 : 41, he writes :—" It may surprise some how it was that I was able to find and describe twenty varieties of *H. attenuata*, since to obtain them is so difficult. Well, I found I had three varieties and C. D. O'Donoghue had two more which he gave me, so that excited me, and I said I would make a special effort to see how many I could find. The predominating feature of the species is the line of tubercles down the middle of the face of the leaf. I broke up a plant and sent a leaf to all the dealers I knew, asking them to send me specimens of any they found in their stock with the special feature, and if slightly various send those as well. I sent the leaves to four dealers in England, one in Belgium two in Germany, one in Italy, and two in South Africa. In due course, I received some fifty plants. I then proceeded to examine them very carefully and discovered amongst them fifteen more varieties, which made twenty in all. I then described them and published the list in our Journal, December, 1939." The above, Mr. Uitewaal, is the answer to your question. To answer it a little more fully, I would mention that to enable me to describe and publish new species and varieties in this very polymorphous genus, I do not write to dealers for plants which, incidently, will in many cases be hybrids, and are mostly, if not wholly, without locality. I study my plants in the field and in my garden and my drawings, photographs and records are accurately and scientifically prepared, and I do try to avoid " errors and blunders " by recording facts and eliminating guesswork.

Let us now examine briefly Mr. Farden's work (1939 : 34—38), the work which Mr. Uitewaal is comparing with mine. Mr. Farden writes :—" to economise space I have been obliged to draw the shape of the leaves more or less all alike, though retaining the exact disposition and size of the tubercles." *Haworthia* leaves are, as most of us know, somewhat variable in size and shape ; nevertheless, these are important characters, and any scientifically minded person would draw them to scale, especially when a number of leaves are shown together for purposes of comparison, as in this case. Looking at Mr. Farden's figures of the leaves, one has no conception of the shape or size. For instance, leaf No. 1 should, when compared with the length, measure 11.5 mm. wide, not 7.5 mm. as figured, and the shape is quite incorrect. Likewise, leaf No. 2, for the length figured, should be 18 mm. wide, not 8 mm. How unscientific ! However, he gives his reason for not drawing the leaves full size, but emphasises that he has retained the exact disposition and size of the tubercles. Having read this statement, it is interesting

to note that of the eleven pairs of leaves drawn by Mr. Farden (in 1938, p. 67), none agree in tubercle disposition with those of the same form in 1939 : 35. It seems, therefore, that if Mr. Farden today drew the leaves of the nineteen varities and forms now quoted by him, they would look so different that on the basis on which he separates forms, he would have another large number of varieties and forms to add to his list. Let me now refer to the tubercles on some of the nineteen pairs of leaves shown, the exact disposition and size of which have been retained by Mr. Farden. Regarding tubercle size, those on the back of leaf No. 1 are in .75 to 2 mm. broad bands, yet the description gives 1 mm. broad bands. Regarding disposition, leaf No. 2 shows twenty distinct bands of tubercles which, according to the description are 2 mm. apart, This means that the bands of tubercles occupy a space over 4 cm. long. Allowing for the tip and base, which are not tubercled, we have a leaf at least 5 cm. long, yet the description gives a length of 3—4 cm. Likewise leaf No. 16 shows a row of tubercles which, at 2 mm. apart, makes a leaf length of a little over 3 cm., yet the length, according to the description, is 5—6 cm. Now Mr. Uitewaal, was it this sort of thing you had in mind when you wrote your first quoted remark ?

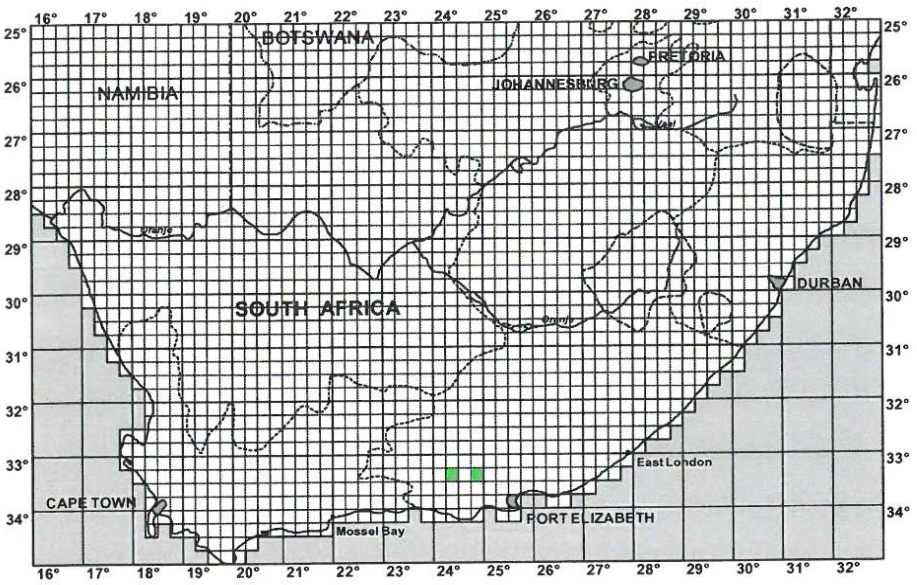
Other examples of " errors and blunders " are to be found in your Journal, 1948 : 41. Here Mr. Farden writes : " they (*Haworthias* and *Astrolobas*) grow on and around the Great Karoo Desert, a little to the north of Cape Town ; they are extremely local, hardly any two species are to be found in the same area." Actually, there are very few, *Haworthias* and *Astrolobas* north of Cape Town ; their distribution extends practically right across the Cape Province, most species occurring between East London and Caledon, where in places two—four are often found growing together.

Mr. Farden then goes on to mention the varieties of *H. attenuata* he described, named and published in your Journal, December, 1939, and which I referred to earlier. He claims to have described, named and published twenty varieties in this Journal. Actually nineteen varieties and forms were published, and this number includes five which were not named by him, three having been named by Haworth, one by Baker and one by Von Poellnitz.

Mr. Uitewaal explains how variable the genus *Haworthia* is, yet he evidently agrees with the separating of forms on such slight differences as he mentions, otherwise why does he disagree with the remarks I made about splitting.

On page 21, Mr. Uitewaal wrote :— " Seeing that, at present, there is insufficient knowledge of the stability of the vegetative characteristics, I proposed to pay more attention to floral characteristics than has been attempted so far." He then refers to such differences in inflorescences as sturdy-branched and filiform-non-branching peduncles, few and many bracts, crowded and lax racemes, hexangular and triangular perianth base (in cross section). In Des. Pl. Life, 1947 : 132—136, he describes at length " a first attempt to subdivide the genus *Haworthia* based on floral characters." He refers to " the alleged uniformity in the floral structure of the species of *Haworthia*" and says " doubtless he, too, was under the spell of the unanimously proclaimed uniformity of the flowers and inflorescence in the genus." He then refers to his discovery that the perianth base of some species of *Haworthia* is hexangular in cross section, while in other species it is triangular. During the last seven years or so, I have described and published 45 new species and varieties of *Haworthia*, in every case referring to all the characters mentioned by Mr. Uitewaal. Most of these have, from time to time, been recorded by other authors, but I can claim to be the first to record the difference in the perianth base, i.e., the triangular or hexagonal perianth base, and these together with the other characters are being used in my key to the genus *Haworthia*.

Map 3.98: Subgenus Hexangulares - Section Luridae - Aggregate: 12411. Bruynsii



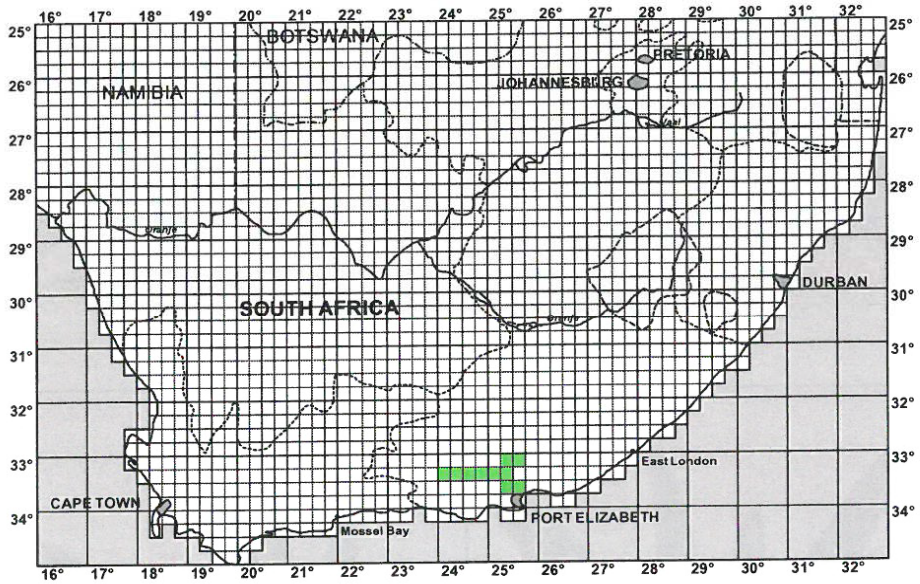
H. bruynsii **IB10378**

H. bruynsii **IB16765**

12411 - H. bruynsii

IB#	Coll-No	locality	Grid-Ref
5906		Kleinpoort, on R75	3324BD
5908		Springbokvlakte, Steytlerville	3324BD
6451	JDV91-123	Langveld	3324AD
10378	GM258	SE of Kleinpoort, Springbokvlakte	3324BD
16765	JDV91-135	E of Springbokvlakte	3324BD

Map 3.99: Subgenus Hexangulares - Section Luridae - Aggregate: 12421. Sordida



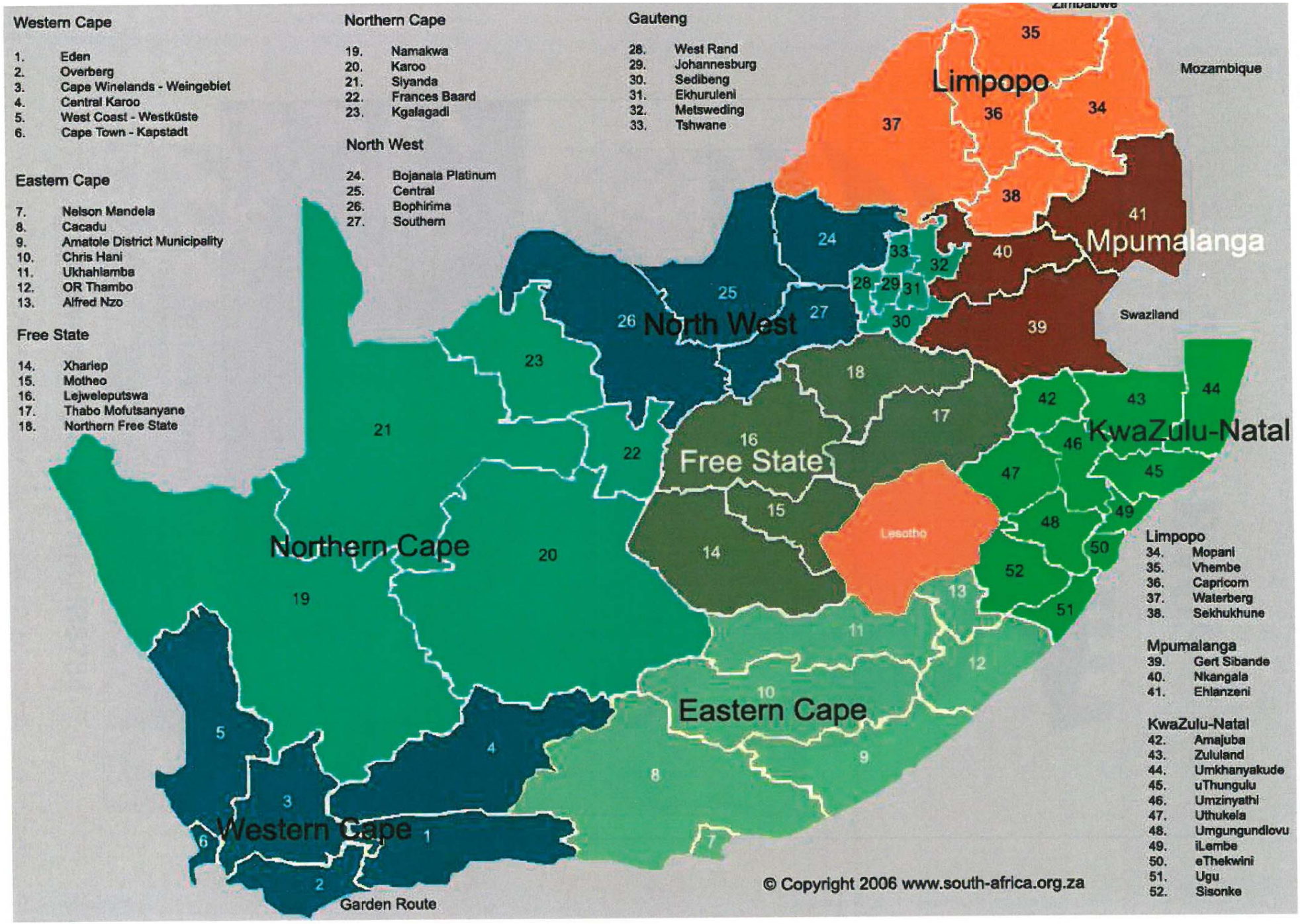
H. lavranii **IB13675**

H. lavranii **IB13677**

12421 - H. lavranii

IB#	Coll-No	locality	Grid-Ref
6501		Tretyre, SEE of Steytlerville, Bloukoprante	3324BC
13675	IB13675	NE of Die Bordjie	3324BC
13677	IB13677	W of Haaspoort	3324BC

The Genus Haworthia. Book 2, part 3 - Ingo Breuer. Page 155.


Western Cape
1. Eden
2. Overberg
3. Cape Winelands - Weingebiet
4. Central Karoo
5. West Coast - Westküste
6. Cape Town - Kapstadt
Eastern Cape
7. Nelson Mandela
8. Cacadu
9. Amatole District Municipality
10. Chris Hani
11. Ukhahlamba
12. OR Thambo
13. Alfred Nzo
Free State
14. Xhariep
15. Motheo
16. Lejweleputswa
17. Thabo Mofutsanyane
18. Northern Free State
Northern Cape
19. Namakwa
20. Karoo
21. Siyanda
22. Frances Baard
23. Kgalagadi
North West
24. Bojanala Platinum
25. Central
26. Bophirima
27. Southern
Gauteng
28. West Rand
29. Johannesburg
30. Sedibeng
31. Ekhuruleni
32. Metsweding
33. Tshwane
Zimbabwe
Mozambique
Swaziland
Lesotho
Limpopo
Mpumalanga
KwaZulu-Natal
Garden Route
Limpopo
34. Mopani
35. Vhembe
36. Capricorn
37. Waterberg
38. Sekhukhune
Mpumalanga
39. Gert Sibande
40. Nkangala
41. Ehlanzeni
KwaZulu-Natal
42. Amajuba
43. Zululand
44. Umkhanyakude
45. uThungulu
46. Umzinyathi
47. Uthukela
48. Umgungundlovu
49. iLembe
50. eThekwini
51. Ugu
52. Sisonke
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Variety or Cultivar, that is the question!

Van Jaarsveld seems to be the one scientist who recognised the importance of the ICN... and the ICNCP for classifying wild plants. Van Jaarsveld's book, "Revision of gasterias" was published in 1994. It listed species and varieties in the body of the text and the index but not the cultivars. Cultivars were listed separately, normally after the paragraph for each species titled "Diagnostic features and variations".

"Taxonomic implications of genome size for all species of the genus Gasteria" Duval (Aloaceae) by B. J. M. Zonneveld and E. J. van Jaarsveld was published with permission in Alsterworthia International, 2008, Issue 3. This listed only species and varieties, no cultivars (not surprising for a scientific paper). However, further taxonomic work was paving the way for a further revision which was published by van Jaarsveld in Aloe 44.4. The revised list of species was published with some colour photographs in Alsterworthia International Volume 8, Issue 3 (2008). The number of species was raised to 23 and as well as listing species, subspecies and varieties it also listed their cultivars with their locations.

Comparing van Jaarsveld's Gasteria classification with that of Bayer's and Manning's for Haworthia (A Rationalisation of Names in Haworthia. A list of species with new combination and new synonyms), see Alsterworthia International Volume 12, Issue 1 March 2012) extract below, it can be seen that the main difference is that wild plants are classified under the ICN… for haworthias with no mention of cultivars whereas for gasterias both the ICN.. and the ICNCP are used for wild plants

H. marumiana Uitew. in Cact.Vetp. 6: 33 (1940). Type: Cape, Ladismith, ex hort. Stellenbosch sub 6610 (AMD).
= H. borealis M.Hayashi in Haworthia Study 15: 14 (2006), syn. nov. H. marmorata M.Hayashi in Haworthia Study 15: 14 (2006), syn. nov. H. tarkasia M.Hayashi in Haworthia Study 15: 14 (2006), syn. nov. *H. euchlora

H. marumiana var. marumiana

H. marumiana var. archeri (W.F.Barker ex Bayer) Bayer in Haw. Revis.: 104 (1999): H. archeri W.F.Barker ex Bayer (1981). Type: Whitehill, Archer s.n. NBG 68145 (NBG). *H. chibita *H. frazeri *H. nudata

H. marumiana var. batesiana (Uitew.) Bayer in Haw. Revis.: 105 (1999): H. batesiana Uitew. (1948). Type: Graaff-Reinet, Ferguson (AMD).

H. marumiana var. dimorpha (Bayer) Bayer in Haw. Revis.: 106 (1999): H. archeri var. dimorpha Bayer (1981): H. dimorpha (Bayer) M.Hayshi (2000). Type: Constable Station, W Laingsburg, Hall sub Smith 7418 (NBG).

H. marumiana var. reddii (Scott) Bayer, comb. nov.: H. cymbiformis var. reddii (Scott) Bayer (1999): H. reddii Scott in Cact. Succ. J. (US) 66:182 (1994). Type: Cathcart, Waterdown Dam, Scott 8968 (PRE). *H. boloensis *H. fatreddii

H. marumiana var. viridis Bayer in Haw. Revis.: 107 (1999). Type: S Prince Albert, Bayer 3620 (NBG). *H. viridis

Gasteria disticha (L.)Haw.

Gasteria disticha var. disticha.
Acaulescent with distichous leaves, 60-120 x 30-45 mm, often undulating and with a wrinkled margin. Surface mat minutely asperulous (G. brachyphylla leaves smooth). Cultivate in dappled shade and in a sandy soil.

Gasteria disticha var. disticha 'Nuy'.
Undulating lorate leaves, flowers from Aug. to September.

Gasteria disticha var. disticha 'Pieter Meintjies'. This cultivar has shiny flowers. Source of plants Pieter Meintjies, west of Matroosfontein.

Gasteria disticha var. langebergensis Van Jaarsveld.
Leaves small, 30-50 x 10-12 mm, margins denticulate. Endemic to the dolomite region of Langvlei quarry between Worcester and Robertson on the lower Langeberg.

Gasteria disticha var. robusta Van Jaarsveld.
Leaves firm, short, robust, 55-100 x 45-65 mm. Flowers midsummer. Plants occur in the mostly summer rainfall region of the Beaufort West region. This plant was apparently published in "Gasterias of South Africa" as Gasteria disticha var. disticha 'Beaufort West', a now superfluous name.

1. Genus Haworthia. Photographs of each species in alphabetical order.

Haworthia angustifolia
var. altissima. SS1034

Haworthia angustifolia
var. angustifolia. B6984

Haworthia angustifolia
var. baylissii. IB3590

Haworthia angustifolia
var. paucifolia. DMC8213

Haworthia aquamarina.
IB13683

Haworthia arachnoidea
var. angiras. IB6591

Haworthia arachnoidea
var. arachnoidea. IB8877

Haworthia arachnoidea
var. calisdorpensis. IB6596

Haworthia arachnoidea
var. joubertii. IB7140

Haworthia arachnoidea
var. laxa. B7143

Haworthia arachnoidea
var. limbata. JDV97-87

Haworthia arachnoidea
var. scabrispina. IB3752

Haworthia aranea var. aranea.
DMC3994
Please see top right of page 24

Haworthia archeri.
IB597

Haworthia asema.
IB6619

Haworthia atrofusca.
var. atrofusca. IB371

Haworthia atrofusca
var. enigma. IB511

Haworthia azurea.
DMC8583

Haworthia badia
var. badia. IB6460

Haworthia badia
var. bobii. MBB7248

Haworthia zantneriana
var. minor. JDV85-26

Haworthia zantneriana
var. zantneriana. IB6574

Haworthia araneav
var. candida GM415

2. Genus Haworthiopsis.
Photographs of each species in alphabetical order.

Haworthiopsis attenuata
IB7199

Haworthiopsis attenuata
var. glabrata PV4400

Haworthiopsis attenuata
var. radula GM415

Haworthiopsis bruynsii
IB5908

Haworthiopsis fasciata
DMC8556

Haworthiopsis fasciata
var. browniana ISI1664

Haworthiopsis glauca
IB8526

Haworthiopsis glauca
var. herrei ISI1568

Haworthiopsis granulata
IB531

Haworthiopsis granulata
var. schoemanii. MH0309

Haworthiopsis koelmaniorum
IB876

Haworthiopsis koelmaniorum
var. mcmurtryi IB6664

Copy of one page in “Some new combinations in Haworthia. Haworthiopsis. Tulista” by Ingo Breuer

Some Hybrid Gasterias produced by Ernst van Jarrsveld.

Glasshouse experience suggests that gasterias hybridise readily. If you have a collection of flowering gasterias and do not bother to remove or collect the seed, the chances are that seedlings will appear in subsequent years and that you will be tempted to grow them on, only to find that many are disappointing, though occasionally you may find a specimen that is superior to its (unknown) parents.

Some years ago, Ernst van Jarrsveld crossed many gasterias, produced many seedlings and grew on selected ones . Many proved not to be improvements on known parent species but a few were selected for cultivar status and given cultivar names, which were often the names of people.

I was sent a disc (I regret I have no record of the person who sent it to me.) with a selection of the best cultivars, which are illustrated on the following pages, with the colour photographs I received. Each is accompanied by the names of the parents and the cultivar name allocated to it, though a few do not have a cultivar name and one, Gasteria batesiana 'Black Beauty' seems to be a selection of a wild plant.

It seems that most gasteria crosses lack significant improvements in colour or shape of leaves which do not justify them being given a cultivar name. If you disagree please do not hesitate to send the Editor (hmays@freenetname.co.uk) colour photographs of you achievements and details of your gasteria cultivars.

Gasteria rawlinsonii x *Gasteria liliputana* (now *Gasteria bicolour* var. *liliputana*) 'Kotie Retief'.

Gasteria liliputana (now *Gasteria bicolour* var. *liliputana*) x *Gasteria rawlinsonii* 'Alex Fick'

Gasteria glomerata x *Gasteria baylissiana* 'Francois Steffens'

Gasteria glomerata x *Gasteria pulchra* 'Paul Brink'

Gasteria armstrongii x *Gasteria ellaphieae* **'Vicky Thompson'**

Gasteria batesiana* var. *dolomitica* x *Gasteria batesiana

Gasteria elephina x *Gasteria batsiana* 'Lisa Stranch

Gasteria excels 'Cala' x *Gasteria carinata* var. *glabra* 'Jeanette Loedolff'

Gasteria glomerata x *Gasteria rawlinsonii* 'Shaun'.

Gasteria glauca x *Gasteria armstrongii*

Gasteria glauca x *Gasteria batesiana* 'Louia'

Gasteria glomerata x *Gasteria batesiana* var. *dolomitica*

Gasteria glomerata x *Gasteria doreeniae*
'Albert'

Gasteria rawlinsonii x *Gasateria bicolor*
'Henk'

Gasteria carinata var. *verrucosa* x *Gasteria baylissiana* 'Lime light'

Gasteria batesiana 'Black Beauty'

***Gasteria carinata* var. *verrucosa* x *Gasteria baylissiana* 'Lime light'**

DFCS2511. No other details available. Presumably a discarded cultivar?

See also *Gasteria glomerata* x *Gasteria pulchra* 'Paul Brink' page 21.