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2005

HEATHERS 2



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FRONT COVER: Orange-breasted Sunbird on *Erica baueri* © Peter Steyn (see pp 27-30).



Heathers 2

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Erica junonia var. *junonia* from a new locality in the Cold Bokkeveld photographed by Ted Oliver in mid-November 2004. (enlarged c. x2)

Heathers: coping with the weather and alkaline clay

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My first heathers were obtained mainly to give a time-saving groundcover between the roses but were beautiful. Abnormal weather became as much a concern as the soil after an initial test indicated that it had a pH of almost 7.5 with some variation. In one patch it was 8.0, probably due to cement debris and concrete. This was a disappointment. Acid mulches have reduced the pH almost to neutral in the top few centimetres.

Having established by good luck that *Erica erigena* and *E. vagans* seemed to thrive in my intractably heavy and alkaline (Kimmeridge) clay, the Harlow Carr Trial reports were a valuable guide to what to get next. The results of a potting disaster (Griffiths 1981) also helped. The success of *E. vagans* suggested a magnesium-rich soil confirmed recently by the spectacular growth of *E. erigena* 'Ewan Jones' reaching over 2.5m (8ft) in six years. After more than two decades of effort, it has become clear that the soil is far from hopeless. For this paper, a professional soil analysis has been undertaken.

Soil and site conditions

The free lime content of my soil prevented the use of a Morgan's analysis so the standard ADAS Arable Analysis was carried out by the Scottish Agricultural College. The analysis revealed a pH of 7.8, a phosphorus deficiency and that the magnesium content was slightly lower than expected. The quantities (mg per litre) extractable were:

Ca 9,670

Mg 127

Na 25

K 160

P 1.8

Initial preparation involved sedge peat and moss peat mixed with the soil when planting. This worked well for some years but more grit should have been dug in. This imperfect preparation led to a more gluey texture in places than originally! This lesson has been applied to later beds. Those cut out of lawn have had the turf turned upside down and broken up in the second spit, which has proved beneficial. Cracks get filled with compost and grit.

Another consideration was shade. As with Karla Lortz (2004) the winter sun does not rise high enough in the sky to reach over the properties uphill.

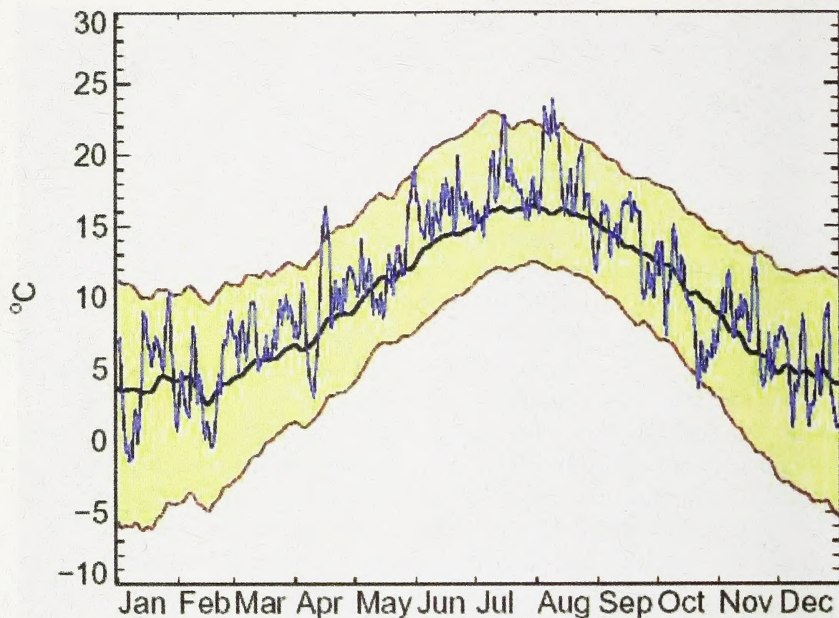


Figure 1. Daily Central England temperature for 2003 (blue line). The black line shows the 1961–1990 normals after 11-term binomial smoothing. The red lines are the corresponding 1st and 99th percentiles for each day of the year. (Crown copyright: reproduced from Parker *et al.* (2004) with permission of the Meteorological Office.)

The weather and heathers

The 1980s saw some extraordinary weather, testing the hardiness of the heathers. The 1990s saw even more extreme conditions. The first extreme year, 1982, opened with floods followed by severe frost, a massive blizzard, then intense cold and fog with record low temperatures. The previous December, *E. australis* had been killed down to the snow. However in mid-January there was more widespread damage where plants had the snow removed by drifting as temperatures fell to between -14°C and -18°C nearby: *E. \times veitchii* 'Exeter' died. Spring was warm and moist until the night of 5 May which was exceptionally cold. The humid, thundery summer had numerous torrential downpours, rather like 2004. One storm in June washed away the mulch and soil over the young *E. vagans* to expose the roots to the hot sun but they survived and still thrive.

The drought and "hosepipe ban" of 1984 was another test. February 1986 was extremely cold with little snow so many new plants, including *E. manipuliflora* 'Ian Cooper', were lost. But this was because they were still

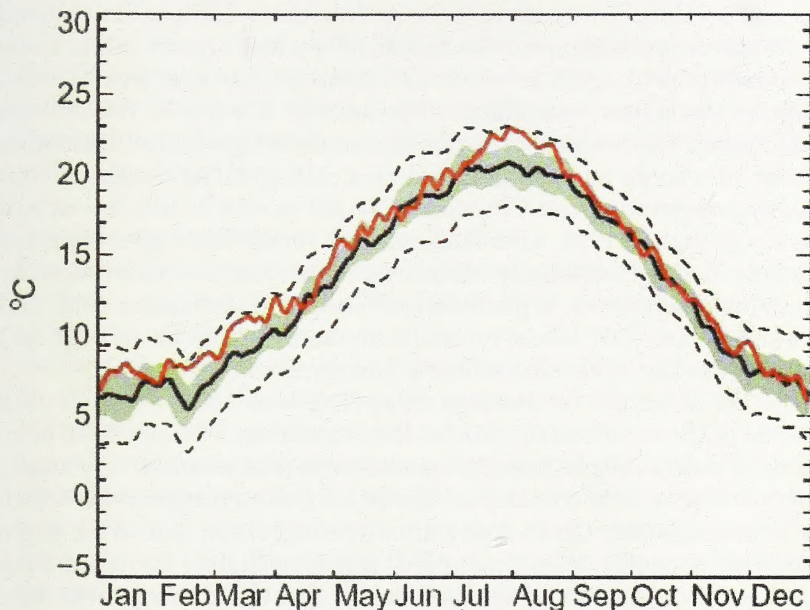


Figure 2. Maximum Central England temperature averaged over 1989-2003 (red) against 1961-1990 (black) and its two standard error range (grey shading) and the 20th and 80th smoothed percentiles for 1961-1990 (dotted). All curves smoothed with an 11 term binomial filter. (Crown copyright: reproduced from Parker *et al.* (2004) with permission of the Meteorological Office.)

in pots or just planted. The frost penetration at least converted overturned sods in a newly-dug bed to powder, killing the grass, so it was ready for planting! The three years 1995 to 1997 were a period of "continental" weather with scorching summers (although 1997 was wet) and intervening winters bringing some severe weather, yet the plants survived with nothing more than minor defoliation.

The greatest damage was wreaked by lesser events. A theme of the last 15 years has been a trend to warmer conditions. Hot summer weather has become common and the first three months of the year have become much warmer. But December and June have not shared this warming and the autumn and April have had some notable visitations of frost and snow as well as warmth. These trends since 1989 are vividly illustrated in Figure 1.

Severe early frost is one source of damage. It was undoubtedly a factor in the December 1981 damage (well summarised for Harlow Carr by Albert Julian (1983)). A sharp frost in early November 1985 caused much damage

to buds on *E. ×darleyensis* 'Arthur Johnson'. But more damage was caused by a short severe spell after mid-December 1999 when a heavy fall of snow broke the stem of my large *E. terminalis* and stems on *E. erigena* 'Ewan Jones'. *E. multiflora* 'Formentor' was killed while another *E. ×veitchi* 'Exeter' was badly damaged. The warmth of November and the first half of December 1994 broke all records but was followed by a cold spell. At Lyneham, four miles away, temperatures on Christmas Eve fell to -9.9°C which was two degrees lower than in 1999. After such warmth it may have been expected to cause great damage, especially without a protective snow-cover, but there was no damage whatever. September had been dull and rather cold, and October also had slightly below-normal temperatures with an air frost on 4 October, so this may have induced early dormancy in the heathers.

The worst example of damage in spring was 1989. After a cold November with severe early frosts, the winter and March had been exceptionally mild but April brought unseasonably cold weather. Very locally April or November were colder than any of the intervening months which may be unprecedented. On 25 April, after overnight rain and snow, slight frost fatally damaged *E. carnea* 'Foxhollow' and even slightly damaged 'Pink Spangles' and *E. erigena* 'Brightness'. It seems that this damage may have been partly due to the foliage being encased in ice when the strong morning sun rose and was reflected off the ice-covered drive.

The scorching summers of 1989 and 1990 caused great stress to *E. erigena* 'Golden Lady' which has suffered burn on other occasions. But the worst damage from drought was in 2003, also another year with extreme temperatures as shown in Figure 1. This shows that the 99th percentile was exceeded in mid-April, late May, July and August while the October cold spell broke the 1st percentile (Parker, Alexander & Kennedy 2004). On 1 August 2003, the soil was moist throughout its profile after a wet July but that was the start of an intense drought: although Swindon missed the record high temperatures of 10 August, it was very hot. September continued the warm, sunny weather but a short cold snap brought an abnormally early frost on 24 September with the lowest temperatures locally in southern England for more than 70 years. October continued sunny but with cold drying winds and sharp frosts. *E. manipuliflora* 'Corfu' responded to the drought by not fully opening its flowers: instead of a brief display of massed lilac pink bloom it resembled a bud-bloomer for two months. Another problem of this period was a coconut-shell mulch on part of one bed that formed a mat almost impenetrable to water so that the brief heavy rains on both 22 September and 22 October did not reach the roots of some plants

which wilted and had to be removed, notably *E. ×williamsii* 'Cow-y-Jack' and *E. erigena* 'Ewan Jones'. Early November was warm and wet but revealed that *Chamaecyparis lawsoniana* 'Pygmaea Argentea' had suffered burn. It is difficult to isolate the effects of the drought, heat and frost, but the conifer damage may have been due to October's drying winds at a time of a severe soil moisture deficit.

Possible explanations of damage by frost

Bannister (2001) examined frost resistance of cut shoots of seven heather species. Unfortunately, this did not include *E. carnea*, but this is likely to behave similarly to *Calluna vulgaris* and *E. tetralix*, which showed the maximum resistance to winter frost (down to -22°C). This is supported by the evidence from the damage to the national collection at Cherrybank, Perth, in December 1995 and the cultivars hardy in northeast USA. The latter has a much wider range of temperature than central southern England. But the central England record of the last 250 years reveals 15 occasions when mean temperature in April has been colder than the preceding March, but not in the northeast USA (Burroughs 2002). As in 1989, it can be lower than even the entire winter although that was a very exceptional event.

Conversely, *E. erigena* and *E. vagans*, while less winter-hardy, were less sensitive to temperature. So there is evidence that the species with the greatest winter hardiness exhibit sharply reduced resistance to frost after high maximum temperatures. This may explain the damage to *E. carnea* and its hybrids after early and late frosts as in November 1985 five weeks after a heatwave brought maximum temperatures of 27°C , and in October 1997 when more tender varieties have suffered no damage. Although likely to be a factor in the damage in April 1989, that was probably a freak combination of events. Evidence from Sweden does not suggest this is a problem there, although it indicates that *E. vagans* may be hardier than thought and its tolerance of shade supports my experience (Johansson 1988).

Another implication is that global warming with warmer spring weather would reduce frost resistance. Artificial warming of only three degrees Celsius accelerated "dehardening" in *Vaccinium myrtillus* (Taulavuori *et alii* 1997). Also, planting of heathers from more southerly latitudes under conditions of different day-length may result in delayed development exposing unhardened tissue to early frost. In October 1993, soft growth on *E. terminalis* was killed by six successive air frosts. Frost resistance may vary between cultivars of the same species due to differing provenance (Bannister 1996).

What could grow? Successes and failures

With *E. erigena* 'Irish Dusk' flowering as early as November and 'Superba' through May, and *E. vagans* starting in late July through the autumn I already could get bloom for most of the year. *E. carnea* and *E. ×darleyensis* cultivars offered many promising variations. By the late 1980s other species and hybrids became available and the hybridisation expertise of Professor John Griffiths and Kurt Kramer opened up new frontiers. Sadly, many of the new "reds" have not succeeded perhaps due to nurseries' propagation methods. *E. ×darleyensis* 'Kramer's Rote' has flowered particularly disappointingly not just here but on acid clay as well. Several of the red *E. carnea* cultivars have not prospered.

Some early failures were unrelated to weather events. Among *E. carnea*, 'Springwood White' was found to be rather drought sensitive through drying winds and cracked soil but coped in a moist shady spot where it became too vigorous: 'Eileen Porter' was painfully slow. Among *Calluna* cultivars failure was not surprising with 'Sunset' being an anomalous success, although 'Beoley Gold' and 'Serlei' grew splendidly in 23cms (9 ins) of soil overlying the chalk at the former Chiseldon nursery, south of Swindon. *Daboecia* gave varied performances but *D. cantabrica* 'Atropurpurea' repeatedly suffered chlorosis and quick death: 'David Moss' and *D. ×scotica* 'William Buchanan' did well in what was well-prepared soil until my downslope neighbour made the bed a bog by laying a concrete foundation for a greenhouse. This really tested them but they came through unlike *D. cantabrica* 'Blueless', which was clearly lime-tolerant but could not stand frost when the ground was wet. 'Waley's Red' was brilliant but only in autumn. 'Barbara Philips' and 'Hookstone Purple' coped but the new 'Cupido' was very unhappy. It was one battle with nature I have given up.

The growth of a weed *E. tetralix*, probably a seedling brought in with another plant, encouraged me to try 'Foxhome'. Beautiful cerise flowers were encouraging but not in 2000. Success followed again in 2001. Sequestrene was applied in spring but it seemed essential to catch the start of growth. The soil water was almost certainly a factor, being planted in a wet spot as in nature. Ironically the weed in drier soil did better indicating that a well drained soil may be preferable.

Therefore the one bed with reasonably good drainage has to be home for all heathers that prefer such conditions whether they dislike lime, hate it, tolerate it or even prefer it: *E. australis*, *E. bocquetii*, *E. carnea*, *E. ×griffithsii*, *E. ×krameri*, *E. manipuliflora*, *E. ×oldenbergensis*, *E. scoparia*, *E. ×williamsii* and *E. spiculifolia* × *bergiana* 'Edeweicht Belle' all need this rather crowded bed, many planted as trials with no idea of their ultimate dimensions!



Figure 3. *Erica carnea* 'Rosalie'



Figure 4. *Erica carnea* 'Barry Sellers'

However, unlike with those gardening over limestone, *E. ×williamsii* has not been a success, despite the brilliance of one of the parents. This casts doubt over the new *E. ×garforthensis*, another hybrid with *E. tetralix* as a parent: 'Tracy Wilson' has made a splendid start but it is too early to be certain of its lime tolerance.

Cultivars: performance

I naturally tried the most outstanding cultivars. Some did not give of their best but were still very good and garden-worthy. Others were less reliable, including many of the winter-flowering "reds". Alongside these, I tried others for time of flowering, colour contrast or taste, and some of these lesser names have done extremely well.

E. carnea: the flowers of 'Myretoun Ruby' did not have the glow I had seen elsewhere, but that may be because it did not get lit by the winter sun before the flowers deepened. 'Pink Spangles' went bare in the centre but was still creditable. However, 'Praecox Rubra' was clearly unhappy, even its few flowers seemed to get damaged by hot autumn sunshine and sharp early frosts like October 1997, November 1993 and 2001. Although superficial, such damage is irritating. Some of the late-flowering cultivars of *E. carnea* such as 'Rosalie' (Figure 3) have been rewarding and this applies in general to the newer "pinks" such as 'Winter Rubin'. 'Rosantha' looks promising although with a short season, but 'Treasure Trove' was weak.

Among foliage cultivars tried, 'Ann Sparkes' had too much bare stem. 'Altadena' was tried but died back with 'Barry Sellers' (Figure 4) being



Figure 5. *Erica vagans* 'Diana Hornibrook'

happiest of those with orange foliage tolerating an intractable patch of clay and worth having more of as it flowers quite well. It is fair to say that I tried the plugs of 'Bell's Extra Special' (WHISKY) and it may have been excellent but it was too vigorous a carpeter so had to be removed.

Erica bocquetii performed reasonably well until dug up in 1996, but has not flowered since replanting. It does not appear garden-worthy but preferring lime is worth further effort, its very short-lived flowers having the delicacy of a magnolia. Cuttings have been taken to plant elsewhere as it was wrongly located, but it has proved extremely hard to propagate.

Erica vagans cultivars performed in line with often high expectations. 'Birch Glow', 'Mrs D. F. Maxwell', 'St Keverne' and 'Diana Hornibrook' (Figure 5) thrive: indeed the only failure in this species was 'Valerie Proudley', which seemed less tolerant of lime, but 'Pyrenees Pink' did not flower as well as usual.

Erica erigena 'Glauca', 'Superba' and 'W. T. Rackliff' have been superb shrubs, the latter despite ravaging by foxes, another hazard. Most cultivars tried have been successful, but 'Irish Salmon' seemed very weak.

Erica × *darleyensis* 'Darley Dale' and 'George Rendall' are among the cultivars that did not disappoint, reliable and trouble-free.



Figure 6. *Erica vagans* 'Lilacina', lit by the evening sun, is attractive. The *E. carnea* cultivar laden with buds is 'Queen Mary', with *E manipuliflora* 'Don Richards' behind.

Erica manipuliflora generally grows well and is drought resistant. The success of this species in providing good bloom, 'Korçula' and 'Cascades' apart, contrasts with Arnold Stow's experience over chalk (Stow 2004). Even unnamed Dalmatian clones and the new golden sport 'Toothill Mustard' proved fully garden-worthy.

Erica umbellata also flowers well.

The tree heaths have generally not found conditions to their liking. *E. arborea* has not been successful: var. *alpina* suffered severe chlorosis and 'Estrella Gold', while appearing more tolerant of lime could not cope with the cold clay growing only 2.5cm (1in) in six years! *E. terminalis* and *E. ×veitchii* have been mentioned. The most tolerant appears to be *E. australis* 'Holebird' which is very promising given reasonable drainage.

Outperformers

But of most interest must be what cultivars seemed to outperform? Even within a species or hybrid there was considerable variation in performance. The preference of *E. ×darleyensis* 'Jack H. Brummage' for a rich clay soil is well known and it was no surprise that it was a super foliage plant until a gale in 1989 flattened my fencing allowing its bed to become an attraction

to dogs and a convenience. The brilliant *E. erigena* 'Brian Proudley' and others were finished by that. A real surprise is *E. scoparia*: the lost 'Lionel Woolner' flattened in the same gale and now 'Madeira Gold' are not the most garden-worthy plants but their happiness in the adverse conditions is surprising. Others with an indifferent reputation have impressed and good plants excelled.

Erica carnea 'Golden Starlet', although "recommended", has probably outperformed. It is an exceptional foliage plant, even rooting into boggy clay when put in a trench to overwinter and showing the same health and vigour! The same may be said of 'Lake Garda' which I have largely removed, its pale violet shade seeming to add to the chill of a winter day. But it is certainly happy, not just with the soil but being in a very shady although open spot and flowered profusely.

Erica carnea 'Queen Mary' (Figure 6) was mentioned by M. G. Frye's Nurseries as actually preferring lime. This certainly seems to be the case, being a reliable, early and free-flowering carpeter deserving its Boskoop recommendation (Flecken 2004). 'Rotes Juwel' failed in those trials but is another free-flowering cultivar that seems remarkably happy, covered with short but crowded spikes of brilliant beetroot even after being run over! These two seem better than 'Eileen Porter', 'Gracilis' and 'Jennifer Anne' for early colour and with the bonus of complementary colours. 'Winterfreude' may now be a worthy addition: I like the rich crimson flowers.

Erica ×darleyensis 'Silberschmelze' was truly outstanding despite a shady spot, eventually spreading so much it had to be removed. 'Furzey' underperformed in the same bed. 'Erecta' has been excellent in the worst possible soil conditions and is going to be used elsewhere. 'Aurélie Brégeon' has certainly proved hardy both against wet, unseasonal frost, drought and heat. Long flowering, it has a little more blue in the colour than 'Erecta' but its solid spikes of large flowers are quite effective, and it has been proved not to mind shade given some summer sun.

Erica ×oldenbergensis 'Ammerland' has proved to be a remarkable plant, its massive spikes so smothered in bloom that the orange spring foliage is hardly visible. 'Oldenberg' has not been tried.

One very good summer flowering cultivar that has been outstanding for bloom and general health is *E. vagans* 'Lyonesse'. Like 'Mrs D. F. Maxwell', it has found a rather shady spot very much to its liking getting plenty of summer sunshine. It has certainly done far better than 'Cornish Cream' although that is long flowering. 'Lilacina' may also have exceeded its normal performance, and is going to be tried elsewhere being useful for early bloom.

Erica × *griffithsii* 'Heaven Scent' is another of the Society's top 100 that may have exceeded its high standards, with beautiful foliage, even after pruning, in addition to its prolific bloom. 'Jacqueline' looks promising and is a superb colour. But they may not have inherited the drought resistance of *E. manipuliflora*.

Erica manipuliflora 'Don Richards' smothered in pink flowers every autumn is another plant clearly at home on clay given reasonable drainage.

Early summer is the time of least bloom but brilliant new foliage colour on, among others, *E. vagans* 'Golden Triumph', *E. carnea* 'Barry Sellers' (Figure 4) and *E. darleyensis* 'George Rendall' providing some compensation to support the late blooms of *E. umbellata*, its very late cultivar 'David Small' and *E. erigena* 'Irish Silver'. But it is not long before plants such as *E. terminalis*, *E. vagans* 'Diana Hornibrook' (Figure 5) or *E. ×griffithsii* 'Heaven Scent' are bursting into bloom, helped by early pruning as soon as safe. In late June 2004, *E. terminalis* overlapped with *E. umbellata* 'David Small' resulting in year round bloom.

Some associated plants that have thrived on this soil have been *Chamaecyparis lawsoniana* 'Minima Glauca' and 'Minima Aurea', *Picea pungens* 'Globosa' despite a poor location and, not surprisingly, *Thuja plicata* 'Stoneham Gold'. The latter is a magnificent slow-growing shrub. 'Rogersii' is being added.

Although the trials go on, and now it is *E. ×krameri*, *E. ×williamsii* 'David Coombe' and the putative hybrid *E. cinerea* × *terminalis*, it is time for some careful design to enjoy the successes. With hot spring weather becoming more common, the risk of blooms fading prematurely can be reduced by planting late flowering *E. carnea* cultivars such as 'March Seedling', 'Viking' and 'Wintersonne' where there is some shade from the afternoon sun and the early flowering clones like 'Queen Mary' and 'Rotes Juwel' in the sunny locations. When replanting, I intend bolder plantings of my favourite cultivars.

Summary and conclusions

It is difficult to draw firm conclusions and evaluations must be partly subjective and a matter of taste. But there is clearly considerable variation in sensitivity to temperature between species and to some extent cultivars. With longer, hotter summers there is a growing risk of damage from sudden falls in temperature in autumn like that of September 2003 given the lengthening nights. Considerable variation in lime sensitivity in *Calluna*, *Daboecia*, *Erica australis* and *E. scoparia* and perhaps *E. tetralix* has been found. Some summer-flowering hybrids also appear relatively insensitive to lime,

particularly those with *E. spiculifolia* as a parent. *Calluna vulgaris* 'Sunset', *E. spiculifolia* × *bergiana* 'Edewecht Belle' and *E. scoparia* 'Madeira Gold' would be rated 1 (moderate impact on growth) or less on the scale used by John Griffiths. *Daboecia* × *scotica* 'William Buchanan' appears to contradict his experience. More research is needed on this.

The failure of many new plants in the last ten years, which appears partly due to modern propagation methods, is compounded by confusion between new cultivars. Therefore taking cuttings regularly is essential to keep a supply. Examples of misnaming include *E. carnea* 'Wintersonne', sold as "Winter Sun" but which has richer flowers and lacks the brown foliage and appears to be 'Viking'. *E. carnea* 'Nathalie' from several sources is quite distinct from the plant I have of that name which has been so difficult to grow on clay but with its deep reddish purple flowers is worth persevering with. But there is enough evidence to demonstrate that, even on alkaline clay, it is possible to have colour from flower practically every day of the year.

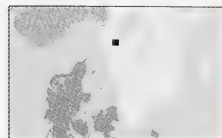
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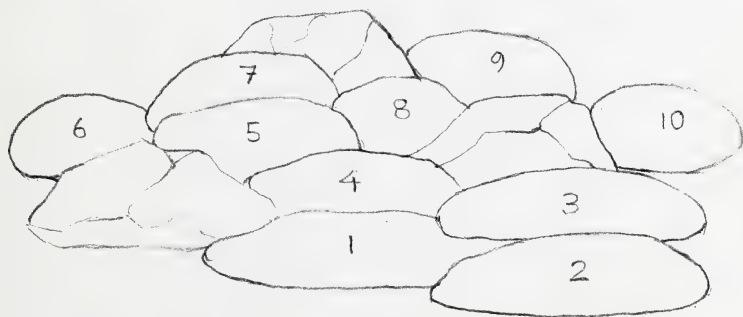
Suggestions for a bed of heathers II: mixed planting

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The first article in this series was published in *Heathers 1*: 39–41 (2004).



KEY

- | | | |
|----|----------|---|
| 1 | 5 plants | <i>Erica carnea</i> 'Weisse March Seedling' |
| 2 | 7 plants | <i>Erica</i> × <i>stuartii</i> 'Irish Lemon' |
| 3 | 4 plants | <i>Erica carnea</i> 'Wintersonne' |
| 4 | 7 plants | <i>Calluna vulgaris</i> 'Catherine' or 'Gaia' |
| 5 | 5 plants | <i>Erica carnea</i> 'Rosalinde Schorn' |
| 6 | 5 plants | <i>Calluna vulgaris</i> 'Sirsson' or 'Sesam' |
| 7 | 7 plants | <i>Calluna vulgaris</i> 'Velvet Fascination' |
| 8 | 5 plants | <i>Calluna vulgaris</i> 'Radnor Gold' |
| 9 | 5 plants | <i>Calluna vulgaris</i> 'Easter-bonfire' |
| 10 | 5 plants | <i>Erica tetralix</i> 'Helma' |



APRIL



SEPTEMBER

This planting scheme was devised for Swedish conditions, but it should also work in the colder parts of Britain, Ireland and North America.

The planting plan is for an area of about 12 metres² (about 10 × 12 ft). The stones may be replaced by dwarf and miniature conifers. You will need about 55 plants of the cultivars listed. A few alternatives are given. For a smaller area reduce the plantings of each cultivar by two plants.

Mix and match: a search for year-round colour

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Frustration is . . . doing everything by the book, and still getting it wrong. My only excuse is that, in the beginning, I probably read the wrong books. Furthermore, a cynic might detect different advice from different authors. What none seemed to supply were the advantages and disadvantages of planting winter- and summer-flowering heathers in the same bed, referring to it, if at all, as a matter of personal preference. Whosoever's fault it was, the result has been something unsatisfactory seen from my lounge window. Sometimes, half a bed will look dead (or, at best, dull); another might look like an irregular chessboard, with patches of colour contrasting with a disfiguring lifelessness. Toogood (and many others) say that dead flowers make an attractive feature over the winter, but my visitors disagree! Recently pruned *Calluna vulgaris* 'Beoley Gold' and 'Peter Sparkes' have looked particularly moribund this year, and I still have the spectre of what Maxwell (1927: 22) called "large, flowerless tracts", supposedly avoided by mixing the seasons in the same bed. Should I, therefore, have surrendered to the inevitable and put all "winter" plants in one bed, and "summer" in another?

My earliest enthusiasm had been for flowers "all the year round", a benefit advocated by most books on the subject, and indeed by being astute (putting, for example, *Erica* \times *darleyensis* 'Kramer's Rote' alongside *Daboecia* \times *scotica* 'William Buchanan') this is quite easily achieved with only two cultivars. But a more casual buying of "summer" and "winter" plants for the same bed will often result in fairly colourless areas in May, June and July, just when competition from the rest of the garden is at its height.

There are several alternative primary criteria for selection, other than time of flowering. A. T. Johnson, for example, recommends deciding first the ultimate height of plants, particularly in relation to the contours of the ground, within which he suggests an arrangement by which "one will always be in bloom when its neighbour is either over or not yet in flower" (1956: 48). Similarly, the initial plan in Jones (1998: 23) seems to relate essentially to the height of the plants – there is no discussion of seasonality. Chapple, on the other hand, appears to be primarily interested in colour (1964: 62–66), and mixed the seasons in the same bed, as Maxwell did "in roughly equal proportions" (1927: 20–21).

Some writers have offered planting schemes which may reveal their

attitudes and preferences. Letts (1966: 22–27) and Yates (1985: 22–25) suggest three beds each with a basic design in which either single-season, or mixed season, cultivars can be found. Van de Laar's examples (1978: 25–29) are almost all "mixed-season" in the same beds, though he is describing whole gardens.

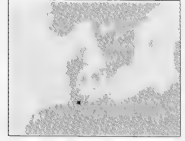
None of the above is leading me to that promised land as shown in photographs of heather gardens, which seems as elusive as the permanently blue skies portrayed in all British university prospectuses. I gazed awestruck at some of the photos in Karla Lortz's book (2002), for example, especially the one on p. 18 which was reproduced in *Heathers* 1 (2004: 2), and tried to analyse the basis for the beauty she had obtained even in a woodland setting.

As a result, I've come round to the Lambies' advice on the subject – that the prime criterion for planning a heather garden should be overall colour, combining the colour of foliage with that of flower. Admittedly, care has to be taken to give non-green foliage the light it needs to get full advantage of their contrasts, and to choose cultivars you know to be on sale within travelling distance from home! I also learned from sad experience to buy all cultivars for a new bed from the same source, one half of a bed of *Erica cinerea* 'Cindy' being a distinctly different purple from the other half! Only by looking back does this now seem the obvious solution, yet many of the published plans do not apply it. Letts (1966: 26) for example, has only one yellow-foliage cultivar among his six dark- to mid-green; the Proudleys (1974: 46) have the gold / red foliage of *Calluna* 'Robert Chapman' among seven mid- to dark-green; and van de Laar (1978: 26) has one bright green among seven dark green.

So I now believe that the "summer" / "winter" debate is of secondary importance, perhaps almost irrelevant for most gardens, and that any dead or dull patches are the result of my own inadequate design. I might not be able to organise blue skies, even in Tintwistle, but I'm determined that my heather garden will be much more colourful in future.

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The explosion of bud-flowerers

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Some years ago one was inclined to say: “the bud-flowerers are on the advance”. Now it seems that we are experiencing an “explosion”. In the 1980s only a few bud-flowering *Calluna* cultivars, each one having been collected in the wild, were known: ‘David Eason’ (introduced 1935), ‘Dunwood’ (before 1977) and ‘Underwoodii’ (1936) from Great Britain; ‘Adrie’ (introduced 1974), ‘Ginkel’s Glorie’ (before 1972), ‘Marilyn’ (before 1972), ‘Marleen’ (before 1972) and ‘Visser’s Fancy’ (introduced 1972) from the Netherlands. The best-known of these, and still general in the trade, is ‘Marleen’. In the past ten years a lot of new bud-flowering heathers have been raised in Germany, and breeders now compete with each other to bring more and more cultivars into commercial production, often with the protection of plant breeders’ rights.

During the last 20 years marketing has also changed: formerly small nurseries which propagated a limited number of plants of a large number of cultivars sold plants directly to private buyers; today, very large numbers of only a few cultivars are sold at auctions and afterwards garden centres and supermarkets sell these on to private buyers. Correspondingly, nurseries have changed their propagation schemes to producing very large numbers of only a few cultivars. It is almost an industrial process, and every propagator looks for gaps in the market.

In 2003 about 80 million *Calluna* plants were propagated in Germany – about 65 million of these were bud-flowerers – and most were destined for an entirely new market. No longer are the owners of heather gardens the main target group: quite the reverse, for those people now represent the smallest group, buying only about 5% of the production. The new customers are the people who wish to adorn their balconies and terraces in late autumn and early winter with bowls and troughs of flowering plants, and also those who will place heathers as winter decoration on their family graves. The latter bought about 25% of the bud-flowerers in 2003.



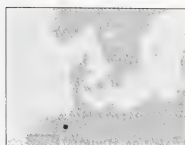
Figure 1. Left to right *Calluna vulgaris* 'Aphrodite'; 'Marlies'; 'Sandy'; 'Theresa' and 'Larissa'.

The propagating nurseries put their potted heathers on to the market from September until November at intervals of about a fortnight, so that bud colour lasts from the time of sale until December/January. In this connection, the survival of the plants through the winter is not the aim. On the contrary, the vast majority of these heathers end up in the garbage box, because the sellers hope for lucrative new sales next year.

The result of the flood of new bud-flowering *Calluna* cultivars is that many of them are indistinguishable: differences often exist only in the imagination of the producers! For example, 'Marlies', a sport on 'Marleen', one of the clones not protected by plant breeders' rights, has given rise to numerous progeny including 'Anka', 'Bella Rosa', 'Bonita', 'Cheyenne', 'Christin', 'Feuerzauber', 'Heideglühen', 'Manuel' and 'Sphinx'. It would be a wonder if all its "children" are discernably different.

At the moment about 80 bud-flowering cultivars, with and without breeders' rights, have been named, and at least that number again are on trial at the Bundessortenamt in Hannover.

Cultivar names for two remarkable heathers from Kurt Kramer, Edeweicht, Germany*



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Among the many novel heathers produced by Kurt Kramer were three seedlings raised from *Erica spiculifolia* (Balkan heath; formerly *Bruckenthalia spiculifolia*) that had been artificially fertilized during the Spring of 1987 with pollen from the African (Cape) species *E. bergiana* (K. Kramer, pers. comm., 23 March 2004).

Erica bergiana is a distinctive heath, notable for its urn-shaped flowers (in clusters of four) with reflexed sepals, and hirsute leaves and stems; these characters are clearly demonstrated in the photograph in D. Schumann & G. Kirsten, *Ericas of South Africa* (1992: 143). *E. spiculifolia* is also distinctive, unlike any of the other northern hemisphere species. It has tiny, bell-shaped flowers clustered in a leafless, terminal inflorescence (raceme), and leaves that are hairless (apart from some microscopic spicules at the tips).

Superficially Kramer's seedlings resemble *E. spiculifolia* although they are much more vigorous. They display no morphological evidence that *E. bergiana* was the pollen parent, so chromosome counts are essential to confirm beyond doubt that they are hybrids (*E. spiculifolia* has $2n=36$ (see McClintock 1979); there is no record of a count for *E. bergiana*).

In 1992, cuttings of this new heather were donated by Kurt Kramer to the late David McClintock, and these were successfully propagated by David Small (Denbeigh Heathers) (the hybrid is noted in *Bulletin of The Heather Society* 5 (2): 4 (Summer 1994)). Subsequently Denbeigh Heathers provided further cuttings and young rooted plants to heather enthusiasts in various countries; for example, cuttings were made available to members of The Heather Society at the annual conference held at Penrith in 1997 (see *Yearbook of The Heather Society* 1998: 63). While neither Kurt Kramer Heidezüchtung nor Denbeigh Heathers put this plant on the market, as far as I can ascertain, it has now been widely dispersed. During July and August 2004, I saw mature plants in Ireland and western USA and I am aware of other examples in cultivation in England and France.

Careful examination of these plants indicates that two clones are in cultivation. With Kurt Kramer's consent, I have published names for these (*Der Heidegarten* 56: 52–57 (2004)), and the chosen names have been registered with The Heather Society (see *Heathers* 2: 70 this issue). This should assist in rectifying a serious confusion in nomenclature. In the USA, I saw plants erroneously labelled "*Erica* ×*krameri* Unnamed Clone"; *E.* ×*krameri* is the name for another of Kramer's artificial hybrid, between *E. spiculifolia* and the European species *E. carnea*, and it is definitely *not* the name for the plants discussed here.

The clone in circulation in the western USA and Canada is identical with that grown by Susie Kay (obtained at Penrith in 1997) in western Ireland (see *Yearbook of The Heather Society* 2003: 18, Figure 2); this is distinguished (see below) by virtually hairless flower stalks (pedicels) and white (colourless) flowers which appear pink due to the colour of the immature anthers – '**Edewecht Blush**' is the registered name for this clone.

A second clone is cultivated by Allen Hall (Leicestershire, England); this is easily distinguished by its pubescent pedicels and pink flowers – the cultivar name '**Edewecht Belle**' is registered for this plant. It is most probable that these two clones represent progeny from two of the three seedlings.

The cultivar names are derived from Edewecht, the name of the town in northern Germany where Kurt Kramer lives and where he raised these seedlings. Blush refers to the tendency of the flowers, especially in bud, to have a pink tinge, while Belle is an English noun usually applied to handsome (beautiful) women (and there is an underlying pun, an allusion to the bell-shaped flowers).

My observations in Ireland and North America suggest that 'Edewecht Blush' flowers best when grown in the open; shading reduces the quantity of blossom. It can be in bloom for many months, beginning as early as April and continuing into winter. Pruning delays the onset of the flowering season, because the immature inflorescences are removed. In the mildest areas, where plants are not affected by frost, it may bear flowers for twelve months.

'Edewecht Belle' is apparently much less common in cultivation, and I have not seen an example in gardens, although I have examined specimens provided by Allen Hall. Mr Hall has informed me that his plant reaches peak blooming in mid-June.

Both clones have malformed stamens; the malformation is not consistent from flower to flower. The filaments are usually broadened and fused, and the anthers are degenerate. Similar malformations have been reported in *E. mackaiana* (see *Yearbook of The Heather Society* 1995: 33–40); the clone 'Maura' demonstrates the characteristic.

Key to cultivars

Flowers colourless but appearing pink (“blushing”) when young due to colour of immature stamens inside; flower-stalks usually entirely without hairs ‘**Edewecht Blush**’

Flowers pink; flower-stalks covered with very short hairs, some of which have glands at the tips (visible with hand-lens) ‘**Edewecht Belle**’

‘Edewecht Blush’

This clone is in cultivation in Ireland (Susie Kay), Great Britain and western USA; the description was prepared from specimens provided by S. Kay.

Bushy, vigorous **shrub**, to 0.5m tall. **Shoots** densely puberulous. **Foliage** bright green. **Leaves** scattered, almost spirally arranged or in pairs or in “disarticulated” whorls of 3 or 4; linear, with parallel sides, to 6.5mm long, 0.5mm wide; sulcate; with a few, scattered microscopic hairs on the margins; apex pointed, with spicules (microscopic hairs). **Flowers** in contracted, terminal racemes, 8–14(–20) per cluster, central peduncle to c. 20mm. **Pedicels** straight or curving, usually slightly bent towards apex so that the flowers are held at an angle, 3–5mm long, tinged red, hairless (or with a very few, scattered, minute hairs), with 1 bract at base (leaf-like, <3mm long, <0.4mm wide), or occasionally with the bract $\frac{1}{4}$ way from base; *very rarely* with 1 or 2 proximate bracteoles. **Calyx** cup-shaped, clasping base of corolla, hairless, c. 1.25mm long, 4-lobed; lobes c. 0.75mm long, pale green with colourless, fringed margins, fused irregularly for up to 0.5mm (but sometimes one sulcus extending almost to base). **Corolla** bell-shaped (campanulate) or broad funnel-shaped, white (colourless) but “blushing” pink when young



Fig. 1. Inflorescence of ‘Edewecht Blush’: enlarged (© David Plumridge).

(due to colour of the immature stamens visible inside), hairless, c. 3.5mm long, c. 1.25mm in diameter in lower part, constricted in middle, to c. 1.8mm diameter towards apex, 4-lobed; lobes erect, rounded, c. 1mm wide, c. 0.8mm long ($\frac{1}{4}$ length of tube); buds can be pink. **Stamens** 8, not manifest (included), with very broad, irregularly fused, colourless **filaments** which coalesce to form a “pseudocorolla”, c. 0.7mm long; **anthers** degenerate, bright red when young, turning golden brown, oval in lateral view, papillose, often remaining fused in a collar, without awns, c. 0.45mm long; pore oval, lateral towards apex, c. 0.1mm long; pollen observed. **Ovary** indistinctly 4-celled (4-locular), glabrous, inversely pear-shaped (narrow (stipitate) at base, expanding towards top) with style continuous with apex; **style** usually prominently manifest, to c. 4.5mm long (but sometimes malformed, and then very much shorter), straight, slightly expanded towards apex, and at base broadening and merging with the ovary; **stigma** simple, truncate, with 4 dark-red ovoid carpels (see H.A. Baker & E.G.H. Oliver (1967) *Ericas of southern Africa*: xlvii, fig. 11). **Ovules** numerous.

'Edeweicht Belle'

This clone is in cultivation in Great Britain (Allen Hall) and probably in France; the description was prepared from specimens provided by A. Hall.

Like 'Edeweicht Blush', but distinguished most easily by the dark red **pedicels** being noticeably pubescent with minute, straight hairs (without glands) mixed with shorter, gland-tipped hairs. Bushy, vigorous **shrub**; when not pruned to 0.5m tall. **Corolla** pink (H9), campanulate (bell-shaped) to conical so broadening gradually towards lobes (not constricted in middle), c. 4.5mm long. **Stamens** variously malformed, not manifest (included); some are simple, petaloid staminodes; others have broadened filaments; some filaments and staminodes may be fused, and in some flowers they may fuse entirely into an inner "pseudocorolla". **Ovary** 8-celled, not distinctly stipitate, but broadly obovoid to barrel-shaped with emarginate apex (so style base is recessed); **style** to 3.7mm long, only slightly broader at base. **Leaves** with hairs along the margins and on the under-rolled sides; terminal hair usually with gland at tip.



Figure 2. Photograph by Kurt Kramer (reproduced by courtesy ©); note the shape of the individual florets and the appearance of the "pseudocorolla" at the mouth of the florets.

Author's footnote (not included in *Der Heidegarten*)

The photograph (Figure 2) of the flowers of one of the original seedlings, taken c. 1990 by Kurt Kramer, very clearly shows "double" flowers. In these the malformed stamens are obvious at mouth of the corolla, appearing as an inner cluster of closely-packed "petals"; thus the internal "pseudocorolla" is as long as, or a little longer than, the corolla, not shorter as in 'Edeweicht Blush' and 'Edeweicht Belle'. None of the flowers I have examined resembled this state, and so I conclude that the third seedling was distinct too. I would welcome any information that could lead to its re-discovery and propagation.

Erica andevalensis, a unique “copper flower” from Spain

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Professor Robert Brooks (1926–2001) was a leading figure in the international fields of geochemistry and biogeochemistry throughout much of the second half of the twentieth century. His work on the ecology, distribution and the potential uses for metal-accumulating plants gave him great notoriety during the final years of his academic career.

In 1977 Robert and colleagues published a paper in the *Journal of geochemical exploration* describing how areas of nickel-rich rock around the world could be identified by analysing small pieces of plant material, obtained from the world’s herbaria, that had originally been collected from their respective areas of mineralisation. Robert realised that some plant species had unexpectedly high concentrations of nickel, and in a fit of imagination invented the term *hyperaccumulator* to describe this abnormally high accumulation of metal. Little did he know of the interest this discovery would make in the future.

Robert’s research during the 1990s saw development of a practical use of the hyperaccumulator plants he identified during his frequent expeditions around the globe – the concept of *phytoextraction*. This is a technique whereby certain plants are grown over a contaminated site or low-grade ore body, and used to clean up the site (*phytoremediation*) or to grow an economic crop of metal (*phytomining* or *phyto-reclamation*). Robert’s research into gold accumulation in plants in particular captured global attention. Academic and industry groups around the world continue to closely follow the work he pioneered. Many regard his last book, *Plants that hyperaccumulate heavy metals*, as the benchmark to describe the subject area to new readers. His involvement with a mining company in South Africa during 1995 saw the first ever, working example of a phytoremediation/phytomining operation through to fruition.

One of the plants Robert identified as endemic to areas of copper mineralization was a heather from Spain, *Erica andevalensis*. It sparked his curiosity as to whether it too was a hyperaccumulator, and so we became involved in an investigation to check this out.

Erica andevalensis was first described by Cabezudo and Rivera in 1980. *E. andevalensis* is an edaphic-endemic of the Andévalo, a 3,500 sq. km area within Huelva Province, southwestern Spain, where it is an excellent geobotanical indicator of copper. The region has a history of metal mining going back to Roman times when it was a source of copper, silver and gold extracted from pyrite. As a result of these mining activities the local environment has been severely affected by both metal contamination and acidity. Some soils in the mining areas have a pH as low as 3 and have high concentrations of copper (Cu), zinc (Zn) and iron (Fe). Stream waters can be dark red from dissolved Fe at the low pHs present and it is in wet, humus-rich, highly metal-contaminated areas along the banks of these streams that *E. andevalensis* naturally occurs.

Since *E. andevalensis* occurs only on older, weathered and highly toxic spoil heaps and highly contaminated soils it cannot be indigenous but rather has adapted to life on contaminated sites. Copper levels in some of these soils range from about 20–3,500 ppm. It will only colonise these heaps after pyrite oxidation has lowered the pH to a point where the toxic conditions exclude other species. Another heather, *Calluna vulgaris*, grows on contaminated soils around the abandoned Parys Mountain copper mine on Anglesey, North Wales, but, although *Calluna*, and other *Erica* species, grow in the Huelva area, none is found with *E. andevalensis* on the most toxic spots.

Our interest in *E. andevalensis* was to determine if it were a true hyperaccumulator plant for copper. If it were it would join an elite group of copper hyperaccumulating plants previously only described from the Democratic Republic of Congo (*Haumaniastrum katangense*) and Hubei Province in China (*Elsholtzia haichowensis*). Our experimental results showed that *E. andevalensis* was in fact not a hyperaccumulator but, intriguingly, exhibited one of the highest tolerances to Cu of any known plant. Cu levels in plants from natural populations were $<50\text{g g}^{-1}$, well below the $1,000\text{g g}^{-1}$ threshold for hyperaccumulation. In the experiments we carried out, even with the addition of EDTA to enhance the solubility and uptake of Cu, the concentration in the plant was $<500\text{g g}^{-1}$. A further observation was that the correlation between total Cu in the soil and that in the plant was not as good as expected. The correlation was significantly improved by determining the plant-available Cu, which made the data from natural and artificial substrates consistent. This outcome showed that the organic matter present in the soil has bound the Cu tightly and rendered it unavailable for plant uptake, explaining in part why *E. andevalensis* is able to survive in the organic-rich, high total Cu soils of the Andévalo.



Figure 1. The valley of Rio Odiel is one of the principal natural habitats of *Erica andevalensis*; the dark shrubberies on both sides of the river on the valley floor are dense stands of the heather (photographed during the expedition by David McClintock, David Small and Charles Nelson in 1982; see Nelson *et alii* 1985) (E. C. Nelson).



Figure 2. *Erica andevalensis* shrubs in the Rio Odiel valley; note the dark red colour of the water which is due to contamination with iron (E. C. Nelson).

Erica andevalensis is therefore an *excluder* plant; it tolerates high metal levels by excluding the metal from its tissues. Its Cu uptake follows the typical pattern of metal-excluder plants with restricted uptake until the threshold of tolerance is exceeded. At this point, there is rapid, exponential growth of uptake until the plant dies.

Thus *Erica andevalensis* is an excellent indicator of copper mineralization, having adapted to a very specific and highly toxic environment, and is so specialised that it cannot survive in ordinary sites. Although not a hyper-accumulator, *E. andevalensis* does belong to the unique group of plants, "copper flowers", that have a special relationship to copper mineralization.

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Focus on sunbirds: the art of sunbird photography

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There are 21 species of sunbird in southern Africa and they occur in a wide variety of habitats. My favourite is the Orange-breasted Sunbird, *Nectarinia violacea* (front cover and p. 28), which I first photographed at Kirstenbosch as a schoolboy in 1952. I still have this nostalgic black-and-white picture of a female at her nest feeding chicks, but since then I have lost track of the number of times I have photographed this species which I consider – with my bias freely admitted – the most beautiful of all our sunbirds.

The specific name of this exquisite sunbird refers to a small band of violet on the upper breast which is very difficult to portray in a photograph. Like hummingbirds, to which sunbirds are not in any way related, the colours are the result of the refraction of light on the iridescent feathers and are constantly changing – in deep shade the glossy green on the head of an Orange-breasted Sunbird appears almost black.

How then does the photographer capture the range of variable iridescent colours on a sunbird? The answer is to supplement sunlight by the use of flash, sometimes even using two flash-heads attached to a powerful pack that can give multiple exposures in quick succession. However, even a small flash attached to a camera will enhance any sunbird picture. As a rule the power output of the flash is balanced to the normal daylight exposure selected, a technique known as fill-in flash. The Orange-breasted Sunbird illustrated here (Figure 1, p. 28) used this method to capture not only the green on the head but also the elusive violet on the throat. All the sunbird pictures accompanying this article used flash to ensure that the iridescent plumage was correctly portrayed.

Photographing sunbirds in flight requires a lot of preparation and powerful electronic flash equipment to freeze the extremely rapid wing beats. The Lesser Double-collared Sunbird, *Nectarinia chalybea*, depicted here (Figure 2, p.29) was taken after many months and numerous failures. In order to achieve a very high speed, the flash-heads needed to be placed close to the *Erica* which was arranged in such a way that the sunbird was unable to alight to probe the flowers.



Figure 1. An Orange-breasted Sunbird feeding on *Erica baueri* with the elusive violet on its throat revealed by the use of fill-in flash. © P. Steyn.



Figure 2. A Lesser Double-collared Sunbird hovers beneath *Erica versicolor* flowers arranged in such a way that it could not alight to feed. © P. Steyn.

Early attempts failed as there was too much ambient light with the result that the wings were blurred because the daylight was also recording an exposure, an effect known as ghosting. The problem was eventually solved by photographing in very dull light once the sun was below the horizon so that only the high-speed flash was effective.

Another useful tip for photographers is to use a telephoto lens, and a focal length of 400 mm is ideal. The reason for this choice is that from a normal working distance of about two metres any distracting background is thrown out of focus and the bird itself is etched in sharp contrast.

Finally, how does one ensure that the sunbird will perch where one wants it to? The solution is to condition the birds to visit an *Erica* or similar plant with long tubular flowers that have been filled with glucose water (Figure 3). A hypodermic syringe with a blunted needle (so as not to pierce the flowers) is used to inject the solution and the viscosity of the fluid ensures that it remains in place.

My fellow photographer Nico Myburgh is an expert on attracting sunbirds and some have become virtual glucose addicts. In one remarkable instance an Orange-breasted Sunbird was so enthusiastic that it alighted on Nico's finger and tried to drink from the syringe before he could inject the flower!



Figure 3. This Lesser Double-collared Sunbird returned repeatedly to this cluster of *Erica regia* because the flowers were filled with a glucose solution. © P. Steyn.

Although sunbirds are usually tame it is not always easy to photograph them to best advantage and it is hoped that these few guidelines, based on many years of experience, will enable potential sunbird photographers to depict these colourful pollinating jewels in a new light.

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Humming and feeding on the Pacific Rim



RON ARRUDA

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The Arboretum at UC Santa Cruz is pretty famous for birds of all kinds — it's on the Pacific Coast Flyway. But hummingbirds are the ones that attract the most attention, both from serious birders and the general public, especially children. In fact, we have an annual Hummingbird Day here during their mating season in March, with hundreds of youngsters overrunning the place, learning about this rambunctious corner of the natural world. And for hummer photography, educational walks, or for just plain visual enjoyment, there's no place in our garden like the South African *Erica* (Cape heaths) beds. For humans, the big draw is the many plants in wide-open arrangement and the head-high flowers that make for easy bird viewing. For the birds, it's the abundance of high-quality nectar year round.

Hummingbird metabolism is about the highest in the animal kingdom, and they use an extravagant amount of energy to keep themselves going. Their body temperature hovers around 40°C (104°F), with heart rates close to 1,000 beats a minute! Though they spend quite a bit of time perching, they have to feed often. Hummers are the only birds that have (or need) a “dormancy” phase, mainly on cold nights, when their body temperature can fall as low as 21°C (70°F). This torpor, known as “noctivation” slows their metabolic rate to a crawl and makes it possible for them to survive the night without feeding, otherwise they would literally starve to death on the roost!

Besides a wealth of sugar to burn, the other reason these birds like our heather garden is the way we water it, with overhead oscillating sprinklers: it's the only bed that gets watered this way. No rain falls between May and October here, and we give the Cape heaths plenty to drink to keep them blooming around the year, and the birds are very appreciative. They dart in and out of the spray and bathe in the wet vegetation — a real treat in our long, dusty summers. Summer can also bring erratic spells of morning fog rolling in off the bay, and we don't irrigate then, as these conditions provide quite a lot of moisture for the plants and the wild life.



Figures 1 and 2 (opposite). Anna's Hummingbird feeding on *Erica discolor*. The flowers are about 2.5–3cm (1–1 $\frac{1}{8}$ ins) long whereas the bird is around 8.5cm (3 $\frac{1}{2}$ ins) long.



Here, smack in the middle of the central coast of California, we only see a few of the fifty or so North American species of hummingbird, and only two are common — Anna’s and Allen’s — but these are present in great numbers where food and nest sites afford. Hummers are all very small: Anna’s weighs about 4 grams, a tiny bit more than a British 1p piece, and a whole gram less than our American 5¢ coin. They’re mostly hollow bones and feathers, and their breast muscles make up 30% of their body weight. Anna’s is by far the more abundant species, and it hardly migrates at all in this mild climate, where only light frosts are common in the winter. This bird has a vivid rose-red forehead and “gorget” (the feathers on the throat and upper chest). Allen’s is a bit smaller in the body (just over 3 grams), with rusty under-parts rearward, and a scarlet to orange-red gorget. The brilliant colors around the head for which hummingbirds are justly famous are “physical” colors, like the spectrum you get when a prism breaks up a beam of sunlight, rather than pigment colors, like say in a robin red-breast: “jewel-like colors” may be a cliché, but absolutely describes them! It’s staggering to remember that Aztec chiefs had magnificent cloaks made from thousands of hummingbird pelts: the effect must have been jaw-dropping!

Of native California plants, these little birds feed particularly on species of *Penstemon* and *Salvia* (sages), and the floral shape of many of the South African *Erica* species we grow is very similar. Much favored by the hummers are *Erica baueri*, *E. mammosa*, *E. hebecalyx*, *E. brachialis*, *E. cerinthoides*, *E. cruenta*, *E. abietina*, *E. curviflora*, and *E. discolor*, all with good-size straight or curving



Figure 3. The cape heath garden at The Arboretum, University of California at Santa Cruz, August 2004. (Allen Hall).

tubes and abundant nectar. Hummers also eat a fair quantity of small insects and spiders, especially during nesting season, and some of these come up with the nectar as they feed.

Our garden's Australian collection, with its eucalypts and *Grevillea*, is also a concentrated hummingbird area with generous winter bloom — another instance of trans-hemisphere cooperation! These plants are also nest sites for the birds, whereas the *Erica* shrubs are usually not.

Hummingbirds are only found in the Americas — the New World, so-called — and *Erica* only in the Old World. This doesn't stop the pair from getting along famously in California, where *Erica* pollination is very successful: witness our tiny forest of seedlings that spring up unbidden on every hand, especially near *Erica baueri*! Due to human occupance, and the unbridled way we garden in coastal California's benign climate, this place is a hybrid ecosystem, a riot of color and ad-hoc adaptation. It offers ever-new niche opportunities, and undreamed of combinations of plants and animals in an exuberant and complicated dance of happy, peppy, mutual exploitation.

Fred Esgate (1911–2003): the last breeder of Cape heaths in Britain

E. CHARLES NELSON¹ & JOHN V. AUBREY²

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Figure 1. Fred Esgate (centre, with hat) with Dr Violet Gray (left) and Mr E. R. Turner (Treasurer of The Heather Society), in Dr Violet Gray's garden, Southcote, Hindhead, Surrey, 7 April 1973, on the occasion of the Cape Heath Party (J. V. Aubrey).

Frederick Esgate, a true Cockney, was born on 24 November 1911 within the "sound of Bow bells" in southwest London. He died on 30 July 2003. Without doubt Fred Esgate was the last specialist breeder of Cape heaths, on a commercial scale, working in Great Britain.

He did not start life as a horticulturist. When he was 15 years old, early in 1926 Fred found employment with a Tunbridge Wells hosier and glover, Sidney H. Bailey, "Indian & Colonial Outfits a speciality", and remained there for 13 months. "During his employment", wrote Bailey, "I have always found him to be strictly honest, painstaking, and a very willing Boy ... a

hard worker, he is sharp & quick at picking up any work entrusted to him." "Thoroughly" recommending Fred to any future employer, Bailey continued: "He leaves at his own wish as I understand he is anxious to learn a trade."¹

It is evident that Fred soon moved into horticulture; there is a gap of about a year and a half in our knowledge of his career, and it is possible that during those months he obtained horticultural experience, if not training. By March 1931 he had been working for two and a half years as assistant propagator in R. Wallace & Co., Tunbridge Wells, under J. Marchand. The firm specialized in hardy trees and shrubs, including many members of the Ericaceae, especially rhododendrons. When Fred left Wallace's employ, Marchand wrote as complimentary a reference as Sidney Bailey had composed four years earlier, noting that Esgate was "good at grafting Rhododendrons, Clematis, Camellias, Conifers, etc. etc. ... he is a hard and painstaking worker ..."²

Esgate's next employer was Geo. I. Adams Ltd, "Florists, nurserymen and seedsmen, garden artists", also of Tunbridge Wells. One of their catalogues, which Fred Esgate kept, includes a long list of hardy heather cultivars. He remained there for four years, and again, on leaving of his own accord, was characterised as "very active, intelligent, painstaking, and trustworthy ..."³ He moved to work for C. Willett, a nurseryman specializing in fruit and tomatoes, at Hayes in Middlesex. Fred received 50 shillings (£2. 10s. 0d) a week, and Willett offered him lodgings, "with good food and room to yourself" for 20 shillings (£1) a week.⁴ In February 1938, Fred moved to work for Ryder & Son, "Seed specialists and makers of beautiful gardens", St Albans, Hertfordshire, but only remained there for about three months, leaving in late April 1938 to join Milton Hutchings Ltd.

Dear Sir,

Confirming conversation over the telephone last evening in which you and your friend accepted employment here, the rate being for yourself £2. 10. 0, and your friend £2. 5. 0, for a week of 53½ hours, the hours being 6.30 a.m. to 5.30 p.m. with the usual meal times, over time required when necessary during the Summer.

Please let me know the date you will be able to commence work.

Yours faithfully
for MILTON HUTCHINGS, LIMITED
Milton H. Hutchings⁵

It is not known what Fred Esgate worked at during 1938, but in 1939 he was in charge of "20,000 Chrysanthemums grown in ten inch pots", and after the Second World War commenced he was given charge of several

acres planted with tomatoes and lettuces. There seems to have been some bother between the nursery foreman, Mr J. Whipp, and Esgate; Fred resented receiving "directions" from the foreman. He was formally reminded (by a letter dated 3 January 1940⁶) that it was "quite impossible to make any distinction between Tomatoes and other crops on the Nursery, and make your Department independent of ... supervision from Mr. Whipp." A reference dated 5 April 1941⁷ suggests that Esgate had decided to leave Milton Hutchings Ltd, but in fact he enlisted in the Home Guard, and continued working in the nursery throughout the Second World War.

After the end of the war, Fred Esgate was given more responsibility within Milton Hutchings' nursery, as the firm set about establishing its reputation as one of the major producers of ornamental pot-grown plants, especially chrysanthemums, including Cape heaths and azaleas. "New hybrid azaleas", tolerant of low light levels and air-conditioning, were first propagated at Milton Hutchings in 1970, under Fred Esgate's "careful eye" (Mannington 1981): by March 1980 the stock of these shrubs numbered 875,000 plants, ranging from rooted cuttings to saleable 3-year old plants. As for Cape heaths, by the early 1980s, Milton Hutchings grew more winter-flowering Capes than any other British nursery (Brandham & McClintock 1985). In the same decade "Hillingdon Heaths" were being exported to Holland and Denmark.

"In the early fifties ... Fred Esgate embarked upon a sixteen year hybridisation programme of Cape Ericas. He was able to raise in excess of forty new varieties, many of which have won him accolades [*sic*] from the Royal Horticultural Society" (Worsfold 1981). Some of the resulting seedlings were selected and named, and during the late 1960s these were shown at the RHS, and a few gained awards of merit (see Appendix).

For his hybrids, Esgate used, among other plants, a nineteenth-century hybrid named *E. ×hiemalis* (often spelled "*hyemalis*"; a name of very dubious application), which typically has pink-purple, tubular flowers with white tips – a colour picture published in *Amateur gardening* on 26 November 1983 (see page 43) shows a range of these plants including one with apricot-coloured bells (Sheppard 1983). *E. gracilis* was also one of the Cape heaths Esgate worked on. He had access to some of the new introductions including *E. pageana*, from which came the cultivar 'Limelight', and *E. oatesii*, one of the parents of 'Gaiety'. But apart from these, no detailed records of his crossings has been traced, and we are left to guess at his techniques. It is interesting that among Fred's possessions were *Practical plant breeding* (Lawrence 1937) and two booklets entitled *Protected wild flowers of the Cape Province* (Anonymous 1953, 1956), which included colour illustrations of some Cape heaths.



Figure 2. At the Cape Heath Party, Hindhead, 7 April 1973

Seated (from right): **Fred Esgate**; Mabel Turner; Constance McLeod; Gary Fitzgerald (Milton Hutchings Ltd); Dr Violet Gray; unknown (Dr Gray's companion).

Standing (from right): Ron Cleevly; John Aubrey (Milton Hutchings Ltd); Anne Small; David Small; Roy Turner; Ros Cleevly; Phil Joyner. (Reproduced by courtesy of Ron Cleevly.)

The only other evidence we have about how Fred conducted the Milton Hutchings' breeding programme comes from a brief article by Brandham and McClintock (1985). They stated that "It was learnt in late 1978 that Mr. F. Esgate, who has for long been in charge of their [Milton Hutchings Ltd] hybridising, has been using colchicine in an attempt to get better plants." Colchicine, an organic compound extracted originally from the autumn crocus (*Colchicum* spp), can disrupt cell division in newly fertilized ovules, leading sometimes to a doubling of chromosome numbers, and the production of tetraploid plants (with twice the normal number of chromosomes). Esgate treated two cultivars, 'Majestic' and 'Pink Gem', and obtained seedlings with larger flowers (these were referred to as "... "Grandiflora" forms ..."*) which were sent to the Jodrell Laboratory, Royal



Figure 3. Fred Esgate (1911–2003)
(By courtesy of Derek Jordan)

Botanic Gardens, Kew, for investigation of their chromosome complements. Whatever these new, larger-flowered plants were they were shown not to be tetraploids (Brandham & McClintock, 1985).

Fred Esgate was appointed Joint Managing Director of Milton Hutchings Ltd, with responsibility for the nursery, on 31 May 1976; he resigned from this post on 17 August 1979 but remained in charge of the nursery and continued working for Milton Hutchings Ltd into the early 1980s. For his services to Milton Hutchings Ltd, Fred was awarded the Royal Horticultural Society's Long Service Medal. He moved to Iver Flowerland Production Nursery, Iver, Buckinghamshire, where he worked into the 1990s.

Fred Esgate was never a member of The Heather Society, but he was present on the occasion when the Society's short-lived Cape Heath Group visited Dr Violet Gray's garden on 7 April 1973 (McLeod 1973).

Notes

¹ S. H. Bailey ms, 26 March 1927 (all the documents quoted here, unless otherwise stated, have been made available by Mr Derek Jordan, nephew of Fred Esgate).

² J. Marchand, 13 March 1931.

³ Geo. I. Adams, Ltd., typewritten letter, 8 March 1935; F. Taylor, ms., 8 March 1935.

⁴ C. Willett to F. Esgate, 1 April 1935.

⁵ M. H. Hutchings to F. Esgate, 14 April 1938.

⁶ [Milton Hutchings Ltd] to F. Esgate, 3 January 1940: incomplete typewritten letter.

⁷ C. E. Lunn "For and on behalf of Milton Hutchings, Ltd.", 5 April 1941: Lunn was one of the company's directors.

⁸ Brandham and McClintock (1985) did not intend that "Grandiflora" should be used as a name, or part of a name. Unfortunately, they employed the ambiguous phrase "... "Grandiflora" forms ...": "The larger flowers of the "Grandiflora" forms are presumably the result of selection of gene mutations ...".

As the plants raised following colchicine treatment must have been seedlings, each one should have been given a unique cultivar epithet, unless they were individually indistinguishable; tagging the word "grandiflora", or the phrase "grandiflora form", on to the names of the parent clones contravenes the *International code of nomenclature of cultivated plants*.

Acknowledgements

We are most grateful to Mrs Pamela Lee, Mr Ron Cleevly and to Mr Ernie Jordan and Mr Derek Jordan for their assistance with this article. Derek Jordan was especially helpful, making available copies of documents about his uncle's career.

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Appendix: Cultivars of Cape heaths associated with Fred Esgate and Milton Hutchings Ltd, extracted from *International register of heather names*.

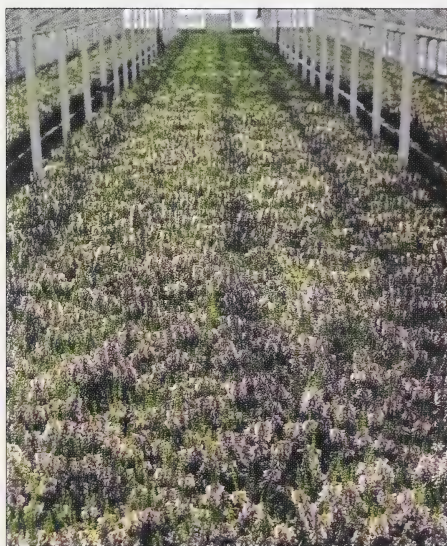


Figure 4. 'Daybreak' in production in Milton Hutchings early in 1972.

'Bow Bells'

Listed 1969 to 1978. "'Bow Bells', as I recall, was the nearest Fred came to naming one of his hybrids after himself, as he was born in S. W. Hackney" (J. Aubrey to ECN, 11 March 2004), thus he was raised within the sound of Bow bells, and therefore a true Cockney; the peal of bells of St Mary-le-Bow, Cheapside, London, have long been famous, to direct travellers on the road to London town. ref.: no printed source traced; [D. McClintock record card].

'Daybreak'

Introduced (as 'Dawn') by 1967; exhibited (as 'Dawn') at the RHS on 31 October 1967. ref.: *Proceedings of the Royal Horticultural Society* 93: 25 (1968); — 94: 85 (1969).

'Dawn' — see 'Daybreak'

'Delight'

Exhibited at the RHS on 14 March 1967: **Cultural Certificate**.

ref.: *Proceedings of the Royal Horticultural Society* **92**: 23 (1967) [name only]; *Bulletin of The Heather Society* **2** (11): 4 (1977); [*Yearbook of The Heather Society* **2** (6): 11 [erroneously called 'Gaiety'] (1977)]; *Amateur gardening* **94** (23–30 December): 60 (1978).

'Dusky Maid'

Flowers 1cm long, mauve base with yellow lobes, December to February. 60cm high.

Artificial hybrid, between two unnamed seedlings; raised by Fred Esgate and introduced by 1967; shown at RHS on 31 October 1967: **Award of Merit**.

ref.: *Proceedings of the Royal Horticultural Society* **93**: 21 (1968) [name only]; *Yearbook of The Heather Society* **2** (2): 14 (1973); — **2** (11): 17, 18 (1982); — **3** (1): 15, 16 (1983); Catalogue, Denbeigh Heather Nurseries, Creeting St Mary, 23 (not dated [1976]); *Bulletin of The Heather Society* **2** (16): 5 (Spring 1979).



Figure 5. 'Gaiety' in production at Milton Hutchings early in 1973.

'Gaiety'

Flowers "large deep pink, bell-like"; "even larger pinkish bells than" *E. oatesii*; "deep rosy version of *E. oatesii*".

Selected from *E. oatesii* crossed with an unnamed seedling; raised by Fred Esgate and introduced by 1967; shown at the RHS on 14 March 1967: **Award of Merit**.

ref.: *Journal of the Royal Horticultural Society* **92**: 236 (1967); *Proceedings of the Royal Horticultural Society* **92**: 24 (1967); *Bulletin of The Heather Society* **1** (19): 5 (1973); — **2** (11): 4* (1977); [*Yearbook of The Heather Society* **2** (6): 11 [erroneous] (1977)].



Figure 5. 'Ghislaine' being grown at Denbeigh, Creeting St Mary, Ipswich, January 2005.

'Ghislaine'

Flowers tubular to clavate, 3 × 9 mm, "deep H14 with white lobes".

Possibly raised at Milton Hutchings Ltd, Uxbridge, Middlesex, before 1980. Rescued from a nursery in Iver Heath, Berkshire, in 1994; introduced by Denbeigh Heathers in late 1997.

ref.: *Yearbook of The Heather Society* 1998: 70 [as *E. ×hyemalis*].

'Limelight'

Flowers pale sulphur yellow, 2.5cm long, pitcher-shaped*; tightly packed in long inflorescences; (October)—December—February; to 0.5m tall.

Introduced by 1967; shown at the RHS on 20 November 1967 and 20–21 February 1973 (Heather Competition, Class 5, 1st).

ref.: *Proceedings of the Royal Horticultural Society* 93: 22 (1968) [name only]; *Yearbook of The Heather Society* 2 (1): 37* (1972); — 3 (6): 48–49 (1988); *Bulletin of The Heather Society* 1 (19): 5, 6 (Summer 1973); — 1 (20): 1–2 (Autumn 1973); — 2 (16): 5 (Spring 1979); Catalogue, Denbeigh Heather Nurseries, Creeting St Mary, 23 (not dated [1976]).

'Majestic'

Large tubular deep magenta flowers, white portion of the corolla is confined to the lobes.

"*E. hyemalis* hybrid"; raised by Fred Esgate and introduced by 1967; shown at RHS on 31 October 1967: **Award of Merit**.

ref.: *Proceedings of the Royal Horticultural Society* 93: 21 (1968) [name only]; *Yearbook of The Heather Society* 2 (2): 14 (1973); — 3 (3): 55 (1985) [chromosome counts]; *Bulletin of The Heather Society* 2 (16): 5 (Spring 1979).



Figure 6. 'Limelight' grown at Denbeigh, Creeting St Mary, Ipswich, c. 1976.

'Pink Gem'

Introduced by 1967 (as 'Pink Pearl'); shown (as 'Pink Pearl') at the RHS on 31 October 1967.
 ref.: *Proceedings of the Royal Horticultural Society* **93**: 21 (1968); — **94**: 85 (1969) [name only];
Yearbook of The Heather Society **3** (3): 55 (1985) [chromosome counts]; [www.collinaexport.com
 accessed 12 October 2003]. (Erica stock list, Ericaflora, Monbulk (Victoria, Australia), not dated
 [c.2000] [name only]; Catalogue, Larkman Nurseries, (Lilydale, Victoria, Australia), 32* (July
 2002) both 'Pink Pearl')

'Pink Pearl' — see **'Pink Gem'**

'Pink Splendour'

Exhibited at the RHS on 31 October 1967; withdrawn by 1978.
 ref.: *Proceedings of the Royal Horticultural Society* **93**: 21 (1967) [name only].

'Pink Superb'

At Milton Hutchings Ltd by 1969, but withdrawn or discarded by 1978.
 ref.: no printed source traced; [D. McClintock record card].

'Pink Supreme'

Exhibited at the RHS on 21 November 1967.
 ref.: *Proceedings of the Royal Horticultural Society* **93**: 22 (1967) [name only].

'Redbreast'

Raised and selected by Fred Esgate and introduced by 1968; shown at the Royal Horticultural
 Society on 20 February 1968.
 ref.: *Proceedings of the Royal Horticultural Society* **93**: 23 (1968) [name only].

'Rosea' — see 'Rosita'

'Rosita'

Introduced by 1967; shown (as 'Rosea') at the RHS on 31 October 1967.

ref.: *Proceedings of the Royal Horticultural Society* **93**: 21 (1968); — **94**: 85 (1969) [name only].

'Salmon Supreme'

Raised before 1969; withdrawn by 1978.

ref.: no printed source traced; [D. McClintock record card].

'Silver Pink'

Said to be a selection from the hybrid *Erica* "willmorei" × "hyemalis"; exhibited at the RHS on 14 March 1967: **Cultural Certificate**.

ref.: *Proceedings of the Royal Horticultural Society* **92**: 23 (1967) [name only].

'Snowfall'

Foliage mid-green (RHS 143B); flowers short (5–8mm long, 0.25mm wide), tubular, white (RHS 155D). 60cm high.

Selected from a cross between *E. gracilis* var. *nivalis* and an unnamed seedling; raised in 1955 by Fred Esgate and introduced in 1965; shown at the RHS on 20 February 1968 – **Award of Merit** – and 21 November 1968; and on 17–18 February 1976 (Heather Competition, Class 13, 3rd).

ref.: *Proceedings of the Royal Horticultural Society* **93**: 22 (1968); *Journal of the Royal Horticultural Society* **94**: 318 (1969); Catalogue, Denbeigh Heather Nurseries, Creting St Mary, 23 (not dated [1976]); *Bulletin of The Heather Society* **2** (8): 3 (Summer 1976); — **2** (16): 5 (Spring 1979); *Amateur gardening* **94** (23–30 December): 60 (1978); W. Martensson (editor), *The homemaker's library – houseplants*, 68 (1979); *Yearbook of The Heather Society* **3** (1): 16 (1983).

'Sunburst'

Exhibited at the RHS on 21 November 1967.

ref.: *Proceedings of the Royal Horticultural Society* **93**: 22 (1968) [name only].

'White Spray'

Selected from a cross between *E. pageana* and an unnamed seedling; raised by Fred Esgate and introduced by 1967; shown at the RHS on 14 March 1967: **Preliminary Commendation**.

ref.: *Journal of the Royal Horticultural Society* **92**: 236 (1967); *Proceedings of the Royal Horticultural Society* **92**: 24 (1967); *Bulletin of The Heather Society* **1**(19): 5.



Milton Hutchings Ltd: a brief history

JOHN V. AUBREY

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Buckinghamshire, SL9 9UA.

Milton Henry Hutchings was born on 2 December 1872 (*The advertiser and gazette*, 1 December 1939), and was the fourth son of James Hutchings of Cowley, Middlesex. He established his nursery at Kingston Lane, Hillingdon, in 1894 and within ten years had transferred it to Pield Heath Road where it became known as Pield Heath Nurseries. This site subsequently occupied 20 acres to the east of the River Pinn and 10 acres to the west. To the north and adjacent to this area was the already established nursery of Lowe and Shawyer which by the mid-1930s had become Britain's, if not Europe's, biggest range of greenhouses.

Mr Milton Hutchings always strived to produce high-quality produce and was awarded several medals by the National Chrysanthemum Society



Figure 1. Cape heaths in 9cm pots at Milton Hutchings; the blocks were positioned to take Dutch lights; autumn 1972 (J. V. Aubrey).



Figure 2. "A selection of cape heathers", including *E. gracilis* cultivars (lower right), available from Milton Hutchings Ltd in the early 1980s; from *Amateur gardening* 26 November 1983.

and also an Award of Merit from the Royal Horticultural Society on 13 January 1903, for a display of the decorative *Chrysanthemum* 'Miss E. Davy': this was his wife's (Edith) maiden name.

The company was registered as a limited company on 4 July 1935. The first directors were Milton Henry Hutchings, Arthur William Hutchings (brother), Edwin James Miles (Sales Director and father of Bernard Miles¹) and Charles Edward Lunn (Company Secretary and subsequent Managing Director).

In 1938 Hutchings engaged Mr Frederick Esgate who quickly established himself as a successful Nursery Manager, maintaining the very high standards set by Milton Hutchings. Regrettably the founder died from a sudden heart-attack on 23 November 1939 (*The advertiser and gazette*, 1 December 1939).

Mr Esgate commenced raising Cape *Erica* hybrids circa 1950, and produced thirty to forty cultivars² which were considered to have good commercial prospects. Several were exhibited at the RHS Fortnightly Shows in the late 1960s and received Awards of Merit, and Cultural Commendations, from the Floral Committee C.

The company eventually had eight acres of heated greenhouses plus heated pits covered with Dutch and English Lights, also several acres of irrigated standing-out ground in order to cope with the annual propagation of 200,000 Japanese and hybrid azaleas and 500,000 Cape heaths.

The company continued under the chairmanship of Mr James H. J. Hutchings (nephew of the founder) and with Mr Charles E. Lunn as

SPECIALISTS GROWERS OF CAPE ERICAS, HYEMALIS AND AZALEA HYBRIDS.

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A subsidiary of Graham Sinclair Plants Ltd. 



Figure 3. Advertisements from *The florist* April 1982: 26.

Managing Director. Mr John V. Aubrey was appointed as Company Secretary in May 1965 having joined the company in May 1959. He subsequently became Chairman following the retirement of Mr James Hutchings.

The 1973 oil crisis seriously damaged the UK horticultural glasshouse industry and with many nurseries closing it was decided that a buyer be found to take the company over as a going concern in order that the four Charity Shareholders holding 60% of the equity be enabled to realise their investment received by them as bequests.

In November 1981 Graham Sinclair Plants Ltd bought the company as a going concern and the remaining full-time former directors who had remained with the company after it was sold, left in 1983. The company ceased production in 1986 and was finally dissolved on 14 October 1997.

NOTES

¹ Later (1975) created Lord Miles. Bernard Miles (1907–1991) published a brief article about his memories of Milton Hutchings Nursery: “by the age of ten I was already a champion disbudder [of chrysanthemums] and could command a salary of 8s 4d a week during the school holidays.” He does not mention Cape heaths. **MILES, B., 1982.** It was all fields, once ... *The countryman* Winter 1982/3: 22–26.

² This figure includes selections that were informally named at the nursery; the informal names were never printed or published and no record of them can now be traced. Eighteen cultivars are recorded on The Heather Society’s database as having come from Milton Hutchings Ltd, with one additional cultivar being in all probability from the firm (see Nelson & Aubrey 2005: this issue pp 41–43).

Heathers on the roof of Africa: The Bale Mountains of Ethiopia

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Like mountains on the top of mountains, the highlands of Ethiopia rise 1,500 metres (4,900ft) above a plateau that already lies at 2,500 metres (8,200ft) above sea level and comprises 80% of the landmass of Africa above 3,000 metres (9,800ft); better known as the “roof of Africa”. The Bale Mountains on the southern highlands are characterized by numerous spectacular volcanic peaks, beautiful alpine lakes and unspoiled mountain streams. A large proportion of these mountains is protected in the 2,500 sq. km (965 sq. miles) Bale Mountains National Park, some 400 km (250 miles) south of Addis Ababa.



Figure 1. Ethiopia and the Bale Mountains: © Sally Adams, Technodraft.

The Harena escarpment that runs from east to west divides the national park. A high-altitude plateau lies north of the escarpment, averaging around 4,000 metres (13,100ft) in altitude. South of the escarpment the land drops abruptly, and then slopes gradually down to an altitude of 1,500 metres (4,900ft) at the park's boundary.

The Sanetti plateau in the north is the most extensive afroalpine (the distinctive flora of the uppermost parts of high mountains, see p. 52) area in Africa, its ancient volcanic rocks dissected by many rivers and streams that have cut deep gorges, and created spectacular waterfalls. Several massifs rise from the plateau. Of these, Tullu Deemtu (Red Mountain) is the highest at 4,377 metres (14,360ft) above sea level: the second highest point in Ethiopia.

The Bale Mountains lie within the tropics of the northern hemisphere and the climate – high rainfall and mainly damp, cloudy weather – is typical of a high-altitude, mountainous region. The year has three seasons: dry from November to February, early-wet from March to June, and wet from July to October. Summer days can reach maximum temperatures of 30°C (86°F),



Figure 2. A homestead surrounded by the giant tree wort (*Hypericum revolutum*) with resprouting stumps of *Erica arborea* in the foreground. Our observations were that the tree heather is only burnt and cut in the vicinity of homesteads. In more pristine areas there were large (3–4m) specimens. © S. Siebert.



Figure 3. *Erica trimera* © S.Siebert.

with minimum winter night temperatures dropping well below freezing point. On cold, clear nights, heavy ground frosts are common.

The basalts of the Bale Mountains support a rich diversity of plant communities. High rainfall and variation in altitude and topography result in clear zonation of vegetation, similar to the patterns of zonation evident on most east African mountains. Some plant genera are shared and are common to many of these mountains (e.g. *Kniphofia*, *Afrocarpus* and *Erica*) although species may differ.

Subalpine zone vegetation

Above the tree line, reaching up to 3,500 metres (9,150ft) above sea level, is a subalpine belt of ericaceous heathland. Frequent mists support a dense growth of lichen, mosses, flowers and grasses beneath small trees. *Hypericum revolutum* (giant tree wort) with its golden yellow flowers occurs frequently with *Erica arborea* (tree heather) at lower altitudes in the forest/heathland transition. Pastoralists often burn the heather in an attempt to increase the grass layer, resulting in stunted, resprouting trees (Figure 2). Frequently-occurring herbaceous genera include *Festuca*, *Hebenstretia*,



Figure 4. The dense vegetation of the *Erica-Alchemilla-Helichrysum* heathlands reminded us of the fynbos of South Africa. © S. Siebert.

Romulea, *Swertia* and *Viola*. At higher altitudes *Alchemilla haumannii* (lady's mantle), *Erica trimera* (asta; Figure 3: p. 51) and *Helichrysum citrispinum* (spiny everlasting) form dense, localized stands among the tree heather in the transition zone with the afroalpine belt.

Endemics associated with the ericaceous heathlands include *Echinops longisetus*, with its conspicuous large flower heads, and *Rubus erlangeri*, with its unusually elongated and pointed sepals.

Afroalpine vegetation

"Afroalpine" refers to the peculiar flora of the uppermost parts of high mountains. On the Bale Mountains this zone starts at about 4,000 metres (13,100ft) above sea level and is recognizable by its capping of more recent lava flows that created spectacular rock formations. High peaks are covered by bare rock or exposed soils, vegetated only by small but hardy herbs like *Dipsacus pinnatifidus* and *Helichrysum splendens*, and tussock grasses such as *Pentaschistis minor* and *Festuca abyssinica*. Plant community patterns in this zone are determined by slope, drainage and rodent activity. Pioneer species are common, colonizing soil that is continuously moved by giant mole-rats,



Figure 5. A typical high-altitude bog with giant lobelias. © S.Siebert.

and include *Arabidopsis thaliana* (thale cress), *Erophila verna* (common whitlowgrass) and *Thlaspi alliaceum* (garlic penny-cress), three species that also are native in Britain and Ireland. Rocks are covered by many species of mosses and lichens. Vegetation in flat areas below the peaks includes many cushion-forming everlastings like *Helichrysum citrispinum*, *H. cymosum*, *H. formosissimum* and *H. splendidum*; and typical cushion plants such as *Geranium kilimandscharicum* and *Polygonum afromontanum*. Plants frequently encountered along drainage lines and bogs include *Alchemilla haumannii* and the tufted sedge, *Carex monostachya*. A peculiar thistle (*Carduus* sp.) and a blue-flowered forget-me-not *Myosotis keniensis* occur on rock outcrops.

In the Drakensberg (South Africa), which also has a basaltic geology but where altitude does not exceed 3,500 metres (11,500ft) above sea level, a similar *Erica-Helichrysum* alpine heath occurs between 2,900 and 3,500 metres (9,500–11,500ft): a significantly lower altitude than in the Bale Mountains. Altitudinal effects have resulted in the East African mountains showing more distinct intermingling of montane forest and ericaceous belts than is the case in the Drakensberg. Like the other high altitude areas of East Africa,

some plants in Ethiopia have developed giant forms. *Lobelia rhynchopetalum* (giant lobelia) is the most noticeable in the Bale Mountains: their silhouettes against the horizon on the Sanetti Plateau, and their reflections in the numerous small lakes make them unmistakable (Figure 5). Another giant lobelia, *L. gibberoa* (jibbra), is a smaller, spindly species that occurs in the southern forests below the Haremma escarpment. Unfortunately these graceful forms are not present in southern Africa, probably because of our lower altitudes. The Ethiopian afroalpine mountain refuge is not only renowned for its unique plant life, but is also home to endemic mammals such as the Simien red wolf, mountain nyala, Menilek's bushbuck and giant mole-rat. It is also a birder's heaven, containing many species endemic to Ethiopia.

This major watershed of Ethiopia and Somalia is not without threats. In the Bale National Park pressure is placed on the natural vegetation by overgrazing, fire for controlling woody vegetation and deforestation. The park has not been legally gazetted and people are permitted to live with their livestock on the sensitive Sanetti plateau and along the Haremma escarpment. Fortunately the World-wide Fund for Nature has taken note of this situation and has initiated a project to address responsible conservation.

Acknowledgements

The authors thank Mr Jonathan Timberlake, Prof. Ibb Friis, Dr Alan Paton, Dr David Goyder and Prof. Peter Linder for field identifications. SABONET, NRF and IAPT is thanked for funding the authors' attendance of the AETFAT Congress and post-congress tour.

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Cape heaths in Pacific Flora 2004

SATOSHI MIWA

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Pacific Flora 2004 (Shizuoka International Garden and Horticulture Exhibition) was held for 187 days beginning on 8 April 2004 in our city of Hamamatsu in the area surrounded by Lake Hamana. It was the third international exhibition of flowers and gardens held in Japan. Masato Shiota, the top Cape *Erica* grower in Japan, and I exhibited 21 species and cultivars (see Table 1) of Cape heaths for 18 days during the opening session of the exhibition.



We entered three competitions – display as a whole; individual plants; container display – and gained the Best Award for display, Honour Award for *Erica walkeri*, and two Silver Awards for *E. chamissonis* and *E. regia* var. *variegata*.

The exhibition space, 4.5m (15ft) square, was divided into two parts by a paved footpath. One side was filled with pot-grown *Erica* of full-bloom, while the other side had a mixed planting of heaths of various shapes and sizes mingled with some other Cape plants. The scenery on the back panel



Erica walkeri: Honour Award plant.

was Silvermine Nature Reserve, Western Cape, which I visited during The Heather Society's *Erica* quest 2003.

Small samples of each heath in flower, labelled with their names, were set out on the front panel to assist visitors in learning the names of the *Erica* in the display.

Cape heaths have been becoming popular in Japan in recent years but they are not always well-known to the public. We hoped the visitors would realise the beauty and the diversity of Cape heaths, and also learn the correct name for the plants sold in flower-shops and garden centres.

Table 1. Species and cultivars of Cape displayed at Pacific Flora 2004.

<i>E. abietina</i>	<i>E. hirtiflora</i>	'African Fanfare'
<i>E. baueri</i> (pink and white clones)	<i>E. nana</i>	'Christmas Parade'
<i>E. blandfordii</i>	<i>E. patersonii</i>	'Ghislaine'
<i>E. cerinthoides</i> (dwarf clone)	<i>E. patersonii</i> × <i>perspicua</i>	'Linton's Red'
<i>E. chamissonis</i>	<i>E. peziza</i>	plus two others as
<i>E. cubica</i>	<i>E. regia</i> var. <i>variegata</i>	yet not named
<i>E. cyathiformis</i>	<i>E. ventricosa</i>	
<i>E. fastigiata</i>	<i>E. versicolor</i>	
<i>E. formosa</i>	<i>E. walkeri</i>	

Chromosome numbers in *Erica* — an updated checklistE. C. NELSON¹ & E. G. H. OLIVER²¹ The Heather Society; c/o Tippitiwitchet Cottage, Hall Road, OUTWELL, Wisbech, Cambridgeshire PE14 8PE, UK.² Compton Herbarium, South African National Biodiversity Institute, Private Bag X7, CLAREMONT 7735, South Africa

The following checklist updates the information compiled by McClintock in 1979 (see source 11 below).

species	gametophytic	sporophytic	sources
Naturally occurring species and hybrids			
<i>agglutinans</i>	13 ^o		14, (15)
<i>andevalensis</i>	12		1
<i>arachnocalyx</i> (= <i>Acrostemon viscidus</i>)	12 ^o		14, (15)
<i>arborea</i>	12*	24	6, 7, 8, 9, 11
<i>australis</i>		24	6, 7, 8
<i>carnea</i> (= <i>E. herbacea</i>)		24	5, 11
<i>ciliaris</i>		24	6, 7, 8, 11
<i>cinerea</i>	12*	24	6, 7, 8, 9, 11
<i>curvirostris</i>		24	3, 11
<i>erigena</i>		24	6, 7, 8, 11
<i>eriocephala</i> (= <i>Acrostemon hirsutus</i>)	12 ^o		14, (15)
<i>mackaiana</i>		24	6, 7, 8, 11
<i>multiflora</i>		24	11
<i>paucifolia</i> (= <i>Syndesmanthus paucifolius</i>)	12 ^o		14, (15)
<i>pilosiflora</i> (= <i>Acrostemon eriocephala</i>)	12 ^o		14, (15)
<i>sessiliflora</i>		24	3, 11
<i>scoparia</i>	12		9
<i>scoparia</i> [subsp. <i>scoparia</i>]		24	6, 7, 8, 16
<i>spiculifolia</i> (= <i>Bruckenthalia spiculifolia</i>)		36	3, 11
× <i>stuartii</i> (<i>mackaiana</i> × <i>tetralix</i> ; = <i>E. ×praegeri</i>)		24	11
<i>tetralix</i>		24	4, 6, 7, 8, 9, 11
<i>umbellata</i>		24	6, 7, 8, 9
<i>vagans</i>		24	6, 7, 8, 11
<i>vernica</i>	12 ^o		14, (15)
<i>xeranthemifolia</i> (= <i>Hexastemon lanatus</i>)	15–18 ^o		14, (15)

Artificial hybrids and cultivars

× <i>hiemalis</i> (parentage not known)	24	11
× <i>krameri</i> (<i>carnea</i> (n=12) × <i>spiculifolia</i> (n=18))	30	(10), 12, 13
'Majestic' **	24	2
'Majestic' ("Grandiflora" form) **	24	2
'Pink Gem' ('Pink Pearl') **	24	2
'Pink Gem' ("Grandiflora" form) **	24	2
"Willmoreana" ‡	24	3, 11

- These counts (by EGHO: see source 14 below) were taken from acetocarmine anther squashes with one confirmation (for *E. eriocephala*) being done using the pollen germination method with division in the tube (for this the pollen was germinated on cover-slips with a growing medium and then treated with acetocarmine). For synonymy of these South African species, see OLIVER, E. G. H., 2000. Systematics of Ericaceae (Ericaceae: Ericoideae) species with indehiscent and partially dehiscent fruits. *Contributions from the Bolus Herbarium* 19.
- * *vide* source 9 below.
- ** Brandham & McClintock (1985: source 2 below) stated that “good rooted cuttings of normal ‘Majestic’ and ‘Pink Gem’ ... and of [colchicine] treated “Grandiflora” forms of both of these were taken to the Jodrell Laboratory at Kew in the summer of 1979. Their parentage is not known. It proved that all four plants had the normal number of chromosomes, i.e. $2n = 24$.”
- ‡ This plant’s identity is uncertain; for discussion of the misapplied name *E. willmorei* and its numerous orthographic variants, see NELSON, E. C. & OLIVER, E. G. H., 2003. Understanding *Erica ×willmorei*, a nineteenth-century English garden hybrid. *Bothalia* 33: 149–154.

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International heather gardens 2: Cherrybank, Scotland

BARRY SELLERS

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Cherrybank is located on the outskirts of Perth. It is home to Bell's National Heather Collection, a seven-acre site accommodating around 50,000 plants with over 900 cultivars of *Calluna*, *Erica* and *Daboecia*, the largest collection of hardy heathers in the United Kingdom.

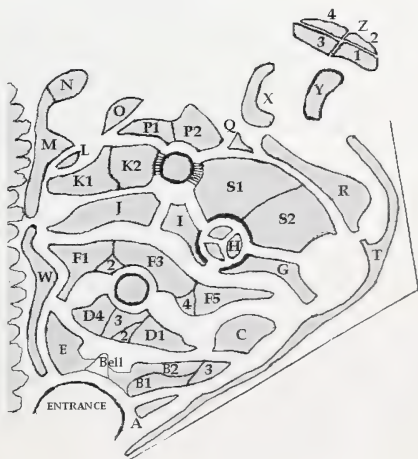
The Bell's Whisky Distillery Company, whose headquarters lay adjacent, created the garden in 1984, and the heathers were first planted in 1988. In 2002, the garden was gifted to Scotland's Garden Trust by Diageo plc, the multi-national company behind the merger of Bell's owners, United Distillers, with International Distillers and Vintners.

On 21 August 2004, Cherrybank was the focus for delegates to the Second International Heather Conference. Nick Dawson of Scotland's Garden Trust gave us an introduction to the garden. We were blessed with good weather as we enjoyed the variety of heather beds, some full of our old favourites, others with the more recent introductions. A number of people were spotted making sketches, and scribbling notes about their favourite cultivars.

The German Heather Society joined us at the garden and it was another opportunity to welcome friends. A moving moment was when Alice Knight met Brita Johansson for the first time; they had been corresponding for a number of years.

The garden is broadly fan-shaped with the beds running across it like ripples in a pond. There are 24 beds of various sizes; all are somewhat irregular in shape and this gives the garden an informality of style. The garden also slopes downwards from the visitor centre, from which extensive views across the entire garden can be enjoyed.

In front of the visitor centre *Erica carnea* 'Bell's Extra Special'





takes pride of place. This cultivar, with its whisky-coloured foliage, was appropriately named to commemorate the association with the adjacent distillery.

The bell heathers (*E. cinerea*) were very impressive, planted in large drifts. Of particular note were 'Joyce Burfitt' [F3] and 'Katinka' [K1]. A clump of 'Contrast' [Q] made a spectacular display. One of my favourites was 'Constance' [B2], named after Mrs Constance Macleod, first Secretary of The Heather Society, the beetroot-coloured flowers contrasting well with the gold foliage.

In the centre of the garden within one of three beds forming a neat circle was a floriferous display of 'My Love' [H]. The bi-coloured 'Eden Valley' [G] and 'Harry Fulcher' [Y] were noteworthy.

Other species in full flower included the Dorset heaths (*E. ciliaris*) 'White Wings' [A] and 'Corfe Castle' [K1]; Mackay's heath (*E. mackaiana*) 'Galicia' [S2]; Praeger's heaths (*E. ×stuartii*) 'Irish Lemon' [K1] and 'Irish Rose' [S2]; and Watson's heath (*E. ×watsonii*) 'Mary' [X].

The *Calluna* cultivars were a little behind in their flowering, as were those growing on the mountains on our way to the garden. Cherrybank has a wide selection. There were old favourites such as 'Robert Chapman' [J], 'Peter Sparkes' [S2], 'Beoley Gold' [X] and 'H. E. Beale' [J], as well as the newer introductions such as 'Red Star' [B3], and the bud-flowerers 'Alexandra' [Z1] and 'Alicia' [K2]. Kurt Kramer deliberately bred the latter, and it was very fitting that he had joined us at Cherrybank along with other members of the German Heather Society.

THE HEATHER SOCIETY'S PROCEEDINGS

SECOND INTERNATIONAL HEATHER CONFERENCE, COYLUMBRIDGE, SCOTLAND
20–24 AUGUST 2004



Figure 1. The Conference delegates at the Speyside Heather Centre

Around 50 residential delegates made their way from distant parts of Britain, from Canada, USA, Holland, Ireland, Norway and Sweden to convene for the Second International Heather Conference at Coylumbridge. Among them were David Small, our President, Ella May Wulff, President of the North American Heather Society, and Alice Knight, one of our Vice-Presidents.

Those making their way by road were undaunted by the news of landslides on the approach roads to the Scottish Highlands. Our various travel experiences were aired and shared in the lounge of the Hilton Hotel, Coylumbridge, on the afternoon of Friday 20 August. It was so good to meet our friends from overseas and welcome new conference delegates too.

After a very enjoyable meal Arnold Stow, the Society's Chairman, opened the Conference with a warm welcome to all, particularly to those travelling from afar. David Lambie, Director of the Speyside Heather Centre, was the guest speaker and he welcomed delegates in his broad Scottish accent, giving us a true sense of our location in the Scottish Highlands. Through his talk he gave us a deep insight into

the relationship between heather and the local flora and fauna. He referred to the Scots word *haeddre*, which has been recorded as far back as the fourteenth century, as being associated with Ericaceous plants, most notably *Calluna*. Apart from *Calluna*, which is abundant in Scotland, there are only two native heathers, *Erica tetralix* and *E. cinerea*, the former growing in the damper places, whilst the latter prefers the drier soils.

The bird most associated with heather is the red grouse, sometimes referred to as "The Heather Bird". Grouse will feed on young heather shoots. The birds rely on the heather for other sources of food, notably insects, as well as for protective cover from predators such as the golden eagle. Other birds associated with heather are the black grouse, ptarmigan, capercaillie, golden plover, dotterel, lapwing, curlew, common snipe and ring ouzel.

David mentioned some of the traditional uses of heather in the Highlands. It has been used as a building material, for the thatching of roofs: a heather roof is reckoned to last a century. A heatherer carried out the work of heather-thatching. Heather was also used for making rope and baskets, and for firewood. David also mentioned that heather was employed in the brewing of heather ale and in connection with the distilling of whisky.

Glorious sunshine greeted us at breakfast on Saturday, and the forecast for the Conference was optimistic. After breakfast we set off by coach to visit Cherrybank and the Scottish National Heather Collection (see pp 59–60, this issue). Here we were joined by 30 delegates from the German Heather Society, including Jürgen Schröder (President of Gesellschaft der Heidefreunde) and Kurt Kramer.

After we had toured the heather garden, we had lunch in the visitor centre. Our next destination was the Scottish Plant Hunters Garden at Pitlochry. Julia Corden and her colleague gave us a guided tour of one of Scotland's newest gardens, established to commemorate the efforts of those Scottish explorers who travelled to the far reaches of the globe in search of plants. The aims of the garden are to provide a unique garden and a centre of excellence celebrating the Scottish plant hunters; to offer an educational resource for schools and adults; to cultivate and conserve rare and endangered plants; and to promote visual arts, crafts and performance in an inspirational outdoor setting. The garden has been laid out with each section dedicated to a different explorer, with some of the plants that they introduced from North America, China, Nepal, Japan and South Africa. Only opened since the Millennium, the planting will take a few years to mature. Notable explorers represented include George Forrest (1873–1932) who was sponsored to collect plants in Yunnan, China, and is noted for his introduction of some of the finest species of *Rhododendron*. David Douglas (1798–1834) explored the north-west America, Hawaii, Portugal and the Galapagos; among the many plants he introduced into cultivation is the Douglas fir (*Pseudotsuga menziesii*). The garden also includes some notable architecture such as the Douglas Pavilion, constructed in Douglas fir.

We also had the chance to visit the nearby salmon-ladder where the fish jump the series of locks in their annual swim upstream to spawn.

On the third day, Sunday, we went to the Speyside Heather Centre, where Betty and David Lambie greeted us. The garden was established in 1972, and the visitor centre includes features about the uses of heather, and the flora and fauna associated with heather in the Scottish Highlands.

At 10am we gathered for The Heather Society's AGM (for a report see *Bulletin of The Heather Society* 6 (13) (Autumn 2004): 2–3). Afterwards we explored the heather garden which contains small, well-stocked beds with a good variety of cultivars. It was pleasing to see so many bell heathers (*Erica cinerea*) including such favourite old cultivars as 'Atrosanguinea Smith's Variety', 'Plummer's Seedling' and 'Vivienne Patricia' that are rarely available elsewhere.

Lunch had a distinctive Scottish Highland flavour. It did not come free! Suddenly a call went out for a delegate from each table to assemble in the kitchen. A few minutes later a parade of new waiters emerged carrying the dishes of a Scottish dessert, the Cloutie Dumpling (*Bulletin of The Heather Society* 6 (13) (Autumn 2004): 3). After this delightful lunch we congregated outdoors in the Summer sunshine for the group photograph (p. 61).

We then boarded the coach bound for the moors. David Lambie guided us on a short walk to a site where he had previously seen a solitary white-flowered *Calluna*. Many of us had never seen a white *Calluna*, that legendary "lucky white heather", in the wild. Then to everyone's surprise Pamela Lee spotted a white-flowered plant of *Erica cinerea*. So the search was on for white-flowered *E. tetralix*. Our President David Small headed off with Anne, and others followed, to conduct a brief search; apart from a few plants with pale pink flowers, a pure white one eluded them.

Our next destination was Loch Garten, to view nesting ospreys. The osprey is a fish-eating bird of prey about 60cm (2ft) in length, with a wingspan of 1.5m (5 ft). After an absence of about 40 years ospreys began nesting near Loch Garten in 1959 and have nested every year since. Using the powerful binoculars provided at the visitor centre, we all delighted in seeing two young ospreys near their nest.

Back at the hotel we prepared for a Highland Banquet. We were all a little apprehensive about eating haggis. Suddenly, to the skirl of bagpipes, the haggis was paraded into the Banqueting Room and the ceremonial slicing was performed in front of us. Then the spicy haggis was washed down by a wee dram of whisky. Next came the ceremonial carving of the cow, accompanied by another fanfare of bagpipes. Throughout the banquet, we were entertained by a singer who accompanied himself on the accordion.

Monday morning was chilly. The delegates visited Jack Drake's famous alpine nursery at Inshriach near Aviemore. John and Gunn Borrowman met us. They had returned from Norway in 1999 to take over the nursery and garden from John Lawson. Jack Drake, who started the nursery in the 1930s, retired in 1971 when John Lawson took over. Jack Drake had transformed birch woodland into a nursery that gained an international reputation for excellence and innovation. His nursery became synonymous with gentians, *Meconopsis*, *Primula*, *Lewisia* and heathers. More than a hundred new cultivars were introduced over the decades. The rock garden and

alpine house were of particular interest. Although there was much of interest in the garden, especially the many uncommon plants, it had obviously seen better days. Nevertheless we were all fascinated by the variety of plants that could be grown, and many of us anticipated finding something quite special. Wild animals also frequent the garden. A red squirrel was spotted, the Scottish Highlands being one of the few localities where this native mammal is still to be found.

Afterwards we headed for Loch Morlich in the Cairngorm Mountains. Some splendid views of the mountains were seen and then, as if rehearsed, a herd of reindeer descended the mountain and crossed in front of the coach. Colin, the coach driver, was heard to comment, "I do not know how much they were paid to do that". Lower down the valley we stopped at the Reindeer Centre where we had lunch and were given a talk by one of the reindeer keepers. She informed us that reindeer were exterminated in Scotland during the twelfth century. They were re-introduced in the 1790s by the Duke of Athol, but did not survive. In 1952 Mikel Utsi brought eight reindeer from Sweden to the Cairngorms – he and his wife, Dr Ethel Lundgren, were the co-founders of the Reindeer Company. Mr Utsi devoted his latter years to the practical, day-to-day management of the project, and it was his zeal and devotion to reindeer that really made the project a success. The herd has grown to between 130 and 150 reindeer.

Some of our party walked down to the shores of Loch Morlich before we boarded the coach again. After a scenic drive to Rothes we arrived at the Glen Grant Whisky Distillery for a conducted tour. Our guides gave us an introduction to the distillery, which was founded by John and James Grant in 1840. At the end of the tour our guides disappeared inside and then emerged holding trays with glasses of whisky. Two strengths of whisky were on offer; one by one we sampled a "wee dram".

Adjoining the distillery is a 26-acre garden, originally laid out by James' uncle, John Grant. During his many trips to foreign parts James Grant collected rare and exotic plants, which complemented the indigenous species in the garden. At its prime, no less than eleven gardeners were employed in the garden. The place fell into decline in the 1930s, but it has now been restored. Old apple trees and rhododendrons planted in the late 1880s have been retained, and new specimens from the Americas, China and the Himalayas have been planted. The garden includes a stunning waterfall, to which "The Major" (John Grant) would often conduct his guests. Hidden in the rock-face behind the waterfall he had built a safe, and much to the delight of his guests "The Major" would open this with great drama.

Following breakfast on Tuesday 24 August many of us said goodbye to our friends for another year. Others joined the post-conference tour and headed off to the Isle of Skye.

Barry Sellers

Heathers 2: 65–68 (2005).

BOOK REVIEW & RECENT PUBLICATIONS

International register of heather names (edited by E. C. Nelson & D. J. Small). Creeping St Mary: The Heather Society.

Volume 1: 4 parts (2000). Price £50, ISBN 0-9539079-3-7.

Volume 2: 4 parts (2004–2005). Price £50, ISBN 0-9549353-2-2.

It was not until the second half of the twentieth century that the establishment of International Registration Authorities for individual genera or groups of genera was formalised, although numerous listings of hybrids and cultivars, with or without descriptions, had been produced for many centuries.

The aim, set out initially in the first edition of the *International code of nomenclature for cultivated plants* (1953) (*ICNCP*), published by the RHS and edited by W. T. Stearn, was to develop, in accordance with the rules of this code, a system of recording the names applied to cultivated plants and promoting uniformity, accuracy and stability in their application.

In order to achieve this aim various organisations were encouraged to undertake responsibility for developing international registers of cultivated plant names for specific genera and recording as much detail as possible about each entry. No easy task, bearing in mind that names for cultivated variants of wild plants were being applied and listed as far back as 160 BC!

The first appointments of International Registration Authorities (now known as International Cultivar Registration Authorities – ICRA) took place in 1955 and, in 1970, only seven years after its formation in 1963, The Heather Society was appointed as ICRA for the genera *Andromeda*, *Bruckenthalia* (usually now subsumed under *Erica*), *Calluna*, *Daboecia* and *Erica*, collectively called “heathers” or “heaths”. Prior to this appointment, David McClintock had been compiling data on heathers and he continued, as Registrar, to seek and record information in his voluminous card index system which has been the “rock” on which the *International register of heather names* has been built.

Ambitious projects such as this, using the limited human and financial resources of a relatively small specialist society, place considerable demands on those involved but there is no doubt that members of The Heather Society can be and should be justifiably proud of the publication of volume 1 of this *International register* which covers the hardy cultivars and European species as well as those from Asia Minor, the Azores, Madeira, the Canary Islands and North Africa.

Volume 1, published in 2000, consists of four parts and the entries throughout are arranged in strict alphabetical sequence, covering all cultivar, hybrid and botanical names that have been located in the five genera for which the ICRA for heathers is responsible.

As the five genera were then considered as a single “denomination class”, the rules of *ICNCP* did not permit duplication of cultivar names within these genera. Consequently an alphabetical system, clearly explained in the Preamble on p. 1 in the paragraph headed “Arrangement”, has been developed. Although initially this appeared somewhat complex to use, I found that, when selecting the epithets *alba* and *rubra*, to search the entries for each epithet to check which usages were accepted and which were referred elsewhere, it worked extremely well.

Underneath the headings for each entry in the checklist, short sections preceded by symbols, provide further information, including a brief description; reasons for the rejection of an epithet or name (where appropriate); place of publication of the name; useful illustrations; the history of the cultivar (where known); and, of course, the name that it is considered is correct to use. While not a fan of symbols in publications generally, I found that here they were unambiguous and the system devised was very practical and simple to use.

In such a complex work as an international register (and indeed in the vast majority of horticultural and botanical publications) it is inevitable that some errors may occur but these are remarkably few in this Register, as I found when randomly sampling pages from all four parts of Volume 1.

My only minor quibble relates to Part 1 (A–C) p. 3 where I had expected the alphabetical listing to begin at the top of the page. I was slightly thrown by the first entry “12 — *Erica carnea* 12.” I then glanced further down the page where it became clear that this was a numbered clone submitted for Plant Breeders’ Rights, one of half a dozen clones numbered prior to cultivar names being applied. This had not been referred to in the Preamble but may be worth noting when any update or revision of the Register is undertaken. At the same time, perhaps, I would suggest that consideration should be given to adding (or possibly publishing separately) a Bibliography to bring together the many useful references already included under the alphabetical entries. As the information in the Register is derived from a computerised database this could be a relatively easy task in the future and would provide ready access to sources of further information on the five genera covered by the Register.

It is very evident that all those who took part in the preparation of the Register have carried out an enormous amount of research involving very thorough investigation of the literature. The resulting production of Volume 1 is a great credit to The Heather Society, an achievement that owes much to the dedication and scholarship of the editors, Charles Nelson and David Small, as well as to many other heather enthusiasts who contributed from their own knowledge to produce this invaluable, major reference work on the “heathers” and “heaths” north of the Tropic of Cancer.

The first (of four) parts of Volume 2 of the *International register* which is devoted to the African species, hybrids and cultivars of *Erica* has also recently been published in August 2004. These are the “Cape heaths” once very popular as greenhouse plants and as pot-plants for the Christmas trade. They were also widely grown in the late eighteenth and nineteenth centuries but are much less frequently seen today in spite of their often very colourful and attractive flowers.

Volume 2 covers all the heathers that occur wild in Africa, south of the Tropic of Cancer, as well as those in the nearby islands of the southern Atlantic and Indian Oceans, such as Madagascar. The natural and artificial hybrids and the cultivars derived from them are also listed with appropriate data.

Volume 2 part 1 (A–C) follows the same strict alphabetical sequence and format that was used in Volume 1 and equivalent data and information is provided for each entry. Unravelling the complexity of the application and validity of the names of the numerous “Cape heaths” described as species in the past (many of which nowadays would be considered cultivars) must have been a mammoth task and one at which most taxonomists would blench!

To complicate the taxonomic situation further more than 60 “minor” genera of African Ericaceae, closely related to *Erica*, have been described in the past from this region. Taxonomic opinion, thankfully, now considers they should all be subsumed under *Erica* and all the names of these taxa are now included in the Register. A list of these genera is provided in Annex 1 while a list of references consulted, but not cited in the checklist of entries, is given in Annex 2.

As the editors recognise, in any complex compilations of data like the volumes of this *International register*, amendments and additions will undoubtedly be forthcoming in the future. I have no doubt however, that when the remaining parts of Volume 2 are published this will prove to be as invaluable a reference work as Volume 1. Both should be in the library of anyone interested in growing “heaths” and “heathers” and, while the Register is likely to be used mainly by gardeners and horticulturists, it will be a very important reference work for taxonomists and botanists as well.

Recent publications

- ALLEN, D.E. & HATFIELD, G., 2004.** *Medicinal plants in folk tradition. An ethnobotany of Britain and Ireland.* Portland & Cambridge: Timber Press. ISBN 0-88192-638-8. £22.50.
This fascinating book seeks to rescue from oblivion indigenous knowledge about medicinal uses of native plants. That corpus of hard-won information from these islands owes nothing to the 'learned repertory', nor to exotic herbs that were deliberately cultivated. The authors exclude anything linked to uses mentioned in the 'classic' herbals of antiquity and more recent centuries. (For reviews see *The garden* 129 (7, July 2004): 571, and *Bulletin of The Heather Society* 6 (13, Summer 2004): 7–8.)
- ANONYMOUS, 2004.** Invaluable spring heather. *The Irish garden* 13 (3: March): 22.
Advice: but without naming any heathers!
- ANONYMOUS, 2004.** Heather for a rock garden. *The Irish garden* 13 (8: September): 18.
Advice: 15 "calluna-type [*sic*] heathers do not flower in winter ... worth planting for foliage alone." But photograph is of *Erica*!
- ANONYMOUS, 2004.** Project report reveals prime area for heath. *Planning*, 5 November: 4.
Joint East of England Heathland Opportunity Mapping Project Report, by the Forestry Commission, the East of England Development Agency, English Nature and the RSPB.
- CHEFFINGS, C., 2004.** New plant status list for Great Britain. *BSBI news* 95: 36–43.
Erica ciliaris and *E. vagans* listed within "Nationally rare taxa not in an IUCN category".
- EIWORTH, K., 2003.** Bjud in Melanie, Anette och deras ljungkompisar på balkongen. *Hemträdgården* 6: 18.
Bud-flowering *Calluna*; in Swedish.
- FAGÚNDEZ, J. & IZCO, J., 2003.** Seed morphology of *Erica* L. sect. *Chlorocodon* Benth. *Acta botanica Gallica* 150: 401–410.
Seed morphology of *E. scoparia*, and its subspecies. [not seen]
- FAGÚNDEZ, J. & IZCO, J., 2004.** Taxonomic value of seed characters in the *Erica tetralix* L. group (Ericaceae). *Plant biosystems* 138: 207–213.
Seed morphology of *E. tetralix*, *E. mackaiana* and *E. andevalensis*. [not seen]
- GORISSEN, I., 2004.** *Die Zwergstrauch Heiden Europas – vom Atlantik bis zum Kaukasus und Ural. Dwarf shrub heaths of Europea – from Atlantic to Caucasus and Ural.* Siegburg: I. Gorissen. Pp 184. ISBN 3-00-013685-1. 49 euro.
Gorissen's "extraordinary interest in the description and distribution of these European habitats made him travel all over Europe [during] the last 12 years to do this research. The book is the result of more than 70 journeys." The author informs us that this book contains "all European Ericas and their habitats." Bilingual, in German and English, with 373 colour photographs. [not seen]
- JACQUEMART, A.-L., 2003.** Floral traits of Belgian Ericaceae species: are they good indicators to assess the breeding systems? *Belgian journal of botany* 136: 154–164.
Includes *Andromeda polifolia*, *Calluna vulgaris* and *Erica tetralix*.
- JOHANSSON, B., 2003.** Den nyttiga ljungen. *Hemträdgården* 6: 30–32.
Calluna: uses, names, folk-lore; in Swedish.
- JONES, D., 2004.** Spreading new life – and heather. *Glossop chronicle* 9 December: 6.
The "Moors for the Future" project is transferring heather by hand and by a helicopter-carried spreader from parts of the Peak District which are flourishing to degraded sites on Kinder, Bleaklow and Arnfield. (See www.moorsforthefuture.org.uk)
- KEENAN, M., 2003.** Top 50 for winter. *The Irish garden* 12 (10: December): 36–41.
Advice: "Choose compact, bushy varieties." (Same issue includes a promotion for "Quality Irish Grown Heathers" (p. 51) and Whyte's article, see below).
- LASHLEY, B., 2004.** Helicopter rescue for peat's sake. *Manchester evening news* 13 December: 16.
See summary of Jones, D. (2004) above.
- NELSON, E.C., 2003.** James Townsend Mackay – Trinity College botanist. *The Irish garden* 12 (10: December): 54–56.
Biographical article. *Erica mackaiana* was named after him; illustrations include 'Shining Light', and *Erica erigena*.

- NELSON, E.C., 2004.** The enigma of the alien heathers of Britain, especially *Erica ×darleyensis*. *BSBI news* 95: 12–14.
(For updated version see Bulletin of The Heather Society 6(14) (Spring 2005)).
- NELSON, E.C., 2004.** 'When the swift appears turn out the greenhouse'. *The Irish garden* 13 (4: May): 56–59.
About John Templeton (1766–1825), naturalist and gardener, and his garden at Cranmore, Malone, Belfast. Among heaths he cultivated were *Erica tubiflora* (probably *E. curviflora*) – outdoors it reached “near four feet high” – and *E. australis* (illustrated). Also mentioned is *Andromeda polifolia* with striped, five-sided bells.
- NELSON, E.C. & OLIVER, E.G.H., 2004.** Cape heaths in European gardens: the early history of South African *Erica* species in cultivation, their deliberate hybridization and the orthographic bedlam. *Bothalia* 34 (2): 127–140.
This paper discusses the horticultural history of southern African *Erica* spp. in Europe, and especially in Britain, during the late eighteenth and the early decades of the nineteenth century. We note evidence for the deliberate hybridization of the so-called Cape heaths by European horticulturists, in particular by the English nurseryman William Rollisson and by the Very Rev. William Herbert. We discuss some of the nomenclatural consequences of the naming by miscellaneous botanists and nurserymen of the hundreds of new *Erica* species and hybrids, emphasizing the proliferation of eponyms. An appendix tabulates eponyms and their numerous orthographic variants published before 1835 within *Erica*, and provides the correct orthography for these epithets.
- OLIVER, E.G.H., 2004.** Nomenclatural changes in *Erica*. *Bothalia* 34: 38.
Erica salicina (replacing *E. viminialis* E. G. H. Oliver) and orthography of *E. pilaarkopensis*.
- OLIVER, E. G. H. & OLIVER, I. M., 2004.** Two new species of *Erica* (Ericaceae); one from Western Cape and one from KwaZulu-Natal, South Africa. *Bothalia* 34: 11–15.
Erica jananthus (Western Cape); *E. psittacina* (KwaZulu-Natal); illustrated.
- TURNER, R.C. & OLIVER, E. G. H., 2004.** A new species of indehiscent-fruited *Erica* from the central Kouebokkeveld, Western Cape, South Africa. *Bothalia* 34: 39–41.
Erica tragomontana R. C. Turner.
- PILCHER, J. & HALL, V., 2004.** *Flora hibernica. The wild flowers, plants and trees of Ireland*. Cork: The Collins Press. Pp x, 203. ISBN 1-903464-51-X (limp covers). ?25.
Paperback re-issue of an excellent book published in 2001. Includes chapters on main habitats, including “Bogs and wetlands”, within which heathers are mentioned. Numerous colour photographs: but, both pictures (pp 50, 66) showing cross-leaved heath (*Erica tetralix*) are mislabelled “bell heather”.
- PRYCE, R.D., 2004.** The Rhos pastures of south-west Wales and their conservation. Presidential address, 10 May 2003. *Watsonia* 25: 1–16.
Characterised by *Carum verticillatum* (whorled caraway); also includes a heathy element (*Erica tetralix*, *Calluna vulgaris*); distribution maybe of *E. tetralix*.
- RICE, G., 2004.** By design, not just good luck. *The garden* 129 (1): 50–51.
“Ericas are certainly not the most fashionable of plants.” Rice’s avers that finding “new planting partners for garden stalwarts can be a challenge.” Suggested partners for stalwart winter-flowering heathers are *Hedera colchica* ‘Sulphur Heart’, white-stemmed *Rubus cockburnianus*, grasses and *Bergenia*, and bulbs such as *Chionodoxa luciliae*. Illustrated.
- SIEBEN, E.J.J., BOUCHER, C. & MUCINA, L., 2004.** Vegetation of high-altitude fens and restio marshlands of the Hottentots Holland Mountains, Western Cape, South Africa. *Bothalia* 34: 141–153. Describes vegetation communities, all dominated by Restionaceae, containing *Erica* spp.; *E. autumnalis* [invalid name], *E. lutea*, *E. sitiens*, *E. coccinea*, *E. fastigiata*, *E. curviflora*, *E. hispidula*, *E. intervallaris*, *E. calycina*, *E. triflora* and *E. longifolia* are present in these mountain fens and marshlands.
- SZKUDLARZ, P., 2001.** Morphological and anatomical structure of seeds in the family Ericaceae. *Biological bulletin of Poznan* 38 113–132.
Erica tetralix and *Calluna vulgaris* seeds (illustrated).
- WHYTE, P., 2004.** All around the blooming heather. *The Irish garden* 13 (8: September): 22–27.
Mostly about *Calluna* and *Erica cinerea*. Illustrated.

Supplement to the *International register of heather names V* (2005)

REGISTERED CULTIVARS

CALLUNA: 5 cultivars, all selections from *C. vulgaris*.

'Athene' [established here]

Registration no. C01:2004: registered on 19 February 2004 by Kurt Kramer, Edeweicht, Germany.

- * Bud-flowering; corolla red, calyx dark red; September–November; foliage dark green.
- ♥ Sport on 'Amethyst' found by Wilfried Holzward, Hoisdorf, Germany, on 23 September 2002 at Betrieb Holzward. "Blütenfarbe früher rot und dunkler als bei 'Aphrodite'."
- ① Eponym: after the Greek goddess.

'Forest Fire' [established here]

Registration no. C04:2004: registered on 16 December 2004 by David Edge, Wimborne, Dorset.

- * Green foliage with salmon coloured new growth in Spring and throughout Summer; flowers mauve, single, late Summer (August–October); habit broad, ascending, to 40cm tall, 45cm across.
- ♥ Chance seedling found in 2001 by David Edge, in his nursery at Wimborne, Dorset.
- ▲ floramedia label (BHG0114).
- ① The name alludes to the yellow/orange/red tips to new growth, linked with nursery name.

'Galaxy' [established here]

Registration no. C05:2004: registered on 14 December 2004 by David Wilson, Chilliwack, British Columbia, Canada.

- * Bud-flowering; white, August–November; foliage yellow-gold; habit upright, compact; a more upright, tidy habit than other gold-foliage, white bud-flowering cultivars.
- ♥ Selected from trials at Wilson's Nursery, Chilliwack, British Columbia, Canada, in October 2004 by David Wilson.
- ① Fantasy name.

'Lukas'

Registration no. C02:2004: registered on 24 September 2004 by H. J. Kuipers, Nijensleek, Netherlands.

- * Flowers white, single, September–October; foliage yellow. "Habit strong, erect. Has the same characteristics as 'Long White' (healthy, strong, erect growth)" but is distinguished by the bright yellow foliage; it is also clearly not the same as 'Fortyniner Gold'.
- ♥ Sport on 'David Hagens', found by H. J. Kuipers in his nursery in 1998.
- *Ericultura* 135: 9, 13–14 (2004).
- ▲ *Ericultura* 135: 20 (2004).
- ① Eponym: after H. J. Kuipers' son.

'Strathspey' [established here]

Registration no. C03:2004: registered November 2004 by David Lambie, Speyside Heather Centre, Dulnain Bridge, Scotland.

- * Foliage "bronze, turning fiery-red in winter", yellow(green); colours in winter much quicker than other foliage cultivars; flowers lavender with dark anthers, August–mid-September; habit upright, to 30cm tall, to 45cm across after 3–4 years.
- ♥ Chance seedling at Speyside Heather Centre, Dulmain Bridge, Inverness-shire; on sale in August 2004 at the Second International Heather Conference.
- ① Toponym: after the region in which it originated.

DABOECIA: 1 cultivar.**'Sid Brown'**

Registration no. D01:2004: registered 28 October 2004 by Mrs C. M. Bowerman, Champs Hill, Pulborough.

*Flowers mauve (H2), calyx beetroot (H9); May–September; foliage dark green, small, fine; habit compact, dwarf, to 30cm tall (after 5 years).

♥ Chance seedling at Champs Hill, Pulborough, Sussex, found in 1999.

Ⓞ Eponym: after Sid Brown, gardener at Champs Hill; named by Mrs C. M. Bowerman.

Notes: On the registration form it was named *D. ×scotica* but that is a tentative identification; in The Heather Society 130th Council minutes (26 November 2003) it is mentioned as an improbable hybrid between *Daboecia cantabrica* and *Erica cinerea*.

ERICA: 4 cultivars.**'Edewecht Belle' (*E. spiculifolia* × *bergiana*)**

Registration no. E02:2004: registered on 4 July 2004 by The Registrar, The Heather Society.

* see *Heathers* 2: 22 (this issue).

♥ Selected clone of an artificial hybrid, *E. spiculifolia* pollinated by *E. bergiana*; raised by Kurt Kramer.

📖 *Der Heidegarten* 56: 54–55.

'Edewecht Blush' (*E. spiculifolia* × *bergiana*)

Registration no. E01:2004: registered on 10 April 2004 by The Registrar, The Heather Society.

* see *Heathers* 2: 21 (this issue).

♥ Selected clone of an artificial hybrid, *E. spiculifolia* pollinated by *E. bergiana*; raised by Kurt Kramer.

📖 *Der Heidegarten* 56: 54–56.

'Goldrush' (*E. ×darleyensis*) [established here]

Registration no. E03:2004: registered on 3 August 2004 by David Wilson, Chilliwack, British Columbia, Canada.

* Corolla pink, calyx pale pink; January–May; foliage green-gold in summer, changing to yellow-gold in winter; habit broad, upright. More vigorous, and foliage less orange than other golden-foliage *E. ×darleyensis*.

♥ Selected in 2003 from a deliberate cross between *E. carnea* 'Golden Starlet' × *E. erigena* 'Brian Proudley' made in 1996 by David Wilson, Chilliwack, British Columbia, Canada.

Ⓞ Name alludes to foliage colour and western North American history; named by Crystal Gillingham (Wilson's Nursery Ltd).

'Raye's Gold' (perhaps *E. ×darleyensis*) [established here]

Registration no. E04:2004: registered on 18 November 2004 by Chris Gill, Hamilton, New Zealand.

* Corolla white, calyx brown; June–August (southern hemisphere); foliage bright gold throughout the year (as yet there has not been any evidence of reversion or scorching in temperatures often above 30°C); habit spreading.

♥ Branch sport on an unidentified white-flowered cultivar (not extant) believed to have been *E. ×darleyensis* (but more likely to have been *E. carnea* 'Springwood White'); found in 2001 by C. Gill in his garden in Hamilton, New Zealand.

Ⓞ Eponym: named by Mr Gill after his late wife Raye.

Calluna vulgaris 'Multicolor'

In *Heathers* 1: 65 (2004), we published the ruling of the International Commission for the Nomenclature of Cultivated Plants, and I realise, following a query from Jos Flecken, that the wording is ambiguous. The Commission ruled that there was no reason to *conserve* the name 'Multicolor'; it is an acceptable name and should continue to be used.

Erica carnea 'Pink Cecilia M. Beale'

The entry for this cultivar name in the *International register of heather names* volume 1, part 3: 133, contradicts the entry for the name 'Cecilia M. Beale Pink' in *International register of heather names* volume 1, part 1: 114. The correct name is 'Pink Cecilia M. Beale'; the name 'Cecilia M. Beale Pink' is rejected and must not be used for this cultivar.

NAMES NEW TO THE *INTERNATIONAL REGISTER OF HEATHER NAMES*

Only names that are published or in the public domain via web-sites are included here.

Andromeda polifolia

'Pink Ice': *The plant locator Western region*, 67 (2004).

Calluna vulgaris

'Abendrot': *Der Heidegarten* 55: 37 (2004).

'Alida': Europlant-Canders GmbH website [accessed 6 December 2003, ECN]; *Ericultura* 133: 2(2004).

'Alissa Diane': *Cascade Heather Society newsletter* Fall 2003: 3.

'Alizee': *Ericultura* 133: 27 (2004).

'Andrea': *Ericultura* 133: 27 (2004).

'Anke C': *Der Heidegarten* 55: 29 (2004).

'Aurora': *Der Heidegarten* 50: 22, 36 (2001); __ 55: 36 (2004).

'Bajazzo': *Der Heidegarten* 56: 44 (2004).

'Bonita': *Der Heidegarten* 48: 12 (2000); __ 50: 25, 36 (2001); __ 55: 24 (2004); *Ericultura* 130:24 (2003).

'Carmelita': Heidepflanzen database of Sondergruppe Azerca, Bonn, Germany, 2002.

'Carolin': *Der Heidegarten* 54: 41 (2003); __ 55: 37(2004).

'Charmaine': *Ericultura* 133: 28 (2004).

'Colorado': *Der Heidegarten* 55: 46 (2004).

'Darleyensis Victoria' (**rejected**): *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 3.

'Dunkelrote Amethyst': *Der Heidegarten* 55: 26 (2004).

'Elena': *Ericultura* 133: 28 (2004).

'Elongata Alba' (**rejected**): *Handy guide to heathers*: 28 (2001, 3rd edn).

'Esprit': *Der Heidegarten* 55: 46 (2004).

'Eurosa': *Ericultura* 130: 27 (2003); *Der Heidegarten* 55: 31 (2004).

'Feuerzauber': *Ericultura* 130: 27 (2003); *Der Heidegarten* 55: 31 (2004).

'Fisser's Fancy' (**error**): *Der Heidegarten* 55: 24 (2004).

'Flamenco': *Blatt für Sortenwesen* 35 heft 11: 392 (2002); *Ericultura* 133: 31 (2004); *Der Heidegarten* 54: 35–36 (2004); __ 55: 37

'Flamenco Variegata' (**rejected**): *Der Heidegarten* 54: 36 (2004); __ 56: 44 (2004).

'Flamenco Variegated': *Ericultura* 133: 31 (2004); *Der Heidegarten* 55: 37 (2004).

'Fluffy Ruffle': *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 29 (2004).

- 'Fraser's Old Gold' (**accepted**): *Yearbook of The Heather Society* 2001: 53; *Handy guide to heathers*: 31, 55 (2001, 3rd edn).
- 'Gelbe Marleen': *Ericultura* 133: 28 (2004).
- 'Gent': *Blatt für Sortenwesen* 36 heft 10: 346
- 'Glenfiddish' (**error**): *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 30 (2004).
- 'Goldrush': *Blatt für Sortenwesen* 36 heft 10: 346 (2003); *Ericultura* 133: 28 (2004).
- 'Goldsworth' (**error**): *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 30 (2004).
- 'Greta Gerticular': *The plant locator Western region*, 102 (2004).
- 'H. Herbstfeuer' (**error**): *List* 2001, Kapels Baumschulen (Edewecht, Germany); *Handy guide to heathers*: 39 (2001, 3rd edn).
- 'Heidebrand' (**rejected**): *List* 2001, Kapels Baumschulen (Edewecht, Germany).
- 'Hellrote Anette': *Der Heidegarten* 55: 26 (2004).
- 'Heusden': *Blatt für Sortenwesen* 36 heft 10: 346
- 'Katherina': Bundessortenamt website [accessed 15 October 2004, DJS].
- 'Laarne': *Blatt für Sortenwesen* 36 heft 10: 346
- 'Leonie': Europlant-Canders GmbH website [accessed 6 December 2003, ECN]; *Ericultura* 133: 28 (2004); *Der Heidegarten* 56: 48 [as 'Leonia'] (2004).
- 'Lianne': Europlant-Canders GmbH website [accessed 6 December 2003, ECN].
- 'Lissi': *Ericultura* 133: 28 (2004).
- 'Lucienne': *Ericultura* 133: 28 (2004).
- 'Lusanne': Europlant-Canders GmbH website [accessed 6 December 2003, ECN].
- 'Lusille': *Ericultura* 133: 28 (2004).
- 'Magic Red': *Der Heidegarten* 54: 42 (2003); __ 55: 37 (2004); __ 56: 48 (2004).
- 'Marielle': *Ericultura* 130: 30 (2003); *Der Heidegarten* 55: 30 (2004).
- 'Marietta': *Ericultura* 133: 28 (2004).
- 'Marina': *Blatt für Sortenwesen* 35 heft 11: 389.
- 'Melasel' (**rejected**): *Der Heidegarten* 55: 27 (2004).
- 'Merlyn': Europlant-Canders GmbH website [accessed 6 December 2003, ECN]; *Ericultura* 133: 28 (2004).
- 'Minsting': *Trädgårdsamatören* 1995 (1): 10, 13; [*International register of heather names* 1 (3): 75 in error as 'Ministing'].
- 'Miranda': *Ericultura* 133: 29 (2004).
- 'Mirato' (**accepted**, replacement name for 'Kontrast' (*Yearbook of The Heather Society* 1999: 70)).
- 'Mister Beale' (**error**): *Spectrum NATUIR encyclopedie deel 1*: 244 (1979).
- 'Monodie': *Blatt für Sortenwesen* 35 heft 11: 389 (2002); *Ericultura* 133: 29 (2004).
- 'Morgenrot': *List* 2001, Kapels Baumschulen (Edewecht, Germany).
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- 'Mrs Beale' (**error**): *Handy guide to heathers*: 52 (2001, 3rd edn).
- 'Pendula' (**rejected**): *List* 2002, Anna & Roman Kowalski Nursery, Czerwonol, Poland.
- 'Pia': *Blatt für Sortenwesen* 36 heft 10: 346 (2003); *Ericultura* 133: 29 (2004); *Der Heidegarten* 55: 37 (2004).
- 'Pink Bell': *The plant locator Western region*, 102 (2004).
- 'Prairy Fire' (**error**): *Der Heidegarten* 50: 19 (2001).
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- 'Purple Prostrate': *Catalogue*, Larkman Nurseries (Lilydale, Victoria, Australia), 17 (July 2002).
- 'Pyramidall Purple' (**error**): *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 3.
- 'Pyramidallis White' (**error**): *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 3.
- 'Radson': *Plantenvinder* 1997 (RHS Plant finder CD-ROM 1999–2000).
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- 'Rosa Bella', 'Rosabella' (**errors** for 'Bella Rosa'): *Der Heidegarten* 55: 29 (2004).
- 'Sally Anne' (**error**): *Handy guide to heathers*: 64 (2001, 3rd edn).
- 'Samantha': *Der Heidegarten* 54: 42 (2003); *Ericultura* 133: 29 (2004).
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- 'Scholljes Gigant' (**error**): www.hiedl-gbr.de/calluna.htm [accessed 31 August 2003].
- 'Scotch Pink': *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 3; *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 31 (2004).

- 'Senta': Europlant-Canders GmbH website [accessed 6 December 2003, ECN]; *Ericultura* 133: 29 (2004).
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 'Son of Kuphaldtii': *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 4.
 'Springfield': *The plant locator Western region*, 103 (2004).
 'Stephanie' (**orthographic error**): *Handy guide to heathers*: 71 (2001, 3rd edn).
 'Summer Snow': *The plant locator Western region*, 103 (2004).
 'Sunny': *Blatt für Sortenwesen* 36 heft 10: 346 (2003); *Der Heidegarten* 55: 31 (2004).
 'Tricolorfolia' (**error**): *Catalogue* 2001–2002, Doran Nurseries Ltd (Donadea, Co. Kildare, Ireland).
 'Venetia': Europlant-Canders GmbH website [accessed 6 December 2003, ECN]; *Ericultura* 133: 29 (2004).
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 'Victorious': *Ericultura* 130: 38 (2003); *Der Heidegarten* 54: 42 (2003); __ 55: 30 (2004).
 'Vigsnes': *Der Heidegarten* 48: 43 (2000).
 'Westerlee Yellow' (**error** for 'Westerlee Gold'): *List* May 2001, G. van Hoef (Barneveld, Netherlands).
 'White Beauty' (**variant**: correct name 'White-beauty'): *Der Heidegarten* 50: 27 (2001).
 'White Bell': *The plant locator Western region*, 103 (2004).
 'WINK4': *Blatt für Sortenwesen* 36 heft 7: 269.
 'WINK5': *Blatt für Sortenwesen* 36 heft 7: 269.
 'WINK6': *Blatt für Sortenwesen* 36 heft 7: 269.
 'WINK7': *Blatt für Sortenwesen* 36 heft 7: 269.

Daboecia azorica

- 'Art Dome' (**error**): *Heather news* 25 (2): 14 (2002).
 'Arthur P. Dome': *Heather news* 24 (2): 2–4 (2001).
 'Elegant Red': *Heather news* 24 (2): 2 (2001).
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— *cantabrica*

- 'Amelie': *Ericultura* 133: 29 (2004).
 'Berrydown Red' (**rejected**): *Yearbook of The Heather Society* 2001: 42.
 'Irish Bell': *The plant locator Western region*, 156 (2004).
 'Newberry' (**rejected**): *Yearbook of The Heather Society* 2001: 42.
 'Newberryii' (**rejected**): *Yearbook of The Heather Society* 2001: 42.
 'Purple Bell': *The plant locator Western region*, 156 (2004).
 'Rudra' (**error**): *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 34 (2004) [specific epithet also misspelled "cantatricula"].
 'Vally's Red' (**error** for 'Waley's Red'): *List* 2001, Kapels Baumschulen (Edeweicht, Germany).

Erica

- 'Purple Bells': *The plant locator Western region*, 188 (2004)

— *australis*

- 'Riverlea' (**error**): *Trade list*, Mason's Nurseries, Te Awamutu (New Zealand), not paginated (1993) [in error as *Erica Riverlea Australis*].

— *carnea*

- 'Alaska': *Der Heidegarten* 55: 46 (2004).
 'Carina': *Der Heidegarten* 55: 46 (2004).
 'Dark Springwood Pink': *Yearbook of The Heather Society* 3 (4): 24–27 (1986).
 'March Seeding' (**error**): *Catalogue* 2001–2002, Doran Nurseries Ltd (Donadea, Co. Kildare, Ireland).
 'Memory': *Der Heidegarten* 55: 46 (2004).
 'Myertown Ruby' (**error**): *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 33 (2004).
 'Myrton Ruby' (**error**): *Catalogue*, Alouette Nursery, Ashburton (New Zealand), 12 (Summer 1986).
 'Pink C. M. Beale' (**error**): *Catalogue*, Alouette Nursery, Ashburton (New Zealand), 12 (Summer 1986).
 'Pink Glow': *The plant locator Western region*, 187 (2004).
 'Rosey Gem' (**error**): *Catalogue* 2001–2002, Doran Nurseries Ltd (Donadea, Co. Kildare, Ireland).
 'Snow Star': *Der Heidegarten* 55: 46 (2004).
 'Springwood Whit' (**error**): *Spectrum NATUIR encyclopedie deel* 2: 508 (1979).

- 'Springwoods White' (**error**): *Catalogue*, Plantorama (New Zealand), 11 (1977–1978).
- 'Tanja': *Der Heidegarten* **54**: 40 (2003).
- 'Tatjana': *Der Heidegarten* **54**: 46 (2003); *Blatt für Sortenwesen* **36** heft 4 (2003); *Ericultura* **132**: 38 (2004).
- 'Winter Sports' (**error**): *RHS plant finder* 1996: 224; *The plant locator Western region*, 187 (2004).
- *cinerea*
- 'C. D. Easton' (**error**): *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 34 (2004).
- 'Foxhollow Mahogany' (**error**): *Catalogue* 2001–2002, Doran Nurseries Ltd (Donadea, Co. Kildare, Ireland).
- 'Purple Bell': *The plant locator Western region*, 187 (2004).
- *xdarleyensis*
- 'Amy' (**rejected**; correct name 'Eva Gold'): Listed by G. van Hoef, Barneveld, Netherlands, October 2004.
- 'Big Pink' (**rejected**): *Blatt für Sortenwesen* **36** heft 7: 269
- 'Big Red' (**rejected**): *Blatt für Sortenwesen* **36** heft 7: 269
- 'Big White' (**rejected**): *Blatt für Sortenwesen* **36** heft 7: 269
- 'Eva Gold' (replacement name for 'Eva'): *Ericultura* **133**: 26–27 (2004); *Der Heidegarten* **56**: 32 (2004).
- 'J. W. Potter' (**error**): *Trade list*, Ardmore Nurseries, Papakura (New Zealand), not paginated (1989).
- 'Johannes Apel': *Der Heidegarten* **47**: 15 (2000).
- 'Lena' (**new identification**): [*Der Heidegarten* **46**: 48 (1999); __ **54**: 43 (2003); *Yearbook of The Heather Society* 2001: 57 all as *E. carnea* 'Lena'.]
- 'Red Spring Surprise': *Blatt für Sortenwesen* **34** heft 1: 9 (2001); *Der Heidegarten* **54**: 43 (2003).
- *erigena*
- 'Gold Lady' (**error**): *Tradelist*, Duncan & Davies (New Zealand), 9 (Winter 1993); *List, Growing Spectrum*, Kihikihi (New Zealand), 12.
- *xgriffithsii*
- 'Valerie Griffith' (**error**): *Heath and heather & hardy garden ferns* (Woodville Nursery, Rogue River, Oregon, USA), 35 (2004).
- "hybrida" (**invalid**: this name must not be used for any hardy heather)
- 'Darlyensis' (**error**): *Catalogue*, Blue Mountain Nurseries, Tapanui (New Zealand), 8 (1974–1975).
- 'Furzey': *Handy guide to heathers*: 137 (2001, 3rd edn).
- 'George Rendall': *Handy guide to heathers*: 137 (2001, 3rd edn).
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- 'Silberschmelze': *Handy guide to heathers*: 137 (2001, 3rd edn).
- *multiflora*
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- "rubra" (**invalid**)
- 'Gwavas': S. J. Palmer, *Parker's manual of trees, shrubs & climbers from Queensland*, 77 (1990).
- "standishii" (**invalid**)
- 'Purple Haze': *The plant locator Western region*, 188 (2004).
- *stricta*
- 'Aldgate': E. E. Lord, *Shrubs and trees for Australian gardens*, 329 (1964, 4th edn).
- *tetralix*
- 'Dawn' (**error**): *Catalogue* 2001–2002, Doran Nurseries Ltd (Donadea, Co. Kildare, Ireland).
- 'Mollis Dawn' (**rejected**): *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 5.
- 'Rosea': D. McClintock in G. Yates, *The gardener's book of heathers*: 158 (1985); *Handy guide to heathers*: 150 (1998, 2nd edn); __: 150 (2001, 3rd edn).
- *vagans*
- 'Diana Hornbrock' (**error**): *Spectrum NATUUR encyclopedie deel 2*: 508 (1979).
- 'St Kevern' (**error**): *Trade list*, Ardmore Nurseries, Papakura (New Zealand), not paginated (1989).
- 'Valerie Proudly' (**error**): *Okells Nurseries Heathers for all seasons* [list] (not dated, 2003).
- *xwatsonii*
- 'Dawn (Gratis)' (**rejected**): *Catalog* 1991, Howland Heathers etc. (Hubbard, Oregon, USA): 5.
- 'Heoralys' (**new identification**): [*Heather notes* **4** (3): 6 (1994) as *E. ciliaris*].
- 'Stuartii' (**error**): *Handy guide to heathers*: 159 (1998, 2nd edn); __: 160 (2001, 3rd edn).

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