

University Botanic Garden Annual Report 2011-2012

CAMBRIDGE
UNIVERSITY
Botanic
Garden



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CAMBRIDGE



Director's Report

This year the Garden celebrated several anniversaries, and marked an unwelcome meteorological record.

We marked the 250th anniversary of the first University Botanic Garden, founded in 1762 as a small physic garden situated close to the city centre on what is now the New Museums site. We are currently collaborating with the Cambridge Conservation Initiative and the University Museum of Zoology, who will be based in refurbished buildings on this site, to green the area once again with the opportunity to reflect some of the original garden plantings.

The Friends of Cambridge University Botanic Garden celebrated 30 years and, with over 4800 members, provide enormous support in many ways. We celebrated the anniversary on a beautiful May evening with the Garden suitably looking its best. This wonderful evening proved to be one of the few when the sun shone in what turned out to be the wettest summer on record. The rainfall for 2012 totalled 820mm which was well above the 30 year average of just 557mm. It gave us new challenges in managing the Garden but I am pleased to say visitor figures remained buoyant at just under 200,000.

Many of our staff enjoy a special relationship with the Garden and this year we celebrated 60 years of the Cambridge University Botanic Garden Association (CUBGA), an organisation for both past and current staff. It's always an inspiration to hear the many stories from the people who have shaped the Garden since the 1950s. I am pleased to say that we have been successful in receiving Heritage Lottery Funding to capture these unique memories in a much bigger way, and also include our many visitors and supporters in the project, called Voicing the Garden.

We celebrated the Queen's Jubilee and the London Olympics this year with colourful annual meadows greatly enjoyed by visitors. In

collaboration with the Royal College of Pathologists we helped to mount an exhibit at the Chelsea Flower Show, entitled 'Urban Greening – Not to be sneezed at' focussing on respiratory allergies, for which we received a Silver-Gilt medal. Perhaps the horticultural highlight of the year was the flowering of an unusual Chinese tree, *Emmenopterys henryi*, for the first time in Cambridge and only the fifth time in the UK. It is the cover photograph for this year's report. It brought a spectacular end to the summer and it was pleasing that this rare event engendered great interest from the media, keen gardeners and curious visitors alike.

We said goodbye to and welcomed many new members of staff during the year. I am thankful to the Garden's team who took on extra work as a result but we can look forward to the coming year in the knowledge that we have a strong team in place. In this report we celebrate the success of the long standing horticultural Trainee Technician Scheme and its more recent accreditation leading to the Cambridge Certificate in Practical Horticulture and Plantsmanship. Our six Trainees each year are a key part of the workforce and we are pleased that many go on to hold senior positions within horticulture.

The recruitment of a new Director has been a major aim over the last year. I am pleased to say that Dr Beverley Glover, currently Reader in Evolution and Development in the Department of Plant Sciences, has been appointed and to the associated Professorship of Plant Systematics and Evolution, and will take up the post in July 2013.

Dr Tim Upson – Curator and Acting Director

The year in pictures...



The Magic Brick Tree, a tale of adventure in the Garden, written and illustrated by young carers, is published. Heffers host the launch party in October.



Al Langley (centre), Assistant Supervisor in the Glasshouse Section, celebrates 40 years at the Garden in December.



The annual number of visits to the Garden breaks through 200,000 for the first time. 2011 ends the second driest year since 1900.



The millstone that commemorates the work of Garden staff past and present is given a new more prominent position on the approach to the Garden Café.



A new Garden trail focusing on chemicals from plants, developed with the Cambridge Crystallographic Data Centre, is launched in May.



In July, the Sounds Green prom concerts presented in association with the Cambridge Summer Music Festival, and supported by Mills & Reeve, are attended by record numbers of visitors.



Annual meadows planted to mark the Queen's Diamond Jubilee and the London 2012 Olympic Games prove very popular.





The Glasshouse Range is especially illuminated for Twilight in the February half-term.



A new Fern Grove is developed at the eastern entrance to the Glasshouse Range.



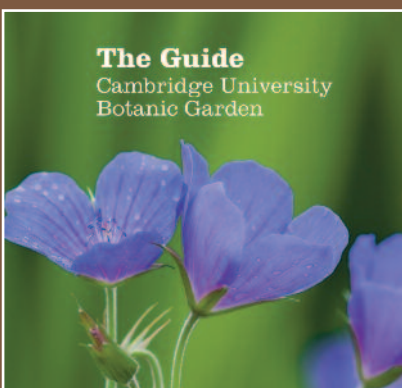
The Garden marked the 250th anniversary of the donation of 5 acres in the city centre by Richard Walker (1679-1764) for the establishment of a Botanic Garden.



In May, the Cambridge University Botanic Garden Association for current and former members of staff celebrate 60 years.



The Friends of Cambridge University Botanic Garden mark 30 years with a garden party.



The updated Guide to the Cambridge University Botanic Garden is published.



Emmenopterys henryi blooms for the first time after a 30-year wait.

Horticulture and Estates

The 40 acres of grade II* listed heritage landscape and plant collection numbering over 8,000 species is cared for and curated by the Horticultural and Estates teams and last year was enjoyed by over 200,000 visitors. Some of the highlights are described below.



EMMENOPTERYS HENRYI IN FULL FLOWER

A flowering first for Cambridge – *Emmenopterys henryi*

The flowering of this Chinese tree in late summer was only the fifth occurrence in the UK since its introduction to western cultivation by the plant hunter, Ernest Wilson, in 1907. Within the UK it first flowered at Wakehurst Place, Sussex, in 1987, and since at the nearby Garden, Borde Hill. *Emmenopterys henryi* is native to central China where it is best known from Hubei Province, close to the area of the Three Gorges Dam. Discovered originally by the Irish plant hunter, Augustine Henry, and named in his honour, the generic name means 'persistent wings', referring to the white bracts that help highlight the inflorescences, which bear many white, scented flowers over 2cm across. Wilson described it as 'one of the most strikingly beautiful trees of the Chinese forests' and this flowering certainly caught the imagination of visitors and the media alike.

Taking a conservative comparison to visitor figures from previous years, for the main flowering period in September we estimated a 13% rise in visits attributable to people coming to see the tree.

Media interest gave national and international exposure via the BBC News web pages. This brought about contact from many with an interest in this tree including relatives of Augustine Henry and an enquiry from the past arboretum curator at the Royal Botanic Gardens, Kew. From this we identified our tree, now 30 years old, as a propagule from an original Wilson tree at Kew, which had been micropropagated and spare plants distributed. Given the destruction of forest in the original collecting localities this material in cultivation is likely to represent important genetic material.

A key question is – why did our tree flower this year? This can't be down to age as, at 30 years old, it's much younger than many of the original plantings now over 100 and still yet to bloom. The most probable explanation lies in the prolonged hot weather and drought conditions experienced in 2011, followed by sharp winter frosts. It's likely the tree needs both a specific period of hot dry summer weather and a cold winter to initiate flowering, conditions rarely encountered in the UK. We may have to wait a while before our tree flowers again.

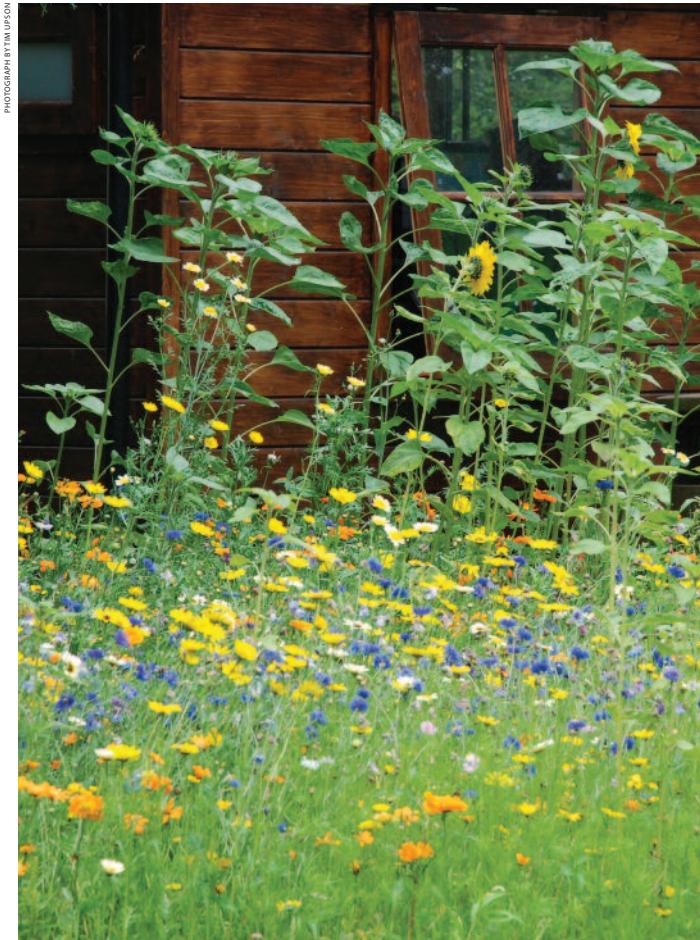
Glorious Meadows

Following the construction of the Sainsbury Laboratory, several areas remained fallow awaiting reinstatement, providing the opportunity to bring an ephemeral burst of colour to key locations, prior to permanent plantings. At the Station Road gate we introduced a predominantly gold-coloured meadow seed mix, originally developed for the Olympic Park. This included *Eschscholzia californica* (Californian poppy), *Coreopsis tinctoria* (tickseed), *Calendula officinalis* (pot marigold) and *Dimorphotheca sinuata* (Cape marigold); a very cosmopolitan mixture that served to brighten the entrance and lift the spirits of visitors and passers-by, peaking magnificently during the weeks of the London Olympics.

To commemorate the Queen's Diamond Jubilee year, a patriotic mix of red, white and blue was adopted to flank the new sinuous path through the research plots. Included were: *Papaver rhoeas* cultivar (Shirley poppy), *Gypsophila elegans* (baby's breath), *Cosmos*

bipinnatus (cosmos), *Consolida ajacis* (larkspur), *Phacelia tanacetifolia* (purple tansy), *Linum grandiflorum* (red flax), *Atriplex hortensis* (red orach) and *Centaurea cyanus* (cornflower). It not only gave the nostalgic impression of cornfields of yesteryear, but also proved a hit with bees and other insects.

In contrast, the yew-backed curve to the east of Cory Lodge played host to a more classic wildflower mix developed for urban areas. Here, *Ammi majus* (bishop's flower), *Rudbeckia hirta* (black-eyed Susan) and *Linum maroccana* (fairy toadflax), amongst others, provided a rainbow of vibrant colour in high summer, which faded gracefully to take on autumnal hues. Intended as one-off plantings, these proved to be horticultural hits, and were particularly popular with our visitors, many of whom made repeat visits specifically to track the progress of these plantings. Such was the success of this venture that we hope to make repeat sowings in the future.



STATION ROAD MEADOW



CORY LODGE MEADOW



HELEN SEAL, ALPINE AND WOODLAND SUPERVISOR, WITH THE NEW RAISED PLUNGE BEDS IN THE ALPINE YARD

Fern Grove

The development of the Life before Flowers house following the restoration of the Glasshouse Range afforded the opportunity to display examples of early plant lineages. With the recent realignment of a boundary fence, the chance arose to extend our representation of these plants beneath the spreading crowns of a *Quercus suber* (cork oak) and *Quercus x hispanica* 'Fulhamensis' (Fulham oak) at the eastern end of the Glasshouse Range.

Newly planted ferns, including *Dicksonia antarctica* (Australian tree fern), Asian *Woodwardia orientalis*, and the more widely distributed, *Asplenium scolopendrium* (hart's tongue fern), nestle amongst the sculptural forms of salvaged tree stumps, to give the feel of an ancient landscape. The inclusion of early seed plants, such as *Ginkgo biloba* (maidenhair tree), *Wollemia nobilis* (wollemi pine), and *Ephedra* (joint firs) further enhances the evolution story.

Mediterranean Beds

The implementation of the second stage of the redevelopment of the Mediterranean Beds took place this year. The large bed in front of the Continents Apart house was enhanced with the installation of a meandering path. This will allow visitors better access to the plantings, and also links this bed to the adjacent one. New plantings of shrubby, herbaceous and bulbous material, including *Genista aetnensis* (Mount Etna broom), *Ampelodesmos mauritanicus*

(Mauritania vine reed) and *Dracunculus vulgaris* (dragon arum), nestle alongside retained mature specimens such as *Juniperus drupacea* (Syrian juniper) and *Acer sempervirens* (Cretan maple). We anticipate that these plantings will thrive in our climatic conditions, and will provide a demonstration planting for local gardeners and a teaching resource for University students and school parties.

Enhancing the boundary

At the eastern end of the Garden along the Hills Road boundary, mature trees of *Aesculus hippocastanum* (common horse chestnut) were removed following their infection by canker, along with poor quality elm suckers. This gave the opportunity to select and establish a new boundary planting appropriate to the situation. Semi-mature specimens of *Tilia tomentosa* (silver lime) were selected for a new boundary screen and should form a majestic planting in future years. We are grateful to Karen & Jos van Oostrum for their generous donation to fund the planting (given to mark Karen's time as Head of Education until this year). Other lime species propagated from the collection built up by previous Director, Dr Donald Pigott, have been interspersed to form a new focus for this collection. Limes are an important street tree in Cambridge and our boundary planting will contribute to the streetscape and should continue to thrive under future climate change scenarios.



A NEW HOME FOR THE MILLSTONE



MEDAL WINNING DISPLAY AT THE 2012 CHELSEA FLOWER SHOW

Raised benches for the Alpine Yard

The Alpine Yard houses our National Collections of *Fritillaria* and *Tulipa* species and serves as a nursery to provide new material for the Rock Garden and Woodland. It is also home to our reserve alpine collection to ensure a constantly-changing display in the public Mountains Display in the Alpine House. Facilities have been steadily replaced and improved in recent years. With support of a donation from Antigoni Iatrou, a botanical artist with a keen interest in Greek Island Floras, we were able to install accessible, raised, sand plunge benches which will greatly enhance our ability to grow alpine plants.

Millstone move

In 1990, after its discovery in the Hills Road boundary, a millstone was positioned beside the now defunct Hills Road Gate as a tribute to the work of current and former staff. Following the redevelopment of the Sainsbury Landscape, it seemed appropriate to relocate this memorial to a more central position in honour of the staff whose endeavours have made the Garden we enjoy today. The millstone has been re-positioned at the junction of Middle Walk and the Café path, and sits against a lush backdrop of Bamboo, *Euphorbia amygdaloides* (wood spurge), and *Phlomis russeliana* (Turkish sage). Now sited at the heart of the Garden, it provides a fitting tribute to all staff who helped to create the Garden and was rededicated at the 60th Anniversary meeting of the Cambridge University Botanic Garden Association.

Chelsea Flower Show success

In collaboration with the Royal College of Pathologists, who celebrated their 50th anniversary this year, the Garden contributed to a display at the Chelsea Flower Show. The exhibit, entitled 'Urban Greening – Not to be sneezed at' highlighted plants which can cause respiratory allergies such as hay fever and asthma. More crucially, the exhibit also demonstrated which plants can be selected to minimise allergies while still being garden-worthy, and included *Acer palmatum* (Japanese maple), *Allium* sp. (ornamental onions) and *Phormium* cultivars (New Zealand flax). Botanic Garden staff, led by Alan Langley and Simon Wallis, took responsibility for growing on the display plants during a difficult season, and employed artificial lights and additional protection to coax plants into flower in time for the show. The hard work and anxiety paid off with the award of a Silver-Gilt Medal.

Sally Petitt, Head of Horticulture and
Dr Tim Upson, Curator & Acting Director

Outreach and Education

The Garden's outreach work extends to many different audiences through the work of our Outreach Office, Education Department and Science and Plants for Schools (SAPS). The work of these teams helps us to reach visitors, families, schools and community groups, providing diverse opportunities for life-long learning, and promotes the importance of plants to teachers and key decision makers in the national education sphere.

The Outreach Office

VOLUNTEER COMMITTEE – LEFT TO RIGHT – ELIZABETH RUSHDEN, RICHARD PRICE, PAM NEWMAN, EMMA DAINTRY & JENNY LEGGATT



The Outreach Office handles administration for the Friends of the Garden, the education programme and volunteers including the Garden Guides. Membership continues to increase with this year seeing 1,037 new Friends and 2,141 renewals, comprising 1,693 joint and 1,485 single memberships, a total of 4,871 individuals. Membership subscriptions increased from £28 to £32 (single) and from £45 to £55 (joint). This rise was the first for over three years and reflected the introduction of year-round charging and increased admission prices.

During 2012 the Friends celebrated their 30th anniversary with an evening garden party on the Main Lawn in May attended by 200 Friends who enjoyed food and drink supplied by the Garden Café and entertainment from a woodwind quartet. The Annual Lecture in November 2011 was well attended with Dr Beverley Glover giving a lively and informative presentation on her research into petal diversity and bee behaviour entitled 'Gilding the lily: understanding angiosperm diversity through petal evolution and development'.

Other Friends' activities during the year included; autumn highlights, winter tree and glasshouse tours; a European trip to the Dutch bulb fields and Floriade; a 19th century garden design lecture with historian, Caroline Holmes; outings to Hidcote Manor Garden,

Kiftsgate Court Garden, Cottesbrooke Hall Gardens, Kelmarsh Hall, Coton Manor, Marks Hall Gardens and Arboretum and The Beth Chatto Gardens. The Friends' activities are co-ordinated by the Volunteer Committee comprising Emma Daintrey, Jenny Leggatt, Pam Newman, Richard Price and Elizabeth Rushden. Thanks are due for all their work on behalf of all Friends and volunteers.

The volunteer Garden Guides are a key part of our outreach programme and their commitment, enthusiasm and professionalism are invaluable. There were 153 occasions, 15 during the evening, when Guides provided tours reaching 1,285 visitors. There are currently 24 qualified volunteer Garden Guides, with Eric Fuller-Lewis and George Thorpe retiring this year. We are very grateful to them and all guides freely give their time and experience for the benefit of the Garden. This year Guides were provided with training sessions on: the tree collection, the Dry Garden, British wild plants, the Glasshouse range, Rock Garden, basic botany and the use of CamTools (an online University tool to facilitate teaching, learning, research and collaboration).

*Emma Daintrey, Outreach Administrator
and Heidi Bradshaw, Outreach Assistant*

The Education Department

PHOTOGRAPH BY HISAN ASLAM



WATCHING THE BEE BORDERS
AT THE 'PLANT POWER' EVENT

The education programme is core to the Garden's work and continues to flourish, diversify and grow. The foundation of the current programmes was laid by Dr Karen van Oostrum who has led the department since 2004, developing the current education programme, and Dr Judy Fox who has been our Schools Officer since 2006. We said 'goodbye' to Karen in February 2012 when her family relocated and Judy will retire at the end of 2012. The Garden is currently looking to fill these posts and continue to develop the diverse and vibrant programmes. We were grateful to Dr Sally Lee and Flis Plent (employed on a temporary contract) for their commitment in ensuring the successful delivery of this diverse and vibrant programme during a year of change. As ever, we are indebted to our dedicated corps of volunteers for the smooth running of many of our educational activities.

Schools

Following the changes introduced to our schools visit policy last year, we were pleased that the new programme settled into a solid pattern, attracting new schools as well as repeat visits. In the reporting period we hosted almost 10,000 children corresponding to 434 school visits. Of these we assisted or provided our new resource packs (including topic-relevant lessons plans and teachers' notes) to approximately a third.

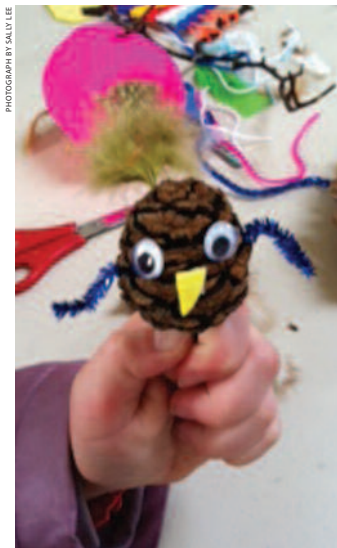
Alongside the school visit programme, we continued to offer nine Continuing Professional Development courses for teachers under

the umbrella of the RHS Growing Schools Programme or as bespoke sessions for schools. These courses have focused on using school grounds across the Curriculum, developing and designing school gardens and how to run gardening clubs.

The Schools' Garden

This was a busy year with new areas developed and planting schemes refined. Gravel pathways between the growing beds have improved access, and new raised beds, seating and a pergola are now in place. Simon Wallis and Alistair Cochrane from the horticultural team have taken on responsibility for the maintenance of the Schools' Garden and supplied expertise and advice, as well as some eye-catching planting. The success of the Schools' Garden would not be possible without their help and that of our dedicated Schools' Garden volunteers and parent helpers.

In addition to our regular group of Friday Gardening Club children, we also worked with St. Alban's RC Primary School on dedicated growing beds. Half of the Year 4 class visited with their teacher on alternate weeks so that everyone experienced each task – digging, sowing, planting and weeding. As a result, their plot was bursting with colour and healthy looking vegetables, presided over by some wonderful scarecrows made by the children to help keep birds and squirrels away. We were also delighted that Year 5 and 6 classes from St. Paul's Primary School continue to be involved with the Schools' Garden by building and monitoring insect hotels.



PHOTOGRAPH BY SALLY LEE



PHOTOGRAPH BY SALLY LEE



PHOTOGRAPH BY IHSAN ASLAM

'FIRST SATURDAY' PINE CONE PETS

POND DIPPING AT BIOBLITZ 2012

Life-long learning

The courses programme continues to develop with topics ranging from plant identification and horticulture to photography, basketry and botanical illustration. This year's programme welcomed the return of a series of four Garden History talks focusing on the Edwardian era, which proved hugely popular. We plan to grow this area of the programme in the coming years and further develop our practical horticulture and plant identification courses.

Families

We ran sessions on the first Saturday of each month and a mix of drop-in and bookable activities during the school holidays. These are now a firm fixture on local family calendars, and have continued to attract a good number of enthusiastic families and are an important means for the Garden to interact with a key visitor group.

Through the autumn and winter we focused our Saturday events on garden crafts and recycling, including using waste material to create unusual collages, pine cones to make bird feeders and packets for seed collected in the Garden. During the autumn half term we hosted apple tasting and art sessions, with children and families encouraged to vote for their favourite.

In the spring we undertook some woodland weaving, made pine cone pets and door signs from foraged twigs and plant materials. We also planted cotton seeds as part of a celebration of Fairtrade fortnight. February half-term saw our popular family birdwatching events run by wildlife expert, David Chandler. At the University's Science Festival in March we joined colleagues from the Department of Plant Sciences in the 'hands-on' science marquee on the Downing site. Over Easter, children celebrated spring by making lambs and bunnies from natural materials and following a trail through the Garden.

The summer events focused on wildlife with a dragonfly workshop during half-term, mini beast hunts around the Garden and a nature trail which encouraged families to plot their findings on a giant Garden map.

Connecting Collections

Over the last year our involvement with the University Museums has developed with increased co-operation through the Connecting Collections programme. In February we participated in Twilight at the Museums with our Glasshouses opening after dark to welcome families on a plant safari by torchlight. In May, with the Zoology Department and Museum, the Garden hosted a 24 hour BioBlitz. In the summer we teamed up with the Folk Museum for our Sweets & Treats family activity, celebrating the plants that are used to flavour sweets, making peppermint creams and running an old fashioned sweet shop. This activity was part of the wider 'Summer at the Museums' programme which also included the 'Draw what you Saw' postcard competition, with entries including some fantastic drawings from children who visited the Garden.

Sainsbury Community Art Programme

This programme is supported through the Percentage for Art from the build of the Sainsbury Laboratory. We worked with Centre 33, a charity for young carers based in Cambridge, on two major community art projects.



THE MAGIC BRICK TREE AND YOUNG CARERS

TWILIGHT AT THE MUSEUMS 2012

The Magic Brick Tree

Along the South Walk a mysterious brick wall can be found inside the trunk of a *Pyrus communis*. This wild pear tree was bricked up in accordance with horticultural practice of the time after a branch fell in the 1960s. This became the starting point for a storytelling project developed for a group of 15 young carers. The planned outcome of the project, run with the help of storyteller Marion Leeper, and artist, Alex Hirtzel, was to create a children's story book. The children who attended the workshops were all young carers who help care for another person, usually a family member, and thus have levels of responsibilities that would normally only be taken on by an adult. Over four fun and extremely busy days of dreaming up characters, print-making, drawing, writing and photography the story started to come together. Many of the ideas were inspired by the plants, wildlife and people that the children encountered around the Garden.

The workshops gave the chance to take a break from their caring role, develop new friendships and most importantly have time to be a young person. At the end of the four days everyone's hard work was handed over to CantellDay, a local graphic design agency, who kindly offered their time and skills to the project. They converted the text and images into a book-ready format which was then printed pro-bono by Cambridge University Press. Billed as a thrilling tale of intrigue, lawnmowers, and the strange kingdom that lies inside the bricked up pear tree, the Magic Brick Tree was launched at a fantastic party at Heffers bookstore in October. It is available at £4.99 from the Botanic Garden shop, Heffers and online at <http://bit.ly/nDD0Mn> and all profits will go towards funding future projects for young carers at the Botanic Garden.

Nonsense in the Garden

After the success of The Magic Brick Tree, the young carers returned to participate in 'Nonsense Botany', in celebration of the bicentenary of the birth of Edward Lear whose book of the same name was written in 1870. We were pleased to be again joined by Marion Leeper and Alex Hirtzel. The children found out about Edward Lear,

his difficult childhood and how he liked to draw, make up words and write poetry. After looking at his bizarre illustrations of plants in *Nonsense Botany* such as *Armchairia comfortabilis*, *Manypeeplia upsidownia* and *Piggiwiggia pyramidalis*, the children set out to find plants that resembled everyday objects and everyday objects that resembled plants. They also discovered some real life curiosities amongst the carnivorous plants and agreed that nature could definitely be stranger than fiction.

Throughout the week, the children enjoyed drawing, creating stories, book making, painting, printing, paper-marbling, poetry and simply being out and about in the Garden. By the end of the workshops, each child had created a concertina book containing collages of their own work, found images and shared poems and prints.

International 'Fascination of Plants' Day

This year we hosted an event for the European Plant Science Organisation's (EPSO) first International Fascination of Plants Day. The event, entitled 'Plant Power', was run in collaboration with the Department of Plant Sciences, the Cambridge Partnership for Plant Sciences and the Sainsbury Laboratory Cambridge University. A large marquee on the main lawn was host to plant scientists from across the region giving demonstrations and displays of their work. During the day an 'Art of Pollination' workshop for secondary school students was delivered in collaboration with Katrina Alcorn, a PhD student in Dr Beverley Glover's group from Plant Sciences and Alex Hirtzel. The workshop introduced the latest research into how flowers attract pollinators and the participants went on to create mosaic artworks with patterns inspired and informed by the science they had learned about. We plan to develop and widen the scope of this event next year to create a whole Garden event - 'Festival of Plants' - which will include plant science, horticulture, plant sales and family activities.

Felicity Plent and Dr Sally Lee, Education Officers

Science and Plants for Schools

PHOTOGRAPH BY HANNET TRUSCOTT



ATTENDEE ON THE 'TRAIN THE TRAINER' COURSE

Science and Plants for Schools (SAPS) is a national programme of support for plant science education in the UK, based in the Botanic Garden, and funded by the Gatsby Charitable Foundation. We help create a positive and stimulating environment for the teaching of plant science in schools and colleges, working with teachers, technicians and scientists to develop resources, contribute to curriculum development and encourage innovative outreach activities.

Building up our online resource bank

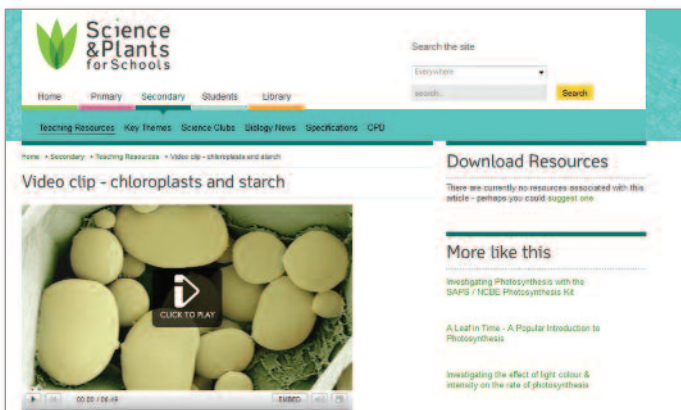
This year we added 22 new resources to the SAPS website www.saps.org.uk covering all manner of topics, from plant-based medicines to hydroponics, virtual ecology, tissue cloning, phytoremediation, and even the biophysics of coconuts. We were particularly pleased that many of these resources were produced by our SAPS Associates – UK teachers and technicians who are keen to extend their use of plants in the classroom – who can apply to us for a grant of up to £500 to develop their ideas.

Our new 'plants in the science curriculum' section of the SAPS website now covers 25 great plants for use in the science lab, with advice on buying, growing and using them to best effect. We added a new set of microscopy practicals developed by teacher, Vicki Cottrell, who joined us for 6 months on a joint Fellowship with the Nuffield Foundation. Our rather dated 'Plant Science Image

Database' was moved onto the more flexible and popular Flickr platform where we quickly garnered almost 8000 views of high-definition pictures of plant parts for use with classroom whiteboards. We also worked with the BBC to help turn their splendid TV series 'Blooming Botany' into a series of short clips suitable for use by school teachers and which are now available online on the BBC's 'Class Clips' service as well as the SAPS website. All these new resources have helped the SAPS website increase its visitor numbers by 125% and we are grateful that our funding allows us to provide such a rich selection of high quality teaching resources free to all.

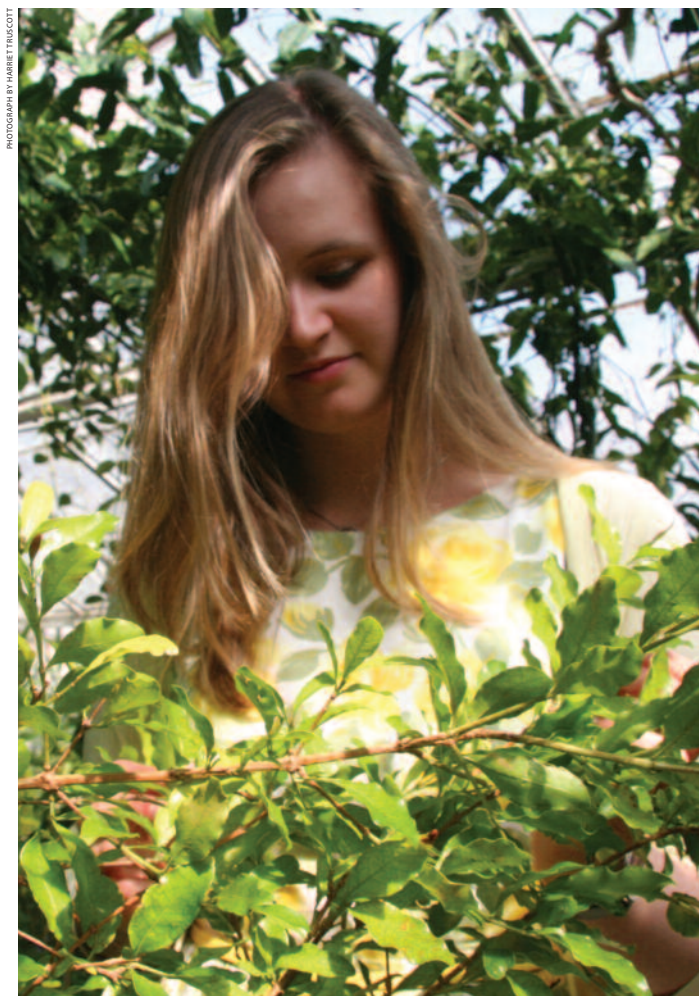
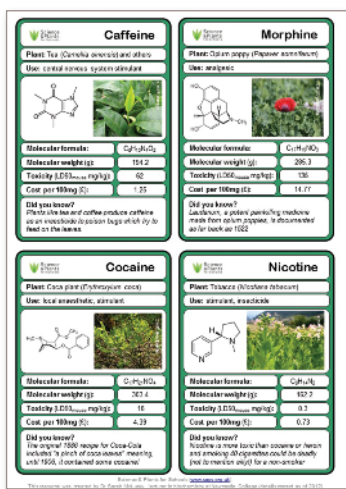
Connecting with teachers and technicians

Along with our website, SAPS uses social media to keep teachers and technicians up-to-date with particularly relevant plant science stories in the media and interesting new ideas for classroom activities. Due to our work in this innovative area we were invited by the Association for Science Education to help co-ordinate an online CPD event via Twitter on 'teaching science with plants'. This year SAPS was 'liked' by 304 more people on Facebook and gained 782 followers on Twitter, as well as being joined by 1015 more SAPS Associates, taking the total receiving our twice-termly newsletter to 2361 UK science educators. We don't just connect with people virtually and attended a number of meetings and conferences engaging around 1000 science teachers and technicians with our tried-and-tested practicals guaranteed to enliven their lessons.



CLIPS FROM THE BBC SERIES, BOTANY A BLOOMING HISTORY, MADE AVAILABLE ONLINE WITH THE HELP OF SCIENCE AND PLANTS FOR SCHOOLS

CARD GAME BASED ON MEDICINES AND DRUGS FROM PLANTS – BY DR SARAH MCLUSKY



YOUNG PLANT SCIENTIST, FREYA SCOATES

'Training the Trainers'

For those who provide Initial Teacher Training (ITT) or Continuing Professional Development (CPD) to biology teachers, there is often a great deal to cover in a short space of time. To help, we designed a new two-day course exploring what SAPS has to offer, and including our best bits for introduction into their courses. Not only did our 32 attendees get to try out 18 practicals, often in conjunction with the teachers who developed them, but they enjoyed a fantastic dinner in the Garden Café and talk from Dr Beverley Glover from the Cambridge Department of Plant Sciences. We are very grateful to the Sainsbury Laboratory Cambridge University for providing a truly inspirational backdrop for these courses this year, through which we reached almost a quarter of all ITT institutions and a half of the Science Learning Centres. We will be continuing these courses in 2012 to further their reach.

Supporting young plant scientists

We want young people to know more about the many, worthwhile careers they could follow if they knew more about plant science. So we commissioned a series of resources designed to outline a variety of jobs ranging from conserving endangered species to hunting for anti-cancer drugs in the rainforest or developing new food products for supermarkets. We also provided one to one advice to almost 50 teenage biologists through our 'Ask the Expert' email service.

For those already studying plant science, the opportunity to communicate their work to wider audiences and engage in outreach activities can bring many benefits. We ran a session on communication skills for the Gatsby Plant Science Network during their spring training weekend, and promoted outreach activities at both the annual research day of the Cambridge Department of Plant Sciences in December and the first UK Plant Science Federation Annual Meeting in Norwich in April. The SAPS team also presented at the Association for Science Education Annual Meeting in Liverpool in January 2012.

Ginny Page, Director, Science and Plants for Schools



The Trainee Technician Scheme and Cambridge Certificate in Practical Horticulture and Plantsmanship

The Cambridge University Botanic Garden has long been committed to training horticulturists, and today, the provision of excellent training in horticulture and plantsmanship is one of our key roles.



PROPAGATION WORKSHOP, AN EXAMPLE OF A WEEKLY EVENT HELD FOR TRAINEES, LED BY PAUL ASTON

In the 1800s the Garden employed journeymen amongst its staff, and they worked their way through the ranks from general garden assistants to skilled horticultural posts, receiving training in all aspects of horticulture from their colleagues. It was not until the 1950s that a formal training was introduced by John Gilmour (Director 1951–1973), the 'Trainee Horticultural Technician scheme'. Those participating are still known as Trainees to the present day. Since this time, hundreds of horticulturists have trained at the Garden and the scheme's alumni now feature eminent horticulturists including the widely acclaimed plantsman Roy Lancaster, Jim Gardiner (Director of Horticulture, Royal Horticultural Society), Peter Thoday (Lecturer and Horticultural Advisor to The Eden Project), and Jonathan Webster (Curator, RHS Rosemoor). In addition, Trainees number amongst the Garden's current horticultural staff, and their experience and understanding are vital in delivering a high quality Garden and collections.

The current scheme, the Cambridge Certificate in Practical Horticulture and Plantsmanship, was introduced in 2007 and is accredited by Cambridge University's Institute of Continuing Education at Madingley Hall. It attracts 120 credit points (Credit

Accumulation Transfer or CAT) at FHEQ level 4, equivalent to first-year undergraduate level. Participants join us as University employees for a year each September. Trainees gain practical horticultural experience, cultivating and maintaining the diverse collection of over 8,000 species, while developing their plant knowledge and collection management skills. On rotation, Trainees work alongside the Garden's skilled horticultural staff in each of the seven horticultural sections: Alpine and Woodland; Demonstration and Display; Experimental; Glasshouse; Landscape and Machinery; Systematics; and, Trees and Shrubs, thus giving them a very broad range of experiences.

Practical work is supplemented by formal training sessions, such as plant identifications, talks, practical demonstrations, and visits to gardens and local sites of botanical significance including Wicken Fen and the chalk grassland along Devil's Dyke near Newmarket. Many of these sessions are delivered by Botanic Garden staff and associates, their expertise and knowledge are crucial to the success of the scheme. To complement their hands-on practical training, Trainees are required to complete weekly logs and submit two assignments, each on a plant-based subject of their choice.



AN OPPORTUNITY TO BE INVOLVED WITH DEVELOPING THE MEDITERRANEAN BEDS



KATY ELTON WORKING WITH THE GEOPHYTE COLLECTION AT JERUSALEM BOTANIC GARDEN HAVING SUCCESSFULLY OBTAINED A SCHOLARSHIP FROM THEIR FRIENDS

At the end of the year Trainees are able to:

- demonstrate a critical understanding of the roles of botanic gardens
- discuss and review issues relating to plant diversity and conservation
- demonstrate their ability and skill in cultivating and managing plant collections according to scientific principles

Our current Trainees represent our fifth intake participating in the Cambridge Certificate in Practical Horticulture and Plantsmanship, and we can reflect with some pride on the success of the scheme. We attract a strong field of applicants from around the world, and interest far exceeds available places. While a number of our Trainees are school-leavers, the majority are now career-changers previously working as journalists, laboratory technicians, teachers and lawyers, for example. Many of our successful applicants have at least some previous professional experience and a basic horticultural qualification allowing them to build upon this knowledge during the year. All who join have enthusiasm, a passion for plants, and a keen desire to develop their horticultural careers.

The scheme further provides a valuable stepping stone and, we hope, allows participants to progress their careers upon leaving us. Those who joined on sandwich year placements return to college, many others take up permanent positions, for example, in College

gardens in Cambridge through to large organisations such as the Royal Horticultural Society (RHS). The majority choose to further their formal education and training, with a number successfully gaining places on the three-year Diploma at the Royal Botanic Gardens, Kew, including Jack Clutterbuck and Jamie Innes (2011-2012 trainees). Others join alternative training schemes including: the RHS Certificate in Practical Horticulture at Hyde Hall, Rosemoor or Harlow Carr; the National Botanic Garden of Wales Studentship; and the Christopher Lloyd Scholarship at Great Dixter. Some have seized the opportunity to further skills abroad, gaining scholarships to work at the Jerusalem Botanic Garden, studying on the Longwood Gardens (USA) Graduate Programme or participating in the RHS/Garden Club of America Scholarship at Longwood Gardens. Others opt to pursue scientific careers and the MSc/Postgraduate Diploma in the Biodiversity and Taxonomy of Plants at the Royal Botanic Garden, Edinburgh is a popular route.

Career options are numerous and varied, but whichever path Trainees choose to follow, we hope their year with us working towards the Cambridge Certificate in Practical Horticulture and Plantsmanship is a key to help them further their careers. While their departure at the end of the year is tinged with sadness, the permanent staff can take great pride in helping nurture a further generation of horticulturists, wherever their careers may take them.

Sally Petitt, Head of Horticulture

Research supported and facilitated

The Botanic Garden maintains and makes accessible the living plant collection of the University of Cambridge. Research and teaching is supported and facilitated through: the plant collections of over 8000 species; the Experimental Section which provides supported glasshouse and open ground research plots; and through use of the 40-acre Garden. In addition to home-grown research, the Garden supports a wide range of projects throughout the University of Cambridge and collaborates with a great many external partners.

Cambridge University Botanic Garden

- **Dr Tim Upson, Curator & Acting Director:** Maintaining collections of *Lavandula* and *Rosmarinus* for systematics research. Provision of *Lavandula* (Section *Pterostoechas*) material for collaborative phylogenetic study of Macaronesian lavenders, with Dr Mark Carine (Department of Botany, The Natural History Museum) and Jenny Chapman (M.Sc. candidate). Thesis successfully submitted for the degree of Master of Science of Imperial College London and the Diploma of Imperial College entitled 'The phylogenetic context of the Macaronesian diversity of *Lavandula* (Lamiaceae)'.
- **In collaboration with Tim Pankhurst, Plantlife Regional Conservation Manager based at CUBG:** Maintaining collection of fen plants for conservation including:
 - Testing 10 year old *Viola persicifolia* (fen violet) seed for viability from Wicken Fen.
 - Growing prothalli of *Dryopteris* sp.
 - Regenerative strategies for *Liparis loeselii* (fen orchid), with Pete Atkinson (Plant Records Officer) and Pete Michna (Experimental Supervisor).

Department of Plant Sciences, Cambridge

The following groups were supported in their work:

- **Dr Ulrike Bauer, Henslow Research Fellow of the Cambridge Philosophical Society (Functional Morphology and Evolution)** Cultivation of carnivorous plants.
- **Dr David Coomes (Forest Ecology and Conservation Group)** Dr Pieter De Frenne (Postdoctorate): cultivation of *Millium effusum* in various soil samples. Andres Plaza-Aguilar (MPhil candidate): facilitation of measurements on various trees. Tom Becker (Part II project): provision of *Rosaceae* samples.
- **Dr Beverley Glover (Evolution and Development Group)** Cultivation of *Antirrhinum* and *Fagopyrum*. Cecilia Martínez (PhD candidate): cultivation of various members of the tribe *Antirrhineae* to investigate different pollination syndromes. Provision of liverworts, mosses, ferns, lycophytes and cycads for teaching.
- **Professor Howard Griffiths (Plant Physiological Ecology Group)** Maintaining collections of *Bromeliaceae* & other plants. J. Falconer-Roberts and E. Marsh (Part II projects): provision of samples to compare C3 and C4 grasses. Dr Jessica Royles (Postdoctorate): provision of *Conocephalum* sp. (thallose liverwort).
- **Dr David Hanke (Plant Growth Substances)** Cultivation of potatoes and Jerusalem artichokes for hormone extractions.
- **Dr Julian Hibberd (Molecular Physiology Group)** Britta Kuempers (PhD candidate): cultivation of *Flavaria* and *Cyperus* to investigate leaf venation in C3 and C4 plants.
- **Dr Uta Paszkowski (Cereal Symbiosis Group)** Cultivation of maize to test inbred lines under Cambridge conditions.
- **Professor Alison Smith (Plant Metabolism Group)** Elena Kazamia (PhD candidate): cultivation of biofuel algae in buckets.

- **Dr Edmund Tanner (Tropical Ecology Group)** Freya Scoates (Part II project): investigating competition between *Brassica napus*, *B. nigra* and *Alopecurus myosuroides*. Niki Bunch (Part II project): investigating the seed bank from different habitats on Fleam Dyke. Laura Plant (Part II project): cultivation of barley in soils amended with biochar. Inga Vejakob (Part II project): investigating soil nutrients from two sites on Ely Common using *Senecio vulgaris*. Emily Farbrace (Part II project): split root experiment in wet/dry and high/low nutrient soils using *Holcus lanatus*. Investigating the cultivation of Oak and Beech in *Miscanthus* compost.

University of Cambridge

- **Dr Sandra Albrecht (Department of Biochemistry)** Provision of *Cedrus* and *Picea* samples.
- **Dr Maximilian Bock (Department of Architecture)** Cultivation of bamboo samples from seed.
- **Dr Nick Butterfield (Department of Earth Sciences)** Provision of *Isoetes*, Bryophytes and Lycophytes for teaching.
- **Dr Alex Driver (Institute for Manufacturing)** Provision of moss for biophotovoltaic moss table.
- **David Earl (University Computing Service)** Digital mapping project.
- **Dr Walter Federle & Dr Adam Robinson (Department of Zoology)** Maintenance of *Nepenthes* and other plant material.
- **Dr Martin Jahnke (Department of Pathology)** Collection of beetles from bracket fungus.
- **Dr Alex Pryor (Department of Archaeology)** Provision of roots for archaeological research.
- **David Williams & Claire Feniuk (Department of Zoology)** Testing bird surveying techniques.
- **Matt Hay & Miranda Stewart (Department of Zoology)** Bird feeder project.
- **Keigo Vematsu (Department of Zoology)** Collection of plant material.

External collaborations

- **Louise Bacon (The Cambridge Lichen Group)** Lichen survey in Botanic Garden.
- **Dr Leonor Morais Cecilio (Instituto Superior Agronomia, Lisbon, Portugal)** Provision of *Quercus* material for the genetic study of *Q. × hispanica*.
- **Dr Lynn Dicks (Department of Zoology), Dr Mark Gillespie (University of Leeds) & Robert Day (University of Reading)** Care of experimental material for field experiment in connection with the Insect Pollination Initiative.
- **Alex Dittrock (Anglia Ruskin University)** Investigation of insects on stinging nettles.
- **Rachel Fosberry (Oxford Archaeology East)** Provision of emmer and spelt wheat for archaeological research.

- **Dr Nancy Harrison (Anglia Ruskin University)** Mick Whitehouse: Great Tit monitoring project. Hilary Conlan & Verena Krug: nest box survey. Carrie Dak & Amber Hatch: bird observations & monitoring on peanut feeders.
- **John Holden (Saffron Walden)** Collection of fungal specimens on *Lavandula*.
- **Dr Jonathan Shanklin (Cambridge Natural History Society)** Provision of plant material.
- **Norman Sills (RSPB/Natural England)** Germination of *Lathyrus palustris* (marsh pea) for reintroduction programme at Lakenheath Fen.
- **Bridget Smith (USA Botany Group)** Collection of plant material and fungi.
- **Dr Filip Vanderlook (Philipps Universität Marburg, Germany)** Provision of various *Geranium* sp. for molecular phylogenetic study.

Plant Material provided to other gardens

- **The Royal Botanic Gardens, Kew** Various woodland and alpine plants.
- **Glasgow Botanic Gardens** New Zealand plant material.
- **Seed of *Strongylodon macrobotrys* (jade vine) to the following gardens:** Royal Horticultural Society Garden, Wisley; National Botanic Garden, Glasnevin, Ireland; The Eden Project; Bristol Zoological Garden; Bristol University Botanic Garden.

Publications by Botanic Garden staff and associates

- Cullen, J. (2012). 731 *Mahonia × lindsayae* 'Cantab' (Berberidaceae). *Curtis's Botanical Magazine* 29(2): 122-136.
- Cullen, J. (2012). 744 *Stauntonia angustifolia* (Lardizabalaceae). *Curtis's Botanical Magazine* 29(3): 315-321.
- Battle, G.M., Kyd, G. O., Groom, C. R., Allen, F. H., Day, J.C. & Upson, T.M. (2012). Up the garden path: a Chemical Trail through the Cambridge University Botanic Garden. *Journal of Chemical Education* 89(11): 1390-1394.
- Upson, T.M. & Cullen, J. (2012). 736 *Firmiana simplex* (Malvaceae). *Curtis's Botanical Magazine* 29(2): 170-181.
- Upson, T.M. (2011). Cambridge University Botanic Garden. In: *Botanical Gardens of the Universities of the Coimbra Group: 20-24*. Padova University Press, Padova.
- Upson, T.M. (2011). *Biscutella*, *Fibigia*, *Iberis*, *Lunaria* & *Morisia*. In: Cullen, J., Knees, S.G. & Cubey, H.S. eds. *The European Garden Flora. A Manual for the identification of plants cultivated in Europe, both out-of-doors and under glass*, ed. 2. Vol. 2. Cambridge University Press, Cambridge.
- Upson, T.M. (2011). *Linum*. In: Cullen, J., Knees, S.G. & Cubey, H.S. eds. *The European Garden Flora. A Manual for the identification of plants cultivated in Europe, both out-of-doors and under glass*, ed. 2. Vol. 3. Cambridge University Press, Cambridge.
- Upson, T.M. (2011). *Lavandula* & *Rosmarinus*. In: Cullen, J., Knees, S.G. & Cubey, H.S. eds. *The European Garden Flora. A Manual for the identification of plants cultivated in Europe, both out-of-doors and under glass*, ed. 2. Vol. 5. Cambridge University Press, Cambridge.

Syndicate and Cory Managers

Four meetings of the Botanic Garden Syndicate were held under the Chairmanship of Professor Keith Richards for the Michaelmas and Easter terms and Professor Nick Davies for the Lent term. Syndicate members for the year were Professor Sir David Baulcombe, Dr David Coomes (from the May meeting), Professor Nick Davies, Dr Laurie Friday, Dr Ian Furner, Dr Beverley Glover, Mr Donald Hearn, Professor Nick Jardine, Professor Ottoline Leyser, Mrs Gina Murrell (who retired following the November meeting) and Dr Jane Renfrew (who retired after a long and much valued membership following the July meeting). The Secretary to the Syndicate was Dr Tim Upton. The Syndicate were again pleased for the opportunity to meet the Botanic Garden staff following the July meeting.

The Cory Managers met four times during the year under the Chairmanship of Professor Sir David Baulcombe. Managers for the year were Mr Michael Allen, Professor Howard Griffiths, Dr Alan Munro, and Mr John Stead.

Botanic Garden Staff – October 2011 to September 2012

Acting Director

- Dr Tim Upton

Administration

- Administrator: Mrs Brigid Stacey
- Deputy Administrator: Miss Martine Gregory-Jones (to May 2012)
- Finance Officer: Mrs Rachel Agnew
- Deputy Finance Officer: Miss Suzanne Broomfield (to November 2012); Mrs Anouska Arthur (from December 2012)
- Finance Administrator: Mrs Elaine Dalton
- Garden Administrator: Mrs Pat Smith, Ms Rachel Fuller (to August 2012)
- Outreach Administrator: Mrs Emma Daintrey
- Outreach Assistant: Ms Heidi Bradshaw
- PA to Director/Deputy Director: Ms Jane Adams (from July 2012)

Visitor Services Team

- Visitor Services Assistant (VSA) Section Supervisor: Mrs Pauline Bryant (retired in April 2012)
- Deputy VSA Section Supervisor & Team Leader (Tuesday-Thursday): Miss Laura Welford
- VSA Team Leader (Friday-Monday): Ms Nicci Steele-Williams
- VSAs: Mr Andrew Bryant, Miss Jennifer Hills, Miss Amanda Wilkins, Miss Lucinda Fudge (maternity leave from December 2012), Mrs Hannah Winter (maternity cover from December 2012), Mrs Susan Baker, Mr Robin Gough, Ms Jacqui Riley (from August 2012), Mr David Evans, Miss Phoebe Monk, Mr Thomas Arnold (to June 2012), Miss Alicia Lloyd, Ms Clare Hall.

Development

- Development Officer: Mrs Juliet Day

Education

- Head of Education: Dr Karen van Oostrum (to February 2012)
- Education Officer, Schools: Dr Judy Fox
- Education Officer: Dr Sally Lee
- Education Officer (temporary cover): Mrs Felicity Plent (from April 2012)

Estates

- Curator: Dr Tim Upton
- Estates Manager: Mr Philip Starling
- Plant Records Officer: Mr Pete Atkinson
- Plant Records Assistant: Ms Mar Millan

Horticulture

- Head of Horticulture: Mrs Sally Petitt
- Alpine & Woodland Section: Supervisor – Ms Helen Seal; Assistant – Heloise Brooke (to January 2012), Mr Simon Wallis (from April 2012).
- Demonstration & Display: Supervisor - Mr Peter Kerley; Assistant – Mr Paul Aston, Mr Paul Abbott (contract to February 2012)
- Experimental Area: Supervisor - Mr Pete Michna; Assistant – Miss Sally Hughes (from September 2012)
- Glasshouse Section: Supervisor - Mr Alex Summers (from September 2012); Assistant - Mr Alan Langley (Acting Supervisor to September 2012)
- Landscape & Machinery: Supervisor – Mr Adrian Holmes; Assistant – Mr Alistair Cochrane
- Systematics Section: Supervisor – Mr John Kapor; Assistant – Mr Simon Wallis (to April 2012), Mrs Julie Clos (from September 2012)
- Tree & Shrub Section: Supervisor – Mr Mark Crouch; Assistant – Mr Ian Barker
- Trainee Horticultural Technicians: From September 2011 to August 2012 – Mr Jack Clutterbuck, Miss Katy Elton, Mr Jamie Innes, Miss Claire Kohlis, Ms Judith Lenton, Mr Callum Mullins. From September 2012 – Mr Danny Burlingham, Mr Gareth Cox, Mr James English, Ms Juliet Houston, Ms Lucy Rowley, Mr Robert Wooding.

Science and Plants for Schools (SAPS)

- Director: Ms Virginia Page
- Project Manager: Mr Daniel Jenkins
- Communication Officer: Ms Harriet Truscott
- Project Officer: Ms Elizabeth McDonald

Botanic Garden staff activities

The following members of staff have contributed to external organisations and groups in connection with their posts:

- Juliet Day continued as Chair of Great Days Out around Cambridge and to represent the Garden at Love Cambridge meetings.
- Judy Fox continued with the Botanic Garden Education Network as a Director.
- Daniel Jenkins joined the Society of Biology Education and Training Panel for a 6 month term.
- Ginny Page was elected to serve on the inaugural Executive of the UK Plant Sciences Federation.
- Sally Petitt continued on the Advisory Committee of the Chelsea Physic Garden and as Trustee of the Merlin Trust.
- Helen Seal continued to serve as Secretary to the Professional Gardeners' Guild Trust.

- Harriet Truscott joined the steering group for the Science Council's 'Futuremorph' STEM careers project and continued as a member of the 'Nucleus' association of professional biology organisations.
- Dr Tim Upton continued as a Trustee of PlantNetwork; as Vice-Chair of the Plant Conservation Committee of Plant Heritage and chaired a working group reviewing collection criteria; as an Editorial Consultant to The Plantsman, published by the Royal Horticultural Society; and as Secretary of the Horticultural Taxonomy Group (Hortax). He was a key note speaker at the Sequim International Lavender Conference, USA in May 2012.

The Cambridge Certificate in Practical Horticulture and Plantsmanship

- Congratulations to Jack Clutterbuck, Katy Elton, Jamie Innes, Claire Kohlis, Judith Lenton and Callum Mullins on their successful completion and award of the certificate.

Funding

The Botanic Garden is able to report on a successful year in which £2 million was raised against expenditure of £1.89 million.

The main funding sources were the University of Cambridge, The Cory Trust Fund, admission charges and Friends' subscriptions. Trading through franchises for the Garden Café and Botanic Garden Shop also contributed. The Gatsby Charitable Foundation supported the activities of Science and Plants for Schools.

Despite poor weather through the main part of the year, admission and tour income (combined) increased by nearly 6%, and Friends' subscription income was up by 27%. In particular, donations and Friends' subscriptions proved invaluable, funding various Garden projects such as the continued improvement to the Schools' Garden, enhancement of the Fern Garden, replanting of Lime trees on the Hills Road boundary, an upgrade to the Alpine Yard, improvements to propagation facilities, and the provision of the annual meadows planted in honour of the Queen's Diamond Jubilee and the London 2012 Olympics.

Income/ Budgets		£k	£k
Funding Source	Details	2011-12	2010-11
University Support	Pay	614.0 See Note 1	649.0
	Non Pay	37.0	0.0
	Non Recurrent	80.6	172.7
Trust Funds	The Cory Fund (previously Cory Maintenance Fund)	452.5 See Note 2	390.4
	Cory Capital Fund	0.0 See Note 2	49.6
	Other Trust Funds	12.7	12.3
Admissions Income	Gate takings and Tours	262.2	248.3
Earmarked Funds	Friends	123.3 See breakdown below	100.6
	Other to include Specific Donations and Trade	62.6	58.2
Project Grants/ Funding		4.5 See breakdown below	103.7
Education Courses and Events		52.1	49.8
Science and Plants for Schools		337.5	64.4
Donations – General		4.4	0.4
Other/ Miscellaneous income (includes Gift Aid from 11-12)		13.6	12.8
Total Income		2,057.0	1,912.1

Breakdown of Income (Friends: Earmarked Funds)		
Friends of the Botanic Garden – Subscriptions	112.6 See Note 3	88.6
Friends of the Botanic Garden – Outreach programme	7.1	8.4
Friends 25 Fund	0.0	0.5
Investment Income and Interest Earned on Earmarked Funds Held	2.0	2.0
Other	1.5	1.1
Total	123.3	100.6

Breakdown of Income (Project Grants/ Funding)		
Schools Garden Fund and Project	0.1	3.5
Education Garden Room Project	0.0	100.0
Tilia – Limes Project	4.0	0.0
Community Art Project – % for Art	0.4	0.3
Total	4.5	103.7

Notes

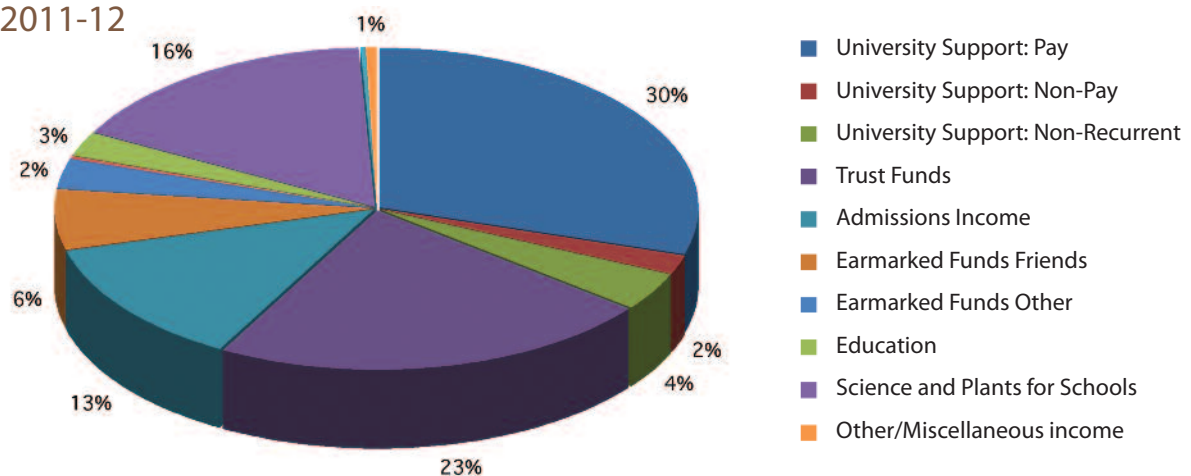
- Staff vacancy enabled University funds to be diverted towards non-pay running costs.
- The Cory Maintenance Fund and the Cory Capital Fund were merged on 1 August 2011, to form 'The Cory Fund'.
- Of note, Friends income from subscriptions increased by 27%.
- Vacancy savings were used to contribute towards non-pay deficits brought forward.
- Pay costs relate to specific external funding.
- Expenditure shown here has been offset by internal transfers from other funding sources (£145k)
- Expenditure largely relates to café remedial works and furniture.

* Calculations include minor rounding errors.

Expenditure		£k	£k
Expenditure Type	Funding Source	2011-12	2010-11
Pay	University Support	543.0 See Note 4	587.2
	Trust Funds	387.1	377.3
	Admission	241.2	232.5
	Earmarked Funds: Friends	52.6	57.0
	Earmarked Funds: Other	14.3 See Note 5	0.3
	Project Grants/ Funding	4.5	3.3
	Education Courses and Events	0.0	0.3
	Science and Plants for Schools	179.2	173.2
		1,422.0*	1,431.1*
Non Pay	University Support	99.0 See Note 6	254.0
	Trust Funds	39.1	20.1
	Admission	80.6	58.2
	Earmarked Funds: Friends	20.5	16.8
	Earmarked Funds: Other	75.6 See Note 7	-67.0
	Project Grants/ Funding	27.6 See breakdown below	7.6
	Education	36.4	39.9
	Science and Plants for Schools	86.0	70.1
	Donations – General	2.6	1.6
	Other/ Miscellaneous	2.8	11.1
		470.2	412.5*
Total Expenditure		1,892.2	1,843.6

Breakdown of Expenditure (Project Grants/ Funding)		
Schools Garden Fund and Project	2.2	0.6
Limestone Rock Garden Project	0.0	0.1
Tilia – Limes Project (incl. Gift Aid)	5.0	0.0
Alpine Yard Upgrade	16.1	2.9
2012 Jubilee Meadows (Financed from Friends 25 Fund)	0.8	0.0
Community Art Project – % for Art	7.9	7.4
Total	32.1*	10.9*
Total Income less Total Expenditure:	164.8	68.5
Less: Earmarked funds held for future planned expenditure	-157.0	-68.0
Funds reinvested by Cory and Trust Fund Managers	-2.9	-117.5
Funds remaining for discretionary use	4.9	-117.0

Income 2011-12



Thank You

Gifts, donations and support received in the Annual Report period 1 October 2011 to 30 September 2012

Giving

In Memory Gifts

- Lesley, Michael, John and Roger Cafferata of Canada in memory of Margaret Pickard, £125
- Mrs Juliet Day in memory of Michael Anthony Atkins for the Fern Grove, £535

Individual Gifts and Donations

- Mr & Dr Jos and Karen van Oostrum, with Jasmine and Charlie, for a new *Tilia tomentosa* planting, £4000
- Mr Richard Price, towards interpreting the Systematic Beds, £1000
- Mr Frederic Carl Rich, US\$500

We would also like to thank all those Friends of Cambridge University Botanic Garden who continue to make gifts over and above the annual renewal subscription.

Grants, Trusts and Societies

- Arts Council East towards Sounds Green late night openings, £230
- Gatsby Charitable Foundation for Galapagos brochure, £3588

Corporate Support

- Mills & Reeve towards Sounds Green late night openings, £800

Corporate Friends

AAAS Science International

Abbey College

Alerme.com Ltd

Arts Council England, East

Bellerbys College

Birketts LLP

Brookgate Development Management Ltd

Cambridge Assessment

Cambridge Centre for Sixth Form Studies

Cambridge Crystallographic Data Centre

Cambridge Education Group

Cambridge Programme for Sustainability Leadership (CPSL)

Cambridge Royal Albert Benevolent Society

Cambridge Silicon Radio Ltd (CSR)

Cambridge University Counselling Service

Cambridge University Investment Office

Cambridge University Press

Cambridge Water Company

Cambustion Limited

Cantab Capital Partners LLP

Churchill College

Clare Hall

Collabora

Dante Ltd

Deloitte LLP

Department of Chemistry

East of England Development Agency

English Heritage

Eversheds LLP

Faculty of Education

Fauna & Flora International

Geomerics Ltd

Hills Road 6th Form College

Hope Residential Nursing Home

Institute of Biotechnology University of Cambridge

John Lewis Cambridge

Kennedys

Linaro Ltd

Marks and Clerk LLP

Marshall Sports & Social Club

Metis Arts

Microsoft

Mills and Reeve LLP

Mott MacDonald Ltd

MPW (Mander Portman Woodward Ltd)

Murray Edwards College

Nash Matthews

National Extension College

Natural England

NetNames Brand Protection Ltd (was Envisional Ltd)

NHS Cambridgeshire

NIAB

Open University

Pembroke College

Peters Elsworthy and Moore

Ramboll UK Ltd

Real VNC Ltd

Samsung Cambridge Solution Centre Social Club

Saunders Boston Limited

Savills (L&P) Ltd

Sony Computer Entertainment Europe Ltd (SCEE)

St Mary's School

Stephen Perse Foundation (Perse School for Girls)

Sylvia Newman Garden Design

Taylor Wessing LLP

Thales E-Security Ltd

The New School of English

Transversal Corporation Limited

True Knowledge

Tucker Gardner

University of Cambridge Computer Laboratory

University of Cambridge Safety Office

Veebeam Limited

Wolfson College

Workplace Law

WSP

Weather

We have been recording weather data at the Botanic Garden since 1904 and supply daily figures to the Meteorological Office at Bracknell. This year was marked by two contrasting periods. Below average rainfall left both ground water and local aquifers inadequately recharged over winter, with levels well below normal. Significant rain did not come until April and marked the start of a record-breaking wet summer. The winter was relatively mild until heavy frosts below -13°C on two consecutive nights scorched many plants and caused subsequent losses from the collection.

Monthly temperatures and rainfall					
	Mean maximum $^{\circ}\text{C}$	Highest temperature $^{\circ}\text{C}$	Mean minimum $^{\circ}\text{C}$	Lowest temperature $^{\circ}\text{C}$	Rainfall (mm)
Oct 2011	18.0	29.1	9.0	0.6	16.9
Nov	13.5	17.6	6.8	-1.5	29.9
Dec	9.4	13.4	2.8	-3.4	47.2
Jan 2012	9.1	12.9	2.8	-3.9	42.2
Feb	7.6	17.4	0.2	-13.6	20.8
Mar	13.6	21.3	2.8	-1.3	22.0
Apr	12.8	19.0	4.0	-3.5	102.2
May	17.5	26.9	8.2	0.9	51.4
Jun	18.9	28.1	10.5	3.9	105.9
Jul	21.3	28.8	11.9	6.9	130.3
Aug	23.3	31.3	12.8	7.8	76.1
Sep	19.5	28.5	8.8	4.5	30.1
					675mm

October 2011 started on a very mild note with the maximum well above 20°C for the first six days, and reaching an unusual seasonal high of 29.1°C . November continued mild with only one day when the temperature failed to reach double figures. While December saw the first light snowfall, this readily thawed.

The first half of January again saw relatively mild weather for the season and was quite unsettled. Winter arrived during the first half of February with a heavy snowfall totalling 14cm on the 4th. With the ground frozen, the thaw was slow and lasted ten days. There were some severe frosts during the snowy spell with -13.6°C recorded in the air on the 11th and -11.5°C the following night, causing damage to a number of plants in the Garden. The previous relatively mild winter temperatures followed by such extreme low temperatures left plants vulnerable to frost scorch. More winter damage and plant losses were caused by these two nights of extreme frost compared to the previous two winters, when the cold was prolonged over several weeks but temperatures did not reach these lows. In complete contrast, a high of 17.4°C was reached later in the month.

March continued dry reviving fears of a consecutive prolonged drought. The second half of the month saw mild days, but the nights remained cold. Significant rain did not fall until the second half of

April with 23.8mm falling on the 28th. The month was cool with the maximum temperature failing to match that reached in March. May continued cool and saw four ground frosts, but ended on a more seasonally acceptable high of 26.9°C . June was notable for heavy rainfall at times.

July proved to be our wettest month. Over 100mm of rain had fallen in three out of the last four months, an unusual occurrence. It is common for Cambridge to experience years in which rainfall does not reach 100mm in any month. As a result the Garden looked green and lush compared to the usual brown lawns we expect during the summer, keeping the mowers abnormally busy and encouraging more weed growth. August was the only month when temperatures exceeded 30°C and was generally drier. There was an exceptionally intense thunderstorm on the 25th which lasted three and a half hours during which 49.4mm of rain fell, the wettest 24 hours since October 2001. This resulted in some erosion of the gravel paths and the intensity marked by significant tidemarks of debris around the garden. Flooding in Cambridge city centre was reported on the national news. September's weather was quieter with below average rainfall and the first ground frosts.

John Kapor, Systematics Supervisor

www.botanic.cam.ac.uk



Front cover image: *Emmenopterys henryi*. By Clive Nichols.

Back cover image: *Glebionis segetum*, part of the Field of Gold celebrating the Olympics. By Tim Upson.

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