

# Newsletter

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

*No 71, Summer 2007/8*

## President's Report

The year appears to be ending on a high note for the Botanic Gardens with the City Council having now signed off, just before the local body elections, the future development and management plans for the Gardens and Hagley Park. These plans set out clearly the future direction for the Gardens and propose a variety of interesting projects that will in time enhance and improve the quality of the Gardens from a both national and international perspective.

More recently the Botanic Gardens and City Council's staff members' garden entry at the Ellerslie International Flower show, depicting the Canterbury plains, won a gold award for a floral display. Currently the City Council is in negotiations with the promoters of the Ellerslie International Flower Show to host the show in Christchurch. If successful, this may have an impact on the use of Hagley Park and the potential to attract a greater number of visitors to the Gardens.

The year ahead will be a very interesting one for the "Friends" and already your Committee has been involved with and agreed to fund a small project for 2008. The project, to occupy the area between the existing herb garden and the Botanic Gardens nursery and service area, will demonstrate the various uses of native plants. The three types of display gardens will be a formal native garden, a bush/forest garden and a tussock/garden.

Don Bell.

## Botanic Gardens Information Centre Display

### Digging Deeper

**How well do you know your garden?**  
Tuesday 23 October – February

The intention of this display is to help gardeners and new home owners save time and money by providing them with some key pointers on how to choose plants that suit the conditions within their garden.



# Gardens' News

### Jeremy Hawker reports –

Heading into spring and summer, plants produce the result of their winter dormant period, with fresh flowers and brilliant blooms and new growth evident. It feels similar for the staff at the Gardens, the length of time the Gardens and Hagley Park effectively waited dormant while the management plans and the master plan process continued. That meant very little appeared, there was no fresh spurt of growth, no splash of brilliance, no bright colours clashing. It is therefore exciting to see that the work that was carried out during this time will now become evident, with renewed plant collections, enhanced displays, new ways to convey messages about plants and people, and new facilities.

- In November, we are supporting Project Crimson with the launch of the Canterbury trail hosted within the Gardens.

- Crop & Food Research and the Gardens are providing a display of potatoes as 2008 is the United Nations Year of the potato and we will be promoting this wonderful vegetable into the coming year.

- The enhancement of native plant collections is under way. Both Landcare and Lincoln University added value in design and planning.

- The Botanic Gardens, after the success of "Botanics Bite Back", will display poisonous plants as part of the Festival of Flowers, and this again is

designed to inform and entertain, making connections between people and plants. It also allows us an opportunity to call on the expertise of the Events team within the Council to provide a venue for some evening entertainment in the gardens.

- The Wollemi pine approval is eagerly anticipated, and planning is under way on numerous projects within the Gardens including the Gondwana project, children's garden, and the enhancement of our plant collections.

- Behind the scenes, progress is being made on the plant database, web site, water conservation, and we have been working with City Council staff on waste minimisation and recycling. Some of these initiatives will be launched in the coming months.

What is evident is that partnerships are an important way to promote plants, enhance the garden and support staff. This was the theme of the recent BGANZ conference held in Hamilton. It was interesting to note that most Botanic Gardens are entering partnerships that support the gardens, and add value to the staff and visitors. Illustrations of successful partnerships within an Australasian context, and internationally, with examples from the USA and Great Britain, were illustrated. The Christchurch Botanic Gardens will actively engage in partnerships to add value to our plant collections, enhance and develop our staff, provide added value to citizens and visitors, and recognise and support our partners.

### Profile: Chrissy Thomson

If you have ever admired the colourful flower displays, marveled at the carnivorous plant collection or enjoyed the tropical jungle in the Botanic Gardens conservatories, you can be certain Chrissy Thomson has had a hand in their creation. Chrissy has been a Conservatory Collection Curator at the Christchurch Botanic Gardens for 19 years, and she still loves it. She first joined the team in 1988 on a six month contract, and has been there ever since.

"It's a great environment to work in and the team here are really caring. I have always liked gardening because of the instant gratification. You get a real buzz from seeing what is created from your efforts," Chrissy says.

Together with her colleague Frances Austin, Chrissy does everything from planting, watering and maintaining the plants that come from nursery propagation, to composting, washing plant pots and of course creating the ever-changing flower displays in the Townend House conservatory.

“Working with Frances over the last 10 years has been really fun. We work really well together and have a lot of laughs,” Chrissy says.

The plant collections with which Chrissy works are exotic, colourful and quirky. Her favourite flowers are lilies, but when interviewed was enjoying looking after the bright winter orchids.

“I love orchids – there are so many different colours, shapes and sizes,” Chrissy says.

Many other varieties of exotic plants are grown in the Cunningham House tropical indoor rainforest. Here one will even find a large glossy banana tree, which donates its organic tree-ripened bananas to the Christchurch Botanic Gardens staff in the form of one of Chrissy’s fabulous banana cakes.

Chrissy’s handiwork isn’t only appreciated by the Gardens staff. Every year the Christchurch Botanic Gardens hosts scores of overseas tourists who express great delight at the plant collections and



often ask the conservatory duo to pose for photographs. “The most satisfying part of my job is the overall look of a finished display and getting good feedback from the public and tourists. It is great to

give the public pleasure and we get a real kick out of it ourselves,” Chrissy says.

Once into ballroom dancing, Chrissy now spends more time in a pair of steel capped boots than four-inch pointed stilettos, either at work or pottering around in her friends’ or family’s gardens in the weekends.

If you want to pick up some gardening tips from this dedicated collection curator, you can often spot Chrissy on a crisp winter morning darting from the Botanic Gardens nursery and back into the steamy tropical temperatures of the conservatories she enjoys along with the plants she nurtures. “I’d certainly find it hard working outside in winter,” Chrissy says with a chuckle.

Chrissy says with a chuckle.

## Botanic Gardens Information Centre Display

### Myths and Magic discovery trail – report back

The Myths and Magic discovery trail for family groups was a hit. 885 five children participated in the trail over the Term 2 school holiday break, compared to 498 for the same time the year before.

Children often learn about fairies and other forest spirits depicted in modern day books, stories, and movies, but don’t always know about their origins. Through this trail children were introduced to a number of forest spirits and fairies from traditional tales, folklore and mythology through a series of fun, interactive activities.

Feedback collected on feedback forms has been very positive, with 85% of respondents indicating that they enjoyed themselves. Participants from past trails continue to come back, with some stating that this was their third or fourth trail.

Kerry Everingham, Visitor Services Coordinator

# Recent Events

### **Te Ara Kakariki Greenway Canterbury: a new long-term and large-scale nature conservation project for New Zealand.**

*The article following is based on a talk given by Professor Spellerberg to the Friends of the Christchurch Botanic Gardens on Sunday June 24<sup>th</sup>, 2007. Professor Ian Spellerberg is Director of the Isaac Centre for Nature Conservation at Lincoln University and is also President of the New Zealand Plant Conservation Network. He is a Fellow of the Linnaean Society, Fellow of WWF (U.K) and Fellow of the Environment Institute of Australia and New Zealand.*

This is a brief introduction to what is possibly the largest voluntary nature conservation project in lowland New Zealand. The project covers about 6,000 square kilometres or 2,300 square miles and will last for many generations to come. The idea for the project came about because a few like-minded people recognised that there was a conservation issue on the Canterbury Plains. This introduction is my personal account about how and why I became involved. To put this into context I should start at the beginning.

I am a graduate of Canterbury University and, like many of my fellow students, went overseas. In my case this was for some considerable time. I spent many years working in the U.K. where I was based at the University of Southampton. I was proud to talk about nature conservation in New Zealand. The fact that New Zealand had such a large conservation estate and had many innovative initiatives to manage pests did not go unnoticed in the many books and papers that I wrote. I looked back on New Zealand with great fondness and kept in touch with many colleagues. I often thought about the Christchurch Botanic Gardens. The words above the main entrance to the Canterbury Museum were fixed in my brain. I missed the smell of the bush and the diversity and extraordinary nature of many of our native plants.

Returning to New Zealand in the late 1990's, I was pleased to be back. It was good to remind myself again about the native plants of New Zealand. At Lincoln University, I was once again enjoying the Canterbury Plains, the mountains and the sea. I started to visit many plant conservation projects and give talks to societies, clubs and schools.

Then I became very disappointed and disillusioned with the extent to which native plants were in the public eye. A number of things and events contributed to my disappointment.

I was reminded that we have about 2,500 species of native plants but about the same number of exotic species that are doing quite well. There are many more exotic plant species and every year some became unwanted pest species. I discovered lupin seeds with the words 'New Zealand Wildflower' emblazoned on the front of the packet. I found that many young people believed that macrocarpas, willows and lupins were native plants. I saw Christmas cards with holly and ivy and red robins. Where were the New Zealand Christmas cards? I joined a millennium tree planting project and argued for the use of native trees along the Main South Road. This is New Zealand and let's celebrate New Zealand! All to no avail. In the newspapers there were many articles about exotics versus natives. There was talk of 'eco-nazis' and some people complained that we were under attack by politically-correct native plant enthusiasts. The headlines read 'let the lupins be' and 'there is nothing wrong with planting introduced trees'. I saw many instances of the continued loss and damage to native plants and plant communities. I listened in dismay to my colleagues as they talked about their battles to conserve and promote New Zealand native plants.

In 2005, the Christchurch Press surveyed their readers and asked what did they like most about Canterbury. The top ten answers included braided rivers, the nor'west arch, the southern alps and macrocarpa shelterbelts. Some people love the geometry of the Canterbury Plains. I surveyed the roadside verges of the Canterbury Plains and yes – they look clean and green but there is not a native plant to be seen. Driving from the airport to Lincoln University, overseas visitors would ask me 'where are the native hedgerows?' No longer was I so proud of nature conservation in New Zealand.

I resolved to do something for New Zealand's native plants and native plant communities. I wanted to raise the profile of native plants and do more for the conservation and sustainable use of our natural heritage. In 1999 the Isaac Centre for Nature Conservation was established at Lincoln University. Many products have come from this Centre includ-

ing a new programme, the Master of International Nature Conservation. Then came a series of ideas for publications. These publications included a booklet 'Establishing shelter in Canterbury with nature conservation in mind,' and a book 'Going Native: making use of New Zealand native plants'. A new book to appear next year will be 'Living with natives: New Zealanders talk about their love of native plants'. Another book is being planned. An idea that I brought from the U.K. is the annual vote for New Zealand's most favourite native plant. This is now hosted on the website of the New Zealand Plant Conservation Network. That Network was established at Te Papa in Wellington in 2003 and next year we return to Te Papa with a major conference and celebration of native plants and native plant projects.

In 2005, a small group of like-minded people just happened to come together and started to talk about the nature conservation issues on the Canterbury Plains. We acknowledged that Bank Peninsula had a Conservation Trust and we knew that many people were once again doing something about Te Waiora / Lake Ellesmere. But out there on the lowlands and dry-lands what future was there for native plants and native plant communities. There were many native plant projects scattered across the plains and we knew that there was a growing interest in the use of native plants. We started to talk about linking plant conservation projects and the concept of greenways came to our attention. It was then that we resolved to establish a greenway across the Plains bounded by the Waimakariri and the Rakaia. We looked for a symbol and adopted Kakariki – we had a vision of native birds returning to occupy the Plains from the mountains to the sea.

Te Ara Kakariki Greenway Canterbury will become a wildlife network across the Canterbury Plains. It is all about fostering the use of native plants and native plant communities. It is a large-scale and long-term project that is to be driven by local people for the benefit of nature and future generations. The Project will not only foster the use of native plants (for all reasons, social, cultural, economic, environmental and conservation) but will also help to assemble resources. These resources will include information about where to obtain plants, what to plant, care of plants and costs of planting. The Project will draw together all the information and make it freely available. The project could take place on public land but much of the land is in private hands. We knew that we would have to identify the benefits of using

native plants – particularly in the light of an uncertain environmental future of the Plains and in face of the changing land-uses. What are the benefits? The project will contribute to New Zealand's clean and green image. Using locally-sourced native plants is part of being sustainable. The project will contribute to amenity and tourism. Te Ara Kakariki Greenway Canterbury will become an icon for Canterbury. Tourists will come to New Zealand to see the swathes of native plants along the roads, railways and rivers. Native plant communities can contribute to our land-based economy. There could be; native plant crops, native plant shelterbelts, sources of native plant food, and native plant projects related to health and well being. Native plants are already being grown as companion plants to support beneficial insects. Native plant communities may minimise risks of flooding, they contribute to surface water conservation and may help to reduce spread of fires. There could be native plant carbon sinks. There will be social benefits. Local towns could benefit from community-based native plant projects. What if all schools in the Greenway had native plants in their grounds and could use Te Ara Kakariki as a geographical, biological, cultural and IT project?

That group of like-minded people has now formed the Te Ara Kakariki Greenway Canterbury Trust. A web site is under construction. A bid has gone to the Biodiversity Advice Fund for money to support a co-ordinator for the project. A Management Team has been established. Research students are becoming involved. The Isaac Centre for Nature Conservation has devoted the 2007 Flock Hill Workshop to asking the question 'What future for native plants on the Canterbury Plains?' A report has been published and is available on the Isaac Centre website or in hard copy form.

But there is more. During the discussions and consultations that have taken place over the last two years, an idea emerged about a new centre for plant education. Some of us had been inspired by that great Eden Project in the southwest of England. Others were drawn to the fact that so little seemed to be known about native plants. We take plants for granted. Humans are dependent on plants for oxygen, clean air, clean water, fertile soil, fabric and fibre. So wouldn't we have a new centre for plant education somewhere in the Greenway. That centre could be anything that we could imagine it to be. It could be a major tourist attraction, a major educational resource, a place to find out about plants and a place to explore the amazing diversity of native plants that we have in New Zea-

## 6 FRIENDS OF THE CHRISTCHURCH BOTANIC GARDENS

land. New Zealand native plants include some of the most extraordinary in all of the world. New Zealand has a very significant and successful history in plant conservation.

We have a network of people throughout New Zealand made up of plant scientists and conserva-

tionist – all who are contributing to what I believe is the most exciting and most significant yet untold story in New Zealand's history of nature and conservation and sustainable use of our natural heritage. I am most grateful to my friends and colleagues who are part of that network, for their continued encouragement and support.

## Articles

*Three Christchurch Botanic Gardens Volunteer Guides represented Christchurch at the 2007 Australasian Conference of Volunteer Guides of Botanic Gardens in Adelaide from 24<sup>th</sup> to 28<sup>th</sup> September, and afterwards at a Post Conference Tour to Port Augusta, in the Arid Lands. The Guides, Patricia Carr, Nedra Johnson and Bill Whitmore, thank the Friends' Committee for contributing towards the costs they incurred. The following articles reflect information and experiences from the Conference and Tour.*

### **The Adelaide Botanic Gardens and recent developments.**

The central city Adelaide Botanic Garden occupies an area of 16 ha (compared with the Christchurch Botanic Gardens' 30 ha). It dates back to 1857, six years earlier than Christchurch. Like the Christchurch Gardens it was designed in the English Hyde Park style with an eclectic collection of specimen trees set in lawns and flower beds.

The average rainfall at 500 mm/year (*cf* Christchurch 655 mm/year) is not well distributed: winters are wet; in spring to summer there are periodic showers, occasionally heavy; there is no rainfall in autumn.

Complementing the city Garden is the Mt Lofty Botanic Garden which was opened in 1977. It has an area of 97 ha, has a rainfall of 1200 mm/year and is much cooler. There is also the smaller Wittunga Botanic Garden in the Adelaide Hills.

The Adelaide Botanic Garden has been enhanced in a number of ways in recent years. In view of Christchurch Botanic Gardens' approaching 150<sup>th</sup> anniversary in 2013 and the planned programme of improvements currently underway it was interesting to see the enhancements in Adelaide and

how they have been brought about. Financial contributions from industry have made possible many of the Adelaide improvements.

The Garden benefited in 1989 from the opening of the stunning Bicentennial Conservatory. This single-span glass and metal conservatory, which has won many awards, is 100 m long, 47 m wide and 27 m high and enables visitors to experience a rainforest environment and understand the importance of rainforests and the need for their conservation. It was built with government funding to celebrate Australia's bicentennial. In the same decade, with financial assistance from Pilkington Glass, the Garden restored its Palm House (originally erected in 1877 to a German design) and acquired the "Cascade", a beautiful water feature made from glass.

Very recent improvements to mark this year's 150<sup>th</sup> anniversary of the Adelaide Botanic Garden are:

- The Schomburgk Pavilion, a new building incorporating a café and Botanic shop.
- Conservation restoration works to the Garden's Museum of Economic Botany and its collections.
- A new "SA Water" Mediterranean Garden and redevelopment of the existing Italianate garden. Both are most attractive gardens and showcase drought-tolerant plants from Mediterranean climatic zones of the world.

A new glass pavilion to display the Garden's rare giant Amazon lily (*Victoria amazonia*).

It is evident that donations from industry have played a major part in paying for the new buildings and developments. This is illustrated by the renaming of an existing avenue of large Moreton Bay fig trees; to acknowledge Rupert Murdoch's multi-million dollar contribution towards the costs of improving the Garden, what was formerly the "Ficus Walk" has been renamed (not without some controversy) the "Murdoch Walk".

Bill Whitmore

## Backyards - the most important room in the house.

Report by Nedra Johnson on an address given to the Conference by Professor Chris Daniels.

This address made a huge impression as it seemed to relate closely to Christchurch and perhaps to other parts of New Zealand.

Chris's concerns were that backyards were seriously under threat due to infill housing and developments of gated and other subdivisions with large houses on small sections with high fences and concrete yards. He considered that backyards, which in the past were used for family parties, barbecues and games of cricket or other activities, were becoming a thing of the past. The loss of these spaces, which he saw as reservoirs for health and for biodiversity including wildlife, would mean that future generations would grow up knowing nothing about birds, butterflies, insects and reptiles.

Sections were traditionally separated by trees and bushes, and these provided shelter and places for birds and other fauna to live. Many roads were planted with trees either on the edges or in the centre also providing for birds and other animals. Backyards were used to produce vegetables and fruit but as developers seemed to be using every inch available for sub-divisions all the open spaces were disappearing.

Another matter for concern was the management of water in the concrete jungles that were increasing. There were no lawns to soak up rainfall. There was no understanding of caring for plants and learning about nature. One example he gave was that 55 people had died when watering their Christmas trees with the lights still on!

Developers were known to try to influence the population by saying that people don't want to have backyards any more. (It is my view that they want to fit more houses in an area and backyards would use up too much space!)

This was an inspiring and inspired address and raises issues that we need to take very seriously if we don't want our city to become controlled by greedy developers.

Chris Daniels would be a great speaker to convince our city planners and councillors of the dan-

gers of allowing over-development in our Garden City. We could lose the Garden City image if we don't listen to the experts who have the ability to look into the future and see the effects of unwise planning.

## Hot plants!

In the Adelaide Botanic Garden is a pond in which thrives the Asian sacred lotus (*Nelumbo nucifera*). It is not uncommon to see a group of people clad in thigh-waders standing in the pond – they are there to take temperature measurements of the lotus flowers. Adelaide Professor Roger Seymour, as well as other botanists and scientists, are studying 12 families whose plants display thermogenesis ie they generate their own heat.

The characteristics of such plants are:

- they are all ancient in an evolutionary sense.
- they typically produce large flowers which have a small surface-to-volume ratio (this favours heat retention).
- they are pollinated by insects.
- the female organs develop before the male parts, requiring the plants to briefly 'kidnap' pollinators to make its pollination system work.
- and they often produce unpleasant smells, similar to decomposing animal carcasses, which is an attraction for insects such as blow flies and beetles.

These types of plants can generate a huge increase in temperature. There is uncertainty how this happens but an effect is to make the plants smell more pungent, or perhaps make the plants' smell more closely resemble a decaying animal carcass. While some plants, such as the dead horse arum generate heat on a preset schedule, others have the ability to keep its flower at an approximately steady temperature. The Adelaide team found that as ambient temperatures drop as low as 10 degrees C. flowers of the Asian sacred lotus will maintain a temperature of 30-36 degrees. When grown outdoors *Philodendron selloum* from Brazil can also maintain its flower temperature between 30 to 36 degrees C. and in lab tests can maintain this temperature even when the ambient air is cooled to 4 degrees C. The eastern skunk cabbage (*Symplocarpus foetidus*) can melt holes in a snow cover; plants will bloom in a snow bank and create their own snow caves.

Scientists have observed that when flies buzz in to explore the dead-horse-arum bloom, many crawl

## 8 FRIENDS OF THE CHRISTCHURCH BOTANIC GARDENS

down into the pocket where the spathe narrows to surround the base of the finger. That pocket contains a band of male florets above a band of female florets. Spines and filaments at the entrance to the pocket imprison the flies. During the first day that a dead-horse arum blooms, female florets have matured enough to receive pollen, but male florets aren't releasing it. The flies, however, may carry pollen they picked up from a previous adventure in another, earlier-blooming plant. As the flies scramble around in the pocket, trying to escape, they dust that pollen onto female florets. By the next day, the female organs have lost their receptivity, but the male parts have matured. The trapped insects then pick up pollen. The blockade of spines withers, so the flies can at last squeeze up out of the pocket. They then carry the new pollen to the next arum, should they fall for the same trick again.

The heat-generating flowers "are like nightclubs for beetles" Seymour says. The warm, alluring environment draws an insect in.

During evolution, a floral innovation may have supplanted the nightclub concept. A flower that offers just a sip of nectar or a pollen snack and then sends the pollinator on its way will probably spread its pollen over many more partners than will a plant that traps insects for a whole night. Seymour's take on why heat rewards died out is that "nightclubs were replaced by fast food".

Current research into the mechanisms causing the heating in these plants may point the way to developing completely different heating systems for us in our homes.

Nedra Johnson & Bill Whitmore

### **Being water wise: sustainable landscapes**

I was and am particularly interested in water sustainability, and being at the Conference was an eye-opener. The upgrading of the Adelaide Botanic Gardens to mark its 150<sup>th</sup> Anniversary this year is magnificent in many ways, but what impressed me most was the way in which they have redesigned some of the areas into being super water wise.

Afterwards at the Post Conference Tour I was deeply impressed by the locals' wisdom and ingenuity –albeit through necessity - in making the

most of the minute amount of water they have. One of their mottos is "Adversity breeds diversity": Adelaide and surrounding areas certainly seem to be proving the truth of this motto.

Managing Adelaide water is a difficult task because there is such variation in rainfall. Between 30-90% of the city's water comes from the River Murray, which is diminishing in flow.

The most fascinating talk I heard was by Sustainable Landscapes Project Officer, Sheryn Pitman. The Sustainable Landscapes project is a collaborative partnership between the Land Management Corporation, Innovation and Economic Opportunities Group (through the Mawson Lakes Economic Development Project), Adelaide and Mount Lofty Ranges Natural Resource Management Board, South Australia Water Corporation and the Botanic Gardens of Adelaide (Department of Environment and Heritage).

The project demonstrates and promotes appropriate park and garden design, plant species selections, and sustainable horticultural practices for South Australian environments, including effective, efficient, and appropriate water use.

Wherever we want to create green spaces, such as urban landscapes, parks and gardens, we must think in a different way today from the past. Why? Because of climate change, loss of biodiversity, energy use and carbon emissions, 'pest' plants and animals, water quality and availability, soil degradation and air quality. Increased urbanisation produces of course decreased bio-diversity.

What we actually do is create oases, regardless of our surroundings. There is an increase in hot days, huge decrease in frosts and much reduced rain in autumn and spring. (This is in South Australia, but you could read similar swings into most countries in the world). All this is also causing stress to animals, and the risk of drought is increased, while fresh water quality is reduced because of erosion. Less rainfall means, of course, more irrigation, and so it is a vicious circle.

Many urban landscapes are resource-hungry, requiring significant inputs of energy, water, nutrients and chemicals while many plant selections and practices are unsuited to the local climates. The result is all too often lush and green parks and gardens that are thirsty and hungry, deplete the soil, allow invasive plants to escape, use unsustainable

materials, contribute to waterway contamination and provide limited habitat for native fauna.

Professor George Seddon in 2005 said 'Historically, South Australia's urban parks and gardens publicly and privately have reflected an English taste with plantings that require a high input of water and other resources. This cannot continue'. (You could insert New Zealand here).

So, what is a sustainable landscape? It is a healthy and resilient landscape that will endure over the long term without the need for high input of scarce resources such as water. The natural functions and processes of the landscape are able to maintain themselves into the future. The South Australian urban landscapes (and any others world wide) are sustainable when they are in harmony with local environmental conditions.

The project, through demonstration and education, promotes the integration of good design, low water use plants, non weedy plants, low chemical use, low energy consumption, habitat creation, water conservation measures and the use of sustainable products. The City Council sent a highly informative leaflet to every house in Adelaide giving advice to people on mulching, creating areas for wildlife, helpful plants, etc.

An example of putting the ideals into practice is one area, now in the Botanic Garden, which had been most unproductive. It had heavily compacted clay and soil because of building. When later planted it was not properly dug; just a 300 mm of top soil was added and the cocktail finished with the planting of a few species. Not surprisingly, the result was a total disaster. The Botanic Garden took over. One metre of topsoil was removed and the ground was scored, new sandy loam with a ph of 7 dug in, drip irrigation installed to establish the plants (it is now rarely used and then only two litres/ hour), gentle contouring for aesthetic interest, an initial dose of Osmacote slow-release fertiliser added, and finally a gravel mulch from quarries (not rivers) placed on top (this is much better than chip mulch because it does not need renewing as often, the plan being to have burden free maintenance). Multi planting took place, usually three in each hole – while this does entail later shaping and pruning, plants such as *Eremophilas* love pruning. The area is called the 'Whipstick Mallee', composed of plants which do not grow tall, are drought tolerant, often silvery and are planted close together eg *Eucalyptus*,

*Cistus x skanbergii* and *Eremophila*. Many of the plants have 'heat shock' proteins. The first plantings were in 2002 and now five years later the result is dramatic and vibrant.

A Sunken Garden has been renovated and tough plants put in; silvery and maroon succulents such as *Salvia*, *Ceanothus*, *Erigeron*, *Convolvulus cneorum*, *Sedum spectabile* 'Stardust' and *Strelitzia*. Anything that needs much watering is going, as watering is only fortnightly and sparingly. This garden now has its own water efficient, computerized dripper system, as does much of the Botanic Garden.

The beautiful Palm House dating from 1877 had come in kit form from Germany. The tropical plants which it originally housed grew too well and needed a huge amount of water resulting in rusting of the iron structural beams. After restoration in 1995 drought resistant plants from very dry SW Madagascar were planted inside. Plants are hand-watered very sparingly. Water is collected from the roof.

The magnificent cactus beds outside are only four months old. Some tall *Aloe bainesii* have been transplanted successfully, looking like something from science fiction and most eye-catching. The whole aspect is magnificent and again the area is barely watered.

The Mediterranean Garden is a garden full of important messages, modern and historic. Its sub-surface irrigation system is seldom used, about once a month. It has a very attractive modern water feature running through the centre. The plants come from SW and W Australia, S Africa, Chile and California. The Economic Garden with medicinal and edible herbs has a similar system in place.



New water tanks will be fully automated by the end of the year. The six tanks housed in a special building can store up to 90,000 litres; this is three

## 10 FRIENDS OF THE CHRISTCHURCH BOTANIC GARDENS

quarters of the water needed for the Garden from the winter rains and comes from various culverts in the Garden and from the roofs of the buildings. The system cost \$A16 million to build. Rainwater is also caught in tanks for the greenhouses and the misting system in the Bicentennial Conservatory.

Around a well, *Acacias* have been planted because of their tolerance to drought and the ability of their roots to fix nitrogen in the soil. The Botanic Garden is reducing lawns and is using drought tolerant Kikuyu grass. While deciduous trees lose their leaves because of drought, conifers can protect themselves against it. Although expensive to buy and slow growing, *Cycads* are drought tolerant and are seen growing beautifully on North Terrace, a main avenue of Adelaide.

Our trip to the Arid Lands of South Australia was another eye-opener for me. The Botanic Garden at Port Augusta overlooks Spencer Gulf and the magnificent Flinders Ranges. It arose from an idea which germinated in the mind of horticulturalist John Zwar in 1979. There are sand dunes, mangroves and a wonderful grove of Western Myall trees all in close proximity to the town.

Arid zone plants have adapted to survive in landscapes ranging from floodplains and watercourses to vast gibber (kind of rock) plains) and ancient rocky ranges. Rainfall is erratic, so these plants are particular about when they germinate. Grasses germinate after summer rains; while most wildflowers do so after winter rains. *Gossypium sturtianum* (Sturt's Desert Rose) germinates after summer rains when the ground is warm but will not germinate in the same place in consecutive years. Arid zone plants have evolved in special ways to collect and hold water, and the remarkable root systems of many plants find water in ground that is barely moist, while strong competition results in uniform spacing between plants.

The Arid Lands Botanic Garden demonstrates water conservation by promoting dry land plants that require irrigation only every few weeks in preference to traditional English style gardens of exotic plants that need constant watering – the same philosophy as the Sustainable Landscapes project of Adelaide. There are examples of a number of hardy attractive ground covers in the Garden, which can take the place of lawns, such as *Eremophila biserrata*. This Garden is one of the few Botanic Gardens in the world which features Grey

Mangroves, an important component of the inshore marine eco system.

The new café in the Garden is constructed of brick made from local earth; there is a computer drip system used once a fortnight using Murray River water; there are tanks which hold 30,000 gallons of rain-water used in the kitchen and toilets; the effluent is treated and re-used in the Garden. The power is solar. Most weeds are removed by hand.

Port Augusta has 220mm of rain a year, and is reliant on water piped from the Murray River. The opening in October 2005 of a new waste water treatment plant is the realization of a vision of the City Council. A number of its parks and gardens are now using treated water, with the result of far greener parks and gardens, usage of a third less water and a substantial reduction of the amount of effluent water pumped into Spencer Gulf. The combination of using treated waste water, subsurface irrigation systems and a computerised central control system is returning great benefits. It also benefits the Murray River by reducing the City's reliance on it for watering purposes.

One of the many worrying factors about the increasing dryness is the increasing salinity of the land. The Agriculture Department is now helping farmers by encouraging them to plant trees, which leach out the salt, in the centre of paddocks. Apparently the situation is beginning to improve.

We also visited a private garden, Timandra, whose owner believed firmly in low pressure overhead irrigation with butterfly-head sprinklers that simulate rain. She watered for six hours at a time, once every four weeks, which is allowed. This garden is reliant on reticulated water from the River Murray and has no irrigation permit. This year she is intending to test the sustainability of the garden by not providing any supplementary irrigation, recognising that her garden which is a mixture of exotics and natives will look forlorn in mid-summer. It would be interesting to see what happens, bearing in mind this garden, though beautiful, is still very much one which has many 'alien' plants, like so many planted areas in the country.

It was very interesting to see how South Australia has risen to the challenge of living with less and less water and how we can all learn from their experiences and example.

Patricia Carr

## Friends' Groups

### Registration of Society as charitable entity

The Charities Commission has approved registration of our Society known as "The Friends of the Christchurch Botanic Gardens Incorporated" as a "Charitable Entity" under the provisions of the Charities Act 2005. The effect of this registration is to confirm that:

- any donations made to the Friends are deductible by the donor for taxation purposes, and
- the Friends remain exempt from Resident Withholding Tax that Inland Revenue allows for organisations that have a charitable purpose.

Donations, which are welcome at any time, should be forwarded to "The Treasurer, Friends of the Christchurch Botanic Gardens Inc., P.O. Box 2553, Christchurch, 8140." All such donations will be applied towards projects for the benefit of the Christchurch Botanic Gardens.

### Subscription renewal

A reminder to those who have not paid their subs for the year ending 30 June 2008 – they are now overdue. Please note that the next Newsletter will be sent only to those who have paid their subs.

### New publication

Next year Margaret Long, who will be known to many Friends, is launching "The Gardeners' Journal". To be issued quarterly, the magazine is planned to be a quality publication. It will contain detailed articles on a range of topics related to gardens and gardening but very little advertising. I am sure that the magazine will appeal to many of you. For further information refer to [www.thegardenersjournal.co.nz](http://www.thegardenersjournal.co.nz)

### Spring season plant and bulb sales

Once again the Spring Plant Sale on 27 October was conducted in chilly, windy weather. Notwithstanding the unseasonable conditions keen gardeners came to take advantage of the many unusual plants offered at bargain prices by Friends of the Gardens. The sale produced a good profit of \$1,338. That sum together with the total of \$1,492 realised from the earlier sale of bulbs and small conifers was a credit to all involved in the production and sale of plants and bulbs on behalf of the Friends. Now that the Friends have agreed to contribute towards three indigenous plant gardens that were approved in the Master Plan for the Botanic Gardens these funds will provide a most useful contribution towards the costs of that project.

The next seasonal sale, a "Summer Plant Sale", is scheduled for February 2008. In the meantime selections of plants including those left over from sales days and suitable for planting at any time will continue being placed on a trolley outside the Information Centre and available for purchase there. This system is also producing very profitable results.

The Committee is most appreciative for the unstinting work of all members who give their time and efforts to produce and sell plants and bulbs as major fund raising activities for the ultimate benefit of the Botanic Gardens.

### Editor's note

We continue to distribute the Newsletter by email to those members who have given us their email addresses. If you would prefer to receive the Newsletter by mail, rather than electronically, please contact Bill Whitmore – phone 339 8356 or [billpauline@ihug.co.nz](mailto:billpauline@ihug.co.nz)

## 12 FRIENDS OF THE CHRISTCHURCH BOTANIC GARDENS

### Contact Numbers

President	Don Bell	343-6699	Ex Officio	Jeremy Hawker	941-7580
Vice President	Vacant		Helpers		
Immediate Past President	David Moyle	358-8914	Plant Sale	Helen Constable	980-9358
Treasurer	Lesley Godkin	388 0043	Newsletter mail out	Jean Norton	379-2464
Membership Secretary	Ruby Coleman	355-8811	Botanist	Bill Sykes	366-3844
Minutes Secretary	Jim Crook	358-5845	Guided Walks	Max Visch	338-2273
Outings/trips	Elizabeth Wolff (03)	313-5046	Guide Co-ordinator	Pat Whitman	384-3475
Newsletter Editor	Bill Whitmore	339-8356	Enquiries	Info Centre	941-6840 x 7590
Other Committee Members	Charles Graham	348-5896	Administrative Assistant	Sylvia Meek	
	Nancy Boundy	388-6345	Newsletter layout	Maria Adamski	

Christchurch Botanic Gardens Inc  
PO Box 2553  
Christchurch