REPORT OF THE

PROCEEDINGS

OF A

HARDY NERINE STUDY DAY

Held at RHS Garden, Wisley

on

26 October 2007

Jointly sponsored by:

RHS Herbaceous Plant Committee and the **Nerine & Amaryllid Society**

Programme

10:30 – 1:00 **Study session** of plants brought by participants.

Led by Dr JOHN DAVID (RHS) with GRAHAM DUNCAN (SANBI, Kirstenbosch, South Africa) & MATT BISHOP (Garden House, Devon)

1:30 – 3:30: **Talks**

Chaired by Capt. PETER ERSKINE CBE, VMH

1:30 **Graham Duncan**, Specialist Horticulturist: South African Bulbs, Kirstenbosch Botanical Gardens, South Africa. *Nerine* species in the wild and in cultivation.

2:00 **John David**, Head of Botany, RHS. The introduction of *Nerine bowdenii* into cultivation in the UK.

2:30 **Matt Bishop**, Head Gardener, The Garden House, Buckland Monachorum, Devon. *Nerine* hybrids raised by Terry Jones.

3:00 **Andrew Tompsett**, formerly at the Rosewarne Experimental Horticulture Station in Cornwall. Bulb physiology in relation to the cultivation of *Nerine.*

Objectives of the day

Nerine bowdenii is a widely grown autumn-flowering bulb which is now regarded as hardy in most parts of the UK. It is variable in the wild and appears to be even more so in cultivation. Cultivar names have been given to some, but not all, the variants but none has been properly documented. This situation has become apparent from examining the various *Nerine* cultivars submitted to the RHS Herbaceous Plant Committee as well as at gatherings of the Nerine & Amaryllid Society. The aim of the study day was to gather together as much authoritatively named material and as many experts and enthusiasts as possible to attempt to establish a better understanding of what is in cultivation and what names can, with confidence, be applied to them. It was also intended that participants would bring material in flower, even if not certainly identified or of unclear provenance, for comparison.

Since *N. bowdenii* is known to be the hardiest species and is generally more robust than the other species, it has been used as a parent in crosses to obtain hardy plants with a wider colour range and flower morphology. The hybrids with the Guernsey lily (*N. sarniensis*) have been the most significant but generally remain rare in cultivation and liable to misidentification. A further objective of the

study day was to bring together material known to be one of these hybrids as well as to share knowledge on their performance in cultivation.

In addition, there are other species which are increasingly being found to be hardy, particularly in more favoured gardens, such as *N. filamentosa* and *N. flexuosa*, whose identification and variability are known to be a problem.

Acknowledgements

The idea for the study day was born out of discussions with Linda Jones, Principal Trials Officer at RHS Wisley and Committee Secretary of the Herbaceous Plant Committee. It was Linda's tremendous enthusiasm and organisational skills that brought it all about and it is no exaggeration to say that without her the study day would never have taken place. The support of the RHS Herbaceous Plant Committee and the Nerine & Amaryllid Society was vital and the number and calibre of participants on the day was a consequence of their interest. Without doubt we owe a tremendous gratitude to the speakers in the afternoon session: Graham Duncan, whose knowledge of the species in the wild and how to cultivate them is unparalleled; Matt Bishop for his astute gardener's-eye view, and Andrew Tompsett, who explained a few of the mysteries of flowering habits of nerines. I should not forget Dr Marion Wood, who contributed to the talk on Terry Jones' breeding programme which was given by Matt Bishop, but unfortunately could not be with us for the study day. The afternoon session was most ably chaired by Captain Peter Erskine. However, the day would not have been the success it undoubtedly was without the participants who brought flowers and plants for study and contributed to the discussion. A large number of the exhibits were brought by Mrs Margaret Owen, the National Plant Collection Holder of hardy nerines, who remarkably had only two weeks previously mounted an exhibit of nerines at the October RHS Show at the Lindley Hall in London. The task of organising the exhibits and general assistance on the day was down to Meg Morgan (Senior Gardener, Rock Department) and Adam Bowley & Patrick Wiltshire (Wisley Diploma Students) who managed the exercise most efficiently, in addition to members of the Trials Office. What participants on the day would not have seen was all the work that went into recording the plants afterwards, which was carried out by RHS herbarium staff, Susan Grayer and Barry Phillips. We now have representatives of most of those shown permanently preserved in the herbarium. But it is also to Susan Grayer that I am particularly grateful since she carefully took notes on the discussion session in the morning and compiled the descriptions, which provided the basis of the first section of this report. In putting together this report, I have benefitted from advice and further information from John Gallagher who knows so many of the nerines and has known the breeders who raised them, and Bob Brown and Ro FitzGerald who have proved most generous in sharing both information and plants. In addition, Victoria Wakefield has kindly let me use some of her photographs of nerines in her collection. I also wish to thank Chris Brickell for his comments on a draft of this report, Professor Athel Cornish-Bowden for the photograph of the Cornish-Bowden family and permission to reproduce the two Cornish-Bowden letters held at Kew and the Royal Botanic Gardens, Kew, for providing the images of the herbarium specimen and the letters.

John David, August 2008

Contents

Hardy Nerine Study Day, setting up of exhibits. Left to right: Bob Brown (Cotswold Garden Flowers), Adam Bowley, Meg Morgan, Linda Jones, Patrick Wiltshire (all RHS) and unknown (Photo: RHS Trials).

Report from the study session

Introduction

Participants had been invited to bring specimens or photographs of nerines that they grow – either ones they had names for and for which they knew the provenance, or ones they did not have names for and which seemed different from 'ordinary' *N. bowdenii*. The response was overwhelming: especially from Margaret Owen, the National Plant Collection holder for hardy nerines, but many of the participants brought flowers – more than could be discussed in the time available. The material was divided into four groups: Typical *N. bowdenii* and its cultivars; *N. bowdenii* "wellsii"; *N. bowdenii* hybrids with *N. sarniensis* and other *Nerine* species and cultivars. While the principal aim of the day was to gain a better understanding of the variety of plants grown as *N. bowdenii*, it was important to recognize that other species, especially *N. flexuosa*, have been found to be hardy enough to survive, and even thrive, outside.

During the session groups of related plants were brought to the front for comment and, if possible, naming. The result was an immensely useful exercise where a surprising amount of agreement was reached.

What is *Nerine bowdenii*?

It was logical, before tackling the question of identifying the cultivars of *N. bowdenii*, to ensure that the concept of the typical form of the species was understood.

The species was introduced to cultivation in the UK by Athelstan Cornish-Bowden at the very end of the nineteenth century, who sent bulbs collected from the King William's Town area of the Eastern Cape to his mother in Newton Abbot, Devon. The details of the introduction to cultivation were the subject of a talk in the afternoon and are provided later in this Report. The species was first described in 1904, after a plant exhibited at the RHS by Messrs Veitch of Exeter had received an Award of Merit. An illustration of the plant exhibited was provided with the original description, although a more detailed description and a colour illustration was later provided (in 1907) based on material provided by Mr Gumbleton, who had received his bulbs from Veitch. It is this material that is preserved in the herbarium at Kew and serves as the type specimen of the species (Fig.1). It took a while for the species to become well established in cultivation, which it did only really after it was widely known to be hardy, but at the same time it has shown itself to be quite variable. The question of the characteristics of "typical" *N. bowdenii* are important to determine the degree of variation in the natural populations, most significantly in relation to the form known as "wellsii" which is the subject of the next discussion. A full understanding of typical *N. bowdenii* will also help with recognizing the variants which have arisen in cultivation.

Note the following conventions have been used throughout:
WSY = RHS Herbarium, Botany Department, RHS Garden Wisley
National Collection = NCCPG National Plant Collection of Hardy Nerines (MO = Margaret Owen, Collection holder)
ICNCP = International Code of Nomenclature for Cultivated Plants (2004)
JRHS = *Journal of the Royal Horticultural Society*: 1975-present as *The Garden*
Names in quotes " " indicate that the name in question has not been formally or validly published and is not being established in this publication.

Fig.1. Type specimen of *Nerine bowdenii* W. Wat. ©Board of Trustees of Royal Botanic Gardens, Kew.

Duncan (2002) divides the genus into three groups based on growth period: the winter growing species, including *N. sarniensis*, occurring in areas of winter rainfall; the evergreen species and the summer growing species, in areas of summer rainfall more typical of the Eastern Cape. A subsequent paper by Zonneveld & Duncan[1] the genus is divided into five groups that largely correspond to these growth regimes. Group E, the final group, is the summer-growing species, in which *N. bowdenii* is included. The only other species in the group that is common in cultivation is *N. undulata*; the remaining species being generally readily distinguished from *N. bowdenii* on morphological grounds. In reality *N. undulata* can be more or less evergreen and flowers later than *N. bowdenii*. The two species can be separated morphologically on size of the perianth segments (4—7cm long and 6—8 mm wide in *N. bowdenii*, 2.5—3cm long and 2.5—4mm wide in *N. undulata*; in addition the perianth segments in *N. bowdenii* are more or less flat, where as in *N. undulata* they are folded inwards to make a more or less discrete channel). From the winter growing *N. sarniensis*, *N. bowdenii* can be separated by the more or less regular arrangement of the perianth segments in the former whereas in *N. bowdenii* the perianth segments are almost all arranged around the upper half of the flower (zygomorphic). Other characters, such as leaf shape, distinguish *N. bowdenii*, with linear, two-sided leaves from the thread-leaved species, such as *N. filifolia*; a detailed examination of the base of the stamens where they join the perianth segments will show the presence of appendages in species like *N. masoniorum*[2] and *N. appendiculata*, but these are not found in *N. bowdenii*. The former species are distinct also for the conspicuously hairy flower stalks (pedicels) and stems (scapes). *Nerine bowdenii* is characterized therefore by being a deciduous species with two-sided leaves which appear either at the same time as or after flowering; the flowers are distinctly asymmetrical; the scapes and pedicels are hairless; the perianth segments are flattened and generally longer and broader than most other species in the genus.

The distribution of *N. bowdenii* in the wild appears to be disjunct, with one population in the Eastern Cape, from which the type specimen was gathered and the other on the North Eastern end of the Drakensberg mountains in Natal. It is the latter that has been known as var. “wellsii”.

Graham Duncan summarized the essential points that separate the *N. bowdenii* populations in the Eastern Cape from those in the Natal Drakensberg as follows:

The flowers have broader perianth segments (c. 8mm) and not much crisping and they are not strongly recurved

The leaves are narrower

The scapes (inflorescence stems) are shorter

The perianth segments are dark pink

Illustrations of the King William’s Town population from the wild are provided in *Flowering Plants of Southern Africa* **22**: t.841 (1942), from a specimen collected near Queenstown (c. 80 miles north of

[1] Zonneveld, B.J.M. & Duncan, G.D. (2006). Genome size for the species of *Nerine* Herb. (Amaryllidaceae) and its evident correlation with growth cycle, leaf width and other morphological characters. *Plant Systematics and Evolution* **257**: 251-260.

[2] It has been stated that the correct spelling of this species name is “masonorum” (E.g., *European Garden Flora* **1**: 313, 1986), but the Botanical *Code* (2006), in Rec. 60C(b) specifically cites the correct spelling of the epithet honouring Mason father and daughter as masoniorum.

King William's Town) in 1941 and Graham Duncan, *Grow Nerines*, p.24 (2002) which is a plant in cultivation at Kirstenbosch collected from the Eastern Cape. Graham Duncan commented that Cameron MacMaster, a local expert and bulb enthusiast, had searched the Eastern Cape and the King William's Town area, to try to find *N. bowdenii* but had, to date, failed. From this it is possible that the species is now extinct in this locality although, having been provided with detailed locality information from specimens held at Kew, it might be possible to refine the search.

In the Herbarium at Kew there are a number of specimens of *N. bowdenii* that have been collected in the wild. The earliest predates Athelstan Cornish-Bowden's collection, having been made by Galpin (No. 1824) from N'Zebanya in the Glen Grey area northeast of Queenstown. This specimen was collected in 1894 and identified as *Nerine flexuosa* and later redetermined as *N. bowdenii*. It was from the Glen Grey area that the material was collected which was used for the *Flowering Plants of Southern Africa* plate mentioned above. A further specimen is from the King William's Town area, and sent to Kew by James O'Brien in November 1904. A final specimen collected in 1932 is said to have come from Queenstown and subsequently grown in a garden in King William's Town. This latter source suggests a possible source of confusion around the natural distribution, where specimens have been collected from plants taken from the wild into cultivation. It is possible that the natural occurrence of the species in the wild is rather restricted to one or a few locations such as the Queenstown area.

It is evident from contemporary literature that there were further extensive collections of *N. bowdenii* from the Eastern Cape made on behalf of British nurseries and collectors. For instance, a later collection for Veitchs' of Exeter was initially named "N. veitchii" in 1910[3] and noted to be a blush or pale pink form of *N. bowdenii* and in 1920[4], and there is a comment from J.T. Bennett-Poë about growing *N. bowdenii* "from one of the earlier importations" implying that wild collected material was gathered repeatedly. It therefore seems possible that local populations of the species could have been exhausted by over-collecting.

It is not known whether any plants in cultivation in the UK can be traced back with a definite provenance to wild plants collected from the Eastern Cape, as opposed to the Natal Drakensberg. Tony Norris, when he visited South Africa in 1971, collected *N. bowdenii* from the Drakensberg and from a further locality approx. 70 miles east of Queenstown to which he gave the cultivar name 'Manina', distinguished by its taller inflorescences and paler, almost white flowers.

Nerine bowdenii "wellsii"

This variant was introduced into the UK by Dr Quinton Wells who lived in Oxfordshire. He was a friend of E.B. Anderson, to whom he gave some plants of this collection. It was E.B. Anderson who distributed it and exhibited it as *N. flexuosa* var. *saundersonii*. This variant was found growing high up at the eastern end of the Natal Drakensberg and was felt to be likely to be hardier than typical *N. bowdenii*. It was determined by Kew to be a variant of *N. bowdenii* and given a cultivar name 'Quinton Wells' which is still the only valid name for the plant. Fig. 2 shows the plant that was

[3] *The Garden* **75**: 486 (& photograph on p.484), 1911.
[4] *The Garden* **84**: 581, 1920.

exhibited by Anderson at the RHS on 13th September 1960. It was published in the *Journal of the Royal Horticultural Society* 86: f.28 (1961).

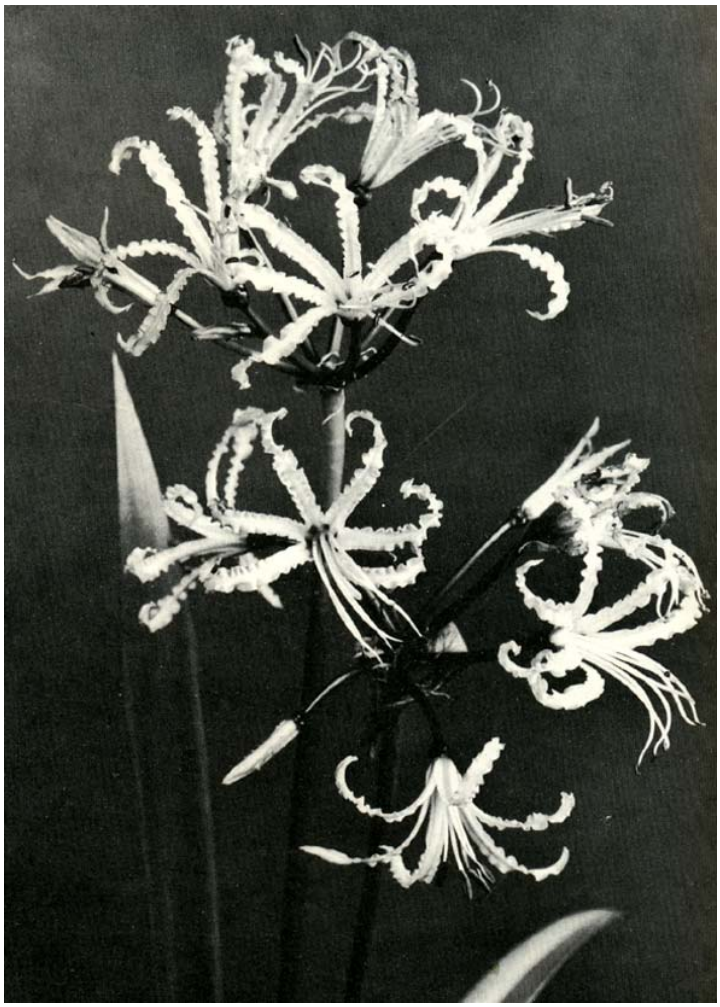

Fig. 2. *Nerine bowdenii* 'Quinton Wells'

Tony Norris, in his account of the genus *Nerine*[5], proposes the Drakensberg population as a new subspecies, even providing a Latin description, but unfortunately the name is invalid (Report p.38). While the name has never been validated, the variant is frequently referred to as "var. wellsii". In the 1970s Tony Norris went back to South Africa specifically to re-collect the variant since he had concluded that much of the material in cultivation under that name was of hybrid origin[6]. Subsequently others have been out and collected it again (e.g. Hilliard & Burtt, Archibald, Rix[7]), so there are a number of wild-origin plants in circulation.

[5] Norris, C.A. (1974). The Genus Nerine. *The Nerine Society Bulletin* **6**: 7-29.
[6] Norris, C.A. (1975). Towards better nerines. *The Garden* (JRHS) **100**: 486-491.
[7] Hilliard & Burt No.10195 (1977) in RBGE; Archibald, *pers. comm.*, distributed by Cally Gardens as "wild form", and Rix (Oct. 2001)

The Drakensburg population was recognized as distinct from typical *N. bowdenii* because:

The individual flowers are smaller

The perianth segments are more crimped (flexuous), strongly recurved and paler (see Fig.2)

The scape is significantly longer (c. 2 feet/60cm)

In the wild it flowers with the leaves (in typical *N. bowdenii* the flowers appear after the leaves have died down, and the leaves start to grow again in early summer).

It flowers earlier than typical *N. bowdenii*. Graham Duncan noted that in the wild it has a long flowering period (January to March) and that flowering time is influenced by the site, soil and geographic location.

It is illustrated in Graham Duncan, *Grow Nerines*, p.25. See also Phillips & Rix, *Bulb Book*, ed.2, p.227 (1989), as "var. wellsii" and this Report in the paper by Graham Duncan (Fig.7)

While discussing the plants named as "wellsii" there was some question over whether these should be recognized as a botanical taxon (either as a subspecies or a variety), or a horticultural taxon (Group) as had been recently proposed[8]. There was also some debate about the nature of variation in the wild and how that was best described taxonomically. It was concluded that, since the plants were part of a wild population, a botanical taxon was appropriate, although more data are required to be able to decide whether it should be as a subspecies or variety. Individual variants in cultivation can then be given cultivar names if required.

There is some variation in "wellsii" in cultivation. A number of people have plants of what is known as the pale variant (Fig.3). This came from Terry Jones and was used by him in some of his crosses with *N. sarniensis*. The flowers have a creamy centre. There is also a variant, known as *Nerine bowdenii* "Logan Strain" which is in cultivation and appears to be very similar to 'Quinton Wells' and may possibly be a seedling from 'Quinton Wells' crossed with another variant of *N. bowdenii*. It was described as, "seedlings from an outstanding, free-flowering variety growing at Logan Botanic Garden."[9]

Nerine bowdenii 'Manina'

This variant was collected by Tony Norris in 1971 from a location he referred to as Manina Forest, which is close to Engcobo in the Eastern Cape (Norris, 1975). Norris described the variant in his 1985-86 catalogue as, "2-3 feet tall almost white, or very pale pink. Very tough, free-flowering and elegant. The individual segments are long and narrow. Many florets to each head." He provided an illustration on the cover (Fig.4) which shows the distinctive inflorescence, the flowers are crimped but the inflorescence is compact and none of the flowers hang down, giving a dome-like appearance. In cultivation 'Manina' is very robust and the bulbs are distinctly larger than those of the cultivated variants of *N. bowdenii*. Most of the plants with this name exhibited on the day matched the variant as described by Norris.

[8] Ward, B. (2004). *Amaryllids* 2004(1): 9.
[9] Cally Gardens Nursery Catalogue 1998: 6.

Fig.3. *Nerine bowdenii* “wellsii pale form” Photo. Victoria Wakefield

Fig.4. *Nerine bowdenii* ‘Manina’ from Nerine Nurseries Catalogue 1985-6.

***Nerine bowdenii* cultivars I (white or pale flowers)**: *N. bowdenii* 'Alba', 'Pallida', 'Marnie Rogerson', 'White Magic', 'Stefanie', and 'Blush White'

Nerine bowdenii 'Alba' was exhibited by Robert Veitch in 1919, when it received an Award of Merit. It was described as having pure white flowers, with narrow perianth segments. It appears to be no longer in cultivation and there is a possible reference to it by E.B. Anderson (1956) where he says there is, "a white form which seems to have lost its power to flower". Earlier Veitch introduced a pale pink or blush variant of *N. bowdenii*, originally named "N. veitchii"[10] but soon given the varietal name 'Pallida', when it received an Award of Merit in 1911. Material on show on the day under the name *N. bowdenii* 'Alba' all proved to be the pale pink variant and were identical to those specimens exhibited as *N. bowdenii* 'Pallida'. A recently discovered true white cultivar was shown by Avon Bulbs with the name 'White Magic' which appears to have originated in South Africa and arrived in the UK via The Netherlands. Hadeco Bulbs (SA) have distributed a very vigorous white variant.

***Nerine bowdenii* 'Blush White'**

Description: Scape c. 27cm. Number of flowers per inflorescence 6, width of inflorescence 15cm. Pedicel 25mm, green (144A). Perianth segments 8mm, reflexed, undulate, white, apex flushed pink. Anthers pale greenish yellow (c.2D). Style straight/deflexed.

Specimen: WSY 0100616 (Margaret Owen, National Collection - MO17, from Myra Carmichael)

Pale pink cultivars include 'Stefanie', 'Marnie Rogerson' and 'E.B. Anderson'. The correct spelling of the first is critical in order to avoid confusion with *N. sarniensis* 'Stephanie'. Another pale flowered cultivar is grown under the name 'Smee' in the RHS Garden, Wisley, and is presumed to have come from Norris, but possibly ultimately from Stanley Smee (although John Gallagher, pers. comm., considers this plant not to be correctly named). This plant has flowers with a pale pink ground and a darker pink mid-rib. 'Stefanie' closely resembles the Dutch cultivar 'Albivetta' but the latter has a much shorter scape and seems to differ in flowering time as well. However, what is in cultivation in the UK does not accord with the description provided in the KAVB List (1991). Both have a uniform pale pink colour to the perianth segments with no difference in the colour of the midrib. 'Marnie Rogerson' (also known as 'Marney Rogerson' or 'Marnie', according to Trevor Wood, who states that the correct name is 'Marnie') has a distinctive salmon-pink colour. There was some question as to whether this cultivar had a darker coloured midrib. 'E.B. Anderson' is said to have "heads of pale sugar-pink trumpet flowers"[11]. Material exhibited was shown by Terry Read who had obtained it from Maurice Mason. There is an illustration of *Nerine bowdenii* as "E.B. Andersons Hybrid" growing at Harry Hay's in John Bryan's book 'Bulbs'[12] (Plate 904), which is described as "true pink". Bulbils of a plant of *Nerine bowdenii* crossed with *N*. "Wellsii" were distributed to members of the RHS Rock Garden Plant Committee in 1997[13], which had come from Harry Hay and had originated from E.B. Anderson. Bob Brown (*in litt*.) states that his material of 'E.B. Anderson' came from Primrose Upward, who obtained it from Kath Dryden who, in turn, is likely to have been given it by Norman

[10] *The Garden* **75**: 486, Oct. 7 1911, see also figure on p. 484.
[11] Cotswold Garden Flowers catalogue, 2006: 78
[12] *Bulbs*, revised edition. Timber Press, 2002.
[13] *Proc. RHS* **123**: 69 (1999).

Hadden, who lived in an adjacent house to Anderson in Porlock. *Nerine bowdenii* 'Mary Knight' is also said to have come from a neighbour of E.B. Anderson's (see this Report, p. 57).

Also shown on the day was 'Blush Beauty', grown at RHS Garden, Wisley, listed by Graham Stuart Thomas[14] and Norris, who described it as having very pale pink flowers and shorter stems (30—45 cm).

Nerine bowdenii cultivars II: 'Mark Fenwick' & "Gilkinson's Form"

This plant was originally known as 'Fenwick's Variety', but since the use of the word "variety" in a cultivar name is not permitted in the ICNCP, it has been re-named 'Mark Fenwick' after the noted plantsman who lived at Abbotswood in Gloucestershire from whom Mrs Hanger had received the bulbs when he visited Exbury in the mid 1930s[15]. The variant first received an Award of Merit when exhibited by Mrs F. Hanger on 2 Oct. 1946, when the Hangers were still at Exbury. Subsequently they moved to Wisley, when Francis Hanger became Curator of the RHS Gardens and where *N. bowdenii* 'Mark Fenwick' was photographed. The colour photograph was published in *JRHS* 75, fig.1 opposite p.26 (1949). After his death in 1961, the nerines were moved and replanted at the Golf clubhouse at Effingham (where Mr Hanger had been President of the club) and where Mrs Hanger took up residence. In 1966 Mrs Hanger again showed 'Mark Fenwick' which this time received an FCC (21 Sept. 1966)[16]. It is reported that Mrs Hanger passed plants to Troon (Ayrshire), Dorset (Mr John Gallagher) and to some Dutch friends in Holland. In an attempt to see if the original stock still survived, Susan Grayer visited Effingham Golf Club but found that the enclosed walled garden where they had grown had been paved over and nothing remains. On the day, the original painting of the AM plant (Fig.3), now held in the image collection in the Wisley Herbarium (WSY), was put on display. None of the plants on the day under the name 'Mark Fenwick' matched the painting except for one brought by the Savill Garden (Windsor). John Gallagher, who had taken Mrs Hanger's flowers up to the show when they were awarded the FCC, stated that plants by the Curator's house at Wisley definitely were 'Mark Fenwick'. Subsequently further material was identified at Wisley of this cultivar growing at Woodside (formerly the RHS Director's house). Chris Brickell (pers. comm.) states that these plants were received from Graham Stuart Thomas who had originally obtained it from Mark Fenwick's garden.

Almost everything in cultivation under this name is not correctly named[17] . *Nerine bowdenii* 'Mark Fenwick' sets seed prolifically and much of what is now attributed to this cultivar is most likely to be seedlings or hybrids derived from 'Mark Fenwick' distributed on the assumption that the plants derived from seed would come true. It is essential that the name be applied only to material that is vegetatively propagated from the true cultivar.

[14] *Perennial Garden Plants*: 230 (1976)
[15] 'Nerines for a lifetime' *RHS Gardens Club Journal* **68**: 65-68 (1975)
[16] Gallagher, J.T., *JRHS* **91**: 514-515, f.259 (1966)
[17] *Amaryllids* 2003(1): 17-18.

***Nerine bowdenii* 'Mark Fenwick'**

Desription: Scape 60—76cm, bright yellowish-green (144A). Inflorescence with 7 or 8 flowers, 18—20cm broad. Pedicels 40—50mm, yellowish-green (145A), flushed with reddish-brown. Perianth segments 9—10mm, reflexed, undulate, pink (73B—68B but brighter pink), glittering conspicuously, segment arrangement strongly irregular. Stamens shorter than the perianth segments; anthers reddish-purple (N77B) before shedding pollen, style straight.

Standard: WSY 0048791 (Mrs. F Hanger, Effingham Golf Club, 20.ix.1966). This is complemented by the painting of Award of Merit plant in WSY (Fig.5).

Authentic material: WSY 0100550 (Wisley, Woodside, coll. C. Crosbie, 14 Nov. 2007); WSY0100561 (Savill Gardens, 26 Oct. 2007).

Distinguishing features: *N*. 'Mark Fenwick' is characterised by the inflorescences being taller than most cultivars.

Material exhibited to the Floral A Committee (4 October 2005) by Rev. Blakeway-Phillips as *N*. 'Gilkinson's Form', was said to have come from the "widow of a former Director of Wisley in the 1960s". This suggests that, although Francis Hanger was Curator at Wisley, not the Director, Mrs Hanger was the likely source and Blakeway-Phillips' plant is 'Mark Fenwick' or a derivative of it. Plants of this origin are also held in the National Collection (MO 39A) and are distinct from 'Mark Fenwick', so may well be seedlings of the latter.

Nerine bowdenii "Gilkinson's Form"

The identity of the cultivar in circulation under the name "Gilkinson's Form" is uncertain. John Gallagher (pers. comm.) stated that it originated from a nursery in South Africa and that the plant was clearly distinct from 'Mark Fenwick' having very curly petals, good colour and shorter scapes. It seems likely that the source was the noted lily grower, Stewart V. Gilkison (fl. 1950-1969), whose nursery was at the Scilla Hill Lily Farm, Haenetsburg in the Northern Transvaal and was a member of the RHS Lily Group. Since the inclusion of the word "form" in a cultivar epithet is not allowed under the ICNCP, it is here proposed that the cultivar should be called 'Stewart Gilkison'. RBG Kew has material in its living collections under the name "Gukisons Variety" which was donated by E.B. Anderson in 1963 which may well be this plant. Further work is required to determine the true identity of the cultivar.

***Nerine bowdenii* 'Stewart Gilkison'**

Syn. *N. bowdenii* "Gilkinson's Form", name not established, Art. 19.19 (ICNCP)

What is in cultivation under this name has more flowers (9-11) per inflorescence than most cultivars and the inflorescence is larger (up to 28cm across), with broad perianth segments that are strongly reflexed, although they are not strongly crimped as in 'Quinton Wells'. In addition the perianth segments are united into a funnel for at least half their length, rather than spreading from the base as occurs in many *N. bowdenii* cultivars. The plant in Fig. 6 has been grown under this name for many years.

Fig.5. *Nerine bowdenii* 'Mark Fenwick' Painting of AM plant exhibited by Mrs Hanger in 1945.

Fig. 6. *Nerine bowdenii* grown as "Gilkinson's Form" Photo. Victoria Wakefield

***Nerine bowdenii* cultivars III**: N. 'Pink Triumph', *Nerine bowdenii* 'Marjorie' and some newly recognized cultivars – 'Linda Vista', "Sheila Owen"

Most 'Pink Triumph' in commerce and cultivation is from a Dutch source and flowers much earlier than the originally described plant, which flowers in late December. All plants on display as 'Pink Triumph' on the day were not correctly named. One shown by Bob Brown was named by him subsequently[18] as *N*. 'Pink Frostwork' and described as having "larger flowers than *N. bowdenii* and a deeper pink, [flowering] Sep.-Nov., 65cm". Bob Brown (*in litt.*) obtained the plant originally as seed (presumably named as 'Pink Triumph') from the RHS Lily Group distribution in 1993.

Nerine 'Pink Triumph' was awarded an AM when exhibited by Messrs. Vandertang's Nurseries on January 22nd 1957. It was described[19] as having fuchsine pink flowers with a central streak of a slightly darker shade and perianth segments with delicately crisped margins. Flowers were borne in umbels of nine to twelve on very stout scapes up to 20 inches tall. The variant was illustrated at the same time (Fig. 54) and this clearly shows the flowers to be strongly zygomorphic, with the perianth segments markedly reflexed, indicating that this is a variant or hybrid of *Nerine undulata*. This would be consistent with the late season of flowering, well beyond that of *N. bowdenii*. In the original description there is no suggestion that this variant has any affinity with *N. bowdenii* and indeed it should be referred to as originally named. This has subsequently been supported by correspondence between Bob Brown and Mr Vandertang's son[20], who says that the possible parentage (no records were made at the time) is *N. bowdenii* and *N*. "Rosea Crispa" or *N. flexuosa* 'Rosea'. Both *N. crispa* and *N. flexuosa* are now regarded as synonyms of *N. undulata*.

***Nerine bowdenii* 'Marjorie'**

This cultivar was found at Logan Botanic Garden in the early 1970s by Jim Marshall and was selected for trial at Wisley in 1984 and awarded an AM in 2005.

Description: Scape 55cm long, flower 22cm in diameter, floret pedicels 6.5cm long, perianth segments 5cm long, overall colour vibrant candy pink (65A), becoming paler at the margins (N57D) and darker at the midrib (63C), base pale pink to white at extreme base, margins crisped; stamens candy pink (65A).

Standard: WSY 0070409 (J. Marshall, 4.x.2005)

The size of the inflorescence is one of the distinguishing features of this cultivar.

***Nerine bowdenii* 'Judy Read'**

This is a seedling of *N. bowdenii* from Terry Jones, registered by Terry Read.

Description: Scape 56cm, bright green (between 144A & 146A). Flowers per inflorescence 9, width of inflorescence 24cm. Pedicels 5.8—6.8cm, green flushed brownish red especially at base. Perianth segments 11—14mm wide, reflexed, undulate pink, glittering present but not conspicuous. Stamens shorter than perianth segments. Anthers pale greyed purple. Style slightly deflexed.

[18] Cotswold Garden Flowers catalogue 2008 (online version only: www.cgf.net/plants.php)
[19] *JRHS* **82**(4): 181 (1957)
[20] *Amaryllids* 2008(1): 6-7.

Standard: WSY 00489925 (Mr T.E. Read, 10.xi.2006)

Distinguishing features: Large size of inflorescence and perianth segments longer than most other cultivars, combined with the distinctive colour of the flowers.

Nerine bowdenii "Sheila Owen"

Named by Margaret Owen for a particularly late-flowering variant which was only just coming into flower at the time of the Study Day. This name has not been registered.

Description: Scape 59cm, green (c.144A—146A). Flowers per inflorescence 8, width of inflorescence 21cm. Pedicel 38mm, green (c.144A—146A), flushed brownish red. Perianth segments 10mm, reflexed, undulate, pink (c.68B) white / pale pink between median stripe and margin, glittering conspicuous, segment arrangement strongly irregular. Stamens as long as perianth segments. Anthers reddish purple. Style straight.

Specimen: WSY 0100629 (Margaret Owen, National Collection - MO 46)

Distinguishing features: Very late flowering variant.

***Nerine bowdenii* 'Linda Vista'**

This variant was brought by Rose Clay who had brought it from a garden in Abergavenny (Monmouthshire) where it had been growing since the 1940s. The cultivar name is derived from the name of the garden. It showed a great similarity to *N. bowdenii* 'Quinton Wells' but since it had been in cultivation from before the known date of introduction of 'Quinton Wells' it must be distinct.

Description: Scape c.58cm, bright green (144A—146A). Flowers per inflorescence 7—11, width of inflorescence 23cm. Pedicel 75mm, bright green flushed reddish brown especially on exposed portion and ovaries. Perianth segments 6—8mm wide, reflexed, undulate, pale sugar-pink (c.62B), white in between median stripe and margin, but can vary: pink with white margins or segments pale pink with whitish tinge, glittering conspicuous, segment arrangement strongly irregular. Stamens shorter than/as long as perianth segments, anther purple (c.N77B). Style slightly deflexed.

Standard: WSY 0100549 (Rose Clay)

Distinguishing features: distinctly undulate perianth segments, pale colour and longer pedicels.

***Nerine bowdenii* 'Pink Surprise'**

This cultivar was selected from a batch of bulbs that originated in South Africa and were sent to Avon Bulbs, which also included 'White Magic' mentioned above.

Description: Scape 54cm, green (c.144A). Flowers per inflorescence 11, width of inflorescence 26.5cm. Pedicel 70mm, green flushed light reddish brown. Perianth segments 11mm wide, reflexed, undulate, white, median stripe pink (c.62C), glittering present but not blatant, segment arrangement strongly irregular. Buds pale pink, base white, veins green. Anthers pale cream flushed purple. Filaments pink, paler pink/white towards apex. Style straight, perhaps slightly deflexed.

Standard: WSY0100576 (Avon Bulbs)

Distinguishing features: the perianth segments are pale with a distinct median pink stripe, as well as the large size of the inflorescence.

***Nerine bowdenii* × *N. sarniensis* cultivars** ('Hera', 'Regina', 'Paula Knight')

Many plants are in circulation under the name *N*. 'Hera' which is the oldest and most well known of the *N. bowdenii* × *sarniensis* crosses, but the majority are in fact not correctly named and often turn out to be robust or particularly dark coloured variants of *N. bowdenii* (see "not Hera" below). The flowers of the two species are clearly distinct: *N. sarniensis* has almost actinomorphic flowers (the perianth segments are distributed evenly and regularly around the stamens and style at the centre of the flower) and the corolla is well-rounded at the base, whereas in *N. bowdenii* the flowers are distinctly zygomorphic (the majority of the perianth segments are distributed in the upper half of the flower) and the corolla tapers into the top of the pedicel at an acute angle. These attributes can be seen in the crosses where the *N. bowdenii* influence is seen in the overall size of the plants and the colour of the flowers. *Nerine sarniensis* characteristic, however, are seen in the rounded base to the corolla and the more regular arrangement of the perianth segments. Once these features are recognized it is not hard to differentiate the genuine *N*. *bowdenii* × *sarniensis* crosses from those which are just forms of either species. The ultimate goal in crossing these two species and making further hybrids is to find a hardy plant with the more striking colour and coruscation of the perianth segments.

The history and identity of the early *Nerine bowdenii* crosses with *N. sarniensis* has been covered in an article by John David[21].

On show on the day were a number of plants, distinctive for their narrow perianth segments and intensely coloured young buds, and were referred to informally as "not Hera" as they had been obtained as 'Hera'. Material from Margaret Owen (MO 59) was from Ballyrogan Nurseries (Gary Dunlop) as well as MO7 which had been obtained from Bridgemere Nurseries in 1996. Chris Sanders (pers. comm.) confirmed that the plants sold as 'Hera' from Bridgemere had originally come from Michael Wickenden under this name in the early 1980s. It is highly likely that this material also originated in Ireland. This is a distinctive plant with horticultural merit and more work needs to be done to establish its precise origin, but once this is done it would be appropriate to provide a cultivar name (See comments on the informal designation "Irish Clone" in this Report, p. 59).

***Nerine* 'Regina'**

This named cultivar was introduced by Springbank Nurseries, who showed a plant on the day and is described by them as a "very vigorous dark pink hybrid"[22].

Description: Scape 41cm, very stout. Flowers per inflorescence 9, width of inflorescence 22cm. Pedicel 54cm. Spathe colourless. Perianth segments 12mm, reflexed, undulate, pink (68B), broad median stripe and edges pink (69B). Segment arrangement slightly irregular. Stamens shorter than perianth segments. Anthers maroon. Style recurved – straight.

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[21] *Amaryllids* 2008(1): 18-22.
[22] Springbank Nurseries Catalogue 2005-6: 17 & photo on front inside cover.

Specimens: WSY0100574 (Ken Hall, 9 Oct. 2007); WSY0100682 (Margaret Owen, National Collection - MO 72)

***Nerine* 'Paula Knight'**

Description: Scape c.61cm, green (between 144A & 146A). Flowers per inflorescence 9, width of inflorescence 22cm. Pedicels 55—70mm, green (between 144A & 146A), some brownish red flushing at base. Perianth segments 9-11mm wide, reflexed, undulate, bright neon pink (58C), median stripe paler pink (c.62A), glittering conspicuous, segment arrangement strongly irregular. Stamens shorter than perianth segments: anthers purple (c. N77D but darker). Style straight.

Specimen: WSY0100567 (Savill Garden)

***Nerine* 'Zeal Frilly Kay'** (see Wood & Bishop, this Report).

Description: Scape 39cm. Flowers per inflorescence 9, width of inflorescence 18cm. Pedicel 50mm. Perianth segments 7.5mm, reflexed, undulate, pink, margins pink (c.N66D), median stripe pale pink/white, glittering semi-conspicuous, segment arrangement slightly irregular. Stamens as long as – longer than perianth segments. Anthers greyed purple (between N77A & N77D). Style recurved.

Specimen: WSY0100600 (Margaret Owen, National Collection – MO100, from Matt Bishop)

Other *Nerine* species

Nerine undulata. South African treatments now lump a number of variants that have been given species names in the past under one broadly defined species, the oldest name for which is *N. undulata*. As the variants are distinct in cultivation it seems appropriate to use the botanical epithets as Group names under the ICNCP.

Nerine undulata Flexuosa Group (= *N. flexuosa*). Very hardy, and known to be so since the 1890s if not before. It was generally seen in the white variant (*N. undulata* Flexuosa Group 'Alba'), flowering specimens of which were on show for the Study Day, but the pink variant is also found. In cultivation it is often evergreen, although this probably depends upon the mildness of the garden where it is grown. It usually flowers later (i.e. late November through to January) than *N. bowdenii* and is distinguished by the strongly zygomorphic flowers where the perianth segments are almost all arranged above the mid-point of the flower, they are strongly reflexed and crisped. *Nerine bowdenii* 'Kinn McIntosh', distributed by Bob Brown (Cotswold Garden Flowers), is likely to be a variant of *N. undulata* although Bob Brown (2008, l.c.) suspects that it might be the true 'Pink Triumph'.

Nerine undulata Alta Group (=*N. alta* Barker). This variant is recognized by its very long, erect flower stem (peduncle) and small, compact, rounded inflorescence[23]. Described and illustrated in *Flowering Plants of Southern Africa* **15**: f.563, 1935. It flowers somewhat earlier than the Flexuosa Group, being in flower from September to November.

[Nerine crispa = *N. undulata* Crispa Group.]

[23] Duncan, *Grow Nerines*: 46 (2002)

Nerine humilis. This species is potentially confusable with *N. undulata* on the appearance of the flowers, the latter species is more or less evergreen, *N. humilis* is winter growing, the leaves being absent during the summer. *Nerine humilis* is probably not reliably hardy in the UK and should be grown in the cool greenhouse.

Nerine humilis Breachiae Group (= *N. breachiae* Barker). Described and illustrated in *Flowering Plants of Southern Africa* **15**: f.566, 1935. Distinguished from typical *N. humilis* by the leaves, which appear as the flowers wither, being pressed flat against the ground.

Nerine humilis Tulbaghensis Group (= *N. tulbaghensis* Barker). Decribed and illustrated in *Flowering Plants of Southern Africa* **15**: f.565, 1935. Distinguished from typical *N. humilis* by the smaller size and the very narrow leaves (2mm broad) which appear at the same time as the flowers.

Nerine humilis Peersii Group (= *N. peersii* Barker). Described and illustrated in *Flowering Plants of Southern Africa* **15**: f.562, 1935. Distinguished from typical *N. humilis* by the more crisped perianth segments and the scarcely glaucous leaves.

The thread-leaved nerines

This is a group of species whose identity is much confused in cultivation. They all have hairs on the scapes and pedicels of the inflorescences and flowers, and thin, thread-like leaves. *Nerine masoniorum* is the only one of the three to have appendages on the stamen filaments. The appendages occur at the base of the filaments as small, wing-like structures. This species is not hardy in the UK and is very rare in its native habitat in the Eastern Cape.

Nerine filifolia (see Duncan, this Report, Fig. 10) is described by Graham Duncan as producing 5–10 fleshy, spreading, thread-like leaves and, according to Tony Norris (Key to the Genus *Nerine*), the perianth segments are up to 3cm long (Duncan says 2.5—4.2cm). *Nerine filamentosa* produces 3 or 4 dark green, spreading thread-like leaves which, in the original description[24], are said to be semi-terete, slightly channelled above. The distinguishing characteristics of this species are the rolled back perianth segments and the long, exerted stamen filaments. The latter species is said to be very rare in cultivation so the most frequent species of the thread-leaved nerines is *N. filifolia*. Both, however, are said to be moderately hardy. *Nerine filamentosa* was exhibited to the RHS Joint Rock Garden Plant Committee in October 1991 (as *N. filifolia*) but had been determined by Brian Mathew to be a good match for the former species[25]. This species was first reported in cultivation in the UK by Lt.-Col. Grey in 1938[26]. *Nerine filifolia* has been in cultivation in the UK for some time (since c.1880) and received an Award of Merit when exhibited by Col. Robert Clarke, Borde Hill, Sussex, in October 1949. Janaki Ammal[27] notes that while the usual chromosome number for *N. filifolia* is 2n=22, occasionally there are variants that are 2n=24, which may explain why some plants of this species in cultivation are more robust than others.

[24] Barker, W.F., *Flowering Plants of Southern Africa* **15**: t.569 (1935).
[25] *Proc. RHS* **117**: 60 (1993).
[26] Grey, C.H. *Hardy Bulbs* 2: 87, 1938.
[27] Janaki Ammal, E.K., *JRHS* **76**: 368, 1951.

Two other species come into this group. According to Graham Duncan, *Nerine angustifolia* has up to six slightly channelled linear (not thread-like) leaves, 3—5mm in width whereas *N. appendiculata* produces three deeply channelled leaves. The number of flowers per inflorescence also differs: *N. angustifolia* usually has less than ten flowers whereas *N. appendiculata* has up to twenty. Finally one species has appendaged filaments (*N. appendiculata*) while *N. angustifolia* does not (although Table 2 in Zonneveld & Duncan, 2006, states that it does and Sealy[28] describes the bases of the filaments as widening). The plant of *N. angustifolia* described by Sealy was provided by Collingwood-Ingram who grew it successfully in an uncovered bulb frame in his garden in Kent. He commented that it seeded itself freely and might well prove hardy in the Home Counties. Material named as *N. angustifolia* held in the National Collection (MO 75) was on show on the day and had originally been obtained from Avon Bulbs, although this is much closer to *N. filifolia* in its morphology.

Another thread-leaved species that was on show on the day was *Nerine gaberonensis* (see Duncan, this Report, Fig. 5). This species, originally described from Botswana but also occurring in the Northern part of South Africa, has a smooth scape and pedicels, the stamen filaments are unappendaged and are strongly deflexed. It was shown for interest as it is definitely not hardy in the UK.

[28] Sealy, J.R., *Nerine angustifolia* in *Curtis's Botanical Magazine* **170**: t.244 (1955)

The distribution, habitat and conservation status of the species of *Nerine* (*Amaryllidaceae*)

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INTRODUCTION

Endemic to the southern African countries of Botswana, Lesotho, Namibia, South Africa and Swaziland, the genus *Nerine* is widely distributed here and concentrated in the eastern and northern parts of South Africa (Duncan 2005). It currently comprises 23 species and is concentrated in the summer rainfall zone in South Africa and is represented in all nine provinces (Zonneveld & Duncan 2006). Relatively few are in general cultivation but cultivars of *N. bowdenii, N. sarniensis* and the plant previously very well known as *N. flexuosa*, now included under *N. undulata*, are important in ornamental horticulture and are commercially-produced crops. Many of the remaining 20 species are poorly known even to bulb enthusiasts, and several of these have become extremely rare in the wild over the past few decades. In temperate climates and under greenhouse protection, the growth cycle of nerines can conveniently be placed into three distinct groups. The smallest group is an exclusively winter-growing one that is dormant in summer and comprises four species, *N. humilis* (Jacq.) Herb., *N. pudica* Hook.f., *N. ridleyi* Phillips and *N. sarniensis* (L.) Herb. A second group is exclusively summer-growing and dormant in winter, comprising seven species (nine taxa), *N. bowdenii* Watson, *N. duparquetiana* Baker, *N. krigei* W.F.Barker, *N. laticoma* (Ker-Gawl.) Dur. & Schinz subsp. *laticoma*, *N. laticoma* subsp. *huttoniae* Schönland, *N. marincowitzii* Snijman, *N. pusilla* Dinter and *N. undulata* (L.) Herb. The third and largest group contains more or less evergreen species that retain some leaves over the winter period and comprises 12 species, *N. angustifolia* (Bak.) Bak., *N. appendiculata* Bak., *N. filamentosa* W.F.Barker, *N. filifolia* Bak., *N. frithii* L.Bol., *N. gaberonensis* Brem. & Oberm., *N. gibsonii* Douglas, *N. gracilis* R.A.Dyer, *N. masoniorum* L.Bol., *N. pancratioides* Bak., *N. platypetala* McNeil and *N. rehmannii* (Bak.) L.Bol. (Zonneveld & Duncan, 2006).

DISTRIBUTION AND HABITAT

The four exclusively winter-growing species occur in mineral-poor, acid sandstone soils and are restricted to the Western and Eastern Cape. They flower in autumn, just before, or as the new leaves begin to appear (Duncan, 2002b). They are usually encountered on south-facing, rocky mountain slopes and although they are not dependent on fire for flowering to occur, flowering performance is greatly enhanced by natural bush fires that sweep over their habitat in summer and autumn, resulting in spectacular floral displays. *Nerine ridleyi* and *N. sarniensis* occur in large, dense colonies

sometimes comprising hundreds or even thousands of individuals in the case of *N. humilis*, whereas plants of *N. pudica* usually occur singly or in small groups within populations. *Nerine humilis* is by far the most variable and widely distributed member of the group, occurring from the Cederberg Mountains in the northwestern part of the Western Cape to the Baviaanskloof Mountains in the western part of the Eastern Cape. Notorious for poor flowering performance in cultivation and in the wild in the absence of fire, *N. sarniensis* occurs in the southwestern and southern part of the Western Cape and is widely considered the most beautiful of all nerines. *Nerine ridleyi*, a robust, high altitude species from the Hex River and Franschhoek Mountains of the southwestern Cape, has large pink flower heads and is the least well known member of the group. Its flowering performance is even more erratic than that of *N. sarniensis*, both in cultivation and in the wild. Once initiation of the flower bud in *N. ridleyi* has been studied, and being a species that is almost certainly hardier than *N. sarniensis*, it may prove to be a useful genetic source for incorporation into breeding programmes (Duncan 2008). *Nerine pudica*, a graceful, pale pink-flowered species with tepals having prominent deeper pink median keels, is restricted to mountains of the southwestern and southern part.

By far the most well known member of the exclusively summer-growing group is *N. bowdenii,* the only reliably hardy member of the genus. It flowers in autumn at the end of its growing period and has a disjunct distribution in the high Drakensberg of western KwaZulu-Natal and in the midlands of the Eastern Cape. Occurring at altitudes of up to 3300 m, it grows in large colonies amongst leaf litter in semi shade of boulders and at the base of south-facing basalt cliffs. *Nerine duparquetiana* flowers in mid-summer amid excruciating heat and bears umbels of large pink flowers with prominently arching upper tepals borne on sturdy short scapes. It occurs in colonies in the central and eastern Namibia and southern Botswana. The similar-looking *N. laticoma* subsp*. laticoma* has a very wide distribution extending from southeastern Namibia in the west, to western Lesotho and the northern part of South Africa's Limpopo Province in the north. It grows in vast colonies in deep sandy soil or clay, its flowers emerging rapidly following summer rain storms. The subsp. *huttoniae* (previously known as *N. huttoniae*) differs in minor taxonomic details and has a disjunct distribution in the eastern part of the Eastern Cape, occurring in deep alluvial sand along the banks of the Great Fish River north of Grahamstown and further northwest in light clay soil near Cradock (Dold 2000a).

One of the most rarely-collected nerines is the dwarf *N. pusilla* from eastern Namibia. Only known from around limestone pans and river beds, it grows in large colonies under harsh, arid conditions where summer rains are highly erratic and prolonged droughts may span years. The bulbs produce filiform, spreading leaves and small, pale pink-flowered umbels that emerge rapidly in response to summer rain storms (Duncan 2005). *Nerine krigei* has dark pink flower heads and erect, spirally twisted leaves. It is restricted to depressions of damp grassland in the southern and northern parts of Gauteng, near Johannesburg, growing in colonies on heavy clay soil and flowering in mid-summer. The recently described *N. marincowitzii* is a very attractive, dwarf species with rounded or laterally flattened umbels of pale to deep pink blooms and narrow, strap-shaped leaves. It occurs in the southern Great Karoo in the dry interior of the Western Cape, and flowers in late autumn if sufficient rains have fallen (Snijman, 1995). *Nerine undulata* hails from the Eastern Cape and is a very variable species as regards tepal length and width, degree of waviness of tepal margins, length of peduncle and habitat preference. Certain variants (previously known as *N. alta*) from around Stutterheim,

Cathcart and Kei Road occur as solitary individuals in wetland marshes in full sun and have very long scapes with small rounded umbels and relatively narrow, completely deciduous leaves. Other variants from around Engcobo, Adelaide and Bedford have larger umbels borne on much shorter scapes and have broader leaves that die down for a very short period in midwinter; they grow in clumps on steep slopes of shady forest verges (Duncan, 2002a).

The evergreen group of nerines is by far the largest and is encountered in the summer rainfall eastern and northern parts of South Africa, and in Lesotho and Swaziland. They generally grow in large colonies, have multiple narrow, thread-like leaves and flower in summer. *Nerine angustifolia* and *N. appendiculata*, two pink-flowered species with very long, erect scapes, look very similar indeed and are separated mainly on the grounds that *N. appendiculata* has appendages at the base of its stamens whereas these are absent in *N. angustifolia*. They both occur in grassland in thick, black, acid peaty soil along stream banks and in bogs, and *N. angustifolia* has the wider distribution of the two, extending from Mpumalanga southwards to the northern part of the Eastern Cape, whereas *N. appendiculata* is restricted to KwaZulu-Natal and the extreme northeastern part of the Eastern Cape. One of the best known evergreen species is the dwarf *N. masoniorum* from the Umtata area of the Eastern Cape. It has been confused in the UK with the much larger *N. filifolia* that also occurs in the Eastern Cape. *Nerine masoniorum* occurs in colonies in a thin layer of soil overlaying exposed dolerite rock sheets and is one of the earliest evergreen species to flower. *Nerine filifolia*, another gregarious plant, grows between rock slabs or in shallow soil on rock sheets in a number of locations in the southeastern part of the Eastern Cape. *Nerine filamentosa,* frequently misnamed *N. filifolia* in cultivation, has a highly restricted range around Cathcart in the central part of the Eastern Cape. Its tepals are distinctly rolled back on themselves and the prominently exserted, almost horizontal filaments are quite unmistakeable. It grows singly or in small clumps in dry grassland on dolerite outcrops. Another nerine endemic to the Eastern Cape is the white, pale to deep pink or purple-flowered *N. gibsonii.* Its relatively broad, spreading tepals are variable in shades of pale to deep pink or occasionally pure white or even purple and it occurs in perennial wetlands in heavy black, acid soil near Cala in the northeastern part of this province. *Nerine frithii*, a most beautiful dwarf species with narrow, erect or spreading, spirally twisted leaves and white or pale pink flowers with maroon markings at the base of its tepals, occurs in grassland in seasonally inundated depressions of dolomitic limestone outcrops in the eastern part of the Northern Cape and the western and northern parts of the North West Province. *Nerine gaberonensis*, an elegant pink-flowered plant with succulent filiform leaves occurs in bushveld and grassland colonies near Gaborone in the southern parts of Botswana, along the banks of the Orange River on limestone or between granite boulders in the Northern Cape and in the western part of Limpopo (Duncan, 2002c). Its inflorescence is laterally flattened, its tepal margins are heavily crisped and it flowers in mid-summer.

Nerine pancratioides, a striking white-flowered plant from KwaZulu-Natal, only produces flowers following summer bush fires. Its exceptionally long, erect scapes bear up to 20 pure white, funnel-shaped blooms and it occurs along stream banks and in seasonally inundated acid marshes in foothills of the southern Drakensberg, flowering in autumn (Craib, 2004). *Nerine platyletala*, another beautiful species, has broad, unusually flat tepals and occurs in perennial marshes in southern Mpumalanga in acid, black fibrous soil. One of the daintiest species, *N. gracilis* has pale pink, cup-shaped flowers and several erect, filiform leaves. It occurs in rocky grassland in large colonies in eastern Gauteng and western Mpumalanga, in heavy clay soil associated with dolomitic limestone

outcrops (Craib, 2002). Another evergreen species from Gauteng and Mpumalanga is the diminutive *N. rehmannii.* The small white flowers have heavily recurved tepals flushed pink on the undersides, prominent white, spreading filaments and several extremely narrow, filiform leaves just 0.5–1.0mm wide. It grows in dense colonies on rocky outcrops and flowers in late summer and early autumn.

CONSERVATION STATUS

Two nerines from the Western Cape are naturally rare in the wild but are not considered to be in immediate danger at present. These are the winter-growing *N. pudica* that occurs in relatively inaccessible montane habitat of the Du Toitskloof and Greyton mountains in the southwestern and southern parts, and the summer-growing *N. marincowitzii* from the semi-arid southern Great Karoo. Although rarely collected and restricted to just a few sites in eastern Namibia, *N. pusilla* occurs in large colonies and is seldom seen in flower due to the brevity of its flowering period in a harsh environment, it is not thought to be under threat (Duncan, 2005). Another exclusively summer-growing nerine, *N. laticoma* subsp. *huttoniae* is not as fortunate as it is vulnerable to farming activity due to ploughing of its habitat in fertile alluvial sandy soil along the banks of the Great Fish River in the Eastern Cape (Dold, 2000a).

A number of species of the evergreen group from the eastern and northern summer rainfall zone of southern Africa are falling prey to habitat degradation and destruction, and at least two of these are close to extinction. *Nerine masoniorum* is probably the most critically endangered species and it may even have become extinct as the only known surviving colony has been built over by informal dwellings (Dold, 2000b). Another species under threat is *N. gibsonii* from near Cala in central Eastern Cape whose wetland habitat has become severely degraded due to overgrazing and resultant erosion, as well as road construction (Dold, 2004). An expert on Eastern Cape nerines, Cameron McMaster, reports that although the only remaining population of *N. gibsonii* contains many bulbs, the plants seldom have the opportunity of reproducing by means of seed as the flowers are consumed by livestock as soon as they open. The rare Eastern Cape endemic *N. filamentosa* is currently safe on private farmland around Cathcart but populations need to be monitored to ensure that it receives continued protection from future landowners (Duncan, 2002b). Grazing by domestic stock, and to a greater extent, the smothering effect and competition for moisture by exotic invader plants are the most important threats to the habitat of the KwaZulu-Natal and Lesotho endemic, *N. pancratioides* (Craib, 2004). Once abundant in eastern Gauteng and western Mpumalanga, *N. gracilis* has been subject to a steady decline due mainly to overgrazing and trampling by domestic stock, resulting in aggressive weeds gaining a foothold, especially Kikuyu grass that has escaped into the wild from gardens of surrounding towns (Craib, 2002). *Nerine platypetala*, another fairly rare species from the northern part of South Africa is more fortunate in that some populations enjoy official protection inside several wetland reserves in southern Mpumalanga (Craib, 1996). While the long-term survival of a number of nerines is indeed bleak in their natural habitats, a measure of comfort can be taken from the fact that some of these rarities including *N. filamentosa, N. gibsonii, N. gracilis, N. laticoma* subsp. *huttoniae* and *N. masoniorum* respond very well in cultivation and are being cultivated successfully at Kirstenbosch and by a number of specialist growers in South Africa and abroad.

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Fig.1. *Nerine angustifolia*

Fig.2. *Nerine gibsonii*

Fig.3. *Nerine humilis*

Fig.4. *Nerine platypetala*

Fig.5. *Nerine gaberonensis*

Fig.6. *Nerine krigei*

Fig.7. *Nerine bowdenii* from the Drakensberg

Fig.8. *Nerine masoniorum*

Fig.9. *Nerine rehmanii*

Fig.10. *Nerine filifolia*

Fig.11. *Nerine laticoma* subsp. *laticoma*

Fig.12. *Nerine sarniensis*: colour forms from the wild

The *Nerine bowdenii* story

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THE INTRODUCTION OF *NERINE BOWDENII* TO CULTIVATION IN THE UK

While the species, *Nerine bowdenii*, was first described in 1904 (Watson, 1904), it is apparent that the plant had been in cultivation in the UK for some years before then. The species name honours the person who collected the bulbs, Athelstan Hall Cornish-Bowden (1871 – 1942), the seventh child (and third son) of Admiral & Mrs William Cornish-Bowden (see Fig. 1), a well known Devonshire family. Although the actual date of collection is uncertain, in the literature two dates can be found, 1898 or 1889[29], which suspiciously looks as if the two final year digits have been reversed accidentally in one. Since Athelstan was born in 1871, if he had collected them in 1889, he would have been 18, and although this is not impossible it does seem improbable. Fortunately, it has proved possible to establish the year that he went to South Africa having made contact with his great-nephew, Professor Athel Cornish-Bowden. A letter in his possession shows that Athelstan was still in England in early 1890, although having failed to get passed for the army, he was exploring the possibility of going out to South Africa. According to Professor Cornish-Bowden he went out to South Africa at the age of 19 and was well established as a surveyor by 1895. He subsequently became Surveyor-General of the Cape Colony. The discovery of the *Nerine* seems to be his only claim to botanical fame as he is not mentioned in any reference works on the history of botany and plant collecting in South Africa.

It would appear that in 1898, while surveying in the King William's Town area of the Eastern Cape, Cornish-Bowden must have come across the *Nerine* and sent some bulbs back to his mother in Newton Abbot, Devonshire, where his family then lived. The precise locality is not recorded and there is some doubt as to how widespread it ever was in that area (see this Report, p. 8). Apparently, according to James O'Brien (1905), "the native boys had much difficulty in getting the roots, which grow only in the most inaccessible spots among the mountains."

Mrs Cornish-Bowden grew the bulbs at the family home (Oak Lawn, Newton Abbot). They seem to have flowered within a year or two of receiving the bulbs. At this point she appears to have got in touch with Robert Veitch of Exeter to ask his opinion on what they were and, based on early reports of the nerine when exhibited, he must have suggested that they were an unknown variant of *Nerine lucida*, an opinion also reached by Watson at Kew. At this time Robert Veitch must have received some bulbs from Mrs Cornish-Bowden, as is recorded in a letter from Peter Veitch (*The Garden* 90: 58, Jan. 23 1926). This is followed by a letter in the 6 Feb. issue of *The Garden* from a cousin of Athelstan, Elizabeth Cornish-Bowden, who reports that her cousin, "now Surveyor-General of the Cape Colony" had "about twenty years ago ... made an expedition with natives and dug up a lot of these bulbs and had them sent home to his mother in Newton Abbot and that she sent them to a nurseryman who placed them on the market."

[29] Chittenden (Ed.), *RHS Dictionary of Gardening*, Ed.2 (1951)

Fig.1. Photograph of the Cornish-Bowden family c.1885. Athelstan is third from the left on the back row. Photograph courtesy of Athel Cornish-Bowden.

Fig.2. The first letter from Mrs Cornish-Bowden to Kew.

In 1902 Mrs Cornish-Bowden sent a truss and some bulbs to Kew. This letter, dated 3rd November 1902, is preserved with the type specimen (see this Report, p.4) of *N. bowdenii* in the Kew Herbarium and, as can be seen from Fig. 2, it was replied to on 4th November and identified as *Nerine lucida*[30]. The letter is quoted by Watson (1904) when he described the new species.

In the meantime, Robert Veitch seems to have quickly distributed the new *Nerine* to other gardeners for Mr Gumbleton of Belgrove, Cobh, near Cork – famous for cultivating many exotics – clearly acquired a plant from Mr Veitch (whom he refers to as "a leading nurseryman in the West of England" under the name of "Nerine new species". When the *Nerine* flowered for him in December 1903 he sent an inflorescence to Kew but apparently did not inform them of its origin. He received a reply stating that the plant was *Nerine excellens* which was illustrated in the *Florist & Pomologist*, Oct. 1882 (Fig. 3). Seeing some differences with that plant, Mr Gumbleton proposed the name *N. excellens major tardiflora*, since the new *Nerine* had larger flowers which appeared later. This appeared in a letter to the *Gardeners' Chronicle* (Feb. 13, 1904). The *Nerine* with which the new plant had been compared is in fact a hybrid between *N. undulata* and *N. humilis* and is more correctly known as *N.* × *excellens*.

It was under this name that Robert Veitch & Son that year exhibited flowering plants at the RHS Show on 18th October in London and gained an Award of Merit. Some two weeks later Mrs Cornish-Bowden had written to Kew again (Fig. 4), commenting that Mr Veitch had said that the *Nerine* was still without a special name. She asked Kew to let it be known as "athelstania" or "athelia". She also indicated that Athelstan Cornish-Bowden was going to send some more bulbs.

According to Watson (1904) some time in mid November Gumbleton brought an inflorescence of the plant to Kew and this, combined with the plants from Mrs Cornish-Bowden that were also in flower, enable him to conclude that this was a new species which he published in the *Gardeners' Chronicle* on 26th November. It seems that up until that point Watson had not realised that Mrs Cornish-Bowden's nerine and Gumbleton's nerine had the same origin and hence the different identifications provided to each of them.

The type specimen in the Kew Herbarium (see Study Session, this Report Fig. 1) is from Mr Gumbleton's plant. It is evident that Kew had been growing the bulbs sent by Mrs Cornish-Bowden under the earlier name of *N. lucida* which Watson had provided to her, but it seems to have been the combination of Mr Gumbleton's notes in the *Gardeners' Chronicle* in February and October together with the Award of Merit to the plant exhibited by Veitch that spurred Watson on to provide a name.

The engraving that was published with the original description (Fig. 5) is from a specimen exhibited by Robert Veitch & Son but the illustration published in the *Botanical Magazine* (t. 8117, 1907) and *Flora & Sylva* (1905) (Fig. 6) was from the specimen provided by Mr Gumbleton.

[30] This species is regarded as a synonym of *Nerine laticoma* (Duncan 2002: 28)

Fig.3. *Nerine* × *excellens* from the *Florist & Pomologist* (t. 567, August 1882)

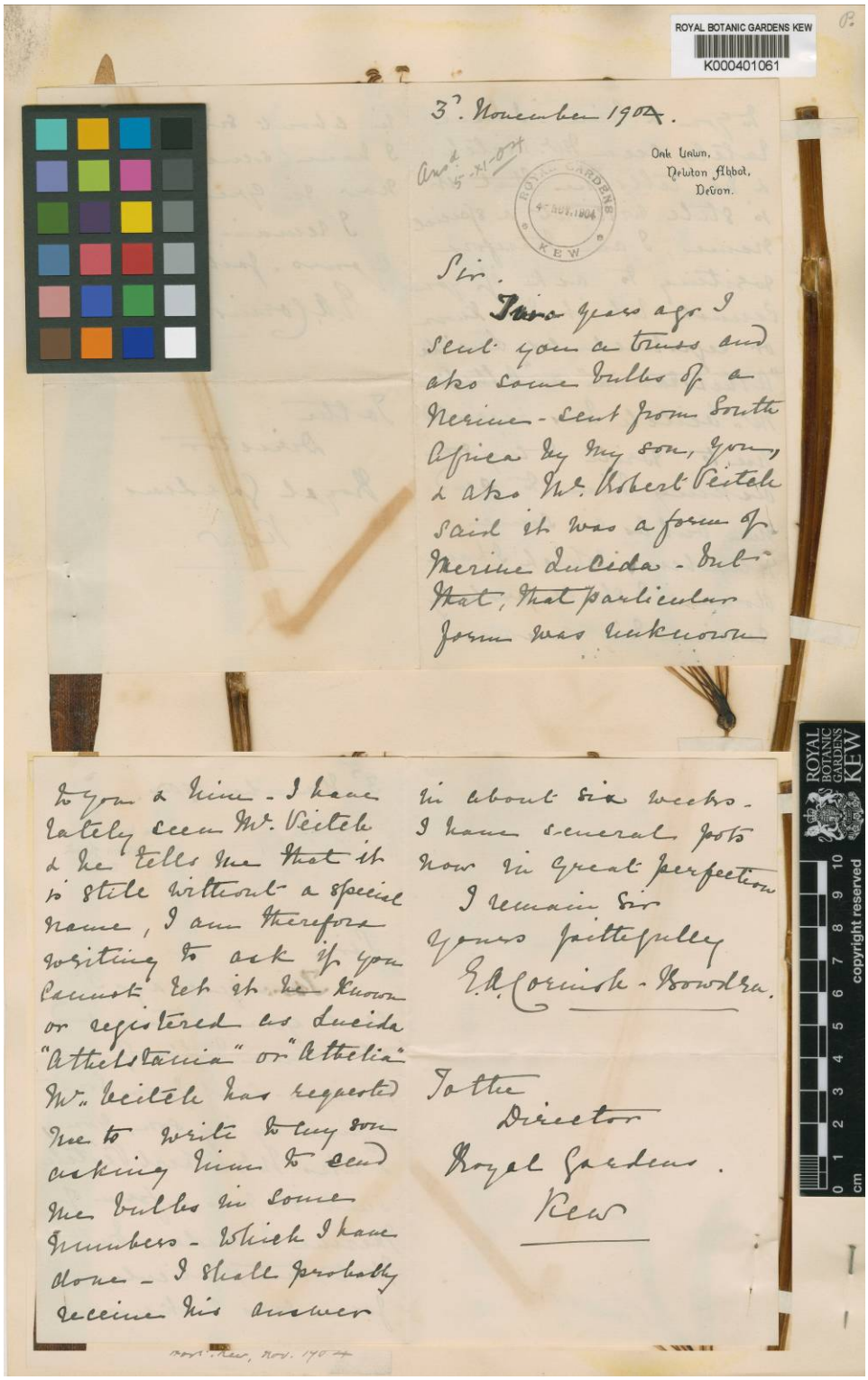

Fig. 4 Mrs Cornish-Bowden's second letter to Kew in November 1904

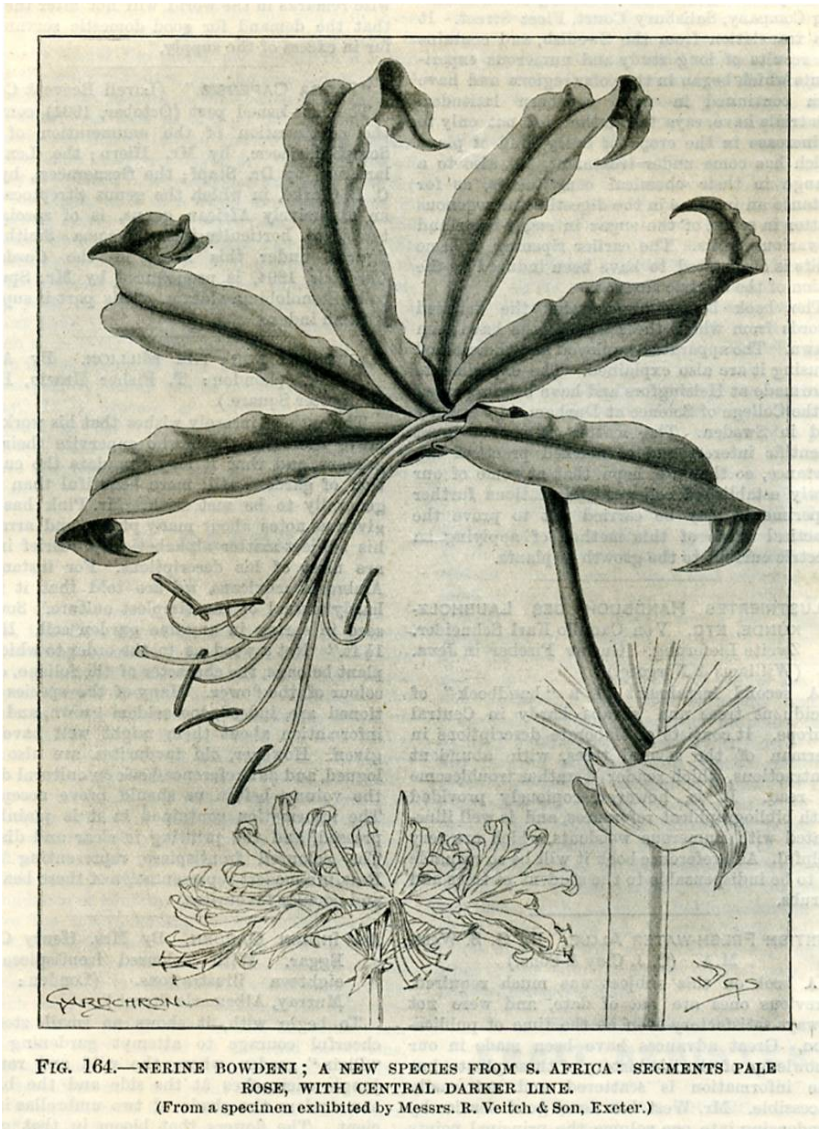

FIG. 164.—NERINE BOWDENI; A NEW SPECIES FROM S. AFRICA: SEGMENTS PALE ROSE, WITH CENTRAL DARKER LINE.
(From a specimen exhibited by Messrs. R. Veitch & Son, Exeter.)

Fig.5. Original engraving of *N. bowdenii* published in Gardeners' Chronicle, Nov. 1904

According to the book produced by the Devon Group of the NCCPG, *The Magic Tree*, (NCCPG, 1989) some of the subsequent collections of *N. bowdenii* by Athelstan Cornish-Bowden were also sent to a Mr Old who ran a nursery in Newton Abbot. Bulbs were sold from 3s6d to 7s6d according to weight and size and *N. bowdenii* first appeared in the Barr catalogue for Autumn 1906 at 7s6d. By 1911 James Veitch was offering it at 5s each. We can deduce that stock of *N. bowdenii* in the trade was sourced by further collections from the wild, as J.T. Bennett-Poë remarks in *The Garden* 84: 581, Nov. 27, 1920, that he was growing *N. bowdenii* from one of the earlier importations. One such importer was James O'Brien, a keen grower of South African bulbs, who subsequently (*Gardeners' Chronicle* 73: 335, 1923) came to question the identity of *N. bowdenii* as a species. He concluded that, based on his own involvement with both sending bulbs to, and receiving bulbs from South Africa, that what was in cultivation as *N. bowdenii*, was in fact some of his own *N. flexuosa* hybrids. The account is confused and seems to overlook some facts about its wild origin that were known at the time.

Fig.6. The first colour illustration of *Nerine bowdenii*, published in *Flora & Sylva* in May 1905. Original painting by H.G. Moon.

The appearance of further collections clearly was the source of some colour variations for in 1911 Robert Veitch & Sons received an AM for a 'flesh-coloured variety' called *N. bowdenii* 'Pallida' and again in 1919 for *N. bowdenii* 'Alba', a pure white variant with narrow petals (*JRHS* 45: cxiv) which was still in Veitch's catalogue in 1927. It seems likely, therefore, that some of the range of variation of *N. bowdenii* in cultivation in the UK reflects the diversity of genotypes brought in by collectors at this time. This has probably been further influenced by a process of intentional and unintentional hybridization in gardens, with the subsequent selection of "good forms".

NERINE BOWDENII AS A HARDY GARDEN PLANT

Like almost all South African bulbs, nerines were generally regarded as plants for frost-free or cool greenhouses. A notable exception being James O'Brien (O'Brien, 1891), who lived at Harrow-on-the-Hill, and reported that species such as *N. flexuosa*, *N. humilis* and *N. undulata* survived being frozen hard: he also reported that the *N. sarniensis* hybrid with *N. flexuosa*, *N*. × *versicolor* 'Mansellii' proved hardy. But James O'Brien was not the first to experiment with growing nerines outside. The Hon. Dean William Herbert, who first introduced the genus name *Nerine*, reports that he was successfully growing *Nerine undulata* at the foot of a greenhouse wall in 1837 at his home at Spofforth, near Wetherby in North Yorkshire.

Initially, though, like other nerines, *N. bowdenii* was grown in the cool greenhouse. Mrs Cornish-Bowden reports flowering it in pots and Mr Gumbleton in his letter of Feb. 1904 says, "it is, in my opinion, a very ornamental plant and a most valuable addition to our stock of easily-flowered cool greenhouse bulbs." This explains why the earliest reports of flowering times are in November and December, much later than known for *N. bowdenii* today, which generally flower from mid-September to late October, depending on the coolness of the autumn. In a cool greenhouse, the cooler temperatures required to trigger flowering would not be reached until much later.

However, it is evident that people were tempted to try this nerine outside, possibly because it seemed much more robust than the previously introduced species. The first record of *N. bowdenii* being grown outside is from a Miss Blanche T. Wright in *The Garden*, 30 November 1907 who wrote:

"It may be of interest to your readers to know that the Nerine Bowdenii planted in the open in November 1906, in my grounds has stood the somewhat severe winter, but, notwithstanding, the bulbs thrived, and I enclose you one of the blooms which I cut to-day for you to see. I must add that the bulbs have not had the slightest protection. I am given to understand that the Nerine I enclose has not flowered in the open before, even in Southern England."

Sadly, we have no idea of where Miss Wright was growing her bulbs as no address was provided and given the price of the bulbs at that time, it seemed a courageous experiment. It is not clear whether anyone else tried it outside immediately as there is no follow-up correspondence, although we find that by 1916 it is growing outside at Kew, for in a note in *The Garden* (80: 521, Oct. 28, 1916) plants are described as growing at the foot of the wall of one of the orchid houses. This is repeated in the *Gardeners' Chronicle* (Oct. 18, 1919) where it was said to be flowering at the foot of a sunny south wall at Kew. We then have a succession of reports of growing it successfully outside during the early 1920s, such as Mr Hawker in South Devon (*The Garden* 86: 647, Dec.23, 1922); Herbert Beckingham in Surrey (*The Garden* 87: 640, Dec.8, 1923) who says that he has an "old established bed of Nerine bowdeni situated at the base of a 8 foot yew hedge" and Herbert Maxwell in S.W. Scotland (*The Garden* 89: 733, Dec.26, 1925), as well as Sir William Lawrence (Burford, Nr Dorking) in 1927 (*JRHS* 52: 183). There is also a report of *N. bowdenii* in full flower in mid November at Glasnevin (Dublin), growing in a border adjacent to the plant houses (*Gardeners' Chronicle* 72: 339, Dec.9, 1922 & photo, ibid.: 385, Nov.14, 1925). It is there commented that it appears to grow and flower better that those kept in pots.

Despite this, we find that the Robert Veitch catalogue for 1927 is still offering *N. bowdenii* as a plant for the greenhouse. So while the knowledgeable gardeners were aware that it could be grown

outside in a warm and sheltered spot from this time, it was not really until after the second world war that *Nerine bowdenii* became considered (and treated in gardening books) as a bulb for the garden rather than the cool greenhouse.

NERINE BOWDENII 'QUINTON WELLS' AND LATER COLLECTIONS

In the 1950s a distinct variant of *N. bowdenii* appeared in cultivation. It was distributed by that eminent gardener, alpinist and bulb-grower, E.B. Anderson. He had received it from a Dr Quinton Wells, who had collected the plant from the Drakensberg mountains in Natal, some way from the original population in the Eastern Cape. The plants were distinctive for their much more crisped tepals (or perianth segments) and for having taller and earlier flowers.

It was exhibited by E.B. Anderson to the RHS as *N. flexuosa* var. *saundersonii*[31] (the name that Dr Wells had been given for it) on Sept. 13, 1960, when it was awarded a Preliminary Commendation. Subsequently it was reported to the RHS Floral Committee B that the plant had been identified by RBG Kew as *N. bowdenii* and given the cultivar name 'Quinton Wells' (which is, to date, its only valid name). This plant was illustrated in *JRHS* 1961, see this Report p.9]

Dr Wells' collection, although the first to be brought into cultivation, was not the first time this variant had been collected. An earlier collection of the Drakensberg population dates back to 1926, which can be seen from a specimen in the herbarium at Kew, labelled *Nerine flexuosa* (a species of the Eastern Cape that does not extend into the Drakensberg), from 10,500 feet up Mont-aux-Sources, the *locus classicus* of "wellsii". There is a further, rather poor specimen in the herbarium, of a plant collected in April 1934 at an altitude of 2800 to 3000 m from the same vicinity. This specimen is a duplicate of a specimen in the herbarium in Paris.

The origin of this variant, high up on the Drakensberg, known as a source of plants hardy in cultivation in the UK, recommended it to gardeners and hybridisers alike as a plant likely to be hardier than the type variant in British gardens. Further, the cooler, wetter conditions that "wellsii" grows in would make it more amenable to a wider range of garden situations. While the variant has been in cultivation in the UK since the 1960s, it is interesting to note that it first appears in the *Plant Finder*, as 'Wellsii' in 1993/4 (although the *Plant Finder* had only been in existence since 1987).

The variant was subsequently re-collected by Tony Norris (Nerine Nurseries, Welland, Worcestershire), who suspected much of the material already in cultivation to be of hybrid origin. He collected material from the Drakensberg in 1971 and distributed a few plants but curiously never seems to have sold it through his nursery. A collection designated "wild form" has been distributed in the last few years and has been traced back to a collection made by Jim Archibald, also from the Natal Drakensberg.

Norris regarded this variant as a good botanical variety and in 1975, proposed it formally but unfortunately, since he did not designate a type specimen, it is invalid under the International Code

[31] The original plant of this name was collected by a Mr Saunderson from the Transvaal and named by Baker (1888). It has more recently been treated as a synonym of *N. laticoma* or *N. falcata* (see *Flowering Plants of Southern Africa*, t.139)

of Botanical Nomenclature. Subsequently no one has validated the name although the population is frequently referred to as var. (or even subsp.) “wellsii”, or given the cultivar epithet ‘Wellsii’ (see Duncan, 2002: 24). The evidence of the Study Day shows that the Natal Drakensberg population is also variable in flower characteristics, although the origin of such taxa as the “wellsii pale form” and “wellsii dark form” which Terry Jones used in his breeding programme is unclear. Further work is required to establish whether the population should be recognized formally with a botanical taxon.

There have, no doubt, been other introductions of *N. bowdenii* from South Africa, although it appears that this species is relatively rare in the wild. Recorded collections in herbaria (in the UK at least) are few, which suggests that the species, although spread across the Eastern Cape to the N.E. Drakensberg is broken up into isolated populations which show distinctive characteristics (e.g. *N. bowdenii* ‘Manina’). According to van Wyk & Smith (2001), the known populations fall into distinct phytogeographic units: King William’s Town & Queenstown are in the Albany Centre of diversity; Engcobo is situated in the Maputoland-Pondoland region and the “wellsii” population is in the Drakensberg Alpine Centre.

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Bulb physiology relating to *Nerine*

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As nerine enthusiasts we are drawn to the beauty of the flowers, the diversity of colour and variant and the seemingly endless potential for creating new and beautiful cultivars. However, there is another aspect which surely intrigues those who grow them, and that is their complex and intimate relationship with their environment and how this is reflected in their growth and flowering. In laymans' language, what actually makes them 'tick'!

During this lecture I am drawing on the published research of Van Brenk and Benschop (1993) who studied the physiology of nerines at Wageningen University in The Netherlands in the 1980s. The work centred on *Nerine bowdenii* 'Favourite'[32] since *N. bowdenii* hybrids are the most important as commercial flower crops in the Netherlands. Some studies were also made of *N. sarniensis corusca '*Major' and *N. flexuosa alba* which are of lesser importance.

The Netherlands is a major producer of nerine flowers and bulbs, with flower numbers, at auction, rising from 156 thousand to 28 million between 1960 and 1990. Such expansion justified the research effort which was primarily on *N. bowdenii* because:-

- It represents 95% of the production;
- *N. bowdenii* bulbs are produced in open ground conditions;
- The dormant bulbs can be lifted in late autumn and cold stored for programmed planting under glass;
- *N. sarniensis* is winter growing and cannot be produced in this way, neither can the bulbs be cold stored.

Knowledge of bulb physiology is essential for successful commercial production. It can also add to the enjoyment obtained from growing nerines and help explain the variable results sometimes obtained. However, bulb physiology studies are only possible if relatively large numbers of uniform clonal material are available. The diversity of types found in many amateur collections seldom provide opportunity for such studies.

The first unusual feature seen in both *Nerine bowdenii* and *N.sarniensis,* and possibly other species, is the presence of two flower initials (buds), of differing ages, within the bulb at any given time (Sytsema, 1982). As far as is known this does not occur in Northern Hemisphere bulbs such as

[32] KAVB International Bulb List (1991) states that the correct name for this cultivar is 'Stam 63'

daffodil or tulip which lay down flower initials during the summer preceding flowering. *Nerine*, on the other hand, initiates a bud each growing season which requires two growing seasons to bloom hence a mature bulb will normally contain one large, outer, bud and one small, inner one. Towards the end of this talk I will suggest some reasons as to why this unusual behaviour may have evolved.

We learn from the Dutch studies that nerines produce several leaves and a single flower initial (in the case of *N. flexuosa* there may be several) each year. *Nerine bowdenii* initiates at the end of its growth phase, i.e. mid-late summer, whilst, *N. sarniensis* initiates at the beginning of its growing season, namely the autumn. Interestingly, Graham Duncan (Duncan, 2002) states that in South Africa *N. sarniensis* initiates at the *end* of its growth period. Can there be a difference between its behaviour in the northern and southern hemispheres? Clearly, this is something needing to be followed up since conditions and culture applied at the time of floral initiation could be of some importance.

Now, let us consider the conditions required during the two years during which the various flower parts develop from the apex to the emerging bud, as this is when bud abortion can occur if conditions are unfavourable (see Fig.2). There is, in fact, plenty of evidence that *N. bowdenii* will abort the smaller of its two flower initials if the temperatures are too high in the first year of its two-year 'gestation'. Field grown bulbs which have initiated under cool, field, conditions perform well in their first year under glass but a second year under glass will see many failing to bloom. The critical temperature has been found to be about 25 °C (see Fig.3). Dissections of buds experiencing high temperatures show that they do not develop properly and subsequently die. For this reason *N. bowdenii* is not grown continuously under glass but 'rested' in open ground before reuse. High temperatures also increase the risk of basal rot *(Fusarium)*. It is now generally accepted that *N. bowdenii* should not be kept too hot and dry in summer when in leaf. I understand that *N. bowdenii* performs badly in Israel and I have found some hot sandy soils in the Isles of Scilly unsuitable. So, ignore the suggestion to plant at the base of a south-facing wall – an open site or even a lightly shaded one is preferable. Bear in mind that *N. bowdenii* is a native of the summer rainfall area of the Eastern Cape and the bulbs will often be shaded by vegetation. Our Amaryllid Journal of November 1999[33] raised the fascinating point that in South Africa a site near a south-facing wall is preferred. Surely this advice has not been blindly followed here!

So much for *N. bowdenii*. What about *N. sarniensis,* the Guernsey lily? It appears that here also there have been misunderstandings over its preferred treatment in summer. Hellyer (1948) stated, "In May, as foliage dies down, stand on shelf near the glass and cut down water until absolutely dry." Today, few nerine growers would agree with this and the alternative of placing pots under the bench or outdoors would also be avoided. Dutch work suggests an optimum mean summer temperature in the range 17—21 °C, whilst Warrington *et al.* (1989) in New Zealand had excellent results with 'Salmon Supreme' kept at 22 °C when amazingly 42 % of the bulbs produced second stems, something that seldom happens in the UK. Warrington et al. Compared constant 14 °C, 22 °C and 30 °C and state that 22 °C was by far the most successful and is close to the mid-summer average of the Cape of South Africa. Both Dutch and New Zealand workers agree that both low temperatures (approaching 14 °C) and high temperatures (30 °C) in summer reduce flowering. These data are summarized in Table 1, below. At the Study Day Graham Duncan confirmed that Cape temperatures

[33] *Amaryllids* 1999(2): 2.

do at times exceed 30 °C, but states in his book that, in their native habitat, montane species such as *N. sarniensis* enjoy morning sun and afternoon shade. We also understand that the mountains of the Cape are often attended by mist and occasional drizzle during the summer.

So, I personally do not clean up dead foliage until August and place newspaper over pots exposed to direct sun in the hottest part of the summer. My plants, though dormant, receive an occasional damping over and those on shelves and staging have capilliary matting beneath the pots.

Winter temperatures down to 4 °C are said to be tolerated by *N. sarniensis* but freezing must be avoided at all costs. There is evidence that the optimum temperature after flowering and during subsequent winter growth is about 14 °C.

Nerine flexuosa, now tending to be grouped in *N. undulata,* is from the intermediate Eastern Cape where rain may occur at any time. Thus, when adequately watered, is it almost evergreen under our conditions. Flower initiation takes place throughout the leafing period and we read that several initials may be produced in the bulb. However, I have seldom experienced multi-stems probably because high temperatures in a general nerine collection can cause some to abort. The optimum summer conditions are said to be on average 16—18 °C with some shade. Much the same advice applies to semi-evergreen *N. mansellii* [34](a hybrid between *N. flexuosa* and *N. sarniensis*).

Table 1. Suggested average temperature regimes for nerines

Species	Autumn	Winter	Spring	Summer	Notes
N. sarniensis	17–21 °C Falling	9 –13 °C Minimum 4°C	13 °C rising to 21°C	21–22 °C	Avoid excessive heat, cold or wetness in summer
N. bowdenii	17 °C Falling	Protect from frost	10 °C rising to 17 °C	17–21 °C maximum	Avoid high temperatures (25 °C) and do not dry out in summer
N. undulata (*N. flexuosa*)	17 °C Falling	8–10 °C	10 °C rising to 16 °C	16–18 °C with shade	Maintain leaf by watering and cool temperatures

As mentioned above, one of the curiosities of nerine is the two-year period from floral initiation to blooming at least as far as *N. bowdenii* and *N. sarniensis* are concerned (see Fig.1). I have no information on the behaviour of other species except *N. flexuosa* (and presumably *N. undulata)* which differs from the above two by blooming one year after initiation.

A study of South African bulbs and many related geophytes suggests that, unlike our northern bulbs which are generally quite reliable, many are liable to abort their flower initials unless growing

[34] Correctly, *N*. × *versicolor* 'Mansellii'

conditions are optimal (Tompsett, 1985). Thus, we read of flowering episodes following veld fires caused by lightning, sometimes followed by rain. Often, fire alone is sufficient to produce a rapid blooming. The fascinating point is that whilst floral initiation may take place annually, development of the bud does not necessarily follow; instead it can dry up and so, presumably, conserve the bulb's energy. It appears that evolution has selected for behaviour which offers the best chance of success for seed production and the establishment of young plants.

Although not universally accepted, the current evidence is that smoke containing a complex mixture of gases, including ethylene, is the trigger for these phenomena. In his book 'Grow Nerines', Graham Duncan mentions several species which are dependent on fire (*N. pancratiodes)* or improved by it *(N. sarniensis, pudica* and *gibsonii)* but there could be others.

One explanation for dependence on these special stimuli could be due to the 'energy economy' of these plants in relation to an uncertain climate. Where conditions are marginal they appear not to waste energy producing seed since the prospects for the seedlings would be unfavourable. In these situations, early abortion seems to make sense. It would appear that nerine go one step further in avoiding committing to flowering unless conditions are good. The two-year 'gestation' period may be an even more highly developed mechanism for ensuring the best possible outcome by giving a longer period during which the bulb can abort its flower bud. However clever this may be it can be an unwelcome factor for nerine enthusiasts!

So, if your nerines disappoint, here are two thoughts. Firstly, for some reason, your bulbs are unhappy and secondly, your bulb is opting for self preservation above reproduction.

Nerines are very sophisticated plants!

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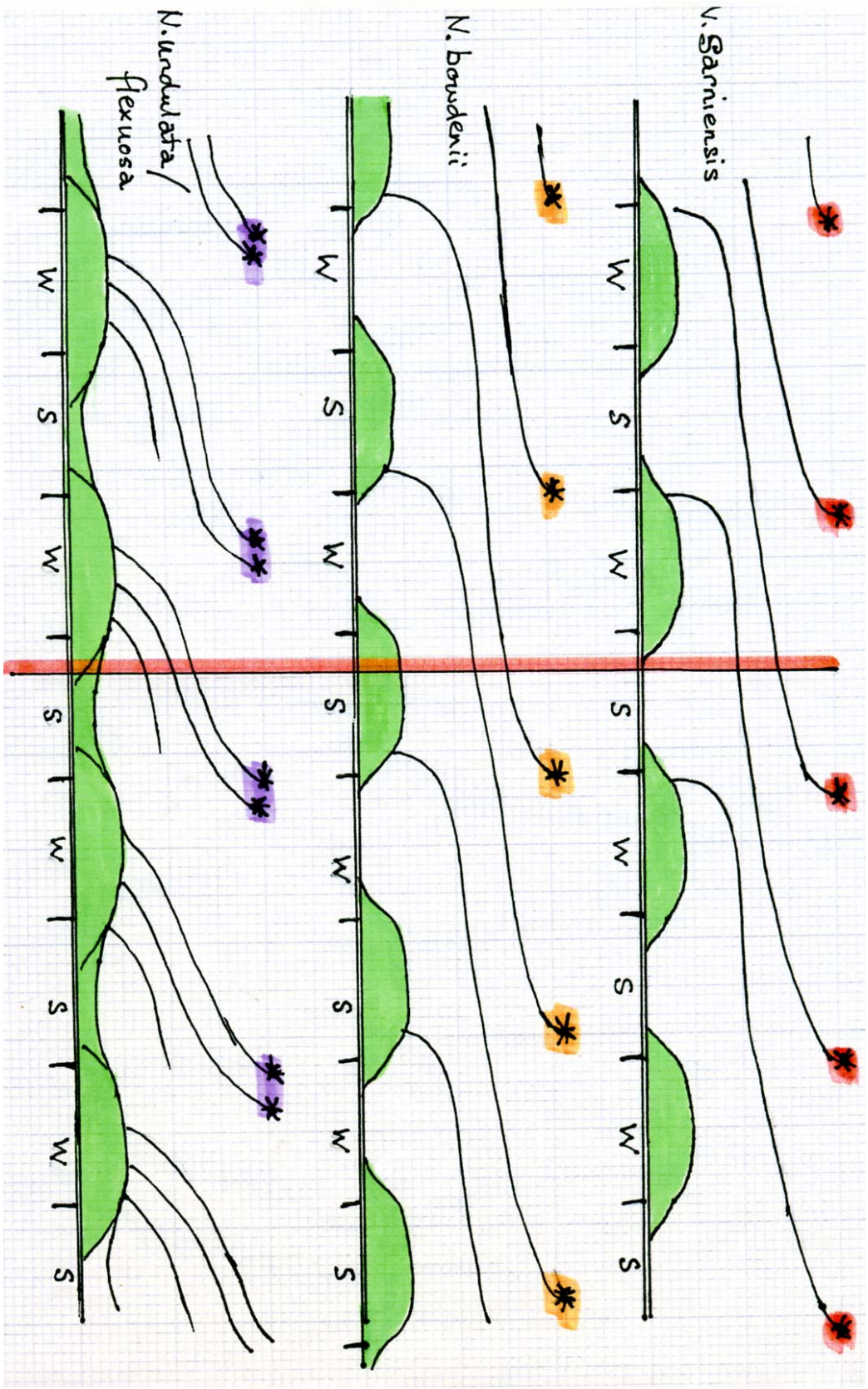

Fig. 1. Seasonal growth and flowering cycle for *N. sarniensis*, *N. bowdenii* and *N. undulata*. At flowering time the bulbs of the first two species will have one inflorescence in flower, one held within the bulb for the following year and one initial developing for the year after. (S = Summer, W = Winter; green peaks are periods of leaf growth)

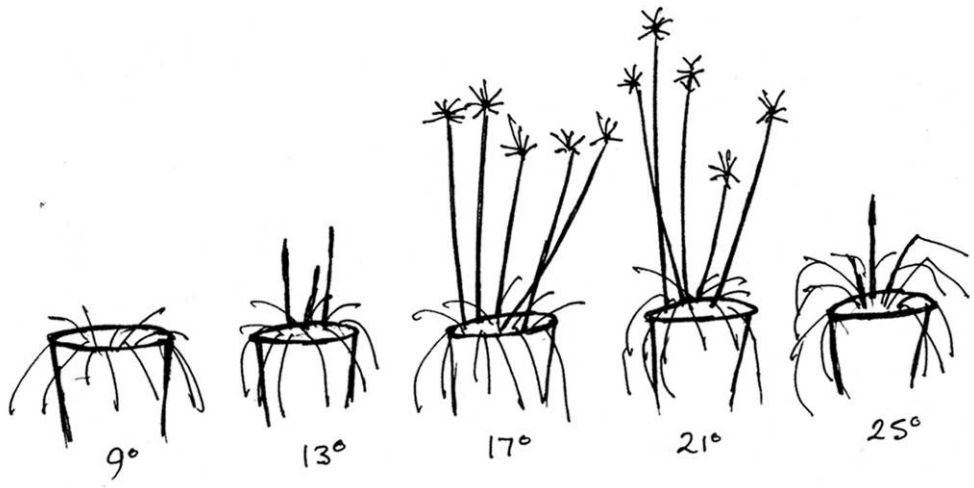

Fig.2. *Nerine bowdenii* – effect of temperature in two growth cycles ago (after van Brenk & Benschop, 1993)

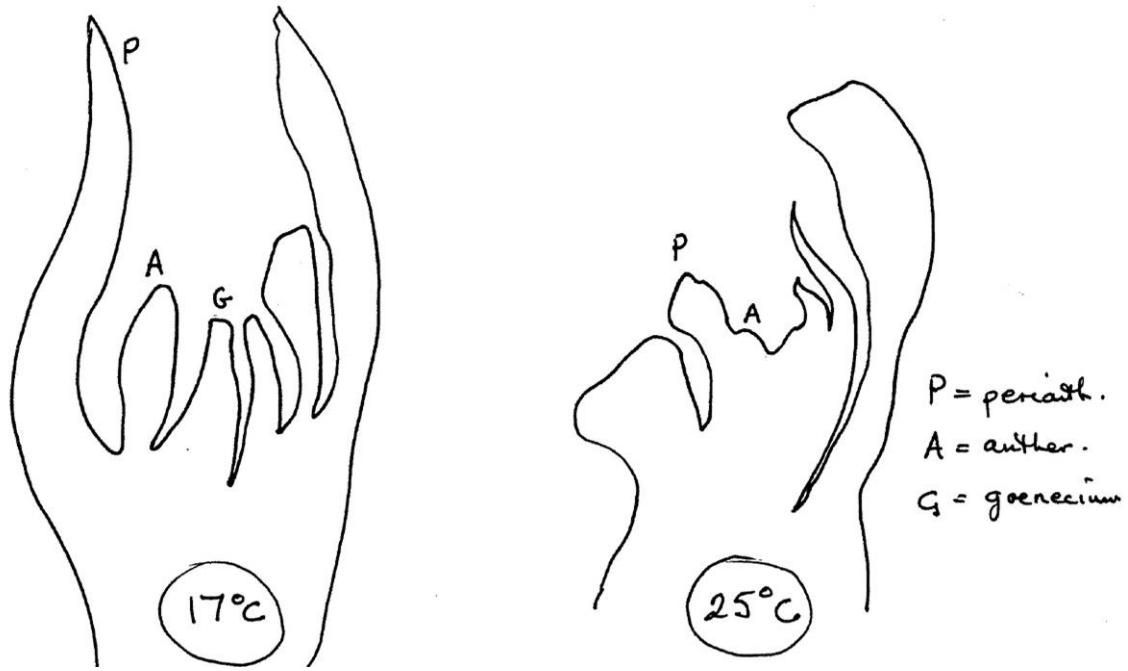

Fig.3. *Nerine bowdenii* – early development of flower initial at 17 °C and 25 °C (after Berghoef & van Brenk, 1983)

Hardy hybrid nerines and the breeding programmes of Terry Jones

Dr MARION WOOD (1) & MATT BISHOP (2)

(1) *Hollacombe, Devon*. (2) *The Garden House, Buckland Monachorum, Devon*.

This article is confined to the hybrids of the hardy, summer-growing *Nerine bowdenii* with the tender, winter-growing *N. sarniensis*. Whilst the colour of the flowers of *N. bowdenii* is confined to shades of pink through to white, *N. sarniensis* comes in every colour except blue, yellow or green with some variants spectacularly striped or ringed in a contrasting colour.

Unsurprisingly, the potential for combining this colour range with the hardiness of *N. bowdenii* has attracted hybridisers since the early 1900s. Robert Veitch crossed *N. bowdenii* with orange *N. sarniensis* f. *fothergillii* to produce the diploid *N*. 'Exonia' and Rose, in 1908, selected the triploids *N*. 'Hera' and *N*. 'Aurora' from a similar cross, possibly using the triploid variant of *N*. *sarniensis* f. *fothergillii* 'Major'. Hybrids using a variant of *N. sarniensis* var. *corusca* were produced by Doris Findlater, for example *N*. 'Glensavage Gem' and 'Glensavage Spider'. Norris provided more than thirty named hybrids including *N*. 'Susan Norris' which he sold as hardy!

Significantly, almost all these hybrids were primary F_1 crosses and were not fully hardy. They tend towards being evergreen in mild sheltered gardens, but if they lose their leaves they do not replace them until much later than the leafing period of *N. bowdenii*. This leads, over several years, to a progressive weakening of the bulb and finally to death.

Whilst the initial cross of *N. bowdenii* with *N. sarniensis* is perfectly easy to make, the pollen of such hybrids has a vastly reduced viability. Diploid hybrids may be pollen and egg sterile, while triploids and aneuploids may have less than 5% fertile pollen and be incapable of setting seed. Terry Jones selfed his hybrids each year and in 38 years produced only three seeds. In order for hybrids not to be a genetic dead-end their sparingly fertile pollen must be back-crossed onto *N. bowdenii* and this repeated over several generations to produce richly coloured hardy plants.

The most significant steps forward were made by Terry Jones. He gardened at Zeal Monachorum in North Devon and all his nerines bear the 'Zeal' prefix, including those named after his death in 2005, aged 94. Terry meticulously recorded his crosses in a studbook, each cross being given a number. His first crosses were made in 1968 and his last in the year that he died. He was uninterested in naming his seedlings and gave and threw away far more than he ever kept.

Terry used various variants of *N. bowdenii* in his crosses. He obtained a pale variant of the cultivar "wellsii" from Tony Norris and also a darker flowered plant from an unknown source. Both these were tall plants with strongly undulate perianth segments. He also used the larger flowered, shorter variant of *N. bowdenii*, originating from the Eastern Cape. He had a variant named 'Marnie Rogerson' which he valued for its ability to pass on broad flower segments and not to "blue" the flowers in the next generation. He also obtained the variant 'Superba', a mid-pink used by Stanley Smee and given to no one. Terry had it from John Gallagher following Smee's death.

In 1969 Terry was given plants of *N*. 'Hera' and *N*. 'Aurora' which he used in many crosses onto *N. bowdenii*. The plant named 'Aurora', however, is a tetraploid, not a triploid like the plant counted by Janaki Amal in 1951[35]. The studbook shows that he obtained seed from 'Aurora' by selfing it and he may have used the offspring as a parent. His most widely grown hybrid is *N*. 'Zeal Giant' which is exactly as its name suggests. Its pollen parent is the triploid 'Hera', which must have contributed all its 33 chromosomes to 'Zeal Giant', which is tetraploid with 44 chromosomes. Unfortunately the stock now carries a low level of virus, but this does not seem to diminish its vigour and hardiness.

In the late 1970s Terry crossed his 'Aurora' onto *N. bowdenii* 'Mark Fenwick' (as 'Fenwick's Variety') and obtained a hardy triploid, which he named *N*. 'Zeal Candystripe' on account of the dark pink stripes on the edges and centre of the petals. *Nerine* 'Aurora' crossed onto the pale *N. bowdenii* 'Mary Knight' gave another hardy plant. Here the startling pink edges contrast with a wide, muted-grey median stripe and inspired the name *N*. 'Zeal Silverstripe'.

From the same cross Terry selected an unusually broad-petalled seedling, which he named *N*. 'Zeal Plush'. This is tetraploid but is now, unfortunately, virused and difficult to maintain. *Nerine* 'Zeal Plush' crossed onto *N. bowdenii* 'Marnie Rogerson' gave a seedling which itself was crossed onto 'Mark Fenwick'. One of the resulting offspring was a broad-petalled, pinkish-red which Terry named *N*. 'Zeal Flame'. It has 31 chromosomes and, like 'Aurora' is late flowering.

In 2002 Terry again used 'Aurora', on this occasion with Smee's 'Superba', which he believed would darken the colour of the F1. He selected *N*. "Zeal 111" which is a reddish-pink whose colour changes according to the light source with which it is viewed. It may be hardy as it is deciduous and produces leaves in the spring, only shortly after *N. bowdenii* comes into growth.

In the late1970s Terry obtained a crimson *N. sarniensis* which he crossed onto *N. bowdenii*. He selected a dark purple, early flowering plant, which he called *N*. 'Zeal Damson'. Towards the end of his life he commented that he regretted not making better use of this plant as he thought it would give rise to early flowering garden-worthy plants. The stock is now virused, but the 1996 cross onto 'Superba' gave a batch of sharp, pink or purple seedlings of which one, recorded as 97C, had all the 'Zeal Damson' chromosomes (30) plus 11 from the *N. bowdenii* parent, giving 41 chromosomes in all. This plant may give rise to a race of hardy purples. Another sibling was grown outside where, in 10 years, it has formed a large, congested clump. This plant is named *N*. 'Zeal Purplestripe'.

Terry obtained the salmon hybrid *N*. 'Susan Norris' from Norris, but found that its salmon offspring tended to 'blue' as they aged and that this carried on into the next generation. This caused him to try *N. sarniensis* 'Scarlet Beauty' onto 'Marnie Rogerson' in an attempt to produce clean, orange flowers. From this cross he selected 70 dark and 70 pale which were elegant salmon flowers but not fully hardy plants. He therefore back-crossed them onto 'Marnie Rogerson' and selected a dark-leaved triploid, which he named *N*. 'Zeal Grilse'. The colour was clean salmon and the plant was vigorous and hardy. However, he was not satisfied and in 1996 he crossed 'Zeal Grilse' onto 'Marnie Rogerson' again and selected *N*. 'Zeal Salmon', another triploid. Its colour is identical to 'Zeal Grilse', but its flowers are larger, the segments more undulate and it is hardier and more vigorous in the garden.

[35] Janaki Ammal, E.K. & Bridgwater, M. (1951). Chromosome numbers in hybrid nerines. *Journal of the Royal Horticultural Society* **76**: 372-375.

It must have come as a surprise to Terry when ‘Zeal Grilse’ pollen onto ‘Superba’ produced a purple flower of excellent substance with a greyish stripe down the centre of each segment. This has been named *N*. ‘Zeal Regal’ and is partly deciduous under glass so may be hardy in the garden.

Terry’s 1986 cross, involving ‘Susan Norris’ gave rise to *N*. ‘Zeal Colourbreak’, which was slightly hardier than its pollen parent. Pollen from ‘Zeal Colourbreak’ onto “wellsii” gave *N*. ‘Zeal Blush’, which was sent, with ‘Zeal Plush’, to Rosemoor. Nerine ‘Zeal Blush’ pollen onto pale “wellsii” produced two of Terry’s most highly coloured hybrids to date. The cross was Zeal 90 and the selected seedlings were referred to as 90 Red and 90 Dark. The red one has been named *N*. ‘Zeal Embers’ and the following year the dark one became *N*. ‘Zeal Plum’.

In 2000 Terry crossed a dark seedling from the ‘Zeal Grilse’ and ‘Superba’ hybrid (above) onto “wellsii” and produced a large-flowered tetraploid which resembles ‘Zeal Giant’, but in a slightly softer colour. It appears to be winter deciduous with a strong stem and shorter stature so may be a good garden plant. It has been named *N*. ‘Zeal Giantess’.

The advance made by Terry in the breeding of hardy hybrids has taken place over some forty years. Using polyploidy and aneuploid hybrids as pollen parents seems to lead to a fertile next generation, which may accumulate characteristics that enhance garden hardiness. It is to be hoped that the introduction of new variants of *N. bowdenii* such as ‘Pink Surprise’ and ‘White Magic’ will encourage others to pursue breeding programmes similar to that followed with such success by Terry Jones.

Fig.1. *Nerine* ‘Zeal Giant’ Photo: John David

Fig. 2. *Nerine* ‘Zeal Silverstripe’ Photo: Victoria Wakefield

Fig.3. *Nerine* ‘Zeal Colourbreak’ Photo: Matt Bishop

Fig.4. *Nerine* ‘Zeal Embers’ Photo: Matt Bishop

Fig.5. *Nerine* ‘Zeal Plush’ Photo: Matt Bishop

Fig.6. *Nerine* ‘Zeal Damson’ Photo: Matt Bishop

Table 1. Zeal cultivars raised by Terry Jones, based on the list originally published by Marion Wood in *Amaryllids* 2006(1): 6.

Cultivar name	**Chromosome count**	**Parentage**
'Zeal Blush'	2n=?	*N*. "pale wellsii" x 'Zeal Colourbreak'
'Zeal Candystripe'	2n=33	*N*. 'Mark Fenwick' x N. 'Aurora'
'Zeal Choice'	2n=?	*N. bowdenii* 'Superba' x 'Zeal Grilse'
'Zeal Colourbreak'	2n=33	*N*. 'Marnie Rogerson' x 'Susan Norris'
'Zeal Damson'	2n=30	*N. bowdenii* x Exbury crimson
'Zeal Embers'	2n=30	*N*. "pale wellsii" x 'Zeal Colourbreak'
'Zeal Flame'	2n=?	N. 'Mark Fenwick' x ('Marnie Rogerson' x 'Zeal Plush'
'Zeal Frilly Kay'	2n=?	Not known
'Zeal Giant'	2n=44	*N. bowdenii* x 'Hera'
'Zeal Giantess'	2n=44	*N*. "wellsii" x (*N. bowdenii* 'Superba' x 'Zeal Grilse')
'Zeal Grilse'	2n=33	*N*. 'Marnie Rogerson' x ('Marnie Rogerson x 'Scarlet Beauty')
'Zeal Hope'	2n=?	(*N*. 'Mark Fenwick' x 'Aurora') selfed
'Zeal Plum'	2n=?	*N*. "pale wellsii" x 'Zeal Colourbreak'
'Zeal Plush'	2n=44	*N. bowdenii* x 'Aurora'
'Zeal Purplestripe'	2n=?	*N.* 'Zeal Damson' x *N. bowdenii* 'Superba'
'Zeal Regal'	2n=28	*N*. *bowdenii* 'Superba' x 'Zeal Grilse'
'Zeal Salmon'	2n=33	*N*. 'Marnie Rogerson' x 'Zeal Grilse'
'Zeal Silverstripe'	2n=33	*N*. 'Mary Knight' x N. 'Aurora'

A provisional list of *Nerine bowdenii* cultivars and hybrids

JOHN DAVID

An earlier version of this list was distributed to participants on the day but the present list has benefitted from information provided by Matt Bishop, John Gallagher, Dr Marion Wood and Chris Brickell and has been updated to include cultivars mentioned or named on the day. The latter are referred to in the list with a page reference to where they are mentioned in the Report. Margaret Owen kindly provided a list of all the cultivars that have been accessed into the National Collection and these have been included below with provenances where relevant. The list also included information arising from further research after the Study Day. While it is certainly still incomplete, hence the use of the word "provisional" in the title, it represents the most comprehensive listing of *N. bowdenii* cultivars and hybrids to date.

Nerine bowdenii
W. Watson, *Gardeners' Chronicle* **36**: 365, 1904 (26th Nov.), f. 164.

Colour illustrations: *Flora & Sylva* **3**: 120—122 (1905); *Botanical Magazine* t. 8117 (1907); *Gardeners' Chronicle* **73**: facing p. 312 (1923); R. Dyer in *Flowering Plants of South Africa* **22**: t. 841 (1942).

Type: Ex W.E. Gumbleton, 14.xi.1904 (**K**000366222)

Further specimen: "Nerine sp. nov. Veitch of Exeter", comm. W.E. Gumbleton, 31.xii.1903 (**K**00366223)

Awards: AM (Veitch, 1904); AGM (1927); reconfirmed (1993)

Checklist of names associated with *N. bowdenii*

'Alba' R. Veitch. AM 1919 (*JRHS* **45**: cxiv). A pure white variant with narrow petals. (Report p.12)

'Albivetta' KAVB List (1991) as *Nerine* 'Albivetta'. Raised by I.V.T., 1988. "Flowers ivory white (CC 155c/d) with vague pastel- mauve edging (CC 69c), anthers light maize-yellow (CC 159b/c), petals recurved, not crenate." Very early flowering. (Report p.12)

'Aldebaran' Selected by Stanley Smee (John Gallagher, who describes it as very tall and strong).

'Alpharet' Selected by Stanley Smee (John Gallagher, who says that it is a darker pink and not as strong as the preceding cultivar).

'Audrey' (Listed in National Collection of hardy nerines - MO 45 ex Bob Brown). *RHS Plant Finder* (2004-5) lists this as *Nerine* 'Audrey'.

'Blush Beauty' Van Tubergen (Zwanenburg Nurseries), Summer-Autumn 1958 Catalogue p.63. "A very delicate soft satiny pink raised by us. AM Haarlem, 1957." This cultivar was available from

Tubergen's up until 1968. In the KAVB list (1991) the flowers are given as rose pink HCC 427/3 edged carmine rose (621/3). See Norris Catalogue (1985-6): "A singularly beautiful very pale pink, more trumpet-shaped than most. The shorter stem, 12—15 inches, makes it especially suitable for the rock garden." (Report p.13)

'Blush White' (In National Collection – MO 17) (Report p.12)

'Bowden Frills' (syn. "Bowden Giant"). Raised by Chittick, New Zealand. See Hatch, T.C. (1992). *Herbertia* **48**: 43—45.

'Cape Town' S. de Goede (KAVB List, 1991). Flowers rhodamine pink (527/2) with darker vein, lobes slightly narrower.

'Chris Sanders' (Cotswold Garden Flowers catalogue, Dec. 2007), see "Irish Clone"; "not Hera"

'Codora' = *N*. 'Codora'. From pictures on the internet, this must be a *sarniensis* cultivar with bright red flowers and a typical *sarniensis* type inflorescence; sometimes also given as 'Kodora' but listed separately as *Nerine* 'Kodora'

'Colwall' Synge (*AGS Bulletin* **41**(2): 146, 1973), an almost white-flowered variant from Ballard's Nursery at Colwall, recognized by E.B. Anderson.

'Douglas Blue' Listed in the National Collection (MO 12 from Myra Carmichael) but no published description traced. A *Nerine* 'Douglas' was used by Norris as a parent of his hybrid 'Pamir' (q.v.).

'Excellent' = 'Stam 63' (*fide* KAVB List, 1991)

'Favourite' = 'Stam 63' (*fide* KAVB List, 1991)

'E.B. Anderson' Brown (Cotswold Garden Flowers): "Heads of pale sugar-pink flowers Sep.-Nov., 45cm". Possibly the same as "E.B. Anderson's hybrid", a cross between *N. bowdenii* and *N. bowdenii* "wellsii". Monocot Nursery (undated catalogue) describes 'E.B. Anderson' as, "a large, very strong growing variant of *N. bowdenii* but not as hardy." (Report p.12)

'Fenwick's Variety' (name contrary to ICNCP) = 'Mark Fenwick'

'Fuchsine' E.B. Anderson (*JRHS* **81**: 125, 1956).

'Fucine' Cultivar in commerce under this name shows characteristics of a hybrid between *N. bowdenii* and *N. sarniensis*, with strong cherry-pink colour perianth segments. What its relationship with the preceding cultivar needs to be established.

'Gigantea**'** E.B. Anderson (*JRHS* **81**: 125, 1956 & *Hardy Bulbs*: 143, 1964). See Janaki Ammal, *JRHS* **76**: 368, 1951, chromosome no. 2n=22.

"Gilkinson's Form" = 'Stewart Gilkison' (Report p.14)

'Judy Read' (Report p.16)

'Kinn McIntosh' Brown (Cotswold Garden Flowers). See *Amaryllids* 2008(1): 6—7) = *N. undulata* cv. or hybrid. Found in a garden in Kent.

'Kodora' orth. var. = 'Codora'

'Linda Vista' (Report p.17)

'Lord Grenfell' (in National Collection, MO 50 - from Gary Dunlop; and MO 29 – from Myra Carmichael). *RHS Plant Finder* (2004-5) lists this as *Nerine* 'Lord Grenfell' from Ballyrogan Nurseries (Gary Dunlop). Norris Catalogue of hardy and near hardy nerines (1986-7): "N. 'Lord Grenfell'. Similar to the better known 'Pink Triumph' but flowers earlier. It is hardy standing up to the rigours of an English winter. The flowers are fuchsine-pink with a darker central stripe. Stem 18 to 24" and flower head of up to 16 florets."

'Magnifica' L.S. Hannibal, *Gardeners' Chronicle* **141**: 19, 1957. "There is a clone known as magnifica which is half as large again as the type species and is prized by Californian collectors. The bulb was either introduced or grown by the late Richard Diener, of Oxnard, California."

'Major' (as "var. major") *Gardeners' Chronicle* **100**: 370 (1936) & Fig. 168 on p. 369.

'Manina' Norris. Collected in 1971 by Norris: Manina Forest is possibly close to Engcobo (E. Cape, 28E/31.5S); see *JRHS* **100**: 491, 1975 for an account of the collection of the bulbs. (Report p.10)

'Marjorie**'** Marshall, AM (2005) Found at Logan Botanic Garden in early 1970s and selected by Jim Marshall. See *Hanburyana* **2**: 74 (2007) for a description. (Report p.16)

'Mark Fenwick' See *Amaryllids* 2003(1): 17—18, many plants distributed under this name are not correctly named. AM (1945); Mrs F. Hanger, FCC Sept. 21, 1966 (*JRHS* **91**: *115*, 1966) as 'Fenwick's Variety'; see also Gallagher, *ibid*. 514—515, f. 259 (colour) & *JRHS* **75**, f. 1 (colour), 1950 and *Nerine Society Bulletin* **2**: 10, 1967. See Janaki Ammal, *JRHS* **76**: 368, 1951, chomosome count 2n=24. (Report p.13—14)

'Marnie Rogerson' A pale salmon pink variant selected by Dr Rogerson in his garden in Croyde. (also given as 'Marney Rogerson' or as 'Marnie') (Report p.12)

'Mary Knight' See note in *Nerine Society Bulletin* **3**: 13, 1968, from E.B. Anderson stating that the cultivar was raised by Mrs Mary Knight, who raised some seedlings of *N. bowdenii*, one of which, a good pale pink, was noted by Anderson, who named it after her. He was given a bulb from which current stock is assumed to be derived. Matt Bishop (*in litt*.) has a suspicion that this is the correct name for the pale pink plant which is circulating as 'E.B. Anderson'.

'Mollie Cowie' (Syn. 'Variegata') Cally Gardens Catalogue (1994) states that 'Mollie Cowie' "occurred recently in an Orkney garden, the leaves develop white edges during the summer..." Chris Brickell notes that Kenneth Beckett had a variant with narrow variegation on the leaf which needs to be compared with 'Mollie Cowie'. The width of the band of variegation appears to vary.

'Nikita**'** Dutch cultivar. From pictures on the internet, this is a *bowdenii* with uniform pale pink flowers); *RHS Plant Finder* (2004-5) lists this as *Nerine* 'Nikita'

'Ostara**'** Dutch cultivar with soft pink flowers.

'Pallida**'** R. Veitch. AM 1911 (*JRHS* **37**: ccxxxxiv) (Report p.12)
(Syn. var. *pallida* Janaki Ammal, *JRHS* **76**: 368, 1951)

'Pink Beauty' Possibly a cross with *N. flexuosa* fide Anderson, *JRHS* **81**: 125, 1956.

'Pink Frostwork' Cotswold Garden Flowers online catalogue 2008. (Report p.16)

'Pink Surprise' Matt Bishop: "stock from a SA Nursery via Holland to Avon Bulbs" (Report p.17)

'Pink Triumph' Vandertang Nurseries, Guernsey. AM Jan. 22, 1957 (*JRHS* **82**: 181, 1957) = *N*. *undulata* hybrid (see *Amaryllids* 2008(1): 6—7) (Report p.16)

'Porlock' Offered in commerce by one nursery in the UK but no description provided. The name suggests a link to E.B. Anderson or Norman Hadden who both lived at Porlock.

'Praecox' Distributed by an East Anglia nursery some time ago stock is still grown in a few gardens there and starts flowering in August (Rod Leeds via Matt Bishop, *in litt*.)

'Promivetta' Dutch cultivar, registered in 1988 as *Nerine* 'Promivetta' – see KAVB Bulb list, 1991.

'Record' G.J. van Velsen (KAVB List, 1991). Flowers spinel pink (625/1), veined slightly darker.

'Rowie' A recent introduction from The Netherlands which has yet to flower here.

'Smee' Used as a parent by Norris: grown at Wisley, presumably from Norris stock.

'Stam 63' KAVB List, 1991: "Roseine-purple to pink population of *bowdenii*, introduced by Jan J. Oudendijk in 1975."

'Stefanie' A pale pink variant of unknown origin that has only recently been offered in commerce. (Report p.12)

'Stewart Gilkison' (syn. "Gilkinson's Variety"; "Gilkinson's Form") (Report p.14)

'Superba**'** Given as parent of *N*. 'Rushmere Star' by Smee and passed on to Terry Jones via John Gallagher (Wood, *Amaryllids* 2006(1): 4)).

"Swain's variety" Used as a parent by Norris.

'Ted Allens' Early' (syn. "Ted Allen's No.1") Appeared this year in the *Plant Finder* being offered by Ben Potterton who was given stock of "Ted Allen's No.1" by Richard Hobbs, and appears to have given it a slightly more formal designation (Richard Hobbs via Matt Bishop, *in litt*., who also comments that it is not known whether either name was accompanied by any published description)

'Ted Allen's No.2' Not to be confused with the above which I haven't seen. No.2 is supposed to be superior (Matt Bishop, *in litt*.)

'Ted Allen's Late' (*fide* Chris Brickell)

'Variegata' = 'Mollie Cowie' This cultivar was first offered under this name by High Banks Nursery, Kent in 1993 (*RHS Plant Finder* 1993-4). The epithet is contrary to the ICNCP and was treated as a synonym of 'Mollie Cowie' in RHS Plant Finder 1996-7.

'White Magic' Stock from a South African nursery via Holland to Avon Bulbs who are about to register it. It was in the same shipment as 'Pink Surprise' and like it is very large flowered – but pure white (Matt Bishop, *in litt*.) (Report p.12)

Informal designations

"Highdown form" See Janaki Ammal (*JRHS* **76**: 368, 1951) "A still darker form [of *N. bowdenii*] from Highdown has 24 chromosomes and a fragment." Anderson (*l.c*.) speculated that this might be the same as the variant he obtained from Ireland.

"Irish Clone" (Cotswold Garden Flowers catalogue, 2007: Large deep pink flowers, taller and more richly coloured than normal. This is the most widespread clone in Ireland). See also E.B. Anderson (*JRHS* **81**: 125, 1956, "a darker from [of *N. bowdenii*] which I obtained from Ireland") indicating that a distinct Irish variant has been known for some time. It would need to be established what its connection is to "not Hera" which also originated in Ireland. (Report p.18)

"Logan Strain" (Cally Gardens catalogue, 1997: Seedlings from an outstanding free flowering variant growing at Logan Botanic Garden, 2 feet)

"Pale pink striped darker" (Desirable Plants, Devon)

"Sheila Owen" Unregistered cultivar named by Margaret Owen. (Report p.17)

"Washfield form" (Offered for the first time in Plant Finder 2004-5, by a nursery run by Graham Gough, who previously worked with Elizabeth Strangman at the Washfield Nursery, Kent)

"White" (Elizabeth Strangman *fide* Chris Brickell)

Var. *wellsii* Norris, *Nerine Soc. Bulletin* **6**: 17, 1974; nom. inval. Art. 37 (no type). (Report p.8—10)

'Quinton Wells' E.B. Anderson (*JRHS* **96**: 122—3, 1961. f. 28). Originally exhibited as *N. flexuosa* var. *saundersonii* by Anderson (Sept. 13, 1960) when it received a PC.

"Wellsii", cultivar name not established, ICNCP Art. 19.x

Informal designations:

"Wellsii dark form" Terry Jones obtained this from PW Plants (Kenninhall, Norfolk) (Matt Bishop, pers. comm.)

"Wellsii pale form" Terry Jones obtained this from Tony Norris (Marion Wood, *Amaryllids* 2006(1): 4)

Both forms appear to have originated with Terry Jones and have been used in his breeding programme.

Hybrids with other species

N. bowdenii × *N. sarniensis*

N. 'Aurora' Rose, 1908; FCC, Oct. 5, 1920 (*JRHS* **46**: lxxiv, 1921). (Janaki Ammal, *JRHS* 76: 370, 1951, states this hybrid to be a triploid, 2n=33).

N. 'Colossus' Veitch hybrid, unknown parentage.

N. 'Diana Oliver' Trussler (Summerhill House) *fide* Marion Wood (*in litt*.).

N. 'Exonia' Veitch; AM Oct. 21, 1919 (*JRHS* **45**: cxiv). *N. bowdenii* **×** *N. fothergillii* (a bright cerise-pink hybrid) (Janaki Ammal, *JRHS* **76**: 370, 1951, states this hybrid to be a diploid, 2n=22).

N. 'Glensavage Gem' Miss Findlater; PC ?1968 (Shown by Norris).

For further information see Nelson, *A Heritage of Beauty*: 156 and Nelson, 'Miss Doris Findlater's Nerine cultivars' *Moorea* **7**: 28—31, 1988. Listed as a *N. bowdenii* × *N. sarniensis* by Springbank/Newchurch Nerines (05/06 catalogue).

N. 'Hera' Rose, 1912; FCC, Oct. 5, 1920 (*JRHS* **46**: lxxiv, 1921).

N. 'Miss Wilmott' Trussler (Summerhill House) *fide* Marion Wood (*in litt*.).

N. 'Paula Knight' AM Sept. 30, 1958 (*JRHS* **84**: 140, 1959) Exhibited by H. Joel, St Albans, plant of unknown origin but probably *N. bowdenii* × *N. sarniensis*. (Report p.18)

N. 'Regina' Springbank/Newchurch Nerines (05/06 Catalogue): "very vigorous dark pink hybrid, selected at Springbank" with colour illustration. Note: a *Nerine* with this name was also listed by Norris but without details. (Report p.18)

N. 'Rushmere Star' Smee; AM Oct. 25, 1966 (*JRHS* **92**: 96, 1967, f. 27). *N. bowdenii* 'Superba' × *N. fothergillii* major [= *N. sarniensis* var. *curvifolia* f. *fothergillii*]. See also *JRHS* **109**: 410, top photo (1984), deep rosy-purple flowers. Originally "Smee No. 11" (*Bull. Nerine Soc.* **2**: 9, 11, 1967).

Standard: WSY 0048845 (S. Smee, 25.x.1966)

N. 'Sylvia' E.B. Anderson. *N. bowdenii* major × *N. sarniensis* (orange-pink). See also *JRHS* **95**: 9, 1970 where the parentage is given as *N*. 'Corusca major' × *N. bowdenii* (shown by Norris)

Dutch crosses (KAVB List, 1991)

N. 'Commandeur' G.J. van Velsen (1974). Flowers glowing crimson (CC 52a), the top of the petals with roseine-purple vein.

N. ‘Gracia’ G.J. van Velsen (1974). *N. bowdenii* ‘Record’ × *N. sarniensis*. Flowers rose-red (CC58b) towards the vein somewhat paler.

N. ‘Lady Mariette’ G.J. van Velsen (1974). Flowers neyron-rose (CC55a,c), veined pale carmine.

N. ‘Lady Vera’ G.J. van Velsen (1974). Flowers carmine-rose (CC52c), towards the vein somewhat paler, petals recurved.

N. ‘Pink Planet’ G.J. van Velsen (1974). Flowers carmine-rose (CC52c), petals recurved.

N. ‘Prelate’ G.J. van Velsen (1974). Flowers carmine-rose (CC52d), veined crimson (CC52a), petals slightly recurved.

N. ‘Red Surprise’ G.J. van Velsen (1974). Flowers carmine-rose (CC52a), veined slightly paler, petals recurved.

Norris crosses

These details are derived from a copy of Norris’s manuscript ‘Nominal Roll of Nerines with Descriptions’ deposited at Wisley in 1992 which includes a list of all *Nerine* hybrids he was aware of. Norris’s hybrids were named with a different initial letter for each year. For instance those beginning with ‘K’ were named in 1982 and those with ‘L’ in 1983.

N. ‘Cameo Beauty’ *N. bowdenii* ‘Manina’ × N. 1407 Exbury White. Norris, Nerine nursery catalogue, 1985-86: 4. “Cameo Beauty is strongly bicolour with the flower segments alternately striped with white-pink-white. The stems are up to 2.5 feet tall and the head carries up to 12 florets which are crisped and recurved.”

N. ‘Cicely Norris’ (as above)

N. ‘Daphne’ N. ‘Cynthia Chance’ × *N. bowdenii* ‘Manina’

N. ‘Erna’ “N.N.” × *N. bowdenii*

N. ‘Goya’ *N. bowdenii* × *N. sarniensis* rosea

N. ‘Iceni’ *N. bowdenii* ‘Manina’ × N. Exbury White

N. ‘Icon’ “N.N.” × *N. bowdenii* Swains var.

N. ‘Idaho’ *N. bowdenii* “wellsii” × N. ‘Dover’

N. ‘Jove’ *N. bowdenii* × N. ‘Brigadier Billy’ Matt Bishop: “Newchurch Nerines are growing a *N. bowdenii* × *sarniensis* hybrid under the name of ‘Jobe’ – and I wonder if theirs is actually this plant – or the one below.”

N. ‘Jose’ *N. bowdenii* × *N. sarniensis* Corusca Major (or [SP] self pollinated)

N. ‘Joyful’ *N. bowdenii* (Swains) × “White”

N. ‘Kara’ *N. bowdenii* ‘Manina’ × N. ‘Dover’

N. ‘Kashmir’ N. ‘Blush Beauty’ × N. ‘Solent Swan’ White flowers with pale pink centre

N. ‘Kilwa’ Magenta (Mid. September)

N. ‘Kingship’ *N. bowdenii* ‘Manina’ × N. ‘Corusca’. Deep cerise with purple rib. 17 flowers.

N. ‘Kitanga’ *N. bowdenii* ‘Manina’ × N. ‘Dover’

N. ‘Kyanga’ *N. bowdenii* ‘Manina’ × N. ‘Dover’

N. ‘Laramie’ *N. bowdenii* × N. ‘Grace’. Mid purple-red, red rib. 14 flowers, early.

N. ‘Largo’ *N. bowdenii* × N. ‘Grace’

N. ‘Lucinda’ *N. bowdenii* ‘Manina’ × N. ‘Exbury White’. “This is the product of the Manina form of *N. bowdenii* crossed with the famous Exbury White. This cross was made in 1969[36] and first flowered in 1975” (Norris, *Country Life*, Sept. 30, 1982). The head of 12 to 15 regularly arranged flowers measures 6” across and is carried on a strong stem up to 3’ tall. The flower is an eye-catching white and palest pink and has segments ½” wide.” Norris, Nerine nursery catalogue 1985-6: 4.

N. ‘Magnum’ *N. bowdenii* × N. ‘Glencoe’

N. ‘Nabob’ *N. bowdenii* ‘Manina’ × N. ‘Corusca Major’. Cerise, fading to lavender, 12 flowers, mid September.

N. ‘Namba’ *N. bowdenii* ‘Manina’ × N. ‘Blush Beauty’. Mid pink, deeper buds, 17 flowers, late.

N. ‘Natalia’ *N. bowdenii* “Smee” × N. ‘Hamlet’

N. ‘Neil’ *N. bowdenii* ‘Fenwick’ × N. ‘Corusca Major’

N. ‘Nevis’ *N. bowdenii* × N. ‘Blush Beauty’

N. ‘Oberon’ *N. bowdenii* × N. ‘Corusca’. Purple-red, 17 flowers.

N. ‘Paloma’ *N. bowdenii* × *N. sarniensis* hybrid 24217. Light red, buds deeper, earlyish, 11 flowers.

N. ‘Pamir’ *N. bowdenii* Douglas [?= ‘Douglas Blue’] × N. Ajax 24221

N. ‘Rex’ Norris. See Nerine Nurseries catalogue 1976: “A very good clear pale pink with wide segments and strong stems.”

N. ‘Susan Norris’ (Norris, 1985-6). N. ‘Blush Beauty’ (SP) × N. ‘Blush Beauty’ (STC). “Our new *N. bowdenii* hybrid – a breakthrough- the colour a soft orange. This is a tough hybrid having survived the 1981/82 winter out in the garden. The stem over 2’ and strong carries a head of 10 to 14 florets with very prominent stamens.” Norris, *Country Life*, 30 Sept., 1982 states that he raised this hybrid in 1972.

[36] The date is questionable since ‘Manina’ was not collected by Norris until 1971.

For a complete list of Terry Jones' named crosses see Wood & Bishop, this Report, Table 1). The following have received awards from the RHS:

N. 'Zeal Giant' (Exhibited Oct. 7, 1986). *JRHS* **112**: 3, 4, 15 (1987). AM (1990); AGM (1999).

Standard: WSY 0004197 (T. Jones, 30.x.1990)

N. 'Zeal Salmon' PC (Oct. 8, 2002). See *The Plantsman*, n.s. **2**: 229, 2003 for description & illustration.

N. bowdenii × *N. flexuosa*

N. 'Pink Beauty' – see *N. bowdenii* cultivars above.

N. 'Kymina' (Norris) *N. bowdenii* × *N. flexuosa alba*

N. bowdenii × *N. peersii*

N. 'Karen' (Norris): *N. bowdenii* 'Manina' × *N. peersii*

N. bowdenii × *N. pudica*

N. 'Kosino' (Norris): *N. bowdenii* 'Manina' × *N. pudica*

N. ?*bowdenii* × *N. angustifolia*

N. 'Justifolia' (Norris, *Country Life*, Sept. 30, 1982)

Cover photograph: *Nerine* 'Regina' (RHS Herbarium)

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