

Birmingham Botanical Garden Work Experience

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By Lisa Whaley



Introduction and brief history

Birmingham Botanical Garden, located in the borough of Edgbaston, is one of the last standing independent botanical gardens and has a long and interesting history. The Birmingham Botanical and Horticultural Society started in 1829, and once an appropriate location was found, the botanical garden was built and later opened to the public in 1832, showcasing glasshouses and outdoor garden space across 18 acres. Overtime it accumulated a lot of plants as a result of plant explorers such as Ernest Wilson, and it became an important part of the community – and not just because of its plants. The Grade two listed bandstand was the platform used by Neville Chamberlain in 1937 to give his first speech as Prime Minister, and it was used as an air raid shelter in the Second World War. Today, the garden has a very similar layout to when it was originally designed by leading garden planner and horticulturalist, J.C Loudon in 1830, (however the glasshouses have seen some repairs and developments over the years). The garden has a huge variety of areas, from a Bog Garden and Azalea Walk to Herbaceous Borders and Acer Beds. It is also a very successful educational charity that engages the public and (approximately 17,000) school children in nature, the environment, native and non-native plants. The day to day running is largely funded by memberships and subscriptions, and projects are supported by the Heritage Lottery Fund. The garden's vision is to showcase a diverse botanical world that enhances all our lives. Secondly its mission is to support plant diversity and an understanding of its importance to the natural environment through conversation, education and enjoyment. The garden is currently aiming to achieve BGCI accreditation. The garden team consists of the Director of Horticulture, and heads of areas, such as glasshouse, herbaceous and alpine. There are also two trainees specialising in the herbaceous gardens, one glasshouse trainee, one seasonal worker, one landscaper, two maintenance people, one conservation ranger, and lots of volunteers. It also boasts the National Cyclamen collection, which is cared for by a specialist trainee, and the potted plants are put on show during the school holidays in February.



The Glasshouses and Restoration.

When I first arrived at Birmingham Botanical Garden I had an induction by the Head of Glasshouses. He showed me the glasshouses that are behind the scenes, the first of which is split into housing *Cyclamen* and *Nerines*, (ideally it doesn't go below 10oc and has an average maximum temperature of around 19oc). The tropical plants and cuttings are in a glasshouse that also doesn't go below 10oc, and has an

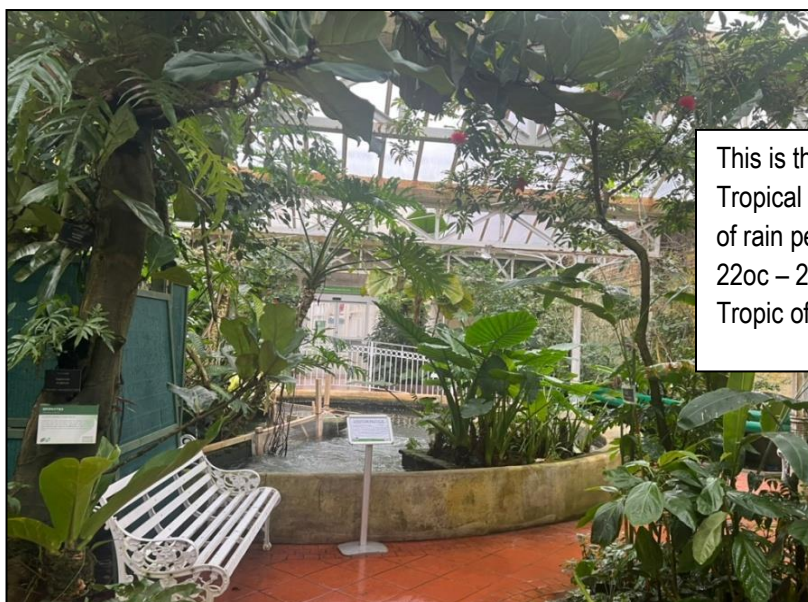
approximate maximum average temperature of 27oc). There is also a glasshouse referred to as the 'Butterfly House' as it used to (and hopes to again) house butterflies, and it is currently over wintering *Alocasias*, *Colocasias*, *Leonotis leonorus* and *Musa basjoo*. Following this we then went to look at the glasshouses where I would be mainly working over the week. There are Mediterranean, Arid, Sub-tropical and Tropical glasshouses, the latter was built as early as 1852. The Head of Glasshouses explained there are plans for the restoration of all the glasshouses that will start in 2025, and is predicted to take two to three years. From talking about this further I realise there is a huge amount to consider in order to be prepared for the restoration. As a result the Director of Horticulture and Head of Glasshouses have been communicating with the architects to ensure that the restored buildings accommodate the plants which are essential to keep, is still in keeping with the Victorian design, and whatever frames that are still fit for purpose are utilised. There will also be some improvements to the general operation of the glasshouses, for example they currently depend on mains water, however the new constructions will be designed in such a way that will harvest some rain water. Furthermore the cabinet that is inside the tropical glasshouse hopes to showcase stages of the propagation of different plants. There are also necessary bench repairs waiting until the restoration. At the moment the benches are losing soil and as a result the plant *Tabernaemontana divaricata* has its roots severely exposed. Although it looks attractive (pictured above), it isn't getting access to enough water and nutrients. Ahead of the restoration project preparations for the plants are also taking place, for example the Tree Ferns have been put into air pots and once they are rooted they will be sliced from the base and removed. Other important plants that are more difficult to remove need to be considered, such as the Cycad that will require a forklift. Additionally other plants will just have to be scarified due to their size, and won't re-grow if reduced, such as *Strelitzia reginae*. However, plants such as the giant *Musa basjoo* will be able to be cut down to the base and when replanted it will eventually reshoot. As an insurance policy for all the plant removal, cuttings are being taken from many plants, especially the delicate and rare ones. All the removed plants from the glasshouses will need to go somewhere while the restoration takes place, therefore some glasshouses and polytunnels will be built behind the scenes too. There is also a Bonsai Garden that will potentially have all its Bonsai Trees removed and loaned back to their owners so they aren't damaged. Aside from considering plants, there are the Koi Carp in the fish pond to think of. Most of them are going to an outside pond, and a few are being homed elsewhere. This will free up the area to eventually return to what it once was, a Lily pond.

While plans for the restoration are taking place, the glasshouses need to be kept full of healthy plants for the visitors to enjoy. To keep the glasshouses looking their best the Tropical and Sub-tropical glasshouses are watered every day, and the leaves are sprayed with water. In the Tropical House the pipes are also watered to increase the humidity. The plants are also fed once a week using a 'Dosatron' feeder, at the moment a low nitrogen feed is being used, and from March onwards it will be a more balanced feed. The carnivorous plants are planted in a bed with sunken areas that are filled with mains water so the plants can gradually absorb it. (I was surprised at this as I thought they needed rainwater, but apparently the mains water of Birmingham doesn't negatively impact the plants). Alongside learning about the maintenance I discovered some of the challenges of running a glasshouse, which includes accurate and consistent heating (the heating broke in December, but

fortunately the plants weren't severely affected). Secondly there is the issue of pest and disease, as pests such as Mealy Bug, Thrips, Spider Mite and Aphids are present – and the Tea Aphid is most prevalent. Currently, to control and reduce these pests they use a SB invigorator, with the aim of eventually implementing biological control once the pest population is more under control. The SB Invigorator was applied while I was there, and to make application easier on the tree ferns dead/dying fronds were removed so the product would access and cover all remaining fronds well. Unexpectedly Stick Insects are also a pest there, they have occurred as a result of the bug house being cleared out and the waste soil being put on the plant beds. The eggs were in the soil and naturally hatched, and now there is an established population of them. They eat the foliage and cause a lot of destruction. When they are found they are killed by hand.



This is the Sub-tropical House, which has much lower humidity than the Tropical House. The temperature doesn't normally exceed 27oc or fall below 10oc during winter. Plants in this area may receive 10cm to 150cm rainfall a year in the wild, with a marked seasonal difference. The regions include parts of Americas, Africa, Asia and Australia.



This is the Tropical House. Plants in Tropical regions may receive up to 1000cm of rain per year, with temperature between 22oc – 28oc. The regions lies between the Tropic of Cancer and Tropic of Capricorn.



The Mediterranean House hosts plants that thrive in hot, dry summers and mild, wet winters. The main growing season is late winter and spring. In their native habitat these plants are exposed to temperatures between 5oc – 30oc, and have an annual rainfall of 35cm to 90cm. The regions include: the Mediterranean basin, California, Central Chile, South West Africa and South and South west Australia.



The Arid House simulates the cool night and hot days of deserts. Plants in these areas may receive from 0cm up to 25cm of rainfall a year, with temperatures between -10 (at night) and 65oc (in the day). There are 11 main desert areas that have this hostile environment, and they make up 20% of the Earth surface - found in tropical and temperate regions.

My work experience:

Day 1



To start my work for the day I was shown where the water point and hose was in the Sub-tropical glasshouse, and drenched the beds, foliage, floors and pipes. Once I had finished I used the brush that had a rubber squidgy on the end to push the excess water into the drains to stop it from collecting in puddles and being a hazard to the public. However there is always signage about wet floors to warn the public. I also took the temperatures in each of the glasshouses, recording, minimum, maximum and current temperature.

In the afternoon I hand weeded *Dorsternia contrajena* from the beds. It is a plant that is supposed to be there as it is an individual specimen plant, however it has taken over in other areas due to its strong roots. Following this, to fill a gap in one of the beds the Head Gardener, Glasshouse Trainee and I took plants from the nursery and wheeled them up to the Sub-tropical glasshouse and laid them in position on one of the beds to be planted tomorrow. We placed a *Begonia luxurians*, *Impatiens niamniamensis* and *Impatiens auricoma x bicaudata*. The *Fuchsia boliviana* already in the bed will be dug up and moved

backwards, and the *Impatiens* and *Begonia* will move to the front. At the end of the day Abi and I went to what is referred to as the 'Butterfly House', to cut back the potted tropical plants in there, cut out the dead and weed the pots.

Day 2

First thing in the morning I used the Dosatron to feed the Sub-tropical glasshouse. I brushed the excess water away on the floor and spot-watered in the Mediterranean glasshouse. I then worked with a member of the team to plant the plants that were placed yesterday. We had to cordon off the area as there was no space for people to walk past us while we worked. The *Begonia luxurians* had a leggy stem so I cut that down - it will be processed as a cutting. The Bolivian Fuchsia, (which is pollinated by Humming birds) was tied in, and all planted plants were all watered in well. We later cleared leaves away that had fallen in the Mediterranean glasshouse using a litter picker to pick leaves off of the spiky plants. We then tidied and pruned the dead from a bed, where I found lots of stick insects which I had to kill. Finally we pruned the *Megaskepasma erythrochlamys* which is a dense, evergreen shrub that has erect flower spikes of white, two-lipped flowers surrounded by showy red bracts, it is native to parts of South America, particularly Venezuela. We pruned down to three or four nodes (from about eight) as it needs to be more clump forming because it is near the entrance and is coming over the pathway, and ultimately it needs to be kept small before it's moved.



Dosatron



Plant of the day: *Ficus pumila* (creeping fig)



Stick insect



Begonia and Impatiens planting



Megaskepasma erythrochlamys

Day 3

I did the nursery checks this morning which involved checking all the glasshouses that are behind the scenes. I watered the *Nerines* well, checked on the cuttings and plants in the tropical glasshouse, and spotted watered some potted herbaceous plants. There was some useful signage on some of the plants, such as *Pleonies*, to inform that they needed to be kept dry. The Butterfly House with tropical plants didn't need much water. I left the *Cyclamen* as they are dealt with by the trainee. I then joined the Glasshouse Trainee to cut the dying fronds off of the large Tree Ferns in the Sub-tropical house. We used the long handled loppers as even the base of some of them was out of reach. We removed as many fronds as possible to make applying the SB Invigorator easier, therefore even some with just a few brown bits were removed. We could see after removing them that the fronds were encased with Mealy Bug. There was a broken label which I flagged, however at the moment apparently there isn't a process in place or equipment to make labels. The next job was to cut the dead out of the smaller ferns, and cut the *Adiantum* down to its base to let the new fronds through. I also dug up the suckers from the *Tetrapanax* – one was coming up along the side of the public walkway.

Later I spot watered in the Mediterranean house, and discovered that one of the *Salvias* had badly wilted which I had missed when watering yesterday, but a can of water revived it well. In the afternoon I removed some of the *Hedychiums* from a clump and planted them elsewhere to fill a space. I planted them close to the surface so the rhizomes were exposed to the light, and trimmed the foliage so the plants stayed upright and weren't top heavy. Additionally I also dug up some *Sansevieria trifasciata* from one of the beds where it was unnoticed and replanted it so that it was in a visible position in the bed.



This is one of a kind, *Dicksonia x lathamii*, created by one of the curators William Bradbury Latham in 1873. It is going to Kew to be formerly named. One of the fronds were carefully removed when pruning.



Hedychium clumps



Sansevieria trifasciata

Day 4

I once again watered the Sub-tropical glasshouse, refilled the pools in the carnivorous bed, took the glasshouse temperatures and spot watered in the Mediterranean house. SB invigorator was applied with the 'Dosatron' to the plants in all houses (apart from the arid house) by a member of the team. Watering in the Mediterranean House was particularly difficult today as there were lots of school groups in and they filled the glasshouse. They also wanted to take temperature readings and the thermometer is by the water butt, I just had to wait until they had moved on. Later in the morning I joined the whole garden team outside to cut back and clear up in the grass garden. Each week the team joins up to hit one big job together, and as there is a lot to do in the grass garden it was this week's choice. Fortunately it was a mild, dry day with sunny spells so it was a particularly good weather for the job. It was a case of weeding the beds, cutting the grass down to neat clumps and clearing the excess. In some cases shears and hedge cutters were used, but due to the smaller size of the grass I was working on it just required secateurs. I also cut the *Melianthus major* down to the base and brushed the dead out of the *Carex* – it didn't need cutting down.



Day 5

Today was my last day and after a week I was confident in what I was doing as it was similar to what I had done in the week. I initially took the temperatures, I then watered again in the Sub-tropical house, (making sure I focused on the pipes to increase the humidity). I cleared some leaves in the Mediterranean and Arid House and swept the floors. In the afternoon I continued in the Butterfly House cutting back the potted tropical plants and weeding the pots.

Conclusion

It has been an interesting experience working in the glasshouses at the gardens, as it is a very different horticultural context to what I have worked in before. It was unfortunate that there wasn't an opportunity to do any propagation and the Director of Horticulture wasn't in this week. However, I have learnt a lot about how a Botanical Garden operates and the roles within the wider team, as well as the challenges and work involved in glasshouse maintenance – all of which were my aim. It was great to have the opportunity to use the knowledge I already had, and gain so much more about certain plants and how to care for them. It has also given me a lot to consider about my next career steps and what I would ideally like to get out of a job in horticulture.

I have noticed some challenges when working in the glasshouses as there is a lot of people in a small space, which makes doing jobs difficult. I also realised that it is crucial everyone is vigilant about what they're doing and the tools they're using at all times. For example wheelbarrows need to be parked out of the way of the pathway, tools used safely and put out of reach of the public, and no tools are left at break times. It highlighted the importance of cordoning off areas, and leaving signage whether you are pruning or planting (as branches could easily fall on someone or cause a trip or slip).

I also learnt that temperatures need to be monitored closely, it's important to be really thorough when watering and keeping the beds free of weeds and leaves is a priority. I realise that the plants need to be checked daily to assess the pest and disease situation and whether they need pruning. Furthermore with the impending restoration there is a constant need to be thinking about ways to make the project run smoothly and how to keep the plants as healthy and prepared as possible for the move – for example that's why we were asked to prune the *Megaskepasma* and cut the tree fronds. There is a lot of engaging signage in place which I think is good, as it keeps everyone informed about what is going on and what preparations are being made for the glasshouse restoration.