

# Newsletter

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

*No 93, Spring 2013*

## **President's Report - for period 1<sup>st</sup> July 2012 to 30<sup>th</sup> June 2013**

I could not help but get a sense of achievement on behalf of all the Friends of the Botanic Gardens as I looked back on the previous twelve months of our activities. The numerous volunteers within our association have given up a considerable amount of their precious time to support the Botanic Gardens in maintaining it as the jewel of our city.

We continue to be in a healthy financial position. Our treasurer has been particularly busy this year with the accounts for the Australasian Volunteer Guides for Botanic Gardens Conference that we are hosting. We have had to register as a GST collector with the Inland Revenue for the conference.

Now that the new Visitors Centre is being built, we are discussing with Botanic Garden staff an appropriate opportunity for funding a project in the Centre that is outside the normal budget of the gardens. These discussions are close to being finalised.

### **Guiding**

As usual, the guides have done a terrific job in an environment that has been less than encouraging. This time last year I reported that a new intake of guides was completing their training. These guides are all old hands now, and provide informative and interesting guided walks. The guides provided guided walks during the Festival of Flowers.

The number of people taking up the opportunity of a guided walk is slightly up on the previous year. This is due to the hard work and perseverance of our guiding team. The after effects of the earthquakes are still having a considerable effect on the number of visitors to our city, which in turn affects the guiding numbers.

The guides are looking forward to the new Visitors Centre being open so they can try out various new guiding options that they are working through. Some garden clubs have made arrangements with the guides to have guided walks in the coming year.

### **Propagation Groups**

The two propagation groups are at last set up on their new site at 4 Riccarton Ave. The staff of the Botanic Gardens provided the muscle and ingenuity to move the Friend's glasshouse on site, and it is hoped that an existing shade house will be available for hardening off stock. The two groups are now comfortably settled in and are looking forward to another year of production. The sale of plants at our plant sales and the plant trolley provide a considerable income for projects we fund in the gardens.

### **The 150<sup>th</sup> Anniversary Celebrations**

The Christchurch Botanic Gardens has been celebrating 150 years of existence with a number of projects and activities this year. The Friends has supported a number of these projects in a variety of ways.

### **The Wollemi Pine**

One of the most notable projects during the 150<sup>th</sup> celebrations was the planting of the Wollemi Pine in an area that will be part of a Gondwana Garden. David Given, one of our past curators did a lot of work to ensure that a Wollemi Pine came to the Christchurch Botanic Gardens. It was fitting that David's wife Karina and family assisted with the planting of the tree. The Friends sponsored this event by providing funds towards the refreshments afterwards.

### **Birthday Celebrations**

On the day that the Christchurch Botanic Gardens turned 150 years of age, it was bitterly cold, but the rain

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New Friends' website

Have you visited the new Friends' website? The address is <http://www.friendschchbotanicgardens.org.nz/>

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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](mailto:philippa.graham@gmail.com)

*Enquiries about membership should be made to Philippa Graham (phone number above)*

### Contact Numbers

#### Committee

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Treasurer	Dot Noordijk	386-0595
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Ex Officio                      John Clemens

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stayed away until after the celebratory events. It was a celebration to remember with a planting of a *Nothofagus fusca* in the Armstrong lawn. Then moving to the temporary Geodome in Hagley Park there were the announcements of the winners of the Photographic Competition, and the revealing of items to be placed in a time capsule.

The Friends were involved with the photographic competition, which attracted close to 800 entrants. We managed to gain sponsorship for prizes, and contributed towards advertising the event. You can see the winning photographs on our website [www.friendschchbotanicgardens.org.nz](http://www.friendschchbotanicgardens.org.nz). They are stunning!!

### **Kidsfest**

We applied for funding from Creative New Zealand for providing a drop-in weaving workshop "The weaving nest - Te kohanga o raranga". I am pleased to say that we were granted \$5000 towards this project. Like all the Kidsfest events it was extremely successful. Many of our volunteers worked on a roster system talking to the young participants, and taking bookings. One of the weavers worked at weaving a back pack with flax, which will be part of a display in the new Visitors Centre.

### **The Hagley Oval**

You will be aware that we put in a submission opposing the granting of Canterbury Cricket to build an international cricket stadium in Hagley Park. I attended most of the Environment Court case and gave evidence based on our submission. As you will have heard, Canterbury Cricket has been given the green light to develop a wicket, build a two-storey pavilion, and erect huge lighting standards. There are several conditions attached to the consent, the major conditions being that the huge lighting heads will have to be removed by crane at the end of each season and placed in storage. This will at least reduce the negative visual effect for part of the year. Parking in the Polo Grounds is to be limited to 2000 cars, which will reduce some traffic congestion in this area. Finally, the number of major fixtures each year is to be reduced from a maximum of 20 to a maximum of 13.

### **Australasian Volunteer Guides Conference**

A dedicated team has put in a lot of hard work, and made sure that every aspect is organised in fine detail to ensure that this event is hosted successfully. At the time of writing there are 115 people registered for the conference plus some partners for some of the activities. Our guides are excited that people from Australia and New Zealand are coming together to learn about guiding and adding to their knowledge.

### **Skills for the Future Award**

This award was initiated last year to provide one staff member each year the chance to further their skills in horticulture or management. Luke Martin is the first person to benefit from this award funded by the Friends. He attended a Practical Field Botany Course at the University of Canterbury Cass Field Station. This course enhanced Luke's knowledge of botany, specimen collecting and preserving, and photography. I can not help but be a little envious of Luke's opportunity.

### **Trust Deed**

The Friends' Trust Deed is just about ready for launching. The presentation brochure for the launching is in the final stages of design. A priority list of major projects for the Gardens is in the process of being identified. Trustees will then be sought for the Trust. The launch of the trust is aimed for Spring.

### **Newsletter**

Bill Whitmore and Maria Adamski have once again provided us with a professional looking Newsletter, and the many contributors of articles have kept the standard of material at a highly informative and interesting level. The cost of producing the newsletter has increased again this year.

### **Website**

Our website gets better all the time. This is thanks to Murray Dawson who is the developer and manager of our website. Thanks also go to Landcare Research who hosts the site. All our coming events and newsletters can be found on the site.

### New Herbarium

The new Information Centre will have a herbarium as part of the facility. It is proposed that part of the herbarium will have specimens available to the public to aid them in identifying plants. This will be in addition to the main herbarium.

The current specimens are currently being updated with their latest classification, so that they can be stored in the new herbarium vault. If anyone is interested in this type of work, and has a computer, I am sure John Clemens would be keen to talk with you.

### Membership Fees

It has been a number of years since the membership was increased. Last year it was moved that the current year's membership remain static. However due to costs of producing the newsletter and postage, a motion was passed at the AGM that a moderate increase in the membership subscription rates is made for the year beginning 1<sup>st</sup> July 2014.

I look forward to another year as a Friend of the Botanic Gardens

Charles Graham

## Gardens' News

### From Curator John Clemens

#### Happy 150<sup>th</sup> birthday Christchurch Botanic Gardens!



*Maritime pines at night, a memorable stop on the Light up the Leafy Nights KidsFest trail.*

Christchurch Botanic Gardens celebrated its 150<sup>th</sup> anniversary as the flourishing heart of the Garden City on 9 July 2013. And as is fitting for such ceremonial occasions, a noble tree was planted and rousing speeches were made, on this occasion by Ngāi Tūāhuriri kaumātua, James Robinson, and Christchurch City Mayor, Bob Parker.

The Curator, John Clemens, welcomed all who had travelled to the event and braved the elements. Those who showed their support by coming to the

ceremony included councillors, representatives and members of the Friends of the Christchurch Botanic Gardens, neighbours and partners in the Cultural Precinct, including the Canterbury Museum, the Arts Centre, and the Curator's House, close collaborators in conservation and science from the University of Canterbury and the Crown Research Institutes, and numerous Council staff and well wishers.

As reported in 1919, the founding tree of the Botanic Gardens, the Albert Edward Oak, was planted by the first Government Gardener, Enoch Barker, on 9 July 1863. A young tree propagated from the original tree was planted on the Armstrong Lawn on the occasion of the 140<sup>th</sup> Anniversary in 2003. In 2013, a red beech (*Nothofagus fusca*) was planted in part as an appreciation of Southern Hemisphere floras and New Zealand plants.

Year 5 Wharenui School pupil, Nfagie Yansaneh, stepped forward to heap shovelfuls of soil into the planting pit, assisted by the speechmakers and Botanic Gardens apprentices. The young tree on the Armstrong Lawn has space to grow into a broad-crowned tree among others from around the world.

Guests were afterwards led by Garden & Heritage Parks Team Leader, Jeremy Hawker, to the dome in Hagley Park, where refreshments were served, and presentations made to the winners of the Botanic Gardens Photographic Competition. Hundreds of entries were received from budding and seasoned





Year 5 Wharenui School pupil, Nfagie Yansaneh, plants the 150<sup>th</sup> anniversary red beech. Photo by Neil Macbeth

photographers and finalists selected by judges Mayoress Jo Nicholls-Parker and *Press Illustrations* Editor, Richard Cosgrove. To complete proceedings for the day, a time capsule was filled by the 10 photographic competition winners with the encouragement of Chris Lynch and Newstalk ZB.

Tree planting is important to the Botanic Gardens. The anniversary year was, of course, initiated with the planting of another noble tree in January 2013: a *Wollemia nobilis* (named for its discoverer in 1994, David Noble). "Ancient", old and recent ceremonial plantings – Wollemi pine, oak, and red beech (along with many hundreds of other tree species) now grace this special public place.

### Calling all sleuths of the understory

I would like to invite readers to join a small research team in an exercise of Citizen Science. We need super sleuths of the understory – people with well honed powers of observation and a love of the natural world – to tell us where they have seen the native potato orchid in flower in and around Christchurch and Canterbury.

Like many species in the orchid family, the potato orchid is not easy to find (hence the need for observant sleuthing) and it tends to grow under the cano-

pies of woody plants where it is camouflaged by the dappling foliage. I have included a photograph of some of these little gems growing against a fence in a wild home garden, and one proudly standing by itself (unusually in full sun). These might help to jog your memory.

Professor Dave Kelly in Biological Sciences at the University of Canterbury sent me the photographs. It was our research student last summer, Zoë Lennon, who discovered that seed set in potato orchid depended on pollination by the little native *Lasioglossum sordidum* bee, a very surprising result given other people's reports. This is the same bee species studied by Della Bennet, another summer scholarship student, who found the bees were harvesting pollen from a range of native and exotic plants in the Botanic Gardens. We want to test if the potato orchid-bee mutualism holds across a range of habitats around Christchurch.



*Non-photosynthetic potato orchids (Gastrodia sp.): a group and a single plant.*

Friends Committee member Alan Hart brought the phrase "Citizen Science" to my attention. This is your chance to join us on this trail of discovery; a little social science, maybe. We hope a new University of Canterbury summer student will choose this project in November, when the information you supply will be invaluable. The student will study pollination and pollinators, and not harm the plants.

The New Zealand potato orchid belongs to the small genus *Gastrodia*, at least one species of which has been used for over 2000 years in traditional Chinese medicine. The starchy tubers of the New Zealand endemic *Gastrodia* species were eaten by Māori. Unlike most orchids, *Gastrodia* lack chlorophyll and the leaves are reduced to scales (as the photographs show). Nutrition is provided by way of wood-rotting fungi, which is why they are typically found in

the understorey of trees and shrubs. They might not be the prettiest of orchids, but they are certainly fascinating and worth hunting. Flower spikes emerge in December/January each year. If you stumble on a new patch or remember where you have seen them before, please let me know (phone 941 7589 or email [john.clemens@ccc.govt.nz](mailto:john.clemens@ccc.govt.nz)).

We might also be able to study a similar looking plant, the common broomrape (*Orobanche minor*) this summer through a link with the Bio-Protection Centre at Lincoln University. Sightings of *Orobanche* would also be appreciated.

## Articles

### Look at that plant - Hellebore *Helleborus*

If you visit the Maple Border in the Christchurch Botanic Gardens at this time of the year the collection of Japanese maples are leafless and the hydrangeas below them have been cut back. However the underplanted hellebores are flowering and provide winter and spring interest to this pleasant area.

The plant breeders have been busy with the genus *Helleborus* in recent years. If you go to your garden centre you will find cultivars with flower colours that would have been unavailable not so long ago. As a result there has been a resurgence in popularity in these useful perennial plants.

The genus belongs to the family Ranunculaceae and come from Europe and Asia. The greatest concentration of species occurs in the Balkans.

The flowers have five, what look to be petals, but are actually sepals surrounding a ring of small, cup-like nectaries (petals modified to hold nectar). The sepals do not fall as petals would, but remain on the plant, sometimes for many months. Recent research in Spain suggests that the persistence of the sepals contributes to the development of the seeds.

The genus can be separated into caulescent species, which have leaves on their flowering stems, or acaulescent species, which have no true leaves on their flower stalks (although there are leafy bracts where the flower stalks branch). The most popular forms found in gardens come from the the acaulescent group.

Cultivars of *H. orientalis* and its colourful hybrids are particularly sought by gardeners today. They

### Back to the future for the Herbarium

We have room for one or two more helpers to assist with the Botanic Gardens Herbarium. This is your chance to join in as we go back to the specimens collected and recorded by Lawrie Metcalf, Diane Smith, Walter Brockie, and others, even as far back as C. Beswick, last century. We are refreshing the entries with the latest names so that we can organise the herbarium ahead of its move to the new Botanic Gardens Visitor Centre. All you would need is internet, interest, and care.

flower in early spring and are excellent for bringing early colour to shady herbaceous borders and areas between deciduous shrubs and under trees. Because in the Northern Hemisphere they flower around the period of Lent they are often known there as Lenten hellebores or Lenten roses.

Several legends surround the hellebore; in witchcraft it is believed to have ties to summoning demons.

*H. niger* is commonly called the Christmas rose, due to an old legend that it sprouted in the snow from the tears of a young girl who had no gift to give the Christ child in Bethlehem.



19<sup>th</sup> century illustration of *H. niger*



In Greek mythology, Melampus of Pylos used hellebore to save the daughters of the king of Argos from a madness, induced by Dionysus, that caused them to run naked through the city, crying, weeping, and screaming.

During the Siege of Kirrha in 585 BC, hellebore was reportedly used by the Greek besiegers to poison the city's water supply. The defenders were subsequently so weakened by diarrhoea that they were unable to defend the city from assault.

An overdose of medication containing hellebore has been suggested as a possible cause of the death of Alexander the Great.

Bill Whitmore

### Stories of earlier staff of the Christchurch Botanic Gardens - Lawrie Metcalf

*Reporter Stan Darling is a new member of the Friends. At Alan Morgan's suggestion Stan has interviewed a number of former staff of the Gardens; these are men and women who have great knowledge of the Gardens, knowledge that we don't want to lose. In this, and succeeding issues of the Newsletter we will include stories based upon these interviews.*

Lawrie Metcalf, a former Botanic Gardens curator, was director of Invercargill parks and recreation from 1977 to 2002. After retiring to the Nelson area, he and his wife have returned to Lincoln to live.



Lawrie Metcalf

Growing up in Riccarton, Lawrie realized that from the age of 12 he was getting interested in the natural world. At first, he wanted to be an entomologist.

He captured butterflies, moths and other insects, and he knew he had to become acquainted with their foot plant sources if he wanted to breed them.

"It was all a bit of trial and error," he says. "An uncle suggested that perhaps I might consider taking up horticulture."

Lawrie started high school in 1942. He had a temporary job as office boy at the *Christchurch Star-Sun*. One job was to go down to the press when the first paper came off and run around to offices to deliver them. He figures it would be more efficient if he made a route that involved no "backing and forthing".

"I was told the Editor was the first to get a paper. He didn't approve my efficiency thoughts."

After working there about three months, he went to the Nairn Nursery, just off Line Road. Jack Humm, the manager, was famous for Jack Humm crab apples. "I had tried with the Botanic Gardens first, but they were having financial problems."

During winter, Nairn put him in the packing shed office, where he had to write down the names of plants correctly. "I didn't realize how much I was learning by doing that."

After 10 months, he tried the City Council parks department again and started at their Linwood nursery; "You'd be shifted around, for example to a very fine rock garden at Beckenham Park. It used to be embarrassing when trams went by and passengers saw you down near the ground, painstakingly weeding but not seeming to be moving much."

The following year, in 1946, the Council took over the Botanic Gardens administration from a separate domains board.

"They had a rock garden chap who was seconded to the Campbell Island weather station for a year to collect plants. He knew my interests, and every once in a while I was detailed to help out in Cuningham House."

Metcalf was still a trainee at that stage. They didn't have apprentices then.

He and a friend cycled around the North Island. "When I visited at the Duncan and Davies Nursery in Taranaki, my eyes lit up. Their propagation skills and techniques were really good. At the time, they were the foremost nursery in the country. I went up there to work for a year."

Then he went to the Melbourne Botanic Gardens, still on trainee wages. He was keen to learn as much as he could. Trying to save money so he could go to England to further his education, he asked if his pay date could be brought forward so he could earn an extra pound. His boss agreed. "It was a cheek asking for an increase in money so I could leave him."

He spent another year in Adelaide, then went to Perth for six months, working as a builder's labourer. Then it was four weeks at sea on a ship to England.

He applied to Kew Gardens and got back a snooty letter saying the days had passed when they reserved places for colonials. "I wasn't very impressed with Kew, anyway. They were not as good as the Christchurch Gardens."

Lawrie worked a year at a hardy plants nursery in Sussex, then moved to the Old Sarum nursery at Winchester with its flinty soil for roses. "You wore down the teeth of your fork quickly. It was on a rise where it was often misty. Sometimes you couldn't see far in any direction."

He became gardener Winkfield Place, a school for young ladies. He was on his own, and with only a brief experience of the local climate, he had a staff to direct. After two years, he was 27 and received a letter from the Christchurch council, offering him as job as assistant curator of the Botanic Gardens. The curator, John Taylor, had left to establish the Zealandia nursery at Hoon Hay.

"That left me virtual curator of the Gardens. The title change came later. I had no written job description but had my own ideas of how a botanic gardens should be run. I had to make the job as I saw it.

He started at the Gardens in 1955.

"You need to be able to talk to people in their language so the more you know about what they do, the better – so they know that you know what you're talking about.

"I had a lot to do with training apprentices, who were introduced when I was overseas."

Not long before he left for Invercargill, he had the riverbank along the woodland planted in palm trees. The Linwood nursery had a surplus of them.

He noticed on a later visit to Christchurch that they had been replaced by ginkgos. "The parks director had fixed ideas on what constituted an English woodland. I didn't care two hoots about where they came from but just how they looked in a certain situation."

Stan Darling

### Scientists fool veggies into being more nutritious.

Plants ramp up anti-cancer compounds at certain times of day to keep insects at bay. Researchers have found they can boost levels of nutritious, cancer-fighting compounds in vegetables such as cabbage by fooling the vegetables into thinking it's a certain time of day.



Janet Braam, a biologist at Rice University in Houston, Texas, and her colleagues discovered in 2012 that *Arabidopsis thaliana*, a plant related to cabbages and broccoli, uses its internal biological clock or "circadian rhythm" to ramp up production of insect-fighting chemicals at the times of day when the insects are most likely to attack and feed on them. Janet Braam says "We understood that crops don't die as soon as you take them away from their roots - but they're much more responsive and active than I think we were aware. That way, the plant prepares for the attack before it actually happens".

Plants keep their internal clocks synchronized to the environment by detecting the light and temperature conditions around them. Braam was interested to find out if plants can maintain those rhythms, after they're harvested and waiting to be purchased and eaten, since some of the insect-fighting chemicals also have anti-cancer properties. The team discovered that cabbages, spinach, lettuce, zucchini, blueberries and even root vegetables such as carrots and sweet potatoes all maintained their internal



clocks after being harvested if exposed to controlled lighting in a sealed chamber. "The results came as a bit of a surprise", Braam said. "We understood that crops don't die as soon as you take them away from their roots or dig them up from the soil - but they're much more responsive and active than I think we were aware."

The researchers also found they could make cabbage leaves increase their production of an anti-insect, anti-cancer compound called gluoraphanin at certain times of the day by manipulating the light conditions to trick the cabbage's internal clock.



If cabbage was exposed to regular light and day cycles after harvest, it remained more resistant to insect attacks. Typically, Braam said, cabbages

produce more of the compound during the day than at night, and more of it later in the day than in the morning.

The researchers also found that if cabbage was exposed to regular light and day cycles after harvest, it remained more resistant to insect attacks during storage. "It's beneficial to keep the clock running even after harvest," Bram said.

Braam said the study was inspired by a conversation with her teenage son, after she told him about her earlier discovery of the link between the time of day and a plant's production of anti-insect chemicals. He commented that he now knew what time of day to eat his vegetables. "Knowing about the plants' rhythms may indeed make it possible to eat or preserve fruits and veggies at the time of day when the accumulation of healthy compounds peaks" Braam said. "On the other hand, storing vegetables in dark trucks, boxes and refrigerators may interfere with their ability to maintain their daily biological rhythms. However plants are very sensitive to stimuli such as light and temperature, so it may not take very much to keep their clocks ticking."

CBC News, 20 June 2013

## Friends News

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### Smaller Earthquakes but Few Visitors for Guides

Trained volunteer guides provide tours of the Botanic Gardens daily between September and April. The story of guiding visitors in the Botanic Gardens over the 2010-2011 and 2011-2012 seasons was one of maintaining a service on a shaky earth for a few visitors. The earth seemed quieter in the 2012-2013 season but visitor numbers remained low - about a third of what they were before the earthquakes. This means that guiding requires grit. The service was maintained day after day, even if for many of the guides there were long stretches of duties when no one came to be shown round the Gardens.

The total number (125) of visitors who took a tour is shown in Figure 1, which also shows the number of visitors for the previous four seasons. There was a slight increase in numbers in 2012-2013 over 2011-2012 (105) but it is not possible to tell whether it is a significant one.

As has been the case in previous seasons, the main sources of visitors were Australia, the USA and the UK. The proportions of these main sources was also similar to previously; it suggests there has been no change in the country of origin of the visitors despite a fall in the absolute number of visitors wanting a tour.

The fall in the number of visitors has persisted for three seasons. What happens next? The following comments are the personal opinion of the author.

This year, the guides have been involved and energised by preparations for their role in the forthcoming Australasian Conference of Volunteer Guides in Botanic Gardens, but can that commitment be maintained in the face of a continued scarcity of visitors? Fortunately, there is another event with implications for guiding on the horizon - completion of the new visitors' centre in the Botanic Gardens early in 2014. This could be an opportunity to change the way tours are offered. Perhaps tours should start from the new

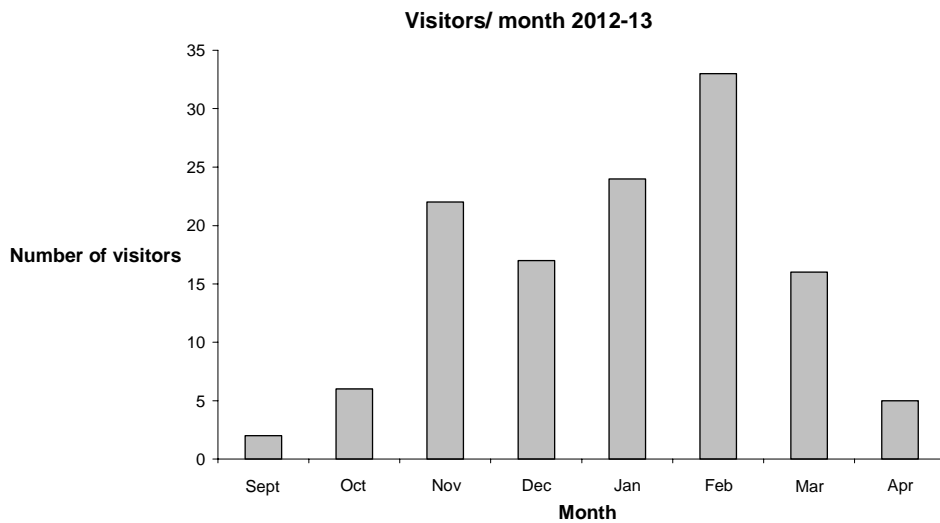


Figure 2: The visitors for the 2012 - 2013 season month by month .

Centre (rather than the Museum)? Perhaps all places on tours should be booked? Perhaps the tours should be on pre-announced topics? Perhaps some tours should be free and specifically designed for local residents?

be the best way of presenting the Gardens to those who want more than a casual glance or a pleasant stroll through lovely surroundings - quite apart from the frustrations engendered in those attempting to provide the service.

Daily tours from the Museum gates may no longer

Alan Hart

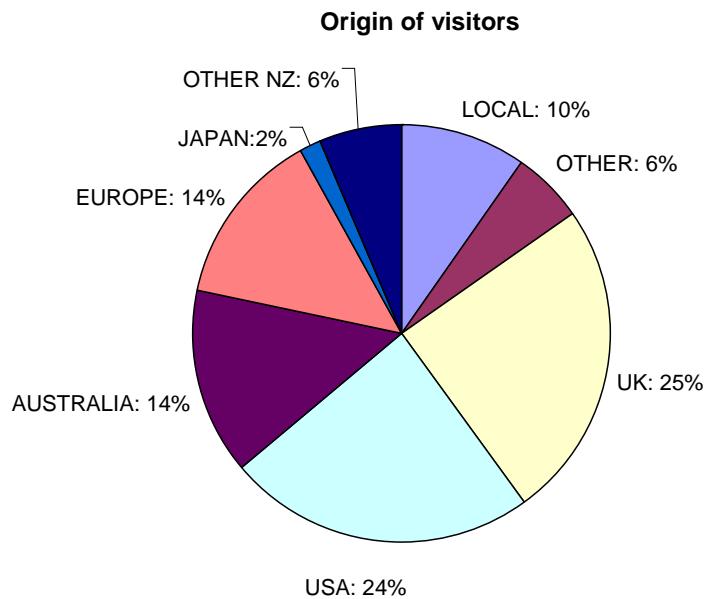


Figure 3: Origin of visitors

## Propagating group

Every Thursday, whatever the weather, a number of the Friends' Propagating Perennials and Annuals Team meet from 12.30pm for about 2-3 hours to



propagate cuttings, plant up and groom already-potted plants ready for the sales trolley outside the Information Centre and the Friends' twice-yearly sales.



During these busy sessions the team takes a short break for a home-baked afternoon tea. The photos show a cake made by Kathleen to celebrate the Botanic Gardens 150<sup>th</sup> Anniversary together with a photo of Jean, the Team leader. The members of the team all enjoy their weekly meetings and welcome any new volunteers interested in getting their hands dirty and learning so much about plants and how they grow.

## Events in the Gardens

From Lynda Burns, Visitor Services Team Leader. 941 7585 or 027 559 0181.

### Writing from the Gardens.

Available up until December. A self guided history tour of the Gardens through the fictitious correspondence of the Paul family. Pick up a map from the Botanic Gardens Information Centre and start from the First Tree Lawn.

### Christchurch Garden City Trust presents "Burst into Spring".

Sunday 15 September; postponement date Sunday 22 September; 12-3pm.

A fun family afternoon-out with live entertainment from local high school groups bringing jazz, swing and a capella music amidst the beautiful setting of the Mona Vale Gardens in springtime.

Free entry

### Escape from the zoo

Sunday 6 to Thursday 10 October, 10am and 1pm

A free 45 minute comedy walking tour meeting at the Band Rotunda in Hagley Park.

### 2013 Research Colloquium - A salute to Leonard Cockayne.

Monday 4 November.

A stimulating and enjoyable morning starting at 9am on the 1st floor Function Room of the Civic Offices (further details supplied in due course). This will be followed in the afternoon by a walk in the Botanic Gardens to the Leonard Cockayne Memorial Garden. Here there will be a short ceremony on the 75th anniversary of the opening of the Memorial Garden.