

Heathers 12

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Editor Dr E. Charles Nelson

Assistant Editors Anne Small & Barry Sellers

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Frontispiece. The Bannut Knot Garden, in spring 1992 and in summer several years later.

Thirty years at The Bannut - or, a (lack of) foresight saga

DAPHNE EVERETT

Rosemary House, Edwyn Ralph, Bromyard, Herefordshire HR7 4LX

Life takes one in unexpected directions. Never, in our wildest dreams did we think we would have a three-acre garden which would be open to the public and would be visited by around 3,000 visitors annually. Nor did we expect, at an age when most people are thinking of retiring, to build a tea room and serve hundreds of home-made lunches and teas – but that is how things turned out.

It all started in 1984, when we were 54 years old and still full of vitality. I had developed my heather nursery in Worcestershire to the stage where there was no more room for expansion. Maurice (my husband) was taking early retirement from the University of Birmingham, where he taught chemical engineering, to join me in the business, and we had offered my parents a home with us - so it was time to make a move.

It wasn't much to ask – a house or bungalow in a lovely rural area, with enough downstairs accommodation for my parents, as well as enough living space for ourselves, three or four acres of useable, reasonably flat, uncultivated land suitable for the nursery, preferably in an area with acid soil, and all at a price we could afford!

We scoured Worcestershire unsuccessfully and eventually ventured across the border into Herefordshire, where, in a beautiful part of the county right next to Bringsty Common, we found a rather basic bungalow, with three acres of reasonably flat pasture land (home at that time to a couple of cows and some Jacob sheep) and with wonderful views to the Malvern Hills. The bungalow's living accommodation at that time wasn't ideal for two families, but, as Capability Brown would have said, it was "a property capable of improvement".

Before buying The Bannut we tested the soil and found, much to our delight, that the pH was about 6.5. We didn't realise just how lucky we were until sometime later, when we discovered that Bromyard, three miles to the west, had a neutral soil and Whitbourne, three miles to the east, was quite alkaline.

One of our three acres we set aside to make a garden around the house and the other two were designated for the nursery. The timing of the move wasn't ideal. It was mid-September and right in the middle of our busy autumn selling season, so things were rather chaotic for a few weeks. In fact, it took us one



Figure 1. The Bannut, about 1983 (an aerial photograph given to us by the previous owners).

day to move house and six weeks to move all the plants. The new owners, who, luckily, weren't planning to use the land for a nursery, were amazingly patient.

The first job was to divide the garden from the nursery area with a hedge and for this we decided to plant Leyland cypress. "What a mistake" do I hear you all saying? Not so – over the years our manicured Leyland cypress hedges (× *Cuprocyparis leylandii*) became an important feature of the garden. They were commented on and admired by many of our visitors, as well as being given special mention in various magazines and on local radio. Not, however, by Monty Don, who only lives a few miles away, and who was very damning about Leylandii hedges on BBC *Gardeners' world*. We invited him to come and see how they could look if they were not neglected, but he didn't deign to reply.

The second task was to lay a lawn and paths at the side of the house. Having had the whole area rotovated when we moved in, it became a sea of mud when it rained, so it was a real treat not to need duckboards to get from one part to another. And the third was to plant the front garden with heathers as an advertisement for the nursery. These were a mixture of summer- and winterflowering cultivars planted around the main feature of the front garden, a beautiful old stone Herefordshire cider mill. There was also a lovely walnut tree, known locally as a bannut tree, which gave the house its name. It took the local grey squirrels 27 of our 30 years at The Bannut to discover that tree. Well that's not quite true! - we did have the odd one or two that we shared the nuts with. During those years we used to harvest large crops of walnuts annually. Some I shelled and put in the freezer, and these were used to decorate the hugely popular coffee-and-walnut 'Bannut' cakes that we served in the tea-room (visitors loved the idea of home-grown walnuts), but the rest we had to find homes for, either giving them away, or touting them round the local farm-shops (which I hated doing). However, once the squirrels arrived *en masse* (and why it took them so long I can't imagine), the problem didn't arise any more, as, after that, we didn't get a single one!

Also, dotted around the front garden when we arrived were about a dozen lovely staddle stones, which we moved into a huddle in a corner of the nursery, until we could decide on the best way to make a feature of them (it took us 16 years!). A visitor called the group our "staddlehenge".

The garden around the rest of the house was laid down to lawns, borders and island beds. We also designated a small area of garden for vegetables, and planted a small orchard.

On the first anniversary of our move to The Bannut, we planted a dawn redwood (*Metasequoia glyptostroboides*) and on the second a handkerchief tree (or dove tree, *Davidia involucrata*) which took 17 years to produce its beautiful white bracts but it was well worth the wait. Unfortunately, in the spring, as the new leaves appeared, the handkerchief tree would give off the heady scent of cat pee. In later years, when we had the tea garden, the smell would just occasionally waft across on the breeze, causing a few wrinkled noses among our visitors and a hurried explanation from me. Luckily the scent didn't last for long. Although we didn't continue the tradition of planting trees on our anniversaries, we planted well over a hundred during our time at The Bannut.

Back in 1970 we bought a little cottage in Worcestershire, and Bonny, our first nanny goat, came as part of the sale. I think the previous owners hoped she would make a good lawn-mower, but goats much prefer trees and shrubs, and roses in particular. Bonny loved company. She had her own little paddock in the garden, from which she would regularly escape, and make her way to the back door of the house, having stripped the leaves from all the bushes on the way. She only once got into our neighbours' garden – we called them the Sodhams, so you can probably deduce that that wasn't a good idea. Bonny was a really loveable character and, from that time on, we always kept a couple of



Figures 2 & 3. The nursery at The Bannut.



pet goats. That is, until we moved to The Bannut! The couple who bought our house were keen to be self-sufficient (I think the BBC sit-com *The good life* had quite an influence) and they asked if they could keep the goats. This suited us very well, as we had no paddock ready to put them in. All went well until about a year later, when, out of the blue, we received a courtesy phone call to tell us that they could no longer cope with the goats and were going to get rid of them. This caused great consternation in the Everett household, because I decided we must take them back, and Maurice decided we wouldn't as there was no spare space! However, luckily for Bindy and Bunty, there was a triangle of land on our western boundary, which didn't fit in with the nursery lay-out, and was not yet being used. After much family 'discussion', we had it fenced off and the goats came to The Bannut. In later years, when the goats had gone to heavenly pastures, "The Old Goat Paddock" became a wooded area and was one of our very favourite parts of the garden.

Over the next few years, the "basic little bungalow" was extended outwards and upwards, becoming a spacious and comfortable family home. The nursery expanded to fill the area available and the one-acre garden continued to develop and mature. By 1990, we had had a terrace laid on the south side of the house and another one on the west, but there was a need for a way to integrate the two.

The idea of a circular knot-garden came to mind, especially as we had the perfect centrepiece - a spare cider-press millstone that was lying around in the garden. The positioning of this required a man with a large tractor equipped with chains, and our very brawny blacksmith neighbour. With Maurice's engineering expertise, the stone was designed to have water bubbling up through the centre, flowing over the top and filtering away into a circle of cobbles. Once the millstone was in place and the paths laid, it was time to think about plants. I had always assumed that it would be a traditional knot-garden with intertwining green and gold box-plant hedges - until I worked out how many plants I would need and what it would cost. We needed several hundred, which, in 1990, were going to cost f_{1} 10p each! Recovering from the shock, my thoughts turned to the 250,000 heathers in many different varieties which were growing on the other side of the hedge. Surely I could find something suitable there? The result was our (we think) unique heather knot-garden. For the little green hedges I chose Erica erigena 'W. T. Rackliff', and 'Golden Lady' for the contrasting gold. At the centre of each segment was a trimmed plant of 'Irish Dusk'. The following spring the knot garden looked quite spectacular, with

white-flowering hedges and contrasting pink cones of 'Irish Dusk'. However, this was the only time it put on this show, as, once the hedges needed trimming and shaping, they never flowered again.

The knot-garden (see frontispiece, p. ii) became quite famous in its own small way, appearing in quite a selection of books and magazines, and on Belgian television. It was an experiment at the time, which worked very well and was a great source of interest to our visitors, many of whom couldn't believe the hedges were heathers.

In 1992, we opened the garden (still only an acre at this time) for the National Gardens Scheme. The first time of opening is a very nerve-racking experience, as you have no idea what to expect. Can we cope with the parking? Will we have enough cakes? Have we got enough cups and saucers? And ... will it rain? We needn't have worried. We had lovely weather on the day and around 270 visitors turned up. Cars overflowed our car-park and were parked on the verges all along the main road. Our three daughters seemed to cope with a never-ending queue for tea-and-cake on the terrace, and my 85-year old mother gamely plodded through the washing-up in the kitchen.

Later that same year we were asked if we would open the garden for the Red Cross, which we were happy to do. (Old hands at it now, you see!). Also, would we like to have a Dutch band to play music during the afternoon? The band didn't want money – just an audience and a steady supply of tea and cake. This seemed a lovely idea – a band playing on the terrace, while visitors strolled around the garden in the sunshine, what could be nicer! "The best laid plans …" and all that! The day dawned windy and showery – not ideal for tea or music on the terrace. So we cleared all the clutter out of our biggest polytunnel, set up tables and chairs for tea, and made a space for the band. What we hadn't realised was that a Dutch band is like a German band; it is a very, very noisy, oompah, oompah band. However, quite a lot of people turned up to go round the garden and most of them seemed quite happy to sit in the polytunnel and be deafened, so it all turned out OK. The band even brought a baby in a pram with them, and it slept through the din all afternoon.

Our grand ideas of growing all our own organic vegetables in the area of the garden set aside for the purpose didn't materialise – we found we were far too busy with the nursery when we should have been digging and hoeing, sowing and planting. Every year we would fill the space with nothing but potatoes and runner-beans which, I was very disappointed to find, didn't freeze well.

Eventually we decided to give up the idea of vegetables and turn the area into two garden-rooms – the Gazebo Garden and the Arbour Garden.

The Gazebo Garden was designed as a small, square, formal garden with a central wrought-iron gazebo, four box-edged beds (box plants from my own cuttings this time!) and statues of the Four Seasons in the corners. I originally tried using heather hedges around the beds, as I loved the bright apple-green foliage of *Erica scoparia* 'Minima', but the growth was too soft and floppy.

The long narrow Arbour Garden was designed to have a central grass path, with herbaceous borders on each side – the planting scheme for the borders was strictly limited to shades of pink, blue and silver. A rose-covered arbour was set at the far end. Our visitors often described this as the "Romantic Garden". Later, when we had closed the nursery and turned the whole area into garden, we cut an opening through the Leylandii hedge at the end of the Arbour Garden to allow visitors walk from the "Romantic" into the quite different atmosphere of the Old Goat Paddock.

1996 and 1997 were momentous years for us because we had decided it was time to retire. We closed the nursery in two easy stages, half in one year



Figure 4. The Arbour Garden.

and completely in the next. We had thought long and hard about what to do with the two-acre redundant nursery site – do we put it down to grass and get a couple of cows and some Jacob sheep? Do we let it out to a local farmer for grazing? Do we move and find somewhere with less land? Or do we turn it all into garden? A chance letter from an estate agent offering to value the property arrived in the post about this time, so we called him in. After putting our quandary to him, his one memorable piece of advice was: "Whatever you do, don't extend your garden. You will make the house very difficult to sell"!

We both had our own ideas for expanding the garden. Maurice loves trees and wanted a mini-arboretum. I loved my heathers and wanted a big colourful heather garden – luckily, there was room for both. The area on our western boundary, now known as The Far Garden, was chosen for Maurice's collection of rare and interesting trees and shrubs – especially for his fine collection of beautiful magnolias. Thousands of wild daffodils were planted in the grass. These multiplied year by year and put on a wonderful show.

The Summer Heather Garden was laid out on a half-acre plot. A wide grass path ran diagonally through it and bark paths divided about twenty heather



Figure 5. The summer heather garden (E. C. Nelson).

beds. Around 12,000 summer flowering heathers were planted – by my own fair hands! – but not *Erica cinerea* (bell heather) which didn't like our cold, heavy soil in the winter. The flowering time worked well too; just when the herbaceous plants in other parts of the garden were coming to the end of their flowering, the heather garden was looking its colourful best. Many of our visitors had never seen a big collection of heathers before, and were quite bowled over by the colour and variety. Sadly, not enough to join the Society! Actually, I think we may have had one success. Quite early on we had a visit from the proud parents of baby Erica, and they came especially to show Erica the heathers.

When we moved to The Bannut we had the nursery area laid out with hardcore drives to facilitate our little hard-working Fergie tractor. The main drive, which ran about 200 feet from the bottom to the top of the nursery (alongside what is now the Summer Heather garden) was so extremely well laid by the contractor that it would have been a major operation to take it up when we turned the nursery into garden. Our solution was to make a feature of it. On each side of the drive (now called the Long Walk) we planted wide borders of winter- and spring-flowering heathers, which looked spectacular from January through to May, making a colourful feature for our early-season visitors to enjoy.

The Old Goat Paddock, which, after the last goat had passed away in the early 1990s, had become a shady woodland garden contained a large collection of camellias, rhododendrons, azaleas and *Pieris*. The camellias came into flower first, often around the end of January, and by May and into June the rhododendrons and azaleas would be putting on their spectacular display.

It wasn't long after we started expanding the garden that we realised that we couldn't manage three acres without some help and we also needed some income to help pay for that help. So, in 1999, we took the momentous decision to open the garden to the public. Having in mind that, when people visit gardens, they also like afternoon tea, we also built a tea-room, and a covered tea-garden. Between the tea-room and the tea-garden we could seat a full coach load of visitors. We decided to open from 2 pm to 5 pm three times a week and opened for the first time in May of that year.

The weather was kind. Lots of visitors turned up for both garden and refreshments, and all was going quite well until a week or so later when our resident swallows returned from their winter in Africa. They expected to find their home in the old tin shed, where they had nested for generations, but the shed had been demolished to make space for the tea-room. It was quite distressing to see them searching high and low for their nesting site – they even came in the house. Eventually they gave up, and built a nest inside our front porch, where they raised five lovely chicks. Sadly, they never came back.

That first year we were open, we had a visit from Reg Moule, the gardening guru from BBC Radio Hereford & Worcester. The programme producer's first idea was that we would chat to Reg about the garden, over the phone. Then, she had the bright idea of sending him out to do a programme from the garden itself. Over the years we have done many radio interviews. The presenter would arrive in his car with his little portable recorder and microphone, and we would wander around the garden, chatting about things of interest on the way. But this must have been a 'first' for them at the time - and it was going out live.

At the appointed time a BBC van with a very tall mast arrived. We thought the programme was going to be all over before it started because the driver, who was also the radio engineer, had great difficulty getting the mast past (and through) the weeping willow tree by our drive, and on to the car park. Then Reg set up his equipment in the tea-garden as, for part of the time he was with us, he would be answering phone-in questions from listeners. However, when it was time to walk around the garden and describe it to the listeners, there was a problem. We discovered that Reg couldn't actually move more than 30 feet from the radio car. This meant he could see the summer heather garden, which was nearest to the tea room, but nothing else. Eventually we gave him one of our illustrated garden leaflets, and, using that, he talked to his listeners, with great authority, about the many parts of the garden that he never in reality got to see. (I expect the BBC could have been sued for deception these days!).

When we closed the nursery in 1997, the removal of several redundant polytunnels gave us some extra useable space. We considered extending the car park, which probably would have been very sensible, but, instead, we decided to make our Secret Garden. This was designed to have a path winding between beds of colourful herbaceous plants, past a gunnera-leaf water-feature and a large Cretan urn, spilling water onto pebbles below. We wanted it to be a bit of a fun garden: the sort of garden where we could put those ornaments and features that people of "good taste" turn their noses up at - such as the Bill-and-Ben figures with flower-pot hats, ceramic snails, tinkling china toadstools and fairy doors. It was also home to Elfred – a charming elf who slept all day on a chair in his own little private garden. We did wonder what our visitors would make of it all, but found that most really enjoyed its whimsical humour.



Figure 6. Gladwin.

We did have a little humour elsewhere in the garden, particularly one which was carved by Steve Elsbey, our local chainsaw-sculptor. This was the bottom half of a man, upside down on the ground with his legs in the air. Gladwin, as we called him, was perfectly decently clad; he was not at all risqué, and our visitors loved him. When we had photography groups round, "he" was one of their favourite subjects. But, there is always someone, isn't there? Just one couple in all the years "he" stood there, reported at the end of their visit that, the garden was lovely, but they thought the legs were in very bad taste! It must be all in the mind. Steve also carved us a six-foot high hare standing on his hind legs as a focal point at a top corner of the garden. We called him Poirot – Hare-cule Poirot! When the willow tree along the drive became too large for its position and had to be cut down, we left the stump in situ and he also carved us a perfect two-foot long walnut to sit on the top, along with a couple of life-size squirrels. A talented man indeed!

One of our biggest garden attractions for many years was Sid, the black cat. Sid arrived with us as a stray and was a real character. When it was time to open the gates to the public, he would appear from nowhere and wait for the first car to arrive on the car park. After greeting the occupants, he would take them on a guided tour of the garden. When the tour was over, he would leave them and wait for the next visitors to arrive. He loved having his photograph taken and would pose artistically for artists and photography groups. He only let us down once, and that was when we had a group of artists in the garden. One lady artist was rather horrified to see the bag by her side (which contained her lunch)moving about violently, with just the tip of Sid's tail poking out of the top. Luckily she saw the funny side of it, and we gave her a free lunch, so Sid was forgiven. We got to know some of our visitors quite well. Many of them came back frequently to see the garden at different times of the year and also to see how it was progressing. We even had a few season-ticket holders. When the returners arrived, their greeting was sometimes "How are you, it is nice to see you again", but more often "Where is Sid"? I think we missed a trick there – we should have charged extra for a Sid tour!

By now we had reached the year 2000 – and we decided that we should have a Millennium project. Do you remember the staddle stones* that I mentioned earlier? No? I am not surprised – it was way back at the beginning of this saga! So, to jog your memories – these lovely ancient staddle stones that would have cost a fortune to buy in a reclamation yard, were just dotted around the front garden when we moved in. We wanted to do something really special with them, and until we could come up with a bright idea, they were stored in a huddle at the top of what was then the nursery, now The Far Garden. They remained huddled there for 16 years. For our Millennium project we decided to make a White Wisteria Walk. Four arches were spaced along the new walk, with two white wisteria planted against each. We pictured the walk eventually making a spectacular vista from the Secret Garden to the Far Garden.

Now – at last – we had found a really good position for the staddle stones! With the help of several strong men, and our little Fergie tractor, some of the stones were lifted and placed in a semicircle at the top of the Walk, resulting in a very distinctive focal point. Flowering shrubs were planted in the borders on each side of the Walk, which were edged with 150 ft-long hedges of *Erica* × *darleyensis* 'Arthur Johnson'. Smothered with bright pink flowers, these looked really spectacular from January into May.

That same year (2000) we had a visit from Belgian television. They were spending a week in Herefordshire in order to film six gardens, one of which



Figure 7. Erica × darleyensis 'Arthur Johnson' hedges, bordering the Laburnum Walk.

was ours. The Belgians don't have any national gardening programmes of their own, so gardening enthusiasts mostly tune in to the BBC for *Gardeners' world*, etc. But there are some small private companies making gardening programmes, and such was the one who visited us.

The team arrived at around 9.30 am, had a look round, and a chat, which brought us to coffee time. After a prolonged coffee break, they filmed in various parts of the garden until it was time for lunch. Lunch (provided by us) was again a very leisurely affair, then more filming, until the crew thought it was a good time for afternoon tea. Worn out after such a hard day's work, they then said goodbye and went off to their hotel. We learnt later that the time they spent with us that day resulted in just six minutes viewing time! They promised to send us a video of the programme but of course they never did. Sadly, the programme didn't do us, or Herefordshire Tourism any good, as the following year (2001) was the year of the dreadful foot-and-mouth epidemic, which put paid to any garden visitors from abroad.

Meanwhile the wisterias were growing well over the arches and we were waiting to see them in flower. We were pleased when they produced their first blooms in their second year (2002). The only trouble was that there was only one white one – all the others were pink or blue. As it happened, 2002 was our Golden Wedding year, so we took the wisterias out and replaced them with golden laburnums. These put on a wonderful show every May and also provided us with a name for the new walk – our Golden Wedding Walk.

By now we had filled up all the space available for making more gardens. Although, we did have a major session in the front garden, when we took out a bed of 25-year old *Erica* × *darleyensis* to make a wider path to the front door. Have you ever seen how far an E. × *darleyensis* plant can spread in 25 years? Quite impressive!



Figure 8. The Laburnum Walk with staddle stones as the focal point

Our visitor figures remained good, but steady and, in 2004, we decided to try and boost numbers by opening the garden at 12.30 pm instead of 2 pm and offering home-made lunches. These proved very popular, but didn't actually bring in many more visitors. The visitors, who would have come at 2 pm, just came early for lunch. Still, we were "Highly Commended" (that is, we came second) twice in Herefordshire Tourism's "Flavours of Herefordshire" competitions and we had two nice plaques on the tea-garden trellis to prove it. One of our daughters bought me a little plaque for the tea-room, which read "Countless people have eaten here and gone on to lead normal lives", but I didn't put it up. I thought it might be tempting fate.

Mind you, there was a day in 2005 when we thought that we might not actually have a tea-room any more. At about 5 am on a dark February morning we were woken by the ringing of our door-bell. We opened the door to find a policeman on the step, who greeted us with the news: "I am sorry to tell you that you have a car in your tea-room"! Not good news with only a few weeks to go before the garden (and tea-room) would be opening again. In the event, things weren't that bad. A young lad, driving home in the early hours of the morning, had fallen asleep at the wheel, and his car, instead of taking the bend in the road by the tea-room, had driven straight on, through our hedge and fence. The car then dropped several feet down a steep bank, and ended up wedged between the bank and the canopy posts in the tea-garden. Somehow the lad managed to scramble up the bank to the road in the pitch dark, and the first vehicle that came along was an ambulance! Luckily he wasn't hurt, and he and his father came back later and repaired the damage to the fence and wall. Sadly, the precious car he had saved up for, was a write-off.

The only time we actually had to close the garden was in July 2007 when we had four inches of rain in an hour, which flooded the garden and the car park. We reckoned that we had a quarter-acre lake. However, the water didn't get in the house or the tea-room, and had completely drained away within 24 hours.

We are almost at the end of our saga. Having run out of places to extend the garden (much to Phil, our gardener's relief) it was now just a question of trying to maintain it and enjoy it as it matured. One annual task, though, was the big Summer Heather Garden, which had been planted back in 1997 and needed a bit of rejuvenation, so for three or four years I had been taking cuttings and replacing a couple of the beds annually.

Also, our heather knot-garden, which had given us much pleasure for almost 20 years, had been beginning to show signs of age, and the bad winter of 2010 didn't do anything to improve it. So, we decided it was time to renew it. This time, instead of *Erica erigena*, I chose $E. \times$ *darleyensis*, using 'Kramers Rote' for the green hedges and 'Moonshine' for the gold. 'Kramers Rote' is rather vigorous, and may not have been the perfect choice, but I loved the contrast between its dark foliage and the gold of 'Moonshine'. Time will tell.

However, 2012 – the year of our Diamond Wedding Anniversary – was now approaching. A big anniversary for us, and one we felt we must celebrate somehow in the garden. The only remaining unplanted space of any size was our "utility" area, home to compost bins, incinerators, pig-wire, fence posts, and much more. It would be a major operation to move everything, but it was our only option. So, in the autumn of 2011, it was cleared and everything moved to a new site on part of the nursery. (Lunch duties rather interfered with time for plant propagation, so the nursery area wasn't all in use). During a Heather Society conference we had visited Holehird in the Lake District and I had been bowled over by the display of *Hydrangea* in all shapes, sizes and colours. We thought that for a September anniversary, hydrangeas would be perfect.

We designed the Diamond Wedding garden to have a path snaking through from one end to the other, edged with dwarf hedges of *Erica* × *darleyensis* 'Kramers Rote'. The beds on each side of the path were planted with 60 different hydrangeas – one for each of our 60 years. Around a central gazebo were six 'Diamond Anniversary' roses – for our six decades – and the gazebo was paved with fossil paving – to represent us – a couple of "old fossils". We were thrilled with the result!



Figure 12. Fossil paving with plaque commemorating our diamond wedding anniversary.



Figure 10. The Heather Society gathering at The Bannut, September 2001.

However, very sadly, we did not have long to enjoy our Diamond Anniversary Garden, because Phil, who had gardened so tirelessly for us for ten years, arrived for work one morning in the autumn of 2013 and announced that he wanted to retire. It was a bombshell, which brought us up short and made us consider our own lives. The idea of starting over again with a new gardener was just too much to bear, and, after much heart-searching, we decided it was time we thought about taking things a little easier ourselves.

The Bannut has now been sold to a very keen gardener, who loves it. Although we are sure he didn't realise how much work he was taking on when he bought the place. He plans to open the garden for the National Gardens Scheme in 2015, and to open it to the public again the following year.

We have moved to Edwyn Ralph, a little village about five miles from Bringsty. The village doesn't boast a shop, a post office, or even a pub, but, we discovered to our surprise, it has a bus service! The bus leaves Tenbury Wells at about 8am, and travels to Hereford, returning to Tenbury late in the afternoon. It doesn't pay to miss the return journey though, as the bus only runs on the first Wednesday of the month!

We now have a small, but quite pretty garden – but it doesn't feel like OUR garden yet. However, having spent so many years garden-planning, it must be in our blood, and we have already started putting our own stamp on this one. Including heathers – of course!

Diary of propagating an unusual bell heather: *Erica cinerea* 'Molly Rose'

MOLLY HALL Red Lane, Headley Down, Hampshire, GU35 8SR

The discovery

One Sunday afternoon in August (2013), I went on a walk with my dad across the heathland at Frensham Ponds, Surrey. I spotted a bell heather with pretty rose pink flowers, which looked different from the purple flowers covering the common at this time of year. I pointed it out to my dad, who told me it could possibly be a new variety, and that we should keep an eye on it to see if it really is new. Dad said that if it was different from any other varieties, he would register it and call it 'Molly Rose' after me, as I had found it, and because it was rose pink, like my middle name, Rose. I was so excited at the thought of producing a new heather and having it named after me. I badly wanted to take cuttings there and then, but Dad convinced me to wait a little longer. We went back to 'Molly Rose' several times that summer (2013), to remind ourselves where it was, as Frensham Ponds Common spreads over a vast area (400 hectares). It was definitely different from the others.

Summer 2014

We went back to 'Molly Rose' in July to see how she was doing. She was definitely a rose pink flowerer, very pretty, but not coping well. Like all of the heather on the common, she was struggling because of the extremely hot, dry summer (the soil is very sandy: Bagshot Sand, Dad told me). We noticed that the shrubs of the common ling were suffering more than the bell heather. They were looking very brown, almost burnt. Dad looked at them closer. "Yes, as I suspected", he said, "the dreaded heather beetle", as he showed me a tiny olive-green and brown striped beetle. The ling weren't only suffering from drought, they were being eaten alive! The good news for 'Molly Rose' was that heather beetles don't eat bell heather, but the damage done to the others was still upsetting. We decided now was not a good time to be taking cuttings, and to keep an eye on her in the hope she would improve.

Autumn 2014

After many visits it was on 21 September (2014) that 'Molly Rose' looked healthy enough to take cuttings. We also noticed that the ling was recovering from the heatherbeetle damage, thanks to the regular rainfall. I had my plastic bag with me and some secateurs. I cut some material off her, mainly from around the lower edges where the new growth was best (Figure 1). As soon as I had a good amount Dad drove us back to the nursery, about ten minutes away. When we got there I prepared to make my new cuttings. I filled a 150-cell tray with compost, a nursery-mix of peat, slow-release fertilizer and Trochoderma (a friendly fungus, Dad told me), watered it in and then pricked holes in each cell. I sat down in the potting shed and started to make cuttings from the wood I'd collected. I selected the youngest growth, about 4cm long, pinched the tip out and stripped the



Figure 1. Molly taking the cuttings (photograph by John Hall).

leaves from the lower half, and put one in each cell. Luckily I had collected enough good material to fill the tray completely: 150 cuttings. It took me about an hour and a half. When I'd finished I wrote out a label with my name "Molly Rose" (Figure 2) and the date "21st September 2014" and put it in the tray.

That was the easy bit done. Now to get them rooted. I'd had some experience before as about six years ago, when I was 6, I did some cuttings of *Erica* × *stuartii* 'Irish Lemon' (my favourite) which I rooted, potted up and sold at a local flower show for \pounds 1 each. I raised \pounds 100 towards our school project which sponsored a village school in Uganda.

I put my finished tray of 'Molly Rose' cuttings into a small propagation tent I had made with my dad's help. It was very simple; just wire hoops and canes



Figure 2. The cuttings, labelled, ready to root.



Figure 3. Propagation tent.

with milky polythene draped over the top (Figure 3). I had put this in one of Dad's bigger polythene tunnels on the nursery, which had been white-washed for shade. I watered the tray using a watering can, with the rose turned down, to firm the cuttings in. I then put the cover back over the tent. Now all I had to do was wait and hope for roots to appear.

The making of 'Molly Rose'

We don't live on the nursery so I rely on my dad to keep them watered when they needed it. I go down to the nursery each weekend as I have two chickens, a Warren called Betty and a Lavender bantam called Tallulah, and two Aylesbury ducks called Charlie and Lola, which I clean out and give fresh bedding. I also inspect my cuttings to see how they are doing, and check that Dad is looking after them for me. If they need a little water I give them a light splash with the watering can. I was tempted to pull out a cutting and check for root, but Dad said to leave them for at least a month before doing that, as the roots are so delicate that I could damage them, and to be patient (which is not very easy). The cuttings continued to look healthy so Dad must have been doing something right.

It is 28 October 2014 and I'm on the nursery to clean out my ducks and chickens, and Dad said it might be worth checking 'Molly Rose' for root. I went into the poly-tunnel and removed the cover from the propagation tent, took my tray of cuttings out and placed it on the table. I noticed that a few of the cuttings have a small amount of new growth on them, which is a good sign. I carefully pull the first one out and – Wow! lots



Figure 4. A rooted cutting of 'Molly Rose'.

of bright, white roots, and on my first one (Figure 4). A big smile spread across my face. I gently replace it back into its cell, lightly firming it in. I couldn't help pulling out another, not so good this time. I go for one more and it has great

root, as do most of the others I gently pull out, being careful to return them. I'm so pleased with 'Molly Rose'.

I will continue checking on my cuttings at weekends, and when they have all rooted strongly enough, hopefully by early next spring (2015), I'll pot them up and grow them on to flower in the summer, for the very first time as *Erica cinerea* 'Molly Rose'.

Editor's postscript. Molly, at the time of writing, is 12 years old, the youngest author to have contributed to The Heather Society's Yearbook (the previous holder of this "record" is now Professor Ian Small who, aged 13, contributed "First impressions" to *Yearbook* 2 (no. 5): 7–8. 1976).

Erica cinerea 'Molly Rose' was formally registered by John Hall on 3 November 2014: registration no. E.2014.03, and a certificate of registration was duly signed. The name is formally published here (see Supplement to the International register of heather names XV (p. 78, this issue).

The making of our third heather garden

JAMES MACKAY 30 Boat Croft, Kenmay, Inverurie, Aberdeenshire, Scotland

In *Heathers* **6** (2009), I described the creation of our two heather gardens at Blairdaff. In 2010 my wife and I decided that having enjoyed life for 49 years in Blairdaff the time had come for us to move to the village of Kemnay, three miles away. Blairdaff was not on a bus route. I was 77, and although we were both fit we knew that a time would come when we would be unable to drive. Rather than waiting for that time we decided to move as there was a nice bungalow in a quiet housing estate on the banks of the River Don looking across to Fetternear Woods. The bungalow is only three minutes walk from the surgery, chemist, post office, two butchers and three mini-supermarkets, with hourly buses to Aberdeen and a 40-minute service to Inverurie, seven miles away. What could be better? We bought the bungalow before we found a buyer for Dellside which was a bit of a worry but things worked out OK.



Figure 1. Part of a front garden heather bed (planted March 2011)- *Erica vagans* 'Valerie Proudley' (left front) and (right) unnamed pink *E. carnea*, *E. cinerea* 'Harry Fulcher' (left). In the middle is a white bud-bloomer (*Calluna vulgaris*). On the stone a leaping salmon I carved from Blairdaff elm.

The new garden consisted of, at the front, an area of grass full of dandelions and other weeds and a similar area at the back. I don't know what the neighbours thought when the first thing I did was to kill the lot with glyphosate. Our idea was to have, at the front, ten island-beds of heathers, maples (*Acer*), azaleas and other dwarf rhododendrons, and conifers, the area around the islands being covered with pink granite chips incorporating four large rocks. For the rear garden, we envisaged two heather-and-conifer beds, an alpine bed, a small bed and two large beds for plants other than heathers

We started at the front. Supplying and spreading many tons of granite chips was too big a job for me so I had a chat with a local landscape gardener. His idea was to use a machine to peel off the now dead turf, lay landscaping fabric, omitting the beds which I had marked out and then spreading the chips. Before this was done a farmer friend came along with the boulders to put them into position. From the pavement to the house there is quite a downward slope and I was worried that the largest boulder would get out of control and go crashing into the house which would be a real problem as the telescopic arm on his tractor would not reach that far. However, it sat snugly in the hole we had made for it and we breathed a sigh of relief. I was concerned too that the chips on the fabric might slide out of position because of the slope, but because of their angular nature this did not happen. In spite of the removal of the turf there was still a good depth of soil, much better than we had at Blairdaff. When the fabric and chips were laid I started to trench the ten beds. This would have been late 2010 and spring 2011. The soil was quite wet and probably I should have waited but I was keen to plant getting on for 300 heathers I had propagated at Dellside which were intended for the Dellside garden. As I trenched the ground I incorporated decomposing beech leaves as a substitute for peat and it worked superbly. I have used no peat at all in the garden. In three years we had complete ground cover. At the front I concentrated mainly on Erica carnea as they produce such a wonderful long-lasting show of colour when all the other gardens are looking dead and bare. Also they require so little in the way of pruning. Added to these I included E. × darleyensis, E. erigena, E. australis, E. × oldenburgensis, E. arborea, E. ciliaris, E. vagans, various E. cinerea cultivars, various Calluna, and self-sown seedlings (mainly Calluna) also from Dellside. There is no wall or fence to the pavement and people who might have been sceptical initially, stop to admire.

Now to the rear garden. I considered the removal of the dead turf quite unnecessary, it was expensive and I felt we removed a good source of nutrients Figure 2 (right). Rear garden heather bed with (from front) *Calluna vulgaris* 'Kinlochruel', *Erica vagans* 'Mrs D. F. Maxwell' (behind, right), *E. × watsonii* 'Dawn' (behind, left), *E. cinerea* 'Sherry' (left), *Calluna vulgaris* 'Peter Sparkes' (middle), *E. cinerea* 'C. D. Eason' (right), and at the back *E. carnea* 'Foxhollow' (left) and *E. arborea* 'Albert's Gold' (middle).



Figure 3 (below). Part of the rear garden, June 2014.





Figure 4. September 2014: the small rear garden bed with Persicaria and Phygelius × rectus in bloom.

so I marked out the beds and got another gardener to lay the fabric and supply and lay the chips. Again I trenched the soil, adding leaf mould to all the beds. I took some of the alpines from Dellside and bought in others some of which had to be removed as they grew too big. The two heather beds we planted with a mixture of spring- and autumn-flowering cultivars. The two large beds have *Persicaria*, primroses, cowslips, azaleas and other dwarf rhododendrons, lavender, geraniums, lilies, *Lithodora, Cerastium tomentosum*, yellow pimpernel, sedums, thymes, maples, *Stachys lanata*, *Roscoea humeana*, *Phygelius* × *rectus*, *Origanum vulgare* 'Aureum', *Fritillaria* and other bulbs, and more.

There were also two borders, one at each side, in which I grew potatoes, onions, herbs, courgettes, strawberries, rhubarb, gooseberries, black currants, and so on. Currently I am in the process of digging them all out, the ground to be trenched with beech leaf-mould preparatory to filling them with heathers of my own propagation to make an even less labour-intensive garden giving time to do other things.

One of my dreams from boyhood days was of living beside a river and being able to walk out through the garden gate and start fishing straight away. That dream has been realised. We feel we have been richly blessed.

Looking for Spanish heathers

E. G. H. OLIVER

Department of Botany & Zoology, University of Stellenbosch, Matieland 7602, South Africa

At the annual conference at Falmouth in August 2012 Dr Jaimé Fagúndez, a member of The Heather Society and botanist from the University of A Coruña, gave a short presentation on a possible excursion he would like to organize for THS members to his part of Spain, Galicia, to see the local heathers in the wild. Eventually eleven members and three of their family and friends assembled in the wonderful old city of Santiago de Compostela for the four-day excursion. The group had quite an international flavour with Ella May Wulff and Dee Daneri from USA, Eileen Petterssen from Norway, Kurt Kramer and Dr Mike Pirie from Germany, Susie and Alan Kay from Ireland, Richard Canovan and Barry Sellers from England and myself from South Africa. Most of us knew each other from various Heather Society and North American Heather Society events stretching back over 20 years. Some of us had to arrive a day earlier because the flights from Gatwick were only on alternate days and Mike arrived on the second day because of university commitments in Mainz.

Galicia is very hilly with few large, open, flat areas, rather like the northern border country in Britain, and has a cooler, wetter climate than the rest of Spain. Our first day out from our charming hotel, Virxe da Cerca (not easily pronounced by us) was to two localities not far from Santiago. Pico Sacro, southeast of the city, is a small, isolated peak sticking out of pine and eucalypt plantations but the summit is a protected area, mostly free of alien plants. It is part of a quartzitic "island" that lower down is heavily quarried. Here we walked and clambered around and were able to see six heathers - Erica arborea, E. cinerea, E. umbellata, E. australis, Calluna vulgaris and Daboecia cantabrica. I was pleased to find a single white-flowered Daboecia growing in a larger shrublet of the pink variant. E. arborea was perhaps the commonest species - sadly with flowers well over. It was mostly short, up to 1.5m, with a few in sheltered areas on the cooler north-facing slopes to 2m. It was amazing to see small plants growing out of crevices on the rock-faces. The few plants of E. umbellata surprised me being only 0.25m tall when I was somehow expecting them to be up to 1m. They had a few flowers still out.

The second locality was totally different being a small flat wetland area west of the city near the Fervenza Reservoir at Zas. Here we were all in for a shock



Figure 1. A captive audience in a stand of *Erica tetralix* listening to Dr Jaimé Fagúndez's comments about the heaths in the Zas wetland: (left to right) Richard Canovan (photographing), Kurt Kramer, Gerd Wilkens, Alan Kay, Ella May Wulff and her cousin Alison Stein, Dee Daneri, Susie Kay, Barry Sellers and Eileen Petterssen.

having to walk single-file in a follow- my-leader style, the leader being myself having to bushwhack through impressive solid stands of Erica tetralix up to 1.5m tall. I wished I had an African panga to make progress easier. Jaimé was busy explaining things to the line behind me (Figure 1). I am accustomed to the low plants of *E. tetralix* on the Roundstone Bog in Connemara. In more open areas at Zas, where *E. tetralix* was not so dominant, patches of *E. ciliaris* occurred. In other areas taller woody shrubs, up 1.5m, of *E. erigena* grew in clumps. They were, of course, well over. Talk soon cropped up of hybrids and pollinators since there was no sign of any hybrids here, the classic *E. tetralix* × *E. ciliaris* cross producing *E.* × *watsonii* – why none here with many flowering individuals of both potential parent species being present (McClintock 1983)? At another part of the wetland the vegetation was much shorter and one could easily amble around in low stands of *E. cinerea*, *E. ciliaris*, *Calluna* and *Daboecia*, but no *E. tetralix* nor *E. erigena*, perhaps not sufficiently boggy?

After that we drove back to Negreira and indulged in a sumptuous luncheon that stretched over several hours! Then followed the long drive up north to the city of Ferrol, allowing us time to relax and digest our enormous lunch. This city was a thriving ship-building port and naval base but sadly the declining economies in Europe have forced many closures including much of the naval base, so things were rather rundown. Two nights were spent here, with dinner in a restaurant-pub named Lar de Toxos, which soon got referred to as the "toxic one" for want of better pronunciation on our part, not that we experienced any problems with all the good food and wine.



Figure 2. Erica mackayana at Serra da Capelada.

Next day, off we drove to the northernmost part and of Galicia indeed Spain, through rugged hilly countryside, past occasional pink smatterings of Erica cinerea, to Serra de Capelada, a nature area. Here, high in the hills we entered natural pine forest with local wild horses that were inquisitive about our presence in their domain. Out, and scouting around, we soon had our first exciting sighting of fully

flowering *Erica mackayana* despite it not being wet and soggy (Figure 2). We had to follow the paths and openings created by the horses through the dominant gorse (*Ulex europaeus*) bushes. What a pest gorse is for browsing naturalists. There were also plants of *E. cinerea*, *E. vagans* and *E. erigena*, *Calluna* and *Daboecia*. In some instances, the heathers grew up in the gorse to a height of 1.5m: again a surprise for me who has only encountered some of them on Roundstone Bog. Then on to the highest point on a headland, San Andres de Teixido, high above the sea and fairly windswept. Here there was very low *E. cinerea* neatly pruned by the wind.

Another fine lunch stopover was made in the hills at a lovely farm restaurant with a nice view. This provided us with a guessing game thanks to Kurt Kramer who nosed around the lower part of the garden and noted a small shelter built with some dried heath branches. Some of us came to the conclusion it was most likely *Erica scoparia* imported from some populations in nearby northern Spain (see Nelson 2012).

After the delicious, extended lunch, we drove back south to Ferrol but not before Jaimé said he would show us some lovely heaths in an unusual locality



Figure 3. Punta Frouxeira sand dune community, fine Erica vagans protected in its den.

- the coastal sand dunes near the lighthouse at Punta Frouxeira. Here we were treated to some fine, fully flowering shrublets of *Erica vagans*. I was very frustrated for my photography because the nicest heather plants were out of reach, well protected in a veritable sea of low, tightly packed gorse plus a thistle or two and some long bramble branches (Figure 3). There was no way that I could get to them without armoured spats! In the open short heath there were fine plants of *Calluna* and *E. cinerea*.

From our Hotel El Suizo in central Ferrol we went off to Monte Caxado where there was a veritable "woodland" of wind turbines stretching miles across the hill tops. The visit here was to see the effect of vegetation management by mowing or clearing of all taller shrubs, and to compare this with, nearby, the low, open pine woodland with its understorey of heaths and gorse. There were small, neat, flowering plants of *Erica cinerea*, *E. mackayana* and *Calluna* and some *E. umbellata* with a few flowers. This vegetation was controlled by the local horses, a very important factor in heathland conservation, said Jaimé (Figure 4). Glad to get away from the cold, windswept hilltops we went down to the Natural Park Fragas del Eume and had a good walk along a paved road alongside a strongly flowing river through beautiful forests of oak and laurel



Figure 4. Barazon area. Slope with flowering *Erica cinerea* and a few *Daboecia cantabrica* and *E. umbellata* intermingled, and with taller *E. scoparia* and behind the advancing pine trees.

with the occasional tall *E. arborea* and, surprisingly, *Daboecia* growing out of rock-faces. For once it was a pleasure to see forest without hordes of alien eucalypts, but they were coming in! A pleasant lunch was had at the attractive, restored, ancient monastery near the head of the valley.

On Sunday, the last day of the trip, we drove east of Santiago through the old town of Melide where a mediaeval fair was being held and many pilgrims were walking through on their own personal "el camino". We went out to a flat area where a business park was being set up and opposite which was a natural area, very boggy in places and full of lovely heaths but not easy to access without getting soggy shoes. The area was dominated by low *Erica scoparia* (not flowering) and *E. cinerea*, *E. vagans* and *Daboecia* and a few *E. umbellata* still with some flowers. One area had badly disturbed vegetation where *E. scoparia* was being bulldozed out. Among the mangled plants I managed to find an excellent example with its impressive lignotuber still attached (Figure 5).

En route back to Melide we passed some recently burnt areas and I got the bus to stop so that we could view the good examples of *Erica scoparia* shrubs



Figures 5 & 6. Melide area. *Erica scoparia* showing the lignotuber, and (right) resprouting vigorously after a recent fire.

vigorously re-sprouting with black, burnt stems still present (Figure 6).

After an enjoyable picnic lunch alongside a stream, we stopped outside a nearby cluster of farms and disturbed the Sunday siesta of the whole lot by walking through and rousing all the dogs, and went to a slope covered with indigenous vegetation and some scattered alien trees marching in from the surrounds. The dominant species was *Erica scoparia* with scattered patches of flowering *E. cinerea* and *Daboecia* and some *E. umbellata*. Jaimé also showed us several other plants that were local endemics.

Back at Hotel Virxe da Cerce we all got together and Jaimé, Mike and I gave members a talk on the latest research on the genus *Erica* and the way forward with our phylogeny work (see pp 35–41 this issue). Mike had brought a printout of the latest molecular tree to bowl over the members – it stretched along the table for 2.5 metres! That evening we held our final dinner in the old part of the city and were joined by Dr Ana Mugrabi de Kuppler and her young family. She completed her PhD at Bonn in 2013 on molecular phylogeny of mainly the European species of *Erica*. Several papers are being prepared for publication.

Thus ended for a knowledgeable and interested group of Heather Society members an excellent trip and set of excursions to see the heaths and heathers of Galicia under the able and friendly guidance of Jaimé Fagúndez. He, alas, has to move into heathland conservation now because funding for systematic research is no longer available to him, or very difficult to come by, due to the economic crisis, but he will, fortunately, keep up his interest in systematics together with Mike and myself.

But, this was not the end of Spanish heaths for me. I left the next day by fast train for the 1,100km, day-long journey south to Cadiz in the southwest of Spain. I could have flown there but did not want to sit in airports and planes but rather look out of the train window at the passing scene. And this I certainly enjoyed. I was really surprised how few farms and villages there were as we rushed down around Portugal to Madrid. I could see lovely hills, mountains (some still with a bit of snowy topping), deep valleys with many reservoirs and alongside the railway line what looked like lots of heaths, probably non-flowering *Erica scoparia*, *E. australis* or *E. arborea* with the occasional flowering plants of *E. cinerea*. Much of this area I later noted on maps was allocated to natural parks (reserves).

In Puerto Real on the mainland opposite Cadiz I was met by my friend, Professor Fernando Ojeda, of the University of Cadiz who had invited me to stay with his family and wanted to show me the Andalusian heaths he knew from his ecological studies while studying in Seville. After his PhD he had come out to the Cape to see the many *Erica* species there and I had met him – that was way back in the late 1990s. He still comes out regularly to work on ecological aspects of our heaths, especially to try to understand the fascinating occurrence of seeding and re-sprouting after a fire in the colour variants of the single species *Erica coccinea*.

We went for some lovely drives and hikes in the mountains above Algeciras where we saw good cork-oak woodland being harvested for the bark and *Erica arborea* re-sprouting in the clearings. The heaths we observed were mainly *E. scoparia* with patches of *Calluna* and near a water-drip below cliffs *E. ciliaris* and *E. erigena*. Higher up there were some plants of *E. umbellata*. In the valley of Rio de la Miel there was lots of open heathland over the mountain slopes consisting mainly of *E. scoparia* and *E. australis*, both of which were re-sprouting in burnt areas or areas manually cleared for fire breaks. Fernando told me that *E. australis* cannot cope with too much slashing-and-burning and eventually dies out whereas *E. scoparia* survives this treatment. Again in a wet seep there was some *E. ciliaris* alongside the hiking path. In the forest going down into the gorge we passed through stands of cork and holm oaks with here and there in openings *E. arborea* up to 6m tall and a few *E. australis* and even some *Calluna* to 50cm. One spectacular area we visited were the white limestone mountains of the Sierra de Grazalema in a natural park where there are superb hiking paths



Figures 7 & 8. Erica andevalensis and (right) excavated rootstock.

with one slope covered with a forest of the striking, local, endemic fir, *Abies pinsapo*. Twisty roads and several small villages with red-tiled, white houses and narrow streets plastered against the slopes made the area so enticing to explore.

On a typically hot, sunny day we visited Seville for Fernando to show me his home town and for my interest in cathedrals. We then drove out west to the Portuguese border where we went to the hills near Huelva around the open mining areas of the Rio Tinto at Minas de Nerva, that classic "poisoned area" dominated by *Erica andevalensis* (Figure 7) with, surprisingly, small patches of *E. australis. E. andevalensis* was in full flower and an exciting sight to behold (McClintock 1983). It was clear that both species had woody rootstocks and were multi-stemmed re-sprouters (Figure 8).

The final day above Algeciras was clear despite the heat so we could see the Rock of Gibraltar and only 14km across the Straits was Africa. I was able to wave and shout that I would be back at the southern tip within a few weeks after a most thrilling excursion to see for the first time the heathers of Spain and their habitats in two dissimilar regions with two authorities as my guides.

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Tree heathers and heather trees; or advanced coalescence theory for *Erica* enthusiasts

MICHAEL D. PIRIE

Institut für Spezielle Botanik und Botanischer Garten, Johannes Gutenberg-Universität, Mainz, Germany (& Department of Biochemistry, Stellenbosch University, South Africa)

Based on work carried out in collaboration with (in alphabetical order): Dirk U. Bellstedt, Jaimé Fagúndez, Ana L. Mugrabi de Kuppler, Jens Léon and E. G. H. (Ted) Oliver

Both Ted Oliver and I have written pieces in recent issues of Heathers about the DNA project that we are involved in, using molecular methods to infer the family tree for species of *Erica* (Oliver 2011, 2014; Pirie 2012). As Ted describes in the current issue (see pp 27–34), we had the privilege last (2014) summer of being able to join a group of fellow Heather Society members on a trip to Galicia organized by Jaimé Fagúndez, and there to see many of the European species in their full glory. This trip also gave us the opportunity to talk in detail about our project, and to try to explain, with the minimum of scientific jargon, exactly what it is we are doing and why. Our "captive" audience was remarkably receptive, and suitably (in my view) appreciative of the enormous phylogenetic tree that we ceremoniously unfolded before them. Most of the actual unfolding was of African and Madagascan species. These remain the greatest challenge of our ongoing research due to both their huge numbers and close relatedness. In this article, I would like to bring you up to date on the progress that we have made with regard to the European species.

It is just two years since the publication of Charles Nelson's beautiful and long-awaited monograph *Hardy heathers from the northern hemisphere* (*HHNH*; Nelson 2012), but already we have some new results from DNA analyses that can answer a few of the questions that he deliberately left open.

In his monograph, Charles organized northern *Erica* into unrepentantly artificial chapters based on overall similarity. We are warned by him in no uncertain terms not to regard this as any form of classification, and yet these are groupings of species defined by reasonable criteria that are given names – informal English ones, rather than formal botanical Latin ones – to help us remember and to talk about the plants and their characteristics. If we turn a blind eye to the denial of warranty and think about these chapters as hypotheses of relationships, one detail becomes immediately clear: of 21 species of *Erica*,

four are graced by chapters all of their own; singletons without hypothetical relationship (or even similarity) to any other species in particular. If we consider the other genera of hardy heathers, *Calluna* is a similar case. It is monotypic; a genus currently represented by just one species. The generic status tells us that *Calluna* is distinct from other members of the sub-family Ericeae, but obviously cannot convey a sense of common attributes – there is only *Calluna vulgaris* to compare. The obvious contrast is with *Erica*, where the generic name also represents the shared characteristics of more than 800 species.

A further six chapters of HHNH treat groups of species. These present hypotheses that we can test, not just in the trivial sense of "Are these each other's closest relatives?", but also in terms of their shared characteristics. Is the tall habit of the "tree heathers" (*Erica arborea* and *E. lusitanica*) directly comparable? Is it shared by dint of common heritage, or did it evolve independently, perhaps in response to pressures imposed by similar habitats? Similar questions can be raised about wind pollination in the "besom heaths" (*E. scoparia, E. platycodon* and *E. azorica*); about flower form in the "bell heathers" (*E. cinerea, E. maderensis* and *E. terminalis*); and even the glandular hairs common to "cross-leaved heaths" (*E. tetralix, E. mackayana* and *E. andevalensis*).

And what do the molecules say? First we have to qualify the results: the molecules, insofar as we can get at them (with increasing ease, given technological advances, but still with considerable laboratory cookery) do not necessarily always speak with a united voice. We analyse DNA sequences from different chromosomes, for example; or from mitochondria or chloroplasts. The latter two are, respectively, the power stations and the photosynthesis factories of the plant cell. They are distant relatives of former free-living, singlecelled, organisms and contain their own diminutive genomes that are inherited, as a rule, along the maternal line and as a single unit. This is in contrast to the paired chromosomes of the nuclear genome that are split up and passed along maternal and paternal lines separately. These, thus, are our independent genetic markers. There are various important biological phenomena that can cause these markers to show somewhat different results. I have attempted to illustrate some of these with a hypothetical species tree in Figure 1.

The most obvious such factor is hybridisation. When more or less distantly related individuals cross, the progeny can inherit chromosomes and chloroplasts implying a mixture of the phylogenetic histories of each of the two parents (Figure 1: A). Perhaps less obvious is the impact of population sizes through



Figure 1. Coalescent stochasticity, hybridization and the species tree. Hypothetical species tree of three species (X, Y and Z). The sequence and timing of speciation events is represented by the black outline that encompasses three (coloured) gene trees (1–3). The width of branches in the species tree represent relative population sizes (wider being larger). Note that although gene tree 2 shows the same branching pattern as the species tree, gene tree 1 differs due to hybridisation (grey box A) and gene tree 3 differs due to the effects of coalescent stochasticity (grey box B) given large population size in the ancestral species.

time. In short, larger populations can harbour more genetic diversity for longer than can smaller populations. At the lower extreme, very small populations result in a "genetic bottleneck", whereby the surviving individuals are all closely related and, genetically, more or less identical. Left to chance, not all individuals will pass on their genes. In small or fragmented populations, genetic diversity can consequently decrease dramatically with each passing generation. Consider the efforts that are made in captive breeding programmes to ensure that small "populations" of zoo animals do not become inbred. At the upper extreme, within large populations, even successful variants can be slow to spread and become the norm, whilst minority genes can persist a long time. This general phenomenon is known as "coalescent stochasticity", meaning the random (stochastic) generation-by-generation shifting of proportions of genes (or "genotypes") in populations. An important upshot for our purposes is that when new species originate from within large populations, individuals that we later analyse can prove to have inherited genes with phylogenetic histories that are more typical of altogether different species (Figure 1: B).

On the one hand, these factors can complicate our analyses, making it challenging to represent the species history with a phylogenetic "tree". On the other hand, it is often exactly these phenomena that are interesting if you want to answer questions about past events: range expansions and contractions in response to climate change, for example, or where the ancestors of particular species originated. From our independent genetic markers we can infer a forest of individual "gene trees", ideally from a number of different individuals representing the species of interest. Where the gene trees are all more or less the same, we can have confidence that this result directly represents the species tree. In such cases, we know that there will have been on average longer periods between speciation events, smaller population sizes, and less hybridisation. By the same token, when the gene trees are less harmonious we can use the degree of the differences to infer past population sizes and hybridisation events. The current theoretical challenge lies in teasing these different factors apart.

For *Erica* phylogenetics, we have so far inferred only two independent gene trees: one from the nuclear genome and a group of linked markers together representing the chloroplast genome. The phylogenetic tree presented in Figure 2 is summarized from a paper that a number of us have been working on for quite a time, but which is now finalized and currently undergoing peer review. It might not be the usual style of an article presented in *Heathers* to have multiple contributing authors, but it is in the nature of scientific research that for the larger endeavours you need to gather a critical mass of the necessary skills, experience and resources. Credit for much of the molecular work goes to Ana Kuppler, who did this as part of her doctoral thesis completed at the University of Bonn, Germany, in November 2013. Ana was helped and advised by both Jens Léon (Bonn) and Jaimé Fagúndez (Santiago de Compostela, Spain), and



Figure 2. A consensus species tree of the northern heathers, representing relationships subject to significant statistical support following the combination of two independent (chloroplast and nuclear) gene trees. Note that *Erica lusitanica* appears in two places in the tree, reflecting the different phylogenetic signals of the chloroplast and nuclear markers.

received funding from the Nordrhein-Westfalen regional government, the Faculty of Agriculture at Bonn, and the Landgard Foundation. Meanwhile, Ted Oliver, Dirk Bellstedt and I, in our work at Stellenbosch University in South Africa (myself, of late, in Mainz, Germany) have been focusing more on the larger African diversity, with funding in part from the South African National Research Foundation and the Claude Leon Foundation. Until last year our two groups were working in parallel, but we have since put our heads together to analyse our combined data and write papers.

To cut a long story short, in *Erica* our genes have generally been telling us the same story. And how does this compare to the story told in the chapters of HHNH? Pretty closely is the answer. The "cross-leaved heaths" are each other's closest relatives, that is to say they represent a monophyletic group. So are the "besom heaths", and so are the "winter and spring flowering heathers" (Figure 2). What does this mean for our evolutionary hypotheses? Amongst the European species there is evidence for numerous shifts in morphology but, apparently, glandular hairs evolved just once in a common ancestor of the "cross-leaved heaths", as did wind pollination in a common ancestor of the "besom heaths". There appears to be some "phylogenetic conservatism" – evolutionary inertia, so to speak – in flowering time too.

Other groups, such as the "bell heathers" (Erica cinerea, E. maderensis and E. terminalis) and "Erica vagans and congeners" (E. vagans, E. manipuliflora, E. multiflora and E. umbellata), fare less well in this comparison. They do not include all of each other's closest relatives and do include the odd interloper. These thus represent non-monophyletic groupings. For example, E. vagans and E. manipuliflora share a more recent common ancestor with the besom heaths than they do with E. multiflora, while E. umbellata appears even more distantly related. This is not so surprising: from the wider phylogeny we know that floral morphology in Erica has changed a great deal, with convergence to similar forms occurring frequently (Pirie et al. 2011). In this example, the highly derived wind-pollination syndrome of the besom heaths (that is, their reduced flowers and expanded stigmas) evolved once, overwriting most other floral morphological similarities to their closest relatives.

And the singletons? *Erica ciliaris* is closely related to the cross-leaved heaths, together forming a group that are all characterised by those glandular hairs. However, even in the molecular phylogeny, the relationships of the other singletons currently remain mostly unclear, and the signs are that this may remain so. The phylogeny seems to show a rapid sequence of speciation events leading to the origins of a number of lineages including oddities such as *E. spiculifolia* and *E. sicula*. This is a common challenge for phylogenetic inference, and under such circumstances the precise order of the speciation events may have less influence on morphological characteristics than does the long subsequent divergence. In the case of *E. australis*, we have a clearer result, but this places it in splendid isolation, the single sister group to the giant African/Madagascan clade. Treating these species under their own "chapters" may not allow us to

generalize, but then again neither can it mislead us into assuming attributes in common with other groups that may be very different. The solution used in HHNH seems in retrospect a rather reasonable one.

So, our independent markers have proved generally consistent, but more rarely, they have actively disagreed. We expected differing results from Erica × stuartii (the only known hybrid that we included in the analyses), and indeed our chloroplast markers were effectively identical to those of the maternal E. tetralix, whilst the nuclear marker showed both E. tetralix and E. mackayana characteristics. A more surprising exception to the rule of congruent gene trees in European Erica is E. lusitanica. Our chloroplast markers tell us that E. lusitanica is more closely related to species such as E. cinerea and E. maderensis; the nuclear marker places it firmly with the other tree heather E. arborea in the "African/Madagascan" clade. With just two gene trees and this particular result it is not possible to say conclusively whether ancient hybridization or coalescent stochasticity (given large past effective population sizes) is to blame. However, the close morphological similarity of E. lusitanica to E. arborea is an indication that the chloroplast might have been "captured" following a past hybridization event. This is to argue that tall habit (and various other similarities) in the tree heathers evolved once, rather than in parallel.

Informal meetings such as ours in Galicia last summer present a fantastic opportunity to help along the kind of collaborative effort that delivered these results. As well as discussing our current work, we also looked to the future and what we might yet be able to achieve in researching European *Erica*. A good number of our current samples of European species have already been contributed by Heather Society members, to whom we are extremely grateful. So, as a final note here I would like to put out a further request on behalf of our research team: to anyone planning their holidays in heather country in the forthcoming flowering season, we would be very interested to hear from you.

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Deer and other heather-eaters - teeth and stomachs

Donald Mackay

135 Deerfield Lane N., Pleasantvolle, NY 10570, USA

Having just finished a small measure of collaboration with Professor Edd Barrows (Georgetown University, Washington, DC) regarding the recently published third edition of his *Animal behavior desk reference* (Barrows 2011), I feel a little more sanguine than usual in entering the lists so ably re-opened by Charles Nelson in his article "Do deer eat heather?" (Nelson 2010).

Were the question "Have deer eaten heather?", or "Do some kinds of deer at some times of year eat some kinds of heather?", or "Do deer like to eat heather?", or "What factors are to be considered in Jungian or Freudian analysis of deciding whether deer do, have, can or want to eat heather?", an answer might profitably be put forward in terms of animal nutrition, or numbers of stomachs in polygastric animals or dentition patterns in cladistic schemes for ungulate animals.

To be complete, we should consider other types of heather-eaters, from *Lochmaea* beetles and caterpillars that eat heather, to grouse that eat beetles and caterpillars, and to humans that eat deer and grouse, for in a sense we are heather-eaters too, though plantigrade ones. However, practicality limits us to deer, cattle, sheep, grouse, rabbits, hares, voles and domestic chickens.

The last have been documented as rabid heather-eaters by Susan White in an article giving reactions to types of heathers by types of chickens (White 1998). Some breeds (in fact all) were picky eaters, and the social pecking order was also a key factor preventing reliable statistical analysis, but chickens certainly do eat heather clippings thrown over the fence to them. However, it has to be admitted that in the fury of competition, similar results might have been obtained from bacon rinds or mashed potatoes or even nail clippings.

Voles (there are many running wild in Vermont) do eat heather bark, leading to heather death, but like Susan's chickens have not encountered heather in the wild, yet have no hesitation in adding it to their diet.

The deer found in the eastern United State is the white-tailed deer, related to the red deer of the western Europe (*Cervus elaphus*) but different enough to have its own name, *Odocoileus virginianus*. There is some variation in size over its range, but most occurs in its behavior. In deer-hunting country like New



Figure 1. White-tailed deer stag (USDA photography by Scott Bauer (Wikimedia Commons).

England, deer disappear a day or two before the hunting season begins. In metropolitan suburbs where no hunting is allowed, white-tailed deer are almost tame and have no hesitation in eating shrubs by the front door or nibbling on heather in the garden. In Westchester County, 40 miles north of New York City, deer are a major cause of road accidents. They are very common, far more populous than the local vegetation can support, and garden damage is extensive throughout the year. *Hosta* and daylilies (*Hemerocallis*) are prime targets, and heather is usually last on the menu, usually in winter after the larger Ericaceae (rhododendrons, azaleas, and others) have been denuded. But even here unknown preferences are evident. Two *Rhododendron "ponticum*" used to live side-by-side in my back garden. One was always denuded over winter (it's dead now), the other barely touched. Why? The best answer I got from a deer hunter was that one was a step closer to a deer path through the woods than the other. It was a stopping point, and a nibbling point – a matter of habit as much as preference or appetite. Deer also stop to rub against trees, and that stop could

also be a meal-stop from a nearby shrub. The rubbing tree, if it loses its bark, eventually dies, but not from eating.

Deer in Vermont are a different matter. They are just as numerous, but very skittish in all seasons. The enclosing woods may have more food than my garden offers. Only on two occasions over about 30 years (exceptionally deepsnow years) have I seen deer eat my heathers (*Calluna*), pawing away the snow to get at them. Bits of heather scattered on the snow testify to their sloppy eating habits, perhaps unavoidable as they lack upper incisors (there is a cartilage pad instead) which means they have to jerk their heads to snap pieces off low-growing shrubs (like heather) but can still chew twigs (with their molars) at shoulder height, and grasp grasses with their spatulate incisors.

Granted that deer – Odocoileus virginianus anyway – have a very strong preference for native American plants, but have been documented as having eaten non-native heather (even if only a few of them, even if only in famine years), one can wonder what deer do with heather when they do eat it. Is it digestible? Nutritious? Palatable? The answers are probably barely, hardly, and not very.

A seedling starts off life as digestible, nutritious and palatable, as humans show by happily eating cress, mustard, alfalfa sprouts and soy shoots in or out of salads and sandwiches. It gradually becomes less so, and few humans eat the plants that cress, mustard, alfalfa or soy seedlings grow into. One reason is that the sugar coursing through their veins, whether photosynthetic or hydrolyzed from starch reserves, is less able to affect the bitter tastes caused by formation of other plant metabolites. Mainly the loss of nutritive value is caused by the utilization of sugar in the production of cellulose, an indigestible form of starch, which on becoming cross-linked with a phenolic polymer called lignin, forms wood, making a plant strong enough to grow towards the sun, and tough enough to resist attack by insects and by many animals.

Some animals, particularly the ungulates, adapted to prairie life by adapting to prairie grasses by developing a series of stomachs, allowing different kinds of enzymes and microbial attack on their ingested food. While humans can digest a few simple starches (most of our starches have to be gelatinized by cooking: consider porridge and oatmeal), many animals (other than carnivores) can eat raw starches, and sometimes even celluloses partially cross-linked with lignin. When cellulose gets to the stage of wood only one or two species can handle it. Termites can, but only because they have the microbes in their gut to get the sugars out of the wood. The ungulates, especially the ruminants like deer, cattle, sheep and goats, also handle a wide range of cellulosic materials via the aid of microbes of all kinds present in their stomachs. It is there that complex molecules get broken up. Complex starches get broken into ketones and sugars, and sugars fermented mainly into acetic acid, which is then later absorbed into the body and converted (in the body) back to sugar (glucose) to supply the energy needs for brain and muscle function. A much less efficient process of getting energy out of food, but then cows can live on grass and we can't.

The biochemistry of ruminant nutrition has had much attention. One day enough will be learned to get ethanol out of wood cellulose (which is not a food for us) instead of corn starch or corn sugar (which are).

So deer, unlike us, unlike horses, have the digestive apparatus to get some nutritive value out of the succulent non-woody parts of heather. Deer are said to concentrate on certain shrubs like *Rhododendron* because leaf removal leads eventually to succulent new growth. That may be a reason why they persist with only certain shrubs. Sheep may have the same effect on heathers. On moorland roadsides on summer nights one finds resting sheep and profusely flowering heather. Even sheep must feel bored at times – so why not nibble what's next to you?

Do sheep eat heather? At all seasons? I have many relatives in the sheep business. Originally, stealing was the clan speciality, as many relatives in Australia can attest. But today's family connections are in shepherding and auctioneering. When I ask them, "Do sheep eat heather?", they look at me quizzically. "Sheep are stupid, but not that stupid." They do, however, have a marked preference in spring for certain moorland plants, in particular a sedge called bog cotton or cotton grass (*Eriophorum* spp), or by shepherds, mossing or moss-crop. "Once the sheep get on to the mossing you canny get them off." But the sheep are smart enough to graze on grassy patches among the heather, and like deer can enlarge these patches by eating at the edges, deer on one side, sheep at the other. Remember, too, that until Cheviot sheep were imported to the Scottish Highlands, sheep could not be over-wintered on the moor. Heather in winter could not keep them alive. Even Cheviot sheep were starving by springtime.

The effect of deer upon the ecology of its habitat has long been studied in Scandinavia, where teeth patterns and the effect of harsh climates on survival of red deer, elk and reindeer (Loe *et al.* 2006) have been examined in detail. This paper has more than 45 references, but unfortunately I could not find

a mention of heather as a possible factor. Nor was heather mentioned in a long article by Perez-Barberie and Gordon (2001) with about 50 references. Obviously a very important topic, but not for heather. This paper was heavily based on statistical analysis, but did deal with the size of the feeding animal and whether it was classified as a browser or a grazer. Body mass turned out to be the determinant of what kind of vegetation was consumed by ungulates of the artiodactyl ruminant type, and largely affected by the pattern of the dentition.

So whether deer eat heather is just a very small part of a large area of science on ecological and developmental relationships between mammals and the plants they eat. A pity we haven't found the basic epistomological answer yet to that question. It's probably buried somewhere among all those references.

However, there is little doubt, from extensive research carried out at the University of Aberdeen under Professor Gimingham, that sheep and deer do eat heather, and that young heather resulting from a managed muirburn is particularly palatable to sheep and to grouse.

Whether deer eat these man-created flushes of new growth is another question since they, especially the deer, are far-ranging in distance and altitude. I never saw deer eating in these strips of young heather, but then I never saw any muirburn in the wartime years I was roaming the Highlands. The muirburn was stopped for the duration of the war (near enough six years) for fear of aiding enemy planes, so the deer and sheep had to do without this source of palatable growth for at least this time.

Those deer that made it through the war obviously didn't starve, though in all probability they were starving, especially in hard winters, and forced to come down from the mountain tops to raid farms and gardens. Deer, however, and especially horses, have a big advantage over sheep and cows in winter. They can use their hooves to break ice to get to water. Sheep and cattle can't, or won't. Deer and horses can use their legs to paw away snow to get to food. Sheep use their muzzles which get bloodied in crusty snow, and they could starve being unable to get to winter grasses under the snow. Archeologists believe this was an important factor in migration pathways of nomadic pastoral peoples across the steppes in Bronze Age times (Anthony 2007).

These days nature reserves in the Scottish Highlands will often have a little fenced-off area to show the effect of animal exclusion. There is no doubt the heather inside is somewhat taller than in the acres of surrounding moorland. But what strikes me is that inside the plots, growing up between and among *Calluna*,

is a large amount of large leaf greenery that is completely missing outside the fences. The preference over the heather is unmistakeable. But whose?

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Readers wishing to pursue this further will be interested in a further article by Donald Mackay: see Mackay, D., 2015. Do deer eat heather? Part II. *Heather notes* **25** (1, Winter 2015): 2, 5

Erica gracilis: breeding new cultivars and frost-protection irrigation in our nursery

HELMUT HIEDL (with KATHARINA HIEDL) Wasserschwenden 3, 87452 Altusried, Germany (hiedl-gbr@t-online.de)

In plant breeding it is important to distinguish between artificial selection of cultivars and actual plant-breeding, that is the cross-pollination of different parent plants. We have been doing the former at our nursery for as long as we have been propagating plants. Hermann Hiedl, father of Helmut Hiedl, laid a solid foundation for the enterprise, raising his own clones. Later, we expanded to selection for other nurseries, too. Our goal was, and still is, to find the right clones for our customers and to propagate them to provide young plants. At intervals we select new plants from amongst our stock, choosing those that are most similar to the original clones. In this way we can ensure that the clones remain consistent. We also clone interesting sports or mutations of *Erica gracilis*, for example those with salmon-pink, cherry-pink or two-coloured blossoms

We have been breeding plants in our nursery for more than 25 years. The first attempts were with *Erica gracilis* 'Globularis' crossed against each of these clones: 'Fischer', 'No. 14', 'No. 32' and 'No. 50'. Our goal was just to raise seedlings. After the first depressing failures, we found a method of getting viable heather seeds, and were then able to test the resulting plants in large quantities within a restricted space. Recently we have been successfully crossing white-flowered *E. gracilis* with the aim of producing better plants similar in habit to 'Florentine'. We use the "polycrossing" method, but sometimes also collect naturally produced seeds from our own plants. We perform hand-pollination as well, but the yield of seeds is poor with this method. The seedlings are grown on, after which we select the best plants. These are kept in cultivation and crossed with other new cultivars.

The most important selection criteria are the flowering period and frosthardiness. These factors can be affected by growing conditions, but with selective breeding we can achieve further success. Other selection criteria are flower colour and size, habit, vigour, and the overall impression, both as cuttings and plants.

As well as Erica gracilis, we also breed other species of heather.





Figure 1.'Frida K.': the newest selection.

Heidi's®

We market our own *Erica gracilis* cultivars under the registered trademark Heidi's[®]. Heidi's[®] selections are early-flowering, robust or compact varieties that are also easy to grow. These selections are also durable – the more protected the place where they are grown, the longer they will last. Temperatures down to -5° C (23°F) don't matter: they keep their bright color.

The registered trademark Heidi's® encompasses the following named clones: 'Florentine', 'Frida K.', 'Fridolin', 'Käthe K.', 'Konstantin', 'Leonardo d.' and 'Lilli'. When in full bloom, the flowers are very bright and visible at a distance. 'Frida K.' (above), 'Leonardo d.' and 'Käthe K.' also provide a beautiful colour contrast between their flowers and their yellow foliage.

The Heidi's® heathers are given cultivar names according to a special system: early-blooming plants are given masculine names, while the later blooming plants have feminine names. The red colour-group are assigned long names, whereas the pink and white plants receive short names. Plants with coloured foliage are given the names of well-known historical figures with the surnames abbreviated.

We are expanding our range continuously and testing and marketing the Heidi's® cultivars in co-operation with AEV Silber oHG, Ottersberg. At

'Florentine' [®] (Figure 4)

Erect, slender spikes of deep pink flowers, mid- to late-season.

'Frida K.' @ (Figure 1)

Erect, slender spikes of white flowers, robust, long-flowering, durable; early- to mid-season; bright golden-yellow foliage.

Named after the self-taught Mexican artist, famous for her self-portraits, Frida Kahlo de Rivera (1907–1957).

'Fridolin' (Figure 3)

Erect, slender spikes of deep rose-red flowers; robust, long-flowering, durable; early- to mid-season.

'Käthe K.' ® (Figure 6)

Straight, upright spikes of large, deep red flowers; late-blooming; bright golden yellow foliage.

Named after Käthe Kruse (1883–1968), the famous German maker of dolls.

'Konstantin' ®

Compact slender spikes of red flowers, early- to mid-season; very long flowering and durable.



Figure 2. 'Leonardo d.'

'Leonardo d.' ^(P) (Figure 2)

Broad, upright spikes with dark pink flowers in mid-season. Sport of 'Glaser's Rote', named after Leonardo da Vinci.

'Lilli' (Figure 5)

Erect, slender spikes of deep rose-pink flowers, mid- to late-season.



Figure 3. 'Fridolin'.



Figure 4. 'Florentine'.



Figure 5. 'Lilli'.



Figure 6. 'Käthe K'.

Frost-protection irrigation of Erica gracilis

Frost-protection irrigation can be described as targeted spraying of cultivated plants with water to protect their flowers. When the water on the plants starts to freeze, energy is released in the form of latent heat (latent, because the water/ ice stay at the same temperature). This protects leaves and flowers from frost-damage. The aim is to protect plants from frost during the growing period and so prevent crop failure. Frost-protection irrigation was originally devised by the fruit-growing industry in which it is used to protect the sensitive flowers from spring frosts.



Figure 7. Erica gracilis after frost-protection irrigation.

In the nursery we use the frost-protection irrigation only in autumn to protect plants that have finished flowering and are kept outside in the fields (Figure 7). Because of our geographical location in the south of Germany, we use the frost-protection irrigation mainly during the night. During the day, freezing is very rare. At night, however, you can expect frosts from the beginning of September – the earliest recorded frost we have had was on 31 August.

The irrigation must be in the form of fine droplets sprayed from above across the whole area, and is achieved using a rotating sprinkler.



Figures 8 & 9. Erica gracilis covered with ice after frost-protection irrigation.

The use of this method for protecting Erica gracilis required many years of experimentation before we could achieve the right approach. We start the frost-protection irrigation when temperatures are between +1°C and +0.5°C. Initially, the warmth of the water itself protects the plants and flowers. As the temperature decreases and the water starts to freeze, a layer of ice forms around the sensitive flowers and the freezing process itself releases energy in the form of latent heat which further protects the flowers. In this way the sensitive flowers are optimally protected from the effects of lower temperatures. It is very important to note that this works only given a relative humidity of at least 60 percent. At lower humidity, more energy is lost through evaporation than is gained through freezing resulting in increased, rather than decreased, frost damage. The same problem ensues if the irrigation is interrupted too soon. For success, it is necessary to continue with irrigation until both the ambient temperature is above freezing and the ice is completely melted. This process can last well into the next day. If you have to use frost-protection irrigation for a longer period of time, there is a danger that parts of the plant can break off under the weight of ice.

When the frost-protection irrigation and subsequent thawing of *Erica gracilis* (and other plants) have been successful, the plants will be in the same condition as before the frost and we can continue uninterrupted with cultivation and sales.

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The heathers of John Curtis's British entomology

PETER C. BARNARD* and E. CHARLES NELSON**

* 7 The Oaks, Gillingham, SP8 4SW, Dorset.

** Tippitiwitchet Cottage, Hall Road, Outwell, Wisbech, PE14 8PE, Norfolk.

Illustrating an insect alongside plants which are significant to the insect's life cycle has been part of the tradition of natural history illustration for more than three centuries. While insects such as butterflies were often incorporated in mediaeval and later flower paintings, as decorative or symbolic elements, the Frankfurt-born artist-naturalist Maria Sibylla Merian (1647–1717) was perhaps the first to illustrate in a single image the various stages in the life-cycle of an insect, usually a moth or butterfly, with the food-plant of its caterpillar – an innovative approach combining animals and plants that are linked in nature (Figure 1).

John Curtis may not be a familiar name to botanists or plant-lovers in general, but he was one of the most significant entomologists of the nineteenth century. Like many early naturalists he had a broad knowledge, not just of insects but of plants as well. When this became combined with an extraordinary talent for illustrating natural history, the resulting depictions of both plants and insects are remarkable, not just for their detail and accuracy but also because they are accompanied by a genuine understanding of their biology.

Born in 1791 in Norwich, John Curtis was the son of an engraver, Charles Morgan Curtis. His mother was to become a horticulturist following the early death of her husband but, despite the family name, they seem not to be related to the well-known William Curtis, founder of *The botanical magazine* in 1787, even though William also had a keen interest in insects. Around 1817 John Curtis moved to London, having learnt the art of copper-plate engraving from his father. As well as providing natural history illustrations for several books he also collected and sold insect specimens, and seems to have been one of the first entomologists to earn his living in this way. Once established he began work on his hugely ambitious series *British entomology* published in parts between 1824 and 1840, and financed by a list of eminent subscribers. Each monthly instalment consisted of four plates with the accompanying text and the complete work described and illustrated all of the 769 genera of insects



Figure 1. A plate from Maria Sibylla Merian's *De Europische Insecten*, published in 1730, and showing caterpillars on their food-plant, in this case *Calluna vulgaris* (Ling). Despite the book's title, only the plants are identified in the text, not the insects.



heather.

Figure 2. Curtis's Plate 145. Calluna vulgaris Figure 3. Curtis's Plate 574. Daboecia cantabrica (St (ling), and Anarta myrtilli (Beautiful Yellow Dabeoc's heath) (originally as Menziesia polifolia, Underwing). Curtis's original description of Irish heath), and Trox sabulosus. St Dabeoc's heath this aptly named moth can hardly be bettered, does not occur in Britain, except in gardens. It "the caterpillars are found from late July until is found in western Ireland and on the fringes October feeding on ling in Kent, Hampshire of the Bay of Biscay in France and Spain. and Dorset, while the imago flies about heaths The larvae and adults of this family of beetles from early June to late August". This is a day- (Trogidae) are scavengers; as Curtis correctly flying moth that "loves the sunshine". We now reported "As far as we know, they inhabit sandy know that it is found over much of Britain districts, and feed upon dead animals". Curtis's and its caterpillar feeds on both ling and bell coupling of the beetle with the plant may be an example of creating an aesthetically pleasing arrangement rather than suggesting any close biological connection, although both are at least found in similar habitats.



Figure 4. Curtis's Plate 35. *Erica cinerea* (bell Figure 5. Curtis's Plate 13. *Erica tetralix* (crossheather), with *Cryptocephalus biguttatus* (originally leaved heath), and the solitary wasp *Eumenes* as *Cryptocephalus biguttatus*). James Charles *atricornis.* This was also found on Parley Heath Dale, an entomologist friend of Curtis, captured by J. C. Dale and the Reverend William Kirby a single specimen of the beetle on Parley Heath in July 1822. Curtis caught the same insect at in Dorset on 1 July 1823. He swept the insect Parley Heath the following summer. William "off Heath growing on a bank", so Curtis chose Bentley informed Curtis that he had found bell heather as the accompanying plant. This is the wasp "settling upon different species of one of the 19 British species of pot beetles (all Ericae". The only British species in this genus of rather scarce in this country) belonging to the solitary wasps is the Heath Potter Wasp (*Eumenes* large family of Chrysomelidae, or leaf beetles. *coarctatus*), which forms vase-shaped nests of Its larvae are now believed to feed only on clay, usually attached to heather or gorse plants, cross-leaved heath in wet heathland.



Figure 6. Detail of John Curtis's original watercolour (with dissections of mouth-parts of *Eumenes atricornis*) for the plate showing *Erica tetralix* (cross-leaved heath) and *Eumenes atricornis* (see Figure 5, p. 57) (© The Trustees of the Natural History Museum, London). Note the fine details of the gland-tipped hairs on the cross-leaved heath.

recognized at that time. The book was regarded as the best of its kind in the nineteenth century, described as "the paragon of perfection" by the French naturalist Georges Cuvier, and is still consulted today, not only because of its brilliant illustrations and informative text, but also because many new species of insects were described therein.

The typically lengthy nineteenth-century title - British entomology: being illustrations and descriptions of the genera of insects found in Great Britain and Ireland; containing coloured figures from nature of the most rare and beautiful species, and in many instances of the plants upon which they are found - has confused some later authors who have assumed that the plant illustrated with each insect must show a definite association. But a careful reading of Curtis's text shows that sometimes the known food-plant of an insect is figured, while in other cases the insect was simply seen on the flower, or just found in same general area. Some insects (such as fleas and bed-bugs) have no particular association with plants at all, and here Curtis seems to have combined the two illustrations for aesthetic reasons. The published engravings are so finely detailed that they often need a magnifying glass to bring out their best, and it is perhaps little wonder that Curtis's eyesight began to fail by the age of 50; he was completely blind for the last six years of his life, and died in 1862. Of the four species of heather that he illustrated (Figures 2-5), three have definite connections with the insects on the same plate, while the fourth is at least found in a similar habitat to the insect.

Curtis's original illustrations were eventually purchased by Lionel Walter Rothschild (2nd Baron Rothschild) and as part of Rothschild's immense natural history collections became the property of London's Natural History Museum in 1937. Although there have been no comprehensive comparisons of the original drawings against the published plates, one noticeable difference appears on one of the heathers (Figure 6). For some reason, Curtis changed the figure of the heather on Plate 13, although the insect remained the same. The line drawings of dissected parts of the insect also seem to have been altered, although these drawings are seldom used by modern entomologists; in many cases they illustrate parts not used in separating species, or not diagnostic for the genus, and they do not always seem to match the main insect illustrated. There is also evidence that some were drawn by workers other than Curtis, including the Irish entomologist Alexander Henry Haliday. As so often happens, research on an apparently straightforward matter leads to more questions than answers.

Chalk heath

RICHARD CANOVAN 10 Queenborough, Toothill, Swindon, SN5 8DU

Introduction

True chalk heath is a rare habitat. There are plenty of examples of acid heathland overlying chalk and limestone but these have developed on different soils to chalk heath. This is not the place for a detailed discussion of the soils and their parent materials but a brief geological and geomorphological review is necessary to identify clearly what is distinctive about chalk heath (a good summary of the processes is provided by French (1976)). To illustrate it, I examined Lullington National Nature Reserve which also has calcareous grassland, woodland and scrub, but focused on the chalk heath (see cover of this issue).

Types of heathland overlying chalk and limestone

The Society's trip to the Burren in County Clare, Ireland, in 1995 revealed heathland on Carboniferous limestone but with very different origin. The Burren landscape of bare limestone is partly the result of glacial action. The retreating glaciers dumped large boulders on the ice-smoothed surface as well as moraines and drumlins of gravel and boulder clay. In the highly oceanic climate, there developed a thin layer of humus supporting a turf rich in plants that like calcareous soil but with small patches of mor humus supporting heather. That is very different to the heathland of southern England, especially with a more continental climate.

These, overlying the chalk and Carboniferous limestone, are south of the limit of glaciation. In all cases there is some overlying deposit on which an acid soil has developed, but these are generally brown earths rather than podsols where the climax vegetation is beech (*Fagus sylvatica*), much of which was cleared by our ancestors.

Some acidic heathland developed over clay with flints above the chalk. There has been some confusion over what this is, due to a lack of definition, but it has generally been accepted that it is a product of material derived from sedimentary rocks of Tertiary age overlying the chalk which, in turn has been overlain by silty material derived from loess, an aeolian deposit during the last ice age (Pleistocene). The soils that developed were generally quite deep and supported mainly beech woods until cleared by man. The chalk heath at Headley Heath in Surrey, owned by the National Trust, is well known and appears to be a transition between the acidic heathland over the clay with flints on the North Downs plateau and the more calcareous soils on the dip slope. Bell heather (*Erica cinerea*) predominates over ling (*Calluna vulgaris*).

This loess material relates to that in Europe and is considered to have formed during an intensely cold, dry period in the Devensian (also known as the Weichselian), the last ice age when the uplands of southern England had periglacial action with permafrost. True chalk heath developed where these loess deposits directly overlay the chalk and which were unaffected by solifluction due to melting of snow and ground ice. The Mendips have a small area of this type of heathland overlying the Carboniferous limestone and this is the subject of a Habitat Action Plan. Another example is Porton Down, Wiltshire, best known as an example of calcareous grassland with Special Protection Area status (and a SAC and SSSI) but with areas of heath dominated, unusually, by Calluna and juniper (Juniperus communis). In the South Downs Area of Outstanding Natural Beauty, Kingley Vale National Nature Reserve, better known for its yew woodland, has an area of chalk heath near the top of the coomb. But the most outstanding area of chalk heath of this type is Lullington Heath in East Sussex, which has been the subject of academic research and is mentioned in the Domesday Project.

Lullington Heath National Nature Reserve

I made two visits, the first on 2 August approaching from the east above Jevington, then on 23 September via the bridleway from Litlington, a village to the west, up to the Winchesters dewpond. On the first occasion I mainly focused on the footpath but on the second the gate to this was padlocked so I went down the nature trial (Natural England have produced a leaflet describing this trail). Sadly there had been some vandalism which necessitated installation of CCTV.

Flora

On entry to the heath via the permitted path one is greeted with six-foot high rosebay willowherb (*Chamerion angustifolium*). Once through the gate, one of the plants I looked for in association with the calcifuges was salad burnet



Figure 1. Bell heather (Erica cinerea) with gorse and wood sage (Teucrium scordonia).

(Sanguisorba minor) as, when established, this has deep roots of 60 cm and more (Tansley 1939) so may have rooted in the underlying chalk. Other key plants of chalk heath were clearly visible including thyme (*Thymus pulegioides*) and tormentil (*Potentilla erecta*) growing together. One of the most prominent plants, although never dominant, was viper's bugloss (*Echium vulgare*) with vivid blue flowers. It was present around the chalk grassland and along the centre of the chalky bridleway from Litlington, as well as on the chalk heath. Another plant readily found in the heathland was betony (*Stachys officinalis*). Burnet rose (*Rosa pimpinellifolia*) was present and another fairly common perennial, usually found growing with *Erica cinerea*, was wood sage (*Teucrium scorodonia*) (Figure 1), normally considered a calcifuge but able to tolerate calcareous soils, both of which occur in the Burren.

Natural England kindly provided a species list (updated in 1999). This revealed that there may have been a few changes in the last 15 years. For





Figure 2. Ling (Calluna vulgaris) with bell heather.

example, common centaury (*Centaurium erythraea*) which was in the Eastern Paddock area appears to have spread to the chalk heath. But I could only find about half the plants on that 15-year-old list in the chalk heath, perhaps due to my first visit not being early enough, my inability to access part of the heath on my second visit, lack of time and my limited skills at identifying plants without their flowers.

A word about the heathers

The slightly acid soil has formed over the aeolian deposit above a layer of flint rubble that was derived from the upper chalk, not later sediments, by cryoturbation during the ice ages when the South Downs were tundra. Soil formation above this siliceous layer would have taken place during the interstadials when conditions were warmer.

The establishment of *Calluna* (Figure 2) will have led to some further lowering of pH under the bushes due to the effect of its litter: this chalk heath

was specifically researched by Grubb, Green and Merrifield (1969) and the effect of a large bush with a partly suppressed *Erica cinerea* was reproduced by Gimingham (1972). But on both visits my impression was that *Erica cinerea* was the main pioneer with isolated plants some way from the main heath, although there were some very good *Calluna*. However there was evidence that the *Calluna* was being grazed preferentially, perhaps because of the bell heather's association with gorse (*Ulex europaea*); certainly there were some excellent clumps of *E. cinerea* very close to the gorse (Figure 1).

It would be interesting to see if the *Calluna* on this chalk heath has adapted in the way described by Marr and Bannister (1978), and whether cultivars known to be more or less soil-tolerant, such as 'County Wicklow' and 'Sunset', could grow in such conditions. That is obviously not possible but might be replicated. Marr and Bannister used material from the limestone heath on Arnside Knott in the Arnside and Silverdale Area of Outstanding Natural Beauty (AONB) in the Lake District, and from Loch Tay limestone. The former is a similar example but where aeolian deposits filled fissures in the limestone leading to a mix of calcifuge and calcicole species similar to Lullington (Arnside and Silverside AONB Management Plan 2004 to 2009).

Fauna

As part of the management plan for Lullington Heath, scrub control and grazing have been important in restoring the heath; grazing had been stopped because of fears of it polluting a public water supply but was renewed in the 1970s. Herdwick sheep (Figure 3) graze the heath. Exmoor ponies are also occasionally allowed to graze to control the invasive scrub, although that is valuable for breeding birds.

There were fewer butterflies and moths on the chalk heath itself than I expected, perhaps because of the limited number of plants in flower. But there were many bees and wasps on *Erica cinerea* especially during my first visit, and when I went to Winchesters Pond there were dragonflies galore.

The heath is also home to some adders but I did not see any, taking great care to avoid them.

Management of the NNR and its wider role

The heath is part of a National Nature Reserve and Natural England has published a leaflet which explains briefly its history and management. Its



Figure 3. A Herdwick sheep at Lullington Heath NNR.

importance is reflected in documents by the planning authorities for the area, recent research on bees and work on the factors that determine which plant species set up on chalk heath.

The chalk heath habitat is very fragile and Natural England has a Long Term Monitoring Project in place. The Reserve has a monitoring station which is part of the Environmental Change Network recording:

> weather information (hourly) pollution: diffuse ammonia & wet (precipitation) deposition (monthly) butterflies through the flying season birds (twice a year) vegetation (every four years) soils (every six years) (Lou Parkinson, Natural England, pers. comm.).

Also, as part of the Automatic Urban and Rural Network (AURN), ozone (8hour mean), sulphur dioxide (15-minutes mean) and nitrogen dioxide (hourly mean) are monitored. This is to help track compliance with the Ambient Air Quality Directives.

Acknowledgement

Thanks are due to Natural England and particularly Lou Parkinson, who provided the list of plants previously observed in the NNR and provided helpful comments on the draft.

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Proceedings of The Heather Society 2014 43rd Heather Society Gathering 12–15 September 2014



It was a beautiful warm, sunny afternoon when fellow heather enthusiasts gathered for yet another Heather Society Conference, the venue this year being at the Royal Victoria Hotel, Llanberis, which is in the dramatic shadow of the Snowdonia National Park. Would the glorious weather stay with us in temperamental North Wales? We all hoped so, as greetings were exchanged upon arrival.

At dinner, the panoramic view was admired and acquaintances renewed, after which the conference was opened by our Chairman, David Edge. He introduced John Harold, Director of the Snowdonia Society, which was established as a charity in 1967, working to protect, enhance and celebrate the special qualities of the National Park. John has lived in Snowdonia's northern edge for over 20 years, spending much of his time carrying out ecological surveys and delivering practical conservation management. In 2013 he re-discovered a rare montane species of moth on Elidir Fach. He focused his talk on the very rare montane heath, which is only found in Wales and parts of Scotland. It is upland, treeless, windy, misty, foggy, has high rainfall and remains snow-covered for months on end. It resembles tundra and links Wales to arctic and

alpine regions. Dominated by mosses, such as *Rhacomitrium*, the flora includes matchstick lichens, bilberry, sedges and dwarf willow. There is a mycorrhizal fungus which grows on the dwarf willow with the former being taller than the latter, so the montane heathland is often referred to as an "inverted woodland". There is also some unique fauna such as the Snowdon beetle and the dotterel, a member of the plover family. The female of this wading bird is the colourful member of the pair and one that doesn't either incubate the eggs or raise the young! After a short question-and-answer session, John Griffiths thanked John Harold for his most interesting and fascinating talk. Then it was time for bed or, for some night owls, the bar!

Saturday dawned cloudy but fortunately dry. After a hearty breakfast, we boarded the coach with our most informative Irish driver Sean, for the drive southwards, via Aberglaslyn Pass and the pretty village of Beddgelert, to Plas



Brondanw gardens, near the village of Garreg, Llanfrothen. In 1904, Clough Williams-Ellis (he of Portmeirion fame) was given Plas Brondanw by his father and although having remained in the family, both house and garden had been badly neglected. So the young Clough set about re-creating the garden, returning it to its original plan. Williams-Ellis described his gardens as "a somewhat surprising mixture of commanding viewpoints and vistas aimed at Snowdonia's summits and intimate enclosed compartments ... punctuated by liberal seasoning of gateways, urns, statues, fountains and flights of steps."



The head gardener, Dylan Williams, showed us round this engaging, now Grade 1 listed, garden. Situated some 100 feet above sea level, it is sheltered, enjoying peaty, acid soil with rare frosts. With the predominance of topiary monuments, with yew, box and beech hedging, it is essentially a green garden but in early autumn there were splashes of colour, notably Welsh poppies, David Austin roses, white Japanese anemones and canary creeper (*Tropaeolum speciosum*) adorning yew. Particularly beautiful were the massed hydrangeas, of all hues. It would be interesting to return in spring or early summer to enjoy the significant plantings of rhododendrons and azaleas. The stone steps with brightly painted wrought ironwork are certainly indicative of Clough's future work at Portmerion.

A temporary contemporary art exhibition received varied comments and interaction by members of our party. Several portraits were taken through the 'windows'. Nobody particularly fancied eating the giant cupcakes or to have to choose between 'Heaven' and 'Hell' ('Nefoedd' and 'Uffern') on the signpost! Dylan was warmly thanked for an excellent tour of this intriguing, tranquil garden. David Sprague had the last word, however, in suggesting that the growing conditions would be ideal for the inclusion of some heathers! After a welcome cup of coffee accompanied by a Welsh cake, we were driven to Porthmadog for an excellent buffet lunch at the Royal Sportsman Hotel.



Senior members of The Heather Society enjoying the Welsh Highland Railway!

Then we were in for a treat: a steam-hauled ride on the Welsh Highland Railway, through the dramatic scenery of Snowdonia from Porthmadog to Caernarfon, a distance of 25 miles taking more than two hours. The recently restored railway uses the largest two-foot gauge steam locomotives in the world. We were served cream scones while we marvelled at the magnificent scenery and engaged in much chin-wagging! We did, of course, pass by swathes of wild *Calluna vulgaris* and clumps of *Erica cinerea* as the train worked its way round horseshoe bends, along zig-zags and through tunnels. We arrived rather numbbummed at our destination, the seats being more suited to small Victorian backsides than ours, with just enough time to take a quick snap of Caernarfon Castle, before being whisked back to base for the evening talk.

Our speaker, Bettina Harden, a garden historian, has special knowledge of Welsh gardens. She has been Chairman of the Welsh Historic Gardens Trust, founded the Gateway Garden Trust and is currently serving as an adviser to the Capability Brown 300 Festival, scheduled for 2016. Nanhoran Estate on the banks of the Horan river has been her husband's family home for over 700 years, so her talk concerning the development of country gardens was with reference with the history of Nanhoran. She traced the evolution of such estates, together with the various fashions which succeeded each other. Such trends included knot gardens designed to be seen from above, great red sandstone mansions, water terraces, fountains, wedding-cake topiary, gates, statues, walled gardens, woodland walks, wild gardens, fake standing stones, grottoes and even
ivy clad 'ruins' with hermits installed! Kitchen gardens and glasshouses became popular in the nineteenth century, although the tax on glass remained until 1848. Now, in the twenty first century, the quadrants of Nanhoran's old kitchen gardens have been restored, roses planted in Jeykyll fashion with chain and rope; rhododendrons have been acquired from Bodnant. However, devastation can occur, for 500 trees were lost in the adverse weather in January 2014. Bettina certainly gave us a fascinating insight into the history of gardening. She was presented with a basket of colourful *Calluna*. We were certainly ready for our excellent dinner, after which some of us found time for a relaxing drink in the bar before retiring.

We departed promptly at 9am on a bright Sunday morning for the short coach drive to Plas Cadnant gardens, just over the Britannia Bridge on the Isle of Anglesey. Having travelled up the pretty driveway, flanked at its beginning by shade-loving shrubs and ferns, we parked in brilliant sunshine and were immediately greeted most warmly by Kay. We were ushered into the spacious new visitor centre where, once we were sitting comfortably, we were given a potted history of the estate. Originally 3,000 acres, it was owned by the Price family from 1804, but by 1928, by then reduced to 900 acres, it was sold. Major



Thomas Fanning-Evans bought 300 acres, added electricity, bathrooms, central heating and a tennis court but by the 1940s, with dwindling resources, the estate declined and was in 1993 advertised in *Country life* as being in need of modernization. The original house was a gentleman farmer's residence rather than a country house. The garden had Humphry Repton influences being described as 'Picturesque' but by the 1990s was overgrown and abandoned.

Kay introduced us to Anthony Tavernor, a Staffordshire dairy farmer

turned horticulturist, the owner of Plas Cadnant since 1996, when he bought 200 acres. He began by painstakingly converting outbuildings into holiday the cottages (now listed buildings) and restored the herb garden. Then in the two-acre walled garden he constructed a raised terrace walk and a double herbaceous border. He reinstated an unusual pond: surrounded by dry-stone walls, the clay puddling is on their outside. He erected some attractive slate fencing, which is apparently good for keeping out sheep. He then turned his attention to the wilder woodland valley gardens. Before we emerged into the sunlight, David Edge presented Anthony with a tray of heathers - mixed



pinks and white *Daboecia* – which surprised and delighted him. Then we began our much anticipated tour. Anthony was an absolute mine of information imparting useful snippets, such as how to avoid box blight by cutting only once a year and not feeding!

The double herbaceous borders, installed in 2006, are impressive, with the perennials being framed by hedges and buttresses of English yew and fastigiate Irish yews. They are colour-themed in Gertrude Jekyll-style, providing interest for a long period from June to late October. The woodland garden, forming a valley bowl, presented a great challenge as cherry laurel together with trees such as sycamore and ash had spread throughout the the valley and needed to be cleared and burnt. Extensive rebuilding of the steep slopes to support new paths followed, using stone mainly from the estate. The upper and lower valley gardens together with the jungle have been extensively planted with choice trees and shrubs, underplanted with many ferns which are now spreading most successfully. There is a huge original lime tree in the jungle and combined with foliage plants such as Fatsia and bamboo is wonderfully architectural. Two Eucryphia must be a magnificent sight when in full flower in midsummer. Fortunately the original covering of snowdrops remains in the upper valley. The carpeting bluebells must be a sight to behold too. Camellias, magnolias, rhododendrons, azaleas and candelabra primroses also abound, followed in summer by giant Gunnera and many colourful hydrangeas. Anthony kindly allowed us to view a newly reclaimed area, awaiting planting, which was not yet open to the public. We finished our tour in the upper walled garden, a dry area with Mediterranean-style planting, before the group photo by the magnificent entrance gates.

This is an awe-inspiring garden that merits visiting again and again. The overall vision of Anthony Tavernor and the amount of hands-on work accomplished with his very small team is amazing. We were so privileged to experience his passion and enthusiasm for the on-going development of this truly special 'hidden garden', which has become a plantsman's paradise.

We enjoyed some tasty sandwiches in the modern cafe before clambering back onto the coach. We retraced our route over the Menai Strait and drove along the coastal road which offered good views of Great Orme and Penrhyn Castle, to Glan Conwy, on the way to the renowned Bodnant Gardens, acquired by the National Trust in 1946. Created by five generations of one family, the 80-acre garden is superbly located, with spectacular views across Snowdonia. There is far too much to see in a short visit but we were able to wander at will along the meandering paths. The Italianate terraces are an absolute marvel of hand-built garden design. It was interesting to see *Erica terminalis* in flower, planted as an edging hedge along the two borders on the lily terrace. Bodant was perhaps not at its best at this time of year but the rose garden still had plenty of colour – and scent! Of particular note was the hot herbaceous border near the entrance to the garden with its clumps of *Helenium hoopesii* 'Mahogany', *Stipa gigantea* and other tall grasses. Swathes of *Clematis tangutica* on the walls of the



croquet terrace also looked impressive. After a browse through the plant centre and a quick cup of tea, it was all too soon time to depart. Sean took the longer but more picturesque route back to the hotel via pretty Betwys-y-Coed and the Llanberis pass.

After a convivial dinner, we assembled for the last time in our conference room for the AGM, after which there was an open forum. Charles Nelson showed pictures of *Erica manipuliflora* (whorled heath) and *E. spiculifolia* (Balkan heath), together with some new hybrids made by Kurt Kramer, all growing successfully in his garden. Richard Canovan, having visited Galicia, gave a brief photographic presentation of *E. arborea*, *E. mackayana*, *E. tetralix* and *Daboecia*. He found *E. tetralix* waist high in wet heathland, together with *E. ciliaris* and *E. erigena*. He also spotted *E. umbellata* growing in mud! In a regeneration area he found *E. scoparia* and plenty of *E. cinerea*.

Dave Brown has been very busy redesigning the Heather Society website, with a view to reducing costs and fixing problems with touch-screen access. He said it should be fully operational by November 2014 and will include online member registration, access to member benefits and *Bulletins*, the cutting exchange system, cultivation advice, contact details update for members together with the ability to pay for services using debit/credit cards and PayPal.

The quiz this year – identifying *Calluna vulgaris* cultivars – resulted in Barry Sellers being the worthy winner! This was followed by an auction of the remaining beautiful heathers brought by David Edge which hadn't been snapped up by eager members earlier. John Griffiths then showed us pictures of the development of his new garden between 2011 and 2014. It was amazing to



Members in the gardens at Plas Brondanaw (left) and Plas Cadnant

see how rapidly the heathers grew in that short time. Alan Kay showed enticing pictures of Connemara, the venue for next year's conference, to whet members' appetites, after which deposits were forthcoming from some members there and then!

This busy, enjoyable and stimulating conference was closed by David Edge, with much gratitude expressed to Susie and Alan Kay for their hard work, expert choices of venue, speakers and visits – also for managing to manipulate the the Welsh weather in our favour!

After yet another substantial breakfast in our own dining room with the splendid view, we departed with thoughts turning to next year's gathering in the Emerald Isle.

Annabel Darnton (photography by Leigh Darnton)

Registered names

'Stardust Muxoll': a new St Dabeoc's heath (reg. no. D.2011.01)

In *Heathers* **11**: 11–13 (2014), I wrote about my first "double" St Dabeoc's heath introduced as 'Romantic Muxoll' with pendulous rose-pink flowers that are deciduous. My second selection (and probably not the last) 'Stardust Muxoll' (see Heathers **9**: 72) has white flowers and is the first "double" with ascending flowers, a characteristic inherited from her grandmother, 'White Blum'.

Standing close to this new cultivar you can see clearly that it has double flowers, whereas the two other "doubles" on the market, 'Charles Nelson' and 'Romantic Muxoll', need much closer inspection if you want to enjoy the doubleness. The first part of the name, Stardust, alludes to the extraordinary white flowers. Single white flowers are translucent, which makes them a little grey. The many layers of white "petals" inside each individual flower make the double flowers reflect all the sunlight.

Unfortunately 'Stardust Muxoll' resembles her grandfather, 'Charles Nelson', and the old flowers are not deciduous. Also, like the grandfather, 'Stardust Muxoll' is not especially vigorous.

My breeding of double St Dabeoc's heaths began about 18 years ago. During the years I have had some other white doubles. A great problem with all previous doubles has been the weight of the flower spikes, especially late in the flowering season when each spike carries several heavy dead flowers (because they do not drop off) as well as equally heavy fresh flowers and buds. The spikes were bent to the ground after rain and under irrigation, and the flowers splashed with soil. A great pity because I had one double white with numerous especially large, long flowers, but it lost its garden-worthiness because of the bending spikes.

After several years breeding work I have concluded that as long as I cannot retain the deciduous character from 'Romantic Muxoll', any new selection should have relatively small flowers in short spikes like 'Stardust Muxoll

'Stardust Muxoll' is available in the UK from Forest Edge Nursery, Spring Park Nursery and John Hall Plants Ltd.

Jens Kjærbøl



Daboecia cantabrica: left to right, 'White Blum', 'Charles Nelson' and 'Stardust Muxoll'

Explanation of symbols

- Registration number, date, and name and address of registrant.
- * Description of cultivar.
- Previously published references, if any.

- * Origin of cultivar
- A Previously published images, if any.

Calluna vulgaris

'Emma'

- ® C.2014.03: registered on 9 January 2014 by Helmut Hiedl, Altrusried-Krugzell, Germany
- * Flowers-buds white, 4mm long, 1.5mm across; September–October. Foliage dark green with mid-green new growth. Habit upright, after 3 years to 30cm tall x 25cm across (pruned). Grows without problems in hot summers.
- PBR granted on 20 January 2011. Deliberately raised seedling made in October 2007 by Helmut Hiedl; selected in October 2008.
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).

'Freya'

- ® C.2014.02: registered on 9 January 2014 by Helmut Hiedl, Altrusried-Krugzell, Germany
- * Flowers-buds blue-violet (RHS72C-74C; H3 lavender), 4mm long, 1.5mm across; September-October. Foliage dark green with mid-green new growth. Habit upright, after 3 years to 30cm tall x 25cm across (pruned).
- CLL 410 by 7652; PBR granted 27 April 2011. Deliberately raised seedling in October 2005 by Helmut Hiedl; selected in October 2006.
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).

'Hilda'

- ® C.2014.01: registered on 9 January 2014 by Helmut Hiedl, Altrusried-Krugzell, Germany
- Flowers buds brilliant violet-blue (RHS80C-77C; H3 lavender), 4mm long, 1.5mm across; September-November; foliage dark green with mid-green new growth; habit upright, after 3 years to 30cm tall x 25cm across, pruned.
- Deliberately raised seedling, cross made in October 2005 by Helmut Hiedl; selected in October 2006.

- Beathers 11: 71 (2014); http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).

'Luisa'

- C.2014.04: registered on 9 January 2014 by Helmut Hiedl, Altrusried-Krugzell, Germany
- Flowers-buds blue-pink to violet (RHS74C–78C), 4mm long, 1.5mm across; August–October. Foliage dark green with mid-green new growth. Habit upright, after 3 years to 30cm tall x 25cm across (pruned). Early flowering.
- * Deliberately raised seedling, cross made in October 2005 by Helmut Hiedl; selected in October 2006.
- Heathers 11: 71 (2014); http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).

'Rena'

- ® C.2014.06: registered on 11 September 2014 by Kurt Kramer, Edewecht-Süddorf, Germany.
- * Flower buds H8, September December; foliage mid-green; habit upright, after 3 years 30cm tall x 25 cm;
- * Sport on 'Hera', found by Kurt Kramer in October 2007.

'Sarah'

- ® C.2014.05: registered on 9 January 2014 by Helmut Hiedl, Altrusried-Krugzell, Germany
- * Flowers-buds white, 4mm long, 1.5mm across; September–November. Foliage light green, in summer with light green new growth, turning light green to yellow in autumn. Habit upright, after 3 years to 30cm tall x 25cm across (pruned).
- PBR granted on 20 January 2011. Deliberately raised seedling made in October 2007 by Helmut Hiedl; selected in October 2008.
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).
- http://www.hiedl-gbr.de/calluna.htm (accessed 2 January 2015).

'Selma'

- ® C.2014.07: registered 29 December 2014 by Helmut Hiedl, Altrusried-Krugzell, Germany
- * Flowers red, dense.
- * PBR applied for. Deliberately raised seedling, cross made by Helmut Hiedl.
- http://www.hiedl-gbr.de/aktuell.htm (accessed 2 January 2015).

Erica

E. cinerea 'Molly Rose'

- E.2014.03: registered on 3 November 2014 by John Hall, John Hall Plants Ltd, Headley Down, Hampshire, UK.
- * Deep rose-pink flowers (H7) verging onto cerise (H6), single, July– September; corolla urn shaped 6mm long x 4mm across; calyx, anthers, and style-end ruby (H5); calyx length 3 mm. Foliage dark green; new growth bright green; habit compact.
- * Wild-collected, found in August 2013 at Frensham Ponds Common, Surrey, by Molly Rose Hall.
- Heathers 12: 18–22 (this issue).

E. × darleyensts 'Snow Surprise'

- ® E.2014.02: registered on January 2014 by Kurt Kramer, Edewecht-Süddorf, Germany.
- * Flowers clear white, corolla 5mm long, 2.5mm across; anthers dark brown; calyx white, 2.5mm long; foliage light green; after 3 years 25cm tall x 30cm across (not pruned)
- * Sport on White Spring Surprise' in winter 2007; found by Kurt Kramer; introduced autumn 2011.
- B Heathers 11: 72 [name only].

Other names new to the international register

Calluna vulgaris

• 'Berta'

- * Pure white flowers, with bright yellow foliage, later flowering than 'Golden Angie'
- Sport from 'Golden Angie'.
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

79

- 'Daria' (CLL501): Blatt für Sortenwesen 2014, Heft 11: 309.
- 'Fiala' (CLL499): Blatt für Sortenwesen 2014, Heft 11: 309.
- 'Gabriela Zawadski' (CLL479): Blatt für Sortenwesen 2014, Heft 10: 257.

• 'Inid'

- * Pure white flowers, with bright yellow foliage, later flowering than 'Golden Angie'.
- A sport from 'Moulin Rouge' found and propagated by Johannes van Leuven. Named after Inid Schiller, Silber Gartenbau, Ottersburg, Germany.
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

• 'Lilli' (CLL413)

- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

• 'Myrna'

- * PBR granted to Eden's Creations B.V. on 26 August 2008.
- CPVO website accessed 5 January 2014.

• 'Neongrün'

- * Foliage bright green; the cultivar does not produce flowers. x Raised and introduced by Kurt Kramer.
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).
- 'Nirina' (CLL503): Blatt für Sortenwesen 2014, Heft 11: 309
- 'Oribel' (CLL502): Blatt für Sortenwesen 2014, Heft 11: 309
- 'Ortense' (CLL504): Blatt für Sortenwesen 2014, Heft 11: 309
- 'Pink Emma'
- * Flowers pure pink.
- Sport on 'Emma'.
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

• 'Rita'

- * Flowers pure pink, with remarkably stright upright shoots.
- Seedling raised by Hiedl gBr.
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).
- 'Sascha'
- * PBR granted to Eden's Creations B.V. on 26 August 2008.
- CPVO website accessed 5 January 2014.
- 'Sefa' (CLL 498): Blatt für Sortenwesen 2014, Heft 10: 257.
- 'Swea' (CLL500): Blatt für Sortenwesen 2014, Heft 11: 309.
- 'Schwarz Aufrecht'
- * Foliage dark green; habit upright; the cultivar does not produce flowers.
- * Raised and introduced by Kurt Kramer under the label "Sunset Line".
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).
- 'Schwarz Breit'
- * Foliage dark green; habit upright; the cultivar does not produce flowers.
- * Raised and introduced by Kurt Kramer under the label "Sunset Line".
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

- 'Zora Neu'
- * Foliage yellow and orange; habit upright; the cultivar does not produce flowers.
- * Raised and introduced by Kurt Kramer under the label "Sunset Line".
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

Erica

- E. lusitanica 'Sunshine'
- * Foliage yellow, fine; habit upright.
- * Seedling. Resistant to Pestaloliopsis (an endophytic fungus that attacks heathers); suitable for cultivation under glass.
- http://www.hiedl-gbr.de/aktuell2.htm (accessed 2 January 2015).

Cape beath cultivars

Erica gracilis

· Gerber": Erica gracilis - Stecklinge, Hiedl GbR 2014 (online)

* Spat weinrot.

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• 'Mister X'
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* PBR granted on 12 July 2010, to Eleonore Dettmer & Peter Dettmer als GbR.

• 'Nr. 63 A 02': Erica gracilis - Stecklinge, Hiedl GbR 2014 (online)

- ✤ Mittel neurot
- 'RS 90': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- * Spat weinrot

'Stöckli Spä ': Erica gracilis - Stecklinge, Hiedl GbR 2014 (online)
* Sehr spat, rot

* Sem spat, for

• 'TW A 02': Erica gracilis - Stecklinge, Hiedl GbR 2014 (online)

- Mittel weinrot
- Weiß Stöckli': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- * Mittel weiss

• 'WFW': Erica gracilis - Stecklinge, Hiedl GbR 2014 (online)

- ✤ Mittel weinrot
- 'Bunt 2 farbig': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- · 'Bunt 3 farbig': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- 'Florentine': Heathers 12: 49-51 [this issue]
- 'Frida K.': Heathers 12: 49-50 [this issue]
- 'Fridolin': Heathers 12: 49-51 [this issue]
- 'Käthe K.': Heathers 12: 49-51 [this issue]
- 'Konstantin': Heathers 12: 49-50 [this issue]
- 'Leonardo d.': Heathers 12: 49-50 [this issue]
- 'Lilli': Heathers 12: 49-51 [this issue]
- 'Nr. 14 A 93': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- 'Nr. 32 A 93': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- 'Nr. 50 A 96': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)
- 'TW Spät': Erica gracilis Stecklinge, Hiedl GbR 2014 (online)

Recent publications

P. Wyse Jackson, 2014. Ireland's generous nature. The past and present uses of wild plants in Ireland. Missouri Botanic Garden Press, St Louis, USA. ISBN 9780915279784. US\$ 60.

The striking image on the dust-wrapper of bell heather in full bloom among the exposed, bleached stump of a pine tree that had long ago been subsumed by peat, is a fine *entré* for heather enthusiasts into a fascinating book. Beautifully and expansively produced, this is a hefty work (over 750 pages, weighing more than 5lbs = 2.36kg) which sets out to record the ethnobotany of Ireland. Peter Wyse Jackson is to be congratulated on the depth of his research, which ranges from the "fiction" of James Joyce through works about botany, Irish crafts, archaeology and medicine, to postage stamps, postcards and botanical watercolours. Illustrated with modern photographs as well as archival materials, *Ireland's generous nature* wears its profound scholarship lightly so it can be browsed for pleasure by anyone with an interest in plants.

Heathers have - or have had - numerous uses (listed here as they appear in Irelands generous nature): in basketry, for ropes, in tanning leather, for thatching, in dyeing, and for herbal teas (Erica cinerea) or to make wines, beers and liqueurs (Wyse Jackson does refer to the legend about Viking ale, or "Danes' drink", a beer supposedly made from heather which I recounted in detail in the 2000 Yearbook (pp 25-34)). Heathers also have had "medicinal uses": ailments treated included asthma, coughs and sore throats, heartburn and other heart problems and rheumatism, as well as stomach upsets, aches and indigestion. Heather even provided "soft bedding" - in his 1772 Essay towards a natural history of the county of Dublin, the English Quaker physician and naturalist, Dr John Rutty, wrote that heather beds "may in some measure vie with feather beds, and greatly exceed them in wholesomeness, refreshing and strengthening the weary, so that they who lie on them rise lively and chearful." The flowers, he added, were "very profitable for Bees for filling their hives in autumn" although the reddish honey was the "least esteemed". There is a chapter about native Irish plants which have entered gardens, and, needless to say, heathers are included. Not unexpectedly, there are dozens of "entries" for various heathers throughout the book, as well as illustrations, including (as a second frontispiece), Miss Lydia Shackleton's watercolour of bell heather from the archives of the National Botanic Gardens, Glasnevin,

The uses of plants are principally given in the numerous tables and in the alphabetic "encyclopedia", arranged by Latin (scientific) names: *Calluna* (pp 219–221), *Daboecia* (p. 279) and *Erica* (p.298–301). Peter Wyse Jackson takes a broad view so "wild plants" include species or hybrids that are not necessarily true natives of Ireland, such as *Erica ciliaris* (Dorset heath) and *Rhododendron* (this familiar, very invasive shrub is now considered to be a hybrid of complicated origin and not true *R. ponticum* L. – its aggressive habits have led to its new name, *Rhododendron* × *superponticum* J. Cullen (*Hanburyana* 5: 11–24. 2011). Interestingly he noted that in Britain *Calluna* was used to pack pottery, but makes no reference to the theory that it was this exact purpose, the

packing of wine jars to prevent breakage during sea voyages from northwestern Iberia, that has been invoked to explain why *Erica erigena* suddenly appeared in western Ireland in mediaeval times.

The Society's Yearbooks sometimes contained material on uses – real and imagined – of heathers in Ireland. A notable instance was in connection with the visit a score of members made to counties Galway and Mayo in 1968. Yearbook 1 (no. 7: 9–11. 1969), included a photograph of lobster pots (between pp 32 & 33) on the quay at Portulin in northwest Mayo. A locally made one had a frame of osiers interlaced with heather. Another version, reproduced here, of the same scene (attributed to the late P. J. O'Hare) is in the archives of The Heather Society; the heather pots are at the edge of the quay (right) beyond two "French" pots. In *Ireland's generous nature* (p. 221), Peter Wyse Jackson notes that an example of such a lobster pot is in the Museum of Country Life in Castlebar, County Mayo. It was made quite recently by Joe Hogan, who claimed that heather-made pots "are more effective in trapping lobster because they smell less than willow and look more natural in the setting of seaweed-covered rocks in which they are placed."



As I have remarked elsewhere (*Archives of natural history* **42**: 186. 2015) as a sourcebook for social historians, botanists and folklorists this work cannot be bettered except perhaps by a second edition. Meanwhile, I wholeheartedly commend *Ireland's generous nature* to all interested in heathers, whether in Ireland or elsewhere: put it on your 2015 wish-list immediately!

E. Charles Nelson