

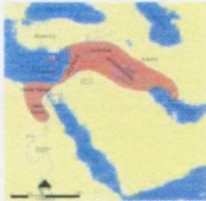
BOTANICAL GARDENS. Their history and development in Australia.

John Garner 4/2/20

My interest in the history of botanical gardens was probably associated with the fact that their story is linked to that of herbal, physic and medical gardens.

When man was essentially a hunter gatherer using available plants for food, he would have noticed that now and again a certain plant or part of a plant could relieve some pain, make him sweat or vomit, give him pleasurable or uncomfortable feelings.

With the time of settlement in regions that could support him agriculture took over so that he not only had the opportunity to have a regular supply of food and have a garden to enjoy but also be able to include some plants such as those to relieve the symptoms of some of the illnesses he would experience.



THE FERTILE CRESCENT. "THE CRADLE OF CIVILISATION"

The **Fertile Crescent**, in what we would describe as the Near East was the site of one of the original settlements of humans, previously hunter gatherers, made possible by the rivers of the Tigris and the Euphrates providing fertile areas for the planting and management of crops.

The **Zagos Mountains**, on the eastern border, have been shown to have flocks of **wild sheep** herds shepherded in 9,000 B.C.

There is evidence of cultivation of **wild cereals** in the **Fertile Crescent** in 7,700 BC.

Peas in the **Eastern Mediterranean** in 6,500 B.C.,

Soap! in 2,300 B.C.

Horses in 2,000 B.C.

In his book "The Ascent of Man" Bronowski discusses the development of wheat and the influence of exchange between communities concerning improvement of fruit trees and plants by exchanges plus the influence of chromosomal changes.

As communication lines opened up between various centres there was the opportunity to create a pleasure garden and to introduce plants from elsewhere.



The **Egyptian Pharaohs** 2,000 years B.C. were bringing back plants from overseas countries they had conquered, as did the Assyrian king **Assurbanipal** in the 6th century B.C.

This was not only happening in the Near East. With the development of towns, cities, countries and empires, **Emperors in China** from 1600 B.C. through various dynasties were creating Gardens for their palaces. In China in 138 B.C. one garden contained 2,000 different plants and included hot houses. Similarly, in **India** gardens were opened up by their emperors and kings.

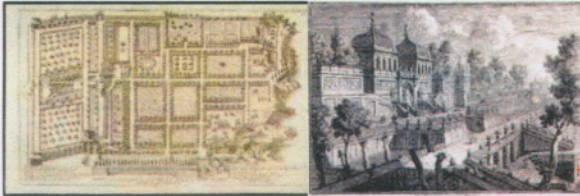
In 546 B.C. **Jivaka Koyashacca** did a survey of plants in India.



In 600 B.C. in the Middle East, **Babylon** introduced the Hanging Gardens of Babylon used hydroponics to provide the necessary water to sustain them.



Aristotle was possibly the first to commence a dedicated **physic garden** in the **Lyceum in Athens** in 330 B.C.



Tiberius had a special garden in Rome in 15 A.D. to grow his cucumbers! It was situated in one corner of the later Farnese Gardens.



In 1520 A.D. when the Spaniards invaded South America, they were impressed by the herb gardens of the **Aztecs**.

Montezuma's garden at **Huastepic** and the gardens at **Texcotzingo** were examples showing evidence of classification of trees, medicinal and fragrant plants. Montezuma's was a high-class garden, no vegetables etc.

Their use of herbal medicine has been researched showing that 85% of the herbs used were medicinally active and some still in use today.



Arabian and **Persian Islamic Gardens** by 700 A.D. were essentially pleasure gardens, laid out with running water producing a relaxing sound. There were reflecting ponds, flowers and fruit trees. The

presence of water features represented the control of the owner giving a sense of power and wealth – a status symbol.

Emperor **Charlemagne, 800A.D.** supported monasteries and their gardens containing orchards and plants for food and medicine.

Arabian physicians had physic gardens in 1250 A.D.

EXPLORATION AND BOTANICAL SCIENCE



The years between the 14th and 17th centuries saw the Renaissance period following the dark and middle ages. They also included the so-called “**Age of Discovery**” with the journeys of **Magellan, Columbus, Marco Polo** providing the Europeans with knowledge of other cultures including an understanding of the variety of world plants.

These explorations also opened up interest in the commercial value of being able to import plants and grow them in their own country. This gave an impetus in the establishment of Botanical Gardens in many countries.



1545 saw the establishment of a garden for mainly medicinal plants in Italy at **Padua** and in doing so the commencement of botanical science.

At the same time the **first university botanical garden** was commenced in **Pisa**.



The **Leiden botanical garden** in the Netherlands was established in 1587



In England, the **Chelsea Physic Gardens** were instituted in 1673 by the London London society of Apothecaries,



Kew Gardens in England commenced with the merger of the Royal Estates of Richmond and Kew in 1772. They had the support of George 3rd and later Joseph Banks on his return from Cook's first expedition.



Linnaeus in Sweden in the mid Eighteenth Century commenced his controversial botanical classification. Based on the sexual characteristics of plants and described in such terms it had something of an erotic nature and was the subject of criticism.



Nevertheless, it was followed by **Banks**, himself a controversial figure.



BANKS

In 1768, he accompanied **Cook** on his journey to **Tahiti, New Zealand and Australia**. Together with **Solander** and the illustrator **Parkinson**. He collected plants in Tahiti, 400 in New Zealand and several thousand in Australia.

Banks florilegium, not published in his lifetime, contains some 743 plates. He supported Linnaeus' view that such expeditions demonstrated the usefulness of plants from elsewhere and the commercial aspects of Imperial scientific exploration expanding the Home Country's interest and control of previously unclaimed land.

Although Banks never moved further after his return than Iceland in 1772, he was a friend of **King George 3rd**, moved in the high echelons of British society and was **President of the Royal Society** for 41 years (in spite of several attempts to unseat him by younger and more progressive members.) His influence in high places helped in the sponsoring of the inclusion of a naturalist in overseas research expedition such as Darwin's presence on the Beagle.

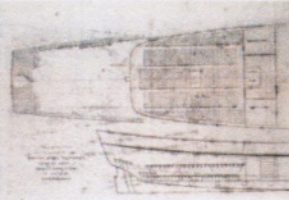
The **Chelsea Physic Garden** which had been developed by Philip Miller, a friend of Linnaeus, was visited often by Banks and on Miller's death Banks bought his herbarium consisting of so many dried plants that it took a fortnight to move.

He was heavily involved in the **Kew Gardens** and his interest and involvement with economic botany included the importation of flax and spinach from New Zealand and persuading the King to pay professional collectors.

Unofficial botanists, politicians, soldiers and sailors were also encouraged to supply plants from overseas, some of which Banks named after their donors.



Banks also was instrumental in getting the expedition to transplant **breadfruit** from **Tahiti to the West Indies** to feed the slaves- the memorable voyage of **Bligh** and the mutiny on the **Bounty**.



Nothing daunted, he encouraged the second and this time successful trip by Bligh. He was involved in the discussions to establish a Botanical Garden in **Calcutta**.

He shipped Mediterranean plants to NSW and pigs to NZ by Cook: - "Cookers".

Importing a couple of Merino sheep, he developed the Leicester breed and in 1804 arranged for 11 merino sheep to be sent to NSW.

In 1779 when asked for advice as to where to send prisoners from overcrowded prisons he advised Australia as the natives were timid (as opposed to the Maoris!).

As well as the sending out of convicts he encouraged the finding of objects in the vegetable and minerals fields.

He supervised the plants of the first fleet and sent out vegetables from the south of France.

Banks died in 1820 and, following this, interest in Botanical gardens at Kew and in the Colonies declined until Kew was taken over by **Hooker** in 1837 followed by his son Joseph.

Colonial gardens depended on advice from Kew for advice, books and plants.



Cook's expeditions were not the first of European nations' interest in Australia. **The Dutch** had landed on the west coast on the ill-fated "**Batavia** expedition in 1649. Before then **the Portuguese** could have landed in northern Australia with their interest in the Spice Islands.



The French sent **Baudin** and 9 zoologists and Botanists to Australia in 1800. His ships were the "Naturaliste" and the "Geographer".

On their trip, which included meeting Flinders in Encounter Bay, they collected plants and animals. kangaroos, emus and black swans which were delivered to the **Empress Josephine** at **Malmaison** together with plants.



Malmaison had been bought by the Empress in 1798 in a rundown condition,



Over the next 20 years she expanded the garden from 50 plants in 1805 to 132 in 1812. She installed a heated orangery in 1800 for 300 pineapple plants and in 1805 a greenhouse served by 12 coal burning

stoves. When she died in 1814, she had introduced 200 new plants for France from overseas including Asia and America.

GREENHOUSES/GLASSHOUSES

From early times it was clear that some plants, particularly from elsewhere, required protection. Various types of structures were developed from the time of **Tiberius** to raise his favourite vegetable – cucumber! They became known as greenhouses with frames and walls of various materials. In the 1450s **Sanga York in Korea** produced a greenhouse with cob walls and underground heating. In the 17th century the Italians used oiled paper to provide light as well as protection.



So called “**orangeries**” made their appearance in the 17th century using glass frames against a brick wall to provide shelter and warmth for tender plants and trees during the winter (**Chatsworth**).



The **use of glass** to make full scale glasshouses had been held up until reliable glass manufacture occurred as faults could cause burning of the plants. Later, more elaborate glasshouses appeared such as those in **Moscow, Versailles** and **Kew**.



These structures when fully developed provided light, ventilation, heating, cooling, water and hydration. Carbon dioxide has also been introduced since.

(Cob – A mixture of sub soil, water, fibrous material such as straw and other additives such as lime.)

BOTANICAL GARDENS IN AUSTRALIA



SYDNEY BOTANICAL GARDENS

The first Australian Botanical Garden was founded in **Sydney** by **Governor Macquarie** and was opened in 1816 on a site that was originally a farm situated at **Farm cove**. It was designed by Charles **Moore** and Joseph **Maiden** although it had relatively infertile soil. It was developed by the first Government botanist Charles Fraser. He and Oxley organised excursions and introduced hoop pines, lilly-pillies and 2 swamp oaks.

In 1825 **Governor Brisbane** opened a new area for an experimental garden for the acclimatisation of plants for export and imported plants. Included were vines from the first fleet in 1788 and 365 cultivars were donated by Busby in 1832. (*A Cultivar is a plant variety that has been produced in cultivation by selective breeding*). Also involved were **Richard and Alan Cunningham**, explorers and botanists. On Fraser's death in 1831 Richard Cunningham was appointed director.

In 1848 Bidwill was made Director with Charles Moore, an English botanist trained in Dublin and in 1852 a **herbarium** was commenced.

A **zoo** was present from 1862 to the 1930s.

A **Palm House** was built in 1876 and in 1879 an international Exhibition Garden Palace was built and had a million visitors until destroyed by fire in 1882.

The **library**, named after Solander who accompanied Banks on Cook's expedition, a student of Linnaeus, contains Horticultural, Botanic and Taxonomic literature and contains samples of Banks' and Solander's plant specimens, some 1.2 million.

** *Aracuria Birdwillii* – Bunya pine. *Aracuria Cunninghamii* – Hoop Pine.

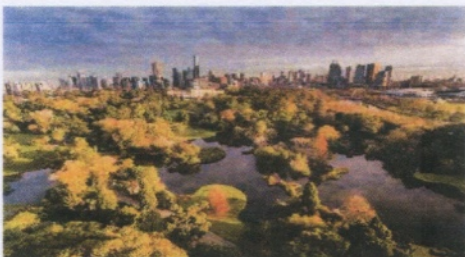
ROYAL TASMANIAN BOTANICAL GARDEN was established in Hobart in 1818.



BRISBANE BOTANICAL GARDENS

In 1828, 3 years after settlement, **Charles Fraser, the NSW Colonial Botanist** commenced the gardens originally to provide a food crop for the prison colony. In 1855 **Walter Hill** planted experimental plants with potential commercial value. – Mango, Papaya, Ginger, Taramid, Mahogany, Poinciana and Jacaranda. Also – Tobacco, sugar, grape vines, wheat, tea, coffee, spices, textile plants and sugar, **John Buhot** was the first to grow **sugar cane** and provide the start for granulated sugar production.

MELBOURNE BOTANICAL GARDENS



The **MELBOURNE BOTANIC GARDENS** were founded by **Governor Latrobe** in 1846. He chose an area of marshland by the Yarra river. The first Curators were **John Arthur** from 1846 to 49 and **John Dallachy** 1849 to 57. Von Mueller took over in 1857

VON MUELLER



Baron von Mueller was born in Rostock, Germany, in 1825. He trained as a pharmacist, passing his exams and studied Botany at Kiel University becoming a doctor of Philosophy in 1847.

He travelled to Australia in 1847 accompanying his sister Bertha to Adelaide for the state of her health. He was employed as a chemist there before moving to Victoria in 1851 to open a chemist's shop in the gold digging areas.

He built a cottage in the Bugle ranges on 20 acres of land that he had bought.

He wrote a paper for the Linnaean Society of London and toured the alpine area of Victoria, the Goulbourn river and the Gippsland area.

After taking over in 1857 he established a plantation of conifers to demonstrate their usefulness in Victoria, a fountain in the middle of the lagoon and a formal garden.

He arranged horticultural shows and concerts and established the **National herbarium** in 1853 with plant, algal and fungal collections and foreign material.

He was followed by **Guilfoyle** who developed the landscaping of the gardens with trees, garden beds and sweeping lawns. He also established Fern Gullies and ornamental shelters, the Temple of the Winds – a memorial to Latrobe, an ornamental lake and the recently redeveloped "Volcano." In 1960 the Cranborne Botanic Gardens were added to the administration.

PERTH Botanic Gardens – Kings Park



The Perth Botanic Gardens commenced in 1829, 2 years after its settlement when the **Governor Stirling and Surveyor John Roe** declared it a public space.

The area was a meeting point for ceremonial and cultural events by the
Aboriginals.

Governor Weld declared it a public Park in 1872, Premier John Forrest
renamed it Perth Park and in 1901 it was called King's Park, the apostrophe
later dropped.



ADELAIDE Botanical gardens

Colonel Light originally designated a piece of land near the Torrens river
but it was unsuitable due to recurrent flooding. After several attempts it was
opened in 1857 near the North terrace on a paddock previously used for
grazing the police horses! (like Ballarat.) George Francis was originally in
charge., A Pagoda was built in 1863 and later a Herbarium and a Botanical
library and a palm House in 1885

.REGIONAL BOTANICAL GARDENS IN VICTORIA



Geelong was the first Botanical Garden outside of Melbourne
commenced in 1851



Followed by Bendigo in 1857.

Ballarat commenced in 1858.

—



BALLARAT BOTANICAL GARDENS

Commenced 1858

Ballarat was proclaimed a Municipal District in 1855. The first Council meeting was held in January 1856 and at that first meeting an application was made for an area to be reserved for a botanical garden and in December an area of 80 acres on the west side of Yuille's swamp, which included the Police paddock, was granted by the government.

George Longley was appointed first Gardener at a salary of 3 pounds a week and a competition for the design of the gardens was held, won by A Mr Wright and Mr Armstrong. Work was commenced with a government grant of 500 pounds.



GEORGE LONGLEY

George was born in Cumberland at the estate of **Lowther Castle** in 1822 the home of the Earl of Lonsdale and trained as a gardener under supervisor George Cruickshank.



In 1851 he married Helen Tickle and travelled to Australia on the "**Marco Polo**"



and travelled to the **Black Hill diggings** in 1853 and pursued a less than successful mining career until he applied for the job of gardener at the new Botanical Gardens. He succeeded to get the position out of 8 applicants by one vote and commenced a long career as the Head Gardener, later Curator of the Gardens.

His first job was to clear the area and carry out the plans for the gardens according to the plan. He received plants and trees from von Mueller in Melbourne and Bunce in Geelong and the propagation thereof. At first he was also responsible for the adjoining lake foreshore. Apart from labourers he was assisted by convict labour.

He was involved in the planting of gum trees in Sturt street. For the protection of his plants he commenced planting gum trees along the western border along Gillies St and the later the development of the Fernery commenced in 1876. He was a member of the Ballarat Branch of the Acclimatisation Society of Melbourne and was responsible for the original fish nursery in the North Gardens until it was moved to its present position. Gate Lodges were built at the North and south entrances in 1863.



The **Wellingtonian avenue** of sequoias was planted over the period of some 10 years from 1863.

Excursion trains from Melbourne brought visitors from Melbourne from 1867 and in 1875 Thomas Gill started his Paddle steamer service bringing people across the lake to the Gardens.



A **Maze**, on the pattern of that in the Hampton Court Palace had been built in 1862, the first of three with a tower in a later one.



The last decade of the 19th century was an eventful one for the gardens. **Stoddart** donated the 12 statues that now adorn the Gardens unveiled in 1884. The Statuary Pavilion was built for the Thomson statues.



Thomson was a friend of Stoddart and on his death in 1887 he left some four thousand pounds for the purchase of more statues, particularly the flight from Pompeii and four other smaller ones.



The **Wallace statue** was commissioned with the money left over.



The **Gardens Pavilion**, now Pipers, was erected in 1890.



The **Claxton Memorial Fountain** was created by public subscription in 1890 following his death.

Claxton commenced his time in Ballarat as a grocer and later an auctioneer and estate agent. He became Mayor of the city three times and had a great interest in the lake and its surroundings. He was said to have had water and weeds on the brain.



Morey donated the entrance gates to the gardens and you will note that they bear the arms of Ballarat West, before the amalgamation with the East in 1921. He was involved in mining companies, had witnessed Eureka and imported heavy mining equipment and had been a councillor and Mayor. He was, in all of this, illiterate and his daughter looked after all that paper work!



Ham's lions were placed inside the gardens at the same time causing upset as he and many others thought they should be outside. He was a local politician and had started work on the goldfields selling sausages.



In 1898 his first planting of tuberous **begonias** is recorded in **Longley's** diary. During his time as Curator he examined students at the School of Mines concerning plants as part of the Pharmacy course with von Mueller.



He was a deeply religious man and attended the Wendouree Wesley Church, later the **Jubilee Church**, as superintendent of the Sunday school and bell ringer.

Some of the apprentices of the Gardens were associated with the Church and later the names of **Tom Toop, Tilly Thompson, Frank and Enid Rogers**, all involved in the gardens in one way or another, appear in the Church's centenary booklet of 1960.

He became ill in 1897 and Thomas Rooney was engaged to manage the South section of the Gardens. George died in October 1899 aged 72 of bronchopneumonia.

ROONEY AND LINGHAM



After his death **Rooney** continued to look after the South gardens and **Lingham** was appointed for the North. It was Rooney who, in 1899, insisted that plants ordered from England be transported in a **Wardian case**. This was an important invention in the 19th century developed by an English doctor who was having difficulty in growing plants due to the terrible air in London at the time. Essentially it was a glass case with glass sashes to admit air and light.



During his time the **Keel House** was built. There had been designs considered for a glasshouse for the gardens for a number of years, some elaborate as in Europe, but the glass house, designed in England and shaped like an upturned boat, was decided upon and erected in 1907. It lasted until 1934 when replaced by the Cuthbert glasshouse.

Rooney died in 1914 and unfortunately his son Charles, who had also been an apprentice gardener, was killed in 1917 serving in the army.

Following the death of Rooney in 1914 and the retirement of Lingham in 1917 Tom Toop took over.

THOMAS TOOP.



Toop took over as a curator in 1914. He had been trained in horticulture in England and was appointed to the Ballarat Gardens in 1890 as a leading hand, became a foreman in 1912. Toop continued as Curator for the next 40 years and stayed on at the curator's cottage after his retirement.

A tall thin man he is said to have reared 82 blackbirds and 9 thrushes, had rowed James Oddie around Fairyland listening to the birds that Oddie had introduced to the Gardens (including starlings from New Zealand!). He also opened the box containing the grey squirrels that were introduced at a later date – one biting his finger as he did so. Gardener Bill Greville remembered him as having the physique that enabled him to stand behind a tree and peep around the trunk to check on the working of his men. He was a good friend of Tilly Thomson who is remembered by servicemen's organisations including the Rats of Tobruk in her section of the gardens.

During his time he saw the establishment of the **Zoo** in 1917 following the death of Ben Jahn who left 12,000 pounds for it having died in Germany in 1912.



Ben Jahn was a gold assayer who lived and worked at the corner of Lewis and Albert St. He was a member of the Old Colonist Club and before he left for his homeland in 1910 he had discussions with the Town Clerk concerning the establishment of a Zoo. The Town Clerk suggested that some old people's homes would be more suitable but did not succeed in changing his mind. The money was used to create the Zoo in the north gardens and it continued to exist until 1959. A zookeeper's house was erected and Mr Longley installed as Zoo keeper. It became run down in its last years and subject to a deal of criticism. Some remnants of the enclosures can be seen in the North Gardens up near the wetlands.

In 1907 the **Almeida Pavilion** was built as a memorial for the son of a local family who was a bank employee killed during an attempted robbery and was used as a "Penny Arcade",

In 1912 a **sundial**, situated near the Statuary Pavilion, was donated by Councillor Holloway, designed by the Government Astrologer, P.Sarracchi.



The **Gordon Cottage** was moved from Craig's Hotel in 1934 and opened by the Governor General, Lord Huntingfield. It has now become the Craft Cottage (*and guides are advised not to start their tour there as if the ladies enter it is a job to get them out again!*)



In 1940 the first 6 busts of the **Prime Ministers Avenue** were unveiled in the Chestnut Avenue. They were the gift of **Richard Crouch**, a solicitor and politician, who, before the 1st World War had been a member of the local militia being commissioned in 1892. In 1915 as a Lieutenant Colonel in command of the 22nd Battalion, Australian Expeditionary Force, landed at Gallipoli in September. He was transferred to command the

Base Camp at Mudros in December 1915 and transferred back to Australia following a bout of laryngitis. His appointment with the AIF was ended and he returned to civilian life resuming his political career. His military views had changed completely, he opposed conscription and became a pacifist. As well as substantial gifts to the Arts Gallery he advanced money for the initial 12 busts.

Toop is reported as being unhappy at the start of the Avenue as he felt it interfered with the vista of the Chestnut trees.



TOM BEAUMONT

Tom Beaumont had joined the Gardens staff in 1924 as an apprentice and worked his way up to the position of Curator in 1947 when Tom Toop retired. He is best known for the role he played in developing the begonia presentations associated with the commencement of the Begonia processions introduced by Edgar Bartrop and Arthur Nicholson in 1953. **The Queen** visited the gardens in 1954.



During his time as Curator the **Keel House** was replaced by the **Cuthbert House** following a donation from the family.



THE **Sound Shell** was built in 1962, a gift of the Begonia Festival. It provided a venue for the "Music for the People" concerts under the direction of **Hector Crawford**.

Tom Beaumont retired in 1979- 55 years of service, in all, to the gardens

BOB WHITEHEAD.

Bob Whitehead was appointed as Director of Parks and Gardens on the retirement of Tom Beaumont.



The **Floral Clock** was moved to the gardens in 1980 from its position at the east end of Sturt St

In 1982 the organisation "**Friends of the Ballarat Botanical Gardens**" was founded. Interestingly, the then Town Clerk, Ian Smith recalled that he spoke to Bob Whitehead on leaving a function at the gardens that it would be worth thinking about starting such a group in Ballarat as had occurred in Melbourne, and so it came about with, of course, Jessie Scott in command!

1983 saw the **Wellingtonia Avenue** of Sequoias placed on the **Register of Significant Trees**.

Philip Clingin replaced Bob Whitehead as Director of Parks and gardens in 1988 and **Ian Rossiter** was appointed Horticultural Officer and later Manager of Lake Wendouree and Gardens.

In November 1989 there was a **freak hailstorm** which broke the roofs of the glasshouses and the Cuthbert conservatory.

Vandalism of the statues of Hercules and Spring in 1993 and 3 heads in the PMS Avenue occurred costing \$50,000 to repair.



In 1995 the **Robert Clark Centre** and the **Conservatory** were opened following the removal of the Curators house and the Cuthbert Conservatory.



This was a result of the donation of 2 million dollars from the family of Robert Clark, the first editor of the Courier.

In 2,000 **David Lewis** was appointed to the garden Staff and later took over from Ian Rossiter as Curator – a return to the old title, followed by Peter Marquand in 2006

Following an extensive **vandalism of the Stoddart Statues in 2002** they were removed to the Conservatory and superbly restored by Jude Schahinger who continues to care for them. The Council erected a fence around the central area of the Gardens to define the perimeter and dissuade trespassing when the Gardens are closed and this seems (fingers crossed) to have worked.



The **Ex- Prisoners of War Memorial** in the South gardens was opened in 2004 whilst a plan to place the playground in the South Gardens was rejected- it is now placed on the Lake foreshore.



The latest addition is the **Gatekeepers Cottage**. This was originally situated in the North gardens, then sold and transported to Gregory St and then returned to the Gardens in 2018 by the relatives following the death of the lady living there. It will be used for education purposes and by the Botanikids, the group of the Friends involved in introducing children to the Botanical Gardens.

THE ROLE OF BOTANICAL GARDENS

Over the past 40 years, as the number of Botanic Gardens has increased around the world, and is now estimated to be 1500 in 2016 with some 100 million visitors a year.

There has been considerable discussion concerning their **role** now and in the future.

There have many instances of encroachments on established Botanical Gardens in the last century with the addition of features such as swimming and paddling pools, mazes, zoos, swing boats and even caravan parks. In many instances these encroachments have been frowned upon recently by Heritage organisations.

The general opinion now is that Botanical gardens are more important than ever with climate change, population increase, higher density housing

and the ability to have an open space for recreation and relaxation, particularly for the young.

Some of the roles that have been put forward include: - SLIDE

ROLES A list, random, not listed in importance)

- Provision of facilities such as greenhouses to provide protection for the propagation and preservation of rare plants.
- The preservation of species outside their normal habitat.
- Acclimatisation.
- In situ conservation.
- Collections.
- Research and exploration.
- Taxonomic (classifications) studies on morphology, ecology, genetics, systematics and evolution.
- Academic studies on cytology, embryology, anatomy and photochemistry.
- Improvement of varieties of plants through hybridisation – flowers, fruits and vegetables. (Commercial applications.)
- Exchange of seeds and plants.
- Seed banks.
- Training.
- Introduction to plants for children.
- Enjoyment- rest and recreation.
- Historical archives – Libraries, museums, herbaria etc.