



Royal
Botanic Garden
Edinburgh

the Botanics

ISSUE 72 | AUTUMN 2018

Christmas at the Botanics

The magical, botanical, illuminated trail

Bug wars

Biological control at RBGE

Scottish Plant Lore

Scotland's flora through
the centuries



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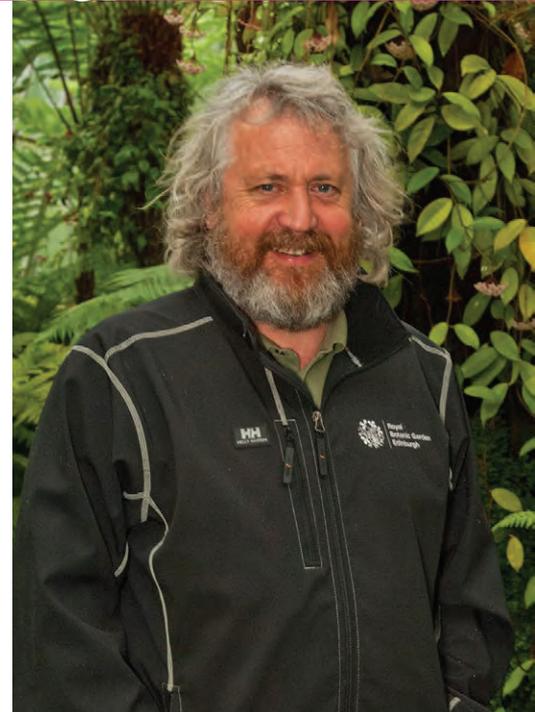
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In conversation with Peter Cairns

Reciprocal admission to other Botanic Gardens
Members' Events

A visit to any one of our four Gardens this autumn will perhaps mean different things to different visitors. This may range from enjoying a pleasant relaxing walk through to actively studying the biodiversity of plants and everything in between. In an increasingly busy world, the value and solace that people gain from being in a garden and being able to work with plants is now recognised as being extremely important to our health and well-being. As horticulturists, we are extremely fortunate that our work in nurturing the plant collections and garden landscapes is enjoyed and can mean so much, to so many visitors, on many different levels: from actively engaging school and community groups with plants, to offering an award-winning Edinburgh Festival venue.

However, we are all currently enjoying the work and vision of previous generations of horticulturists, and a key future challenge for the RBGE horticultural team will be attracting the next generation with the skills and knowledge to help cultivate the 13,500 species and 130,000 plants, and manage RBGE's four Gardens. If we are also to continue to actively protect the world's plant life and strengthen plant communities in fragile habitats



both here in Scotland and across the globe, we need to be able to transfer the horticultural skills and knowledge gained over many years. We are extremely grateful to the funding support for horticultural apprentices at Benmore and Edinburgh to take the first steps in this process.

I do hope you not only enjoy this issue of the Botanic but also take the opportunity this autumn to visit each and every one of our four gardens and help support the work of RBGE.

**David Knott DHE, SHM,
C Hort FCIHort
Curator of Living Collections**

The Royal Botanic Garden Edinburgh is a Non Departmental Public Body (NDPB) sponsored and supported through Grant-in-Aid by the Scottish Government's Environment and Forestry Directorate (ENFOR). The Royal Botanic Garden Edinburgh is a Charity registered in Scotland (number SC007983).

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Opinions expressed within *the Botanics* are those of the contributors and do not necessarily reflect the views of the Royal Botanic Garden Edinburgh.

All information correct at time of going to press.

Printed by BARR Printers Ltd.



Cover image: Sycamore by Janis Bain, watercolour (contemporary).

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News

The Big Botanic BioBlitz and the 1000th Species

One of the ways the garden has celebrated nature and biodiversity this year was to hold the Big Botanic BioBlitz. This was a day for our visitors, enthusiasts and local experts to come together and discover the Garden's wildlife. If that wasn't reason enough to join the fun, they had the opportunity to find the RBGE's 1000th species!

Out of a grand total of 332 species found, we had 20 new records for the Garden, which included three hymenoptera, two lacewings, three spiders, five bugs, three beetles, two flies/bark-flies and two moths. These included the champion moth,



Above: The champion moth *Sideridis rivularis*.

which was the 1000th record for the Garden.

This beautiful moth, *Sideridis rivularis*, is named the 'champion' after its larval food plant. The caterpillar feeds within the seed capsules of various campion (*Silene*) and catchfly (*Lychnis*). A big thank you goes to Katty Baird for moth trapping at the event and for finding such a lovely species to add to our lists.

Volunteer Garden Guides

Volunteer Garden Guides have been leading walks at RBGE for 26 years, which are popular with visitors, both local and from overseas. Could you be the leader of a garden walk, enthusing and informing members of the public on the importance of plants and the role of botanic gardens in conservation? RBGE is now actively recruiting Volunteer Garden Guides who are good communicators with a thirst for knowledge and are committed to promoting the Garden and the work we do. There will be a training course for successful applicants during December 2018 to March 2019. The new Guides will then be ready to lead garden walks from April 2019 and for many years into the future.

Application forms can be obtained from <http://www.rbge.org.uk/supportus/volunteer> or by email from t.garn@rbge.org.uk. Completed applications should be received no later than Tuesday 30 October 2018.



Rainforest collaboration

Simon Milne, the Regius Keeper of RBGE and Peter Bennett, Director of the UK Charity Rainforest Concern, have signed an agreement to collaborate in Latin America. This builds on a 25-year collaboration with the International Conifer Conservation Programme that focused on the purchase and research of monkey puzzle forest in Chile.

Under this agreement, funding and research collaboration will target conservation and habitat restoration in a range of ecosystems in Chile and Peru, bringing researchers and horticultural scientists together to help ecosystems, local communities and agriculture adapt to climate change and protect biodiversity.

Australian Ministerial Meeting held at RBGE

Plant diplomacy was in action in August when the United Kingdom and Australian governments held a day of business at RBGE's Inverleith site.

Regius Keeper Simon Milne provided an official welcome for the 10th UK Australian Ministerial Meeting, attended by British Foreign Secretary Jeremy Hunt, Defence Secretary Gavin Williamson,

Australian Foreign Minister Julie Bishop and Minister of Defence Marise Payne.

Molecular ecologist Dr Linda Neaves was on hand at the Rock Garden to discuss Australasian plants, tell the story of the discovery and conservation through commercialisation of the Wollemi Pine (*Wollemia nobilis*) and explain her research on the koala genome.

Garden of Tranquillity: Members raise £13,530

Thank you so much for your support! There's still time to donate: text BOTANICS to 70660, or visit donate.rbge.org.uk/tranquillity

Texts cost £5 plus your standard network charge. RBGE will receive 100% of your donation. Please obtain the bill payer's permission. For customer care, call 0131 552 5339.

Below: Judy Good's Garden of Tranquillity design.



The magical, botanical, illuminated trail

CHRISTMAS AT THE BOTANICS



As night falls, join us at the Royal Botanic Garden Edinburgh for our magical outdoor trail which returns this year with over a million twinkling lights.

Enter a world festooned with seasonal cheer as you wander beneath unique tree canopies and alongside the iconic Glasshouses drenched in Christmas colour.



Royal
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As a valued member, you can enjoy a £2 discount on tickets to Christmas at the Botanics when booked in advance. Simply enter **MEMBER18** when booking your tickets at rbge.org.uk/christmas

We spoke to Zoe Bottrell, Creative Director of Culture Creative, about this year's trail.

Q What can members expect from Christmas at the Botanic's?

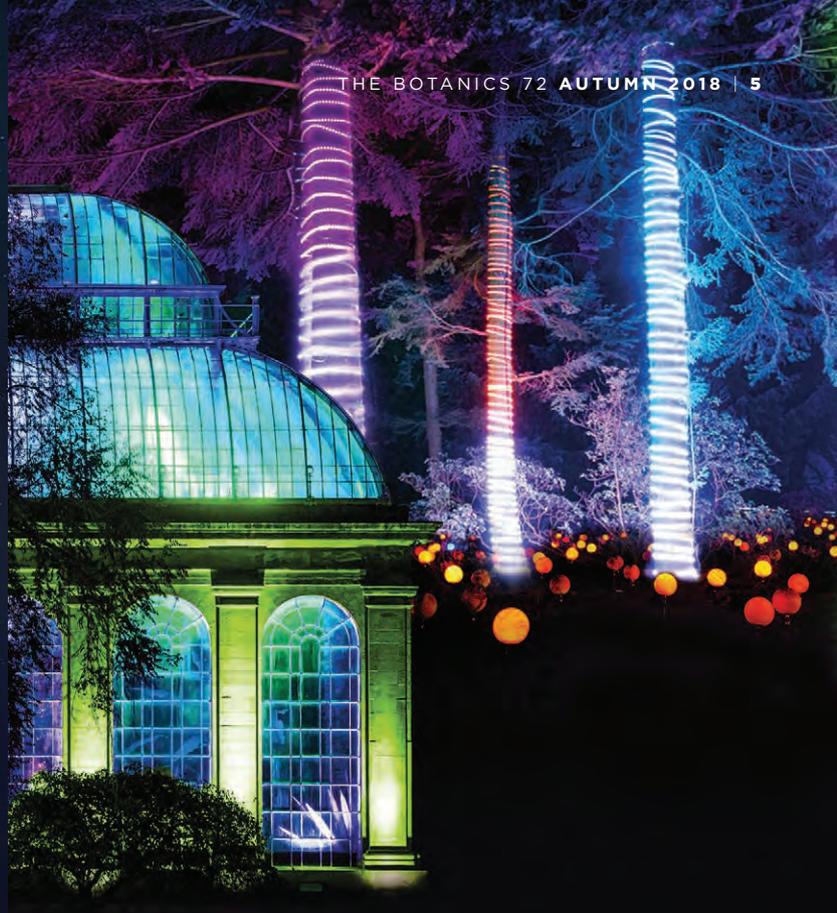
A truly magical Christmas night out. Christmas at the Botanic's is the perfect way to start your season's festivities. Audiences will leave after dark from John Hope Gateway and follow a lit trail for just over a mile. We expect that this will take around an hour to complete but there is no time limit for visitors, and they are welcome to take as long as they need. They can also enjoy a mulled wine or toasted marshmallows at our pop-up catering stalls along the route. Some of this year's highlights include light projections with music on the Glasshouse and on Inverleith House, a fire garden, a Santa show and several large light installations by both UK based and international artists.

Q What are you using as your inspiration for this year's Christmas at the Botanic's?

A The Botanic's' conifer collection will be the main focus of this year's event. We will be working closely with their inhouse teams to ensure that the conifer exhibition that the Botanic's are planning to install in the John Hope Gateway is an integral part of the trail.

Q Who are you working with to create the 2018 Christmas at the Botanic's?

A We work with both local and international artists to develop content for this event. We have a new Australian company who specialise in lighting installations that we are working with to create a 70m long pea light tunnel this year, as well as French company Tilt who are returning with new work. All the people on the ground who manage the install and run the event are employed locally and it is their expert knowledge of the area and the Gardens that really make the event very special for the visitor.



Q This is your second year of working on Christmas at the Botanic's. What do you enjoy about working in Edinburgh?

A Edinburgh is a city that truly embraces winter festivities. Here, we are part of a much greater offer to visitors than on other sites. Hundreds of thousands of tourists come to Edinburgh to spend Christmas and New Year, so we are not only providing a festive experience for locals, we are part of that visitor package which reaches a global market and that's very exciting for us. We also know that similar to London and Christmas at Kew, Edinburgh audiences have a huge choice of activities on offer over the Christmas period, therefore we really need to work hard to stand out and ensure that audiences hear about the event.



23 Nov – 29 Dec
rbge.org.uk/christmas

0844 995 1363

Calls cost 7p per minute plus your network access charge

f t i #christmasatthebotanics



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Not open every day. Check website for full details.



Below: Larva of Australian Ladybird (*Cryptolaemus montrouzieri*) (centre left, with long legs) devouring mealy bug.

Bug wars

Biological control at RBGE

Throughout history, humans have practised biological control, using one organism to control the numbers of another. For example, the Egyptians were most likely the first civilisation who learned the benefits of this approach, using cats to control the mice and rats raiding their supplies of stored grain. Our aim at RBGE is to control our pests, albeit on a much smaller scale, using bugs to control other bugs. This is a battle of miniature proportions!

To explain this in more detail, we first need to look at some of the challenges faced by RBGE's horticultural team in growing plants in artificial environments.

Within the glasshouses at RBGE, an amazing number and variety of species are cultivated from all over the world, some of which are incredibly rare and endangered.

Unfortunately many of these plants are susceptible to pests that, up until reasonably recently, could only really be effectively controlled with the use of pesticides. We always do our very best

Our aim at RBGE is to control our pests, albeit on a much smaller scale, using bugs to control other bugs. This is a battle of miniature proportions!

Over the past few months, visitors to the glasshouses may have noticed many of our plants 'decorated' with small cards and sachets of varying shapes and sizes. So what do these envelopes contain?

to grow healthy strong plants: the healthier the plant, the more resistant it is to pests and diseases. However as any gardener knows, pests by their very nature can be difficult to control. Physical removal methods are always considered in the first instance, with chemical control only used as a last resort. At RBGE, we have been using bio-control products in specific areas of the Garden for many years, but this year, for the first time, we

are trialling pesticide-free control in our public display glasshouses.

The use of pesticides raises a number of issues, and our main concern is the environmental impacts. Another important issue is the potential for the pest to build up resistance to the formulation of a pesticide. With ever more stringent legislation, there are now fewer products available to control

pests under glass. However, increasing awareness of the wider environmental impacts of pesticide use has led to more investment into the application of natural non-native enemies and 'beneficial' insects (bio-control) in the controlled glasshouse environment.



Since the 1920s, there has been significant research on using natural enemies to control glasshouse pests. One of the first of these was the parasitic wasp *Encarsia formosa* used to control glasshouse whitefly, and now widely used commercially on tomatoes and other horticultural crops.

The use of non-native predators has to be comprehensively studied before they are approved to ensure that they do not have a wider impact than intended; in reality this could mean a negative influence on their new environment. For example, the cane toad was introduced to Australia in 1935, from its native habitat of South and Central America, to control the cane beetle, damaging sugarcane crops. However with no natural predators, and the fact that its toxic skin effectively poisoned anything that tried to eat it, numbers increased dramatically without control and created a whole new pest problem that persists to this day.

Once approved for use, these biological control agents are environmentally friendly, with no resistance build up, and there are not the same health and safety concerns as with pesticide use. Biological control is much more targeted to the specific pest; many pesticides are very broad

based and can kill off our native non-pest insects at the same time.

The pests we are currently battling with in our Glasshouses include Red Spider Mite, with the introduction of the predatory mites *Phytoseiulus persimilis*. We are also effectively controlling whitefly with the regular introduction of the parasitic wasp *Encarsia formosa*. To fulfil their lifecycle in their natural environment, these wasps must lay their eggs into the nymph stage of the whitefly. The wasp larvae develop inside and parasitise the whitefly, subsequently emerging as a wasp – and so the cycle begins again. Mealybugs are being consumed in large numbers by *Cryptolaemus montrouzieri* (Australian ladybird) predators, which we release in the larval stage. If you look very closely you might be able to see some in action. We are also trying to control the scale insect present in the glasshouses, *Diaspis boisduvalii*, with the introduction of *Rhyzobius lophanthae* predatory beetles. This has been our biggest challenge so far, as many scale insects are very well protected by a protective 'shell' that they form around themselves. Even the giant Victoria waterlilies are not immune to attack from aphids, and a multi-aphid parasite is being introduced directly onto the lily pads. Tortrix moth can also be a problem



Above: Parasitised whitefly scales; each black scale contains a developing *Encarsia formosa* wasp.

in some of our glasshouses and can be difficult to control as the caterpillars 'sew' themselves inside leaves; so we are using the natural bacteria *Bacillus thuringiensis* to control the emerging caterpillars in their feeding stage. We are also using different microscopic nematodes to control sciarid flies, vine weevils and slugs, and these are applied as a drench.

Increasingly, these products are available for home use and can be purchased in garden centres and online. The key to ensuring the successful introduction of all these bio-controls is to know what pest you have, so you can target it with the correct product and apply at the correct time. Keep plants in good health, because they are more susceptible to attack if stressed. Careful monitoring is essential to keep on top of the problem.

At RBGE we want this approach to work. We accept that it is impossible to eliminate every single pest here, and actually we need a small number of pests to keep our beneficial populations going and growing! Our aim is to control them to a manageable amount whilst making sure that all of our plants remain as healthy as possible. The goal of our pest management system is to reduce and, if possible eliminate, the use of pesticides in our public display glasshouses. This will inevitably take more time and effort to control our pests but will ultimately help to ensure a safer and more pleasant environment for all.



Left: Louise and Pat monitoring pest numbers on the giant Victoria waterlilies and applying bio-control directly to aphid colonies.

Schools in the Cottage

Since the opening of the reconstructed Botanic Cottage in the Demonstration Garden in May 2016, thousands of people have engaged with plants through community group and school sessions and a programme of events for the public. The Cottage was designed by the architects John Adam and James Craig around 1764 and stood at the entrance to RBGE's former site on Leith Walk as the home of the head gardener. The upstairs classroom was a centre for learning about botany during the late 18th century, so it is wonderful that the Cottage has become a buzzing hub for learning once again.

RBGE's schools department caters for a wide range of ages from nursery to secondary. The beautiful Cottage and our selection of lovely props and equipment help us create a special learning environment where children and young people feel welcome and cared for. Thanks to generous contributions from charitable trusts and private donations, the sessions are free, ensuring no school is excluded from taking part due to financial constraints. RBGE staff and tutors are supported by a team of volunteers who bring their own

experience of gardening and can build positive, nurturing relationships with the children they work with.

Grandpa's Garden for early years

Supported by the M V Hillhouse Trust

Gardening is for all, and people of any age or ability can do it. At RBGE, very young children can learn their first gardening skills through short activities and play in our Grandpa's Garden programme. The children are invited by Grandpa (our green-fingered puppet) to come and learn about the seasons in the garden. They help with

Below: Planting potatoes in the Schools' Gardening Project plots.



Above: Working together in the Schools Gardening Project plots.

tasks that include sowing seeds, learning about worms, hunting for seasonal vegetables, playing a pollination game, digging and watering. Children love meeting Grandpa; they talk to him about the gardening they have done as if he were a real person and leave with wonderful memories of being immersed in the garden.

Dig for Victory at the Botanics

Supported by the Cruden Foundation

Dig for Victory weeks are run for older primary age classes. We use original materials produced by the Ministry of Agriculture and Ministry of Food to learn how to dig and how to grow and cook the vegetables that were available during WW2. Children are surprised to learn how choice of food was more limited due to the blockade of imports to the UK and the seasonal availability of fruit and veg. Every child takes away a seed they have planted in a pot so they can continue growing it back at school or home.



Schools' Gardening Project

Supported by the Gannochy Trust

RBGE has been gardening with children in various ways for over 20 years. The current iteration of this, the Schools' Gardening Project, works in partnership with classes from five local primary, secondary and special schools who come in small groups each week to look after their own plots. Health and wellbeing outcomes are a big part of the project, which involves healthy eating, exercise and being outside in the fresh air. Once harvesting starts, the children take bags of produce home or to be used in school. We find that the children and teens are more likely to try new things if they have grown them themselves. On our last session, we celebrate with a feast made in the Cottage kitchen with our home-grown veg.

Repeat visits are key to the deeper impact of this project – children form a relationship with the Garden as they learn how to grow their own food. Activities encourage social skills such as

good communication and negotiation and support personal development such as growth of self-confidence, positive behaviour and sense of responsibility as they care for their plants and the tools that we use. These social and personal impacts are especially important for pupils with additional support needs, who may be struggling in school for various reasons such as learning or behavioural difficulties, or due to social isolation. Being outside in the garden builds friendships and can improve mental and physical health.

Learning about sustainability is a big part of the project and we use three guiding ethics borrowed from permaculture: People Care, Earth Care and Fair Share. These not only support learning about biodiversity and sustainability but provide guidance on the ideas of equity and fairness and encourage positive behaviour with other people and the creatures who share our planet. The project aims support various UN Sustainable Development Goals, such as Sustainable Cities and Communities and Zero Hunger, which aims to end hunger, achieve food security and promote sustainable agriculture.

Feedback

The Cottage programmes and the Schools' Gardening Project are really appreciated by teachers who see the quality of the experience and learning. Feedback suggests that some children rarely or never spend time in a garden and certainly don't visit botanic gardens, so this gives them a positive experience. We know that pupils who have taken part in practical gardening activities come back with their families to show what they have been doing.

We know that the children try vegetables they wouldn't normally

eat: one teacher said that "Some have started putting lettuce they have grown into their sandwiches at lunchtime." Comments from children include "I have been inspired to make an edible garden of my own" and "I used to think it was just plant a seed and water, but now I realise it's a lot more than that".

A volunteer told us that "The children have learned so much biology – about the soil, the plant lifecycles and have had a real connection to nature. They have seen that vegetables don't just come from the supermarket."

We hope that the children

and young people continue to take an interest in gardening and return to explore the Botanics with their families.

Thank you to our volunteers and funders not already mentioned – The Robertson Trust, Edinburgh Airport Community Board and Mains of Loirston Charitable Trust – for enabling these varied and worthwhile activities to take place. We hope that the meaningful connections children make to nature through these projects enrich their lives and inspire a respect for the environment that they will carry through to adulthood.

Follow us on Twitter @SchGardeners

We know that pupils who have taken part in practical gardening activities come back with their families to show what they have been doing.



Right: Meeting Grandpa in the Cottage.



Autumn colour at Benmore

After such prolonged periods of sunshine and the highest temperature recorded at Benmore since 1931 – 30.9°C on 28 June – the 2018 autumn colour and fruits should be spectacular.

Benmore has many fine mature specimens that provide fantastic colour each year. *Betula alleghaniensis* has foliage that turns to a rich yellow, and young plants were collected in 2008 and 2010 from the north-east of America and added to the collection. *Betula maximowicziana*, the largest-leaved birch, was collected in Japan in 2003 and 2005; its foliage turns a clear yellow.

To the south of the avenue near the entrance, the foliage of *Acer rubrum* turns a rich red and scarlet. Previously, it was mainly north American acers that were grown at Benmore, but the RBGE Collections Policy for the Living Collection was reviewed in 2006 and, as a result, Benmore also targets Japanese and Sino-Himalayan acers. This has transformed the acer collection,



with at least forty-two species across over 500 plants. The species with larger numbers of multiple plantings are *Acer cappadocicum*, *A. davidii*, *A. japonicum*, *A. macrophyllum*, *A. nipponicum*, *A. palmatum*, *A. pennsylvanicum*, *A. rufinerve*, and *A. sieboldianum*.

The Younger Walk has large specimens of *Enkianthus*, which every year display spectacular colour, the finest of these being *Enkianthus serrulatus*. A champion tree of *Sorbus alnifolia* has foliage turning yellow with orange tints and is laden with red fruit. *S. commixta* is one of the earliest to colour and has orange to red fruits held in erect bunches. *S. hedlundii*, *S. thibetica* and *S. vestita* are Himalayan species with spectacularly large leaves and large yellow to orange fruit; they are mainly to be found in the Bhutanese Glade.

The most intense area of autumn colour at Benmore is around the pond. There is a broad selection of Japanese maples and deciduous rhododendrons planted among a mix of herbaceous species, and the dominant tree on the island is *Cercicophyllum japonicum*.

Much of the woody flora of Chile is evergreen, and anyone making the effort to reach the upper slopes of the Chilean Rainforest in autumn will be rewarded with the beautiful rich yellow foliage of *Nothofagus antarctica*. *Eucryphia glutinosa*, known for its displays of white flowers in July and August, adds to the autumn colour mix.

Non-stop at Logan

In the recent heat wave, Logan has been basking in summer sunshine. Many of our plants, such as palms, bananas and gingers, have never produced such strong, healthy new growth, and the Albanian Laburnum *Petereria ramentacea* has flowered for probably the first time ever in the UK.

In July, Logan welcomed RBGE's senior management and trustees for a guided tour of Scotland's Most Exotic Garden. They experienced Logan's hottest day of the year with wall-to-wall blue skies.

A large new area of *Maddenia* rhododendrons has been planted in the gully to the west of the Logan Conservatory. This includes many new species not previously grown at Logan including *Rhododendron carneum* and *Rhododendron chunienii*. It will provide lots of interest early in the season and contribute towards Logan's rhododendron conservation work.

During this current year, Logan is hosting more than 20 intern students who are participating in European exchange programmes as part of their university course. Currently our students from Greece, Hungary, France and Wales are landscaping and planting up a new border in the car park.

Below: RBGE's Senior Management Team & Trustees during a recent visit to Logan Botanic Garden.



sunshine



Above: The Desert Border has flourished during this summer's hot, sunny weather.

The Cabbage Palm avenue along Logan's drive provides a spectacular arrival. It is now around 250 m long, and although now only 4 years old many of the plants are already over 2 m tall.

In recent months Logan has welcomed two new staff members to the horticultural team. Chris Parsons and Katy Merrington bring a wealth of plant knowledge to Logan, having previously worked at notable gardens such as Longwood Gardens, Royal Botanic Garden, Kew and Tresco.

Logan's events listing continues to grow. The latest additions are Mostly Ghostly Tours and Life O'Reilly, who provide live music in the Walled Garden.

Please do come and visit us soon.



Below: The newly installed monoblock front ramp, which has greatly enhanced the front of the Visitor Centre.



Above: A new panorama panel in Scrape Glen.

Developments at Dawyck

With the onset of autumn, the Garden staff at Dawyck can take time to reflect on a wonderful summer season. The long hot summer brought many visitors but also a prolonged and intense drying heat. Many hours were spent watering new plants, whose planting had already been delayed due to the 'Beast from the East'. However, this careful daily watering has at least meant we have no apparent casualties from the dry weather.

Along with the day-to-day maintenance, we were able to undertake a number of smaller targeted projects with the commitment from our own talented Garden team, aided by our able volunteers and our resident student intern, Alexia Perlot.

Thanks to our Estates team and the expertise of a local groundworks contractor, the garden has replaced both front and rear ramps of the Visitor



Above: Using the new digger for root removal.

Centre, which have been re-modelled and installed using mono-blocks for a more permanent and rot-free solution.

With access for all being high on our priority list, the garden team, notably Harey Geddes our in-house woodwork expert, has undertaken a mini-restoration of our wheelchair-friendly bridge. The bridge has had a completely new floor with anti-slip mesh installed and has been retreated with preservative to look its best.

Self-sufficiency has always been a buzz-word for Dawyck and with the recent capital investment in a mini-digger the garden is now in a much better place for easily undertaking development works and root removal, which require earth-moving equipment. The staff at Logan will also be pleased that we no longer need to keep borrowing theirs!

Right: The Pianodrome was designed and built by a team of more than 100 people, many of them volunteers, off site. It was then dismantled and rebuilt in the Botanic Garden.

The Pianodrome is a 100-seater auditorium created from 50 discarded pianos. Well-seasoned timbers have a resonance that, when combined with the gentle reverberation of taught strings attached to old piano soundboards, creates a unique acoustic environment. This results in the whole structure becoming a gigantic instrument that both musicians and an audience can immerse themselves inside.

Part-installation, part-concert-venue, part-sound-lab, the Pianodrome defies all definition, but probably the most remarkable thing about this whole project is the leading lights behind it. Tim Vincent-Smith and Matt Wright are not designers, carpenters or structural engineers, but musicians who created the Pianodrome, with the help of more than 100 volunteers, using their own hands combined with a certain amount of blood, sweat and tears!



As well as their desire to create something that was original, beautiful and playable, Tim, Matt and the Pianodrome team wanted to force people to consider the profligacy of our

throw-away society. Even 100 years ago a piano was a 'must-have' aspiration for every family, just as a TV is today. In the 1920s, pianos were being produced in Britain in huge quantities to meet the demand and many were bought by working families on hire-purchase schemes. The quality of these pianos was variable but they took pride of place in people's homes and must have brought much pleasure and jollity to the people who played or sung their songs around them.

Today, pianos have largely been replaced in people's lives by electronic gadgetry and there is a surfeit of old pianos destined for the scrap heap. Each piano is made up of hundreds of pieces of solid wood and veneer, metal, plastic and sometimes ivory, making them notoriously difficult to recycle. However, the Pianodrome team took on the challenge of systematic deconstruction and reassembly and have

The Piano- drome lands at the Botanics



Left and above: The Pianodrome was housed in the Botanic Garden under a geodesic dome supplied by Atlas Domes of Eddleston.

transformed the unwanted and unloved pianos into an incredible art space.

Pianodrome was premiered at RBGE as part of the 2018 Edinburgh Festival Fringe. The Pianodrome team

curated a series of performances featuring their own house band S!nk and different guest artists each night, drawn from some of the best names on the alternative music scene. The

Sunday Times announced this as the 'best new venue in the Edinburgh Fringe 2018' and the bands played to a full house every night. The response from festival goers and reviewers was hugely appreciative – both of the venue and the live music sessions.

It may be that inviting a group of young musicians into the Botanics during August to create and perform in a self-build structure, the likes of which had never been seen before, was high risk. However, it was a gamble that paid off. RBGE aims at an art programme that is every bit as ambitious and innovative as its science, and exciting partnerships that cross-boundaries and defy conventional categorisation as art, culture or entertainment will continue to feature strongly in our programming.



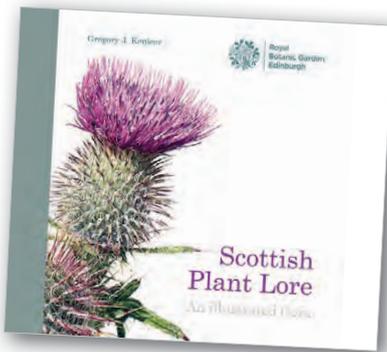
Left: The house band S!nk playing during one of their popular evening concerts.

Left: Foxgloves by Jacqui Pestell MBE, watercolour (contemporary).



For making syrup and spirituous beverages

To celebrate the season of mists and mellow fruitfulness we're marking publication of two new publications.



Scottish Plant Lore

Scottish Plant Lore is published in October, at £25.

Scottish Plant Lore by Gregory J. Kenicer is a beautifully illustrated, lavish new hardback book devoted to the history of the folk uses of Scotland's flora down through the centuries. Illustrated with both period and contemporary botanical art plus photographs from the RBGE Herbarium, it combines some of the latest research with a celebration of the rich social and natural history that has gone before.

Here is an exclusive extract devoted to the historic uses of Scotland's favourite autumn fruits.

“Brambles and raspberries are both native to Scotland, and have long been foraged for their delicious berries. We can be fairly



Above: The author and some of the artists featured in *Scottish Plant Lore* at the official launch in the Botanic Cottage.

certain that Mesolithic hunter-gatherers ate them, a practice that continues with modern foragers. A traditional tale told throughout Britain is that the devil is said to spit or urinate on the berries after Michaelmas (29 September), because he was thrown from Heaven by St Michael on that day.

Bramble and raspberry have also been domesticated and are a major part of the berry economy of the Tay valley, with modern breeding programmes at the James Hutton Institute at Invergowrie concentrating mostly on raspberry and hybrids.

Buchanan White (1876) states that, “The berries are often eaten and afford a good jelly.” Withering (1776) notes that, “The berries when ripe are black, and do not eat amiss with wine. The green

twigs are of great use in dyeing woolen, silk and mohair black. Cows and horses eat it; Sheep are not fond of it.” They also commonly find their way into historical and modern alcoholic drinks – from wines to gins. Henslow (1905) writes that, “It is said that the inhabitants of Skye use them for making syrup and spirituous beverages.” The juice of raspberries on their own was used for a refreshing lightly distilled drink popular following a fever.”

Director's Choice

Simon Milne, RBGE Regius Keeper, has become the first director of a natural history collection to feature in the Director's Choice series from Scala Arts & Heritage Publishers. In the book's 80 pages, Simon highlights some of his favourite objects, plants and buildings from RBGE's Living, Herbarium, Library and Archive collections. With full colour illustrations throughout, the book provides a beautiful overview of RBGE for just £9.95.



Below: Regius Keeper, Simon Milne and Gregory J. Kenicer.



RBGE is passionate about promoting, creating and supporting careers in horticulture. Our wide-ranging education programme, engaging children as young as three and extending all the way to PhD level, is a core strand of our mission to explore, conserve and explain the world of plants for a better future.

Alongside our extensive academic offering, RBGE is passionate about providing high-quality vocational training and we are keen to grow this area over the next few years. Recently, we were delighted to be awarded funding by the Magdalene Sharpe Erskine Trust to run an apprenticeship in the Edinburgh Garden, whilst an apprentice in Benmore will be funded jointly by the John Younger Trust and the Cruach Trust. We look forward to welcoming these two budding horticulturists to our Garden teams this autumn and supporting them through a stimulating and rewarding two-year programme.

Cameron Tasker was in our first cohort of apprentices and is now a permanent member of staff at RBGE: "It's a great way of getting first-hand experience in

Below: Cameron Tasker, one of RBGE's first apprentices and now a member of staff.



Above: Staff member Peter Wilson instructing apprentice Jennifer Wright in tree care.

Developing horticulturists of the future

horticulture. The staff at RBGE are very knowledgeable and helpful in preparing you for a career in the industry. I really enjoyed my two years of learning in each of the Garden's departments, experiencing a wide range of horticultural tasks."

These apprenticeship grants have come at a crucial time, as the industry as a whole is facing a serious skills shortage. A major report, issued in 2013 by the Royal Horticultural Society and other partners, listed startling statistics: 72% of 200 horticultural businesses were unable to fill skilled vacancies, whilst 70% of 1,000 18-year-olds surveyed believed horticulture careers are only for those who have failed academically.

We have witnessed a decreasing level of competence and confidence when job applicants are faced with practical gardening tasks. RBGE has therefore just embarked on piloting a paid, one-year horticulture internship in the Edinburgh Garden, with a view to growing and extending it to the Regional Gardens if we can secure sufficient funding.

David Knott, Curator of Living Collections, explains the importance of this development: "The Royal Botanic Garden Edinburgh cultivates

over 13,500 species and 130,000 plants across the four very different garden landscapes and climates of Benmore in Argyll, Dawyck in the Scottish Borders, Logan in Dumfries & Galloway, and Inverleith in Edinburgh. To cultivate this number of plants and different species successfully, we rely on teams of highly skilled horticulturists to grow and nurture the plants in their care. For new or prospective horticulturists, gaining the necessary experience and expertise is not always possible, easy or financially viable, so an RBGE apprenticeship or paid internship is invaluable in providing them with an immersive, hands-on training opportunity."

As well as developing and enhancing the employment prospects of individuals, apprenticeships and paid internships are a way that RBGE can help to secure the future of this vital profession. If we are to protect the world's plant life and strengthen fragile habitats, we desperately need to pass on the wealth of knowledge – accumulated over decades in our glasshouses and gardens – to the younger generations.

Horticulture is a challenging, highly skilled, fulfilling and worthwhile career. Through our growing suite of vocational training options, we hope to inspire many more young people to enter the profession and enjoy all that it has to offer.

During the summer, the Edible Gardening Project has been involved in an exciting new plant display that links what we eat to the vital genetic resource found in the wild relatives of our crops. The RBGE research programme has a focus on the potato family, so it made sense to collaborate with the James Hutton Institute at Invergowrie, near Dundee, where the Commonwealth Potato Collection (CPC) is maintained.

The CPC is one of the largest potato gene banks in the world and maintains around 1,500 samples of wild potato seed stored at -20°C to prolong their life. These seeds are an important genetic resource as they contain the genes for useful qualities such as resistance to late blight, a disease that causes massive economic losses for potato farmers around the world.

The first case of resistance to late blight being transferred from a wild potato into the crop was from hybridisation with a Mexican species called *Solanum demissum*. The naturally occurring hybrid was named and described as new to science using plant material supplied by RBGE at the beginning of the 20th century. The name given to the new hybrid, *Solanum x edinense*, reflects the Edinburgh connection. Although it is a Mexican plant the name forever identifies it as the 'Edinburgh potato'.

The potato displays in the Demonstration Garden and Temperate Palm House have relied on input from Science and Horticulture staff and the hard work of volunteers in the Edible Gardening Project. The volunteers have been learning the techniques of

Below: Using a vibrating 'artificial bee' to mimic buzz pollination and extract pollen.



Above: Jan applying pollen to a potato flower as part of controlled crossing between domesticated potatoes and a wild Mexican potato *Solanum demissum*.

Protecting potatoes

potato breeding so that the Edinburgh potato can be recreated by carrying out controlled crosses.

New interpretation, with financial support from SEFARI, has been developed for the displays. The panels tell the story of the potato from its native home in South America to global spread and the threats posed by late blight. New research at the James Hutton Institute is now speeding up the discovery of blight resistance genes in wild potatoes.

The Edible Gardening Project is supported by players of People's Postcode Lottery, for more details please go to www.rbge.org.uk/ediblegardening

Below: Liz extracting pollen from a potato flower for use in controlled pollinations.



Seasonal tips

Autumn and winter are the quietest seasons in the productive garden. The slower pace of work brings an opportunity to reflect on the previous years' successes and challenges and to plan for the next season.

There are some outdoor jobs for this time of year, including planting garlic in October and November. Garlic requires a cold spell to grow well. Split a bulb into individual cloves and plant them 10cm (4in) deep and 15cm (6in) apart. Each clove will grow into a new bulb of garlic by July next year. It is recommended to buy certified garlic from a reputable supplier rather than planting garlic from a supermarket. This is because it is less likely to carry pests and disease and more likely to be a variety that is suitable for growing in Britain. We've found that 'Solent Wight' grows well at RBGE.

Supported by players of



Awarded funds from



In conversation with Peter Cairns

The nature and conservation photographer, Peter Cairns, will be the guest judge for the Friends of RBGE's Photography Competition this year. Here he shares his passion for photography and some useful tips.

Q You have said 'I've never considered myself a proper photographer, not really' yet you are, literally, behind some of our most iconic conservation photography?

A What I mean is that I'm not particularly interested in the photographic process – the technical side. What excites me about photography is what it can do. And what it can do is make people feel and think differently. To that end, it's a very powerful communications tool.

Q To an absolute beginner, would you have any must-have tips to share?

A You've got to want to do it. That might sound obvious but early mornings, late nights, frustrations and disappointments are everyday factors in nature photography. Added to this is the mind-blowing standard of modern photography, so you've got to really want to do it and then go the extra mile. It's not for everyone.

Q Does passion for a subject alter the way you look at the composition of a photograph?

A You absolutely need passion. If you're indifferent to your subject it will show in your images. If you're passionate you'll want to showcase your subject in the best possible way. This may mean lying on the floor to get level with wildlife or climbing a mountain to get the best viewpoint. You really have to be prepared to do whatever is necessary. I'd like to say it's easy, but it isn't.

Q How can pictures tell the story you want to be heard?

A Visual imagery transcends age, background, gender, language; it communicates on an emotional level to everyone and therein lies its power. Beyond the single image, however, you need to think 'How can I tell this story?' That might be achievable in one image, but more likely it will need several. Try not to look at the camera as a tool for capturing trophy images but as a tool for compelling storytelling.

Q How does lighting play its role?

A Discerning light – understanding how it behaves and what effect it has on your images – is really important. Over time you start to understand how light can contribute to your pictures and how it can destroy them. In winter

for example, the light is generally quite soft throughout the day but in summer, on clear days, the sun is high in the sky, casting very little shadow and therefore depriving the photographer of any modelling light. A bright sunny day in July might look fantastic for photography but in reality, the harsh, contrasting light makes for awful images. Watch light and work out how to use it.

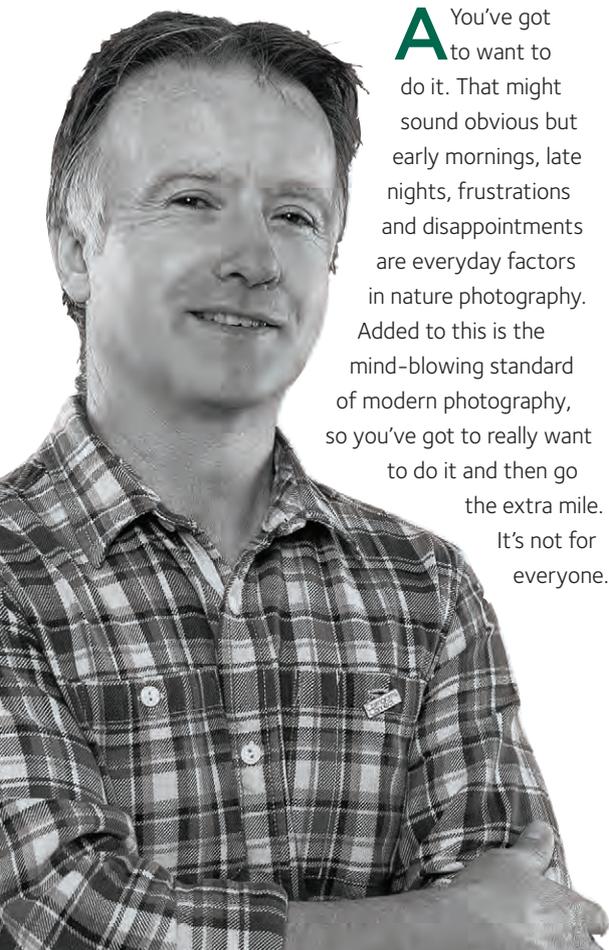
Q Can good quality photography remain fun?

A If it isn't fun, don't do it. Yes there is discomfort and frustration but there's also a huge rush when it comes good. Many photographers expect too much, especially in Britain. I work on the 90:10 rule. For 90% of the time, the weather is awful, the wildlife doesn't behave and one way or another, you come away with very little. But when the 10% rolls around, it's the best thing in the world. When an image comes together as you'd imagined it, the pain is worthwhile.

Q To sum up, what makes a good picture?

A That's tricky because to a certain degree, it's subjective. I'd say a 'good' picture is well lit, well composed and sharp. A 'great' picture however, has something else: impact. If an image has impact, it stays with you and in some cases changes your perspective. I always strive for impact and although it's not possible every time, when it does work you know you're in the right job.

The Friends of RBGE Photography Competition is open until 31 October. For further information and to enter go to www.rbge.org.uk/photocomp





Reciprocal admission to other Botanic Gardens

As a Member of RBGE, you have access to a wide range of benefits across all four of our Gardens including free admission to many other gardens in the UK and overseas with whom we have a reciprocal agreement in place. Recent changes have been made to some of these agreements and we would like to make you aware of these to help you when planning a visit to one or more of them.

■ **Westonbirt Arboretum:** from 1 September 2018, any children accompanying RBGE Members will be required to pay an admission fee upon entry.

■ **Royal Botanic Gardens, Kew and Wakehurst:** from 1 June 2019, free admission for RBGE Members will change to a two-for-one discount on the full adult entry fee. Child admission fees also apply at Kew.

■ **New York Botanic Garden:** RBGE Members are entitled to free grounds-only access to the Garden. All-Garden passes and special events will be charged at the full rate.

The full list of Gardens that offer free or discounted admission will be kept updated at www.rbge.org.uk and we would recommend checking this list and with the Garden you wish to visit prior to your trip. Remember to take your RBGE membership card with you to gain admission to these Gardens.

Members' Events

Edinburgh

■ **Coffee Morning & Talk: The Illuminating History of Garden Rushes**
Tues 9 Oct, 10am for 10.30 start, Conference Room, 20a Inverleith Row, £5 Members only

Phil Lusby will shine a light on Edinburgh's dark past and explain how some bright sparks had a brilliant botanical idea.

■ **The World of Seaweeds**
Thu 18 Oct, 7pm, Lecture Theatre, 20a Inverleith Row, £7, £5 Members

Explore the secrets of seaweeds with marine phycologist Dr Gavin Hardy and learn more about Scotland's new seaweed aquaculture industry.

■ **Christmas Shopping Evening**
Mon 12 Nov, 6pm – 9pm, The Botanic Shop, John Hope Gateway (see back cover)

■ **Coffee Morning & Talk: The Edinburgh Shoreline Project**
Tues 20 Nov, 10am for 10.30 start, Conference Room, 20a Inverleith Row, £5 Members only

An opportunity to hear about The Edinburgh Shoreline Project, aimed at regenerating and conserving natural habitats along Edinburgh's coast.

■ **1670: The Making of our Botanical Gin**
Tues 4 Dec, 7pm – 8.30pm, Botanic Cottage, £15/£13 Members

Edinburgh Gin and RBGE's Greg Kenicer will introduce our own botanical gin, with exclusive gin tastings. The perfect winter evening for gin lovers!

■ **Arctic Explorer to Scotland's First Fragrance House**

Thu 17 Jan, 7pm, Lecture Theatre, 20a Inverleith Row, £7, £5 Members

Have you ever wondered how a perfume is developed? Imogen Russon-Taylor will tell us how the adventures of Scottish botanist and Arctic Explorer Isobel Wylie Hutchison inspired her bold new fragrance and how the complex perfume notes were developed and brought to market.

■ **Coffee Morning: Tours and Day Visits**
Tues 22 Jan, 10am for 10.30am start, The Caledonian Hall, East Gate, Free

The launch of the 2019 days trips and tours programme

■ **Friends of RBGE Photography Competition Exhibition**
1 Feb – 24 Mar, John Hope Gateway, Free

Your opportunity to view the finalists and cast your vote for your favourite photograph in the 'People's Choice' category.

■ **Coffee Morning & Talk: *Sibbaldia*, the Journal of Botanic Garden Horticulture**

Tues 12 Feb, 10am for 10.30 start, The Caledonian Hall, East Gate, £5 Members only

Join editor Kate Hughes for an exclusive insight into RBGE's own peer-reviewed journal, *Sibbaldia*, which covers all aspects of horticulture in botanic gardens around the world.

■ **Evening Talk: Can we change the Scottish fruit basket?**

Thu 21 Feb, 7pm, Lecture Theatre, 20a Inverleith Row, £7, £5 Members

Professor Derek Stewart of the James Hutton Institute on the wide variety of exotic fruits that will grow in Scotland and tips on how you might grow them in your own garden.

Benmore

■ **Talk by Richard Baines: Developments at Logan Botanic Garden**
Wed 31 Oct, 2pm in Courtyard Gallery, no booking necessary, £4, £3 Members

■ **Christmas Party in The Courtyard Gallery**
Sat 1 Dec, 7pm, £18, £16 Members

Join us for a fork supper with musical entertainment, a quiz and a raffle. Mulled wine, tea and coffee included. Book tickets on 01369 706261.

■ **Christmas Shopping Events**
Thu 15 Nov and Thu 13 Dec

Dawyck

■ **Autumn Bring and Buy Plant Sale**
Sun 7 Oct, 10am – 3pm, free entry

■ **Christmas Shopping Event**
Thu 15 Nov, 10am – 4pm

Logan

■ **End of Season Shopping Event**
Sun 11 Nov, 10am – 5pm

■ **Snowdrop Sundays**

Open on Sundays in February. The Potting Shed Bistro is also open on Sundays in February, 11am – 3pm. Entry by donation.

Bookings for events can be made through the Membership Office on **0131 552 5339**, unless otherwise stated. Further details can be found at www.rbge.org.uk and in the monthly Members' e-newsletter. If you'd like to receive this, email us at members@rbge.org.uk.

Royal Botanic Garden Edinburgh



Open daily (except 25 December and 1 January)
Inverleith Row, Edinburgh, EH3 5LR
Tel: 0131 552 7171 • Email: info@rbge.org.uk
Admission to the Garden is free;
charge applies to the Glasshouses.



Benmore Botanic Garden



Open daily 1 March to 31 October
Dunoon, Argyll, PA23 8QU
Tel: 01369 706261 • Email: benmore@rbge.org.uk
Admission charge applies.



Logan Botanic Garden



Open Sundays only in February
Open daily 1 March to 15 November
Port Logan, Dumfries and Galloway, DG9 9ND
Tel: 01776 860231 • Email: logan@rbge.org.uk
Admission charge applies.



Dawyck Botanic Garden



Open daily 1 February to 30 November
Stobo, Scottish Borders, EH45 9JU
Tel: 01721 760254 • Email: dawyck@rbge.org.uk
Admission charge applies.



For further information about the Gardens visit

www.rbge.org.uk

For a *What's On* guide, contact Lorna Mitchell
Tel: 0131 248 2991 • Email: l.mitchell@rbge.org.uk



Members' Christmas Shopping Evening

Monday 12 November, 6pm - 9pm

The Botanic Shop, John Hope Gateway, Edinburgh

Enjoy some complimentary refreshments whilst browsing our Christmas gift range and receive 15%* off all purchases on the night. Bring a guest, who will receive 5% discount.

So we can cater for the appropriate numbers, please RSVP to Membership Office **0131 552 5339** or members@rbge.org.uk

Members' shopping events are also planned at Dawyck, Logan and Benmore. See page 19 or www.rbge.org.uk for details.

*excludes alcohol sales



Royal Botanic Garden Edinburgh

Give the gift of Membership

and help the Garden grow

Treat family or friends to a year of inspirational Garden visits with a unique gift of RBGE membership.

0131 552 5339
www.rbge.org.uk/membership

The Royal Botanic Garden Edinburgh is a charity registered in Scotland (number SC007983).

Sign up for our e-newsletter at www.rbge.org.uk/e-news

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