New Zealand Plants in Australian Gardens Stuart Read

Abstract: (11.6.2013):

Raised in a large New Zealand garden full of native trees, plant lover Stuart Read was perhaps hard-wired to notice kiwi plants in Australian gardens. Over time he's pieced together a pattern of waves of fashion in their planting and popularity, reflecting scientific and horticultural expansionism, commercial and familial networks and connections across the Tasman. Stuart will examine a range of NZ plants found in old and younger Australian gardens, try to tease out some of the means by which they got here and why they remain popular.

No cabbage, This constellation of asterisks Slaps and rustles Its tough tatters In the brisk breeze; Whispers of times past And ancient histories

(Barbara Mitcalfe's poem, 'Ti Kouka' (cabbage tree) catches well the distinctive skyline profile of this ubiquitous New Zealand export (in Simpson, 2000, 213)

Introduction / overview

New Zealand gardens have been introduced to and cultivated in Australian gardens from early in their 'discovery', trade and exchanges between the two colonies. Australian and other explorers, botanists, nurserymen, New Zealand settlers and others searched New Zealand's coasts and bush, bringing plants into cultivation, export and commerce from early in the settlement's colonization.

New Zealand plants have had their 'vogue' periods, including as:

- A) **Economic plants** (various timbers, kauri gum for shellacs and jewellery; flax for fibre, rope, cloth; greens for scurvy; poroporo for the contraceptive 'the pill');
- B) **Exotic ornamental imports** into Australian gardens and beyond to English and European conservatories (and some warmer, southern) gardens and parks;
- C) Depicted or carved as *subjects of* **botanical and other artworks**, commercial commodities. They've also succumbed in fashion and novelty to other competing sources of plants.
- D) Influential garden **designers**, **writers and artists** have at times favoured New Zealand plants, in collections, or publications such as books and magazines.
- E) Collectors & Distributors (botanists and naturalists, Botanic Gardens, garden designers, merchants, nurserymen and gardeners) imported or exchanged plants, including New Zealand's.
- F) **Nurserymen** on both sides of the Tasman collected, swapped and traded each others' flora, ever keen for something 'new', exotic and thus, lucrative on a foreign market.

- G) **Hill Station gardens**, cool climate retreats from the heat and humidity of Australia's coastal plains often had keen gardeners and collectors of suitable plants, many from New Zealand.
- H) Common NZ plants in Australian Gardens examples and discussion. Appendix A lists a selection of NZ species seen here with dates of introduction or listing 'for sale' where known.

1) - And now? Concluding comments about their current popularity a	and use.
--	----------

A) - Economic plants.

As in any colony (and even before England had decided to colonise or 'run' New Zealand), its natural resources were eyed and then exploited for ready use-fulness and profitable export.

In his 'Proposal for Establishing a Settlement in New South Wales' Mr J.M.Matra suggested that important results might be obtained from the cultivation of 'the New Zealand hemp or flax-plant' (Phormium tenax), which appears to have been well-known at the time to English manufacturers. The same idea was prominent in Sir George Young's 'Plan', in the 'Heads of a Plan' and in the Royal Instructions given to Captain Phillip he was enjoined to pay particular attention to the cultivation of the flax-plant. He didn't find it in NSW. It was found in Norfolk Island, abundantly. Problems knowing how to process it hampered 'supply' until New Zealand Maoris were brought there (Appendix B, in Phillip, 1793-92 / HRNSW).

The giant herb harakeke / lowland NZ flax (*Phormium tenax* & mountain flax, P.colensoi) is also native to Norfolk Island. Banks wrote: 'Of all the plants we have seen among these People, that which is the most excellent in its kind, & which really excels most if not all that are put to the same uses in other Countries, is the plant which serves them instead of hemp and flax; of this there are two sorts the leaves of both ...(from which) with very little preparation, all their common wearing apparel are made, & all strings Lines, & Cordage for every purpose, and that of a strength so much superior to hemp as scarce to bear a comparison...'(Morrell, 1958, 127).

In 1793 two Maori were taken to Norfolk Island to teach settlers to dress flax there. A trade in flax for guns rapidly grew. In 1810, 1813 and 1814 Sydney merchants went to New Zealand for flax. In 1815 the 'Active' with Rev. Marsden and flax arrived in Sydney. By 1828 a trade was active (60 tons), by 1830 841 tons to Sydney.

Dawson (2010, 50) notes that shortly after the New South Wales government became interested in using flax for making ropes, sails and sacks in the early 1820s, flax-laden ships plied the Tasman. Demand boomed from the mid-1820s-1830s, from all over New Zealand. Manila hemp and sisal were later thought superior fibres and took over this trade (Golding, in McLintock, 1966).

Plants from the Pacific (then Oceania/the South Seas) were prominent in early Australian gardens when fewer competing imports were readily available. The first were from Norfolk Island,

occupied less than a month after the First Fleet arrived in 1788. The 'flax plants' and 'spruce pines' (Araucaria heterophylla) Cook reported growing luxuriantly there were believed to be of great consequence to a naval power: as masts and cordage or ropes. Both were soon readily available in Sydney. The potential economic value of Pacific region plants was one motivator behind establishing Australian botanic gardens (Clough, 2002, 459).

The French d'Entrecasteaux expedition is said to have given 'useful' European seeds to the Maori in about 1795, in exchange for New Zealand flax seeds which they took for possible introduction to France and its colonies (Raine, in Bradbury, 199, 53).

In 1832 the English *Gardeners Magazine* / Foreign Notices ... / Australia ... / Sydney ... advised: The New Zealand Flax, which forms an important article of commerce between Sydney and New Zealand, is recommended as a very suitable plant for the moist lands of New Holland. More tobacco, it is stated, will soon be grown than is required for the consumption of the colony... (Gardeners Magazine, 8 (36), February 1832, p.79).

By the 1830s the NZ flax trade peaked with 1182 tons shipped to Sydney, 70% of it contracted to the British Navy Board (Moon, 2012, 16). Frazer Simons (1987, 18) points out that Norfolk Island also had native *Phormium tenax* which was collected and cultivated early, adding that a large proportion of Tasmanian settlers had been born or spent much of their lives prior in Norfolk Island, thus it may have been from that source that some plants found their way into New South Wales and Tasmanian gardens. She also points out (ibid, 266) that Francis Cotton at *Kelvedon*, (1829+) Swansea was *'first to naturalise New Zealand flax here...'*.

Lady Jane Franklin noted *Phormium tenax* growing in A. B. Spark's Tempe Estate garden south of Sydney in 1839 (Morris, 2008, 69). It was grown in Victoria's Governor La Trobe's garden at Jolimont, plants provided by Ronald Campbell Gunn, of Tasmania in 1844 (Botham, 2006, 19).

New Zealand's natural resources were exploited early and actively by Australians. For example, many behind the frantic 1820s+ export trade in New Zealand timbers (of kauri, kahikatea / white pine, rimu / red pine and totara timber) were Sydney and Melbourne timber merchants, construction companies and investors. Many a surviving Australian house or building owes its timber to New Zealand forests (Read, unpub., 2013).

NZ kauri pine (*Agathis australis*) is endemic to New Zealand's frost-free north. Its soft, golden timber was milled for export timber from 1772. After NSW was settled in 1788 exports picked up volume in the 1820s (a Sydney company mill was established in the Hokianga harbour in 1826) and peaked from the 1840s-70s. The trade continued in dwindling waves into the mid 20th century (Read, unpub., 2013). Live NZ plants were taken by the *HMS Dromedary* and *Coromandel* in 1820 to Sydney and on to London (Adam (1), 2013). As well as NZ kauri, rimu / red pine, totara / mahogany pine, matai /black pine and miro /brown pine were favoured timbers (AGHSV, 2012).

Other 'forest' or plant products were exported for ready profit: kauri gum for manufacturing shellacs and (still) jewellery; harakeke /flax fibre for fibre, twine, cloth and (particularly) rope. In 1840 flax, timber and whale oil from New Zealand were shipped to Australian ports by

missionaries, mostly from Australia, resident traders (the majority, who comprised ex-convicts, seamen and farmers)(Oliver, 1960).

A 5/1871 article in *The Otago Witness* gave an account of trees being grown in Dunedin Botanic Gardens' nursery and the potential uses of their timber. It gave an extensive list of native trees and shrubs including hebes. It concluded with a reference to Mr. McGruer's plans to select and propagate improved cultivars of flax (Dunlop, 2000, 43).

Plants had been traded freely across the Tasman Sea and beyond from the 1820s. The term 'native productions' was used to classify a whole range of economic commodities traded, including New Zealand plants. For example the seed of native trees, such as the kowhai (Sophora spp.) was traded, as was its bark as a dye (The New Zealander, 14 February 1846, 1, in Adam (3).

The shrub poroporo / kangaroo apple to Australians (*Solanum aviculare*, native to both countries and Papua New Guinea) is a NZ export crop to the Netherlands (in dried, powderised form, to-be-pelletised) as an active ingredient in the contraceptive 'the pill' (Maori and some Aboriginal women traditionally chewed poroporo for the same reason).

Even herbs like Cook's scurvy grass/NZ spinach were economic exports, treating sailors' scurvy.

Chinese migrants to New Zealand turned from gold-digging to market gardening. Some exported plants to their networks in China and the Chinese community in Sydney – this case study is more about stomachs than gardens. Chan Dah Chee (Chan Ah Chee, 1851-1930) established a succession of market gardens around Auckland from the 1880s. Profits led to diversification. Ah Chee sidelined in collection, sale and export of edible tree fungus, *Auricularia polytricha*. Although pioneered by John Ah Tong, Chew Chong (c.1830-1920) developed this industry commercially, buying large quantities in 1868. Buying from Maori and settlers, he would send fungus to Dunedin, to on-ship for China or Sydney. Profits were substantial (401,551 pounds export income between 1880 and 1920) at a time many New Zealand settlers were battling clearing the bush and scratching a living (Beattie, 2013, 14, 16-17).

Ferdinand (later Baron von) Mueller was Director of the *Melbourne* (later *Royal*) *Botanic Gardens*, appointed in 1853 as Government Botanist principally to put them on a more scientific footing. He was described by MP G.V.Smith in 1870 as 'a little too scientific – a little too abstract for practical utiliatarian colonists' (Pascoe, 92).

He was an active writer and advocate for the introduction, trialling and use of economic botany (something he regarded as 'the most important part of his research') — to create or sustain industries, local and export. Fibre plants were an area of interest and writing. A Royal Society report noted British manufacturers were in 'extreme want' of raw materials for textiles and hoped the colonies would provide a suitable crop. Mueller considered New Zealand flax (Phormium tenax) and other Australian species but did not anticipate any large quantity of useful fibre (ibid, 94).

In the 1870s and '80s there was much Australian interest in commercial fibre-yielding crops. Synthetic fibres didn't appear until the 1890s and botanic gardens were active in trials. Both *Melbourne Botanic Gardens* directors Mueller and successor Guilfoyle (1873+) did so.

In South Australia, flax growing was supported by the local Chamber of Manufactures, Royal Agricultural Society and Professor Custance at *Roseworthy Agricultural College*. Flax was grown in that state during World War II as part of the war effort. New Zealand flax proved of very limited use commercially but cultivars became popular as ornamentals (Payne, 2007, 124).

In 1880-81 *Adelaide Botanic Garden* Director Richard Schomburgk built a Museum of Economic Botany, featuring plants and plant products of economic significance. It had diverse displays – plants as foods, medicines, in technology and construction – as education. It hoped to influence farmers on possible crops, and manufacturers on possible products. What was flax and could it be grown and harvested in South Australia? (Aitken, 2006, 107).

In 1891 von Mueller's published spruiking of economic plants included Cordyline banksii, ti ngahere / forest cabbage tree, (with C.baueri from Norfolk Island) 'by far the hardiest, quickest growing and largest of the genus, and thus most sought in horticultural trade for scenic planting, but also because their leaves furnish a fair fibre for textile purposes...these palm-lilies ought to be naturalised copiously in forest-ranges by mere dissemination.' C.indivisa: 'grows without protection in Arran (Scotland)[Capt. Brown]' and C. superbiens (perhaps C. australis?) 'attains a height of 40 feet...when cut down will spring again from the root...; Corynocarpus laevigata: 'the wood is light, and used by the natives for canoes. The pulp of the fruit is edible. Cattle browse on the foliage. In rich irrigated soil the tree can be adopted for very shady avenues.' Cyathea medullaris: 'an extensive export exists in root-stems of tree ferns, this species being one of the most hardy.'; Dacrydium colensoi: 'hard and incorruptible timber; D.cupressinum: 'stately tree attains the height of 200 feet...great strength for girders and beams...most suitable tree for cemeteries, on account of its pendant branches...'; Dammara (now Agathis) australis: magnificent tree... excellent, remarkable durable timber...ought to be extensively introduced into our denser forests...; Danthonia cunninghamii, 'splendid alpine fodder grass... and on and on... (FM7 1891, 129, 141, 145-6, 149).

William Guilfoyle was a NSW horticulturist who succeeded von Mueller running the *Melbourne Botanic Gardens* in 1873. His re-design laying them out as pleasure ground is well known. He also continued von Mueller's economic botany and public education interests, exhibiting fibre, paper and vegetable extracts (dyes, gums, resins, oils...), mainly from natives, at the international exhibition of 1880-1 in Melbourne. In 1892 he established a museum of plant products with thousands of herbarium specimens and in 1903 a system pavilion: both popular. Horticulture and landscape gardening popularised decorative plants (some New Zealanders) by demonstrating how they could be cultivated (Pascoe, 97).

B - Exotic ornamental imports into Australian gardens and beyond to English and European conservatories (and some warmer, southern) climate gardens and parks in the open.

On the eve of European colonization of New Zealand, plants from the Americas, South Africa, the Antipodes and China were all the rage in Britain. '[N]ovelty as respects flowers is now a complete mania' observed (then gardener) Joseph Paxton in the 1830s. Britain's (particularly its middle classes) enthusiasm for new plants and gardening was boosted by journals, commercial nurseries' pulsing sales, flower shows and new organisations like the Royal Horticultural Society (1804). Novelties got high prices, as long as supplies were limited (Beattie, 2013, 3).

New Zealand and the Pacific Islands were much visited by Australian horticulturists and resultant introductions entered botanic gardens and via the nursery trade, domestic gardens. In the age of maritime trade, the distances between Australian and New Zealand ports were comparable to – in some cases shorter than – those within the Australian colonies. Cabbage tree and pohutukawa (*Metrosideros excelsa*) became popular ornamental trees in Australia (Adam, 2002, 441). See **E - Collectors, Botanic Gardens** and **D – Influential Designers & Writers**).

Some exotic imports were purely practical: hedge species for example. New Zealand and Australian *Pittosporum* species were one such, commonly used in Tasmania (Frazer Simons, 1987, 19) and Victoria. She points out (ibid, 34) that the *Royal Society's gardens*, Queens Park, Hobart's 1857catalogue of plants included five varieties of *Pittosporum* and (ibid, 23) that Hobart's docks were busy with ships from New Zealand, Pacific and American ports. Sheridan ((3), 26) notes that while the catalogue was published in 1857, it had been compiled well before this, reflecting plants grown there from perhaps the 1840s. She adds the bush cabbage tree (*Cordyline banksii*) was listed there in 1868, dwarf cabbage tree (*C.pumilio*) in 1873+ and oddly, no record of *C.australis* has come to light (ibid, 32). It was in fact listed in the 1857 catalogue, 'disguised' by an old genus name, *Charlwoodia (australis)*. A specimen shows in an 1861 published photograph (ibid, 51).

Dawson (2010, 116) notes the importance of hedging plants, and that hawthorn 'quicks' were quickly produced and sold by the hundred thousand to 'wool kings' and farmers throughout New Zealand, some being exported to Australia. Sheridan ((3) 57) notes in 1852 a case of 50 plants from New Zealand arrived. Plants were sent to Captain W. T. Cooper in New Zealand in 1855 (ibid, 64). A Mr. Diehl of Dunedin sent plants quite regularly (1864+), New Zealand plants beginning to arrive from numerous sources: a Mrs. Gore-Brown (1863), A. Morrison (1864), Mr. T.C. Wren of the *Mt. Hobson Nursery*, Remuera (Auckland)(1868 & 9), the Acclimatisation Society of Christchurch (1866 & 1869), Mr. A. Begg, Dunedin (1866), Mr. S. Clifford of Dunedin (*Cyathea sp.* in 1869) and the Christchurch Botanic Garden (1873 & 4)(ibid, 17, 59, 61 & 63). She notes that Royal Society members as a benefit received plants from the Hobart garden from at least 1855 (ibid, 21). Some were likely to have been from New Zealand, thus entering old Tasmanian gardens.

Beattie (2013, 4) adds that the English East India Company (EIC) was another source supplying lucrative exotic plants to ready English markets. People like Sir Joseph Banks, Director of the *Royal Botanic Gardens, Kew*, and commercial nurseries and private collectors, actively encouraged botanically inclined EIC employees to collect plants from all places reached by the Company's vessels, including New Zealand and Australia. By the 1840s steamships and Wardian cases were cutting travel time and boosting the survival rate of plants en route. He notes (ibid, 5)

that nurseries, public botanic gardens and collectors in Sydney, Hobart and later Melbourne sent plants to New Zealand. What might they have expected or received in return or exchange?

Acclimatisation societies existed in France and England by 1860, and cooperated with kindred organisations, including zoological societies, in Adelaide, Melbourne, Sydney, Brisbane, Hobart and a number of New Zealand cities (Payne, 2007, 140). See **E** – **Collectors**: **Botanic Gardens**.

C) - depicted or carved as subjects of botanical & other artworks, commercial commodities. They've also fallen from fashion and novelty to other competing sources of plants. And later rerisen. This subject is broad enough to support its own paper - space limits do not permit its teasing out here. One tidbit: the first fully-coloured art book printed in New Zealand, published in 1887-9 was *The Art Album of New Zealand Flora: being a Systematic and Popular Description of the Native Flowering Plants of New Zealand and the Adjacent Islands* by Mr. Edward (E.H.) & Mrs Featon (Sarah Ann Porter, of Auckland, later Gisborne. Described as a visual feast, it was perhaps a revelation to New Zealand settlers who, as Edward claimed, believed in the fallacy of there being no flowers in New Zealand. Edward's descriptions were enthusiastic, clearly a keen promoter of native plants in European gardens (Harris, 1992, 23).

D) - Influential garden designers, writers and artists

Examples of records of von Mueller's work (his annual reports) involving NZ plant material are revealing about his sources – who (in NZ) was sending or receiving parcels and consignments (bear the following in mind when reading section $\mathbf{F} - \mathbf{Nurserymen}$ later):

1858 - Capt. Kreeft, of the *Marchioness*, to serve our establishment by a regular transmission of Wardian cases from and to New Zealand (FM, 1858); ...the kaurie pines from Australia, Polynesia and New Zealand...
22 cases with living plants were forwarded to the neighbouring colonies or to more distant countries, and 19 have been received as donations or in exchange from the BGs of Auckland...F.Bailey; Wellington;...Captain Kreeft, Wellington;...list of donations of either seeds or plants from...D.Wilkinson, Wellington (FM);

- 1860 W.F.Bailey Esq., Wellington; The Hon.Dr Featherstone, Wellington; W.K.Hulke Esq., of New Plymouth; ...Captain Anderson, of the Chatham Islands; W.Wilson, Canterbury; Judge Travers, Nelson; Andr. Wilson, Dunedin (FM2);
- 1861 F.Bailey, Hutt Valley; Hulke, New Plymouth; H.A.Head, Canterbury... Julius Haast, Nelson; of the Wide Bay Kaurie, which endures the vicissitudes of our climate evidently better than its New Zealand congener... (FM3);
- 1862 Hon.Judge Travers, Nelson; A.S.Wilson, Dunedin; Alpine plants from NZ presented by Jul.Haast, Esq.; ...; 'In the distribution of plants to public institutions I have been mindful to diffuse, as far as possible also plants of particular utility...with those of ornamental character. The NZ flax'...H.A.Hood, Akaroa; E.Quick, Dunedin; James Reed, Collingwood (?); R.H.Read, Invercargill; A.S.Wilson, Dunedin (FM4);

1863 - NZ flax (planting by lagoon in BGM)...has realised in London sales as raw material 20 pounds per ton, a price remunerative for a more general cultivation of this useful fibre plant'; Rev. G.J. Chalmers, Christchurch; ...His Excellency Sir George Grey, Governor of New Zealand*; Barrister Travers, Christchurch (herbarium specimens); alpine plants from the province of Canterbury, collected during his expeditions by Dr. Jul. Haast; G. Oliver, New Plymouth; T.H. Hulke Esq. Of New Plymouth; Alex Head, Christchurch; Wilfred Wilson, Dunedin; the karaka...; the Dammar pines (presumably including Dammara (syn. Agathis)(australis)); the totara (FM5).

*Grey (see **E** – **Collectors & Distributors**) played a significant role in the acclimatisation of plants (and animals), especially those of economic value to New Zealand (Brassey, 1999, 10), corresponding and exchanging plants with von Mueller (ibid, 34). Gentlemen collectors and public botanic gardens played an important role in educating, displaying and influencing others. Grey had a personal relationship with the Hookers at Kew, which was then acting as a clearing house for assessing and trialling economic plants around the world in and from Britain's colonies. He was a significant, if not the principal, New Zealand link in this network, at least until the 1870s (Shepherd & Cook, quoted in Brassey, 1999, 29).

1865 - Wardian case with NZ plants from Mr. T. Hulke, New Plymouth; (after Yarra River flooding) Fern trees, ... Dracaenae, New Zealandian and hardy Australian palms...imparting a tropical feature, have been grouped at the adjoining edge of the lake...; The contents of the conservatories have much increased in variety; the selections of Ferns, Cacteæ, and other succulents being particularly rich...;

The hedge of Pittosporum eugenioides proves a feature equally interesting and ornamental, and as the plants can be raised with facility from seeds, and these are so readily accessible in New Zealand, this Pittosporum, as well as the allied P. tenuifolium, might be extensively employed for surrounding garden areas. ...;

(re the library): A small volume on the plants of the Chatham Islands, (Flora of the Chatham Islands) elaborated in the latter part of last year, is based on material presented to the museum of our botanical department by W. T. L. Travers, Esq., of Nelson, N.Z... Though this material afforded actually but a limited number of species, of the existence of which we had no previous knowledge, it was well deserving of special elucidation, since the little Chatham group was formerly almost unexplored ... At the time when the plants of the Chatham Islands were received here and rendered known, a volume also on the plants of New Zealand, written by Dr. Jos. Hooker, passed in London through the press, for which volume Mr. Travers's collections became not timely accessible...;

(for the herbarium), dried plants from Dr. Haast, Christchurch; J. Hardy, Wellington; Dr. Hector, Dunedin; W. Travers, Christchurch.

(seed) A. Begg*, Dunedin; F. Bicknell, Dunedin; Captain Cadell, Auckland; _ Francis, Christchurch; W. Hardy, Wellington; H. Piffen, Auckland; W. Travers, Christchurch.

*Alexander Begg was appointed 'Gardener of the Recreation Grounds' in 1863, these including the Botanic Garden Reserve. His 1865 report noted he'd 'succeeded in gathering together a very large collection of most useful and ornamental trees and shrubs from the sister colonies and Home Country, in exchange for plants and seed sent' (Dunlop, 2000, 19-20).

Index of eminently valuable, conspicuous or rare plants specially numbered on the plan: includes: *Pittosporum colensoi; Notelaea (syn. Nestigis) ligustrina; Podocarpus totara; Cordyline australis; Hymenanthera banksii (?probably H.divaricata); Corynocarpus laevigatus; Melicytus ramiflorus; Alectryon excelsum; Olearia traversii (FM6).*

One of the neighbouring colonies with which Dunedin had a relationship in 1869 was Victoria. A letter of 3/10/1869 from Victorian Chief Secretary requested New Zealand native shrubs and trees. Another of 25/7/1870 from Dr Mueller acknowledges receipt of two cases with 'growing New Zealand plants'. Mueller sent in return two cases filled with '59 industrial plants' (Dunlop, 2000, 41).

Mid-late 19th century plant 'crazes' and fashions such as **conifers** and **pineta** (von Mueller helped, these peaking in popularity in Australian between 1850-70 (Spencer, 156), ferns, orchids, palms and sub-tropical species. Aitken (2010, 103-4) points out that von Mueller was an unacknowledged pioneer of the Subtropical Garden style (see below). Guilfoyle, Charles Moore and later Joseph Maiden in Sydney all helped— see sections **E** – **Collectors: Botanic Gardens** & **D: Influential writers and designers**) are reflected in the plant palette of parks and gardens of the era. Aitken (ibid, 110) adds that von Mueller broke up the monotony of massed conifers in Melbourne's Botanic Garden in 1867-8 with 'several hundreds of New Zealand Palm-lilies (Cordyline australis and C.indivisa), numerous groups of real palms (including NZ nikau palm).

Writers and public speakers (the above four in Australia) and overseas were influential popularising 'new', 'exotic' introductions – of plants such as New Zealand natives, new styles and modes of gardening. Key players in England, widely published via magazines and widely held and circulated in Australia, were Scot John Claudius Loudon and William Robinson.

Among other trends Loudon pushed was the 'Gardenesque' style, a rather featuristic focus on individual plant form and contrasting foliage. Understandably New Zealand plants with striking 3-D form or foliage (*Cordyline australis, Pseudopanax crassifolium*, etc) might be so-favoured. Among those pushed by Robinson were 'Subtropical Gardening' (see below) and 'Wild Gardening'. Robinson judged bold foliage plants, such as Pampas grass, often to be more attractive than flowers (Raine, in Bradbury, 1995, 100). His writings were well known in Australia, through weekly horticultural press reviews, circulation of *The Gardener's Chronicle* and his books (Aitken, 2002, 510).

Garden designer in three states Edna Walling (who spent 3 formative years as a 16-19 year old in New Zealand), had a suite or palette of signature plants which included New Zealanders: hebes / veronicas, *Leptospermum spp.*/tea trees or manukas for example (Churchill & Dixon, 1998, 139).

She used NZ tawhairaunui / red beech (*Nothofagus fusca*) in *Nalparingan*, Upwey (1932) and large leaved kowhai (*Sophora tetraptera*) in the Colman garden, South Yarra (1933)(ibid, 56, 60).

Paul Sorensen, Walling's contemporary in NSW, had a preferred palette (conifers, deciduous and evergreen trees and shrubs) and used New Zealand plants such as *Pittosporum eugenioides* 'Varietatum', *P.tenuifolium, Cordyline australis* and *Phormium tenax* in some of the around 100 gardens he designed or advised on (and sold plants to) across that state. *Cherry Dell / Invergowrie*, Exeter, *Aola*, Peats Ridge, *Goollooinboin*, Capertee Valley and *Blue Mist*, Leura are but a few such (Ratliffe, 1990, 110, 120, 162). Sorensen had wide influence on Blue Mountains and central NSW gardens through both design work and his Wentworth Falls nursery.

Garden designer in Sydney and later Adelaide Max Shelley's palette of plants included pohutukawa / NZ xmas tree (*Metrosideros excelsa*)(Read, 2002, 20-21).

Claude and Isabel Crowe similarly had wide influence across NSW and the ACT through garden design advice and running a very long-standing nursery, the *Berrima Bridge Nursery*. Their plant palette also included some New Zealand plants, which subsequently survive across NSW's Southern Highlands and Tablelands regions.

Surviving old plants in old gardens, parks and botanic gardens reflect toughness and longevity as much as former diversity – more short-lived or delicate species are often long-gone. Toughies able to take drought, fire and more, such as *Cordyline australis* and *Phormium spp.* persist.

Fads or fashions such as **Palm-Mania** and **Phyllo-mania** and a vogue for '**Sub-tropical' or** '**Tropical' gardening** sought out and displayed New Zealand plant 'exotica'. These caught on in grander gardens and public parks in Australia. As but one example, toi / mountain or broadleaved cabbage tree is New Zealand's most sub-tropical looking species. First described by Johann Forster in 1786 (as a 'dragon tree' and *Dracaena [now Cordyline] indivisa*) from Dusky Sound, Fiordland on Cook's second voyage it was illustrated in *L'Illustration Horticole*, tab. 265 in 1860 (in France) and was on sale in Berkshire's *Sunningdale Nurseries*, receiving a 'First Class Certificate' from the Royal Horticultural Society (UK) that same year. Launched! And why not: it's stunning and very 'tropical' looking given it is a mountain/cold climate species. It forms only a few, gigantic heads of leaves (over a meter long and up to 20cm wide) on a usually unbranched trunk up to 5m tall (Simpson, 2000, 45, 172) – that's before it flowers!

It's more modest sister, *C.australis*, ti kouka / cabbage tree is still tellingly called 'the exotic palm lily' in countries-European. It was introduced decades earlier (first mentioned in print from Cook's first visit in 1769 - 'the Cabbage of which made us one delicious meal...' (Banks, quoted in Morrell, 1958, 126). Cook, Banks and Parkinson all wrote of the 'cabbage palm' and possibly seen by Abel Tasman in 1642) (Simpson, 2000, 171). George Bennett wrote in 1834 that *Cordyline terminalis* (cabbage tree) 'grows and flowers well' and 'is frequently planted in front of the dwelling houses in and about Sydney'. At Hannibal Macarthur's The Vineyard at Rydalmere, he found karaka (Corynocarpus laevigatus) in 'thriving condition...nearly 14' and

borne fruit' (Bennett, 1834, 336, in Beattie, 2013, pending). So 'nativised' did *C.australis* become in Torbay, Devon, it is now known locally as the '*Torbay palm*' (Pawson, in Beattie, 2008). Cordylines (likely *C. australis*) were novel, unusual and found in old Hobart gardens (Sheridan (3), 25).

Duxbury (2002, 10) notes that cabbage trees gave 'a palmy ambience' to or near ferneries in cool climates where palms wouldn't grow). They remain popular in European coastal areas and resorts where frosts are scarce (Dunlop, 2009, 20), European conservatories, the USA, Argentina, Chile, Japan, India, South Africa, France, Portugal, Spain, Italy (ibid, 2000, 253), even Scotland and Topkapi Palace gardens, Istanbul (not averse to snow).

New Zealand's British Resident (de-facto Governor) James Busby was one of that country's first settlers to plant cabbage trees — in 1836 he planted a horseshoe-shaped row in his garden at Waitangi (Simpson, 2000, 237). Busby was ex-Sydney and no doubt trading plants with friends and colleagues there. He brought grape vines to New Zealand from his Sydney home and grew an extensive garden around *Treaty House*, Waitangi by 1840 (Burgess, 2007, 40; Wells, 2011, 65-6). Did it contain New Zealand plants? Likely so.

Cordyline australis, like other species, has a natural tendency to mutate and variation. This is of course a (novelty-seeking) nurseryman and horticulturist's dream! 1870 saw publication of *C.a.* Lentiginosa'- leaves tinted and spotted brownish-red. 1871 saw 'Veitchii' (leaf base and midrib crimson) and 1882 'Atrosanguinea' (bronze, infused red leaves) and 1890: 'Purpurea'. Not to mention 1878's 'Doucetiana', 1888's 'Argento-Striata', 1890's 'Dalliereiana' and 1896's 'Albertii' with green leaves edged and striped with white, cream, yellow and yellow, respectively. New Plymouth's *Duncan & Davies Nursery* was at the forefront of *Cordyline* breeding and hybridising, crossing *C.australis* with *C.banksii* in their 1925 catalogue (Simpson, 2000, 250). Other species from other countries, such as *D.fragrans* and *C.fruticosa*, became hugely popular mid-19th century for the number of coloured (& striped, variegated) forms, for conservatories – with literally hundreds of cultivars (Simpson, 2000, 36). Duncan & Davies more recently hybridised *C.a.*'Albertii' with 'Purple Tower', producing a colour range of cultivars as broad as that available in flaxes (dozens) under 'Pacific ...' themed names (Simpson, 2000, 250). Finds continue: hybridising with *C.banksii* and dwarf *C.pumilio* has led to recent introductions to commerce and gardens.

Fern-or Pterido-mania convulsed Victorian England and its colonies from the 1840s (Duxbury, 2001, 4), influencing wild-collection, propagation and export, and displays. George Schneider's 3-volume *Book of Choice Ferns for the Garden, Conservatory and Stove* and others became best-sellers. Over-collecting of British and European ferns led to a demand for others from overseas for diversity and a more plentiful supply. Live plants were transported in Wardian cases. New Zealand settlers sent ferns as presents to family and friends 'back home', by the 1880s this being a cottage industry (Brownsey, 2002, 38).

This was serious business and leisure. Melbourne nurserymen listed Australian fern species for sale from the late 1850s (Pascoe, 2012, 77; Duxbury, 2001, 4). The 1854 Great Victorian Exhibition had a small display of tree ferns from the Dandenong Ranges (FBBG, 21). Day

trippers visited fern gullies (such as Fern Tree Gully in the Dandenongs, famously painted by Eugene von Guerard), taking their trowels (Pascoe, 2012, 77-8).

Sheridan (3) 19) traces interest in Tasmanian tree ferns to 1827, adding that their export started to replace the Araucaria export trade in the 1860s-70s, encouraged by colonial artists. The craze reached its heights in the 1870s and 1880s.

Daniel Bunce ran the *Geelong Botanic Gardens* in 1857 and from 1859 built a conservatory, which included ferns (Pascoe, 98, 100). A 300' long fernery followed from 1885 in stages under his successor Raddenbury, no doubt sporting New Zealand ferns among others. The Director sent a request in 1886 for ferns to the Dunedin Botanic Garden (Dunlop, 2000, 59). Bunce gave advice (and plants) to regional botanic gardens such as Colac (1868) and Camperdown (1870).

Large ferneries vied between gardens for size, and these, artificial fern groves and gullies with wide collections (e.g. from New Zealand and the South Pacific) were features of public and private gardens. Tree ferns such as ponga /silver tree fern (*Cyathea dealbata*)(Duxbury, 2002, 10), mamaku /black tree fern (*C.medullaris*) and wheki ponga (*Dicksonia fibrosa* and wheki (*D.squarrosa*) were popular. Less seen here is king fern (*Marrattia salicina*) with its huge fronds and primitive look. And related to Australia's giant fern (*Angiopteris evecta*).

Examples of public ferneries in Victoria include Ballarat, (*Rosalind Park*) Bendigo, Creswick, Ararat (1912: '*largest in the state*'), Warrnambool, Queenscliff, Maryborough, Kyneton, Horsham, Hamilton, Kyneton, a naturalistic one at *Wombat Hill Botanic Gardens* in Daylesford (FBBG, 2012, 21; Duxbury, 2001, 4)(now being restored with 300 mostly Australian and New Zealand species)(Kerr-Forsyth, 2013, 6), Castlemaine, Buninyong and *Geelong Botanic Gardens* (Pascoe, 232-3). Some were established along small watercourses in small public gardens such as: *Fitzroy Gardens*, Melbourne; *Victoria Gardens*, Prahran; *Johnston Park*, Geelong or *Eaglehawk* near Bendigo (Duxbury, 2001, 7).

Ballarat Botanic Gardens' fernery was pegged out in 1880 and extended annually until 1883 (to 450 x 60') and beyond. Von Mueller visited regularly (FBBG, 2012, 21).

In 1880, to 'render the fern gully (in Melbourne Botanic Gardens) still more interesting to the public', William Guilfoyle raided the gullies of Macedon and Dandenong for shrubs and herbs, beech...and native Clematis...He also introduced 'a number of choice New Zealand ferns' (Fox, 2004, 131). Amongst other inhabitants of the fern gully was titoki / New Zealand ash (Alectryon excelsus) and karaka / NZ laurel (Corynocarpus laevigatus)(Duxbury, 2002, 11). In 1897-8 Guilfoyle's 'Tourist Notes on the picturesque in gardens, parks and forests' promoted Australian 'wild gardens' that should include a great range of plants – including bulbs from South Africa - 'to say nothing of the wonderful resources from other countries, our own native vegetation, including the lovely shrubs of NSW, Queensland, and West Australia, together with that of New Zealand...' (Guilfoyle, 1897-8).

James Veitch of *Veitch's Nursery*, London visited Ballarat in 1892, opining (its Botanic Garden)'s *collection of Tree Ferns* (including ponga / silver (*Cyathea dealbata*), mamaku / black (*C.medullaris*) and wheki (*Dicksonia squarrosa*) from New Zealand)...is large and in good

condition (FBBG, 2012, 21-22). Geelong's fernery (built in three sections from 1885-7, with 200' first stage) included New Zealand species: a Geelong Advertiser report (2/12/1886) noted: The town of Geelong may certainly lay claim to the possession of one of the best (if not the very best) ferneries in the colony, and for which the curator of the Eastern Park (John Raddenbury) is entitled to the credit...'.

New Zealand ferns favoured included *Cyathea medullaris*, choice dwarf ferns including *Todea superba* (New Zealand crape (sic: crepe) fern, and ponga/silver fern (Jones, 1984, 83).

F. Manson Bailey's 1881 book *The Fern World of Australia* made the leap from botany textbook to popular handbook, as a fernery became an essential element of suburban gardens (Aitken et al, 2004, 96).

A magnificent example of a private fernery - Australia's largest-known - is the curving barrel-vaulted c1880 one at *Rippon Lea* in Melbourne's Elsternwick (1868+) built for Frederick Sargood, politician and merchant. Its garden (1868-1903) was re-laid out by garden designer William Sangster of Mt. Macedon's *Taylor & Sangster Nursery* in 1883 – its curving driveway shrubberies alone contain many New Zealand species with others near its lake and house.

In one of Mount Macedon (Vic)'s grandest gardens, Charles Ryan's *Derriweit Heights* author/ethnographer Edge Partington described in 1879:

'a winding gully where a small stream ran' was enhanced by 'all sorts of ferns, collected at different times both here, and in Tasmania and New Zealand' (Fox, 1995, 11).

Adelaide Botanic Garden's Palm House opened in 1877, Schomburgk describing it as 'like a fairy tale of the thousand and one nights'. Among palms and variegated plants it sported tall tree ferns from New Zealand, Queensland and Port Natal (Aitken, 2006, 105).

The ferneries in C. F. Neumann & Son's '*The Model Nursery*' in Adelaide's Hills contained the largest collection in that colony, covering 8000 square feet (Swinbourne, 2006, 44).

Bathurst, NSW's *Machattie Park* fernery was built in 1890 (100'x 80') and survives (Harvey, 2006, 19).

Phyllo-mania or a vogue for '**Sub-tropical' gardening** – or at least display of sub-tropical plants in cool-climate gardens especially bright-coloured or large or bold-shaped foliage included many New Zealand plants. Whether that be in a park in Battersea, London, Paris, New York, Sydney, Melbourne or Adelaide. Many in cooler climates had to settle for a conservatory or bush house to keep such plants alive. Many in the northern hemisphere used them in pots, plunged into the ground in beds or lawns to appear 'natural'.

William Robinson's influential book *The Subtropical Garden* (1871) helping popularise bedding of plants with bold or ornamental foliage in picturesque groupings, in reaction to massed annual flower bedding. His ideas influenced William Guilfoyle and Moore to create bold foliage effects in Australia (Aitken, 2002, 510). A couple of small quotes from it give an idea of the ethos:

Numbers of subjects not from subtropical climes may be employed with great advantage...

... the culture of plants with large and graceful foliage or habit, and the association of them with the usually low growing and brilliant flowering plants now so common...

"...New Zealand flax and the hardier Dracaenas, will be found as effective as around London & Paris..." (Robinson, 1871).

Guilfoyle looked to the *Cordyline (australis)* to create 'tropical' scenery in Victoria (Fox, 2004, 137), as evidenced by 1880s photographs of bold clumps and groupings of this tree on islands, mounded beds and in the fern gully at Melbourne Botanic Garden and Government House garden next door. Many remain in both today. And in many private 'Guilfoyle' gardens.

He toured New Zealand in 1908 by train, glorying in the riot of colour: 'gorgeous crimson-flowered rata', white blossoms, scarlet berries and golden flowers 'all mingled in picturesque confusion'. Above this 'jungle' towered gigantic trees, which were 'fast becoming scarce' with timber-getters. Near Rotorua's hot springs, nature became scenery: his eye constructed 'charming views of broad fertile valleys studded with robust Cordylines, or cabbage trees'. He peeped into 'woody dells, beauty spots in fact' where he would have loved to roam (Fox, 2004, 139, 141). This was one source of inspiration for his garden making and re-making in Victoria.

Various forms of NZ flax became a staple of subtropical shrubberies, valued for bold foliage (Adam, 2002, 441). Variegated forms (naturalist William Colenso recorded striped flaxes in some North Island New Zealand settlements in 1868)(Gabites & Lucas, 2001,12), pittosporums and other plants gained in popularity. Guilfoyle was an enthusiastic user of golden and silvervariegated plants for colour contrast in his rich mixed shrub and tree borders.



Above) Phormium tenax 'Variegatum' (Curtis' Botanical Magazine/W.Fitch)

Heritage Victoria's horticulturist John Hawker notes that in that state there were lots of NZ plants grown in the 19th century, for a few reasons – they were:

- easy to obtain;
- low cost nurseries imported and sold them cheaper than plants from UK and China;
- they had desirable features dark green glossy leaves and
- the *Cordyline* and *Phormium* had desirable strap-like foliage, the fashion of the day;
- they fitted with the fashion for **subtropical gardening** etc, promoted by writers such as William Robinson in England; and
- they grew in our soils and climate.

Asked why there seem so few *Pseudopanax spp*. from NZ grown in Australia, John opined: The main reason in my view that there are few Pseudopanax is that it's too hot There are old plants at 'Alton' Mt Macedon, and probably other hill station gardens, and a few in RBG, and a recent planting in Koroit BG, a few Agathis and other NZ conifers, but generally it's too hot and dry (Hawker, pers. comm., 2013).

As 'Aralia' species, Pseudopanax (e.g. A. crassifolia) were certainly sold and grown early in Tasmania, Victoria and New South Wales. I suspect the plants are short-lived particularly in warmer climates, hence what survive tend to be longer-lived species.

Around Newcastle, NSW are many New Zealand species of karaka and pohutukawa, introduced by eccentric park designer, architect, poet and ex-Auckland artist Alfred Sharp(e) from the late 1880s (Adam, 2002, 441; Beattie, 2006). Sharp(e) migrated to Newcastle in 1887. He had success in local design competitions, ending up designing or re-designing the major parks in the area. His design for 'Upper / Hill Reserve' (now King Edward Park) included 800 pohutukawas (Metrosideros excelsa). He wrote that 'unless the great bulk of the trees are the handsome giant myrtle from New Zealand, success will be very doubtful' (Sharpe, 1890). He wrote much on parks and plants as agents to improve city life. He championed planting New Zealand and other species and acclimatising New Zealand species into Newcastle (Beattie, 2011, 91, 94-5).

E) - Collectors & Distributors: botanists & naturalists

Captain James Cook's first world voyage in 1769-70 brought naturalists Joseph Banks and Daniel Solander to (and circumnavigated) New Zealand, where they collected 360 plants, including the evergreen shrub/climber kaka beak / glory pea (*Clianthus puniceus*), at that time cultivated as a sacred plant in many Maori settlements. Cook in the Waihou / Thames measured the lofty height of kahikatea 'every tree straight as a pine and of immense size... (& so high) without a branch'; Banks enthused about white pine / kahikatea and matai ('would make the finest plank in the world')(Morrell, 1958, 79-80, 112 illus.).

Cook refurbished the *Endeavour* in Ship Cove (Queen Charlotte Sound, near the top of the South Island) giving the naturalists much time to study native flora and fauna of that area until they left (October 1869-March 1770)(Chalk, 1988, 137). Solander collected and Parkinson drew pohutukawa /NZ xmas tree, (*Metrosideros excelsa*) in Mercury Bay (11/1769)(Morrell, 1958, 96 illus.) and reportedly also at Totaranui, Queen Charlotte Sound (1/1770) along with southern rata (*Metrosideros umbellata*). If indeed he found pohutukawa there, it must have been planted by the Maori – it's natural distribution stops way north of there (Simpson, 2005, 33, 195). New Zealand plants brought to England by Cook's expedition were being grown commercially within ten years, and the British were largely responsible for their introduction into Europe (ibid, 232).

Local plants entered European settler gardens in New Zealand early on. Journal entries and letters noted the use of native plants in a few mission gardens, the first recorded being Rev. William Yate transplanting natives from Warepoke Falls behind Kerikeri into his garden in 1829. Rev. William Cotton of Waimate established a native area in front of his house in 1843 (Raine, in Bradbury, 1995, 60). That garden at the *Waimate Mission Station* (1832+) sports a Bunya pine from Australia, amongst other mature trees (Burgess, 2007, 46). Europeans 'discovered' Bunya pines in the mid-1840s by which time Rev. George Clarke was resident. Or Bishop Selwyn after

1846? Who did they know in Australia: Rev. Marsden? Another grows at *Te Papa* (later *The Elms*) in Tauranga – established by the Church Missionary Society in 1835 for Archdeacon Brown, an enthusiastic tree-planter from the start (Burgess, 2007, 109).

Sir Joseph Banks (d.1820), from 1773 Director of the *Royal Botanic Gardens, Kew* cultivated in that garden and distributed many newly-introduced from around the world. Along with commercial nurseries and other private collectors, he actively encouraged botanically-inclined East India Company employees to collect plants from all places reached by the company's vessels, including New Zealand and Australia. As a result, Banks and Kew developed an extensive network of European collectors around the world (Beattie, pending (2013)).

Cook's second voyage to the Pacific and Antarctica had German naturalist Johann Forster, his son Johann and A.Sparmann on board. The *Resolution* anchored in Dusky Sound, Fiordland in 1773 and the Forsters collected daisies (*Celmisia species*), gentian (*Gentiana montana*) and ground cover *Forstera sedifolia* (Metcalf, 1993, 243). They introduced puawananga (*Clematis indivisa*), a winter-flowering NZ climber whose hundreds of white star-shaped flowers, each 2-3" across, sprinkle the bush '*like laughter in court*', to quote New Zealand poet Rex Fairburn (Fisher, 1980, 175). Also introduced into England by the Forsters was *Veronica* (now *Hebe*) *elliptica*, known to the Maori as kokumuka (Chalk, 1988, 137-8).



Above) toi (*Cordyline indivisa*), *Wombat Park*, Daylesford. Each leaf is 20cm wide and up to 1.5m long.

Perhaps the most distinctive New Zealand plant the Forsters introduced to Europe was the toi/mountain cabbage tree (*Cordyline* (then *Dracaena*) *indivisa*), found in Dusky Sound. It was described by J.G.Forster in 1786. John Standish of the *Sunningdale Nurseries* (Berkshire) won a First Class Certificate for a plant in 1860 from the Royal Horticultural Society. Belgian Ambroise Vershaffelt, editor of '*L'Illustrations Horticole*' published a colour image of it in 1860 (Dunlop, 2009, 20). Its higher altitude habitat makes it cold-hardier than *C. australis* in the northern hemisphere. And scarcer in warm Australia – I came with delight upon one handsome toi tree in the shrubbery at (montane) *Wombat Park*, Daylesford, Victoria (see above).

The *HMS Dromedary* and *Coromandel* in 1820 carried live NZ kauri plants to Sydney and on to London. They brought other live New Zealand plants to Sydney (starting a long association between the Royal Navy and plant collectors in the South Pacific (Clough, 2002, 459).

In 1824 French expedition led by Lt. Dumont d'Urville and naturalist Rene Primeverre Lesson on the Coquille collected plants in the Bay of Islands. D'Urville returned on the Astrolabe in 1827 collecting on the shores of Cook Strait, again with Lesson. Their finds were published in a book by Achille Richard, 'Essai d'une Flore de la Nouvelle Zelande''. Plants bearing their surnames are mapou (*Rapanea* (now *Myrsine*) *urvillei*), houpara / coastal five finger (*Pseudopanax lessonii*) and fern *Polystichum richardii* (Cockayne, 1919, 5).

Plants were being traded freely across the Tasman Sea and beyond from the 1820s (Adam (3)).

Sydney became a clearing house for plants and seeds for the south-west Pacific. With whaling's development, incursions were made into New Zealand, followed by missionary settlements providing bases for botanists and plant collectors (Clough, 2002, 459).

Another French expedition visited Akaroa on Banks Peninsula in 1840 where a French settlement was well known. Less well known is the botanist accompanying the expedition, M. Raoul, on the 'L'Allier'. He collected plants across the peninsula (two extinct volcanoes) and in the Bay of Islands. The ground-cover genus *Raoulia* was named after him by Joseph Hooker (Cockayne, 1919, 6).

George Stevenson, JP, first editor of Adelaide's *South Australian Gazette and Colonial Register* and later City Coroner, was a keen gardener at *Melbourne Cottage*, four town acres. By 1843 it contained a great many plants including 'New Zealand plums' (?), *Charlwoodia (Cordyline)*, *Veronica (Hebe)*, *Phormium* and beds of *Clematis (C.paniculata?)* (Swinbourne, 2006, 9-10).

Professional Wellington gardener William Trotter wrote to English polymath John Claudius Loudon in 1843: 'I am collecting seeds of all the best New Zealand plants to send you... I have sent upwards of 100 native plants to a gentleman in Van Diemen's Land, who has promised to send me fruit trees in return' (Dawson, 2010, 130).

Sir George Grey as a young officer explored Western Australia in the 1830s, was appointed Governor of South Australia in 1841, took on the same role in New Zealand in 1845-55, then in the Cape Colony (South Africa) 1854-61, returning to New Zealand that year until 1868. He then went into politics, later serving as Premier from 1877-79 (Russell, 2001, 3-4). Looking to buy an island to escape the pressures of public office, he bought Kawau Island in Auckland's Hauraki Gulf. He promptly began obtaining plants from fellow collectors worldwide, making it a showplace – not least sporting Australian conifers (*Araucaria spp.*), figs, wattles (for a tanning industry), rainforest and other species – many survive today (Brassey, 1999, 11).

Grey's friendship with the Hookers at Kew was mirrored by those in local horticultural and botanical societies with friends such as Charles Knight, Dr. Andrew Sinclair and Thomas Kirk, all active collectors. Grey used his influence in Government to secure funding for the publication of Joseph Hooker's two volume *Handbook of the New Zealand Flora*, published in 1864-7 and

dedicated to Grey. He founded and fostered several learned societies and institutions, was influential in setting aside public reserves and having Domains and parks planted with exotics, including Australian conifers, figs and eucalypts, New Zealand-wide (ibid, 35). Grey's name is remembered in New Zealand shrub *Brachyglottis* (syn. *Senecio*) *greyi* (ibid, 33), with its silvergrey felty leaves and bright yellow daisies. This was discovered by botanical collector William Colenso in 1845 (St. George, 2012, 217) and remains popular in Australian gardens.

William Hart, first owner of Auckland's *The Pah* was planting trees there in 1847-8 including rare Australian trees (figs, araucarias) – perhaps bought across the Tasman by merchant John Logan Campbell or Joel Polack's ships as 'Agents' trading in the 1840s around the Pacific – Fiji, Sydney, San Francisco, Boston...(Adam (1), 2013).

Plants in and out - links:

This was accompanied by export (to **Botanic Gardens** and keen **private collectors**) of plant species involved: NZ kauri (Agathis *australis*), rimu / red pine (*Dacrydium cupressinum*), matai / black pine (*Prumnopitys taxifolia*) and miro / brown pine (*P. ferruginea*) respectively.



Above) Label in Chelsea Physic Garden, London, 2008

Clough (2002, 459) notes the most popular NZ plants in Australian gardens were already there before Allan Cunningham (1826), his brother Richard (1833-4), John MacGillivray (1840s-50s) or Bidwill (1830s-40s)'s introductions, as Commissioner Bigge recorded in his 1820s reports. One notes around 25 species in cultivation by Charles Fraser in the *Sydney Botanic Gardens* (Adam (1), 2013). In 1820 Fraser listed 53 New Zealand species in that Sydney garden, some with botanical names, some Maori names, some described, others unidentified (Clough, 459).

Fraser (1816-c1830) visited New Zealand's Thames in 1826 (for a day), likely following Captain Cook's journals/routes (ibid, 2013). Whether the *Cordyline baueri* in the *Sydney Botanic Gardens* collection (seed of which was flowered in Edinburgh in 1827) was from NZ or from Norfolk Island is unclear (Mills, 22/2/09 entry: *Cordyline baueri*).

Several naval English gentlemen also on the London Horticultural Society's committee came to New Zealand, collected and took plants back for the Society's gardens at Chiswick, London (Adam (1), 2013), perhaps stopping in Australian ports en route for supplies and exchanges. Examples are Thomas Laslett (1820s) and a Mr. Gowen who liked **conifers** (1830s)(ibid, 2013).

Botanist Allan Cunningham visited New Zealand (from Sydney) in 1826 (Gilbert (1), 170) and 1838. He collected extensively in Australia and New Zealand (George, 2009, 339). His brother Richard followed (from Sydney) in 1833-4, at last finding the kaka beak / glory pea (*Clianthus puniceus*) in the wild, more than 50 years after Banks had discovered the cultivated specimen (Fisher, 1980, 240). This plant only survives today thanks to cultivation by gardeners. It is extinct in the wild. He found the tiny ground-cover *Fuchsia procumbens*, so unlike the rest of its genus, with up-turned flowers and no petals. Cunningham also found koromiko, *Hebe* (syn. *Veronica*) *speciosa* with purple flowers and *H.salicifolia* (koromiko / willow-leaved hebe) (ibid, 241)(the latter again found earlier by Banks and drawn by Parkinson (Morrell, 1958, 112 illus.).

The Macleay family at Elizabeth Bay regularly received plants and seeds from Norfolk Island, New Zealand and Tahiti between 1835 and 1853 (Clough, 459). Or earlier: Austrian Baron Charles von Hugel, sniffy at the best of times, visiting in 1834 was 'impressed by... some plants from New Zealand...' (Gilbert, 2000, 14). Georgiana Lowe noted in 1842-3: 'Mr Macleay has an immense collection of plants from New Zealand' (ibid, 2000, 16-17). In 1836 he received New Zealand spinach (Tetragonia expansa (now T.tetragonoides) introduced into England by Sir Joseph Banks, 1771), Coprosma villosa (syn. C.pilosa/bauera, now C.lucida) and Phormium tenax (ibid, 2000, 54), in 8/1837 he received Edwardsia (now Sophora) sp. from South America and New Zealand, more seed from New Zealand and in 1839 John Carne Bidwill sent New Zealand material, including seeds of daisy shrubs, NZ kauri, Dracaena (probably Cordyline), Phormium, Leptospermum, Pittosporum, Dracophyllum and a 'gigantic' grass (ibid, 2000, 45, 54-5, 63, 65). Sydney's first nurseryman Thomas Shepherd (Darling Nursery, Chippendale, 1827+) (and the Botanic Gardens, who in turn passed on plants) got stock from settlers such as Macleay and William Macarthur, perhaps including New Zealand plants.

What Northern Hemisphere gardeners and botanists called 'shrubby veronicas' (Veronica spp.) were first introduced into England with V. (now Hebe) elliptica in 1776 from the Falklands. Next were New Zealand's V.(H.) diosmifolia and V.(H.) speciosa (c/o Richard Cunningham) in 1835. So popular and widespread did 'Southern veronicas' become that it took from 1921 until 1985 for the New Zealanders to persuade international colleagues to accept a new genus Hebe as distinct and separate from Northern Hemisphere's Veronica. 1985 saw the Hebe Society established in London. England and France (and Australia?) have more hybrids and cultivars than species: in New Zealand it is the reverse. 80 of the world's 100 species are New Zealand endemics. The others range from SE Australia, Papua to South America. Hybrid cultivars such as H. 'Andersonii' (H. speciosa (ngapuka) x H. salicifolia (koromiko/willow-leaved hebe) crossed pre 1849 by Isaac Anderson-Henry near Edinburgh), H. 'Carnea' (from an unknown garden in New Zealand, described in 1881), H x franciscana 'Blue Gem' (pre 1869, by Mr Warren, of Salisbury, UK) and 'Inspiration' (1950s, from Duncan & Davies Nursery, New Plymouth – my alma mater) continue to be used in Australian gardens (Chalk, 1988, 1, 9).

English naturalist and entrepreneur John Carne Bidwill visited in 1839 and 1840 and became the pioneer botanist of its high country, visiting the Bay of Islands, Lake Taupo and Rotorua. He collected seed, live plants and herbarium specimens of *Hebe, Forstera, Brachyglottis*, *Dracophyllum* and *Lepidothamnus* a dwarf conifer. After this, NZ alpines started to be cultivated overseas. In 1845 he visited Nelson's mountains at the top of the South Island, collecting alpines (George, 2009, 294).

Bidwill no doubt distributed booty among Sydney friends and patrons like William Macarthur. In 1847 Bidwill was appointed (first) Director of the *Sydney Botanic Gardens*, and successfully

established some plants collected in New Zealand. His successor Charles Moore (1848-96) collected plants in New Zealand, visiting Auckland in the early 1850s. A Queensland kauri in the Auckland Domain potentially dates from then via an exchange linked to that visit (Adam (1), 2013; Metcalf, 1993, 243). Plants were exchanged with Auckland government officials, including several Norfolk Island pines collected on that 1850 Pacific tour (Adam, 2009, 226). One can't help wonder what New Zealand species Moore took back to Sydney with him!

Between 1840 and 1841 Ernst Diffenbach climbed Mt.Taranaki (then Mt.Egmont), and Sir James Clark Ross, with English botanist Joseph Hooker, explored New Zealand's subantarctic islands making extensive collections. Hooker was effusive in praise for their flora, but despite their dramatic forms and colours, these mega-herbs are difficult and rarely cultivated (ibid, 1993, 243).

Joseph Hooker arrived in the Bay of Islands in 1841 and met William Colenso, a Cornish missionary printer in Paihia from 1834. Colenso filled his leisure studying history, folklore, languages and natural history (a new enthusiasm after meeting Charles Darwin in 1835 and Allan Cunningham in 1838)(ibid, 1993, 243). Colenso was intimate friends with British Resident, James Busby at Waitangi (near Paihia). Cunningham trained him in botany and collecting specimens (ibid, 2011, 354) Colenso travelled the North Island collecting plants and information over 65 years (ibid, 1993, 243). Lady Jane Franklin gave him a microscope after an 1841 visit, inviting him to write botany for *The Tasmanian Journal of Natural Science* (ibid, 2011, 354) – four papers of Colenso's were published there (St.George, 2012, 94). One wonders if its Tasmanian or NSW readers had New Zealand plants in cultivation?

Philip Parker King in Sydney encouraged Colenso to correspond with Hooker's father, Sir William at Kew, who he sent seed and specimens, among others (St.George, 2012, 93; ibid, 2011, 356; ibid, 1993, 243). After 1841 he corresponded with Joseph Hooker over 50 years, providing much field information and seed funding for Hooker's 1864-7 NZ flora (see below)(ibid, 2011, 367). He also sent plants: one example: 24/11/1851 letter AC – JH: 'I sent both you and Dr. Harvey a lot of plants in February last by the 'Lord Wm.Bentinck', and I also wrote Dr.Joseph a long letter in July; all of which I hope safely reached you...' (ibid, 2012, 309).

Colenso guided Hooker around, where he noted *Coprosma*, tree ferns (*Cyathea*), NZ lowland flax (*Phormium tenax*) and a forest of tall kauri trees (*Agathis australis*), as seen by Darwin. Hooker sent a box of nearly 250 herbarium specimens from Tasmania and New Zealand on to England. Lady Jane Franklin reported that this collection sent from Hobart was lost at sea.

Hooker would go on to publish a multi-volume *Flora Antarctica*, including Tasmania and New Zealand (from 1844-7), its first. He would be invited by the NZ Government (c/o George Grey) in 1862 to compile another NZ Flora from 1864: *The Handbook of New Zealand Flora*. The intense botanical activity in New Zealand during the decade since the publication of *Flora Novae-Zealandiae* justified a general – and portable – manual for both professional and amateur botanists. His *Handbook of the New Zealand Flora* published 1864-7 did this and was the benchmark until T.F.Cheeseman's *Manual of the New Zealand Flora* in 1906. It followed the style recommended by Sir William for a series of floras of British colonies. Kew was actively advising the British government on improvements in colonial agriculture and horticulture –

identifying indigenous plants of commercial value and introducing new crops. These were meant to be cheap Octavo volumes, without expensive illustration plates, 'scientific yet intelligible to any man of ordinary intelligence' (Desmond, 1999, 216). Some notable plants discovered by Colenso include the giant buttercup (Ranunculus insignis), NZ edelweiss (Leucogenes leontopodium) and a Spaniard (Aciphylla colensoi)(ibid, 1993, 244).

Dr Andrew Sinclair first arrived in New Zealand in 1841 and accompanied Colenso and Hooker on North Island expeditions. On his second visit he botanised extensively in the North Island, later visiting Nelson where he made important collections of alpine plants. From there he went south to Canterbury to join scientist Julius von Haast. While exploring Canterbury's Rangitata River in 1861 with Haast, Sinclair was drowned. His discoveries are recollected in species of vegetable sheep (*Haastia*), mountain daisy (*Celmisia*) and native calceolaria (*Jovellana sinclairii*)(ibid, 1993, 244). During his term of office as colonial secretary (1844-56) he spent much spare time collecting botanical specimens for Kew. After retirement he visited Scotland and Europe, where he discussed a wide range of scientific matters with Darwin, Thomas Huxley and Richard Owen. He returned to New Zealand in late 1858 to collect material for J. D. Hooker's *Handbook of the New Zealand flora* (1864–67)(Molloy, 2012).

From 1847-51 HMS *Acheron* was surveying New Zealand's coastline, particularly the west and south. On board was surgeon-naturalist Dr Lyall, who collected plants around the fiords and Foveaux Strait. He was the first foreigner to explore Stewart Island. He discovered the stunning mountain lily – in fact a giant buttercup, (*Ranunculus lyallii*)(ibid, 1993, 244).

Sir David Monro (an ancestor of my mother's) from the early 1840s collected extensively in Marlborough and Nelson's mountain ranges. Discoveries included the Marlborough rock daisy (*Pachystegia insignis*), silver-crinkle-leafed groundsel (*Brachyglottis (syn. Senecio) monroi*), daisy (*Helichrysum coralloides*) and mountain daisy (*Celmisia monroi*) (ibid, 1993, 244).

W.T.L.Travers arrived in Nelson in 1849, making excursions into Nelson and Marlborough back country, being the first European to cross the Wairau Gorge and Spenser Mountains. He explored parts of Canterbury's Banks Peninsula (two defunct volcanoes), the Canterbury Plains and upper Buller River valley. His name graces a daisy, forget-me-not and several plants. His son Henry visited the Chatham Islands in 1863 and 1871, discovering a number of new plants, including *Geranium traversii*. Later father and son trekked Marlborough and Canterbury back country and the North Island's Tararua Ranges (ibid, 1993, 245).

Dr Julius (later Sir Julius von) Haast arrived in Auckland in 1858. After exploring the North Island's interior with Dr Hochstetter, he carried on to the western Nelson province and Canterbury, where he was appointed Provincial Geologist in 1861 and from then until 1870 he explored Canterbury and Westland extensively, as surveyor and geologist, fitting in much botanising, discovering many new alpines. An example of a plant bearing his name is scree buttercup (*Ranunculus haastii*)(ibid, 1993, 245).

In the 1860s the Otago region's botany came under greater scrutiny with a number of notable workers active. John Buchanan arrived prior to 1860 but settled in Dunedin, making a study of native vegetation. In 1862 he teamed up with (later Sir) James Hector, accepting the position of

draughtsman and botanist to the Geological Survey of Otago. Over the next 3 years they made several journeys in that region, new discoveries including veronicas (*Hebe buchananii* and *H.hectorii*. Buchanan became known for work on native grasses. Hector went on to become Director of the Geological Survey for the country exploring many areas. He is best known for setting up Wellington's Dominion Museum and Observatory. He ought to be better known for his leading role in the 1869 establishment of *Wellington Botanic Garden* and his private garden in Lower Hutt, which evolved to become the *Percy Reserve* (ibid, 1993, 245). Where I used to do Scottish Country dancing on summer nights, and spent many a stroll, admiring labelled plants.

Hobart's Royal Society garden sent 50 papers of indigenous seeds to Mr. W. Johnston, in New Zealand, in 1863, 12 varieties of conifer seeds in 1867 and 180 packets to Col. Gore Brown in 1868 (Sheridan (3) 20).

In 1879 a box of plants was received at Dunedin Botanic Gardens from Mr. Bernays, Trustee of the *Queensland (Brisbane) Botanic Gardens* (and heavily involved in the Queensland Acclimatisation Society) and another from Guilfoyle in Melbourne's (Dunlop, 2000, 50). Active donations were made to these gardens from amateur collectors across the South Island. A keen interest in cultivating native plants existed, and active seed exchanges with Melbourne Botanic Gardens continued through the 1890s (ibid, 2000, 64).

Dr. Leonard Cockayne was one of New Zealand's greatest plant collectors. In 1892 he purchased a property in sand-dunes near New Brighton and established an experimental garden, *Tarata* devoted to botanical purposes. Here he annually sowed some 2,000 species of exotic plants obtained from botanic gardens around the world; he sent local plants in exchange (Thompson, 2012). From 1897 until the late 1920s he made many expeditions around the country and offshore islands. He was strong on studying plants in their habitats and under cultivation. He was the pioneer ecological botanist and an early writer on New Zealand plants (and cultivation). Later Cockayne made an intense study of hybrids and was responsible for establishing Wellington's Otari Native Plant Museum (ibid, 245). Examples of his writing are *New Zealand Plants and their Story* (1910); *The Cultivation of New Zealand Plants* (1921) and, with E. Phillips Turner, *Trees of New Zealand* (1928/39/50).

Botanic Gardens

Auckland was selected as New Zealand's permanent new capital in 1840 and by May 1843 its merchant class had formed a public Agricultural and Horticultural Society. The same pattern repeated in all other organised settlements, such as Nelson and Wellington, where public gardens were initially attached to these institutions in the first decades ... Like Sydney, Auckland had two public gardens. One surrounded the state house of Governor Hobson (the Society's energetic patron) and the other in the nearby *Government Domain*, functioned at its centre as a public *Botanic Garden* from the mid-1850s. It functioned partly as an acclimatising institution after 1861... A private acclimatisation society was established in this public park in 1867 (Adam (3).

The Wellington Horticultural and Botanical Society was founded in 1842 and in its first years received plants from *Sydney Botanic Garden* and a British nursery. New Plymouth did likewise

in 1842, followed by Auckland and Nelson in 1843, the latter with its own garden (Raine, in Bradbury, 1995, 71).

Launceston's Horticultural Society formed in 1838. By 1845 an advertisement featured in the Launceston Advertiser, noting (inter alia) that the Society's Gardens (now City Park) included 'Amongst products of the Australian Colonies...New Zealand has the following: - Clianthus, pioralum (?), veronica, podocarpus (Sheridan (2) 22). By 1849 the Society requested additional land ...'(ibid, 4).

The Otago Horticultural Society was formed in 1851 yet faltered. Revived in 1863 as the Horticultural Society of Otago, it aimed (as many did) 'to collect and diffuse knowledge on horticultural subjects with a view to the improvement of cultivation and the development of the resources of the Province by holding Exhibitions; by holding monthly meetings at which Essays may be read and discussed; and by affording opportunities for the exhibition of useful, new, rare or interesting plants, fruits, flowers and other things connected...'(Dunlop, 2000, 23).

The North Canterbury (elsewhere called the Canterbury Horticultural and) Acclimatisation Society was formed in 1864 (Christchurch City Council, 1963, 23, 41) and started planting the *Government Domain*. Among plants donated by members were *Araucaria excelsa* and peppermint gums (*Eucalyptus amygdalina*)(ibid, 1963, 42). From 1861 Dr Julius Haast had returned from Mt. Cook expeditions to Christchurch. By exchanges he obtained a wide variety of seeds from Hooker at the *Royal Botanic Gardens Kew* (Tritenbach, 1987, 104) and with von Mueller in Melbourne (see **Section A**). Christchurch Botanic Garden today sports enormous eucalypt specimens, some from the 1860s, some later. It also retains an active exchange of seed with botanic gardens worldwide. An average of a thousand packets of New Zealand plant seeds are dispatched annually and a similar number received in exchange (ibid, 1963, 43). In 2007 through the *Index Seminum* (seed catalogue) the gardens exchanges seed lists with 200 different institutions worldwide (Christchurch City Council, 2007, 13).

In 1867 John Armstrong was appointed head gardener to the *Domain Gardens* – today's *Christchurch Botanic Gardens*. He collected seeds, plants from various parts of New Zealand and exchanged with collectors around the world (Fleming, 2010, 2). It is estimated he introduced and acclimatised over 4000 different species. His son Joseph worked in the Domain assisting his father over 16 years. He collected many plants around the country including Canterbury's mountain regions, some used for exchange with collectors worldwide (Christchurch City Council, 1963, 45). The original New Zealand plant section was established about 1875 (ibid, 1963, 106) by the Armstrongs (ibid, 2007, 19). The Australian section (1927+) is marked by a row of tall eucalypts and a representative selection of Australian plants is (was) grown (ibid, 1963, 180).

Oamaru's Public Gardens were reserved in 1865 and planted in the 1870s 'with exotic trees'. From 1879 the Waitaki Acclimatisation Society leased its western end for raising plants, birds and fish. In 1881 more trees were planted (Tritenbach, 1987, 123-4). Nelson's Acclimatisation Society were planting rare and exotic trees in the grounds in 1866, 1888 and 1893 (Norfolk Island pines from Australia)(ibid, 97-8). Auckland's Domain had trees such as eucalypts planted in it by about 1850 (ibid, 18).

Von Mueller saw one role of the Melbourne Botanic Gardens as 'desirable for...experimental introduction of foreign plants... (Pascoe, 92-3). He also advised on garden and park design and sent vast numbers of plants state-wide to such ends (ibid, 93). An example: he influenced the layout of George Verdon's *Alton* at Mount Macedon, an itself-influential hill station garden (McConville, 8) and one rich in New Zealand plants – see **Section H**.

Acting Surveyor-General Clement Hodgkinson had some influence on almost every Crown Reserve in Victoria between 1857-74, through survey, grants, regulation, landscaping and encouragement (Pascoe, 65-6).

Guilfoyle advised on plans for and sent plants to a number of Victoria's regional botanic gardens and private gardens. Examples include: *Renny Hill*, Camperdown (1867); *Warrnambool Botanic Garden* (1877+); *Koroit Botanic Garden* (1879-90); *Camperdown Botanic Garden* (1885); *Trawalla*, Beaufort (post 1890); *Mooleric* and *Turkeith*, Birregurra (1903-12); *Dalvui*, Terang (1907-8). An analysis of the origins of plants commonly used by Guilfoyle in 'private jobs' in Victoria's western District, as well as commonly seen in Botanic Gardens and parks he had influence in, reflect these trends as well as a penchant for plants from South Africa, the Mediterranean, South America, New Zealand and the South Pacific Islands (Read, 2013).

Charles Moore Director of the *Sydney Botanic Gardens* sent plants out state-wide to public parks, schools, institional grounds (e.g. police stations, court houses, hospitals) and botanic gardens. Moore travelled to Paris' Exposition Universelle in 1867 where he met and travelled with Irish writer William Robinson, who'd been mentored in Dublin by Moore's elder brother, David (Gilbert (2), 416) gaining first-hand knowledge of Subtropical Gardening (Aitken, 2010, 117). Robinson spent most of that year in France, reporting through journals on that country's horticulture, including advances in ornamental plants. Moore was influential, both in his embellishing and laying out of the *Sydney Botanic Gardens* (beloved and admired by William Guilfoyle), his 1862+ Palm Grove there — outdoor palm cultivation being 'comparatively new' (ibid, 2010, 117, 119) and by distributing plants to public institutions across NSW, Victoria and Queensland. From 1848-96 Moore's successor, Joseph Henry Maiden (1896-1924) continued widespread distribution of plants, state-wide. Just in the year 1900 there were 339 consignments of plants sent to NSW schools, 74 to railway stations, 34 to court houses. A total of 37, 534 plants were distributed, including to churches, convents, post offices and hospitals (Jack, 2013, 2).

Albury Botanic Gardens, NSW (1877+) was donated trees from Moore, Guilfoyle and local identities (Lawrence, 2012, 39). It includes some New Zealand species (see appendix).

Castlemaine, Victoria's Council gardener Philip Doran received unusual and experimental plants from Charles Moore (Director, *Sydney Botanic Garden*), Ferdinand Von Mueller (Director, *Melbourne Botanic Garden*), William & Michael Guilfoyle (*Exotic Nursery*, Double Bay, Sydney) and Daniel Bunce (Director, *Geelong Botanic Garden*) from 1863.

A list of 101 species donated by von Mueller for Castlemaine's parks and gardens spanned a range from Europe, Nth.America, Australia, New Zealand, India, China and Japan. Ballarat nurseryman Thomas Lang's records (1856-67) note that Mueller supplied 8 consignments, including species from New Zealand and Northern California (Pascoe, 111).

Portland Botanic Gardens (1853+) retains a *Cordyline australis* listed as the largest specimen in Victoria (Pascoe, 243), also an avenue of the same cabbage tree (VHR).

Geelong Botanic Gardens' first printed catalogue in 1860 under (1857+) Director, Daniel Bunce listed 2325 species in 1858 (& 4000 in 1859). His conservatory included ferns – a collection amplified by his successor Raddenbury's huge fernery. Bunce's 1860 catalogue included renga renga lilies, Arthropodium cirrhatum, Acaena sp. (which could be from New Zealand or Australia), pohutukawa /NZ Christmas tree, Metrosideros tomentosa (M.excelsa) kaka beak (Clianthus puniceus), shining karamu /mirror bush (Coprosma lucida (or taupata, C.repens)), harakeke/lowland flax (Phormium tenax), karaka /NZ laurel (Corynocarpus laevigatus), whau/cork tree (Entelea arborescens), veronicas, Veronica (Hebe) speciosa (Jones, supp. 1988). An 1870 wood engraving of the gardens shows very clearly a Cordyline australis (Pascoe, 88 adj.). Its significant trees today include a karaka, Corynocarpus laevigatus (Pascoe, 241).



Above) Arthropodium cirrhatum, renga renga / Cape Reinga lily (Curtis' Botanical Magazine)

Colac Botanic Gardens (1868+)'s significant trees include a kohuhu, *Pittosporum tenuifolium* 'Eila Keightley' (Pascoe, 241).

Wood engravings of *Ballarat Botanic Gardens* from 1881 and photographs show an avenue of cabbage trees, *Cordyline australis* down a major walk, and other specimens (Pascoe, 89, adj.). Williamstown Botanic Garden (1858+) designed by Edward La Trobe Bateman used an avenue of cabbage trees to define east-west symmetry (sadly replaced with Washingtonia robusta palms in 1910-15 (Pascoe, 129; FBBG, 2012, 2, 9, 21).

Melbourne Botanic Gardens accumulated numerous and some unusual New Zealand plants under directors Von Mueller (1853+) and, after 1873, William Guilfoyle. Mueller for decades kept up an active transmission and exchange of seed and plants worldwide, as well as within Australia's colonies. On 19/11/1867 Dunedin's Otago Witness noted the excitement of Botanic Garden's (New Zealand's first, from 1863 – on its second site: the first site was reserved in 1846

and is today part of Otago University's grounds)(Tritenbach, 1987, 126) curator Joseph Hooper at receiving a case of plants from Glasgow and 24 other plants (*pines, cypresses, 34 Cape bulb varieties, seeds of an equal number, varieties of garden flower plants*) from Dr. Mueller of Melbourne Botanic Gardens.

With New Zealand plants in top demand throughout the world, curators of overseas collections were more than happy to exchange interesting species. Dunedin Botanic Garden's first gardener and curator, Alexander Begg's report of 1865 noted: *I have now succeeded in gathering together a very large collection of most useful and ornamental trees and shrubs from the sister Colonies and Home Country, in exchange for plants and seeds sent. I have now distributed upwards of thirty collections of native seeds, each containing upwards of seventy different varieties, to nearly all parts of the world...(Dawson, 2010, 211). David Tannock (1903-40) was perhaps Dunedin Botanic Gardens' finest and most productive Director. He liaised with botanic gardens around the world, exchanging seeds mostly, but also plants. He built its collection up, forming a named native plant collection by 1923, a native scree garden in 1936-7 and made strong efforts to ensure it was a botanic garden, not just a park (Dunlop, 2000, 102, 107). International seed exchange continues: the Index Seminum (annual seed list) in 1988 went to 170 organisations, 160 outside New Zealand, in 40 countries. In return some 100 overseas gardens send their seed exchange lists and requests for seeds (ibid, 2000, 221).*

Auckland's Acclimatisation Society was granted five acres of that city's Domain in 1867. It started a nursery, built glasshouses and developed grounds for display and distribution of field crops, fruit and ornamental trees, aviaries and a fish hatchery. From the following year it developed the old Government nursery into a pleasure ground. Exotic trees planted in the Domain include Queensland kauri, Moreton Bay figs, eucalypts and Bunya Bunyas, though postdating 1869 (Tritenbach, 1987, 19).

Adelaide Botanic Garden (1855+)'s 1857 superintendent George Francis' list of 'desiderata' of 'The Pine Tribe' (conifers) to von Mueller included NZ kauri, Agathis australis (ibid, 39). An invoice of 4/1857 from John Bailey's Hackney Nursery (which Swinbourne (2006, 10) notes was sole agent in South Australia for William Macarthur's Camden Park nursery, NSW) Adelaide included Corynocarpus laevigatus, karaka / NZ laurel (Aitken, 2006, 38). NZ plants weren't cheap: buying a single plant of koromiko (Hebe salicifolia, then Veronica lindleyana) in 1862 was a major investment for the young garden, at 7s 6d (Aitken, 2006, 36).



Hebe salicifolia, Edwards Botanical Register, 1846

An illustration of flowering Pampas grass (*Cortaderia selloana*) in an edition of Adelaide's *Advertiser* that year showed the huge popularity of such dramatic Southern hemisphere 'large exotic grasses' in Australia and Europe (ibid, 2006, 54).

It's likely that NZ species *C.toe toe* and *C.richardii* were grown here then too, being similarly theatrical. Sadly since they've gone feral and are now found on noxious and environmental weed lists. That same year saw the gardens' Director George Francis influential in establishing the Acclimatisation Society of South Australia, active importers of plants and animals (ibid, 2006, 29, 58). Pulleine's 1934 first survey of exotic/adapted plants in South Australia included (under 'hedges' New Zealand mirror bush (*Coprosma repens*)(Pulleine, quoted in Jones, 1997, 36).

Under Director Richard Schomburgk (1865+) the gardens exchanged plants with New Zealand – less so with other botanic gardens than with private collectors, nurserymen, professional people and an Acclimatisation Society. By 1873 plants could be sent by steamer in the monthly mail service: 20 Wardian cases of plants were sent from ABG that year, including to New Zealand ports / recipients. While steam costed twice that of sail passage, there was a substantial reduction in losses, which at times had been 2/3 (Payne, 2007, 114, 154).

An 1870 photograph of Schomburgk's replanted northern bank of First Creek with bold-foliaged plants to form a 'tropical group' sports a *Cordyline australis*.

Adelaide Botanic Garden's NZ Section dates from 1948-80. Then director Noel Lothian studied in New Zealand (on a year's exchange in 1936-7, discovering its rich flora), lived in Christchurch (establishing Lincoln College's certificate in Horticulture in 1940) and his first wife was a New Zealander (Whitehill, 4/2013; Aitken, 2006, 154, 156).

In Melbourne, from 1873 William Guilfoyle rearranged Mueller's stiff scientific layout in favour of more flowing, picturesque strolling gardens – pitching it at recreation and education equally. He also favoured New Zealand plants, touring that country in 1908, leaving Auckland by train, glorying in the riot of colour: 'gorgeous crimson-flowered rata', white blossoms, scarlet berries and golden flowers 'all mingled in picturesque confusion'. Above this 'jungle' towered gigantic trees, 'fast becoming scarce' due to timber-getters. The volcanic plateau around Rotorua he saw 'charming views of broad fertile valleys studded with robust Cordylines, or cabbage trees'. Paul Fox wrote evocatively of Guilfoyle's recreation of the frontier of empire in the Melbourne Botanic Gardens, with beds devoted to the flora of continents and countries: South Africa, New Zealand (ibid, 141) and of course its great urban 'jungle' fern gully.

Chris Betteridge's lists of plants grown in Federation era (1880-1920) NSW gardens contains many New Zealanders. Under conifers: kauri (*Agathis australis*), rimu (*Dacrydium cupressinum*) and totara (*Podocarpus totara*). Under climbers (more of a scrambler in fact), *Fuschia procumbens*. Under ferns: mother spleenwort/hen-and-chicken fern (*Asplenium bulbiferum*), wheki (*Dicksonia squarrosa*) and turawera (*Pteris tremula*)(also native to Australia). Palms included the nikau (*Rhopalostylis sapida*). Flower seeds included kaka beak / glory pea (*Clianthus puniceus*). Trees and shrubs included: titoki / NZ ash (*Alectryon excelsus*), makomako / wine berry (*Aristotelia serrata*), kaka beak (again), taupata / mirror bush (*Coprosma repens* 'Picturata' and 'Variegata', *C.lucida*, ti kouka / cabbage tree (*Cordyline australis*), ti / mountain

cabbage tree (*C.indivisa*) and *C.stricta*, which is native to both Australia and New Zealand. Others grown were karaka / NZ laurel (*Corynocarpus laevigatus*), *Hebe x andersonii*, *H.diosmifolia*, *H.hulkeana*, *H.parviflora*, ngapuka (*H.speciosa* and 'Imperialis'), *Meryta* species (which are NZ, Australia and New Caledonian in origin, e.g. puka, *M.sinclairii*), pohutukawa (*Metrosideros excelsa*), mountain flax (*Phormium colensoi*), harakeke / lowland flax (*P.tenax* and *P.t.* 'Variegatum'), *Pisonia* species (which hail from tropical America but one of which is New Zealand's parapara / bird-catcher tree, *P.brunoniana*), karo (*Pittosporum crassifolium*), tarata / lemonwood (*P. eugenioides* & 'Variegatum', kohuhu (*P.tenuifolium*)('...highly ornamental and suitable for single specimens in the shrubbery...oranmental evergreen hedges...' (*Searl's Catalogue*, 1901), kowhai (*Sophora microphylla* and *S.tetraptera*) and *Veronica* (now *Hebe*) species (Betteridge, 1986).

You could argue that no one had more influence than *Yates Seeds*, through its *Garden Guides*. Arthur Yates set up the Southern Hemisphere branch of his family's Manchester (UK) business in Auckland in 1883 and then in Sydney in 1887 (Polya, 1981, 98). Focussing on seeds and renowned for the *Yates Garden Guides* and *Annual* (since the mid-1890s) it remains strong in both Australia and New Zealand. Early editions focused strongly on fruit and vegetables, with some information on flowers at the rear. After the 1930s the flower section expanded, and trees and shrubs gained a chapter, which continues to increase in size. The 125th anniversary 43rd edition (2011) has some 40 pages at the front on garden design, designer's tips and water-saving.

New Zealand plants form a thread throughout, particularly in trees and shrubs chapters. Two examples: the 1976 YGG includes NZ plants in lists of: Shrubs for damp or shaded spots (*Phormium tenax*); Dry situations (*Dodonaea; Leptospermum; Pittosporum*; veronicas (*Hebe*); Seasonal flowering (kowhais, tea tree and veronicas in spring; tea tree, lace bark in summer; veronicas in autumn) and Shrubs for coastal planting (*Clianthus, Coprosma, Dodonaea, Griselinia, Leptospermum, Olearia, Pittosporum*, pohutukawa and veronicas); Ornamental hedges (*Coprosma, Myoporum, Olearia, Pittosporum*)(YGG, 1976, 291-2, 294-5).

The 2011 125th anniversary 34th edition (for Australia) uses *Cordyline* leaves as backdrop to the chapter heading 'Planning & Designing your Garden'. NZ plants are featured under perennials, vines and creepers (*Phormium*); trees and shrubs (*Coprosma, Hebe, Pittosporum*); Plants for special conditions: Seaside gardens (*Coprosma, Hebe, Leptospermum, Metrosideros, Pittosporum*); Gardens in Shade (*Arthropodium, Cyathea dealbata*); Fire-prone area ground covers (*Coprosma*); Boggy soil (*Carex*); Courtyards (*Cyathea dealbata*) and Designer plants (*Phormium*)(YGG, 2011, 1, 367, 384, 387, 389, 412, 414-17, 421, 424, 429, 448, 451). More detailed scrutiny of the prevalence or variability of supply of New Zealand seeds across the span of this business and these guides is beyond the resources of this paper.

Some recent Australian Botanic Gardens feature New Zealand plants. *Gisborne Botanic Gardens* in Victoria (1991+) specialises in them. It is sister city with NZ's Gisborne, which has a reciprocal collection of Australian plants there. Gisborne Victoria gets its plants from other botanic gardens and private gardens in nearby Mt.Macedon, such as *Alton*. It once belonged to G.R.Nicholas, head of Aspro pharmaceutical company, who imported many plants from New Zealand in the 1930s, plus seed from New Zealand (Lockwood et al, 2001, 77).

The Tasmanian Arboretum at Eugenana south of Devonport (1984+) has a large 'Gondwanaland' collection with many New Zealand species, alongside Chile, New Caledonia and South Africa.

F) - Nursery links - exports from Australia, imports in exchange...

As noted earlier, commercial nurseries, public botanic gardens and individual collectors in Sydney, Hobart and later Melbourne all sent plants to New Zealand. Australian suppliers, in turn, obtained plants and hybrids from Asia, India, England and elsewhere - including New Zealand.

Government (or forest) nurseries imported, trialled and distributed timber and ornamental ones. Victoria's *State Nursery* at Mt. Macedon (1871+) was one. By 1872 it had 80 different exotic trees, trial plots and a nursery. In 1883 an experimental plot of 50 acres stocked imported forest trees. It and others (Creswick and Broadford) were state-run between 1900 and 1915. Between them they raised over ½ million plants in 1911-12 and by 1914 over 3 million (McConville, 8).

Private nurseries perhaps played the largest part in importing plants. *Loddiges'* London nursery catalogues of the 1820 and 1826 show popularisation of palms, dracaenas and ferns. This trend, along with the rising interest in **conifers**, was echoed later in Australia (Polya, 1981, 25).

Polya (ibid, p.17) notes Australian nurserymen had been exporting well before the 1890s. Fruit trees were often shipped to New Zealand from Hobart. In 1849 a notice in NZ newspaper *Southern Cross* (7/8/1849, p.1) advertised Hobart fruit trees for sale. NSW nurserymen Francis Ferguson, Anderson and Hall, Law & Somner & Co., John Baptist & Son and James Purchase and their Tasmanian colleagues E.Lipscombe were all involved. Carl Nobelius in Victoria was exporting a 400,000 tree stock to South Africa and to India, Japan, Europe and South America. New Zealand's nursery trade was slower to establish, with many individuals 'receiving plants'.

That is not to say exchanges were not common from individuals or nurseries in New Zealand. Polya notes that although Australian nurserymen operating pre-1860 were able to get stock from wealthy landowners who imported their (own) plants, they may've had to deal mainly in fruit trees and vegetables, farm seeds and shade or shelter trees for farms. Fencing wire was not used widely pre-1860s, thus hedge plant supply was a large chunk of the trade – 8-10,500 plants per mile were needed for the 'ditch, bank and hedge' or ha-ha system.

A selection of plants listed in the Melbourne Botanic Garden from 1845-74 and known to be available in the nursery trade includes *Clianthus puniceus*, *Cordyline australis*, *Dacrydium cupressinum*, *Pittosporum eugenioides* and *P.tenuifolium*. Additional plants listed 1874-1900 include *Metrosideros excelsa*, *Phormium tenax*, *P.t.* 'Variegatum', *Pittosporum crassifolium*, *P.eugenioides* (& for hedging), *P.e.* 'Variegatum', and *P.tenuifolium* (RBGMHS, 1986)

Post-gold rush urbanisation, pressure for an eight-hour working day and shorter week (Saturday off) led to success and more leisure, bringing more demand on nurseries for plants. A boom in nursery industry in the 1870s-80s was one result. Railway building led to a suburban housing boom and with these came gardens, needing stocking for 'display' (Polya, 1981, 25). New Zealand, along with Australia and the South Sea / Pacific Islands, had all in plenty. T.W. Shepherd's 1851 Sydney catalogue sports a page of ferns, some perhaps kiwi ones.

New Zealand's first public parks, *One Tree Hill Domain* and *Western Park* in Auckland and *Pukekura Park* in New Plymouth followed that country's first elected parliament in 1854, being gazetted by 1876 – ceremonial opening planting trees included a Norfolk Island pine (Tritenbach, 1987, 56). Competitions for their design were run in the 1870s and 1888. Plants came locally or direct from Australian or Californian nurseries (Adam, in Bradbury, 1995, 110).

Raine (in Bradbury, 1995) notes that New Zealand nurserymen set up business very early on in town centres, some straight off the first ships. *The Pioneer Nurserymen of New Zealand* (Hale, Allan, 1955 AH & AW Reed, Wellington) recorded 22 nurseries in the colony to 1855 – which could be under-estimating. One, John Edgerly, in 1842 accompanied a large collection of New Zealand plants to the Royal Botanic Gardens, Kew, returning to Auckland in 1843 with six cases of *'good flowering shrubs'* in return from director, Sir William Hooker (Raine, in Bradbury, 1995, 74-75).

To take but one region: Canterbury supported a number of nurseries, some of whom are known today only by the existence (or mention) of catalogues. One major early one was William Wilson's, in business 1851-1877 – at its peak covering 18 acres and selling 2 million plants – in variety. He printed catalogues in 1852, '55, '59, '62, '63, '65, '73 & '77, not that many survive). Another Christchurch nurseryman was James Low, who was agent for (Francis Ferguson's) *Australasian Nurseries*, Camden, NSW. (See Nurseries section below).

Other examples across the country include Thomas Abbott, Papanui (1872); Thomas Allan, Dunedin (1863); William Hale, Nelson (1862); James Laird, Wanganui (1875); Montpellier nurseries, Auckland (1860; 1873); Charles Sontag, Otago (1871)(Challenger, 1979).

In the 1860s, growing colonial towns and wealth and security led to more New Zealand commercial nurseries catering to evolving gardening tastes. A greater variety of plants came, thanks to quicker, more frequent and more reliable transport (Beattie, pending (2013)).

Raine (in Bradbury, 1995, 100) notes that New Zealand nurseries from the 1870s had extensive lists of native species for sale: rare high-country alpines, ferns in profusion and colourful shrubs. George Matthews' *Moray Place* Dunedin nursery by the late Victorian era listed 27 species of *Celmisia* (mountain daisies), 74 ferns and 43 hebes. His catalogue's introduction noted that such choice collections were commonly exported to England and the Continent (ibid)(and Australia?). Dawson (2010, 120) adds he was an early collector of native plants, offering collections of New Zealand plant seeds to interested customers.

Joseph Hooker edited the influential magazine, *Curtis' Botanical Magazine*, from 1865-1910, following the footsteps of his father Sir William who (amongst others), had edited it before him. This magazine, founded in 1787, published brief accounts of plants, usually novelties from abroad, likely to interest professional and amateur gardeners (Desmond, 1999, 179). It featured gorgeous coloured lithographic illustrations, for example by the artist Walter H. Fitch.

A few examples of Australian importing of New Zealand plants follow.

C.F. Creswell & Sons' Hobart nursery started in the late 1850s, importing seed from America & Europe, raising seed under contract for the trade in other colonies (New Zealand?). Charles's seed list, in the 1876 Philadelphia Exhibition, comprised 'about 340 varieties of the chief trees and flowering shrubs indigenous to Australia, Tasmania and New Zealand...'.

James Dickinson's Hobart Nursery (1844+)'s 1845 catalogue is Australia's oldest-surviving (not counting Daniel Bunce's 1836 Denmark Hill lists and advertisements (Polya, 1981, 78).

Hobart's Royal Society's Gardens 1845-59 catalogue included a number of New Zealander trees/shrubs: Aralia (now Pseudopanax) crassifolia, rangiora (Brachyglottis repanda), tree broom (Carmichaelia australis), Charlwoodia (now Cordyline) australis, kaka beak / glory pea (Clianthus puniceus), Coprosma lucida, C.nitida and 'C. Sp. N.Z.', karaka (Corynocarpus laevigatus), kowhai (Edwardsia (now Sophora) microphylla), whau / cork tree (Entelea arborescens), Hymenanthera angustifolia, manuka / tea tree (Leptospermum scoparium), pohutukawa (Metrosideros tomentosus (now M.excelsa)), M. Saligna (?), Phormium tenax, tawhirikaro (Pittosporum cornifolium), Veronica (now Hebe) angustifolia, V. (H.) formosa, V. lindleyana (now H.salicifolia). Climbers included Polygonum sp. (NZ)(now Muehlenbeckia sp.) and their conifers included kauri (Dammara (now Agathis) australis), totara (Podocarpus totara), rimu (P.(now Dacrydium) cupressinum), miro (P. ferrugineus (now Prumnopitys ...a)), matai (P. spinulosus (now Prumnopitys taxifolia)). Herbaceous plants included Astelia alpina (likely A.nivicola) and wharawhara (A.banksii)(RSG, 1845-59). No doubt Society members expected and got progeny and seeds.

Denmark Hill nursery stocked 'New Zealand forget-me-not (presumably Myosotidium hortensia, the Chatham Island giant...), NZ flax, 'ditto spinage' (Tetragonia tetragonoides)(also native to Australia, known here as 'warragul greens'), five species of Senecio (which may have been NZ ones like S.(now Brachyglottis) greyi, S.monroi with their yellow daisies and grey felty leaves)(Bunce, 1994). Dickinson's 1845 catalogue included renga renga / Cape Reinga lily (Arthropodium cirrhatum), an orache/NZ spinach (Atriplex hortensis), kaka beak / glory pea (Clianthus puniceus), kowhai (Edwardsia (now Sophora) microphylla), native hibiscus (H. trionum, also native to Australia), Phormium tenax, and several Veronica (now Hebe)s: formosa, labiata and sp. – these could be herbaceous (European) or NZ species.

William Macarthur at *Camden Park* south-west of Sydney had a famous and large nursery, operating from (his garden) the 1820s and (his nursery) 1843 until the 1860s. Catalogues from 1843+ survive, and helpfully thanks to the work of the late Colin Mills are available online at www.hortuscamden.com - in more useful form with expanded information, luscious illustrations of plants from *Curtis' Botanical Magazine* (of the time) and other sources.

In Adelaide, NZ clematis / puawananga (*C.paniculata*), NZ karaka /laurel (*Corynocarpus laevigatus*), rimu / red pine (*Dacrydium cupressinum*), koromiko / willow-leaved veronica *Hebe salicifolia*), *Hebe sp.*, a 'weeping' kowhai (*Sophora microphylla*) and NZ harakeke / lowland flax (*Phormium tenax*) were all in John Bailey's *Hackney Nursery* catalogue in 1845 (Jones, Payne & Nottle, 1998, 85-6). Yorke Peninsula and Mid-North gardens from the 1850s-90s could have hedges of karamu / mirror plant (*Coprosma robusta*). Clare and Gilbert Valley cottage gardens in the same era might use taupata / mirror bush (*C.repens*)(ibid, 1998, 39, 41). Victorian gardens (1860s-90s) might use pittosporums for hedges (*P.eugenioides* and *P.tenuifolium* from

New Zealand)(ibid, 1998, 52, 57). Federation era gardens (1900s-20s) might include *Cordyline australis* or *Phormium tenax* (ibid, 1998, 62) while California Bungalow gardens (1910s-30s) might have hedges of taupata / mirror bush (Coprosma repens)(ibid, 1988, 72).

Michael Guilfoyle (William's father)'s *Exotic Nursery* in Sydney's Double Bay 1851 catalogue boasted they were: ... confident that their collection of ferns and of South Sea Island plants is unrivalled in Australia...New Zealand plants (apart from conifers, mentioned in Sections **B-D**) included: Clematis sp. (from NZ – likely puawananga (C.paniculata); karaka (Corynocarpus laevigata); ti kouka/cabbage tree (Dracaena (now Cordyline) australis); D. purpurea (probably C.australis 'Purpurea'); Edwardsia grandiflora (now Sophora tetraptera); E.(S.) microphylla (kowhai); pohutukawa /NZ xmas tree (Metrosideros tomentosa (now excelsa)); berry Rubus sp. (from NZ); Sambucus sp. (from NZ); koromiko / willow-leaved hebe (Veronica (now Hebe) salicifolia)(Guilfoyle, 1851; Pescott, 1974, 12).

A report in the NSW Gazetteer, 1866 noted of this nursery: what first catches the eye is the singularly fine collection of palms and ferns...(including) the nika(u) of New Zealand... (ibid, 1974, 9). The nursery's 1866 catalogue added to the species above with: Alectryon excelsum(s)(titoki / native ash); Aralia (now Pseudopanax) crassifolia(us)(horeka/lancewood); Aristotelia racemosa (makomako/wineberry); Clianthus puniceus (kaka beak / glory pea); Coprosma grandiflora (now C.australis)(kanono); shining karamu (C.lucida)/(C.repens, taupata); C. robusta (karamu); Griselinia littoralis (papauma / kapuka / coastal broadleaf) & G.lucida (puka / broadleaf); Melicope ternata (wharangi); Melicytus ramiflorus (mahoe/whiteywood); Metrosideros robusta (Northern rata); Piper (now Macropiper) excelsum (kawakawa / pepperberry); Pisonia grandis & P.sinclairii (now P.brunoniana)(parapara / birdcatcher/bird-lime tree); Pittosporum cornifolium (tawhirikaro); P.crassifolium (karo); P.lucidum; *P.nigrum* (probably *P.tenuifolium* (kohuhu)); *P.viridifolium*(?); *P.salicifiolium*(?); P.rubiginosum(?); P.obtusifolium(?); Rhabdothamnus solandra(i) (waiuatua / matata/NZ gloxinia); Vitex littoralis (now V.lucens)(puriri / NZ teak) and conifers rimu / red pine (Dacrydium cupressinum); alpine toa toa (Phyllocladus alpinus); kahikatea / white pine (Podocarpus (now Dacrycarpus) dacrydioides); miro / brown pine (D. (now Prumnopitys) ferruginea); matai / black pine (D.spicata (now Prumnopitys taxifolia)); the curious Thuja doniana (New Zealand)(now Libocedrus plumosa) supplejack (Ripogonum scandens); and bidibidi (Acaena sanguisorbae); renga regna/Cape Reinga lily (Arthropodium cirrhatum); nikau palm (Areca (now Rhopalostylis) sapida); ponga/silver tree fern (Cyathea dealbata); mamaku/black tree fern (C.medullaris); fern (Davallia nova zealandica); and wheki (Dicksonia squarrosa)(Guilfoyle, 1862).

William Hale's Nelson (NZ) nursery were ordering plants from Australian nurseries in the 1860s and 1870s, supplying many to Auckland's Domain Board who in turn supplied the Anglican Church with plants, such as for the Anglican and Wesleyan cemeteries there (Adam (2), 2013).

By 1860 Francis Ferguson & Son (Camden, NSW's *Australia/asia Nursery*) and by 1866 Sydney's John Baptist Nursery were advertising stock in New Zealand's *Lyttleton Times* (Polya, 1981, 85). Perhaps both sought New Zealand plants or seeds 'back'.

J. & J. Rule's nursery *Victoria Nursery* (Richmond, Melbourne) catalogue of 1855 lists NZ flax, *Clianthus puniceus* (kaka beak / glory pea), karaka trees, NZ kauri, *Dracaena* (now *Cordyline*) australis, *Edwardsia* (now *Sophora*) macrophylla, *Metrosideros tomentosa* (now *M.excelsa*), 3 'other' species of *Pittosporum* (which could be NZ species)(Rule, 1855). Their 1857 catalogue included five *Veronica* (now *Hebe*) species, *Dammara* (now *Agathis*) australis and four *Podocarpus species*, including *P.pungens*, 'the prickly' (likely *P.totara*), the majority likely from New Zealand (Polya, 1981, 4).

An 1857 invoice by former SA Colonial Botanist & Keeper of the Botanic Garden John Bailey supplying plants from his nursery to the *Adelaide Botanic Gardens*, included NZ laurel / karaka (*Corynocarpus laevigatus*)(Aitken, 2006, 38).

Nurserymen complained of competition from botanic gardens distributing plants: something helping Von Mueller to lose his job. His successor William Guilfoyle discontinued the practice after 1873 and the role was taken up by the *State Nursery*, Mt. Macedon (Pascoe, 110).

Numerous private nurseries established on Victoria's Mt. Macedon before and after the 1870s have contributed greatly to the diversity of flora in that region...Many New Zealand trees and shrubs were also established during this period in particular gardens, such as *Karori* (Moulds, 15).

The former John Smith & Sons Nursery in Riddell's Creek, Victoria was one of that state's earliest, involved in export (and presumably import) from c.1860 specialising in fruit trees and by the 1870s in conifers (VHR; Gilfedder, 20). These included New Zealand conifers: rimu / red pine (Dacrydium cupressiformis (cupressinum)); NZ kauri (Dammara (Agathis) australis); totara / mahogany pine (Podocarpus totara). Ornamental trees and shrubs included horoeka/lancewood (Aralia (Pseudopanax) crassifolia(us)); titoki / NZ ash (Alectryon excelsum(a)); kaka beak / glory pea; taupata / mirror bush); Dracaena (Cordyline) australis; large leaved kowhai (Edwardsia grandiflora (Sophora tetraptera)); papauma / kapuka / coastal broadleaf (Griselinia littoralis); wharangi (Melicope ternata); Northern rata (Metrosideros robusta); Phormium colensoi (now P.tenuifolium ssp.colensoi) varieties; harakeke / lowland flax (P.tenax and P.t. 'Variegata'); Pittosporum colensoi; P.crassifolium; P.nigrescens (probably P.tenuifolium); P.eugenioides; P. rigida & P.tenuifolia; and Veronica of sorts (Smith & Sons, 1873-4).

Smiths exported large numbers of tree ferns (presumably from Macedon) to St.Petersburg, Moscow, Vienna, Edinburgh and New York (ibid, 20). One wonders if New Zealand ferns bulked up consignments? It continued until 1945 and the core garden remains. Mature exotics include *Cordyline* (ibid, 20).

Adelaide's *Grove Hill Nursery* was established by Mr.C.Giles Sr. in 1846 in town and from 1862 sited near Magill on the outskirts. Its 1862 (first) catalogue included six pages of conifers, with NZ's *Dacrydium cupressinum* and *Podocarpus pungens* (?). Ornamental trees included shining karamu / mirror bush (*Coprosma lucida* / taupata/mirror bush (*C. repens*); *Clianthus puniceus* (kaka beak / glory pea)(...an admirable pillar plant, or for training against a wall); *Dracaena* (*Cordyline*) australis; *Edwardsia* (*Sophora*) macrophylla; *Pittosporum eugenioides*; *P. nigrescens* (*P. tenuifolium*); *P. sp. from New Zealand* ('suitable for hedges or for shelter');

several *Veronica* (*Hebe*)s: (x) andersoni(i); buxifolia; formosa; hulkeana (now *Heliohebe...*); longifolia (?); rosea; salicifolia; speciosa kermisina; V.sp. from New Zealand; harakeke / lowland flax (*Phormium tenax & P. t.* 'Variegata' (Giles & Pascoe, 1862).

Charles Wyatt's Geelong Frogmore Nursery's 1874 catalogue included conifers: Dacrydium cupressinum (rimu / red pine), D.excelsum (now Dacrycarpus dacrydioides)(kahikatea/white pine), NZ kauri, Podocarpus spicata (now Prumnopitys taxifolia)(matai / black pine) and P.totara (totara / mahogany pine); among trees: Alectryon excelsum (titoki/NZ ash); Aralia (now Pseudopanax) crassifolius (horoeka/lancewood); Coprosma latifolia (?), C. lucida / C.repens), taupata/mirror bush; Dracaena (Cordyline) australis; Edwardsia (Sophora) macrophylla; Melicope ternata (wharangi); Metrosideros tomentosa (excelsa); M.floribunda (?); M.robusta (Northern rata); flax; variegated flax and 'Colensoi variegata' flax 'extremely handsome, being flamed with deep golden coloured flames'; Pittosporum crassifolium (karo); P.eugenioides (tarata/lemonwood); variegated tarata; P.nigrescens (probably kohuhu (P.tenuifolium)('these are all very useful, being evergreen, handsome...rapid in growth, and compact...often planted for ornamental hedges, as well as single for the lawn or shrubbery'...); and several Veronica (Hebe)s: andersoni(i); buxifolia; celestial (?); elliptica; formosa; hulkei (now Parahebe hulkeana); hybrid... & speciosa (ngapuka); and palms included Areca (Rhopalostylis) sapida (nikau)(Wyatt, 1874).

Taylor & Sangster's nursery in Victoria's Mt. Macedon was early (1875) and influential, specialising (inter alia) in conifers. Its lost 1877 catalogue listed 200 fern species! It provided plants and design advice to parks and botanic gardens. William Taylor and William Sangster laid out many Mt.Macedon hill station gardens. Alfred Turner, trained here, was gardener at Alton for decades. The nursery continued into the 1930s. It (and many Macedon nurseries and gardens had Pittosporum hedges – whether NZ or Australian species is not known – likely P.eugenioides (tarata / lemonwood). Sangster was commissioned to redesign (1882-4) Frederick Sargood's 45 acre garden at Rippon Lea, (Gilfedder, 21; Aitken, 2010, 124) in Melbourne's Elsternwick: its sweeping driveway shrubberies alone contain many a New Zealand plant. The garden was described in contemporary articles: 'Rippon-Lea Elsternwick: The Grounds of the Hon. F.T. Sargood', Australasian, 25 December 1875, p.826; 'Rippon Lea', Leader, 1 December 1883, p.13; and Leader, 7 June 1884, p.13 (Aitken, pers.comm.).

Andrew Goldie was a landscape gardener in Auckland c1861. He later became a collector of natural history specimens, best known for his New Guinea travels. He also had a lively trade going with *John Baptist's nursery*, Surry Hills (and later Redfern) in Sydney (Mullins).

In 1877 Peter Veitch of London's *Veitch Nurseries* was traversing Queensland, NSW, Fiji and liaising with Sir William Macarthur of Camden Park over the prospect of new orchids from Papua New Guinea. Veitch was also off collecting ferns in New Zealand for the London market (Fox, 2004, 25, 27)

Carl Nobelius established the *Gembrook Nursery* near Emerald, Victoria in 1892. By the 1920s this had grown to be 650 acres and was said to be the largest in the Southern Hemisphere – influential in the planting out of various Victorian parks and botanic gardens and actively exporting to all colonies and New Zealand (VHR) and presumably importing also.

John Latham's Hobart nursery's c.1890 catalogue included: Alectryon excelsus, Aralia (now Pseudopanax) crassifolia (-us), Clianthus puniceus (& Alba), Coprosma baueriana (now C.repens) 'Variegata', C. latifolia, C. lucida and C. Picturata (C.repens 'Picturata'), Cordyline australis, C. indivisa and C. stricta, Corynocarpus laevigatus, Pittosporum crassifolium, eugenioides and P.e. 'Aurea Variegata' and 'Gracilis Argentea Variegata', P. nigrescens (tenuifolium) 'Variegata' (the latter two also listed under Hedge species), and many Veronica (Hebe)s: andersonii, buxifolia, 'Crème et Violets', cupressiformis, decussata, diosmaefolia, formosa, hulkerii (hulkeana), kermisina, lindleyi, lobelioides, parviflora, speciosa and 'Versicolor'.

It stands to reason that commercial nurseries often 'swapped' plants with their partner nurseries overseas – 'in kind' payments.

This continued into the twentieth century. Anderson & Co. Ltd., seed, bulb and plant merchants in Sydney's 1929 catalogue listed *Edwardsia* (now *Sophora*) *microphylla* and Veronicas – 'in variety' under 'Evergreen flowering Shrubs' and Podocarpus totara under conifers.

A 1937 catalogue of *Hazelwood Brothers Nursery*, Sydney is dominated by roses, but its 'General Trees & Shrubs' section includes a number of kiwi plants: *Clianthus puniceus*, *Coprosma baueriana* and 'Variegata', *C.kirkii, Dracaena* (now *Cordyline*) *australis, Edwardsia* (now *Sophora*) *microphylla*), *Hoheria populnea, Phormium tenax*, 'Purpurea' and 'Variegata', *Pittosporum crassifolium*, *P.eugenioides* & 'Variegata', *P.nigrescens* (now *P.tenuifolium*), *Veronica* (now *Hebe*) *andersonii*, 'Blue Gem', *gracilis, imperialis* and 'La Seduisante'. Its conifer section has *Dacrydium cupressinum* and *Libocedrus donniana* (now *L.plumosa*) – 'see special items' (Hazelwood Bros., 1937, various).

Dominant and enduring New Zealand nursery *Duncan & Davies* (1899+) was long famous for its mail order catalogues around New Zealand. It has also become internationally known for exporting plants particularly to Europe in the late 20th Century, including NZ natives. Dawson (2010, 182) notes that flax thriving on Scotland's west coast and in Japan, Britain's first hebes (that claim is debatable: Chalk (1988, 9) notes *H.speciosa* via Cunningham introduced into England in 1835) and griselinias in the Orkney Islands all originate from their early shipments. She notes this was by 1946 the largest nursery in the southern hemisphere.

An interest in cultivating New Zealand native plants developed somewhat earlier in New Zealand than the corresponding local interest in Australian plants, due in large measure to the influence of botanist Leonard Cockayne (1855-1934), and so New Zealand nurseries (such as Duncan & Davies and Nairn's) were well placed to export New Zealand plants. The trade in plants continued at all levels until quarantine restrictions at first made it difficult, later impossible (Adam, 2002, 441).

(CHECK – and DATES). Duncan & Davies catalogues, both undated and from 1930 and 1932 in the Clough Collection of the State Library of NSW (some 1100 items between c1890-1995) has many New Zealand native trees, shrubs, plants, ferns & seeds. Another item in this collection is

NATIVE SEEDS OF NEW ZEALAND, Christchurch, N.Z.

Catalogue (1936, n.d.) ((Mitchell file no. ML 225/93)).

Exhibitions & Conferences: showing off

Horticultural, Agricultural and Acclimatisation Societies existed from 1823 (Parramatta, NSW) and 1838 (Launceston) and around Australia. Many directly imported and exported plants, members eager to acquire and trade 'novelties': useful or ornamental. One example: in 1851, native Tasmanian plants were sent by Colonial Secretary, J.Milligan, from D'Entrecasteaux Channel to New Zealand, Norfolk Island and Tahiti (Frazer Simons, 1987, 5). Norfolk Island pines were propagated and exported by the Launceston Horticultural Society (1838+) in their hundreds to all points of the compass. New Zealand beach promenades country-wide sport this species. No doubt Australian plants were exchanged for plants from recipient countries back.

Inter- and intra-colonial and international exhibitions were a phenomenon world-wide from 1851's Great International Exhibition in London's Crystal Palace. This echoed in Australia's and New Zealand's colonies and provinces. Each varied in its composition and scope, but many featured New Zealand sections – boasting commercial, industrial and artistic products and manufactures. These included botanical art, plants and forest products like timbers, oils. Trans-Tasman exhibits were common – an example being the Victorian Mr. L Kitz & Sons company winning prizes for their wines at the Dunedin's NZ & South Seas Exhibition of 1889-90.

After the 1862 London International Exhibition's New Zealand Court, Dunedin's building that housed New Zealand's first Industrial Exhibition was built between 1864 and 1865, when it housed New Zealand Indian, Australian and some European exhibits (NZ Scrapbook, 1972, 47).

Dr. James Hector was appointed head of the new Geological Survey of New Zealand in 1864. One temporary duty was Commissioner for Dunedin's 1865 New Zealand Exhibition. He commissioned a series of scientific essays from authorities in conjunction with the exhibition. William Colenso wrote two: one on North Island botany; the other on the Maori. Notable gardener Alfred Ludlam of Lower Hutt (Wellington) wrote on the cultivation and acclimatization of trees and plants. That same year saw publication of Hooker's *Handbook of NZ Flora*, again paying tribute to Colenso as foremost botanical explorer, supplier of specimens and information (St.George, 2012, 383; Dunlop, 2002, 17).

Between 1867 and 1883 there were nine inter-colonial conferences (Australia & New Zealand) held in Melbourne or Sydney. In addition there were 1890 and 1891 Federal Conferences, leading up to Australian Federation in 1901. New Zealand attended four inter-colonial conferences, seeking improved trade and communications (Rice, 1996, 341).

The New Zealand section in Sydney's Inter-Colonial Exhibition of 1870 was in a large court in the 'Garden Palace's eastern transept, displaying its natural resources, primary products (e.g. native woods), manufacturing (e.g. timber work including cabinet-making and marquetry), self-conscious 'culture' (Proudfoot et al, 2000, 107).

G) – Hill Station Gardens

Blue Mountains and Southern Highlands (NSW), Mt. Macedon and the Dandenongs (Vic), Adelaide's Hills (SA), Mt. Wellington (Tas.) and others retain rich collections of kiwi plants.

Some gardens sport Maori or New Zealand names – *Karori* (Mt. Macedon), *Wairoa* (Stirling, SA) being two.

Alton in Mt. Macedon is rich in NZ species, particularly trees – many planted in the mid-1870s (Gilfedder, 20). Karori is a 6 acre hill station on that mountain's southern slopes built as a summer retreat in 1888 by mining and pastoral investor Charles William Chapman who was originally from New Zealand with active Australian interests. He named it after the suburb in Wellington (NZ), where he'd lived. (http://www.bellholme.com.au/karori.html).

Karori's garden is on the Victorian Heritage Register (H2281) with an important collection of conifers and deciduous cool climate plants, especially North American and New Zealand species. This includes an enormous *Griselinia* (likely: *G.littoralis* (papauma / kapuka / coastal broadleaf), rimu / red pine (*Dacrydium cupressinum*) and *Podocarpus sp.* (OGA).

Forest Lodge, Stirling (1889-91) the Bagot family's large Victorian garden, included a Japanese garden and grotto and collections of plants from nurseries in England, America and Japan. It features conifers – it was proclaimed by forester Charles Lane Poole as Australia's richest conifer collection in 1943. It includes NZ conifers rare in S.A.: rimu / red pine (Dacrydium cupressinum), totara / mahogany pine (Podocarpus totara) and tanekaha / celery pine (Phyllocladus trichomanoides)(Beames & Whitehill, 1981, 37-39).

Marbury School (formerly Wairoa) at Aldgate from 1893 (for pastoralist, William Austin Horn MHA (who named it)(Tanner & Stringer, 1979, 62) has a Maori name and many New Zealand plants. Horn was a director of the mining company mining the Barrier Range (what became BHP) and made a fortune. Its name means 'long water', perhaps due to the site's extensive underground water supply. He built it as a summer retreat in Adelaide's hills. Head gardener George Sparrow laid out a garden reputedly in the style of von Mueller. Horn was an amateur sculptor, of Maori and other heads on a rock outcrop. From 1896-1965 the Barr-Smith family owned it. The garden contains a grotto once surrounded by ferns, and elsewhere NZ flax and pittosporums (ibid, 1981, 67-71). Professor William Stearn visiting during AGHS's 1983 conference described the Cordyline australis in its garden as the largest he had ever seen. Tony Whitehill also notes that Coprosma was often used as a front boundary hedge in early Federation houses until the 1920s when Cupressus (now Hesperocyparis) macrocarpa replaced it. Ridleyton, an Adelaide suburb has several streets planted with Metrosideros in the 1920s, the first such in Whitehill's view. He adds that Dacrydium cupressinum appears in several old Adelaide Hills gardens (Whitehill, pers.comm., 16/9/2013).

Hillview, Sutton Forest, the former NSW Governors' summer hill station retreat garden (1880s+) contains a couple of NZ plants – by their size they may date to its later phase of ownership by Mr. Klein, i.e. the 1950s. These are *Cordyline australis* 'Purpurea' and *Pittosporum eugenioides*, tarata / lemonwood.

Summerlees, Sutton Forest next door to *Hillview* (built in 1881-5+ for the Richardson family – later of Richardson & Wrench, includes variegated tarata/lemonwood

(Pittosporum eugenioides 'Variegata') and Cordyline australis (Webb, 2013)

Wynstay, Mt. Wilson (built c.1875+ for Richard Wynne and family, has a large and rich garden with several New Zealand species:

Pittosporum eugenioides, tarata/lemonwood;

Corokia cotoneaster, korokio;

Cordyline australis

Libocedrus plumosa, kawaka/native cedar (several, in pairs, planted formally);

Griselinia lucida, puka / broadleaf;

Nothofagus fusca, red beech (SHR).

H) - Examples in Australian gardens

Species: A range of more commonly-found New Zealand plants might include the following. Those bolded are more commonly found – some are indeed rarely seen here:

Agathis australis (NZ kauri);

Arthropodium cirrhatum, renga renga / Cape Reinga lily

Beilschmedia tawa or *B.taraire* (tawa, taraire)

Brachyglottis greyi & B. monroi, silver shrub groundsels

Carex spp. & cv.s, (e.g. C.testacea) sedges

Chionochloa spp., tussocks

Clianthus puniceus, kaka beak / glory pea

Coprosma repens, taupata / mirror bush

Cordyline australis, cabbage tree/palm lily/ti kouka (& 'Purpurea')

C.indivisa, toi / mountain cabbage tree

C.pumilio, dwarf cabbage tree (particularly red-coloured forms)

Cortaderia toe toe (toe toe/cutty grass - not C. sellowiana, the pampas grass - Argentina)

Corynocarpus laevigatus, karaka / NZ laurel

Cyathea medullaris, mamaku/black tree fern

C.dealbata, ponga / silver tree fern

Dacrydium cupressinum, rimu / red pine

Dacrycarpus dacrydioides (fmr. Podocarpus dacrydioides), white pine/kahikatea

Dicksonia fibrosa, wheki ponga & D. squarrosa, wheki (tree fern)

Dodonaea viscosa (& 'Purpurea'), akeake / hop bush

Festuca spp. (matthewsi, multinoda, rubra) – tussocks

Fuschia procumbens, trailing /dwarf fuschia

Griselinia littoralis (papauma / kapuka / coastal broadleaf) and G.lucida (puka / broadleaf)s...

Hebe spp. & cv.s, shrub veronicas/hebes - various

Hoheria populnea and H.sexstylosa, houhere / lacebark (& variegated forms of H.p.)

Knightia excelsa, rewarewa/ honeysuckle tree

Leptospermum scoparium (manuka/tea tree) and many coloured and double-flowered cv.s

Libocedrus plumosa, kawaka / NZ cedar

Meryta sinclairii, puka /pukenui / broadleaf

Metrosideros excelsa, pohutukawa/ Christmas tree &

M.kermadecensis, Kermadec pohutukawa

Phormium tenax, harakeke/lowland flax

Phormium cookianum, mountain flax

Phyllocladus trichomanoides, tanekaha / celery pine

Pittosporum eugenioides, tarata / lemonwood (& 'Variegatum')

P.tenuifolium (syn. P. nigrescens), kohuhu (& many cultivars – variegated, purple...)

Plagianthus betulinus, manatu / ribbonwood

Podocarpus totara, totara / mahogany pine

Prumnopitys taxifolia (syn.Podocarpus spicatus), matai / black pine

Prumnopitys ferruginea (syn. Podocarpus ferrugineus), miro /brown pine

Pseudopanax (syn. Neopanax) laetum (large-leaved version of Pseudopanax arboreum)

P. species and cultivars (cv.s), e.g.:

P.lessonii & cv.s (houpara / coastal five-fingers, medium-large shrubs/small trees with leathery leaves in a wild variety of distinctive shapes (linear/palmate/fingered), including golden/variegated, tones of gold/green/purple/brown/bronze/black)

P.crassifolium, P.ferox (lancewoods/horoeka) to the Maori.

Sophora microphylla and S.tetraptera (kowhai & large leaved kowhai);

Vitex lucens (puriri / NZ teak);

Xeronema callistemon, raupo Taranga / Poor Knights' lily

State-based examples I've seen or know of - in gardens members may know are:

Australian Capital Territory (ACT)

Booroomba Homestead garden, Tidbinbilla Road, Tharwa (1820s, 1848+ house & garden for Earnest McKeahnie, Sir Keith Murdoch 1945-52, Mr. & Mrs. J.H. Hyles since) Hebe buxifolia (now H.odora) 'Midsummer Beauty', box-leaved veronica H. decumbens, red-stemmed veronica Pittosporum tenuifolium 'Variegatum' & 'Silver Queen', kohuhu cv.s (Baskin & Lucas, 1995)

The Canberra Gardener (2010 edition) recommends a range of NZ plants, including: necklace fern (Asplenium bulbiferum) (native to NZ and Australia), taupata / mirror bush (Coprosma repens, C.r. 'Coppershine' 'Picturata', 'Variegata' & 'Yvonne'), purple ake ake / hop bush (Dodonaea viscosa 'Purpurea' (also native to Australia), veronicas (Hebe x andersonii, H.buxifolia, 'Emerald Green'. 'Wiri Series'), houhere / lacebark (Hoheria populnea), tea trees (which can include manuka, Leptospermum scoparium or hybrids), Phormium tenax, Pittosporum spp., (P.eugenioides & 'Variegata', P.tenuifolium, 'Cathy', 'Green Pillar', 'Irene Patterson', 'Limelight', 'Pixie', 'Purpurea', 'Silver Magic', 'Stirling Mist', 'Silver Sheen', 'Stirling Gold', 'Sunburst', 'Tom Thumb' and 'Variegatum') and fern (Pteris tremula).

Commonwealth Park, Canberra (chiefly 1964+ to design of Dame Sylvia Crowe)

Sophora microphylla, kowhai (from seed collected in NZ by Canberra histian Mrs. Pat Wardle – the kowhai 'is rarely planted in Canberra...there is potential to select forms which may grown well in Canberra's cold, dry climate' (Boden, 1990, 252)

Dimpel garden, 83 Hawkesbury Crescent, Farrer (1974+ for Mr. & Mrs. Konrad Dimpel) Hebe buxifolia (now H.odora), box-leaved veronica Leptospermum scoparium cv., manuka / tea tree Pittosporum eugenioides 'Variegatum' (Baskin & Lucas, 1995)

Government House, Yarralumla (1827+ grant/farm, 1891-8 house, 1925+ refit and expansion, garden from 1830s+, much added to with successive governors/wives, including Lady Gowrie's Wild Garden (1936-45) and the Deanes' Bravery Garden (2001) which commemorates ANZAC and uses NZ Hebe spp. among other plants)(Crawford, 2001, 11)

Gribble Garden, Higgins Crescent, Ainslie (1941+, Tom & Norma G. (AGHSA/M/R, 2004, 16) *Cordyline australis*, ti kouka / cabbage tree

Huntly Homestead garden, Block 426, Uriarra Rd., Stromlo (1830s+ Captn. E.H.Cliffe, 1880s+ Frederick Campbell, 1932-3 house and garden for Mr. & Mrs.N. Milson)(Baskin & Lucas, 1995) *Coprosma repens*, taupata / mirror bush

Cordyline australis

Leptospermum sp., ?manuka / tea tree (could be *L.scoparium*, native to NZ & Australia) *Phormium tenax*

Pittosporum eugenioides 'Variegatum'

National Museum of Australia (former *Canberra Hospital* site)(c.1940s+)

Cordyline australis

Hebe species / cv., hebes, hedged

Podocarpus totara, totara / mahogany pine (removed: was part of Hospital site)

O'Reilly Garden, Higgins Crescent, Ainslie (1948+ for Mavis & Don O'Reilly)(HAGHSA/M/R, 2004, 18, 21-2)

Pittosporum sp., (not specified – could be P.crassifolium/eugenioides/tenuifolium)(all NZ) P.crassifolium 'Variegatum', variegated karo

Park Garden, 21 Scarborough Street, Red Hill (1970+ for Peter & Polly Park) *Hebe amplexicaulis*, veronica

Pfitzner Garden, 63 Vasey Crescent, Campbell (1982+ garden for Mrs. Margaret Pfitzner) *Hebe spp.*, veronica

Pittosporum eugenioides 'Variegata' (Baskin & Lucas, 1995)

Riek Garden, 19 Duffy Street, Ainslie (1949+ for Dr. Edgar & Mrs Mary Riek) *Nothofagus fusca*, tawhairaunui / red beech *Pittosporum tenuifolium & P. t.* 'Purpureum', purple / kohuhu

NSW – including New England

Albury Botanic Gardens (1877+, design c.1901+ by J.E.R. Fellowes, various directors)

Agathis australis, NZ kauri (Spencer, 1995)

Astelia chathamica 'Silver Spear'

Carex testacea, sedge

Coprosma sp. (?C.robusta, karamu)

C.x kirkii

C.repens, taupata / mirror bush

C.r. 'Aurea', golden "/"

C.r. ''Variegata', variegated "/"

C.r. 'Silver Queen', " "/"

Cordyline australis (in a photo of c1895)

C.a. 'Purpurea', purple "/"

Corokia cotoneaster), korokio

Cortaderia toe toe, toe toe (NB: may be C.selloana, Pampas grass, Argentina) (in same photo of c1895)

Hebe 'Eversley Seedling' (under the statue of Melpomene, muse of tragedy (1892))

Hebe cv.s, shrubby veronicas

Hoheria sexstylosa, narrow-leaved houhere/lacebark

Metrosideros kermadecensis 'Variegata', variegated Kermadec Island pohutukawa

Phormium cookianum cv.s, harakeke/mountain flax

P. tenax cv.s, harakeke / lowland flax

Pittosporum crassifolium, karo

P. tenuifolium, kohuhu

P.t. 'Tom Thumb', dwarf purple "

Podocarpus totara, totara / mahogany pine

Pseudopanax lessonii 'Gold Splash', golden houpara/ coastal five finger

Sophora tetraptera, large leaved kowhai

Bendooley, Berrima (1830s+ house and oldest trees; much of garden post 1980 for the Berkelouw family)

Hebe speciosa cv., ngapuka / hebe

Blue Mountains Botanic Garden, Mount Tomah (c.1988+, master plan by Geoffrey Britton) has a New Zealand section, a Gondwana Rainforest walk and Southern Hemisphere conifer and woodland collections, including:

Cordyline australis and cv.s

Dacrycarpus dacrydioides, kahikatea / white pine

Hebe spp., veronicas/hebes

Metrosideros carminea, dwarf rata

Olearia spp., daisy bushes

Phyllocladus alpinus, alpine toa toa / celery pine

Pimelea prostrata, pinatoro / NZ daphne

Pittosporum tenuifolium 'Pixie', dwarf kohuhu

Bolaro station, Adaminaby, Monaro (1840s+, 1908-68 the Osborne family) *Cordyline australis*

Bondi-Bronte beach walk over the cliffs reveals *Coprosma repens*, taupata / mirror bush gone feral, appearing to be native. It isn't. A 1916 article 'A garden of flowers' noted: 'The little garden of Mr A.A. Duke of Pinefield, Albert Park ... qualifications for making a garden beautiful are good taste, close attention to the plants he rears, and plenty of enthusiasm ... [lists many plants] ... That well known New Zealand evergreen shrub, the Coprosma lucida can be well recommended for covering an unsightly wall or fence. What was an eyesore has been by means of Coprosma converted into a very pleasant wall of shining greenery.' (Australasian, 12/2/1916, 298).

Brownlow Hill, **Orangeville** (1830s+ Macleay family; 1860s+, Downes family) An 1844 Sydney Botanic Gardens record of sending plants included 12 *Metrosideros* – which could well have been NZ *M. excelsa*, pohutukawa (none survive). *Phormium tenax* and *P.t* 'Variegata, harakeke / lowland flax

A **Carlingford**, Sydney modernist 1950s house in designed by Neville Gruzman has tightly clipped modernist 'balls' of *Pittosporum tenuifolium* cv. – many dwarf kohuhu cultivars were released onto the market in the 1980s-90s for hedges and topiary.

Centennial Park, Sydney (1888+ landscape by Charles Moore, James Jones) *Podocarpus totara*, totara / mahogany pine

Dormie House (golf club), Moss Vale (1930s+) *Hebe* 'Inspiration' *H. speciosa* cv.s, ngapuka *H.* 'Carnea', hedged

Durham Hall, south-west of Braidwood (c1840s+ by Mrs William Henry Roberts (nee Badgery), long held by her (now the Royds) family) Hebe x andersonii, Anderson's veronica (AGHS (ACT/M/R), 1992, 15)

Gostwyck, Uralla (1830s+ for the Dangar family, graziers) *Cordyline australis* near the house.

South **Goulburn** gardens include *Pittosporum tenuifolium* cv. kohuhu hedges to the street – of recent planting. Central Goulburn street bed planting includes *Hebe diosmifolia* and *Phormium tenax* 'Purpurea', bold even in winter.

Heatherbrae, Devil's Pinch north of Armidale, (c.1980?+ for Lynne Walker & Richard Bird)
Astelia chathamica 'Silver Spear'
Cordyline australis Purpurea' near octagonal pond
Muehlenbeckia axillaris, creeping pohuehue
Phormium tenax 'Purpurea'
Sophora macrophylla, kowhai – about 8' tall

Hillview, Sutton Forest (c.1888+, former Vice-Regal summer retreat; 1950s+ Mr.Klein) *Cordyline australis* & C.a. 'Purpurea' *Phormium tenax*, harakeke / lowland flax

Holy Trinity Church, Berrima (1850s)

Has Phormium tenax, harakeke / lowland flax near its entry porch.

Hyde Park, Sydney (1927)'s *Anzac Memorial* has flanking hedges of *Metrosideros collina var. collina*, the ratta / pourata, from Tahiti – a relatively popular modern pot plant and shrub in gardens. While not from New Zealand (as are *M. excelsa, M. robusta, M. umbellata* – the pohutukawas and ratas – also used here for hedging and as street trees), the popularity of this Polynesian species shows some of the breadth of this genus' natural distribution

Invergowrie, west of Armidale (1866+, 1870s+ garden for James Mitchell, 1990+ revived by descendents Doug, David and Lee Moffat and Ian Telford) *Hebe ?parviflora*, koromiko taranga / veronica

Lanyon, Tharwa (1830s+ house and garden for James & Mary Wright, 1974+ ACT Governm't.) *Phormium tenax*

Pittosporum tenuifolium 'Garnetti', kohuhu cultivar (Butler, G., 1982 LH Plant Survey, CL 82/22, in Marshall et al, 2010)

Lindfield Park, Mount Wilson (1960s for Mem and Tom Vidler, 1981+ Cec & Rita Sullivan) *Dacrydium cupressinum*, rimu / red pine (Halliday & Hambrett, 2010, 118-125)

Martin Place, Sydney – spring bedding scheme, 9/2013 included *Astelia nervosa* cv., silver cultivar kakaha / bush flax

Merry Garth, Mount Wilson (1960+ for Denys & Elizabeth Hake, 1979+ Keith & Libby Raines) *Dacrydium cupressinum*, rimu / red pine (Halliday & Hambrett, 2010, 18-27)

A **Moss Vale** house garden south of the former Town Hall has dwarf red cabbage trees, *Cordyline banksii* (ti ngahere) x *C. pumilio* 'Purpurea', as a rather knock-out informal front hedge in bright plum red. Another neighbour has a low hedge of *Coprosma* 'Chocolate Soldier', deep-bronze-leaved in winter. Several other Moss Vale gardens behind the golf course (dating from c.1900-1960s) sport *Pittosporum eugenioides* 'Variegata' as a large shrub giving shelter or privacy from either the street or neighbours. One has a smart mixed shrub border with many *Hebe species* and cultivars forming colour highlights – with purple new leaves and flowers.

Royal Botanic Garden & Domain, Sydney (1816+) has several relevant collections) **Woolloomooloo Gates entry** terracing includes 'crescent' plantings of striking: *Cordyline australis* 'Albertii', variegated ti kouka / cabbage tree *C.a.* 'Purpurea', purple leaved "/"

The **New Zealand section** (near the Woolloomooloo Gates) includes

Arthropodium cirrhatum, renga renga / Cape Reinga lily

Corynocarpus laevigatus, karaka

Coprosma macrophylla, Three Kings' Islands coprosma (a rare species)

Dacrycarpus dacrydioides, kahikatea / white pine

Macropiper excelsum, kawakawa / pepper berry

Phormium tenax 'Variegata'

Podocarpus totara, totara / mahogany pine

A smaller, newer **NZ collection** near Farm Cove includes

Arthropodium cirrhatum, renga renga / Cape Reinga lily

Clianthus puniceus, kaka beak / glory pea

Cordyline australis

Entelea arborescens, whau / cork tree

Hebe species / cv., hebes

Phormium tenax, harakeke / lowland flax

Rhopalostylis sapida, nikau palms (other older (taller) specimens of nikau are in a collection of palms just west of the cafe's outdoor seating),

Vitex lucens, puriri / NZ teak

Xeronema callistemon, raupo taranga / Poor Knight's (Island) lily

Against the Macquarie (Inner Garden) wall is

Pisonia brunoniana 'Variegata', para para / bird lime/catcher tree

North of the **Palm house** in the Cadi Jam Ora garden is

Griselinia lucida, puka / broadleaf

A **1993 Fernery** is similar to that at *Rippon Lea*, (Vic.), replacing predecessors 1888 'bush house'/1904 / 1914 bush houses and 1920s fernery of varying sizes. While not having surveyed its contents, it is likely to include (or have included) New Zealand ferns.

In the southern tip of **The Domain**, near the Land Titles Office is *Cordyline australis* 'Purpurea'

Saumarez, Armidale (1834-56 for the Dumaresq family, 1856-74 for H.A.Thomas, 1874-1984 for the White family, 1984+ National Trust (NSW) property)

Phormium tenax, harakeke / lowland flax

Stuart Park, North Beach, Wollongong (1930s by W.City Council)

Pittosporum crassifolium, karo, seeding and competing with P. undulatum (NSW/Qld.)

Summerlees, Illawarra Highway, Sutton Forest (1881-5+ for the Richardson family)

Cordyline australis

Pittosporum eugenioides 'Variegata', variegated tarata/lemonwood (Webb, 2013)

Uralla garden

Clianthus puniceus, kaka beak / glory pea

Wingecarribee, Bowral (1850s for the Oxley family, graziers) *Pittosporum eugenioides*, tarata / lemonwood

Wynstay, Mt. Wilson (1875+ for Richard Wynne, merchant, politician)

Cordyline australis

Corokia cotoneaster, korokio

Cortaderia sp. (could be C.toe toe / C.richardii) toi toi / pampas grass

Pittosporum eugenioides, tarata/lemonwood;

Griselinia lucida, puka / broadleaf

Libocedrus plumosa, kawaka/native cedar (several, in pairs, planted formally)

Nothofagus fusca, red beech (SHR)

Yasmar, Haberfield (1850s+ for the Ramsay, later Lethbridge families) *Agathis australis*, NZ kauri (Read, unpub., 2012)

Yengo, Mt. Wilson (1877-80 for Jesse Gregson, with Charles Moore, Syd.Botanic Gardens) *Phormium tenax*, harakeke / lowland flax *Podocarpus totara*, totara / mahogany pine

Queensland

Landscape architect Harry Oakman (1906-2002) was Parks Department Manager for Brisbane City Council from 1946-63 and influential as an educator and author. His books include *Shrubs for Tropical and Subtropical Gardens* (1990), which includes some New Zealand ones: *Coprosma repens, Leptospermum spp.* (manuka / tea tree)(including Australian species too), *Metrosideros excelsa* and *M.kermadecensis* (& 'Variegata')(Seto & Sim, 2002, 449; Oakman, 1990, 28, 83-4, 93).

Landscape architect, the late Barbara van den Broek used to use *Phormium tenax* (flax) quite a lot in her designs for residential gardens in the late 1970s.). She was from New Zealand. She noted that other Modern landscape architects here used it and it was fairly readily available from nurseries then. I've seen it a little since then, but I think not so much available now, and with all the dark /purple coloured cordylines available now, that niche in the garden is filled.

There was a substantial reduction of the range of plants grown in Qld nurseries from about 20 years ago, and particularly during the 10 year drought. The Aspley Wholesale Nursery continues to stock a range of *Cordyline australis* cultivars: dwarf, variegated, purple; as well as *Metrosideros (excelsa)* 'Little Dugald'; (Brouwer, pers.comm., 4/2013; http://www.aspleynursery.com.au/plant%20description.htm).

Metrosideros excelsa grows here. I used to admire a beautiful small tree in the front yard of a commercial premises in Brisbane (spectacular when in flower), but sadly cut down a few months ago. I think it's not readily available now (ibid, 4/2013).

The Shambles, 588 Mountain View Road, Montville (c.1999+)(Simpson, 2010) includes: *Metrosideros excelsa* (syn.tomentosa) 'Variegata', variegated pohutukawa

Phormium tenax 'Bronze Baby'

References the Simpsons use include Frederick Manson Bailey's 1885 catalogue of plants in the two Metropolitan Gardens, the Brisbane Botanic Garden and Bowen Park (Qld. Acclimatisation Society's garden) which note Cordyline australis at that date (Simpson, 2010, 4).

South Australia

A recent visit to *Adelaide Botanic Garden* revealed rare *Pittosporum buchanani*, in red flower.

NZ flax was grown in 1850s and 1860s **Adelaide Plains gardens** (ibid, 38). Taupata/mirror bush (*Coprosma robusta*) was grown as a hedge in miners' gardens on the Yorke Peninsula and Mid-North SA gardens, 1850s-90s (ibid, 43). Taupata / mirror bush (*C. repens*) was grown as a hedge in Clare & Gilbert Valley cottage gardens, 1850s-90s (ibid, 44).

Alex Russell's Garden, Woodville (c1880 for A.Russell)

Veronica (now Hebe) buxifolia, box-leaved hebe

Pittosporum – several kinds including

P.colensoi, Colenso's pittosporum (Swinbourne, 2006, 64)

Beechwood, (fmr. *St. Wilfreds*), Stirling (c1893 for Frank Snow) *Dacrydium cupressinum*, rimu / red pine

Ben Acre, Glen Osmond (c.1880 for The Hon.Henry Scott MLC)

Coprosma lucida, shining karamu / C.repens, taupata / mirror bush

Corynocarpus laevigatus, karaka / NZ laurel 15' high (Swinbourne, 2006, 79-80)

Cressingham Lodge, Prospect district (c1880, for Mr F.C.S.Driffield) Cordyline australis (Swinbourne, 2006, 36)

Dulwich House, Dulwich, Adelaide (1881-1950s, predominantly Federation)(Joyner, 2003)

Coprosma repens, taupata / mirror bush

Hebe sp., veronica

Metrosideros excelsa, pohutukawa / NZ xmas tree

Sophora macrophylla, kowhai

The Eagle's Nest, Mount Lofty Ranges (for Edward & Amelia Homersham, 1850s) *Dacrydium cupressinum*, rimu / red pine (Swinbourne, 2006, 31)

Evandale Garden & Nursery, Keyneton, Angaston (1843+ for Henry & Sarah Evans) *Dammara* (now *Agathis*) *australis*, NZ kauri (Swinbourne, 2006, 34)

The Exotic Nursery & Garden, Kent Town (c1857+ for Charles Giles & Son)

Charlwoodia/Dracaena (now Cordyline) stricta, narrow leaved cabbage tree

Dammara (now Agathis) australis (named D.robusta but believed by one writer to have been D.(A.) australis, said to have been a native of New Zealand and one of the first species of

conifers known, growing as straight as a reed to a height of some 400'...Kauri pine (Swinbourne, 2006, 46-7)

Forest Lodge, Part Lot 94 and 8 Pine Street, Stirling (1889/90+ for John Bagot)

Cordyline australis (Bagot, 1987, 222)

Dacrydium cupressinum, rimu / red pine

Phyllocladus trichomanoides, tanekaha / celery pine

Pittosporum eugenioides 'Variegatum', variegated tarata / lemonwood (Bagot, 1987, 220)

Podocarpus totara, totara / mahogany pine (Jones, 1997, 187)

Glanville Hall, Port Adelaide (c.1880 by Edwin Smith of Walkerville)

Veronica (now Hebe) speciosa, ngapuka/veronica (Swinbourne, 2006, 75)

Goodwood House, Goodwood (1870s-80s for Mr. W.D.Hewer)

Dracaena (now Cordyline) australis (Swinbourne, 2006, 60)

Melbourne Cottage, 4 Adelaide town acres (George Stevenson). By 1843 contained: beds of *Clematis (C.paniculata?*), *Charlwoodia (Cordyline*), 'New Zealand plums' (?), *Phormium* and *Veronica (Hebe)*(Swinbourne, 2006, 9-10)

Victorian SA gardens included the shrubs tarata / lemonwood (*Pittosporum eugenioides*) and kohuhu (*P.tenuifolium*)(ibid, 55) and Edwardian gardens (1920s-30s) included *Hebe spp*. (veronicas)(ibid, 83). Cabbage tree was recommended for Adelaide Plains gardens in 1920s-30s (ibid, 93). NZ toe toe / pampas grass (*Cortaderia richardii*) is a 'proclaimed plant' in SA in 1996 – i.e. a weed requiring destruction (Jones, Payne & Nottle, 1998, 92).

Mount Lofty Botanic Garden, Crafers (1952+, opened 1977)

New Zealand trees and shrubs from high rainfall areas (Lockwood et al, 2001, 118).

The Model Nursery (c1870+) & *Garden*, Water Gully, Mount Lofty Ranges (1854+ for Carl Freidrich Neumann)

Hebe traversii, Travers' veronica

The largest fernery collection in South Australia – NZ ferns? (Swinbourne, 2006, 44)

Old Government House, Belair (1859 cottage, used for Governors until 1880, garden c/o Dr.

Richard Schomburgk, then Director, Adelaide Botanic Garden)

Leptospermum sp., tea tree (possibly L. scoparium, manuka (native of NZ & Australia)

Metrosideros excelsa, pohutukawa / NZ christmas tree (Nolan, 1987, 118).

Ridleyton, Adelaide

Several streets planted with $Metrosideros\ sp.$ as street trees in the 1920s (perhaps the first such instance (Whitehill, pers.comm., 16/9/2013).

Rothesay House, College Town (c.1880s for Mr. A. W. Dobbie)

Clianthus puniceus, kaka beak / glory pea

Coprosma baueriana 'Variegata Picturata' (now C. repens 'Picturata')

C. foetidissima, hupirau-ririki / stinkwood

C.lucida, shining karamu (more likely *C.repens*), taupata / mirror bush

C.variegata (likely C.repens 'Variegata')

Pampas grass (could be *Cortaderia toe toe / C.richardii*)

Dicksonia antarctica ('brought from New Zealand') thus wheki (D.squarrosa) / wheki ponga (*D.fibrosa*)(Swinbourne, 2006, 66-8)

St. Vigeans, 17 Laurel Road, Stirling (1880/2+ house and garden for academic, Edward Stirling) Dacrydium cupressinum, rimu / red pine (Jones, 1997, 185)

Wairoa (fmr. Marbury School), 158-160 Mt. Barker Rd., Stirling (1893+ for Tom Elder Barr-Smith)

Cordyline australis

Phormium tenax, harakeke / lowland flax

Pittosporum spp.

The Waite Institute (Adelaide University), Springfield, has Coprosma?acerosa/brunnea, leafless coprosma.

Woodfield, Fullerton (c1880 for the Hon. Joseph Fischer MLC)

Coprosma lucida, shining karamu (more likely C. repens), taupata / mirror bush (Swinbourne, 2006, 70)

Tasmania

Ashfield, Sandy Bay (c.1834+ for architect David Lambe, later various, then Jennings family) Corynocarpus laevigatus, karaka – formal hedge, front drive (2001 photo below) Pachystegia insignis, Marlborough rock daisy

P.i. var. rufa, golden-haired variety " " (rare)

Sophora microphylla, kowhai



Belmont, Longford (1823+, 1830+ Dr. Wm. Paton, member Launceston Horticultural Society, 1838+, Paton was its President in 1848/9 and gave lectures in 1846) Cordyline australis

Sophora sp. (tetraptera), kowhai (Cox, 2011)

Brickendon, Longford (1824+ William Archer and descendents) Hoheria sp., houhere / lacebark (1884 ex Royal Society, Hobart)(gone now)(Sheridan (1)) Nothofagus fusca, tawhairaunui / red beech, south of the house

Cambria, Julia Street, Swansea (1822-8 garden, 1836 house, George & Louisa Meredith) *Phormium tenax 'from New Zealand*' mentioned by Louisa in her writings *Pittosporum tenuifolium*, kohuhu

Cranbrook, Swansea (c.1823+, for the Amos family, Quakers) *Pittosporum* and lacebark (*Hoheria sp.*) hedge (Frazer Simons, 1987, 263)

Culzean, Westbury (1840+ for Captain Edward Martin, garden 1878+, 1907-57 the Busby family, many trees from nearby Quamby, Hagley – Sir Richard Dry's c.1804+ Hagley estate (another Launceston Horticultural Soc. Member and a Royal Society member)
 Cordyline australis
 Nothofagus fusca, tawhairaunui / red beech, south of the house

A **Deloraine** garden has *Weinmannia racemosa*, kamahi – a tree rarely seen in Australia.

Dunedin, St. Leonards, S. of Launceston (1804 grant to James Hill, later Tulloch family 1850s+, 1878+ Scott family, 1973+ garden by Annabel Scott)

Astelia chathamica 'Silver Spear' grown fetchingly in whale blubber cauldrons

Brachyglottis greyi, Grey's groundsel

Lophomyrtus bullata cv., ramarama

Myosotidium hortensia, Chatham Island (giant) forget-me-not – blue & white forms *Phormium cookianum* 'Purpureum'

Entally, Hadspen (c1819+, C. Foster, later Thomas Reibey (cleric and politician, member, Launceston Horticultural Society) & descendents)

Cordyline australis

Myosotidium hortensia, Chatham Island (giant) forget-me-not

Esk Farm, Cressy

Sophora tetraptera, large leaved kowhai (Morris, 1994, 10)

Eskleigh (fmr. **Scone**), Midland Highway, S. of Perth)(c1820+ for David Gibson and family) Cordyline australis, ti kouka / cabbage tree (1870s photo – gone)

Pittosporum eugenioides, tarata / lemonwood

P. tenuifolium, kohuhu

Sophora macrophylla, kowhai (Read, unpub./2010).

An *Evandale* garden sports a *Cordyline australis* and mature *Sophora macrophylla*, kowhai, both in full flower one spring. Another sports a *Hebe diosmifolia* low hedge, ablaze in bloom.

Franklin House, Franklin, south of Launceston (1838+, Mr. Britton Jones) *Podocarpus totara*, totara / mahogany pine

Government House, Hobart (fmr. Royal Society's garden, 1840s+ trees, 1857 house) Corynocarpus laevigatus, karaka / NZ laurel (40' high)

Harefield, Swansea (c.1843+ for a Mr. Groom) NZ *Pittosporum* hedge (Frazer Simons, 1987, 265)

Harland Rise, 46 Dalness Road, SE of Evandale (1850s for store owner, J.W. Gleadow, Launceston Horticultural Society member)

Pseudopanax lessonii 'Gold Splash', variegated houpara / coastal five finger

Kelvedon, Swansea (1829+, Francis Cotton, keen horticulturist, associated with the Royal Society/establishing their garden (later the *Royal Tasmanian Botanic Garden*, Hobart) *Cordyline australis*

Phormium tenax ('first succeeded in naturalising NZ flax here' (Frazer Simons, 1987, 266) Pittosporum sp.

Kuranui (Maori for large dog)(also *Castlethurso*), Low Head, mouth of the Tamar River (1970s+ for Captain John Gunn)

Coprosma repens, taupata / mirror bush hedges (2001 photo below) Cordyline australis

Myosotidium hortensia, Chatham Island (giant) forget-me-not



Lemon Springs, Midlands Highway, S of Oatlands (1832+ for J. Page) Cordyline australis Dodonaea sp. (perhaps D. viscosa / D. v. 'Purpurea', purple ake ake / hop bush) Hebe spp. Pittosporum sp.

Malahide, Fingal Valley (1824+ William Talbot, to Lord Talbot de Malahide, & Rose Talbot (d) *Myosotidium hortensia*, Chatham Island (giant) forget-me-not *Pittosporum tenuifolium*, kohuhu *Sophora microphylla*, kowhai

Marlbrook, Mangalore (1818 grant, 1838 house, 1990+ garden by Mary Darcey)

Libertia ixioides, NZ iris

Pachystegia insignis var. rufa, golden-haired Marlborough rock daisy (rare)

Mount Pleasant, Launceston (1860s+, for businessman John Crooks, 1873+ entrepreneur Henry Reed, both members: Launceston Horticultural Society)

Cordyline australis, ti kouka / cabbage tree

Griselinia littoralis, papauma / kapuka / coastal broadleaf

Griselinia lucida, puka / broadleaf

Pittosporum eugenioides & P.e. 'Variegata', tarata / lemonwood'

P. tenuifolium, kohuhu

Sophora sp., kowhai (gone)(2010 visit; and Paul, 2004)

Natone, 29 Queen (now *Captain O'May's* heritage accommodation, Petchey) Street, Bellerive (c.1845, later additions)(http://www.captainfellshistoricferries.com.au/O'may.html) *Hoheria sp.* hedges contain the garden (Frazer Simons, 1987, 67)

Old Wesley Dale, 1970 Mole Creek Road, Mole Creek (fmr. Native Hut Corner)(c1829+ grant to Travers Vaughan, 1836+ entrepreneur Henry Reed and family; 2001+ Scott & Deb Wilson)
 Myosotidium hortensia, Chatham Island (giant) forget-me-not
 Pittosporum tenuifolium 'Limelight', kohuhu cultivar

Pigeon Hill, Romaine / Burnie (Faerie Nielsen's garden, c.1950s+)
Nothofagus fusca, red beech
Nothofagus solandri, black beech
Sophora microphylla, kowhai

Ratho, Bothwell (c1830 to Alexander Reid, later the Ramsay family) *Cordyline australis* – a formal pair flank front door.

Ravensworth, 812 Pateena Road, Longford (C1826+, Thos. Selleck & Andrew Knowland) *Nothofagus fusca*, tawhairaunui / red beech, very large tree

Red Banks, Swansea (c1822+, Edward Carr Shaw) *Pittosporum eugenioides*, tarata / lemonwood *P. tenuifolium*, kohuhu

Royal Tasmanian Botanical Garden, Hobart (c.1818+ Royal Society's garden, later a B.G.) Has had a 20th century focus has been on regional and particularly cool-temperate zone flora, including many conifers, and introduction of Southern Hemisphere flora, including an early collection of New Zealand plants (Sheridan (3), appendices: *Royal Society's Garden*) *Agathis australis*, NZ kauri (pre-1857)

Alectryon sp. nova (may have been A.excelsus, titoki / NZ ash)(")

Alseuosmia quercifolia, karapapa (1869)

Aristotelia (may have been A.serrata, makomako / wineberry)(1857-74 sales book) Astelia alpina (likely A. nivicola) A.banksii, wharawhara / bush flax (pre-1857)

Brachyglottis repanda, rangiora / bushman's toilet paper (")

Carmichaelia grandiflora (syn.C.australis), tree broom (")

Clianthus puniceus, kaka beak / glory pea (")

Coprosma lucida, taupata / mirror bush (")

C.nitida, (")

C.sp.nova N.Z. (")

Cordyline australis (ibid, 36 and photographs: 45, 48, 49, 51)

Corokia buddleioides, korokio (1869)

Cortaderia toetoe, toi toi / NZ pampas grass (1857-74 sales book)

Corynocarpus laevigata, karaka / NZ laurel (pre-1857)

Dacrycarpus (syn. Podocarpus) dacrydioides, kahikatea / white pine (1869)

Dacrydium cupressinum, rimu / red pine (")

Entelea (likely E.arborescens, whau / cork tree) (")

Griselinia lucida, puka / broadleaf

Hebe (syn. Veronica) x andersonii; angustifolia (pre-1857); cupressiformis (1866); H. formosa (pre-1857), H. hectori; lycopoides (1866); H. salicifolia (syn. V. lindleyana)(pre-1857); H. (V.) parvifolia (1862); H. variabilis (?)(pre-1857), veronicas

Hoheria populnea, houhere / lacebark (1869)

H. (syn. Plagianthus) lyallii, mountain lacebark (")

Leptospermum scoparium, manuka / tea tree (pre-1857: also native to Australia)

Macropiper (syn. Piper) excelsum, kawakawa / pepper bush (1862)

Melicytus lanceolatus, mahoewao (1869)

Metrosideros diffusa, white rata (climber)

M. excelsa (fmr. M.tomentosa), pohutukawa / xmas tree (pre-1857)

M. saligna (?)(")

Muehlenbeckia sp.(syn. Polygonum sp. NZ), pohuehue / wiry bush/creeper (pre-1857)

Myosotidium hortensia (syn. Cynoglossum chatamicum), giant Chatham Island forget-me-not (1862)

Olearia (syn. Olea) ilicifolia, mountain holly / daisy bush (1862)

O. traversii, Travers' daisy bush (Chatham Islands - uncommon)

Panax dendroides (could be Pseudopanax arboreus, pate)(1857-74 sales book)

Phormium tenax (pre-1857)

Pittosporum colensoi, Colenso's pittosporum (1862)

P. cornifolium, tawhirikaro (pre-1857)

P. eugenioides, tarata / lemonwood (1857-74 sales book)

Podocarpus totara, totara / mahogany pine (pre-1857)

Prumnopitys ferruginea, miro / brown pine (")

P. taxifolia (syn. Dacrydium spicatum), matai / black pine (")

Pseudopanax crassifolius, horoeka / lancewood (1857 catalogue)

P. lessonii (syn. Panax quinquefolius), houpara / five finger (1862)

Rhabdothamnus solandri, putaputaweta / NZ gloxinia (1869)

Vitex lucens, puriri / NZ teak

RTBG Sub-Antarctic House (1990s) has (mega-herbs common to NZ & Australian sub-Antarctic islands):

Pleurophyllum speciosum, Campbell Island daisy Stilbocarpa polaris, giant purple/white daisy

Salmon Ponds, Glenora Road, New Norfolk (1850s+ G. R. Read, Royal Society member) *Hoheria sp.*, houhere / lacebark *Sophora sp.*, kowhai

The Scented Rose, 1338 Cygnet Coast Rd., Glazier's Bay (1920+ for the Hammond family; garden significantly extended 1994+ by Elaine Rushbrooke & Ray Joyce) *Clematis paniculata*, puawananga / bush clematis

Signal Hill garden, Launceston (generally Edwardian subdivision / some Victorian homes...) *Myosotidium hortensia*, Chatham Island (giant) forget-me-not

Strathroy, (fmr. Kerry Lodge), Midland Highway, Breadalbane/Youngtown (c1878-88+ for a Mr. W. Grubb MHA, member of the Launceston Horticultural Society & T. Bartley)
Cordyline australis (2)
Pittosporum eugenioides, tarata
P. tenuifolium, kohuhu

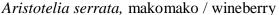
Summerhome, 22 Hopkins Street, Moonah (c1833+ for a Mr. Giblin, later the Hopkins family) *Cordyline australis* (2)

C. kaspar, Three Kings Islands ti kouka / cabbage tree Nothofagus ?solandri, tawhairauriki, black beech Sophora sp., kowhai (Dave Gray, pers.comm., 2011)

Symmon(d)s Plains, Midlands Highway, 5km SE of Perth (c.1826+, house 1839 for James Youl and family)

Nothofagus fusca, tawhairaunui / red beech

The Tasmanian Arboretum, Eugenana (1984+: affiliated with the Royal Tas.BG, Hobart) Has a New Zealand collection (amongst its geographic theme collections, and specialises in Southern Hemisphere conifers (*Dacrydium*, *Dacrycarpus*, *Manoao*, *Phyllocladus*, *Podocarpus*, *Libocedrus*...) and Southern Hemisphere beeches.





Chordospartium stevensonii, tree broom (above: photos c/o Tasmanian Arboretum)

Coprosma robusta, kakaramu

C. tenuifolia, wavy-leaved coprosma

Cordyline australis 'Albertii', variegated ti kouka / cabbage tree

C. banksii, ti nghaere / forest cabbage tree

C.indivisa, toi / mountain cabbage tree

Corokia cotoneaster, korokio

C. x virgata, korokio

Dacrycarpus dacrydioides, kahikatea / white pine

Dacrydium cupressinum, rimu / red pine

Fuschia excorticata, kotukutuku /tree fuschia

Hebe parviflora var. angustifolia, kokomuka taranga / veronica

H. parviflora var. arborescens, kokomuka taranga / veronica

H. stricta, koromiko /veronica

Knightia excelsa, rewarewa / honeysuckle tree

Leptospermum scoparium var. scoparium, var. eximium & prostrate var., manuka / tea tree (also native to Australia)

Libocedrus bidwillii, pahautea / mountain cedar (extremely rare here)

Manoao colensoi, silver pine (syn. Podocarpus/Lagarostrobus...)

Melicytus ramiflorus, mahoe / whiteywood

Myrsine australis, mapou / red matipo

Nothofagus fusca, tawhairaunui / red beech

N. menziesii, silver beech

N. solandri, tawhairauriki / black beech

N. solandri var. cliffortioides, tawhairauriki / mountain beech

Phyllocladus alpinus, mountain toatoa/celery pine

P. trichomanoides, tanekaha / celery pine

Pittosporum colensoi, Colenso's pittosporum

P.eugenioides, tarata / lemonwood

P. tenuifolium 'James Stirling'; 'Purpureum'; 'Silver Song'; kohuhu cv.s.

Podocarpus cunninghamii (syn. P. hallii), Hall's / mountain / thin-barked totara

P. totara 'Aurea', golden totara

Prumnopitys ferruginea, miro / brown pine

P. taxifolia, matai / black pine

Pseudopanax ferox, fierce horoeka / lancewood

Sophora molloyi 'Dragon's Gold', Cook's Strait kowhai cultivar

S. prostrata, prostrate / dwarf kowhai

S. tetraptera, large leaved kowhai

Valleyfield, Lyell Highway, New Norfolk (1822+ for William Abel, Royal Society member,

1880s+ a Mr. Shoebridge, also a Royal Society member (and keen on conifers inter alia)

Coprosma robusta, karamu – a weed species along Derwent River banks – 4-5m x 4-5m, 15cm diameter trunks;

Cordyline australis

Phormium tenax

Pittosporum crassifolium, karo (uncommon)

P. eugenioides, tarata / lemonwood *P.tenuifolium*, kohuhu

Winton, Midlands (c1823 for the Forlonge and 1835+ Taylor families)

Hebe cupressoides, whipcord hebe/veronica

Heliohebe (syn.Hebe) hulkeana, NZ lilac

Woodbank, Longley (south of Mt. Wellington)(c.1970s-00s former nursery of Ken & Lesley Gillanders)

Nothofagus fusca, tawhairaunui / red beech

Sophora microphylla, kowhai

Woodhall, Midland Highway, nr. Longford (for Joseph Bonney, Commissariat Officer & member, Launceston Horticultural Society; later (1880s+ the Gibson family)

Clianthus puniceus, kaka beak / glory pea

Hebe spp., veronicas

Podocarpus sp., likely *P. totara*, totara / mahogany pine (all from Sheridan (2), LHS records, 1860s)

Woollmers, Longford (1817+ William, then Thomas Archer and descendents / a Trust)

Hebe albicans, veronica

H. ?purpurea, veronica

Victoria

Alton, Mount Macedon (1874-96, Sir George Verdon with gardener (who trained at *Taylor & Sangster nursery*, Alfred Turner all that time; Sir Alfred Nicholas and family, 1926-1990s (*see George Nicholas Memorial Gardens/Burnham Beeches, Dandenongs* which also has NZ natives – indicating two possible waves of popularity: c.1870s and 1930s...)

Agathis australis, NZ kauri

Aristotelia serrata, mako mako / wine berry

Brachyglottis repanda 'Purpurea', purple rangiora /bushman's toilet paper

Coprosma ?propingua, small-leaved coprosma

Cordyline australis

Cyathea species, mamaku / ponga, black/silver tree fern

Dacrycarpus dacrydioides, kahikatea / white pine

Dacrydium cupressinum, rimu / red pine

Dicksonia species (D. fibrosa/squarrosa), wheki ponga (NB: may be D. antarctica, Australia)

Griselinia littoralis 'Variegata', variegated papauma / kapuka / coastal broadleaf

Griselinia lucida, puka / broadleaf

Knightia excelsa, rewa rewa / honeysuckle tree

Melicytus ramiflorus, mahoe / whiteywood

Nestigis lanceolata, oro oro / narrow-leaved /montane maire

Nothofagus fusca, tawhairaunui / red beech

Phyllocladus trichomanoides, tanekaha /celery pine

Podocarpus totara, totara / mahogany pine

Pseudopanax crassifolium, horoeka / lancewood

Sophora microphylla, kowhai

Ballarat – main street – *Cordyline australis*

Ballarat Botanic Garden (1858+; fernery 1880-83 (NZ ferns))

Cordyline australis, avenue near fernery (in several early photographs & etchings)

Cyathea dealbata, ponga / silver tree fern (noted by James Veitch, 1892)

C. medullaris, mamaku / black tree fern (noted by James Veitch, 1892)

Dicksonia squarrosa, wheki ((noted by James Veitch, 1892)

Vitex lucens, puriri / NZ teak behind the Adam Lindsay Gordon cottage (Significant tree)(AGHSV 2012; FBBG, 2012, 69)

Banongil, Wn.District ()

Cordyline australis

Benalla Botanic Gardens (1859; 1882+)

Collection of New Zealand plants (VHR) **CHASE THIS UP _ MORE INFO???**

Bishopscourt, North Melbourne (1853+ for the Anglican Bishops of Melbourne)

Coprosma 'Coppershine', coprosma

C.repens, taupata / mirror bush (several)

Cordyline australis (1892 photograph)

Corynocarpus laevigatus, karaka / NZ laurel

Phormium tenax

Pittosporum eugenioides 'Variegata', variegated tarata / lemonwood

P.tenuifolium, kohuhu

P. t. 'Purpureum', purple kohuhu

Sophora microphylla, kowhai (Hawker, 2002, 15)

Bon Accord, Sale (c.1865+, garden c.1877+ by Dr. William Forbes, Overend family 1898-1956) *Cordyline australis* (Govanstone, 1989, 42)

Brighton Cemetery, Caulfield South, Melbourne (1855+)

Pittosporum crassifolium, karo

Camperdown - NZ plants collected around the town/area (AGHSV, 2012)

Arthropodium cirrhatum, renga renga/Cape Reinga lily

Coprosma repens & C.r. 'Picturata', variegated/ taupata/ mirror bush

Cordyline australis & C.a. 'Albertii'

Corynocarpus laevigatus, karaka/ NZ laurel

Melicytus ramiflorus, mahoe/whiteywood

Metrosideros excelsa, pohutukawa/Christmas tree

M.kermadecensis 'Variegata', variegated Kermadec Island pohutukawa

Olearia paniculata, akiraho

Pittosporum crassifolium, karo

P.c. 'Variegatum', variegated karo

P.eugenioides & P.e. 'Variegata', tarata/lemonwood P.tenuifolium & cv.s, e.g. 'Tom Thumb' (dwarf purple cultivar), kohuhu

Camperdown Botanic Garden (1860 reserved; gazetted 1869. 1870 Daniel Bunce was asked for advice. 1873 saw some planting. In 1879 279 acres were reserved as park. In 1885 William Guilfoyle was consulted and a plan for future planting prepared (planted 1885-8). 1982-5 saw revival/replanting and 2002+ renewed efforts at replanting per Guilfoyle plan (AGHSV, 2012) Cordyline australis

Melicytus ramiflorus, mahoe / whiteywood *Olearia paniculata*, akiraho (rare, largest in Victoria)

Castlemaine Botanic Garden (1860 reserved)

Podocarpus totara, totara / mahogany pine

Colac Botanic Garden (1865+ reserved; 1868 Bunce visited and advised: 1910 GF report on reworking)(AGHSV, 2012)

Alectryon excelsus, titoki/NZ ash

Coprosma repens 'Picturata', variegated taupata / mirror bush

Cordyline australis (several, e.g. in 'spiky bed')

C. kaspar, Three Kings Islands ti kouka/ cabbage tree (rare)

Corynocarpus laevigatus, karaka/NZ laurel

Hoheria populnea 'Aureo-Variegata', houhere/golden variegated lacebark

Metrosideros kermadecensis 'Variegata', variegated Kermadec Island pohutukawa/NZ xmas tree, Kermadec Islands

Olearia paniculata, ake ake/daisy tree

Phormium cookianum, harakeke / mountain flax

P. tenax 'Variegata'

Pittosporum eugenioides, tarata/ lemonwood

P. tenuifolium 'Eila Keightly', kohuhu, New Zealand (rare/Victoria)

Colman garden, South Yarra (Edna Walling, 1933)

Sophora tetraptera, large-leaved kowhai

Dalvui, Camperdown (1898+; Guilfoyle 1907-8)(AGHSV, 2012):

Arthropodium cirrhatum, renga renga/Cape Reinga lily

Astelia sp., (?A.nervosa, kakaha / bush flax)

Brachyglottis repanda, rangiora/bushman's toilet paper

Cordyline australis

Corokia cotoneaster, korokia

Corynocarpus laevigatus, karaka / NZ laurel, which is seeding happily

Dacrydium cupressinum, rimu/ red pine

Griselinia littoralis, papauma / kapuka / coastal broadleaf

Hoheria populnea 'Variegata', golden houhere/lacebark

Muehlenbeckia axillaris, creeping pohuehue

Olearia paniculata, akiraho / daisy bush

Phormium tenax

P. cookianum cv., red/purple coastal flax hybrid
Pittosporum crassifolium 'Variegatum', variegated karo
P.tenuifolium, kohuhu
Plagianthus betulinus, manatu / ribbonwood
Solanum laciniatum (syn. S.aviculare), poroporo / kangaroo apple
Sophora microphylla, kowhai

Derriweit Heights, Mt. Macedon (1860s+)

Cordyline australis
Metrosideros excelsa, pohutukawa/ Christmas tree
Phormium tenax (Tanner & Stringer, 1979, 62 photo).
Sophora microphylla, kowhai

Ebury garden, Mt. Macedon (1990s for Sue & Francis Ebury)

Chionochloa flavicans, tussock
Hebe spp., hebes/veronicas
Pachstegia insignis, Marlborough rock daisy
Phormium tenax 'Purpureum'

Emerald Lake

Dacrydium cupressinum, rimu / red pine

Geelong Botanic Garden (1859+)

Coprosma lucida, taupata / mirror bush

Corynocarpus laevigatus, karaka

Metrosideros colensoi (syn. as GBG-labelled, M. demonstrons), climbing dwarf rata

Pachystegia insignis, Marlborough rock daisy

Pisonia brunoniana, para para / bird lime/catcher tree

Podocarpus acutifolius, needle-leaved totara / mahogany pine

P. totara, totara / mahogany pine

Gembrook (aka Nobelius) Nursery, Emerald (1886+)(VHR)

Knightia excelsa, rewa rewa / honeysuckle tree – largest in Victoria *Phormium tenax* plantation

George Nicholas Memorial Gardens, (fmr. Burnham Beeches, 1930-33), Dandenong Ranges Nothofagus fusca, tawhairaunui / red beech

George Tindale Memorial Garden, Dandenong Ranges (?)

Dacrydium cupressinum, rimu / red pine

Gisborne Botanic Gardens, Gisborne

Corokia spp., korokio Hebe spp. veronicas/hebes

Phormium tenax

Pseudowintera spp., horopito / pepper trees (related to Tasmania's Tasmannia spp.)

Glen Harrow, Belgrave (former Coles Nursery site)

Dacrycarpus dacrydioides, kahikatea / white pine

Glenrannoch, Mt. Macedon (NTV)(1873+)

Hoheria populnea, houhere / lacebark

Gnotuk, Camperdown

Vitex lucens, puriri / NZ teak

Goodwood, Camperdown

Hebe gracillima, slender leaved veronica

Hascombe, Mt.Macedon (c1873+ for Mr. R.L.J.Elery, garden greatly expanded by R.S.Whiting pre 1930; Sir Thomas and Lady Ramsay – 1983; Lindsay & Paula Fox)

Agathis australis, NZ kauri

Phormium tenax

Pittosporum sp. hedges – (unspecified) could be NZ or Australian

Hedgeley Dene gardens, Malvern

Podocarpus totara, totara / mahogany pine

Karori, Mt. Macedon (1888+)

Dacrydium cupressinum, rimu / red pine

Griselinia sp. (likely G. littoralis (papauma / kapuka / coastal broadleaf or puka / broadleaf)

Knightia excelsa, rewa rewa / honeysuckle tree (largest in Victoria)(VHR)

Podocarpus sp.

Kenloch, Dandenongs ()

Agathis australis, NZ kauri

Dacrydium cupressinum, rimu / red pine

Koroit Botanic Garden (1857 reserve, 1860s first garden efforts; 1879/80: Guilfoyle advised, 1880 GF plan (which recommended NZ kauri (*Agathis australis*)(AGHSV, 2012)

Coprosma repens 'Marble Queen', variegated taupata/mirror bush, NZ/garden origin (1996)

Cordyline australis (1920s photos)

Corynocarpus laevigatus, karaka/ NZ laurel (1996)

Dodonaea viscosa 'Purpurea', ake ake/hop bush (1996)

Hebe speciosa, ngapuka / titirangi / veronica (1996)

H. spp., veronicas (1996)

Libbertia ixioides, mikoikoi / NZ iris

Metrosideros excelsa, pohutukawa / NZ Xmas tree (1996)

Phormium tenax (1920s photographs)(1996)

P.totara, totara / mahogany pine (1996)

Pseudopanax lessonii, houpara / coastal five finger (1996)

Lake Bullen Merri, W. District

Coprosma repens, taupata / mirror bush

Lal Lal estate, Yendon (1847+ Fisken family, present house 1911+ (AGHSV, 2012)

Hoheria sexstylosa, narrow-leaved houhere/lacebark

Lophomyrtus bullata 'Variegata', variegated rama rama

Nothofagus fusca, tawhairaunui/ red beech

Phormium tenax

Malvern High School grounds

Podocarpus totara, totara / mahogany pine

Maranoa Gardens, Canterbury (1901-26 by mercantile broker John Middleton Watson as a garden of Australasian flora, opened to public 1919, 1926+ Council owned & run)

Coprosma lucida, taupata / mirror bush

Podocarpus totara, totara / mahogany pine

Mawallok, near Beaufort (1847+ Alexander Russell & family until 1980. WRG plan 1909)(AGHSV, 2012)

Alectryon excelsus, titoki / NZ ash (which has Australian relatives, e.g. A. subcinereus)

Arthropodium cirrhatum, renga renga/ Cape Reinga lily

Corynocarpus laevigatus, karaka/NZ laurel (several)

Hoheria populnea, and cultivars 'Purpurea' & 'Variegata', houhere/lacebark (several)

Metrosideros excelsa, pohutukawa / NZ xmas tree

Phormium tenax 'Variegata'

Pittosporum colensoi, black mapou

P.crassifolium 'Variegatum', variegated karo

P. ralphii, Ralph's pittosporum

P.tenuifolium, kohuhu

Melbourne University – **Botany Department** (later the) System Garden (JOH)(1856+)

Dacrydium cupressinum, rimu / red pine

Meryta sinclairii, puka / pukenui broadleaf (mis-labelled Ficus lyrata!)

Mooleric, Birregurra (1871+ house; 1923 additions – Guilfoyle advice 1903-1912)(AGHSV, 2012)

Arthropodium cirrhatum, renga renga/Cape Reinga lily

Coprosma baueriana 'Beatson's Gold', variegated coprosma

C.repens, taupata / mirror bush

Cordyline australis (many)

C.a. 'Albertii', variegated "/" (AGHSV; Gilfedder, 2003)

Corokia buddleioides, korokia (1905 plant list)(Gilfedder, 2003)

Cortaderia toe toe 'Aurea', golden toi toi/grass

Corynocarpus laevigatus, karaka/NZ laurel (AGHSV, Gilfedder, 2003)

Hebe spp. e.g.: H. angustifolia, H. x carnea, veronicas (AGHSV, Gilfedder, 2003)

H.speciosa, ngapuka (AGHSV, Gilfedder, 2003)

Hoheria populnea 'Alba Variegata', variegated houhere/lacebark (AGHSV, Gilfedder, 2003)

Metrosideros excelsa (syn. M. speciosa?), pohutukawa/NZ christmas tree

Phormium tenax 'Variegata'

Phyllocladus sp., celery pine, NZ/Australia

Pittosporum eugenioides & P.e. 'Variegata', variegated/ tarata/lemonwood (Gilfedder, 2003)

P. tenuifolium, kohuhu

Mt. Boninyong, Scotsburn (1839+ Andrew & Celia Scott; 'formal' garden 1845+)(AGHSV, 2012)

Lophomyrtus bullata 'Variegata', rama rama

Pittosporum eugenioides & 'Variegata', tarata/lemonwood

P.tenuifolium, kohuhu

Plagianthus betulinus, manatu/ribbonwood

Mt. Dandenong Arboretum ()

Podocarpus nivalis, alpine/snow totara (very rare here)

Nalparingan, Upwey (Edna Walling, 1932+)

Nothofagus fusca, tawhairaunui / red beech

Janet *O'Hehir garden*, Camperdown (JOH)

Corokia cotoneaster, korokio

Macropiper excelsum, kawakawa

Meryta sinclairi, puka / pukenui broadleaf

Pseudopanax crassifolium, horoeka/ lancewood

Purrumbete, 3551 Princes Highway, Camperdown, Western District (c1842 for Thomas, John & Peter Manifold & family, 1882 additions, 1901 alterations to house (& to the garden?)) Corynocarpus laevigatus, karaka / NZ laurel (over 12m x 6m)

Renny Hill, Camperdown (1876 Wm.Guilfoyle advice, AGHSV, 2012)

Cordyline australis

C.x 'Green Goddess', hybrid Poor Knights' Island cabbage tree

Corynocarpus laevigatus, karaka/ NZ laurel

Hebe x 'Great Orme'/H.carnea 'Carnea', pink veronica

Metrosideros kermadecensis 'Variegata', variegated Kermadec Island pohutukawa/NZ xmas tree Pittosporum crassifolium, karo

Rippon Lea, Elsternwick (1868-1903)

Agathis australis, NZ kauri

Cordyline australis

Cortaderia sp. (may be C.toe toe / C. richardii), toi toi/pampas grass (1902 Savony photo)

Corynocarpus laevigatus, karaka / NZ laurel

Phormium tenax

Podocarpus totara, totara / mahogany pine

Vitex lucens, puriri / NZ teak (on the front lawn, probably 1880s)(Heathcote, pers.comm.)

Rosalind Park, Bendigo

Agathis australis, NZ kauri

Royal Botanic Gardens, Melbourne (1840s+; 1853-73 Mueller; 1873-1910 Guilfoyle)

The fern gully includes Cordyline australis, C. stricta (Australia and NZ), Cyathea species,

Alectryon excelsus, titoki / NZ ash

Corynocarpus laevigatus, karaka / NZ laurel

Dacrycarpus dacrydioides, kahikatea / white pine

Dacrydium cupressinum, rimu / red pine (south lawn above fern gully)

Dicksonia species (likely *D. fibrosa / squarrosa*)

Meryta sinclairii, puka / pukenui broadleaf, near the lake cafe (JOH)

Metrosideros excelsa, pohutukawa / NZ xmas tree

Phormium tenax, Lake-side plantings in clumps/drifts (1915 photographs show clearly young cordylines and *Phormium* forming a planted knoll and lakeside plantings doubtless at Guilfoyle's instruction (Tanner & Stringer, 1979, 27)

The **New Zealand section** is extensive and includes:

Cordyline australis

Podocarpus totara, totara / mahogany pine

Phormium tenax

P.colensoi cv.s, mountain flax

Phyllocladus trichomanoides, tanekaha /celery pine

Podocarpus totara, totara / mahogany pine

Sophora microphylla, kowhai

Vitex lucens, puriri / NZ teak

Stony Ridge, W. District

Sophora microphylla, kowhai

Trawalla, near Beaufort, Western District (1890+)(Guilfoyle gave advice/plan)

Cordyline australis (several)

Turkeith, Birregurra (1865 house, 1903-1912 Guilfoyle advice)(AGHSV, 2012)

Coprosma repens, taupata/mirror bush (AGHSV, 2012)

C. r. 'Variegata' (1905 plant list)(Gilfedder, 2003 – introduced into Vic. 1873)

Cordyline australis (seedlings on 1905 plant list)(Gilfedder, 2003 – introduced into Vic. 1855)

C. kaspar, Three Kings Island ti kouka/ cabbage tree

Metrosideros speciosa (now *M.excelsa*), pohutukawa/ NZ Xmas tree (1905 plant list) (Gilfedder, 2003 – introduced into Vic. 1855)

Victoria Park, Ballarat ()

Dacrycarpus dacrydioides, kahikatea / white pine

Warrambean, Wn. District

Has a *Cordyline australis* shown young in an 1870s photograph near the house – it survives.

Warrnambool Botanic Garden (1866+, 1877+ Guilfoyle advice, 1879+),

An 1894 Council report noted *Phormium tenax*

Brachyglottis repanda 'Purpurea', purple rangiora/bushman's toilet paper

Coprosma repens, taupata/mirror bush (on island)

Cordyline australis

Cortaderia sp. (C.toetoe / speciosa), toi toi / pampas grass

Corynocarpus laevigatus, karaka / NZ laurel

Entelea arborescens, whau/ cork tree

Metrosideros excelsa, pohutukawa / NZ Christmas tree (multiple)

Pachystegia insignis, Marlborough rock daisy

Phormium tenax

P.t. 'Aureo-Variegata'

Podocarpus totara, totara / mahogany pine

Wigandia, Noorat

Carex sp., sedge

Cordyline australis

C. kaspar (a formal pair flank the front door)

C.pumilio 'Purpurea'

Phormium tenax 'Purpurea'

Williams Nursery site (fmr.), Kallista

Dacrydium cupressinum, rimu / red pine

Wombat Park, Daylesford

Coprosma spp. (hedged)

Cordyline indivisa, toi

Pittosporum eugenioides, tarata/ lemonwood (hedged)

P.e. 'Variegata', variegated "/" (hedged)

P.tenuifolium cv., kohuhu (hedged)

WA

The 1826-50 period from European settlement in the Swan River colony included cultivation, amongst other vegetables, of NZ spinach (*Tetragonia tetragonoides*)(Viska, 2007, 12).

The Gold Rushes – Interwar era (1890-1920) saw garden urns or vases planted with *Cordyline australis* (ibid, 18), and use of taupata / mirror bush (*Coprosma repens*), *Hebe buxifolia* and *H.speciosa* and tarata / lemonwood (*Pittosporum eugenioides*) (ibid, 21) and pohutukawa / NZ Xmas tree (*Metrosideros excelsa* (*syn. M.tomentosa*)) in W.A.gardens (ibid, 23).

Interwar – Modernism era (1920-50) saw manuka / flowering tea tree (*Leptospermum scoparium* cv.s) in W.A. gardens (ibid, 30).

The 1960s saw purple hop bush (*Dodonaea viscosa* 'Purpurea') become commercially available (ibid, 36).

Voyager Estate vineyard, Margaret River

Astelia sp., kakaha / bush flax

Leptospermum scoparium 'Ruru' and cv. - red and pink-flowered manuka / tea tree - hedged

I) - And Now?

A thesis on Inter-War Sydney gardens lists pohutukawa (*Metrosideros tomentosa* (now *M.excelsa*)) and kaka beak / glory pea (*Clianthus puniceus*) erroneously under her 'Native Plants' list of 1925; shining karamu / mirror bush (*Coprosma lucida*) and manuka / tea tree (*Leptospermum scoparium*) under 1932 hedge plants; *Veronica* (now *Hebe*) under 'Rockery Plants (1933) and *Fuschia procumbens* under 1937 'Trailing plants for the shade house and fernery' (Smart, 1988, various). Craig Burton lists under his 'modern period' (1940-62) pohutukawa (*Metrosideros excelsa*)(CB). A *Chandler's Nursery* (Sandy Bay, Hobart) 1938 catalogue includes *Clianthus puniceus* (& *Alba*), *Coprosma baueriana* (now *C.repens*) 'Variegata', *Cordyline* (*ornamental leaved plant*), *Corynocarpus laevigatus*, *Leptospermum nichollii* (*NZ ti tree – crimson*), *Metrosideros tomentosa* (now *M.excelsa*), *Pittosporum eugenioides*, *P.e.* 'Variegatum', *P. nigrescens* (*tenuifolium*)(also promoting the previous three for hedging), *Sophora tetraptera*, Veronica (now *Hebe x*) *andersonii*, *V.(H.)a.*'Variegata', *buxifolia, parviflora, hulkei* (now *hulkeana*).

South Australian garden suburbs between the wars, such as Adelaide's *Colonel Light Gardens* (1920s-40s) used kowhai (*Sophora microphylla*). Adelaide Plains gardens in the 1920s-30s used Cordyline australis and Hebe species (Jones, Payne & Nottle, 1998, 86, 90-1).

To an extent New Zealand's plants are still being discovered. One example, the vigorous evergreen climber, *Tecomanthe speciosa*, (below) was only discovered on the Three Kings Islands in 1945. It was reduced to one single plant in the wild: and all those in cultivation (common in New Zealand today: very rare in Australia – any sightings?) derive from cuttings from that one plant. Thanks to Botanic Gardens and educated, concerned gardeners it survives – in fact seedlings have been reintroduced to the Three Kings Islands to bolster its sole survivor there (Simpson, 2005, 326). Gardeners are more powerful than they may realise. The same goes for kaka beak / glory peas – popular garden plants in New Zealand today, and grown in parts of Australia.



Above) *Tecomanthe speciosa*, painting by Margaret Stones, from *Curtis' Botanical Magazine* (www.studiobotanika.com)

Writing in 1969 landscape architect Ron Rayment summarised, with wry humour, commercial landscaping styles of the previous decade:

many architects are taking a fresh look at those pocket sized landscapes which bedeck or sometimes befuddle the bases of out prestige office buildings. In style, they tend to fall into one of three categories - Brasilia, characterised by dramatic spiked cacti and yuccas arising out of a sea of stones or creeping succulents; Exotica, a rich profusion of semi-jungle foliage with brilliant floral accents, and lastly, the Bush, a casual array of dominantly Australian native plants or near New Zealand relatives. And of the three, those plants from back-of-beyond, with their inbuilt will to survive, are successfully establishing themselves (Ron Rayment, Landscape, Architect, III, 2, May-June 1969, p.14).

Landscape designer Rod Barnett noted of 1970s-90s New Zealand gardens: (quoting historian Ian Sinclair): 'The chief result of recent events has been to bring home to New Zealanders a fact which they have not always seemed to regard as important: New Zealand is in the Pacific...New Zealanders belong to a branch of New World civilization, the main centres of which are Sydney, San Francisco and Auckland'...soon to be expressed in the emergence of a subtropical garden style (Barnet, in Bradbury, 1995, 174).

Heritage Victoria's John Hawker noted: occasionally plants listed last century become fashionable again. The Chatham Island (giant) forget-me-not (Myosotidium hortensia), listed by only one Victorian nursery in 1889, is now (1997) 'the plant of the moment' (Hawker, 1997, 2).

Despite the vagaries of fashion in garden plants, New Zealand plants remain in use and circulation in some Australian nurseries today, due to their beauty, toughness and ongoing waves of hybridisation and cultivar promotion in the trade and magazines. To a modest extent (i.e. range of plants), coloured cultivars and some species remain popular garden plants today.

Plantsman and Mediterranean-climate advocate, writer Trevor Nottle's books have long included tough and beautiful New Zealand species: his 1996 'Gardens of the Sun' includes design notes on using coloured forms of Coprosma x 'Walter Brockie', Cordyline australis 'Purpurea', flaxes Phormium tenax, 'Bronze Baby', 'Elfin' and 'Thumbelina'. He mentions Maori kumara gardens for their cunning water conservation techniques and lists NZ sources of seed and alpines. His 'Plants for a Changing Climate' (2011) does likewise, singing the praises and encouraging use of Brachyglottis (syn. Senecio) greyi 'Sunshine' (a silver-leaved groundsel with yellow daisy flowers), Coprosma 'Black Cloud' and C.repens, purple cabbage trees, Corokia buddleioides (buddleja-leaved korokia, which he winningly calls 'NZ wire netting plant'!), the tree fuschia (F.arborescens / kotukutuku) (which would probably only really suit wetter mountain gardens here) and of course, flax.

Australian specialist nurseries are dwindling in number, if growing in the richness of fare. *Yamina Collectors' Nursery* from Monbulk, Victoria's 2013 catalogue includes kiwi plants: whau/cork tree (*Entelea arborescens*); houhere/lacebarks (*Hoheria populnea* 'Alba Variegata' & *H.sexstylosa* 'Purpurea'); tawhairaunui / red beech (*Nothofagus fusca*); dwarf purple kohuhu (*Pittosporum tenuifolium* 'Tom Thumb'); horoeka / lancewood (*Pseudopanax crassifolius*); fierce lancewood (*P.ferox*); houpara / coastal five fingers (*P.lessonii* 'Cyril Watson', 'Gold Splash' & 'Purpureus'); kowhais including dwarf ones (*Sophora macrophylla, S.prostrata* 'Little Baby' & *S.tetraptera*, large leaved). Perennials on offer include *Astelia chathamica* 'Silver Spear'; conifers include rimu / red pine; alpine toatoa (*Phyllocladus alpinus*). I'd have to say the borders of China and the Americas are winning in the numbers game of 'exotica' though!

New Zealand migrants in Australia have long brought, imported, planted and promoted plants from their land of origin in their Australian homes and milieu. This tradition continues — an example being the Society's patron (and ex-pat), Sue Ebury introducing NZ tussock *Chionochloa flavicans* seed into cultivation at Mt. Macedon and the nursery trade via David *Lambley's* and Stephen Ryan's *Dicksonia Rare Plants* nurseries in Victoria (Ebury, pers.comm, 18/8/13). And myself: propagating kowhai for modest distribution within New South Wales.

Designers, writers and artists continue to champion New Zealand plants: English magazines in the last 5 years have 'raved' about kiwi plants and a crop of young kiwi designers are making their mark on English gardens – using NZ plants - architectural or otherwise.

New Zealand plants offer rich possibilities for further selection, hybridisation and (heaven forbid) ANZAC crossings of species 'over the ditch'. Imagine chartreuse *Tecomanthe speciosa* x hot pink *T. hillii* from Queensland, or *Xeronema callistemon* crossed with New Caledonian cousin *X.moorei*, NZ lilac *Hebe hulkeana* crossed with *Parahebe* and *Derwentia* species, tea tree (*Leptospermum*) hybrids and dwarf or ground cover selections – particularly compact flowering shrubs for our ever-shrinking gardens, courtyards, roof tops or pot culture. Hmmm!

Sources:

Adam, John (1), personal communication, email, 26/4/2013 – quoting, inter alia: Simmonds, A., 1948, *A Horticultural Who Was Who*?, London, Royal Horticultural Society;
Adam, John (2), personal communication, 8/8/2013 – re William Hale's Nelson nursery, NZ;
Adam, John (3), personal letter dated 13/12/2004 – re NZ botanical history links to Australia;

- Adam, John, 'Parks and Public Gardens 1860s-1900', 110 in Bradbury (ed.), 1995 see Bradbury
- Adam, John, 'New Zealand' entry, in Aitken, Richard & Looker, Michael, (ed.s), 2002, *The Oxford Companion to Australian Gardens*, OUP & AGHS, 440-1
- Adam, John, 'Forever Green: a midsummer night's dream', in Bieleski, Rod and Wilcox, Mike, (ed.s), 2009, Araucariaceae - Proceedings of the 2002 Araucariaceae Symposium, Araucaria – Agathis – Wollemia, International Dendrology Society, Auckland, New Zealand, 14-17/3/2002, International Dendrology Society, c/o Larnach Castle, Dunedin, 226
- AGHSACT/M/R, 1992, Upitis, Astrida (ed.), 1992, *Durham Hall Garden, near Braidwood, New South Wales*, complied by members of the Australian Garden History Society (AGHS) ACT, Monaro & Riverina Branch, 19 AGHSV, 2012, AGHS Victorian Branch 19-21/9/2012 *Guilfoyle Western District Tour*, plant notes by Stuart Read (unpublished list)
- Aitken, Richard, personal communication, emails 29 & 30/8/2013
- Aitken, Richard, 2002, 'Robinson, William (1838-1935)' entry, in Aitken, Richard & Looker, Michael, (ed.s), 2002, *The Oxford Companion to Australian Gardens*, OUP & AGHS, 510-1
- Aitken, Richard et al, 2004, *Gardenesque a Celebration of Australian Gardening*, The Miegunyah Press /Melbourne University Publishing, in association with the State Library of Victoria, Melbourne, 88, 96
- Aitken, Richard, 2006, Seeds of Change an Illustrated History of Adelaide Botanic Garden, Bloomings Books & the Botanic Gardens of Adelaide, 29, 36, 38, 54, 58, 154, 156
- Aitken, Richard, 2010, The Garden of Ideas Four Centuries of Australian Style, The Miegunyah Press / Melbourne University Publishing, Melbourne, 103-4, 110, 117, 119, 124
- St.George, Ian (ed.), 2012, Bagnall, A.G. & Petersen, G.C., 1948, William Colenso Printer Missionary Botanist Explorer Politician his Life and Journeys, Otago University Press, Dunedin, 93-4, 217, 294, 309, 339, 383
- Bagot, Tempe, 'Forest Lodge To-day', in *The Australian Garden Journal*, vol.6 (5), June/July 1987, 220-222 Barnet, Rod, 'The Eclectic Garden', 174 in Bradbury (ed.), 1995 see Bradbury
- Baskin, Judy and Lucas, Anna, 1995, Report on Work Undertaken under a grant from the A.C.T. Heritage Council to Survey and Record Significant Gardens in the Australian Capital Territory, AGHS (ACT, Monaro & Riverina Branch), Canberra
- Beames, R.O. & Whitehill, J.A.E., 1981, *Some Historic Gardens of South Australia*, National Trust of South Australia, in conjunction with the Botanic Gardens of Adelaide, 37-39, 67-71
- Beattie, James, 2006, 'Alfred Sharpe, Australasia, and Ruskin', *Journal of New Zealand Art History*, 27 (December, 2006), 38-56, quoted in Beattie, James, 2008, (ref.)
- Beattie, James, 2008, 'Acclimatisation and the "Europeanisation" of New Zealand, 1830s-1920s?', *ENNZ: Environment, Nature and New Zealand*, 3, 1 (February, 2008), 1-25
- Beattie, James, 2011, 'Colonial Aesthetic Anxieties', in *Empire and Environmental Anxiety Health, Science, Art and Conservation in South Asia and Australasia, 1800-1920*, Palgrave Macmillan, 91, 94-5
- Beattie, James, publication pending (2013), 'The Empire of the Rhododendron: re-orienting New Zealand garden history', chapter 14., research supported by University of Waikato Vice-Chancellor's Research Award, 3, 4, 14, 16-17
- Bennett, G., 1834, Wanderings in New South Wales, Batavia, Pedir Coast, Singapore, And China..., 2 volumes, Richard Bentley, London (Volume 1, 336), quoted in Beattie, 2013, pending (ref.)
- Betteridge, Christopher, Appendix A Plant Lists, in 'Federation Gardens', in Heritage Council of NSW, 1986, Conservation of Federation Houses – papers relating to one day seminars arranged by the Heritage Council of New South Wales (various venues and dates, 1981-86), Fifth Edition, 1986, HCNSW, Sydney
- Boden, Robert, 'The Trees of Commonwealth Park' (Canberra), in *The Australian Garden Journal* vol. 9(4), August 1990, 250-3
- Botham, Helen, La Trobe's Jolimont a walk around my garden, 2006, C.J. La Trobe Society, Port Melbourne, 19
- Bradbury, Matthew, (General Ed.), 1995, A History of the Garden in New Zealand, Penguin Books (NZ), 53, 60, 71, 74-75, 110, 174

- Brassey, R.J.N., 1999, Mansion House Gardens, Kawau Island A Conservation Plan and Resource Document, Second Edition, 4/1999, (NZ) Department of Conservation, Auckland Conservancy, 10, 11, 29, 32-5
- Brookes, Margaret, 2009, *Plants Listed in Nursery Catalogues in Victoria*, Garden Plant Conservation Association of Australia Inc., South Yarra diverse plant entries (dates for sale)
- Brouwer, Catherine, personal communication, email 19/4/2013- re NZ plants in Queensland
- Brownsey, Patrick, 'Feeding the Victorian Fern Craze- In the Garden', in New Zealand Historic Places Trust, 'Historic Places' magazine #87, summer 2002, 38-39
- Bunce, Daniel, 1994, 1836 Catalogue of Seeds and Plants, indiigenous and exotic, cultivated and on sale at Denmark Hill Nursery, New Town road, Hobart Town, by D.Bunce, Mulini Press, Canberra
- Burgess, Linda, 2007, *Historic Houses a Visitor's Guide to 65 Early New Zealand Houses*, Random House New Zealand, 40, 46, 109
- CB = Burton, Craig, unpublished, University of Western Sydney, Rydalmere Landscape Management Plan Appendix D1 Conservation Areas 1-2, Modern Period (1940-1962) plant list
- Butler, Geoff, *Tree Survey / Lanyon Homestead Plant Survey CL 82/22* (A.C.T)., Commonwealth Department of Housing and Construction, in Marshall, Duncan, ...Butler, Geoff & Associates... et al., 2010, *Lanyon Conservation Management Plan Volume 1*, for the Cultural Facilities Corporation ACT Historic Places
- Chalk, Douglas, 1988, Hebes and Parabebes, Timber Press, various pp.
- Challenger, S., (1978) 'Early Nursery Catalogues: an historical resource', in *New Zealand Libraries* 41 (4), 107-8, 1978
- Christchurch City Council, 1963, A Garden Century the Christchurch Botanic Gardens 1863-1963, Christchurch City Council, Christchurch, 41-3, 45, 106
- Christchurch City Council, 2007, Christchurch Botanic Gardens Management Plan 2007, Christchurch City Council, Christchurch, 13, 19
- Clough, Richard, 'Pacific Islands' entry, in Aitken, Richard & Looker, Michael, (ed.s), 2002, *The Oxford Companion to Australian Gardens*, OUP & AGHS, 459
- Cockayne, Leonard, 1919, New Zealand Plants and Their Story, New Zealand Board of Science and Art, Manual No. 1, Second Edition, The Hon. G.W.Russell, Minister of Internal Affairs, Wellington, 5-6
- Cox, Carlton, 2011 (unpub.), Belmont Longford (garden visit notes/plant list), 8/2011
- Crawford, Ian, 'The Gardens of Government House Yarralumla', in *Australian Garden History* 13(3), November–December 2001, 9-11
- Dawson, Bea, 2010, A History of Gardening in New Zealand, Godwit Books, 50, 110, 116, 120, 130, 182, 211
- Desmond, Ray, 1999, Sir Joseph Dalton Hooker traveller and plant collector, Antique Collector's Club, with the Royal Botanic Gardens, Kew
- Dixon, Trisha & Churchill, Jennie, 1998, *The Vision of Edna Walling Garden Plans 1920-1951*, Bloomings Books, 138
- Dunlop, Eric, 2002, *The Story of the Dunedin Botanic Garden New Zealand's First*, Friends of the Dunedin Botanic Garden Inc./Dunedin City Council, Longacre Press, Dunedin, 17, 19-20, 23, 41, 43, 50, 59, 102, 107, 221
- Dunlop, Gary, 'Cordyline indivisa in the British Isles', in New Zealand Garden Journal 2009, vol. 12(1), 20-21
- Duxbury, Ken, 'Planting and Planning Victorian Ferneries By Channels of Coolness Part 1', in *Australian Garden History* 13 (3), November-December 2001, 4-8
 - " " Part 3', in Australian Garden History 13(5), March-April 2002, 10-13
- Ebury, Sue (The Lady Wilton), 2013, pers.comm. 18/8/2013 re Chionochloa flavicans

- Fisher, 1980, The Origin of Garden Plants, Constable, 240
- FM = Dr. Ferdinand Mueller, To John O'Shanassy, The Hon. The Chief Secretary, (Annual) Report Melbourne Botanic Garden, 24/10/1858, in Victorian Parliamentary Papers, 1858;
- FM2 = ", To William Nicholson, The Hon. The Chief Secretary, (Annual) report Melbourne Botanical & Zoological Garden, 12/1/1860, in Victorian Parliamentary Papers, 1860;
- FM3 = ", To Richard Heales, The Hon. The Chief Secretary, (Annual) Report Melbourne Botanic & Zoological Garden, 10/1/1861, , in Victorian Parliamentary Papers, 1861;
- FM4 = ", To John O'Shanassy, The Hon. The Chief Secretary, (Annual) Report Melbourne Botanic & Zoological Garden, 10/3/1862, in Victorian Parliamentary Papers, 1862;
- FM5 = ", To John O'Shanassy, The Hon. the Chief Secretary, (Annual) Report Melbourne Botanic Garden, 15/4/1863, in Victorian Parliamentary Papers, 1863;
- FM6 = ", To James McCulloch, The Hon. the Chief Secretary, (Annual) Report Melbourne Botanical Garden, 30/9/1865, in Victorian Parliamentary Papers, 1865;
- FM7 = Mueller, Ferdinand von, 1891, Select extra-tropical plants readily eligible for industrial culture or naturalization, with indications of their native countries and some of their uses, 8th edition, revised and enlarged, 129, 141, 145-6, 149, online at http://www.biodiversitylibrary.org/item/67626#page/9/mode/lup
- Fleming, Faye, (ed.), 2010, 'Who influenced the early years of the Botanic Gardens?' Time Line, (compiled from diverse sources for), the Friends of the Christchurch Botanic Gardens (brochure)
- Fox, Paul, 'The Simla of the South' (re Mt. Macedon conference paper), in *Australian Garden History* 6(4), January-February 1995, 11
- Fox, Paul, 2004, *Clearings Six Colonial Gardeners and their Gardens*, The Miegunyah Press, 131, 137, 141 Frazer Simons, Phyl, 1987, *Historic Tasmanian Gardens*, Mulini Press, Canberra, 5, 19, 23, 34, 38-9, 41, 67, 79, 96, 108, 113, 168, 261, 263, 265, 266, 279
- FFBG = Friends of the Ballarat Botanical Gardens, 2012, *An Eden of Loveliness Ballarat Botanical Gardens by Lake Wendouree a Pictorial History*, FBBG, Ballarat, 2, 9, 21-2, 69
- Gabites, Isobel and Lucas, Rob, 2001, *The Native Garden Design themes from wild New Zealand*, Godwit Books/Random House, 12
- Gardeners Magazine, (Foreign Notices ... / Australia ... / Sydney / NZ flax...), 8 (36), February 1832, p.79
- George, Alex S., 2009, *The Australian Botanist's Companion*, Four Gables Press, Kardinya, 294, 339
- Gilbert (1), Lionel, 'Cunningham, Allan (1791-1839)' entry, in Aitken, Richard & Looker, Michael, (ed.s), 2002, The Oxford Companion to Australian Gardens, OUP & AGHS, 169-170
- Gilbert (2), Lionel, 'Moore, Charles (1820-1905)'entry, in Aitken, Richard & Looker, Michael, (ed.s), 2002, *The Oxford Companion to Australian Gardens*, OUP & AGHS, 414-6
- Gilbert, Lionel, 2000, Mr. Macleay's Elizabeth Bay Garden Plants, Privilege, and Power in Sydney's early Scientific Community, Mulini Press, Canberra, 14, 16-17, 45, 54-5, 63, 69
- Giles & Pascoe, 1869, Giles & Pascoe's General Catalogue for fruits of Flowering and Ornamental Trees, Shrubs, Creepers, etc...Grove Hill Nursery, Third Creek, near Magill..., William Hay, Printer, Advertiser and Chronicle Offices, Adelaide
- Gilfedder, Francine, 'Sowing the Seeds: the early Nursery Industry in the Macedon Ranges', in *Australian Garden History* 6(4), January-February 1995, 18-21
- Gilfedder, Francine (ed. with Kocsis, Marika and Hunt, Suzanne), 'Guilfoyle Plant Lists, Turkeith, 1905, 1906 and 1907, Mooleric Plant List 1994', in *Australian Garden History* 15(2), September-October 2003
- Golding, Jeanne Harnington, Botanist's Assistant, Auckland Museum, 'Flax' entry, in McLintock, A.H. (ed.), 1966, An Encyclopaedia of New Zealand, W.E.Owen/Government Printer, Wellington
- Govanstone, Andrew, 'A New Lease of Life for 'Bon Accord', Sale, Victoria', in *The Australian Garden Journal*, vol. 9 (1), November 1989, 42
- Gray, Dave, personal communication, 25/2/2011 (re Historic Houses Trust of NSW visit Summerhome, Tas.)
- Guilfoyle, Michael, 1851, Catalogue of Plants for sale by Michael Guilfoyle, Nursery & Seedsman, Exotic Nursery, Double Bay, New South Head Road, Kemp & Fairfax, Sydney, online at www.slv.vic.gov.au
- Guilfoyle, Michael and Sons, 1862, M.Guilfoyle & Sons Catalogue of Ornamental Trees & Shrubs, Fruit Trees, Bulbs, Plants, Climbers, etc, Exotic Nursery, Double Bay, New South Head Road, Sydney, New South Wales, Reading & Wellbank, Sydney, online at www.slv.vic.gov.au
- Guilfoyle, William, 1897-8, 'Tourist Notes on the picturesque in gardens, parks and forests', in *Bankers' Magazine of Australasia*, quoted in McBriar, 1981, 4 (ref.)
- Halliday, Alison and Hambrett, Joanne, 2010, *A Passion for Place Gardens of the Blue Mountains*, Bloomings Books, Melbourne, 18-27, 118-125

- Harris, Jan, 'Treasured N.Z. Plants', in 'Gardening', in New Zealand Historic Places Trust, *Historic Places*, 3/1992, 23
- Harvey, Spencer, 2006, *The Story of Machattie Park and the people who worked there*, Bathurst & District Historical Society, 19
- Hawker, John, personal communication, email 19/4/2013
- Hawker, John, (1997) 'Guest Editorial', in Australian Garden History 8(5), March-April 1997, 2
- Hawker, John, (2002), 'Bishopscourt Plant List compiled by John Hawker 7 August 2001', in Dwyer, Wendy, 'Bishopscourt, East Melbourne', in *Australian Garden History* 13(4), January-March 2002, 9-20, AGHS Victorian Branch
- Hazelwood Bros., 1937, *Favourite Roses and Other Plants 1937*, Hazelwood Bros. Ltd., Epping, Sydney. Heathcote, Richard, personal communication, email 30/8/2013
- Hughes, Tim, 'Invergowrie a garden restoration', in Australian Garden History Society, *Australian Garden History* 13 (4), January/February 2002, 4-6
- Jack, Sybil, 2013 (unpublished abstract) 'Planting New South Wales, the role of the Sydney Botanic Gardens), sourced from records (journal, annual reports) of the Royal Botanic Gardens, Sydney)
- Jones, David S., 1997, Designed Landscapes of South Australia Theoretical Frameworks for Designed Landscapes in Australia: South Australian Report, (to the Australian Heritage Commission), The University of Adelaide, 26, 185, 187
- Jones, David, Payne, Pauline, Nottle, Trevor, 1998, 'Adelaide Plains Gardens 1850s-60s', in *Gardens in South Australia 1840-1940 Guidelines for Design & Conservation*, SA Dept. of Environment & Natural Resources & the Corporation of the City of Adelaide, Heritage Conservation 2-5, 38-9, 41, 44, 52, 57, 62, 72, 85-6, 92 JOH = O'Hehir, Janet, personal communication, 7/8/2013 re *Meryta, Corokia, Pseudopanax*
- Jones, George, 1984, *Growing Together a Gardening History of Geelong extending to Colac and Camperdown*, George Samuel Jones;
- Jones, George, 1988, *Growing Together Supplementary Volume*, (about Geelong Botanic Gardens) George Samuel Jones
- Jones, Peter, 1982, *Planting c.1850-1900 a Guide to the Restoration, Conservation and Rehabilitation of Early Style Australian Gardens and Man-Made Landscapes*, Australian Council of National Trusts and National Trust of Australia (Victoria), NTA (Victoria), Melbourne
- Joyner, Wendy, unpub., 2003, *Plant List for Dulwich House* (Adelaide, b.1881, garden 1881-1950s), compiled 9/2003
- Kerr-Forsyth, Holly, 'Botanic Design Picture Perfect', in Gardening, in "Weekend A Plus", in *The Australian*, 28-29/9/2013, 6-7
- Lawrence, David, 2012, Albury Botanic Gardens, Albury Library Museum, Albury City Council, 40, 51, 55, 58
- Lockwood, Leslie, Wilson, Jan and Fagg, Murray, 2001, *Botanic Gardens of Australia a guide to 80 gardens*, New Holland Publishers, 77, 119
- McBriar, Marilyn, 'Formal or Natural Gardens for Australia? An Edwardian Discussion', in *Journal of the Australian Garden History Society*, Winter 1981 no. 2, AGHS, Melbourne
- McConville, Chris, 'A Forest at the Edge of the City', (on Mt. Macedon conference paper) in *Australian Garden History* 6(4), January-February 1995, 8
- Metcalfe, Laurie, 1993, The Cultivation of New Zealand Plants, Godwit Press various entries & 243-6
- Mills, Colin, Hortus Camdenensis an illustrated catalogue of plants grown by Sir William Macarthur at Camden Park, NSW, Australia between c.1820 and 1861, online www.hortuscamden.com diverse entries (Cordyline, Metrosideros etc)
- Molloy, Brian P. J., (2012), 'Sinclair, Andrew 1794-1861', in *The Dictionary of New Zealand Biography. Te Ara-the Encyclopaedia of New Zealand*, updated 30/10/2012, www.TeAra.govt.nz/en/biographies/1s12/sinclair-andrew
- Moon, Paul, 2012, A Savage Country the untold story of New Zealand in the 1820s, Penguin Books, 16

- Morrell, W.P., (ed.), 1958, *Sir Joseph Banks in New Zealand from his journal*, A.H. & A.W.Reed, 79-80, 96 (illus.), 112 (illus.), 126-127
- Morris, Colleen & Rodd, Tony, *Colonial Plants Database*, NSW Historic Houses Trust / Sydney Living Museums, online at http://www.hht.net.au/collections/library/colonial_plants (diverse entries)
- Morris, Colleen, 2008, Lost Gardens of Sydney, Historic Houses Trust of NSW, Sydney, 69
- Morris, Joanne, 'Tasmanian Gardens in the Spring' (tour report), in *Australian Garden History* 5(4), January-February 1994, 10
- Moulds, F.R., 'The Forest Resource of the Macedon Ranges', (conference paper) in *Australian Garden History* 6(4), January-February 1995, 15
- Mullins, Dr. Steve, Bellamy, Martin & Moore, Clive, 'Andrew Goldie in New Guinea 1875 1879: Memoir of a Natural history collector', published online in *Memoirs of the Queensland Museum Culture Volume 6*, Queensland Museum, www.qm.qld.gov.au
- 'New Zealand Scrapbook', in New Zealand's Heritage the Making of a Nation, part 46, 1972, Paul Hamlyn, 47
- Nolan, Richard, 'Old Government House Gardens, Belair, South Australia' in *The Australian Garden Journal*, vol.6 (3), Feb./March 1987, 117-120
- Nottle, Trevor, 1996, Gardens of the Sun, Kangaroo Press, Kenthurst, 38, 87, 110, 146, 198-200
- Nottle, Trevor, 2011, Plants for a Changing Climate, Rosenberg Publishing, Dural, 36, 38, 53-5, 175, 180, 183-4
- NTV = National Trust of Australia (Victoria) Database http://vhd.heritage.vic.gov.au/search/nt-search
- Oakman, Harry, 1990, Harry Oakman's Shrubs the complete guide to shrubs for tropical and subtropical gardens, University of Queensland Press, 28, 83-4, 93
- OGA = Open Gardens Australia, *Guidebook* 2013, entry: Karori, Mt. Macedon , Victoria (open 5/5/2013)
- Oliver, W.H., 1960, 'A British Frontier', in The Story of New Zealand, Faber & Faber
- Pascoe, Gwen, 2012, 'Long Views & Short Vistas' Victoria's Nineteenth Century Public Botanic Gardens, Australian Scholarly Press, 89, 92-4
- Paul, Gordon and Eves, Laura, Arboricultural Consultants, (unpub.), 29/9/2004, Site Plan, Prospect House (fmr. Mount Pleasant, Launceston) Tree Management Plan, Preliminary Schedule of Works (per compartments)
- Pawson, Eric, 'Networks of Botanical Exchange and the Production of New Landscapes', in *Meeting of New Zealand Geographers*, University of Canterbury, Christchurch, 14 September, 2007, quoted in Beattie, 2008, (ref.)
- Payne, Pauline, 2007, Richard Schomburgk: Explorer and Botanic Garden Director, 105, 107, 114, 124, 140, 154
- Pescott, R.T.M., 1974, W.R.Guilfoyle 1840-1912 the Master of Landscaping, Oxford University Press, Melbourne, 9, 12, 21
- 'Appendix B Flax Plants of New South Wales and Norfolk Island', in Phillip, Arthur, 1783-92, in *Historical Records of New South Wales*, Volume 1, part 2, 707-9
- Plate, Gina, Quoyle, James & Morris, Colleen, 2013, *Brownlow Hill, Orangeville, NSW garden recording*, Sydney & Northern NSW Branch, AGHS (draft, 7/2013)
- Polya, Rosemary, 1981, *Nineteenth Century Plant Nursery Catalogues of South-East Australia: a Bibliography*, La Trobe University Library, library publication no.24, Bundoora
- Proudfoot, Peter, Maguire, Roslyn and Freestone, Robert, (ed.s), 2000, Colonial City, Global City Sydney's International Exhibition 1879, Crossing Press, 107
- Pulleine, R.H., 1934, 'The Botanical Colonisation of the Adelaide Plains', in *Proceedings of the Royal Geographical Society of Australasia (SA Branch)*, vol. 35, 31-65, quoted in Jones, David, 1997, 36 (ref.)
- Ratliffe, Richard, 1990, Australia's Master Gardner Paul Sorensen and his gardens, Kangaroo Press, Sydney

- Raine, Katherine, '1815-1840s The First European Gardens', 53, 60; '1840s-1860s The Settler's Gardens', 71, 74-75; and '1860s-1900 Victorian Gardens', 100, in Bradbury, 1995 see Bradbury
- Rayment, Ron, Ron Rayment Landscape, in Architect, III, 2, May-June 1969, p.14
- Read, (2002), 'The Mysterious Mr Shelley, in Australian Garden History 14, '(2), September-October 2002, 11-21
- Read, Stuart, (unpub.) 2010, Eskleigh / Scone (Perth, Tasmania) Advice on driveway and paddock trees, for Australian Garden History Society Tasmanian Branch, 8-9/2010
- Read, Stuart, (unpub.) 2012, Yasmar Garden Plant List Species Identified 2003 (by the NSW Government Architect's Office), updated 12/2011; 3 & 7/2012 Stuart Read Recommended Management and Priority Actions, NSW Office of Environment and Heritage
- Read, Stuart, (unpub.) 1/2013 email exchange with Peter Freeman, Garry Smith and diverse other NSW heritage advisers regarding the NZ and Qld. Kauri timber trade, extraction, ecology and export, 1770s-c1930s and subsequent conservation
- Rice, Geoffrey (ed.), 1996, The Oxford History of New Zealand, second edition, Oxford University Press
- Robinson, William, 1871, *The Subtropical Garden, or, Beauty of form in the flower garden*, Frances Murray, London (online at http://archive.org/details/subtropicalgarde00robi)
- RBGMHS = Horticultural Staff, Royal Botanic Gardens, 'Appendix III Selection of Plants Listed in Victoria from 1845-1874 and known to be available in the nursery trade', and 'Additional Plants listed 1874-1900', in Historic Buildings Council Victoria, 1986, *Papers presented at the Historic Gardens Conference, 'Rippon Lea', Melbourne, 16 April 1986*, Ministry for Planning and Environment, Melbourne
- RSG = Catalogue of Plants in the Royal Society's Gardens, Queens Park, Hobart Town, Tasmania (1845-59)
- Rule, J. & J., 1855, Catalogue of Plants for Sale at the Victoria Nursery, Richmond..., Charlwood & Son, Melbourne
- Russell, Roslyn, 'His Island Home Sir George Grey's Development of Kawau Island', in *National Library News*, 10/2001, National Library of Australia, Canberra, 3-4
- Seto, Jan and Sim, Jeannie, 'Oakman, Henry Octave (Harry)(1906-2002)' entry, in Aitken, Richard & Looker, Michael (ed.s), 2002, *The Oxford Companion to Australian Gardens*, OUP & AGHS, 449
- Sharp(e), Alfred, 'The Hill Reserve', in *The Newcastle Morning Herald*, 27.8.1890
- Shepherd, Winsome and Cook, Walter, 1988, *The Botanic Garden, Wellington: A New Zealand History 1840-1987*, Milwood Press, Wellington, quoted in Brassey, 1999, 29 (ref.)
- Sheridan (1) = Sheridan, Gwenda, unpub., (2007), *List of Plants to W.H.D.Archer, Brickendon in 1884 from the Royal Society's Garden* (source: Catalogues of the Royal Society's Garden, Hobart Town, Van Diemen's Land)
- Sheridan (2) = Sheridan, Gwenda (pending publication), *Launceston Horticultural Society*, 1838-2013 a History, Launceston Horticultural Society, 22
- Sheridan (3) = Sheridan, Gwenda, unpub., (2002), A Report on the Significant Trees in the Royal Tasmanian Botanical Gardens, Hobart, 17, 19
- Simpson, Kyleigh and Dr. Michael, 2010, Australian Gardens Making History the vital role of making and keeping garden inventories...the Garden at 'The Shambles', Montville, Queensland..., Kyleigh & Dr. Michael Simpson, Montville
- Simpson, Phillip, 2000, Dancing Leaves the story of New Zealand's cabbage tree, ti kouka, Canterbury University Press, 36, 45, 171-2, 250, 253
- Simpson, Phillip, 2005, *Pohutukawa & Rata New Zealand's iron-hearted trees*, Te Papa Press with the Crimson Trust, 33, 195, 326
- Smart, Gillian, 1988, Sydney Gardens between the Wars, BLA thesis, University of NSW, 2 volumes, 318, 327, 329, 332

- Smith & Sons, 1873, 1873-4 Descriptive Catalogue of Fruit Trees, Coniferae, Hardy Trees, Shrubs etc cultivated for sale by John Smith & Sons, Riddell's Creek...Riddell's Creek Nursery...., Fergusson & Moore, Melbourne
- Spencer, Roger, 'Conifers' entry, in Aitken, Richard & Looker, Michael, (ed.s), 2002, *The Oxford Companion to Australian Gardens*, OUP & AGHS, 155-7
- Spencer, Roger, 1999, *A Horticultural Flora of South-Eastern Australia*, Royal Botanic Gardens, Melbourne (entries on NZ conifer species)
- St. George, Ian, 2012, William Colenso Printer Missionary Botanist Explorer Politician His Life and Journeys by A.G.Bagnall and G.C.Petersen, Oxford University Press,
- Swinbourne, Robert, 2006, *Gardens Lost* (edited/transcribed by Merilyn Kuchel), Australian Garden History Society, South Australian Branch, 9-10, 31, 34, 38, 43-4, 46-7, 56, 60, 63-4, 66-8, 70,75, 79-80
- Tanner, Howard and Stringer, Richard, 1979, *Converting the Wilderness the Art of Gardening in Colonial Australia*, (Exhibition catalogue, Australian Tour, 1979-80), Art Gallery Directors Council / BP Australia, 64
- The Horticultural Society of Canberra, 2010, The Canberra Gardener Tenth Edition, THSC Inc., Canberra
- Thomson, A. D., 'Cockayne, Leonard 1855-1934', in the *Dictionary of New Zealand Biography. Te Ara the Encyclopaedia of New Zealand*, updated 30-Oct-2012, www.TeAra.govt.nz/en/biographies/3c25/cockayne-leonard
- Tritenbach, Paul, 1987, Botanic Gardens and Parks in New Zealand, Excellence Press, Auckland, 12, 18, 19, 56, 97-8, 104, 123-4, 126
- Unattributed, 'A garden of flowers', in Australasian, 12 February 1916, p.298
- Viska, John, Lilleyman, Gillian & Hof, Elizabeth, 2007, *A guide to conserving and interpreting Gardens in Western Australia*, West Australian Branch, Australian Garden History Society & Lotterywest, 12, 18, 21, 23, 30, 36
- Webb, Chris & Charlotte P/L, 2013 (unpub.), *Summerlees* (Sutton Forest, NSW) *Garden Recording*, for the Australian Garden History Society (Southern Highlands Branch)
- Wells, Peter, 2011, The Hungry Heart Journeys with William Colenso, Vintage Books/Random House New Zealand, 65-6, 354, 356-7
- Whitehill, Tony, personal communications (emails), 15/4/2013; 16/9/2013 re South Australian gardens & Wairoa
- Wyatt, 1874, Charles Wyatt's General Descriptive Catalogue for 1874 of Fruit Trees, Shrubs, Ornamental & Forest Trees, Plants, Bulbs etc, etc...Frogmore Nursery, Fyansford, Geelong, Henry Franks, Geelong

Other sources used:

Australia's Open Garden Scheme, Dalvui opening notes, undated

Australian Garden History Society (Tasmania), 2010, *The Vision Splendid, Australian Garden History Society 31*st Annual National Conference, Launceston, Tasmania, 5th-7th November 2010 (conference booklet)

Bart Gane, Secretary, Koroit Business & Tourism Association, undated, Koroit Botanic Gardens (notes: 3/5/2012 World Environment Day planting of 60 trees to reinstate parts of KBG)

Chandler's Nursery, 1938 Catalogue, Sandy Bay, Hobart

Dawson, John & Lucas, Rob, 2012, Field Guide to New Zealand's Native Trees, Craig Potton Publishing

Dickinson, James, 1845, Catalogue of Annual and Herbaceous Plants, Flowering Bulbs and Tubers, Ornamental Shrubs, Forest Trees, Fruit Trees and Culinary Plants and Seed, on sale by James Dickinson, 39 Murray Street, Hobart Town, Van Diemen's Land, Wm. Gore Elliston, Courier Office, Collins Street

Friends of the Colac Botanic Gardens, undated brochure, Colac Botanic Gardens;

Friends of the Warrnambool Botanic Gardens, undated brochure, Warrnambool Botanic Gardens – designed by William Guilfoyle;

Friends of the Warrnambool Botanic Gardens, 2/2011 guide tour notes

Hawker, John, personal communication

http://en.wikipedia.org/wiki/Brighton_Cemetery (Brighton General Cemetery, Victoria, accessed 29/8/2013)

http://en.wikipedia.org/wiki/Rippon_Lea_Estate (Elsternwick, Victoria), accessed 29/8/2013 http://federation-house.wikispaces.com/Purrumbete+Homestead%2C+Camperdown

http://oldestatesforsale.wordpress.com/2013/05/15/karori-mount-macedon/ (accessed 18/8/2013)

http://www.aspleynursery.com.au/plant%20description.htm

http://www.biodiversitylibrary.org/ - diverse entries

http://www.captainfellshistoricferries.com.au/O'may.html - Natone house, Bellerive, Tasmania

http://www.rbgsyd.nsw.gov.au/welcome/tomah/fast_facts_and

http://www.rbgsyd.nsw.gov.au/welcome/tomah/the_garden/feature_gardens# (Blue Mountains Botanic Garden, Mt.Tomah, accessed 8/9/2013)

<u>http://www.rtbg.tas.gov.au/index.aspx?base=598</u> (Royal Tasmanian Botanic Gardens website/plant collections - history, accessed 8/9/2013)

http://www.tasmanianarboretum.org.au/southern_beeches.shtml & http://www.tasmanianarboretum.org.au/plant_list.shtml (accessed 8/9/2013)

http://www.theplantlist.org/tpl/record/kew-2382098 - diverse entries

Latham, John, c.1899, Catalogue of Choice Plants and Seeds, offered by John Latham, Nurseryman, Florist & Seedsman, Nursery: Harrington Street, Hobart, Mercury Print, Hobart

Pascoe, Gwen, 2012, 'Long Views & Short Vistas' – Victoria's Nineteenth Century Public Botanic Gardens, Australian Scholarly Publishing

Vale, Anne, 2012, The Garden at Dalvui, Australian Garden History Society (Victorian branch)

Warne, Catherine, 1992, Guide to the Gardens of the Blue Mountains – a seasonal guide to 50 gardens opening to the public, Kingsclear Books

www.bellholme.com.au/karori.html - Karori, Mt. Macedon

www.heritage.nsw.gov.au - NSW State Heritage Database - diverse entries

<u>www.heritage.vic.gov.au/places</u> - various listings on Vic. State Heritage Register; National Trust of Australia (Victoria) database entries (classified sites)

YGG, 1976 = Yates Seeds, 1976, *Yates Garden Guide for Home Gardeners in New Zealand and Around the World*, 52nd Edition, Arthur Yates & Co. Ltd., Te Papapa, Auckland, 291-2, 294-5

YGG, 2011 = Yates Seeds, 2011, *Yates Garden Guide* – *Celebrating 125 Years of Yates in Australia*, 43rd Edition, Harper Collins Publishers Australia P/L, Sydney, 2011, 1, 367, 384, 387, 389, 412, 414-17, 421, 424, 429, 448, 451).