Newsletter

For Friends of the Christchurch Botanic Gardens Inc
To Promote, Protect, & Preserve

No 83, Summer 2010/11

President's Report

You may have noticed a new and very shiny interpretive sign base installed in the maple border opposite the herbaceous border. This is a prototype for several more that will be appearing around the Gardens over the next few months.

As guides we recognise that rattling off plant names soon has the visitors' eyes glazing over and the names become meaningless unless there is a story to go with them. I recall telling a group that our Rangiora is sometimes called "Bushman's toilet paper" and an American in the group said "that may well be the only thing I remember from this tour".

There are many stories to tell and as the vast majority of the folk who join our tours are from overseas, the stories we can tell about our own flora are unlikely to be heard anywhere else. These are the stories that are ours to tell – like the one about *Dodonaea viscosa* later in this issue.

When you take into account that only about one visitor in 2000 joins our tours, there are 1999 who don't get any more information than what's on the label, if there is one. Of course more folk get a "once over lightly" on the Caterpillar but that's not the same as our face-to-face, interactive tours where you get to ask questions.

The Botanic Gardens does have a role and a responsibility to educate and for the 99.95% who miss out on our tours, the provision of stories by way of words and graphics is a major step forward.

We commend and support John, Jeremy, Lynda and the BG Staff in this endeavor and look forward to an information explosion in the months to come.

Cheers
Alan Morgan

Friends Christmas Party 2010

When and where: 4 pm, Saturday 11th December 2010 at the P C Browne Room, Canterbury Horticultural Centre, Riccarton Ave

What to bring: Please bring a plate. Drinks, coffee, tea and Christmas cake will be provided.

Attractions: There will be a quiz to test your knowledge of the Botanic Gardens and a raffle with three hampers as prizes.

INSIDE

FCBG
PO Box 2553
Christchurch

Gardens' News

From Curator John Clemens

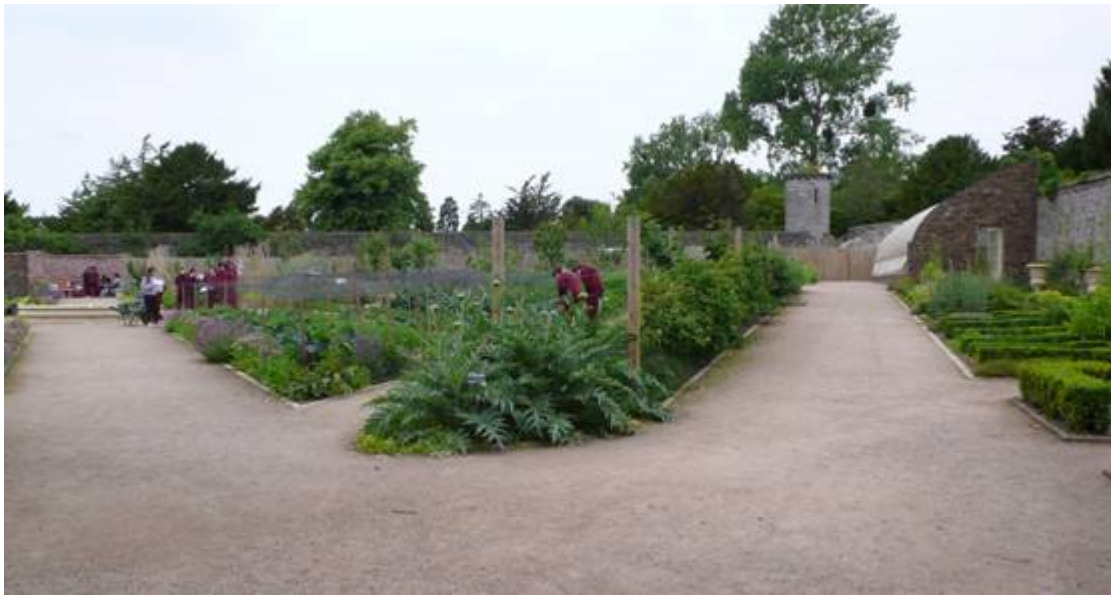
To Dublin and back.

Over winter and into spring I have continued to give talks to community and specialist groups on topics ranging from a vision of the future for the Christchurch Botanic Gardens to broader topics, such as the role of the botanic garden in plant conservation. Audiences have included those attending the Wellington Botanic Garden Winter Seminar, the Christchurch Plant Conservation Network conference, and the local members of the Royal Society. The St Barnabas In-between group of the Association of Anglican Women was particularly memorable for the gift of baking I was able to share with Botanic Gardens staff. All audiences are hungry for information about the work of botanic gardens and the progress being made in our very own example of this worldwide phenomenon.

Questions from the floor at these meetings can often revolve around the twinned issues of "What are you going to do about…?" and "I hope you are not going to change…". Whether it is to do with change or maintaining the status quo, these questions reinforce the keen interest people have in their special botanical place. In response, I frequently return to the purpose of botanic gardens and the various activities they undertake to the highest standard possible in the four roles of display, education, research and conservation.

These roles were analysed and debated at the 4th Botanic Gardens Conservation International (BGCI) Congress in Dublin in June 2010. I attended the Congress along with Grounds Staff Coordinator, Bede Nottingham, and over 375 other people from over 70 countries. BGCI is a worldwide non-profit organisation established in 1987 to coordinate and mobilise botanic gardens in halting the loss of plant diversity. Botanic gardens, coordinated and supported by BGCI, helped in the development of the *Global Strategy for Plant Conservation* (GSPC), which was adopted by the Parties to the UN *Convention on Biological Diversity* (CBD) in 2002. The Strategy has 16 targets, many of which are relevant to botanic gardens, and BGCI takes a lead in facilitating the ex situ (cultivated) collections of threatened plants, and the promotion of education and public awareness of the importance of plant diversity for our future existence. The Christchurch Botanic Gardens is a member of BGCI and is registered as being committed to plant conservation through the 2000 *International Agenda for Botanic Gardens in Conservation*.

There were several memorable presentations. Peter Wyse Jackson (former Curator, Dublin Botanic Gardens) gave an important plenary message in "New roles for old gardens: managing and developing an effective botanic garden in modern times". He identified major shifts in focus in the last two decades:



A magnificent walled fruit and vegetable demonstration garden at the National Botanic Garden of Ireland, Glasnevin (Dublin)

Science and technology has progressed from a study of taxonomy to conservation genetics and active *in situ* and *ex situ* collections and undertakings.

Live collections have broadened to include seed and DNA banks with an emphasis on native plants and communities, although conserving threatened exotic crop and ornamental cultivars was also important.

Education has expanded to include the social role of botanic gardens in raising awareness of environmental issues (such as climate change, invasive species, water wise gardening, and biodiversity loss).

Botanic gardens needed to adjust to these changing circumstances at the same time as providing a relaxing place of high amenity and recreational value, as well as conserving cultural heritage.

Sara Oldfield (Secretary General of BGCI) reported on plant conservation and botanic gardens worldwide and the achievement of the *International Agenda* targets. Many of the success stories of botanic gardens are summarised in the *BG Journal* and other BGCI publications. These include the development of a database of globally threatened species, the growth of education, conservation and research programmes involving botanic gardens, and the use of wild plants for food and medicine by local communities.

Bruce Pavlik (for Stephen Hopper, Royal Botanic Gardens, Kew) and others presented work on the role of botanic gardens in ecological restoration, either through hands-on collection and use of seeds in industrial restoration projects or as models of restoration within botanic gardens.

Jocelyn Dodd (University of Leicester, UK) reported on research commissioned by BGCI on the redefinition of the role of the botanic garden. Botanic gardens tended to be tentative in taking up challenges and adopting a leadership role. Jocelyn identified a number of key areas for improvement (some of which might apply to any botanic garden), including broadening of audiences, enhancing relevance to communities, embedding education in the organisation, and modelling sustainable behaviours.

Further information on the work of BGCI, including congress reports and publications, can be found at http://www.bgci.org/. It is inspirational to see how other botanic gardens are responding to these modern challenges, each in its own way and with the resources at its disposal. In Christchurch we have a beautiful and highly accessible botanic garden set in the parkland of Hagley Park and surrounded by many natural and productive landscapes. We also have a City Council that is forging ahead with the construction of our new operational and visitor facilities as we make improvements and innovations within the Gardens.

These developments are progressing despite the impact on the City of the September earthquake. I can report that the Christchurch Botanic Gardens sustained very little damage as a result of the shake and after-shakes, the most obvious of which was some slumping and lateral spread near one part the Avon. The trees must have had a good shaking, but none came down; the conservatories, glasshouses and other buildings are still intact.

Summer Research Scholarships

The Friends of the Christchurch Botanic Gardens are funding two 2010-2011 Summer Scholarships for full time research to be undertaken over the next 10 weeks. Matching funds to support the students are being provided by the University of Canterbury, which will also administer the student stipends as part of its Summer Scholarships scheme.

These scholarships are intended to support students eligible for enrolment at the fourth year MSc or PhD level with an expectation that they will undertake postgraduate research at the University of Canterbury at some stage in the future.

The first project has been taken up by Matt Wallace who has already made a start. Matt is working as part of a team that includes the Curator and Dr Trevor Partridge on the naturally occurring indigenous flora of the Christchurch Botanic Gardens and Hagley Park. He will survey and collate past surveys and published information from reports made over 100 years ago to BioBlitz 2005, familiarise himself with plants of particular interest (aided by study in various herbaria and in the field) and engage in guided exploration over the summer. It is hoped that this will allow the naturally occurring plants to be better conserved, but also guide potential revegetation compatible with other uses for these areas. The supervising staff member at the University is Dr Pieter Pelser.

The second project will start shortly. This will focus on the baseline survey and detailed planning of the

Cockayne Memorial Garden, the associated pond and threatened species lawn in the New Zealand Section of the Botanic Gardens. The supervising staff member at the University is Dr Dave Kelly.
News of progress on these projects will be reported in the next issue of the Newsletter, and the students will prepare reports and deliver talks at the close of their brief but intensive period in the Botanic Gardens.
John Clemens

Events in the Gardens

From Lynda Burns, Visitor Services Team Leader - 941 7585

Coming events include:

Christmas display.
A floral celebration of Christmas in the Gardens' Conservatories. In the Townend House.
Daily during December between 10.15 am and 4.00 pm

Tree magic - a nature programme.
A free children's activity designed for 5–10 year olds with parent or caregiver presence required. Follow signs from the Information Centre. Sunday 9, and following Sundays, in January, 2.00 - 3.00 pm.

The Breeze Lazy Sundays.
A free concert of local music on the Archery Lawn.
Sundays, from 6 February to 13 March, 4.00 - 5.30 pm.

Sunday Bandstand.
Two 40 minute sets at the Band Rotunda (except for February 20th when it is on Weather Station Lawn).
Sundays, 6 Feb to 27 March, 12 noon to 1.30pm.

Anthony Harper Lawyers Summer Theatre presents - *The Complete History of World Rugby Abridged.* Daffodil Lawn, Botanic Gardens. Free. Cancelled if wet.
9 February through to 27 February.
7.00pm, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday.
2.00pm matinees, Saturday, Sunday.
No performance Monday.

Burst! Christchurch's 22nd Festival of Flowers.

Including:

Sogetsu Ikebana Bamboo Installation.
A large-scale water-themed Sogetsu Ikebana bamboo installation on the Archery Lawn, by Master teacher Takako Martin.
Fri 11 Feb - 6 Mar. 7am to dusk

Watery Wonderland.
Meet our topiary baby whale and his penguin friends at the Information Centre pond.
Fri 11 Feb- Sun 6 Mar, 7am –dusk.

Out door movie night
Water Whisperers Tangaroa by Kathleen Gallagher. With a special guest speaker**.** On Archery Lawn. Sun 20 Feb. Arrive at 7.30pm. Bring a picnic and enjoy. Film will begin around dusk. Gates and car-parks will be open till late. (If raining will be postponed to Sun 27 Feb. Check Gardens website for notification.)

Childrens' Story Telling.
Free event for kids of all ages with stories inspired by the magic of water. Botanic Gardens Playground. Weekends 12/13, 19/20, 26/27 Feb and 5/6 Mar, 11.30am-12.30pm.

World Buskers Festival.
Circus and street theatre - at the Peacock Fountain.
Friday 21 to Sunday 30 January, 11.00 am to 3.00 pm.

Floral topiary menagerie.
Following the popularity of the 2010 topiary in Victoria Square, a group of life-size sculptural animal forms will be gracing Cathedral Square during the 2011 Festival with two more creatures displayed in the Information Centre lake in the Christchurch Botanic Gardens.

Articles

Dodonaea viscosa – Ake Ake - an amazing traveller

This bread and butter native that everyone knows, probably because of its more popular purple form, has a little known story that goes far beyond our shores. The story opened up for me about 15 years ago in the "Indigenous to Arizona section" of the Desert Botanic Gardens in Phoenix, Arizona where amongst all the cacti was *Dodonaea viscosa;* common name "Arizona hop bush".

I queried a passing ranger as to how this native of Banks Peninsula could also be a native of the Arizona Desert – he didn't know but confirmed that it was an Arizona native and added that it was also a native of Florida where it was called the "Florida hop bush".

A few years later I was in Al Ain in Abu Dhabi visiting my son-in-law, landscape architect Justin Meek, who pointed out that growing in the median strip was *D. viscosa*. I figured if it could stand the desert heat of Arizona it could handle the Arabian Desert where the official temperature count is reputed to stop when it hits 50C. He said that *Dodonaea* was considered a native of the Indian Ocean coast of Oman next door.

As Oman was on my bucket list, the next time I visited I got on a local bus from Al Ain to Muscat, the capital of Oman, a seven hour journey through the vaguely familiar but barren Oman mountains. The familiarity could have come from the fact they are the product of tectonic uplift the same as our Southern Alps, when part of the other side of the Gondwanan landmass banged in to the Arabian plate.

I found my way to the new Natural History Museum of Oman and asked to see their resident botanist, a striking black-robed woman with impeccable English. When I told her I was fascinated with the distribution of *D. viscosa* she said "So am I" and reached for the local Flora and there amongst the Arabic script, the botanical name in the familiar format. What a wonderful convention that is, that latinised scientific names are constant regardless of the language or writing characters used.

Anyway the script apparently said that it only occurred in the wild further up the coast, a bit too far for me to get to in the time I had available. She was fully aware of the worldwide distribution and filled in some gaps in the information I had. Naturally she was interested that the southernmost point of its range was within (or close to) our city boundary.

Another time I was at the Huntington Gardens in Los Angeles and wanted to check some references that it was also native of Southern California, a logical stepping stone for its occurrence in Arizona and the first thing the botanist there said was - "You know that it has the widest distribution of any plant in the world" – but not in California.

So what is its distribution? How many countries claim it amongst their indigenous flora? I haven't found one reference that lists them all but I got up to about 60 after consulting a few of the Floras in the Botanic Gardens library. To be "indigenous" means that plants have got there by other than human intervention but that can get a bit suspect in old world areas where humans have been moving around for many centuries, long before botany as a science existed.

Anyway starting from the top left; Iraq, Iran, Afghanistan, Pakistan, India, China, Japan?, Sri Lanka, Oman, Yemen, East Coast of Africa to South Africa, Ghana?, Australia, Papua New Guinea, most Pacific Islands including Hawaii, New Zealand, Bolivia, Peru, Brazil, Central American countries, USA, and Caribbean Islands and, of course, many little places in between.

It is generally considered to have originated in Australia and spread from there by means that are still a matter of debate. Some seed capsules can float for a reasonably time and can handle sea water and possibly they can be wind-blown across country. (Arizona is a long way from the coast and Florida even further, unless the seeds travelled around Cape Horn!) There is also some suggestion that birds may be vectors but few would eat the seeds.

It would be tempting to suggest that it was a vicariate Gondwanan plant as it occurs in every Gondwanan land except Antarctica. However that would mean it would have had to have established all over the Gondwanan landmass, been stable as a species for 125 million years ago when India split off, and not to have evolved further in that 125 million years (at, say, a 10 year generation, that's 12.5 million generations!). No, it is much more recent than that, with the

best estimate that the distribution occurred in the 1-3 million year era.

The earliest reference I have found was made in 1737 in an Institut de France publication by J. Burm and Thes Zeylan apparently from Ceylon who recorded it as *Carpinus forte viscosa salicus folio integro, oblongo* and in 1757 from one P. Browne in Jamaica who named it *Triopterus erecta fruiticosa, folius oblongus acuminatis, ramulus gracilibus.* Of course Linnaeus soon spoiled such generously descriptive naming by introducing the binomial system and the name *Dodonaea viscosa* Jacq. appeared in 1760. Apparently Jacquin was also working with material from Jamaica. Earlier in 1753 Linnaeus had named a plant *Ptelea viscosa* (presumed to be *Dodonaea*) from material from India. But it is interesting that it was being recorded from very different parts on the world – I haven't found when or who described it in New Zealand.

With such a wide differential in location, climate, soil types, etc, there have inevitably been adaptations of particularly leaf size and character (ie it is polymorphic) which has for the last 150 years or so, caused considerable debate within the botanical fraternity across the world. Some taxonomists are suggesting that there are up to six sub-species but there appears to be no pressure to change the species status – in fact it has been given the status of an "ochlospecies" – from the Greek "ochlo" meaning "mob", maybe an unruly one! It just proves that nature doesn't always put things in tidy boxes just to suit our systems.

D. viscosa is included in the Australian section of the Chelsea Physic garden of medicinal plants and indigenous people in all regions have used it. Its leaves have been used in various ways to combat rheumatism, skin infections, fevers, swelling, diarrhoea, toothache and headaches and as an antispasmodic agent. However it is also said to be quite toxic and not recommended for general use!

The Maori name Ake Ake means "for ever and ever", a tribute to the long lasting qualities of the wood. They used it for clubs and other weapons because the wood is also very hard and very heavy. The wood turner in the Arts Centre has some fine objects made from Ake Ake – pick one up and you would think it was made of stone.

New Zealand has made a significant contribution to this species – it is the origin of the purple form, *D. viscosa* 'purpurea' which is recommended as a good landscape specimen in publications all over the world. According to Lawrie Metcalf it originated as a sport on the banks of the Wairau River in Marlborough and was bulked up and distributed by Nairn's Nursery in Christchurch. The original plant was later washed away in a flood..

So why does it matter? We know from guiding that visitors' eyes start glazing over after having about five plant names thrown at them if there is no story attached. This is one such story. Also, while most of our indigenous flora has a Gondwanan origin, most of it disappeared as most of our landmass submerged for a few million years. The vast majority of our current flora's ancestors arrived back from other places of Gondwanan origin by various means of dispersal usually using "stepping stones" across the world. Often the "stepping stones" lose any evidence that they may have hosted a particular plant for its migration but *Dodonaea* has most of those places intact. And there is a certain warm fuzzy about having just this one thing in common with all sorts of exotic places around the world.

References'
This is obviously a story as told by a gardener and the references are many. If you would like a recent and scientific article, try the Australian Journal of Biogeography 2009, article by Mark Harrington and Paul Gadek "A Species Well Travelled, *Dodonea viscosa*". www.blackwellpublishing.com/jbi.
Otherwise any southern hemisphere flora plus the floras of India, China, and Ceylon – all of which are in the Botanic Gardens library. Or Google it for over 38,000 references.
Alan Morgan

The Armstrongs and bedding displays

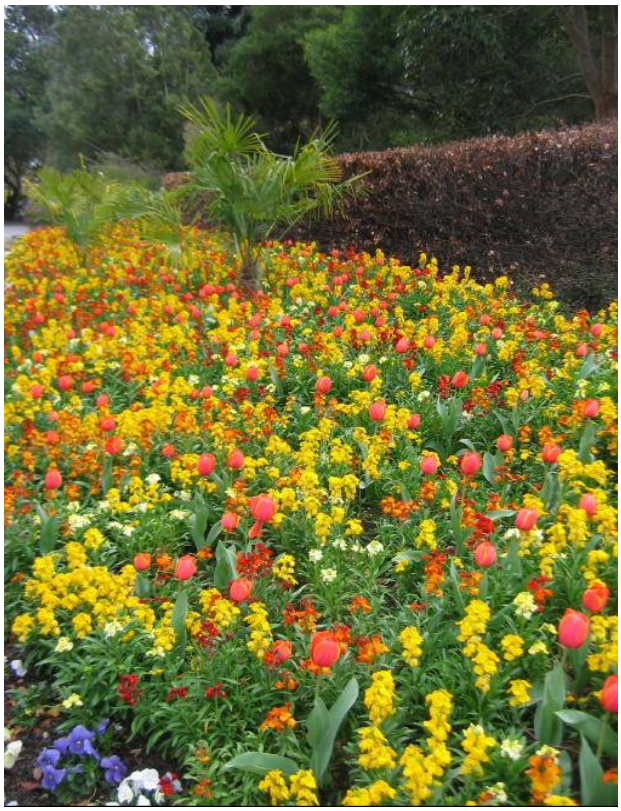
How ironic that this September of catastrophe in Canterbury should be blessed with one of the best springs one could wish for.

There is also an ironic feature of the year based on my Heritage week research of that environmental hero of mine, John Armstrong, and his son Joseph. Their departure from the Botanic Gardens was brought about by the rising tide of Victorianism which led the city fathers, in their wisdom, to tell these hard working and visionary men that they had to abide by the decisions of the wise men of the City and to transform the gardens into a sharp and tidy vision of annual bedding splendour. This all took place in the 1880's after the Armstrongs' 22 years of service de-

veloping the gardens and distributing useful trees and plant material around the province. They both resigned in protest at their treatment.

While the front lawn is still known as the Armstrong lawn and graced with some of their now heritage trees, it is ironic that it is also the lawn that features the greatest number of bedding displays. Even more ironic is that the latest two beds occupy a position left vacant by the felling of some of those selfsame heritage trees and indeed they are so gaudy and flamboyant as if to add fuel to the Armstrong fire.

I am assured that visitors love them and indeed they do have something in their vulgar finger pointing at current trends for more environmental sensitivity but to me they are a joke especially with regard to their position on the Armstrong lawn.



Bedding display, wallflowers and tulips

For me the highlight of the gardens this spring surprisingly was another bedding display which evidently has also been much appreciated by visitors. It was at the far end of the herbaceous border and was a symphony of that old flower, the wallflower, interplanted with tulips and backed by the still leafless beech hedge. It was not just the colour of the flowers but also the all-pervading perfume on a warm spring day wafting across the pathway bringing memories of long ago to us older persons. It goes even further because it was also in the right place; it fitted in perfectly with the trees and vegetation. Even the Armstrongs might have approved!
Bob Crowder

Giardino Giusti – a magnificent 15th century renaissance garden in Verona

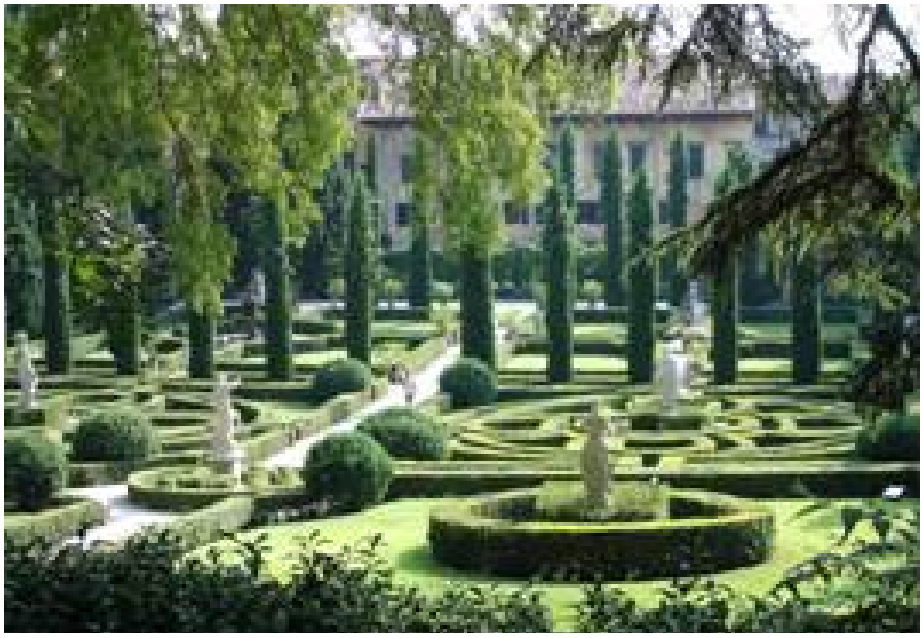
Because of our historically strong English links and associations, our ideas in New Zealand of what a garden should look like have been influenced by British gardens. Many of the notable large gardens of England have been influenced by the work in the 18th century of landscape architects Charles Bridgeman, William Kent and especially Lancelot "Capability" Brown. Brown's landscapes were at the forefront of fashion. Brown became immensely sought after by the landed families. It is estimated that Brown was responsible for over 170 gardens surrounding the finest country houses and estates in Britain.

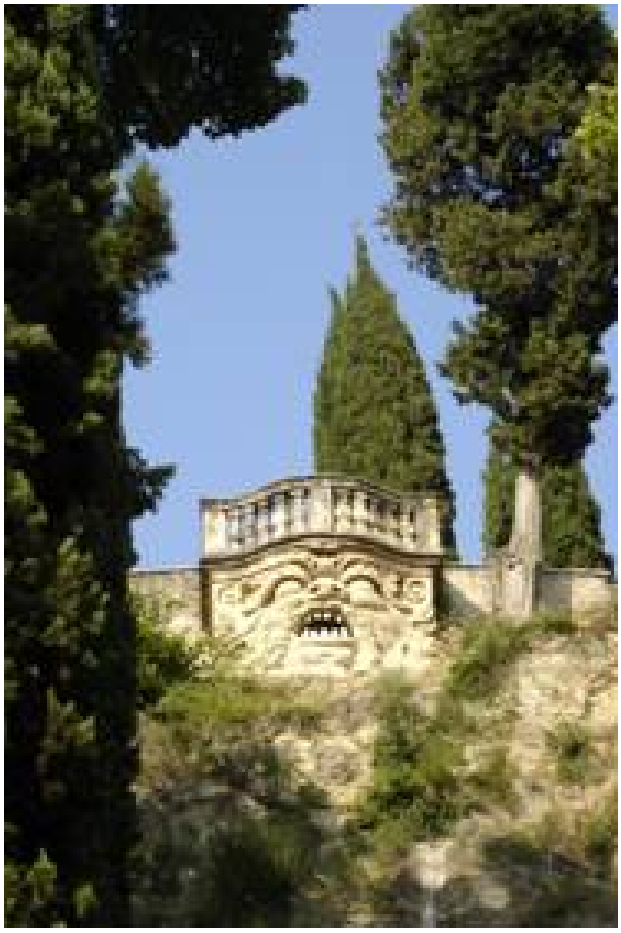
Brown's style of smooth undulating grass, which would run straight to the house, clumps, belts and scattering of trees and his serpentine lakes formed by invisibly damming small rivers, were a new style within the English landscape, a "gardenless" form of landscape gardening, which swept away almost all the remnants of previous formally patterned styles. Brown's creations were fundamentally different from what they replaced. Before Brown the fashion was for formal gardens based upon those of Europe especially Italy and France. What were these gardens like? One can get a pretty good idea from the Giardino Giusti in Verona, a magnificent Italian formal garden that is being superbly maintained to maintain its 16th century structure.

It was designed for Agostino Giusti, Knight of the Venetian Republic and Squire of the Grand Duke of Tuscany. The garden forms a backdrop to the Giusti Palace.

There is an extensive level area adjoining the palace. In this area is a magnificent cypress avenue, formal geometric areas with hedges, fountains and statuary. Included is the obligatory maze.

The land rises behind this level area and a meandering path leads the visitor upwards through a shady wood. Then behind this rising ground is a high cliff. One can climb up a high tower to a belvedere at the top of the cliff from which there is a sublime view of the garden and of the old town of Verona. There is a





prominent “mascherone” – a giant stone mask built to emit tongues of flame from its mouth.

Pauline and I visited the garden on hot afternoon in July. The overwhelming impression was of a green cool oasis. The trees and hedges were a lush green and fountains were splashing away. There was very little in the way of colourful flower beds. .

The garden has been visited through the centuries by many notable figures; emperors, kings and lesser mortals. Mozart made a stop on his visit to Italy. The great German writer, Johann Wolfgang von Goethe, visited the garden in 1786. He was fascinated by the garden and rested for several hours under a giant cypress that today bears his name. This what he recorded in his “Italian journey”:

“…But early this morning when they were all running this way and that with flowers, vegetables, garlic and other market products, to my great surprise they could not take their eyes off some cypress branches I had in my hands. These branches had great cones hanging from them, and I was also carrying some sprigs of blossom from a caper bush. Everybody, young and old, kept staring at my fingers, and strange thoughts seemed to be passing through their heads.
I had picked them in the Giardino Giusti, where huge cypresses soar into the air like awls. The yew trees, which in our northern gardens, are clipped to a point, are probably imitations of this magnificent gift of nature. A tree whose every branch, from the lowest to the highest, aspires to heaven and which may live three hundred years deserves to be venerated. Judging from the date when this garden was planted, these cypresses must already have reached such a great age.”

If any of the formal gardens that Capability Brown swept aside were like the Giardino Giusti his improvements came at a great cost.
Bill Whitmore

Vegetation seen in American National Parks

A few years ago a friend and I did a tour, with Calder and Lawson, to some American National Parks. We started at Yosemite, went on to Zion, then Bryce Canyon and finally both sides of the Grand Canyon. When we got home I wrote a few notes about some of the trees and plants. Here they are.

Fire. There were little piles of brushwood every 2m under the trees in pine and sequoia forest. We learned that controlled fires are lit after the rains when conditions are safe and these help prevent raging destructive fires. They are also necessary for the germination of some species, helping the forest to thrive and regenerate naturally.

Early on, when our coach broke down and we were stranded on the roadside for 2 hours, we had time to meet lush tufty sugar pines and digger pines, greyer and with longer drooping needles. The sugar pines had big cones with tasteless crystals on their outer edges. The nuts were large and too tough to get into. Many incense cedars were also in this area with stringy bark and bright green feathery foliage.

In Yosemite Park we walked a mile downhill to view some sequoias. They were huge, but ours in Christchurch are a good substitute. In the undergrowth along the way there were miniature roses in flower and azalea plants.

The pinyon pine has edible seeds like our pine nuts but tougher with reddish outer skins. They are eaten by Navajo Indian who could gather an 85lb sack of nuts in a day. Their tradition forbids shaking the trees to get more nuts as this is greedy and disrespectful to nature. They only collect the ones that fall unaided. Some years provide a more plentiful harvest than others and some trees are more prolific. The pinyons on the South rim of the Grand Canyon can take up to 40 years to grow a foot in height as the conditions are harsh at that altitude. It is sometimes called the pygmy pine. The wood is used for firewood and timber and the sap for dyes and adhesives.

Ponderosa pines, also called yellow pines, have hard wood used for support beams and roof beams, lintels and ladders. The bark smells of vanilla or caramel and has a wriggly pattern like a jigsaw. The foliage is greyish green with needles in threes. Branches droop with an uplift at the end. They grow at high altitudes from 4000 feet up to 8000 feet or more in the canyon areas. They are very hardy and many of them had burn scars showing they had survived a forest fire.

We met a few bristle cone pines which cling to rock crevices. They can live thousands of years and parts of the tree can die leaving just one live branch. It gives them a very spiky look.
Douglas firs also grow at high altitudes and in extreme conditions and are sometimes called alpine firs. We found one growing out of apparent rock at the bottom of Wall Street in Bryce Canyon. This is a thin passage between huge orange cliff walls and the tree had grown extremely tall to try and reach the light at the top.

My favourite tree of the trip was the red fir. It grew only above 7000 feet and the changeover level was very obvious. It is a delicate tree with symmetrical fine horizontal branches in fives, like a Norfolk pine. Silhouetted against a blue sky it was just beautiful.

Other trees we met were Californian oaks, low growing trees with small lightly indented leaves and short acorns. The Indians who lived in the desert regions of the Sierras gathered them and ground them into meal. They needed 500lbs per person to survive a year. Later at Mono Lake we saw desert oaks, scrubby little trees, some of which had what looked like a juicy pink fruit like a grape but we found out it was a gall with an insect inside it.

Shaking aspens are like a mixture of our silver birches and poplars with a white barked trunk and leaves with a flat stem so they tremble in the slightest breeze. They grow in clumps as younger trees sprout from the extended root systems of existing ones. In autumn they turn a golden yellow and stand out against a dark background of conifers.

One-seed junipers abound in the dry scrubland and woodland areas. They can tolerate dry conditions. They are attractive conifers and the squirrels love to collect their berries before the winter. We saw lots of them with their cheeks at bursting point but still gathering more. The foliage is a greyer shade than that of pine trees.

Lower down in scrub areas we saw manzanita bushes. They have pink bell-shaped “lily of the valley” flowers and also bright chestnut bark which peels in thin vertical curls like the arbutus in the Woodland area of the Botanic Gardens.

At lower levels we travelled through dark mesquite and greyer sagebrush areas with low metre high bushes of a bright yellow flowered plant called rabbit brush. We also saw areas of creosote bushes all evenly spaced as if planted out. They have a root system that extends to a radius of 30-40 feet and then gives out chemicals that prevent the growth of anything else.

There were a variety of flowering plants, miniature penstemons, carmine thistles at the Grand Canyon, mini sunflowers called brittlebrush, red Indian paint-

brush and many others which we couldn't name. We met a bush with miniature tasteless gooseberries called a waxberry

Round some of the Indian reservations we saw agave plants. The roots were roasted for food or fermented for alcohol. Yucca leaves had useful leaf fibre used for making rope and sandals.

In the desert areas we encountered Joshua trees with nicely rounded forms. Teddy bear or jumping cactus, so named as it looks pretty with rounded ears, catches on clothes at the slightest contact. In many places there were prickly pears with their handsome dark red fruit. Also saguaro cactus with their vertical tubular form and upward growing arms were seen between Flagstaff and Phoenix.

We expected to see lots of Phoenix palms as we drove to Phoenix airport, but although palms lined the roads none of them were Phoenix!
Pat Whitman

Art in the Gardens: An Inside Outlook.

This project by Stuart Griffiths was part of the *Sculpture in the Gardens* in 1999. It is a frame

formed from heavily grained slabs of chlorite schist. The scale of the frame suggests the grandeur of an 18th century "folly" where ornamental houses and ruins were constructed by wealthy and eccentric landowners to highlight particular sections of the gardens and landscape. One of his other works is the entranceway at the Dunedin Botanic Gardens (1998). He combines architectural and environmental elements from existing entrances with symbols drawn from native plant forms. Griffith's structure has integrated allusions to classical European gardens designed with material and imagery indigenous to the local area.

He was born in Hamilton in 1958 and graduated from the University of Canterbury in 1980 with a Diploma in Fine Arts (Sculpture).
Barbara Brailsford and Faye Fleming.

Look at that plant –

***Puya alpestris* – one of the amazing bromeliads.**

The bromeliad family contains some three thousand species. A genus within the family is *Puya*, with 185 species. One such plant can be found in our own Botanic Garden. It is *Puya alpestris*; *Puya*, derived from the local Indian name and *alpestris,* growing in lower mountains. It comes from the South and Central Chilean Andes where it thrives in arid soils.

P. alpestris

In December each year this plant can be seen in flower along the outside wall of Townend House near the Fern House. And what an inflorescence it is! Usually, it reaches about 2 metres in height and bears hundreds of funnel-shaped waxy flowers of the most amazing blue-green iridescent colour with contrasting bright orange pollen. This spike of flowers

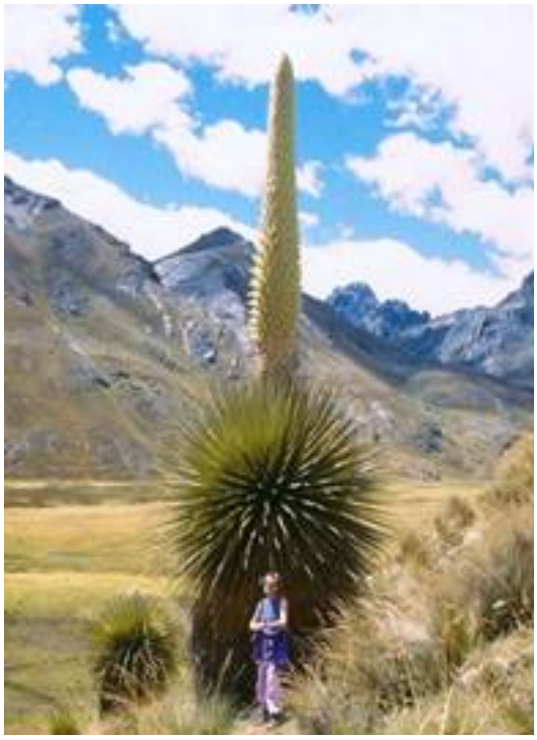
arises from a clump of long thin leaves, armed with curved spikes sufficient to deter even the most determined browser.

Birds known to visit these flowers for its abundant nectar are, in this country, tuis, bellbirds, thrushes and blackbirds.

Spectacular as it is, *Puya alpestris* cannot compete with its close relative, *Puya raimondii,* which is found in the Andes of Peru and Bolivia. Its common name, Queen of the Andes, says it all. A trunk supporting a crown of long narrow spiny leaves grows to 2.5 to 3 metres. After many years, often one hundred or more, a tall flower spike arises from the crown to reach an amazing 10 metres. This spike supports 8,000 or more individual waxy, creamy-white flowers, which, like its other cousins, has bright orange pollen. Humming birds are said to be the chief pollinator. Seed, having set, is dispersed by the fierce winds that blow at these high altitudes of up to 4,000 metres.

As can be expected, temperatures range from blisteringly hot daytime highs to night time extremes, well below zero. How does this plant survive such a harsh environment? Over time a dense mat of both dead and living leaves surrounds the trunk. Without this insulation, the sap would freeze, killing the plant.

Like other similar species, such as the agaves, *Puya* dies after flowering. It not does regenerate from offsets at the base. Pups are not produced.



P. raimondii

The conservation status of *Puya raimondii* is sadly endangered, bordering on extinction. Local Andean Indian herdsmen are known to set fire to these plants. The abundant inflammable sap and masses of dried leaves turns them into flaming torches, which keep the herdsmen warm for all but a short time.
Neil O'Brien

Friends News

The Christchurch Botanic Gardens Charitable Trust

Your Committee has for some time now, been working on the formation of a charitable trust for the Botanic Gardens. Some members have wondered how this might affect the existing "Friends" as an organization so it is appropriate that we report on progress.

The FOBG has a prime objective to raise funds for the betterment of the Botanic Gardens and over the years a considerable amount has been raised and used for a wide variety of projects over and above those which are funded by the City Council. The society currently has a healthy bank balance.

However, over the next few years there will be a number of major projects undertaken in the Gardens, starting of course with the new Visitor Centre and service facilities. On top of that there is the Gondwana Garden, a children's garden, new and improved show houses, a revamped indigenous plant section and more. While in general these will be publicly funded, there will be plenty of opportunity to put the "icing on the cake" or to bring projects forward.

While the FOBG does very well through plant sales and guiding charges, there are other avenues of fundraising that we don't or can't tap into – such as bequests, grants, sponsorships, donations, etc. The Committee and members are already involved in the normal work of the society and generally are not well

experienced in tapping in these other funding opportunities. Hence the need for a separate entity, a trust run by carefully selected trustees with experience and connections to maximise the funding potential.

Lawyer Oscar Alpers has prepared a draft trust deed (as a contribution) and it is in the final stages of fine tuning after consulting widely with people from other organizations that have trusts, notably the Christchurch Art Gallery where several million dollars were raised by their trust to enable the new gallery to be built at all. We are also working closely with Curator John Clemens to ensure that the objectives and structure of the trust are compatible with the City Council and the Botanic Gardens. However the Trust will have no connection with the Council and its independence from it is clearly stated in the Deed.

The Trust will have a minimum of five trustees and a maximum of eight, one of whom will be the president of the Friends and there will be a rotational retirement. There will be no members other than the trustees and it will be substantially independent of the Friends although there is provision that both entities must work in concert. The funding of both entities will be kept separate although the Friends may decide to contribute to any trust fund raising, and vice versa.

The AGM of both entities will be held together and the membership of the Friends will have a say at that time. Trustees, will however, be by appointment, initially by the Friends Committee and subsequently by the existing trustees.

However, before the Trust is launched it is necessary to be able to demonstrate a need for funding. The current management plan has proposals in broad terms but we need some well-defined projects with budgets preferably with impressive pictures to create both a vision and a target. We have been working with John and the staff on this process and the visions are emerging.

We had a timeline that would have the trust launched with some fanfare before Christmas but the earthquake changed all that. With attention rightfully directed towards rectifying the consequences of the quake(s) - we considered it inappropriate to have the launch now – we'll review it in the New Year.

If you would like to discuss this further please email me at a.morgan@xtra.co.nz or home phone 384 9976.

Alan Morgan
President

Friends events

Woodland heritage

On 16th October thirty five Friends of the Gardens visited the woodland, gardens and lakeside that they had helped to save at their Christmas party 2 years ago; in good faith they had signed a petition to the Council to buy this precious heritage site to add to the Ernle Clark riverside walkway, and which very few members had seen. This quiet ancestral sanctuary was planted in 1862 by pioneer Charles Clark who named his estate Thorrington. Remaining in the family for 117 years, in this elegant setting they held charity fairs and garden parties, with boating on the river and horse rides in the paddocks for the children. During that era eight gardeners were employed.

Small subdivisions gradually occurred, and in the 1970s the riverside walkway was gifted to the Council; the rest of the estate was sold. In 2008 it was in danger of further subdivision, but was saved by that petition of 1684 signatures from the local community and by the enthusiasm of many caring tree lovers. The woodland has retained its original charm, and after much public consultation the Council has produced a management planting plan to try to satisfy differing opinions as to the future of the combined reserve. The present home owner, after relandscaping his area, has generously opened this too, so that the public can enjoy strolling round the whole estate. We finished a very pleasant afternoon in his home and tea house.

Biddy Pollard.

Treasurer required!

Please, please can we have someone to act as Treasurer for the Friends of the Botanic Garden Committee. Those interested in the position should contact Alan Morgan (384 9976) or Gwenda Murfitt (981 3124)

Contact Numbers

Committee

President	Alan Morgan	384-9976
Vice President	Charles Graham	348-5896
Past President	Don Bell	343-6699
Acting Treasurer	Gwenda Murfitt	981 3124
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Events Co-ordinator	Leith McMurray	337-2008
Other Committee Members	Ruby Coleman	355-8811
	David Moyle	358-8914
	Diane Percy	385-6769
	Des Riach	352-9803
Ex Officio	John Clemens	

Helpers

Plant Sale	Helen Constable	980-9358
Membership database	Philippa Graham	348-5896
Newsletter Editor	Bill Whitmore	339-8356
Newsletter formatting	Maria Adamski	
Newsletter mail out	Philippa Graham	348-5896
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Distribution of Newsletter

We distribute the Newsletter by email to those members who have given us their email addresses and who have not requested otherwise. If you would prefer to receive the Newsletter by mail, rather than electronically, please contact Philippa Graham – phone 348 5896 or email philippa.graham@gmail.com

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