Newsletter

For Friends of the Christchurch Botanic Gardens Inc *No 102, Summer 2015/16*
To Promote, Protect & Preserve

President's report

Another year has all but zipped by and yet another Christmas looming. Pity we have to get a year older with each one.

The year has been an eventful one for the Friends' Committee mostly behind the scenes and mostly dealing with changes in the City Council and the Botanic Gardens management – and funding.

The new Visitor Centre has required some evolving adjustments to the staffing and processes. The set-up does not allow for plant sales or for the plant barrow, and finding a suitable site for it has been a challenge. We have now settled with the management a location to the left of the entrance to the Old Information Centre. It has been operating on an honesty box basis but inevitably there are plant losses (aka thefts). We are planning a semi-fixed structure that can be locked up at nights rather than a barrow that has to be physically moved to a lockup. We are investigating some camera surveillance to reduce theft. The nursery is well stocked so watch for more sales in the New Year.

Guiding still has its challenges as daily walks are attracting few takers compared with pre-quake times. However we are getting more groups booking tours and we can handle more.

The Old Information Centre (it needs a new name) is now vacant since DOC left on November 5 and the Friends' Committee has made a strong representation to have it developed as a meeting/seminar/workshop facility suitable for our needs and available for short-term rental. We have requested secure storage space for our archives and meeting equipment and we have offered to help fund furnishings (chairs, tables etc.) Of course there will be no charges for the Friends groups and events.

The old Tea Kiosk has been repaired and restored and is under lease negotiation with an outside and unknown entity. This is under the Council assets team from Hereford Street, not the Botanic Gardens. No doubt all will be revealed in due course. Our submission on the Old Information Centre stressed that it must be under the control of the Botanic Gardens and for the benefit of the Gardens and kindred users

Since the AGM, the Committee has seconded Earl Bennett, a landscape architect, lecturer and all round good bloke and Tracy Shui, a qualified accountant with Mackay Bailey accountants, garden lover and now our delightful Treasurer. Our money is back in safe hands.

Wishing you all a happy Christmas and a Bountiful 2016. And remember our Christmas Party on Saturday December 5th at 2.30pm.

Alan Morgan

Garden News

From Curator John Clemens

On research and mistletoes at Christmas.
It will soon be Christmas, so what better plant group to think about than the mistletoes? We have heard the stories about the mystical powers of the (Northern Hemisphere) mistletoe, the ritual of kissing under the mistletoe, or simply using their strange leaves and fruit for Christmas decoration. I grew up with the myths surrounding European mistletoe (*Viscum album*). To me, it was the mistletoe. Now I realise that there are well over 3,000 species of these parasitic plants worldwide. They typically derive most of their nutrition from their hosts, which they can festoon with their dense balls of foliage as shown in the pictured French poplar plantation.

European mistletoe (Viscum album) growing in profusion in a poplar plantation in rural France.

In New Zealand we have eight or nine species in the families Loranthaceae and Viscaceae. Australia has over 90, including the showy Western Australian root hemiparasitic *Nuystia floribunda*, which incidentally is known in those parts as the Christmas tree. New Zealand's species are far daintier by contrast.

Not only do mistletoes signify Christmas, they also make good subjects for research and cultivation as we shall see in the year ahead.

Christchurch Botanic Gardens research five years old.
In fact, that title is somewhat disrespectful. Research and scholarly activities in one form or another have been conducted at the Botanic Gardens since the early years when John and Joseph Armstrong collected, cultivated, studied, displayed, and published science papers on Canterbury's plants. However, in a few months' time our botanic garden will have completed the first five years of a new research chapter through its working relationship with the School of Biological Sciences at the University of Canterbury. It was Mayor Garry Moore who expressed the vision of a close city-science partnership in 2007. Soon after I took up the Curator's position, Councillors endorsed a recommendation to sign a Memorandum of Understanding between the Botanic Gardens and the School.

A happy discovery on that occasion was the collection of native mistletoes that Professor Dave Kelly and colleagues had established on diverse host plants at the School's nursery. I remember thinking at the time that we needed to do something about the lack of mistletoes in the Botanic Gardens and generally throughout our city parks. And now the time has come! A newly appointed Summer Research Scholarship student, Juanita Miln, has started on her 10-week period of study of these charismatic plants.

Dave Kelly, Kristina Macdonald (the new Parks Unit ecologist) and I met with Juanita for the first time today to plan her research and to revisit those mistletoes in cultivation. The stunning *Peraxilla tetrapetala* (one of the red-flowered mistletoes found on native beech trees) was in full flower, as was the smaller but elegant *Alepis flavida*, another beech mistletoe (both pictured).

A red-flowered beech mistletoe, Peraxilla tetrapetala, grown at the School of Biological Sciences, University of Canterbury.

Hugh Wilson once found the *Alepis* growing on the beech trees at Hinewai, although, for whatever reason, I believe it no longer occurs there. The two commoner local species, which will be the main focus of Juanita's work, are the

insect-pollinated green mistletoes. These are *Ileostylus micranthus* and *Tupeia antarctica*, which can both grow on many different host plants.

The elegant, golden-green flowers of another beech mistletoe, Alepis flavida also growing at the School of Biological Sciences.

A recipe for successful research

Research often depends on sponsors or granting agencies to fund a project, on skilled supervisors able to understand the issues and design robust experiments, able and willing students, and an avid audience who can appreciate and use the results. Supportive landowners also play their part. The Friends have been tremendous contributors to (at least) two of these ingredients: supplying funds to co-sponsor summer scholarships as well as being a keenly listening and questioning audience.

The summer scholarships, some of which were also supported by the Canterbury Branch of the Royal Society, Scion (the New Zealand Forest Research Institute), and Lincoln University, have been invaluable. However, because the summer projects are of only short duration (unlike Masters projects or longer doctoral studies), research has been most successful when a number of studies carried out in different years can be brought together. Kristina Macdonald published her research on *Gastrodia* orchids with the results of two other students who completed their studies in previous years. Likewise, the recent work on Canterbury's threatened exotic trees was founded on research carried out years before by Scion. Three summer students have worked on pollinators in the Botanic Gardens and have published or are publishing their results.

Publication in science journals might seem a good way to use too many words to produce an unintelligible dissertation - the journal paper. Nevertheless, it is a great way to test the quality of research in the critical arena of peer review of manuscripts submitted for publication. Summer research projects have undergone and passed this important test.

In the case of the mistletoes, an MSc student supervised some years ago by Professor Kelly identified suitable host plants and attempted to 'sow' the seeds of mistletoes onto their branches. Juanita will locate the former student's sites and assess establishment. She will also locate suitable sources of parent mistletoe plants so that the team can make collections of fruit this autumn for further establishment trials in the field as well as in cultivation.

How you can add your mistletoes to the mix

Juanita Miln, the mistletoe summer student, is just making a start on her 10-week project. As well as locating the experimental sites of the previous student, she would be delighted to learn of locations of the green mistletoes (*Ileostylus micranthus* and *Tupeia antarctica*) throughout Christchurch. If you have mistletoes in your garden or know where you have seen some growing in the city (including Banks Peninsula), please let me know (john.clemens@ccc.govt.nz or phone 0274 320 178). Juanita, or the whole research team, might pay you a visit to learn from your discoveries. Of course, if you know of beech mistletoes, like the pictured *Peraxilla* and *Alepis*, growing in the city other than at the University of Canterbury, we would be even more delighted to know!

We will be collecting fruit from parent plants, including the University's plants, this autumn. Some of these will be for propagating mistletoes for the Botanic Gardens and for adding to the biodiversity of the city's parks and gardens. Our propagators might like to try some!

I wish you a Happy Christmas and look forward to the year ahead. If you would like to know more about our research, please ask using the contact details above. I would be happy to send you copies of papers or to talk.

Events in the Gardens

From Amy Johnston Bray, Interpretation & Exhibition Designer, Parks Unit.

Lazy Sundays. Sundays from 3 January to 21 Feb 21, at 3pm on the Archery Lawn.

Goodnight Film Festival. Outside the Visitor Centre in the Botanic Gardens on the 30 and 31 January. Live music from 6pm and the movies start at 7pm.

Sunday Bandstand. On Sundays from 7 February to 28 March at 12.30 pm on the Central Lawn

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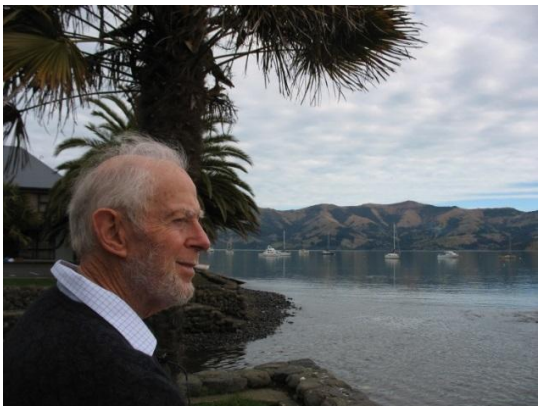
To find out more about our upcoming events and activities at the Botanic Gardens, join our official Facebook page https://www.facebook.com/christchurchbotanicgardens

Articles

Plant Collector - 'Botany Bill' Sykes

Adrianne Moore's excellent Anniversary presentation to the Friends of her exploration of the famous gardens of Scotland and her meetings with their owners was a delight to her audience. Bill Sykes, internationally renowned botanist and consultant to the Friends of the Botanic Garden, attended. His own account of the last days of the big plant-hunting expeditions to the Himalaya in the 1950s is a fascinating story.



Bill Sykes

The 1950s signalled the end of the big plant-hunting expeditions from the US and Britain. Names such as Ludlow, Sheriff, and Kingdon Ward were heroes to Bill Sykes, then a student at the Royal Horticultural Gardens at Wisley, south of London. At twenty-four, he had never travelled overseas and was excited to be one of three botanists selected for a joint Royal Horticultural Society (RHS) and British Museum of Natural History expedition in 1952, and again in 1954, to a part of the Himalaya that was little known botanically and much of it unmapped territory. These were scientific expeditions seeking new herbarium specimens, viable seeds and fresh plant material.

Each of the three botanists was assigned a separate area and visited it three times during the eight months of the expedition beginning early March in springtime Nepal. In 1952 they worked mainly east from Jumla, West Nepal, along the Karnali River; the 1954 expedition was based at Pokhara in Central Nepal and Sykes worked westwards about 70 miles along the south face of the Dhaulagiri Range. From the Indian border it was a month's trek to the collecting fields.

In the spring, flowering plants were tagged for later seed collection. Then from mid-July they were collecting herbarium specimens and seed during the monsoon's heavy mists and rains. Primula seed –and there were so many species varieties – has only a short viability period, so it was wrapped in damp moss, the same with acorns from local alpine oaks (*Quercus semecarpifolia*). Alpine rhododendron seed was stored in paper packets. "The difficulty with rhododendrons was to get precisely the right seed; it was important to tag particular colour forms of individual species when they bloomed in the spring and early monsoon."

The RHS wanted temperate plants that would be successful in the British Isles. These were collected from the upper slopes above 7000 feet, nothing from the sub-tropical valleys below. There were certain genera –*Rhododendron, Primula, Gentiana, Meconopsis* –that one almost made obeisance to. Some alpines didn't do well when they got back to Wisley but thrived at the Edinburgh Royal Botanic Gardens and even better at Inshriach, Jack Drake's famous alpine nursery at Inverness.
Drying seeds was difficult in the monsoon; on each sunny day, thousands of paper bags of seed were laid out to dry. And there were some problems with leeches especially in forests or along stock routes, where they clung to legs and then had to be picked off gorged with blood. In the '52 expedition, Sykes contracted amoebic dysentery, wasted to a skeleton, and had to be carried out a month early in a large bamboo basket.

By October the monsoon was over and plants had died down, time to collect live plants and much of the seed. "Polythene had just come in, but most plants were lifted and packed in sphagnum moss and tucked into little cattle nose-baskets." Live plants needed as much air as possible to avoid mould but they also had to be kept cool and out of the sun.

After the end of October 1954 the expedition began its journey back to its Pokhara base.

Many of the 90 boxes the size of tea chests that were originally brought from England were filled with dried specimens and 18,000 packets of seed were carried out by porters, flown to Kathmandu, and railed to Bombay. Live specimens in their big moss-packed baskets flew home to England, but all the dried seeds went home by ship with the expedition.

"There's nothing like that kind of huge expedition these days," Sykes says. For one thing, modern day commercial plant hunters would not stay three seasons to get their plants, and for another, even in the remotest Himalayas there is much greater accessibility, making such long stays unnecessary. Dehydrated food, good medicines, fabulous trekking gear make the 1950s look antiquated.

In New Zealand since 1961, Bill Sykes is now a collector of Pacific plants, working out of Landcare at Lincoln. Known for his expertise on the flora of tropical Polynesia, he never collects plants horticulturally there. "Just the occasional plant I think, yes, this would be nice in cultivation, but then New Zealand is the most difficult country in the world to get plants into." Not that Sykes isn't concerned about the plunder of plants worldwide. He cites the orchid family: some species have been so over-collected that they are now extremely rare. "They are an emblem of culture and wealth, but their reproduction and dispersal makes them vulnerable." Without sophisticated legal protection, they and many species in other plant families have left their homelands forever. When he worked in the Guangxi Botanical Institute in China, Sykes was acutely aware that the Chinese felt they'd been fleeced. "For well over a century plant hunters from the West had made profits from their flora but nothing ever came back to China."

Bill was born at Walsham-le-Willows, Suffolk, England and after completing his National Service in the Royal Navy as a medical attendant he studied horticulture at the Royal Horticultural Society's Gardens, Wisley, from September 1949 to August 1951. On gaining his diploma he was appointed assistant botanist at Wisley and worked there until 1957 when he enrolled to take an Honours degree in taxonomic botany and zoology at London University.

Bill Sykes arrived in New Zealand on a bitterly cold day, when he was appointed to Botany Division, DSIR, Lincoln, as a scientist specializing in the taxonomy of horticultural plants. He was immediately in demand from local horticultural societies as a lecturer and has served for many years on the Nomenclature Committee of the Royal New Zealand Institute of Horticulture. He was made an Associate of Honour of the Institute in 1992.

At Botany Division, Bill first undertook the vast project of the study of ornamental plants cultivated in New Zealand and started by tackling the woody ornamentals. He has built up the herbarium collection of these plants at Landcare Lincoln and has compiled a database of the distribution of each shrub and tree species throughout New Zealand.

His next major research interest, the study of the flora of the South Pacific Islands, began in 1964 with a visit to the Kermadecs as a member of the NZ Ornithological Society's expedition. This foray was cut short after two days by a volcanic eruption on Raoul, but on many subsequent visits Bill made collections from every island in the Kermadec group. His "Annotated Checklist of the Kermadec Islands Flora" (DSIR Bulletin No 219) appeared in 1977 as well as a second edition, with co-author Carol West, published in 1996 (NZ J Bot 34: 447-462). In 1965 Bill surveyed the Niue Island flora for two and a half months at the request of the Department of Island territories, collecting nearly 1100 numbers and finding over 200 taxa new to this island. Contributions to the Flora of Niue (DSIR Bulletin no 200) was published in 1970. Bill then turned his attention to the floras of Tonga, Samoa, Norfolk Island and the Cook Islands.

From the late 1970s to 1988, Bill was also working on his massive contribution to the Flora of New Zealand Volume 4 with co-authors C.J. Webb and P. J. Garnock-Jones. This volume covered the naturalized gymnosperms and dicotyledons. In 1988 Bill returned to Asia for six months as an exchange botanist at the Guangxi Institute of Botany in Guangxi Province in South China where his main project was a study of the conifers of southern China, but again he also made a large collection of herbarium specimens.

Bill 'retired' in 1992. He is now working on a Flora of the Cook Islands and has completed the account of bamboos for the forthcoming grass volume of Flora of New Zealand. Since his 'retirement' Bill has taken part in several expeditions to the Pacific, the Himalayas, remote parts of Fiordland and the Chathams, etc, etc. Whenever he is in Christchurch Bill works almost daily at Landcare Research herbarium at Lincoln sorting and identifying his numerous plant collections. His colleagues greatly value his presence there and make many calls on his expert knowledge of plant families and species from many parts of the world. He generously gives up his time to provide answers for difficult enquiries and to identify baffling plant specimens.

Based upon article by Diana Madgin

Interpretation in the Gardens.

The collective wisdom of interpretation experts internationally is that the average adult reading age is what is expected of an eleven year old. This suggests that 50% of the population is below the eleven year average and 50% above – the former challenged and the latter short-changed.

There are many processes involved in evolution of our world each requiring a sentence of two to define but which also have a technical term, a sort-of shorthand for the long sentence. Interpretation folk seem to be afraid that introducing the technical term would confuse or even offend the 'common man'

So on the basis of the superior reading age of our Friends here is a story to help take the bogy out of some technical terms. All such technical terms will be presented in italics. (Of course, following normal practice, botanical names will also be in italics.)

It is the story of two of our of our city's native plants – Banks Peninsula sun hebe *Veronica lavaudiana* (previously *Heliohebe lavaudiana*) and Ake Ake *Dodonaea viscosa*.

Both are *indigenous,* (occurring naturally in a country), the former is also *endemic* (occurring only in a country or in a specified area), in this case in Banks Peninsula. *Dodonaea viscosa*, on the other hand, is indigenous to about 60 widely scattered countries. (Botanists use the word *endemic* a little differently to the medical profession - a disease is 'endemic' when it is entrenched in an given area.)

So what's the story of wide difference in these two plants' *distribution range* (the places where they occur without the intervention of man).

First the hebe (now a *common name*). It grows naturally only on Banks Peninsula - in other words it is *endemic* to Banks Peninsula, within our city boundary, as are six other plants. How many other cities in the world have seven plants endemic to their city??

It is thought that the ancestor was a single seed of a *Veronica* species similar to the common weed "Speedwell". This one species produced

seeds which *dispersed* into different habitats that require some sort of *adaptation* to survive, a process known as *adaptive radiation*. Ultimately, many generations later, and maybe some distance from the original parent, the plant is distinctive enough from the original parent to justify the status of a species, a process known as *speciation.*

The genus *Hebe* and its offshoots *Parahebe, Heliohebe* etc (now changed back to *Veronica* where it was 100 years ago, but that's another story) is remarkable in that it had evolved from that single ancestor to around 130 species ranging from large woody shrubs/trees to tiny cushion alpines and soft herbs as they have adapted to their chosen environment. The *Hebe* genus was an almost exclusive New Zealand story now spoiled by being lumped back in to the mostly northern hemisphere *Veronicas*. That "Speedwell" is a pesky weed in turf as it is resistant to all the commercial lawn herbicides which makes it a worthy ancestor for the genus.

Adaptive radiation is a fundamental component of Darwin's 'Origin of the Species by Means of Natural Selection' (or 'Survival of the Fittest'). He first observed the phenomenon in the famous Galapagos finches but didn't invent the term. This process is greatly assisted by the miracle of sexual reproduction which mixes the genes from two plants to create more chances of diversity. This diversity allows for *adaptation,* (also known as *evolution)*.

It's well known in the nursery industry that if you sow 100 *Pittosporum tenuifolium* seeds you potentially can get 100 slightly different plants which if used in a hedge can give a strange outcome – known as *seedling variation*. Good hedges therefore come from cutting grown plants from a single parent (ie *cloned*).

Plants which are endemic to a small area usually have a weak means of *dispersal* which also means they have very limited *distribution* (in botany-speak once plants *disperse* they are then *distributed* or have a specified *distribution)*. Or they may have adapted to a very localised and specialised habitat (eg a pocket of limestone) and that there is no similar habitat in its distribution zone.

It would be tidy if species would stay in the little boxes we put them in, but evolution as we understand it wouldn't have happened if they did. So we add *provenance* to the mix ie the exact location of the plant as variations can occur from one valley to the next.. *Eco-sourcing* of seed or cuttings is how you retain the *provenance* purity. Botanists always include *provenance* when recording or describing plants particularly for herbarium collection.
On the other extreme is the another *indigenous* plant of Banks Peninsula, *Dodonaea viscosa* which has super means of *dispersal* to be able to claim to have the widest *distribution* of any vascular plant in the world – over 60 countries from Afghanistan to the West Indies. It obviously can handle a wide range of climatic conditions – I have seen it in the desert heat of Abu Dhabi and Arizona, the humidity of Florida (where it is called the Florida hopbush) and the West Indies (where it was first described) - and of course the very temperate Banks Peninsula, its southernmost point of distribution.

In addition to this climatic tolerance it has a very strong dispersal mechanism – its hop-like seed capsules can withstand long sea voyages but this does not really explain how it got from its assumed Australian origin once it got to the western coast of the US, how it got to inland Arizona, or even more remarkably to the West Indies where it was discovered long before the Panama Canal was opened.

Remarkably, considering its distribution and some presumably superficial variations in foliage form there seems to be no moves to break up the genus

The Friends recently approved the payment of $1,400.00 for the interpretation panel for the new *Hebe* collection. It is beautifully designed and the mounting stand will last many years. It briefly tells the remarkable story of how the genus *Hebe* evolved through a long process of adaption and dispersal, from a single ancestral *Veronica* plant that somehow arrived here millions of years ago. The reluctance to include the term for that process, *adaptive radiation,* prompted this article.

Alan Morgan

Look at that tree - *Ceratopetalum gummiferum* New South Wales (NSW) Christmas Bush

The NSW Christmas Bush is not commonly seen in Christchurch. You will however find a healthy, well-established specimen in the Christchurch Botanic Gardens. When you enter the Gardens over the bridge from the Armagh Street car park and head towards the Kiosk you will find it on your right. And it is well identified by a plant label at its foot.

As you will deduce from its common name the tree is a native of Australia. It is one of nine species in the genus *Ceratopetalum* which occur in Australia and Papua New Guinea. The name of the genus comes from the Greek ceras, a horn, and petalon, a petal, referring to the petal shape of one of the species. The specific name *gummiferum* alludes to the large amounts of gum that is discharged from cut bark.

Plants initially grow as rounded shrubs but mature to pyramidical trees. The leaves are up to 70mm long and are divided into three leaflets which are finely serrated. When they first appear they are pink or bronze in colour and turn to grey-green when mature.

The small, white, five-petalled flowers appear in late spring and one might say that they are fairly insignificant. Indeed based upon the description so far you might wonder what is so special about this tree – why write an article about it?

The best is still to come! After the flower sets fruit and starts to dry out the sepals enlarge to about 12mm and become pink to red in colour. It is at this time that the bush/tree presents a beautiful sight; there is a massed display of the sepals of the developing seed capsules which are commonly mistaken to be flowers. In NSW the display peaks at Christmas time leading to its common name. In the upper South Island of New Zealand, the display is later – late January to February.

The sepals and foliage are widely used in Australia for cut flowers and the plant is farmed commercially for that purpose.

NSW Christmas bush.

C. gummiferum can be propagated by seed or cuttings. However, as the intensity of the red coloration can vary from very pale to deep red in seedling-grown plants, propagation from cuttings is preferred. There are named cultivars which presumably are propagated by vegetative means rather than by seed. The specimen in the Christchurch Botanic Gardens is the named cultivar 'Rubies'n lace'.

I have ordered a plant from a North Island plant nursery and am hoping, firstly that it grows, and secondly, that if it does, it produces sepals of a strong pink or red colour.

The plant is described as being frost tender but it must have some frost resistance to thrive as it does in the Christchurch Gardens. It is also described as being susceptible to salt laden winds but I wonder about this; there is a magnificent specimen growing in the Pohara camping ground in Tasman Bay only 20 metres from the beach!

There are other plants that have enlarged and coloured sepals. With the South American *Bougainvillea* the actual flower of the plant is small and generally white, but each cluster of three flowers is surrounded by three or six bracts with the bright colours associated with the plant. In hydrangea the flower heads contain two types of flowers, small fertile flowers in the middle of the flowerhead, and large, coloured, sterile bract-like flowers in a ring around the edge of each flowerhead.

I have chosen to illustrate the article with a botanical painting from *The Flowering Plants and Ferns of New South Wales,* Part 7 (1898) by J H Maiden. NSW Government Printing Office. It shows all features of the plant; leaves, flowers and sepals. But to see the real thing you should hunt it out in the Gardens.

Bill Whitmore

Art in the Gardens:
The Gnome - by Bing Dawe.

The Gnome is quite small and rather hard to find – I had been looking for it for some time and asked various people without success. Then walking through the children's playground - there it was!

This work was commissioned for the first ever Gnome Convention held in Christchurch in March 1995. Henry Sunderland, artist and ex-art teacher at Hornby High School presented it to the Botanic Gardens and it is called "Henry". Vicki Buck, Christchurch Mayor at the time, was very pleased for Christchurch to be the first city in the world to have its own garden gnome.

Henry, the Gnome. Photo – Phillip Skilton

He is a rather superior garden gnome, but not superior in the sense of giving himself airs as he is a rather humble fellow. An inscription on a sash around his shoulders reads: - "Guarding naturally over mother earth".

The sculptor is Bing (Brian) Dawe. Dawe's upbringing in Glenavy, South Canterbury, alongside the Waitaki River, was a formative experience that has fed into both his personal and artistic lives. It has sustained a life-long interest and respect for the environment; its bio-diversity and eco systems and the ways in which human beings interact with these delicate and self-sufficient series of relationships.

Bing Dawe

Bing Dawe graduated with a Diploma in Fine Arts from the University of Canterbury's School of Fine Arts in 1976. Since graduating he has participated in numerous solo exhibitions including a major retrospective at the Robert McDougall Art Gallery in 1999. He is the recipient of many awards including the highly prestigious Wallace Visa Gold Art Award in the same year. His work can be found in significant public and private collections both in New Zealand and overseas including public commissions in Auckland, Wellington, Christchurch and Rotorua.

Between 1981 and 1982 he made a series of endangered species sculptures. Fundamental to his work is the relationship between the personal and the global. He is Programme Co-ordinator of Craft Design at the Christchurch Polytechnic Institute of Technology. Christchurch City Libraries commissioned Bing Dawe to create a huge river of eels under the feet of visitors to the Parklands' Library. These run through the building from its street side to a striking sculpture in the form of a large loop with three eels on its top edge, placed on the Library's rear terrace. The artwork is a reminder of what the area was like before European settlement and a reminder that what goes into our waterways today, affects our environment tomorrow. Our birds and fish rely on our rivers and wetlands.

Based upon information prepared by Faye Fleming and Barbara Brailsford but with some modifications and additions by the editor.

Friends News

Neil and Faye Fleming report on the 14th Australasian Conference of Volunteer Guides in Botanic Gardens held at Sydney Botanic Gardens, 21-25 September 2015.

This conference had the theme *Guiding in a Changing Climate.* Unfortunately there was very little about guiding and a lot about the 200 anniversary of the Sydney Botanic Gardens but we gleaned some new information to help our Christchurch guides.

Three guides and Neil, our trainer, attended the conference. The Friends of the Botanic Gardens generously paid for the registration fees for the three guides. Thank you.

Registration was held at the Lion Gate building in the Sydney Botanic Gardens in downtown Sydney that many readers will have visited. The registration site was close to a fabulous "Spring Walk" dotted with blossom trees and magical spring colours. It was fun to catch up with many of the people who had attended the Christchurch conference that we ran in 2013. A very meaningful aboriginal welcome and a chance to reminisce listening to a string quartet and having finger foods welcomed us.

Spring walk – Sydney Botanic Gardens

Tuesday was a full day of lectures and walks guided by their guides. Unfortunately the weather was at its worst with wet and Antarctic-cold winds but we were used to sudden weather changes having come from New Zealand; those from Western Australia and Queensland were not so well prepared. There were a huge variety of walks covered by the four of us and we covered many of the options without doubling up. "Green Medicine" was a herb walk with a highlight being the Madagascar periwinkle that is used so successfully for the treatment of leukaemia and Hodgkinson's disease. The "Art Walk" was quite different from what we would offer in Christchurch. The guide had selected some well-known Australian artists who had painted flowers and plants in their paintings. She had photographs of those paintings and we stood at the plants.

The "Eucalyptus" guided walk was too much for Neil who was faced with 900 varieties of that species including some that were familiar to kiwis and many that were distinctly not like our eucalypts with thick and rugged bark.

The morning lectures that preceded the walks, covered many topics about climate change (the theme for the conference) and the familiar changes to Botanic Gardens worldwide with reduced funding and sponsorship and increased demands for commercialisation from funding bodies such as city councils.

The story of the Wollemi pine was very well told and we learned that they had propagated thousands of plants as quickly as possible so that people would not venture to the source and destroy these unique plants in their only location.

Day tours on Wednesday took groups for bus tours to the two outlying gardens run by Sydney at Mount Annan and Mount Tomah. Mt Annan had 416 hectares with a modern plant bank at its heart. That opened in 2013 in an impressive architecturally designed building. They had already collected 100 million seeds from 50% of the endangered plants of New South Wales and it was home to some impressive work from their scientific team.

We enjoyed a very adventurous session from Donna Osland, coordinator of volunteers. Donna chose to show us a guided walk without leaving the auditorium and she used role play very effectively pretending that the audience of some 140 were “on her walk” as she talked and illustrated her walk. She demonstrated not only the skills of a guide but also how to deal with some of the problems facing guides in botanic gardens; a very daring topic and creatively handled. Many who were at the Christchurch conference will remember Donna and her enthusiasm. She also presented a session called “From coffee beans to coffee cup” that began with the participants collecting the coffee berries from the gardens and enjoying a cup of coffee made from those same berries at the end of the 45 minute session.

Climate change was highlighted with a well-designed phone app that is used to record any changes that had happened to specific plants, birds and habitats monitored by individuals. The records were automatically sent to a clearinghouse in Melbourne and with the record went the GPS information that automatically identified the location. At present here are few changes identified as the clever idea is in its infancy but exciting results are expected. It could be an idea for New Zealand or for our own botanic gardens with volunteers signing up to watch for changes to a particular plant or species that sparks their interest.

The work of the Sydney Friends of the Botanic Gardens is very broad and ambitious as it has a large membership and hundreds of volunteer guides – 200 plus. Overall the signage in the gardens was something that we envied and wish we could copy for our Christchurch gardens. It was informative and had enough detail to enthuse children, adults and botanists.

Some of the main ideas that we came back with were: Let us mark plants in our gardens that are available for sale at our plant sales. The Sydney Gardens uses moveable signs pushed into the ground near the plants that are currently for sale. Secondly, we should be using more phone apps for our walks and also using large-scale photographs to show our visitors things that would be otherwise unseen. Neil is keen to copy the “From Coffee bean to Coffee Cup session some Sunday afternoon. We should find ways to enthuse Christchurch about the importance of our Botanic Gardens as a place of research, climate change, education, endangered species as well as a garden of beauty and tranquillity.

Labelling – Sydney Botanic Gardens

The next conference is in Canberra 15th-19th October 2017 with the theme “Informed Guiding”. We hope that some other guides will start planning to attend.

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

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 Penny Martin – phone 332 6866 or email graememartin1@xtra.co.nz

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