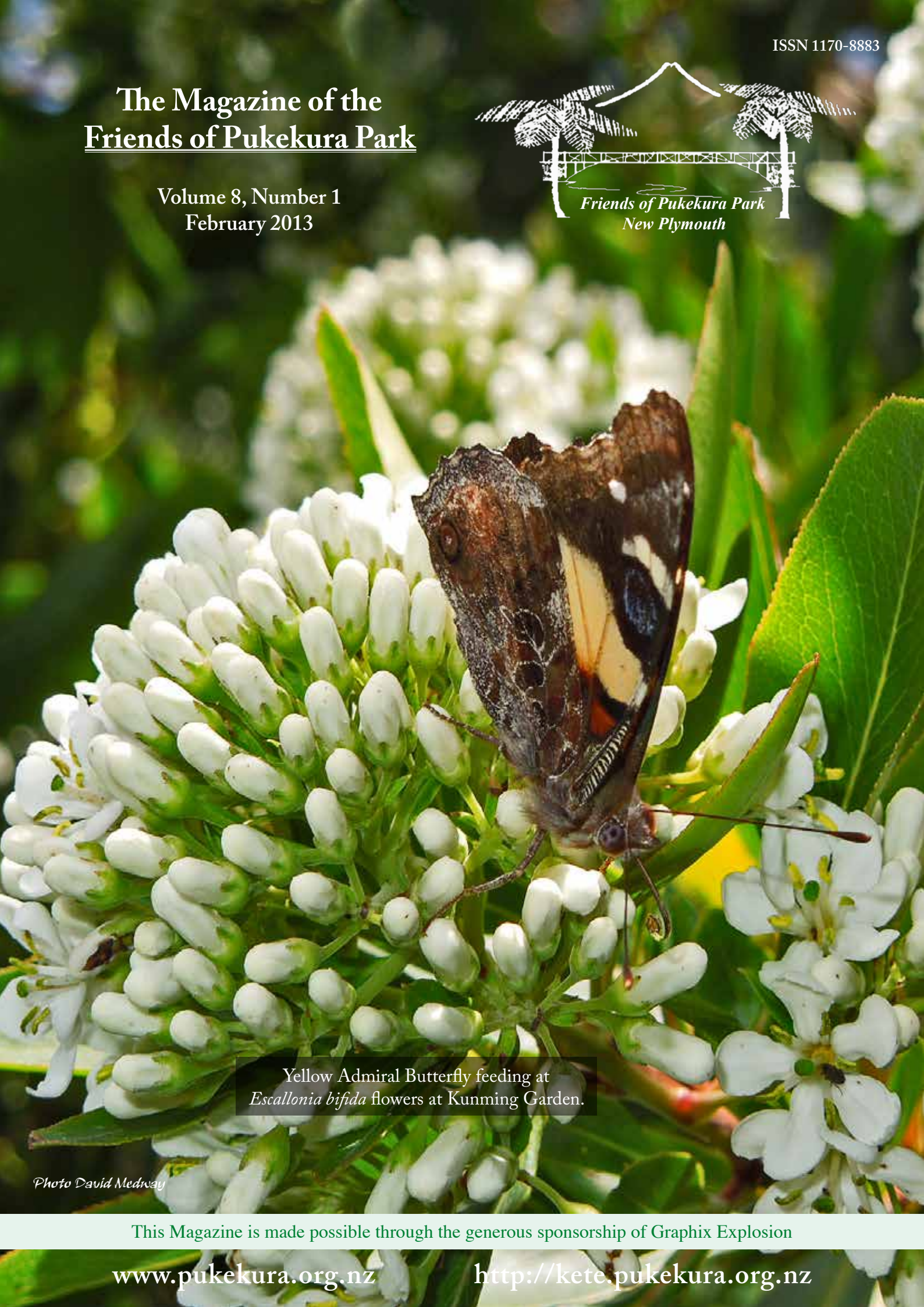


The Magazine of the Friends of Pukekura Park

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Yellow Admiral Butterfly feeding at
Escallonia bifida flowers at Kunming Garden.

Photo David Medway

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From the Botanical Records Officer**Ian Hutchinson**

The Pukekura Park Accession Book records for 2012 show that 277 new plant accessions came into the Park and Fernery last year. All information about these accessions is now entered into BG Base. One of the next tasks to learn, which utilises the data on BG Base, is the creation of aluminium accession labels. Once these are printed they will be put with the plants to help keep track of the various accessions. The labels will be most useful when it comes to doing plant census work. Plant censuses will be carried out periodically to determine how many plant accessions are alive and also the performance condition of the plants. This information will be put into the database against the relevant accession to keep a running record about the plants in the Park. In readiness for the accession labels we have had some stainless steel accession spikes manufactured by a company in Auckland. The spikes are like mini electric fence pig-tail standards. The labels will be placed on the spiral part of the spike and then inserted into the ground near the relevant plant accession. In the case of the Fernery, the accession labels will be put into the pot.

Work has continued on forming retrospective accession lists. These lists are a collation of information from Plant Supply inwards goods books and the outwards planting books and, in the case of the Fernery, from diaries and monthly reports. I have completed accession lists for 2005 (some of which is entered onto BG Base), 2006, 2007, and 2008. I have also made a start on an accession list for 2009.

Another project has been the formation of a labelling list for trees around the Park. The list I have created covers the following areas: Bellringer Pavilion car park environs, Sunken Dell and Tea House environs, Horton Walk, Lower Racecourse Walk, and Fred Parker Lawn. The list covers trees that are near walkways or very accessible. The list is in the final stages of approval and should be sent off to a company called Metalimage in Auckland for printing in the very near future. Metalimage specialises in the creation and printing of botanical plant labels. We have had some special label mounts made to which the labels will be attached. The mounts will be attached to the trees using a washer, spring, and stainless steel nail that allows the mount to be spring loaded. The spring loading allows for the continuing growth in the diameter of the trunk. As the labels become tight the nail can be drawn back moving the label away from the stem. The labels will enable interested visitors to identify the different trees. Hopefully this will make their Park experience even more enjoyable.

Recently, I have spent some time verifying the identities of the varieties within the Park Canna Lily collection. I have done this by using information found in the outwards books and old plant lists, searching descriptions on the Internet, and then matching names and descriptions to the plants in the field. Except for one or two uncertainties, I now have a list of the Canna Lily cultivars in the Park. This will be useful information when it comes time to accession them for the database. I have also been looking at the Camellia collection in and around the former Curator's House at 25 Victoria Road. This collection was started in September 1956 and was added to in June 1963, August 1969, and June 1990. I have made preliminary checks against some planting plans to assess what still remains alive. At this stage it would appear that a majority of the collection still exists. I will also use information obtained from the Internet to further assist with verification of the identity of these Camellias when they start to flower. All of this is useful research in preparation for accessioning them in due course.



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Park summer update

**Sheryl Clyma
Assistant Curator Pukekura Park**

The summer period is always a busy season for the Parks team with the festive season and Festival of Lights bringing in the crowds. The team's focus during this busy time is to refresh all the high profile areas concentrating on rubbish removal, leaf blowing, raking paths, and maintaining the gardens close to the main walkways.

We decided to open up the area between the Band Room and the playground at the Rogan Street entrance. This area was overgrown and damp which resulted in a place for the dumping of rubbish and other undesirable activities. Now there is an open area next to the playground which is more children friendly. Performing beautifully next to the toilets in this area is a stunning Pomegranate (*Punica granatum*) bush. This plant has been flowering for months. Its orange flowers are a stand-out and the glossy foliage is hardy. Between here and the Rogan Street gates the Canna Lilies are putting on a beautiful show displaying the results of their winter divide and compost. *Hydrangea paniculata* 'Grandiflora' is in full bloom nearby.



Photos Derek Hughes



The Fred Parker Lawn area had minimal maintenance over the winter months due to the continuing renovations at the Fernery, but this area has now been handed back to the team. Some of the lawn was re-sown over the Christmas /New Year period with the grass germinating within five days. The gardens will need to be reshaped and further landscaping will need to occur in the coming months. Despite the renovations, the borders are still looking nice and colourful. A stand-out for me here is the foliage of *Pseudowintera colorata* 'Red Leopard', a striking native foliage plant. The foliage is golden-green and heavily blotched with deep ruby-red supplying all year round colour.

The herbaceous border at Brooklands is currently very colourful. The Dahlias are having a brilliant season as are the Canna Lilies. Deciduous *Ligularia* 'Britt-marie Crawford' is another beautiful foliage plant with maroon black leaves. The perennial *Bidens* is putting on a colourful display of bright yellow. The Alstromerias have just finished as have the Daylilies, but both supplied some good early summer colour. The Tuberous Begonias are now just starting to supply some bright colour to the flower beds. In the near future, a new pergola is to be built for the large Wisterias at the southern end of the lawn.

The Wisteria on the Pergola next to the Tea House is making a show with its second flowering. Divine Scarlet Red New Guinea Impatiens in the Tea House bedding is starting to put on a great display. In nearby Sunken Dell the flowering Begonias and *Iresine* providing foliage colour can be appreciated.



Photos Derek Hughes

Looking up through the Tea House Wisteria showing some of its second flowering

The creation of the main lake in Pukekura Park

David Medway

The Recreation Grounds (later Pukekura Park) were formally opened on 29 May 1876 (*Taranaki Herald* 31/5/1876, p.2). By July 1877, the Botanical Gardens Board (as it was then known) had arranged for the site of a proposed “ornamental water” in the grounds to be surveyed and plans to be prepared (*Taranaki Herald* 3/7/1877, p.2). In 1875, Thomas Kelly, Secretary of the Taranaki Provincial Council, had considered that “the stream which flows through the reserve takes the drainage of about three hundred acres of land roughly estimated” (*Taranaki Herald* 26/6/1875, p.2). S. Percy Smith, noted ethnologist and Pukekura Park Board member, recorded that “Pukekura” is the original Maori name of that stream (*Taranaki Herald* 5/8/1916, p.5). It should continue to be known by that name.



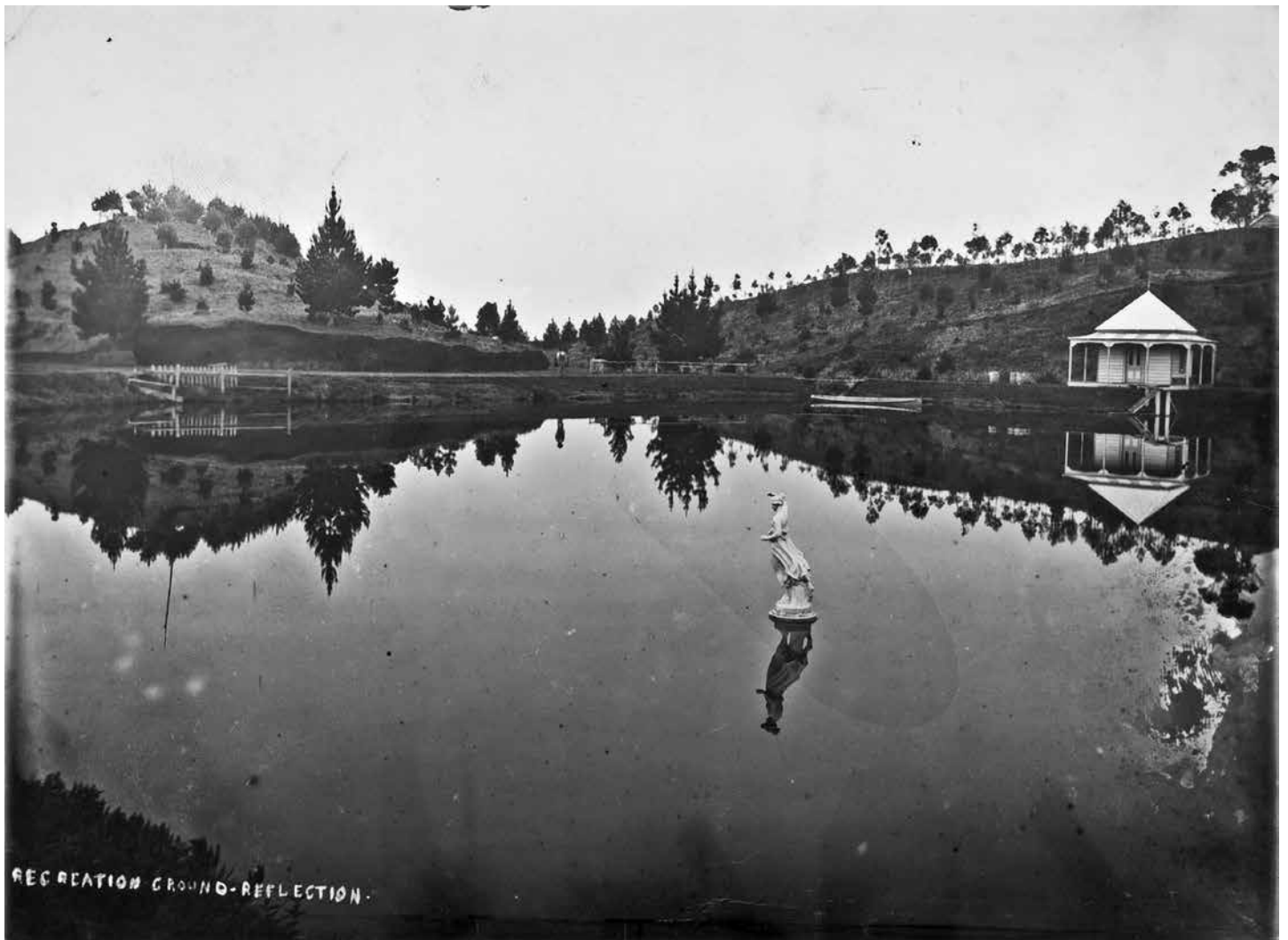
The main “ornamental water” in Pukekura Park today.

Photo David Medway

At its meeting in December 1877, the Botanical Gardens Board decided to call for tenders for the required dam and associated works (*Taranaki Herald* 3/1/1878, p.2). The New Plymouth resident engineer was present by invitation at the Board meeting in February 1878. He strongly advised the construction of a deep under-sluice as an absolute necessity in connection with the dam excavation works, and that by constructing the same it ensured the future safety of the dam and protected private property from damage in case of accident. The Board accepted this advice and, with some modifications, it also accepted a tender for the required work. The Board resolved that “for the purpose of raising the necessary funds the members of the Board pledge their personal credit” (*Taranaki Herald* 6/2/1878, p.2).

In mid-February 1878 the *Taranaki Herald* was “pleased to observe that the dam excavation works in connection with the “ornamental water” to be formed in the Botanical Gardens are being rapidly proceeded with. The contractor is now engaged clearing out the dam site, to obtain a foundation for the puddle wall, the said wall to be thirty-one feet in height from foundation to top of dam. Measuring from bank to bank the dam top will be about 110 feet in length. The water in front of the dam will be about sixteen feet deep. On the east bank of the dam there will be a deep under sluice cut, 11ft. 6in. in depth, and 3ft. in width, which will carry a culvert 1 foot square and 30ft. in length, in three lengths of 10ft. each. This sluice is constructed for the purpose of emptying the lake when repairs are required, and will doubtless prove of great service in this respect. It is expected that both dam and under sluice will be completed early in April, and then the New Plymouth public will have the satisfaction of seeing in their recreation ground a sheet of ornamental water second, perhaps, to none in the colony, and similar to those which now beautify the noble parks of London” (*Taranaki Herald* 14/2/1878, p.2). By the end of April 1878, the dam and associated works were “rapidly approaching completion; in fact, there is already a large sheet of water in the space enclosed by the dam” (*Taranaki Herald* 26/4/1878, p.2).

Work was completed by mid-June 1878 (*Taranaki Herald* 13/6/1878, p.2). “The greatest difficulty which the contractor had to contend with was the water. Owing to the peculiar formations of the ground it was not possible to divert the stream, therefore it was found necessary to form a coffer dam some little distance above the works,



The above photograph from George Fuller’s collection depicts the northern end of the recently-created “ornamental water” in Pukekura Park. It is not dated, but it must have been taken between about August 1882 when local hairdresser “Professor” Furlong erected two statuettes of “The Graces” in the lake (*Taranaki Herald* 30/8/1882, p.2), one of which is shown in the photograph, and March 1887 when construction of the Band Rotunda at the foot of Cannon Hill commenced (*Taranaki Herald* 1/3/1887, p.2).

in order to carry the stream by a race out in the side of the hill clear of the proposed foundations, about 80 feet across. The excavation was then gone on with, although water was still coming in too fast to admit of the work being carried on with satisfaction. The springs burst out in many directions, the strongest ones at the sides of the excavations. These springs did not show until the contractor had got down about 7 feet through a stiff black soil, very much like peat, evidently the stream's deposit for many years, for it was full of leaves, sticks, &c., some of them being as green as if plucked the day before. The contractor now introduced a Californian pump, and found that by plying it every half-hour the water could be kept down. Beneath this layer of black soil was a bed of volcanic ashes about 2 inches thick, resembling powdered pumice stone. It was quite gritty, and evidently not wood ashes. This was resting on a bed of very greasy white clay, about 2 feet in thickness. At sight this seemed to be a sound bottom, but the sounding bar disclosing gravel underneath, it was found necessary to remove the clay. Large rocks then began to show themselves, and limbs of trees with the leaves still attached and quite green. Thousands of hinau berries were turned up with shells of mollusca 3 inches long. A further excavation of 2 feet brought the contractor to the bottom, which consisted of a stiff clay. Then being then down about 11 feet below the surface their contention against the water was very laborious. It was now found necessary to run a bank of clay across the excavation, 12 feet from the upper side to the former level of the stream. This being well puddled the benefit was seen at once, for the water collected behind it during the remainder of the time the contractor was at work and the excavation was tolerably dry The intention of the Board in the first instance was to have formed the dam without a scouring sluice, but further consideration induced them to alter their plans, and a deep under sluice was cut on the east bank. It was found necessary to use dynamite in making this cut, as large rocks kept cropping up; but most of the cutting was through very compact gravel cement

“That it was a large undertaking is manifest, and that the contractors have ably performed their work, the proof is its impermeability. We have not as yet been able to obtain the exact information as to the amount of earth removed, area of water, &c., but the following is an approximate estimate: - About 3,000 yards of earth have been removed, and the area of water obtained is nearly two acres. The length of the sheet, in our estimation, comprises its beauty, as it will run back nearly 400 yards, with varying breadth. The total length of the dam across the way on top is 110 feet by 10 feet wide, with breadth of 80 feet at the foundation. The pressure of water on the embankment will be over 400 tons - a weight which need not alarm the most timid, as the stability of the work is unquestionable”
(*Taranaki Herald* 13/6/1878, p.2).



Northern end of the main “ornamental water” in Pukekura Park today

Photo David Medway



Variations of the bark of *Ulmus parvifolia* (also opposite page photo)

Photos David Medway



Above: *Ulmus procera*

Right: *Ulmus glabra*

Below: *Ulmus glabra* 'Camperdownii'



Photos Elise Smith



More Beautiful Bark

Elise Smith

Elms (*Ulmus* spp. Family Ulmaceae) have been celebrated over centuries, not only as useful trees providing fine grained pliant timber but as memorials to historic events. From the *Iliad* onwards there are literary references to Elms, and paintings featuring Elms showing the importance of these trees in Europe and North America. So it is unfortunate that the fungal Dutch Elm Disease, spread by bark beetles, has decimated these landscapes and the ecology. Some species of Elm are more resistant, particularly the East Asian ones. Elms originated in Asia, and freely hybridise, so it is likely that some resistant replacements will be bred. Elms have historically been cloned to select desirable features to provide consistent forms for horticultural purposes such as living supports in Roman and English vineyards and amenity plantings, which has led to poor genetic diversity. It is interesting that records indicate there were probably 40 Elm cultivars of which 30 have been lost to us.

A group of four Chinese Elms (*Ulmus parvifolia*) is next to the path in the Chinese Collection at the Coronation Avenue entrance to Brooklands. These trees have remarkable bark which is quite varied amongst the group. All the trunks have a pattern of exfoliation, flakes revealing shades of green and pink rimmed with russet lenticels. There are three large English Elms (*Ulmus procera*) in Brooklands, supposedly planted by Newton King. They and the Wych Elms (*Ulmus glabra*) have quite similar grey and finely cracked bark. Luckily, no Dutch Elm Disease has struck New Zealand so these two species are still healthy. At The Gables, an English Elm stands facing a large Wych Elm, also known as Scotch Elm, across Brooklands Park Drive. Wych Elms were native to and common in Scotland. "Wych" apparently derives from the Middle English 'wiche', meaning 'pliant', which may mean 'weak' and thence 'wicker'. The Wych Elm has given rise to a number of cultivars which are actually mutants selected by horticulturalists for strange and interesting features. A normal Wych Elm is used to provide a trunk atop which the mutant clone is grafted. All of the Weeping Elms (*Ulmus glabra* 'Camperdownii') were derived from the same creeping branch in Dundee (1835-1840). There are three 'Camperdownii' in Pukekura Park. If you look carefully you will see the graft line at the top of their trunks. The ones at the Band Room and on Brooklands Lawn have very entwined branches, a basket effect, which support a wonderful array of epiphytes, ferns, mosses, and lichens. The 'Camperdownii' by Fountain Lake is used as a support for Festival lighting effects, and by New Zealand Pigeons. A similar but much larger cultivar is to be seen by the Tea House, a Horizontal Elm (*Ulmus glabra* 'Horizontalis'). This tree has a strange, contorted shape, wrapping itself around a Nikau Palm (*Rhopalostylis sapida*) in an "S". A portion of the trunk must be a Wych Elm. The bark, under the festooning plants, is reddish and not at all like the Wych Elm at Brooklands. It has a large and symmetrical canopy.





Photo Derek Hughes

Fernery redevelopment update

Donna Christiansen

Technical Officer Fernery and Display Houses

The earlier stages of the major redevelopment of the Fernery and Display Houses were described in the October 2012 edition of this *Magazine*. By late January 2013, when this report was written, work on the redevelopment was in the final stages of completion. Life as we knew it in the Fernery and Display Houses will never be the same again.

There has been a delay with completion due to a run of bad weather over the winter and the occasional design hiccups. The re-roofing of House 1 (Fern House) was started in late September 2012. We had specified that the ferns needed to be covered at all times during the replacement of the new roof as they have never been exposed to the outside environment. This caused a few challenges. Work was started after a structural redesign of the footings. The majority of the existing concrete footings were kept but 1.8 metre holes were dug at specific points to take the load of the new roof and additional strengthening was provided over the tunnels to distribute its weight. This work was completed with the old roof still on. It was demolished in sections as the new structure was being built. The new metal structure was brought onto the site, small pieces were bolted together, then a small crane lifted them into position all under the watchful eye of the Fernery team. The aluminium company people then attached the aluminium to the steel frame and the glaziers fitted all of the glass. The glass used is tinted glass which filters out a large percentage of the UV and has a greater shading coefficient than clear glass. This has eliminated the need for either shade cloth or white washing the roofs over the summer. The finished height of the roof is approximately 50cm taller which gives the ferns that were touching the roof a little more room to grow. House 1 was reopened to the public a week before Christmas. Over the next few months we will be evaluating the fern collection and adding new ferns to it.

The potting, chemical, and implement sheds are now completed. The potting shed has an external potting mix hopper which is accessible from the track on the east side of the Fernery. This will have our potting mix delivered to it and then it will be delivered straight to our potting bench which will save us so much time as we have to transport it all to the existing potting sheds now by wheelbarrow. The propagation and under-cover houses located on the top of the office and staff facilities are ready for the fit out of benches, irrigation, heating, and propagation bed. This will complete our working areas. The fitting of the new boiler and additional heating units is a major job which has been a work in progress for the last three months. When all the equipment is installed our team will require three months training so we know what all the levers, taps, pumps, switches, and miles of pipes do. The internal work on the offices and staff facilities is being completed. It will be great change for our team to have a stylish smoko room after our cosy little office of the past.



Photo Derek Hughes

Hand-reared Rainbow Lorikeets

Anna Willetts
Keeper Brooklands Zoo

In most years birds are born in the free flight aviary at Brooklands Zoo. This nesting season Zoo staff had the task of hand-rearing some young Rainbow Lorikeets (*Trichoglossus moluccanus*) which for whatever reason the parents had stopped feeding. Staff took on the challenge when the birds were around three weeks old, feeding them up to four times a day with daily weighing. We kept a close eye on their development. At twelve weeks they were fully fledged and healthy and full of energy. It would not be long before they were enjoying full flight in our spacious free flight aviary. We have been and will continue to post photos and information on this and other events and activities at the Zoo on our Facebook page at <https://www.facebook.com/BZooNP>.

Just a few days old.

Their first hand feed.



Photos Anna Willetts

Take a look at us now
(12 weeks old).

