

VOL. IV.

SEPTEMBER, 1961.

NO. IV.

WILLIAM COLENZO
COMMEMORATIVE ISSUE

NEW ZEALAND
PLANTS AND GARDENS



THE JOURNAL OF THE
ROYAL NEW ZEALAND
INSTITUTE OF
HORTICULTURE

(INCORPORATED)

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Visitors to United Kingdom

An enquiry has been received asking how members visiting Great Britain and Europe can be informed of matters of horticultural interest. The Royal Horticultural Society at Vincent Square, Westminster, London, S.W.1, has stated they are always pleased to welcome overseas visitors to the Shows held there throughout the year and to answer enquiries about places of importance to horticulturists, in Britain and in Europe.

If members become Fellows of the Royal Horticultural Society they receive individual tickets for all meetings, Wisley Gardens, and Shows of the Royal Horticultural Society, including the Great Spring Show, Chelsea, and other privileges. (£2/2/- a year).

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NEW ZEALAND PLANTS AND GARDENS

The Official Journal of the Royal New
Zealand Institute of Horticulture (Inc.)

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BOTANISTS AND PLANT HUNTERS

It is a matter for speculation how many people who grow plants with such specific epithets as *fortunei*, *forrestii*, *delavayi*, *colensoi*, *sinclairii*, *haastii* give much thought to their origin. If it was explained to them that *Aciphylla colensoi* was a speargrass discovered by and named after William Colenso, how many would, I wonder, ask 'Who was Colenso?' This issue of *New Zealand Plants and Gardens* is designed especially to commemorate the 150th anniversary of the birth of William Colenso, F.R.S.

Articles have appeared from time to time in this Journal describing the work of the botanical explorers of New Zealand. These belong to the great race of plant hunters who have botanised the countries of the world, often suffering hardship and danger, to bring to us those treasures without which our gardens would be poor indeed. Although certain areas are now closed to botanical explorers, plant collecting is even now taking place in New Guinea and in Western Australia. Such work must surely continue so long as man is conscious of the natural beauties of the world.

There is also an academic aspect of horticulture where the botanist plays his part to preserve order and avoid chaos in the nomenclature and classification of plant genera. Carl Linnaeus formed the basis for systematic botany in the 18th century and since that time botanists have been constantly revising, where necessary, existing plant names to bring them into line with modern requirements. Until recently T. F. Cheeseman's *Manual of the New Zealand Flora* was accepted as the authority for our native flora. Much research, however, has taken place since the *Manual* was first published and the appearance, this year, of a new *Flora of New Zealand*, by Dr. H. H. Allan, is welcomed as the successor to Cheeseman. This important work is the subject of a review in this issue.

G. A. R. PHILLIPS,

Editor.

WILLIAM COLENZO, 1811 - 1899

A. W. ANDERSON, A.H.R.I.H.(N.Z.), (Timaru).

1. — The Missionary

We always think of William Colenso, whose name is commemorated in so many of our native plants, as a missionary who, in the early days, spent the greater part of his life journeying through the uncharted North Island and it may come as a surprise to many people to find that, in fact he had little more than eight years in the mission field. I should think his life was an unhappy one because it was full of trials and frustrations and, all too often, when his ambitions seemed to be on the point of fruition they turned to dust and ashes within his grasp.

Colenso was a man of strong personality and high principles and, like so many do-gooders, he felt that his views were right and gave little thought to other people's feelings. He was an Englishman, born at Penzance in 1811, and, as he pointed out on one occasion at Napier, he thanked God he was an Englishman, and had he not been born an Englishman he would wish to have been born an Irishman — anything rather than a mean, crawling, sly, close Scotsman. It was that sort of thing, more than anything else, that made enemies and caused him so much frustration during the latter half of his life.

At 15 years of age he was apprenticed to a bookbinder and printer in Penzance and later went to London. There he missed the social life of the small town, and always of a religious turn of mind, he spent his spare time writing anonymous articles for a religious periodical. By an odd chance his articles were sent to his employer for printing, and, when Colenso admitted authorship the employer introduced him to the Secretary of the Church Missionary Society, and altered the whole tenour of his life.

As it happened, the missionaries in New Zealand were imploring the Society to send them a printing press and when young Colenso offered his services, saying he was willing to go to New Zealand, the offer was accepted. Just before sailing Colenso and the young missionaries who were going with him were shown some of the sights of London. On one occasion they visited the Bank of England and Colenso had the experience of holding £2,000,000 in notes in one hand and a bag containing £2,000 in golden sovereigns in the other. He knew what might be expected of him and announced that if he had to choose between the Scriptures and all that money he would choose the Holy Book.

I think it would be most unfair to suggest that he was not perfectly sincere, because throughout his life he took remarkably little interest in personal gain. It was not until he had reported at Paihai, in the Bay of Islands, and handed over a sealed package to Rev. Henry Williams who was in charge of the mission that he was told his salary

would be £30 a year with rations similar in quantity and quality to those allowed the convicts in Sydney. He came out strongly against missionaries acquiring land, and when the Rev. Williams was dismissed by the Society in 1850 Colenso's letters to the Society on the subject were regarded as a contributing cause.

Colenso was in trouble soon after his arrival. Busy though he was with his work and learning Maori he missed the evangelical meetings and discussions he had enjoyed so much during the latter part of his life in London, and he suggested to Mr. Williams that it might be a good idea to ginger things up a bit at the mission station. This was not well received. By the end of 1837, 3 years almost to the day since his arrival in New Zealand, he completed the printing of the New Testament in Maori. This was no mean achievement and he proudly proclaimed this to be the first printing of the New Testament in the Southern Hemisphere.

He was present at the signing of the Treaty of Waitangi but by that time was already beginning to feel his subordinate position. That same year he wrote to the Society pointing that his sabbatical year would be due in two years' time and suggested that he be given permission to go home and see his people, go into the question of ordination and find a wife. Permission was refused on the grounds of the inconvenience that would be caused by the missionaries in the field by his absence from New Zealand. As for a wife, surely he would have little difficulty in finding a suitable girl among the missionaries' daughters.

Colenso accepted the decision with good grace, approached Mr. Williams for permission to woo his daughter but the missionary's consent was refused. He was more fortunate with Rev. W. T. Fairburn who was stationed at Otahuhu, and in due course became engaged to Elizabeth Fairburn. A whole year was to elapse before the young couple met but at the end of 1842 Mr Telford arrived to take over the printing press and Colenso set off for Otahuhu.

Colenso's last few years as a printer had been far from happy and he was keen to be ordained and take the Gospel to the heathen Maoris in the field. In the meantime a new character appeared on the scene, a man who was every bit as self-opinionated and stubborn as Colenso himself, the formidable Bishop Selwyn. The Bishop was High Church and had no patience with the dissenting view of the Paihai printer, and Colenso was not one to give in gracefully. When the Bishop saw fit to make some disparaging remarks about the printing press Colenso pointed out that the press belonged to and was controlled by the Church Missionary Society and had nothing to do with him. This did not go down very well.

Colenso and his fiancée decided to put off their marriage for a year or so in the hope that Colenso might be ordained in the meantime. This did not suit the Bishop at all. He wanted the girl to teach in his new Maori Girls' School at Te Waimate and ordered Colenso to get married

right away. So this marriage of convenience, the Bishop's convenience, took place in April, 1843, and the young couple settled down at Te Waimate where their duties took up so much of their time that the two strangers had little chance to get to know each other.

Colenso had the duty of teaching Maori to newly arrived missionaries and he was desperately unhappy, much of his usual consolation of religion being denied him because he could not abide the High Church ritual practiced at Te Waimate. Matters did not improve when the Bishop ordained three young men and passed over Colenso although he had more knowledge and experience of the Maori than any of them.

Soon afterwards, however, Colenso was advised that he was to go to Hawke's Bay to select a site for a mission station. Before he left the Bishop took the trouble to point out that, as a mere catechist, he would be quite unable to undertake services of the same order as those of an ordained clergyman. It may be that this was meant to show him his place but in effect the services he could undertake would be more in line with his dissenting notions, and perhaps more to his liking than the ritual he had seen so much of at Te Waimate.

In due course the site was selected and at the end of 1844 Colenso, who had at last been ordained deacon, his wife and baby daughter together with two Maori servants Hamuera and Ripeka, settled down at Waitangi, somewhere near the present township of Clive. Mrs. Colenso's nearest neighbour lived some 80 miles away to the north.

Colenso's new parish extended from Hawke's Bay across the Ruahine Mountains, down the Wairarapa to the fishing villages by the margin of Cook Strait. Here he spent what well may have been the happiest eight years of his life, full of hardship and adventure in territory quite unknown to Europeans and populated by cannibal Maoris who were thirsting for European knowledge but were highly suspicious. While some of the chiefs welcomed the missionary others resented his presence seeing only too well that, in the new-found independence of his converts, lay the end of their ancient way of life. Colenso had need of the highest degree of physical and moral courage and he had them to the full. One can only admire his selfless devotion to duty and his fearless bearding of those wild chiefs in their own pas. I shall discuss some of his travels and adventures when considering the work of Colenso the Botanist.

Then in 1852 everything blew up in his face. Ripeka, the kind and cheerful maid who had been with the family since its arrival at Hawke's Bay in 1844 was tactless enough to present the missionary with a son. The whole sad story is fully dealt with in Bagnall and Petersen's biography and all that it is necessary to say here is that, if the eruption took some time to build up, the devastation was complete when it came. By the end of 1853 we find Colenso alone at the deserted mission station. Wife, children and servants had all deserted him.

Of course the whole thing must have been very painful to the other missionaries who were doing their best to wean the Maoris from their polygamous habits, but the heartless way in which these professional Christians abandoned the sinner was not a very good example of Christian charity.

Little is known about the next few years of Colenso's life. During later years he made a precarious sort of existence as a trader, politician and school inspector. When the storm broke he was all but penniless and having no other home, nor the means of acquiring one, he had perforce to remain at the old mission station at Waitangi. The Church was implacable and determined to turn him out, but he refused to leave without compensation.

The story is a long and involved one and the legal position is obscure. When Colenso and Williams arrived to select a site for a mission station in 1843 there was so much strife, jealousy and dissention among the Maoris that the only piece of land they could obtain was 10 acres of low swampy country densely covered with rushes, flax and toe-toe. The whole countryside has been altered so much by the floods and progress of more than a century that the exact site is uncertain.

Colenso described it as low, damp, cold and unhealthy, surrounded with morasses. The Bishop said he thought it was the most disagreeably situated station in New Zealand, no drinking water, no road, no good harbour, no shelter from stormy winds, not having a hill or bush or a tree near to them. One would have thought the Church would be content to let him live there and forget about him. Not a bit of it. Whatever the legal position may have been the accepted position at the time was that the Maoris handed over the 10 acres to Queen Victoria and she in turn handed them over to the Society. Both the Maoris and the missionaries signed a document to this effect.

Colenso was granted £70 to set up his mission station, but it took a great deal more than that to make it habitable. When ordered to quit the site he simply pointed out that it belonged to the Society, had nothing to do with the Church, and sat tight. This went on for 12 years, but things came to a head in 1862 when Colenso had to appear before a court in Napier charged with squatting on Maori land. What had happened was that the Church had given up all claim to the land and goaded the Maoris and the Government into action.

When the verdict was given it was unfavourable to Colenso and was hissed in court while it 'was universally referred to in words of unmeasured indignation' by the community at large. A petition was drawn up and signed by all the leading citizens of Napier and the Attorney-General of the day made a minute to the effect that the judgement could not be sustained. He had forgotten the strong hand of the Church. Bishop W. Williams wrote to the Colonial Secretary recapitulating the position, defending the validity of the £70

grant and even went out of his way to draw attention to the serious moral lapse of Colenso, which took place twelve years before. To cut a long story short, the Government wakened up to the fact that it had been drawn into a quarrel with which it had nothing to do and in the end Colenso got his £300.

Colenso's popularity had never been higher at the time of the unpopular verdict, but when the Napier town election took place at the beginning of January, 1863, Colenso scraped in by the casting vote of the returning officer. It was then that he made his disparaging remarks about Scotsmen, as reported earlier. At the end of forty-two years in the wilderness the old scars were forgotten and Bishop W. Williams 'came down to the entrance to receive me, with a hearty shake hands and kind words,' when Colenso, now in his 83rd year had accepted an invitation to attend the Anglican Synod in October 1894. It says much for his Christian faith that he could go back and preach after all he had been through. He died in February, 1899, and his proud spirit would have rejoiced could it have known that a memorial was to be erected to his memory in the Napier Cathedral.

II. — The Botanist

In a life that spanned all but 11 years of his century William Colenso saw this country develop from one of the most out-of-the-way whaling stops in the world to become a fully developed state able to give its citizens an honoured place anywhere. Throughout the years natural history was his abiding interest and it was force of circumstances more than anything else that caused him to give first place to botany. This interest began at an early age and at 18 years old he read a paper to the Penzance Natural History and Antiquarian Society of which he was a member. Although he had no formal training he was the first of a long line of enthusiasts who collected, described and named many plants that were new to science. He appears to have been a rigid fundamentalist on whom the *Origin of Species* seems to have had little impact, and, living in the days before the laws of heredity were understood he cannot be blamed for overlooking the possibilities of natural hybridism. If many of his later species have been unacceptable to modern thought his descriptions can be of considerable use in running down atypic forms of variable species.

Scientific Contacts

Colenso may have had but little botanical background when he arrived at the Bay of Islands in 1834 but he was keen to learn, and, if the Mission Station was far from the haunts of civilised man, it was not so isolated as might be supposed. During the first 7 years of his residence there Colenso met, and had intimate contact with, more

of the young men who were to be the leading scientists of the age than he could possibly have met had he remained a humble printer in London. They included Darwin (1835), Cunningham (1838), D'Urville (1840), Asa Gray (1840), and Hooker (1841).

He had barely been a year in the country when H.M.S. *Beagle* arrived for a 9-day visit, and Colenso had the good fortune to meet Darwin. Little about that visit has come down to us, but it is known that Darwin attended a service at the Paihai church and, long afterwards, Colenso claimed to have spent the Christmas Day with him. There is no reason to doubt this, and slight though the association may have been, it cannot have been without value to the missionary printer who was so keen to know something of the wild life of this strange new land.

Naturally enough, one of the first plants to attract Colenso's attention was the Kaka Beak, *Clianthus puniceus*, 'On my arrival in New Zealand I first saw this fine plant in full bloom in the gardens of the missionaries; naturally, I was struck by its imposing appearance, and very soon cultivated it in my own garden. In all my travels at the north, extending over several years, crossing and re-crossing the country, in all directions, I never met with the *Clianthus* growing wild or naturally save on one or two of the smaller islets of the Bay of Islands, notably on a small islet named Taranaki in the mouth of the Kerikeri River. I have also seen it occasionally in deserted food plantations and near the residences (occupied or abandoned) of the old Maoris.' In 1885 he described a bigger, southern form as *C. maximus*, but it is now regarded as no more than a variety.

His First Holiday

Life was real, life was earnest, at the Mission and when Colenso's turn to take a holiday came round in January 1838 he was expected to take the Gospel to the wild tribes of the East Coast. He enjoyed the break from routine and although I have not been able to ascertain that he actually collected anything on that occasion, we are left in no doubt that he was thrilled to find himself at Tolaga Bay where Banks and Solander botanised in 1769. 'A deep reverential indescribable feeling' came over him as he saw 'the remarkable cliffs and trees on which they had often gazed, visited and sketched'—a feeling heightened doubtless through conversing with a few old New Zealanders who remembered them.

Thus his knowledge of the flora had increased considerably by the time Allan Cunningham arrived from Sydney for a 6-months' collecting trip. The two soon became fast friends and doubtless Colenso gathered many hints on collecting and plant classification from this seasoned plant hunter who had spent some 20 years in South America, Australia and New Zealand. When Cunningham re-

turned to Sydney we find him sending back various items of botanical equipment and regretting that he is unable to find a lens, doubting if one is obtainable in the whole of Australia.

In the course of their lively correspondence, carried on through what was to be Cunningham's last year of life, Colenso referred to '2 or 3 gents styling themselves botanists' who were roaming the country and trying to climb some of the higher mountains. He was referring to Bidwill who climbed Ngarahoe and Dieffenbach who reached the top of Mt. Egmont. The former spent a night with Colenso and gave him some seeds of mountain plants, but Dieffenbach was not so popular. He lived next door for some 6 months and although Colenso shared his natural history knowledge and specimens the German made no acknowledgment in his book and the disgruntled printer was reduced to writing 'stuff,' 'liar' and the like on the margins of his own copy of *Travels in New Zealand*.

It was about this time that he came across the silver pine. He had heard several references to a mysterious tree which the older Maoris claimed to be able to recognise at a glance while the younger men knew nothing of it. Then, out on the Te Ranga hills, above the Bay of Islands with a party of Maoris an old man stopped and pointed, but neither Colenso nor the young men could see any difference to distinguish it from its fellows. The old man insisted that this was the mysterious tree he had been talking about and Colenso managed to secure a specimen. It was sent to Kew where Sir William Hooker recognised it as a new species and named it *Dacrydium colensoi*.

A Life-long Friend

When the British Antarctic Expedition put in at the Bay of Islands Colenso was delighted to welcome the naturalist Dr. (Sir) J. D. Hooker who gives an interesting picture of the missionary in his workroom. 'Asking for Mr. Colenso from an intelligent native we were directed to a square, brick, one-storied cottage with a high roof in which was the printing establishment as well as the owner's dwelling. Entering . . . I was surprised to see how complete all the arrangements were, they all seemed very busy and the sheet of native language, well struck off and ready to be dried, emitted a smell strongly reminding me of the time when, in going backwards and forwards to school I was wont to act as printer's devil to my father. In the sitting-room was a portrait of poor Allan Cunningham and a pretty pine tree in a bottle, as also some of my father's botanical works on a table. Mr. Colenso received us very kindly and talked of some fine collections he had sent home, and of the gratification this immediate acknowledgement gave him.'

So began a friendship that lasted until the end of Colenso's life. The two made a number of excursions like the one on 3rd September when they went to the Waikare Inlet. There Hooker saw 'the rich vegetation among the rocks now began to be enlivened by *Pomaderris kumeraho* coming into flower, a plant that was such a favourite with poor Cunningham that the natives always called him by its specific name.' This was the golden tainui, long confused with the Tasmanian *P. elliptica* but now regarded as an endemic.

During the next dozen years or so Colenso made many journeys through his 10,000 square mile parish, and plant hunting formed a pleasant relaxation amid the discomforts and privations in a land traversed by Maori tracks that were often overgrown, or ill-defined, and without huts or bridges. He had a keen eye for a plant and found many that eluded other plant hunters for upwards of 50 years. Such was the dainty sundew, *Drosera pygmaea* and a club moss, *Lycopodium serpentinum* for long known only from the peat swamps of Lake Tongonge, near Kaitaia, but later detected near Hamilton. Another was the mysterious *Logania depressa*. Colenso found this while crossing the Ruahines one cold morning. His Maori friends had been complaining bitterly about the ice on their bare feet when suddenly he dived into the icy water to collect this semi-submerged plant. It has not been found again and his are the only specimens in existence.

In 1843 we find him back again on the East Coast, casting longing eyes on Mt. Hikurangi during a hurried journey from Hicks Bay to Gisborne. Unable to spare the time to climb it he gave a Maori £4 to go up and collect as many plants as possible, and, being fortunate in his man, secured a fine haul that included *Celmisia incana*, *Hebe tetragona*, *Ranunculus insignis*, *Leucogenes leontopodium* and *Olearia colensoi*.

On the Ruahines

Two years later he was to find most of these for himself when he climbed the Ruahines and this was undoubtedly the high-light of all his plant hunting. After a hard day he found *Olearia colensoi* growing by a well where they camped for the night, 'a fine bushy compositaceous shrub of stout diffuse growth, having peculiar dark-green leaves, thick, broad and serrated, reminding me at first sight of those of a hydrangea.' All who climb our hills will appreciate his introduction to another that bears his name, *Aciphylla colensoi*, 'these plants rarely intermixed their spear-leaves to any great extent; they seemed as if they just touched each other with their living circle of points, and . . . we were often caught on all sides as if in a man-trap, and not infrequently roared pretty loudly from the pain, while our vain efforts to extricate ourselves often increased it.' Another of his plants from here was *Phyllachne colensoi*, a dense green cushion plant from the wet herbfields and rocks that covers itself with small white flowers.

The alpine flowers were a revelation. 'When we emerged from the forest and the tangled shrubbery at its outskirts on the open dell-like land just before we reached the summit, the lovely appearance of so many varied, beautiful and novel wild plants and flowers richly repaid me the toil of the ascent for never before did I behold at one time in New Zealand such a profusion of flora's stores. In a word I was overwhelmed with astonishment and stood looking with all my eyes, greedily devouring and drinking in the enchanting scene before me. Here were plants of all the well-known genera of bluebells and buttercups, gowans and daisies, eyebrights and speedwells of one's native land, closely intermixed with the gentians of the European Alps and the rarer southern and little known novelties,—*Drapetes*, *Ourisia*, *Cyathodes*, *Abrotanella*, and *Raoulia*.' But there we must leave him as we have no time to follow his other wanderings.

Those long journeys ceased when his troubles overtook him in 1852-3 and for many years his interest in natural history was intermittent at best. Things began to change when the Hawkes Bay Philosophical Society was formed in 1874 and his interest quickened when Miss Leech sent him a copy of her book on native ferns, the following year. Colenso was so out of touch with things botanical that he had to write to Cheeseman at the Auckland Museum asking about the name changes, remarking that, through his own fault, he hadn't had copies of the *Transactions* or *Journal* of the Linnaean Society for ten years.

So began the last phase when he collected and described so many plants of the Ruahine-Hawkes Bay region that others began to look askance at his work. It is probable that his trouble was isolation rather than ignorance, but he had a bitter way of criticising other men and their opinions that did not increase his popularity. Fortunately they were big enough to overlook all that when Hooker and others in England nominated him for election as a Fellow of the Royal Society, and supported him. It must have been a proud day when in 1886 William Colenso was elected to the most exclusive scientific body in the world, with the citation:—

'F.L.S. Honorary Secretary to the Hawkes Bay Philosophical Inst. Author of numerous Memoirs on the Botany and Zoology of New Zealand and on the History, Language, Manners and Customs of the Native Race, published in the London Journal of Botany, Tasmanian Journal of Science, and Transactions of the New Zealand Institute. Mr. Colenso's labours as a naturalist, philologist, and ethnologist in New Zealand commenced half a century ago, and have continued ever since. He was the first to record the discovery of the *Dinornis* remains, and he has contributed largely to a knowledge of the flora and fauna of the Islands.'

THE COLENZO MEMORIAL, NAPIER

L. LANNIE (Superintendent of Reserves, Napier)

On the 14th November, 1959, a ceremony was held at the site of Colenso's Waitangi mission station, which is a few miles south of Napier City, on the coast, and between the river mouths of the Tutaekuri and the Ngaruroro. The unveiling of the memorial was attended by about 200 residents and among the official party present were Mrs. E. P. Edwards, of Waipukurau, a great granddaughter of Colenso, and Mrs. Huri Huri Wairama, a grand-niece of Te Hapuka, a noted local chief and a close friend of Colenso. Both these ladies are seen in the photograph holding the bell, which was used over a hundred years ago to call people to the mission. The peeling of the bell was heard again at this unveiling ceremony, and the new Colenso High School in Napier has now possession of the old mission bell.

The Hawkes Bay regional committee of the National Historical Places Trust was responsible for this memorial and it is the first of its kind to be erected by the Trust in Hawkes Bay. The photograph shows the Bishop of Waipapu, the Rev. N. A. Lesser (now Archbishop of New Zealand) unveiling the plaque which reads:—

Waitangi Mission Station

1844 to 1852

In this vicinity nearer the sea

William Colenso established his Mission Station.

The exact site of Colenso's mission station is difficult to determine now, as the rivers which enter the sea here have changed their courses from time to time, stop banks have been erected, and other work carried out, which has changed the face of the land. The mission site was purchased in 1843 when it was a wilderness of swamp covered by toetoe, niggerheads and raupo. Among the Maoris it was a place of disputed ownership so it was no hardship for them to sacrifice this land for a mission station.

On December 13th, 1844, Colenso, with his wife and child, sailed from the Bay of Islands for Hawkes Bay and landed at the mission site on December 30th, where a raupo whare had been erected.

Of this landfall, Colenso afterwards wrote: 'Through God's mercy we passed through the surf and landed in safety, and crawling up through the mud and bushes, we stowed ourselves away among the boxes until daybreak, without fire or candle, food or water.'

One can only speculate on what were Mrs. Colenso's feelings on seeing their future home and having only native women for company. When their second child was expected, she and her husband set out for the Poverty Bay mission station taking 2 weeks for the journey. What almost unbelievable hardships separate us from those pioneers of our land. Colenso's parish extended from Mohaka in the north to Palliser Bay in the south.

The Hawkes Bay Regional Committee of the National Historical Places Trust, hopes to develop the area surrounding the memorial plaque. However, as river control work must be carried out in the vicinity, it may be some time before this can be accomplished.

Today, as the traveller approaches Napier from the south, he may wonder what the memorial stone commemorates as he passes swiftly on a concrete highway. He may or may not know, that the stone is in memory of a tireless worker, who, amongst other things, helped to lay the foundation of a wonderful and rich province, and who had to journey on foot through the length and breadth of the land which was roadless and covered by the natural vegetation.

NEW ZEALAND'S FLORAL STAMPS

*J. H. GLAZEBROOK, B.Sc. (Hort.), (Senior Lecturer in Horticulture,
Lincoln College.)*

Interest in postage stamps is universal, although for the majority of people interest does not usually extend beyond the utilitarian aspect of paying for postal services. However, even the casual observer must have noticed the recent trend towards stamps with a pictorial theme, rather than the traditional formal design of earlier years.

This tendency is due to a number of reasons, improved printing techniques being in no small way responsible. It is also realised by the authorities concerned that well designed, colourful stamps can, in addition to providing revenue, be good publicity agents for the countries concerned. To the young collector, stamps featuring historical events have undoubtedly proved more fascinating than the history book or classroom, and in recent years many stamps could justifiably be regarded as visual aids for the study of botany, animal and insect life and other allied subjects.

Of particular interest to horticulturists are stamps depicting flowers, which are naturally very appropriate subjects for postal stamp designs. Many countries have used floral themes, and it is fitting that New Zealand, with a unique range of native flora, many species of which are endemic, should have chosen representative native plants for the recent issue of postage stamps. One does not have to be an ardent philatelist to appreciate beautiful pictorial stamps and those familiar with New Zealand's flora will appreciate the publicity given to it in this way whilst others will find the stamps a novel and easy way of identifying the species concerned.

With so many species to choose from, and so many whose claim for recognition would be well justified, the authorities are to be congratulated on their final selection. The 7 plants selected and listed in order below are features of the landscape in many parts of New Zealand and, in an appropriate environment, are highly valued garden plants. Plants represented with the appropriate stamp details are as follows:

- ½d. Manuka (tea tree), (*Leptospermum scoparium*).
Family: *Myrtaceae*.
Artist: Messrs. Harrison & Sons Ltd., London.
Colours: Flowers, white; foliage, green; background, plum.
- 1d. Karaka (*Corynocarpus laevigatus*).
Family: *Corynocarpaceae*.
Artist: G. F. Fuller.
Colours: Berries, orange; foliage, green and wine; background, brown.
- 2d. Kowhai-ngutu-kaka (Kaka beak), (*Clianthus puniceus*)
Family: *Leguminosae*.
Artist: A. G. Mitchell.
Colours: Flowers, red; foliage, yellow and green; background, light green.
- 3d. Kowhai (*Sophora microphylla*).
Family: *Leguminosae*.
Artist: G. F. Fuller.
Colours: Flowers, yellow; foliage, green and brown; background, blue-grey.
- 4d. Puarangi (*Hibiscus trionum*).
Family: *Malvaceae*.
Artist: A. G. Mitchell.
Colours: Flowers, cream and plum; foliage, green; background, blue.
- 6d. Pikiarero (*Clematis paniculata*).
Family: *Ranunculaceae*.
Artist: G. F. Fuller.
Colours: Flowers, white, mauve and green; foliage, green; background, dark green.
- 8d. Rata (*Metrosideros fulgens*).
Family: *Myrtaceae*.
Artist: A. G. Mitchell.
Colours: Flowers, red and yellow; foliage, green; background, grey.

Manuka, although selected for the lowest denomination, is the most abundant of all New Zealand shrubs. Particularly widespread on poorer soils, such as dry gravel plains or the Auckland gumlands, it is, however, extremely adaptable and capable of adjusting itself to a wide range of environmental conditions, sea-coast, swamps, rocky cliffs, river-beds or forest.

Flowers are normally white but many coloured single and double-flowered varieties and dwarf types have been introduced to gardens.

Dr. W. E. Lammerts of California has been responsible for developing many of these varieties including 'Red Damask' but one of the best varieties 'Nichollsii' was raised by Nairn's Nurseries, Christchurch, from seed from a wild red-flowered plant found growing near Kaiapoi. 'Nichollsii' received a special award from the Royal Horticultural Society for being the best novelty plant of 1911.

The coloured varieties of manuka are desirable garden subjects, tolerant of a wide range of conditions and excellent for floral work.

To eliminate manuka from farm land a scale insect has been distributed to attack and destroy dense areas of the species. Areas have been reduced or eliminated in this way but the method has been a mixed blessing leading to erosion on some subsequently exposed areas and also causing devastation amongst the cultivated varieties. The scale with its associated sooty-mould is popularly known as manuka blight and although insecticides can be used early application is essential before the insect gets well established.

Like many members of the myrtle family the whole plant is aromatic and the local popular name 'tea-tree' originates from the fact that early voyagers and colonists sometimes used the pungent leaves in place of tea. The wood is used mainly for fences and fire-wood but the Maoris utilised it for paddles and spears. The botanical name *Leptospermum scoparium* translates 'narrow-seed, broom-like'.

Karaka or New Zealand Laurel as it is sometimes called forms a handsome tree up to 30 or 40 feet high. The large oval, glossy green leaves up to 6 or 8 inches long are a feature of the species. The flowers are small and relatively inconspicuous but are followed by clusters of large, fleshy, plum-like, orange-coloured fruits; *Corynocarpus*, 'club-fruited', refers to these conspicuous fruits. The large seeds are extremely poisonous but the Maoris knew the technique of removing the poisonous properties and after careful baking and soaking they were utilised for food.

Karaka is not as hardy as manuka, and consequently not as widespread, being confined to the warmer parts of the country.

Silver and golden variegated forms are available and these and the parent species make excellent foliage plants for pots and tubs.

Kowhai-ngutu-kaka or Kaka Beak as it is more commonly known, is one of the most colourful New Zealand native shrubs.

The Maori name indicates not only the relationship of this plant to the yellow kowhai but also the resemblance of the flowers to the beak of the native parrot, the kaka. *Clianthus puniceus* translated literally means red glory flower, which indicates the value of this shrub from the garden point of view.

In the wild state in New Zealand the species is now almost extinct but it is widely grown in gardens, forming an attractive shrub 3ft. 6in. high.

In addition to the red species there is a creamy-white variety, *C. puniceus* 'Albus', and an attractive pink variety *C. puniceus* 'Roseus.' Propagation is normally by seed but good types should be raised from cuttings.

The kaka beak or red kowhai as it is often called is drought resistant and does particularly well on high dry banks. Indeed for best effect and for seeing the beak-like flowers to advantage a bank or even against a wall or fence is the most suitable position. It is moderately hardy but will not tolerate severe frosts. Like certain other well-known New Zealand species the shrub is pollinated by birds.

The kowhai itself pictured on the 3d. stamp is well known throughout New Zealand the three species being adaptable and found growing in a wide range of conditions. There is some confusion over the botanical nomenclature of the kowhai and there seems to be difference of opinion regarding the species and varieties in existence. However three main species are definitely recognised—*Sophora microphylla* (small-leaved), *S. tetraptera* (four-winged, referring to the pod), and *S. prostrata*. *S. microphylla* and *S. tetraptera* reach tree proportions and, unlike most New Zealand species, are semi-deciduous. The yellow flowers appear as a rule before the leaves, and a tree in full bloom during spring time is indeed a magnificent sight. Several forms of these species exist.

S. microphylla sometimes goes through a characteristic juvenile stage during its development and this twiggy interlaced-branching period often persists for many years. *S. tetraptera* assumes the mature stage without going through the juvenile condition. *S. prostrata*, as its specific name suggests, is a low growing shrub which is fairly widespread on hill country in the South Island.

The bright yellow seeds of kowhai are very hard and, to assist germination, chipping or treating with boiling water is necessary. The species have received considerable attention by poets and have on many occasions been recommended as New Zealand's floral emblem.

Puarangi or *Hibiscus trionum* differs from the other species represented in being an annual—annuals in fact are sparsely represented in New Zealand's flora. It is probably less well-known than the species appearing on the remaining stamps, but through no fault of its own. Stock, fires and so on have contributed to the reduction of this attractive plant which is confined in the wild state to the northern parts of the country.

The flowers which are produced on stems 1-2 feet high are pale straw-coloured with a distinctive dark, velvety centre. It seeds freely and flowers over a long period until cut by the autumn frosts. It is useful for bedding purposes and is particularly suitable in informal drifts—in the Christchurch Botanic Gardens and other public gardens throughout the country it has certainly been used to good effect in this way.

A related and larger species, *H. diversifolius*, is more rarely seen probably because of the fact that it is very frost tender.

Regarding the stamp reproductions, this particular one is the only one which I feel is not truly representative of the colour. The centre of the flower is usually much deeper in colour than depicted on the stamp. However, I am pleased the plant was selected because it is one which deserves greater recognition than is normally provided.

Of plants which have grace and charm *Clematis paniculata* (*C. indivisa*) must rank high on the list. The northern Maoris in fact gave to *C. paniculata* the name Pua-wananga, sacred or sanctified flower.

The several species of New Zealand *Clematis*, all of which are endemic, bear attractive flowers although they are not as colourful as species and varieties from overseas. The white or near white colour of the best-known New Zealand *Clematis* is in fact a feature of many of our plant species; New Zealand violets are white, gentians are mainly white, the beautiful *Ranunculus lyallii* is white. This prevalence of white is possibly due to the fact that pollination is in many cases dependent on forms of night-flying moths and conspicuous white flowers naturally lend themselves readily to this method of pollination.

Clematis paniculata is one of the best known flowers of the New Zealand bush. Rooting in the cool moist bush floor the vines scramble to the topmost branches where the festoons of flowers hang like clusters of white stars. To grow *Clematis* successfully in the home garden one should keep these natural conditions in mind because there is no doubt that *Clematis* generally like a cool root run with their flowers in the sun. *Clematis paniculata* will grow well in cultivation and at Lincoln College we have a number of well-established plants scrambling up oak trees and quite happy in their exotic environment.

Finally, on the 8d. stamp we have another colourful member of the myrtle family, *Metrosideros fulgens*, the orange-flowered climbing rata. The genus *Metrosideros* contains several species, trees, shrubs and climbers, the flowers of which consist largely of masses of stamens, red and pink shades predominating. *Metrosideros fulgens*, pictured on the stamp and formerly known as *M. florida*, is a climber in all stages of its existence and never forms an erect trunk. It is common in forests throughout the North Island and in Marlborough, Nelson and Westland.

The genus *Metrosideros* is an important one in New Zealand, and includes *M. excelsa* the famous pohutukawa or New Zealand Christmas tree, a feature of the milder North Island coastal areas, and the beautiful South Island rata, *M. umbellata* which grows in masses on the slopes of the Southern Alps and when seen in a good year is a

sight not easily forgotten. A disturbing feature which is causing concern at present is the extensive damage being done to rata by the opossum and other introduced animals—not only is there a definite possibility of severe reduction or elimination of the Rata species but erosion quickly follows on the steep and often inaccessible slopes.

The wood of this genus is extremely tough and durable and is used for boat-building, framing for railway wagons and where strength and durability are required. The name 'ironwood' used by bushmen refers to *Metrosideros* species.

I am not in a position to judge the stamps critically from a philatelic point of view but I am sure few would dispute the fact that they are attractive and have a definite educational and publicity value. New issues of stamps are not infrequent in New Zealand and it is to be hoped that further representatives of our native flora will appear on future stamp issues. A selection of New Zealand alpine plants, for example, would provide a most interesting series.

1962 ANNUAL DOMINION CONFERENCE
of the
Royal New Zealand Institute of Horticulture (Inc.)

THIRTY-NINTH ANNUAL MEETING AND
CONFERENCE OF DELEGATES

NOTICE IS HEREBY GIVEN that the Thirty-Ninth Annual Meeting and Conference of Delegates of the Royal New Zealand Institute of Horticulture (Inc.), will be held in the CONCERT CHAMBER, OPERA HOUSE, PALMERSTON NORTH, on WEDNESDAY, FEBRUARY 14th, 1962, commencing at 9.30 a.m.

The 1962 Banks Lecture will be delivered at 8 p.m. on that day.

Members of the Institute and delegates from affiliated organisations are specially invited to attend the Dominion Conference and the Banks Lecture. Tentative arrangements have been made for afternoon 'bus trips on the Tuesday and Thursday afternoons.

It is recommended that those desiring to attend the Conference make early hotel reservations.

K. J. LEMMON,
Dominion Secretary.

PENDULOUS TREES

M. J. BARNETT, M.B.E., A.H.R.H.S., A.H.R.I.H. (N.Z.), N.D.H. (N.Z.),
Christchurch.

Pendulous or 'weeping' trees, when given their proper place and environment in the garden, can be effective units of the general composition. But when misplaced, the planting of them overdone, and not used with discretion in association with other subjects, they can upset the balance and harmony of the garden.

As an example, a neighbour's garden of three-quarters of an acre in extent with a wide frontage, has along the street front of the property no less than five weeping trees, two silver birches, two cherries, and one Kilmarnock willow, planted in a straight row, equidistant apart, and all approximately of the one height. To say the least the effect is monotonous and unnatural. To make matters even worse, in the centre of the lawn between the row of weeping trees and the residence, which is of the bungalow type, there is a *Wisteria* which has been carefully trained to a single upright standard carrying the pendulous head. Being of lesser height and dimensions than the other weeping trees, it is quite out of proportion with its surroundings, especially in view of the fact that the background adjoining the side of the house is occupied by a large weeping elm tree. The general effect is more complicated by the persistent attempt to grow roses and herbaceous perennials underneath and between the specimens of weeping trees. The struggle for existence between these poor unfortunates and the trees is pitiful. Any one of the weeping trees, given its proper situation in the garden, would be an asset—the weeping elm, for instance, situated where it is to one side of the residence, where it does not obscure the light and where it is surrounded by green lawn, softens the severe outlines of the building, and in the summer time provides coolness, shade and restfulness. The others just do not fit in to the overall garden composition.

Some trees such as the weeping willow, the rimu or red pine, and the Himalayan Spruce, (*Picea morinda*, syn. *P. smithiana*) have a natural pendulous habit and will grow to a considerable height without assistance, while others such as the weeping elm and weeping ash, are pendulous forms which have 'sported' from their upright species. Such weeping trees are more or less prostrate in habit and require to be grafted on to upright standards and trained so as to increase their height which will render them more effective as specimens for the garden.

THE WEEPING WILLOWS

One of the most common and popular of pendulous trees in New Zealand is the weeping willow, *Salix babylonica*. It has quite an interesting history. For many years it was considered to be a native of the Euphrates region in Mesopotamia and by some authorities was

the willow mentioned in the 137th Psalm which refers to the grief of the Israelites during their Babylonian captivity. It has now been determined that the weeping willow is a true native of China.

Introduced to England about 1730, it was still a somewhat rare tree until about 1823 when an impetus to its cultivation was given through its association with Napoleon during his captivity at St. Helena. It is recorded that Napoleon loved to sit in the shade of the weeping willow which grew there and under which he was buried. In 1840 when the French settled at Akaroa, one of the immigrants had procured cuttings from this willow on the journey to New Zealand. Three of the cuttings survived and were duly planted at Akaroa where they flourished. Later Akaroa became the headquarters of the French missionaries and they, on being sent to other parts of the colony, often took with them cuttings of the weeping willows, and so they became distributed throughout New Zealand. The weeping willows along the banks of the Avon and Heathcote rivers of Christchurch are indeed a feature of the 'Garden City'.

Not so well known but worthy of mention is the weeping form of the golden willow, *Salix vitellina* 'Pendula'. Given ample space in which to develop its natural habit, it is a graceful and elegant tree and, when leafless in the winter time, the golden bark of the twigs and branches are very effective, especially when silhouetted against a darker background.

The heavy branches of these two willows, as they reach maturity, because of their rapid growth and the exuberance of the long pendulous lateral branches with the weight of the foliage, are apt to tear away from the parent trunk during high wind and excessive rains. Systematic pollarding of the heavy limbs every 5 or 6 years, or when warranted, will not only overcome this defect, but will prolong the life of the trees.

Neither of them are suitable for the small or moderately sized garden, but for waterside planting and for spacious landscape effect they are worthy of consideration.

The Kilmarnock willow which is a pendulous form of the goat willow, *Salix caprea*, although of a distinctly weeping habit, is somewhat stiff and formal in appearance. It is more of a curiosity than a thing of beauty; even well grown specimens could be likened to huge inverted mops. Still, it has its uses and when given a suitable environment can be employed with effect. Grafted on to upright standards 6 or more feet high, the pendulous heads will reach a height of approximately 10 feet above ground, 8 feet long and 6 feet wide.

The Silver Birches

The silver or white birch tree is one of the most graceful and elegant of deciduous trees. Although it has an upright branching

habit, the tips of the branches and the lateral twigs are thin, wiry and pendulous, thus adding considerable grace to its general character. When given the proper treatment, it is easily raised from seed. The seedlings, however, when they reach tree size, vary considerably in form and character; some are much more pendulous in habit than others. This pendulous tendency can easily be distinguished in the early stages of growth, and from a number grown in nursery rows, one can easily distinguish those of the most graceful habit. The true weeping birch is the variety *youngii* which is very pendulous in habit and does not produce a leading upright shoot. It is propagated by inarching on to young trees of the common silver birch which are planted in a position that will allow this work to be conveniently carried out. The greater the height above ground at which the inarching is carried out the better the specimen—the extra height increases the length of the drooping branches. As a specimen tree the weeping birch has one fault and it is that at the top, a foot or so out from the union of stock and scion, the main branches become bare. These bare limbs with their white bark and being devoid of foliage give the trees a somewhat unnatural appearance. This fault can be overcome during the formative years of the tree by securing a tall stake above the height of the standard or trunk and training upright to it one of the main pendulous branches. By this means the height of the specimen is not only increased but given a more natural and graceful appearance. Over the past 50 years at the hands of the botanist the common silver birch has enjoyed no less than three distinct specific names. In the early part of the century it was *Betula alba*, then it was changed to *B. verrucosa* and now it is *B. pendula*. The weeping birch is *B. pendula* var. *youngii*.

The Weeping Elm

One of the most popular of weeping trees is the pendulous form of the Scotch or Wych Elm, *Ulmus glabra*, syn. *U. montana*. When fully grown it has a good rounded habit and where one has sufficient lawn space for it, it is an excellent subject. It is propagated by grafting on to the English Elm, *Ulmus procera*, syn. *U. campestris*, and here again the higher it is grafted on to the stock, the better the specimen. While the Scotch elm does not sucker the English elm does, and very badly too, especially if the soil near the roots is disturbed. As the roots extend well out beyond the outermost branches, it is by no means uncommon to find suckers of the stock appearing in neighbouring flower beds and borders, pathways, and drives, and in all sorts of places where they can be a continual source of nuisance. Many a householder has rued the day that he planted a weeping elm in his garden. I recall two occasions where bowling clubs, with the worthy desire of improving the surrounding appearance of their greens, planted weeping elms, only to find in later years that the roots of the trees had penetrated well out into the green where as soon as

they were injured by the close-cutting mowing machines, they started to sucker. What was said of whoever was responsible for planting the elms can well be left to the imagination!

One wonders why our nurserymen have persisted in using the English elm as a stock when there are other elm species which do not sucker. In describing the Scotch elm the R.H.S. *Dictionary of Gardening* says, 'Much used as a stock for grafting because of its non-suckering habit.' Why not graft the pendulous form on to its parent species?

The Weeping Ash

The weeping ash is a pendulous form of the common ash *Fraxinus excelsior*. It has been described as a somewhat ungainly weeping tree, but I have never found it so; a little judicious pruning and training can rectify any tendency towards such a description. It is easily propagated by grafting on to upright standards of the common ash which are readily raised from seed. The ash does not sucker from the roots and it will thrive in heavy soils where other trees would fail to flourish.

The golden weeping ash, *Fraxinus excelsior* 'Aurea pendula' is similar in character to the ordinary weeping ash with this difference, the bark has a distinct golden hue, the foliage has a golden sheen and in the autumn it is a true golden yellow—a lovely sight.

The Linden or Lime Trees

Given ample space in which to develop its natural form the English or European lime, *Tilia europaea* is one of the most handsome and pleasing of trees—much too large for the average home garden but worthy of a place wherever it can be accommodated. In the strict sense of the term it could not be described as a pendulous tree, but the tips of the branches do droop gracefully towards the ground. Although rare there is a true pendulous form of it. In the garden at Riccarton, which was established well over 100 years ago by the Deans family, the first permanent settlers on the Plains of Canterbury, there is a beautiful specimen some 60ft. or 80ft. high with pendulous branches. The pendant silver lime tree, *Tilia petiolaris*, although it will grow to a height of 80ft., has distinct pendulous branches. The under side of the leaves is covered with a dense silvery down and when the foliage is stirred by the wind the glint of silver catches the eye. This lime is in New Zealand, but not as widely grown as it deserves to be.

The Weeping Copper Beech

The copper beech, *Fagus sylvatica* 'Purpurea', is, when well grown, indeed a magnificent tree and a familiar specimen in many public and private gardens, but few are aware of the weeping form of it, *Fagus sylvatica* 'Purpurea pendula'. Like the weeping ash and

the weeping elm, it requires to be propagated by grafting on to an upright stock of the species. It is in New Zealand and some nurserymen may grow it. I know of one specimen growing in a Christchurch suburban garden where it reaches a height of some 8 or 9 feet with the pendant branches sweeping the ground. Had it been grafted on to a higher standard it would be an even more imposing specimen.

The Weeping Cherries

For the small and moderately sized garden the weeping cherries should be given preference. Probably one of the best is the weeping rosebud cherry, *Prunus subhirtella* 'Pendula'. Seen in the springtime with its delicate pink clusters of flowers borne profusely on the pendulous branches, it is indeed an enchanting sight. Unlike some weeping trees it will continue to grow upwards but still retain its pendulous habit. Good specimens should be obtained on high-grafted standards. Some nurserymen are now propagating them by budding low down and training the scions upwards until they reach the required height. There is also a variety of the weeping rosebud cherry with double flowers.

'Cheals Weeping' or 'Oriental Weeping Cherry' is a small tree with drooping branches bearing densely double pink flowers much larger in size than the rosebud cherry. It has quite an assortment of names amongst which are the Japanese titles of 'Kiku-Shidare Sakura' and 'Shidare Sakura'. Collingwood Ingram lists it as *Prunus serrulata* 'Rosea', and it is also listed in some publications as *Prunus serrulata* 'Plena pendula'. There are weeping or pendulous forms of other species of *Prunus* but as it is only occasionally that one can procure them it is not intended to deal further with them, except to say that English nurserymen catalogue some which we hope will find their way to this country.

The Crab Apples

Amongst the varieties and hybrid forms of the crab apples there are some with a semi-weeping habit. A hybrid, *Malus* 'Sir Heaton Rhodes' raised by Nairns Ltd., is such a tree; it has semi-pendulous branches, small graceful foliage and bright red flowers. For the average-sized garden, it is a useful tree deserving of a place to itself as an individual unit of the general composition.

Closely allied to the crab apples is the rowan tree, *Pyrus* (*Sorbus*) *aucuparia*. The variety 'Pendula' is a weeping form of the species, and a poor thing it is; perhaps of some value to the collector of weeping trees, but as a garden ornament, a mere monstrosity.

MR. T. D. LENNIE**An Appreciation**

One of the most senior members of the Royal New Zealand Institute of Horticulture, Inc., Mr. T. D. Lennie, M.B.E., A.H., R.I.H.(N.Z.), celebrated his 90th birthday on February 2nd, 1961. The day was quite an occasion for Mr. Lennie, for it brought congratulations from many people and organisations with whom he has had associations in his long and active life. Horticulture, football and bowls have been his staunch loves, and it is only a few months since he gave up his weekly gardening column in the Christchurch *Press*. Even now he enjoys his weekly game of bowls, an interest which commenced in 1902. There is justifiable pride in Mr. Lennie's claim to be the senior bowler in New Zealand.

Mr. Tom Lennie's work for horticulture has been loyal and continuous through the years. He entered his father's business at Waikiwi, Invercargill, in 1888, when Mr. James Lennie bought out James Cooper (brother of the founder of F. Cooper Ltd.), and he has been actively engaged in horticulture ever since. He moved to Christchurch in 1926, where he managed the firm of A. W. Buxton until 1930, when he established his own business. This is now run by his son.

Mr. Lennie was President of the Horticultural Trades Association from 1923-5, and it was during this period that the New Zealand Institute of Horticulture became consolidated after its founding, sponsored by the H.T.A., in 1922. The original suggestion actually came from Mr. A. H. Shrubshall in 1916, when he proposed an organisation to undertake educational work in horticulture. The Institute was formed in Christchurch at a meeting of the H.T.A., or, as it then was, the N.Z. Association of Nurserymen, and Mr. Lennie was one of the founder members. He was an active worker for the Institute for many years, being Chairman of the local examination committee for the National Diploma in Horticulture (N.Z.) until 1939. It is of interest to note that Mr. M. J. Barnett, until recently Senior Examiner for the Institute, was a candidate for the N.D.H.(N.Z.) when Mr. Lennie was supervising the examinations in Christchurch.

Mr. Lennie has always been a prolific writer, and contributed garden notes to the Invercargill papers as far back as 1908. He wrote for the Christchurch *Star* from 1931-1945, and for the *Press* from 1945-1960. During this time he was also garden expert on 3YA radio station, from 1938-1952. His services to horticulture have been recognised by the award of the A.H., R.I.H.(N.Z.) in 1948, Honorary

Life Member of the H.T.A. (of which he was a founder), and the M.B.E. in 1955. Mr. Lennie is also an Honorary Life Member of the N.Z. Compost Society, in which he has always played an active part.

Mr. Lennie's interests do not end here, however, for they embrace sport and public affairs. Tom Lennie represented Southland at Rugby in 1897-8, and he was a member of the Rugby Union from 1900-12. During this time he helped to obtain the loan of £3000 used for the purchase of Rugby Park, Invercargill, in 1906. From 1890-1911 he belonged to the Royal Artillery Volunteers, and from 1908 to 1924 to the Invercargill City Council, being Deputy Mayor in 1923. His interest in bowling commenced in 1902, when he joined the Northend Club. When he came to Christchurch he helped to found the Elmwood Bowling Club, to which he still belongs.

Mr. Lennie has had a long and active life, not the least commendable feature of it being his breadth of interest. Today he is as mentally bright as ever, and his only trouble is arthritis. Perhaps it is fitting to close with a passage from a letter received on his birthday from the Pirates Football Club, of which he is the oldest surviving member. 'We look forward,' they say, 'to seeing you at our 80th anniversary in 1963' !

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(See pages
167-176)

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William Colenso's grave in the old Napier cemetery, which adjoins the Botanical Gardens.

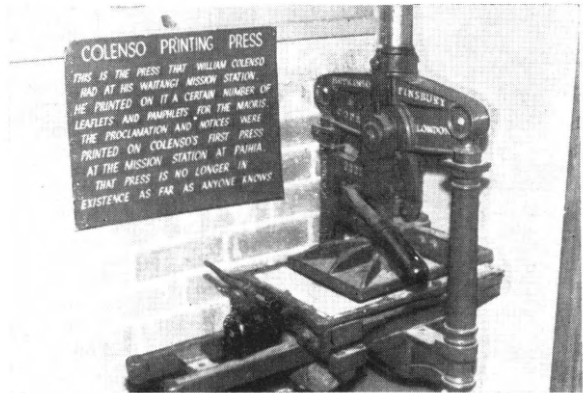
The inscription reads — In Loving Memory of the Rev. Wm. Colenso, F.R.S. Born at Penzance, 17th Nov. 1811. He was the first printer in these Islands, and the first missionary in Hawkes Bay. Died at Napier, Feb. 10th, 1899, aged 88 years.

(Batchelor's Candid Studios, Napier.)

*Printing Press
used by Colenso
at the Waitangi
Mission Station.*

*Hawkes Bay
Museum, Napier.*

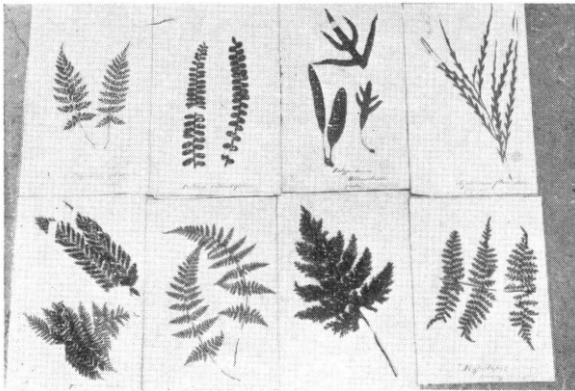
(Batchelor's Candid
Studios, Napier.)



*Some fern speci-
mens collected by
Colenso and sent to
Dr. le Lisle.*

*Hawkes Bay
Museum, Napier.*

(Batchelor's Candid
Studios, Napier.)

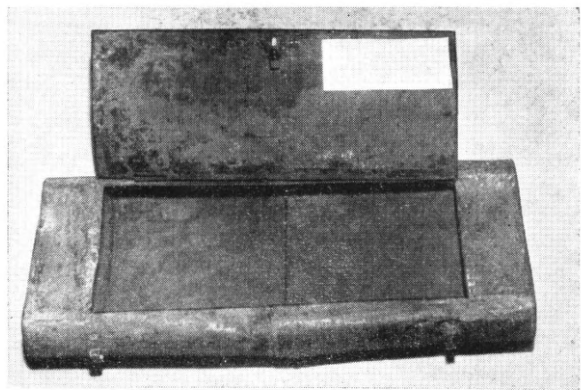


*Colenso's Vasculum.
(Botanist's Collecting
Case).*

*This vasculum was
presented to Joseph
Dalton Hooker, by his
father, Sir William
Hooker, on his leav-
ing for the Antarctic
in the Erebus with Sir
James Ross, in 1839.
Later the vasculum
was presented to
William Colenso by
Sir J. D. Hooker.
Colenso used it exten-
sively in his expedi-
tions and later he*

gave it to Henry Hill who used it for his botanical collecting. From him the vasculum passed on to Mr. H. Guthrie Smith, and now after such a long and historic life it has found a safe home in the Hawkes Bay Museum at Napier.

(Batchelor's Candid Studios, Napier.)





*The Right Rev.
N. A. Lesser un-
veiling the
memorial plaque.*

(See page 176).

(Hawkes Bay
Herald.)

*Mrs. Edwards, a
great grand-
daughter of
Colenso and
Mrs. Hurihuri
Wairama, a
grand niece of
Te Hapuka, a
Maori chief and
friend of Colenso.
Both are holding
the old mission
bell.*

(See page 176).

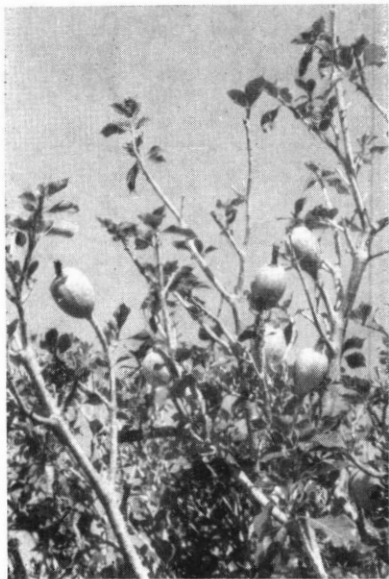
(Hawkes Bay
Herald.)



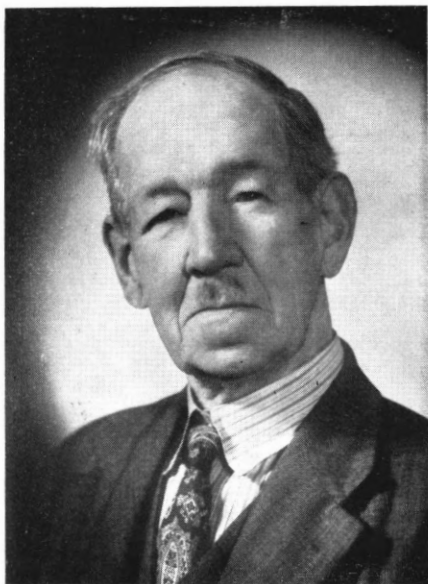
New Zealand's floral stamps.

(See page 178).

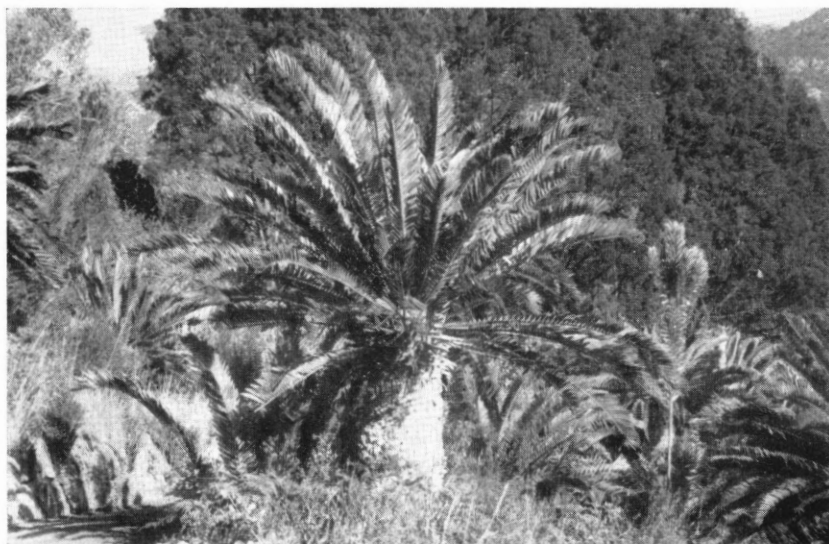
(R. C. Blackmore.)



National Botanic Gardens of South Africa, Kirstenbosch, Gardenia thunbergii in fruit.
(See page 193).



T. D. LENNIE, A.H.R.I.H. (N.Z.).
(See page 188).



National Botanic Gardens of South Africa, Kirstenbosch, Encephalartos altensteinii. (See page 192).

KIRSTENBOSCH
THE NATIONAL BOTANIC GARDENS OF SOUTH AFRICA
An Onlooker's Impressions

F. R. LONG, A.H.R.H.S.

PART II.

As the visitor approaches the gardens at Kirstenbosch, he is at once struck with the beautiful natural layout. There are no ugly buildings to mar the landscape. The Herbarium buildings are well hidden on the hillside with the famous silver tree, *Leucadendron argenteum* growing near by in its very limited habitat. It is only found in this small area, in the whole world. The lecture and refreshment rooms are discreetly camouflaged by trees. Even the entrance gates tie in with the natural beauty of the surroundings.

The Lily Pond is beautifully laid out, backed by lawns, shrubs and forest trees, leading up to Castle Rock, a 2000 feet buttress of Table Mountain. What a lovely picture!

Near at hand is Lady Ann Barnard's bath, fed by a natural spring of clear water which fills a stone faced pool, said to have been used by the wife of an early Governor. Surrounding this is a collection of ferns, not least is the royal fern, *Osmunda regalis*, and 'Maiden Hair', *Adiantum capillus-veneris*, capped by our South African tree ferns, *Cyathea dregei* and *Hemitelia capensis*. There are some 20 indigenous species of ferns besides *Lycopodium*, most of which can be found in the gardens.

Nestling in the rocks can be seen our lovely small flowered *Streptocarpus rexii* and *S. parviflorus*, with their whorl of leaves pressed closely to the rock face. Wandering up past the bath and up on to the slopes one comes across the Cycad Collection, embracing practically all species of *Encephalartos*. These plants always make me pause and ponder. My thoughts go back hundreds of years when some of these magnificent trunks were seedlings. They are, as you know, of ancient lineage, traces being seen in coal deposits. Our main genus is *Encephalartos*, in fact there is only one other, namely, *Stangeria*. Some of the individual plants of some species have trunks running up to 15ft. high here, these must be at least 500 years old. They are easily transplanted. There are some 15 distinct species represented at Kirstenbosch, most of which have very restricted habitats so that preservation of living specimens is a scientific necessity.

Near by are large plants of *Leucospermum bolusii*, *reflexum* and *nutans*. I actually saw these in 1917, just planted, and they are still there, giving their annual display of gorgeous flowers. What a reward for careful forethought—planted by the late Mr. Matthews.

To see these gardens in the spring and early summer, when the so-called annual Cape daisies are in flower, is a picture of colour, never to be forgotten. I allude to *Ursinia*, *Venidium*, *Dimorphotheca*, *Arctotis*, *Felicia* and others. Many of these are self sown and reappear every year without re-sowing by hand.

But the bulbous plants of the South African flora form perhaps the gem section. I must mention a few even although it may resemble a catalogue.

First then comes the *Nerine*, that pretty little plant with sparkling petals. These tucked away in the rock garden reappear year after year. I know a group of *N. bowdenii* at the Albany Museum that has flowered regularly for 15 years undisturbed and I daresay there are others at Kirstenbosch. The popularity of this genus is well understood after seeing the collection. No wonder there are many hybrids described in the R.H.S. Journal from time to time. *N. sarniensis* is the Western Province gem, the largest species and a beautiful rich pink. *Watsonias* are grown in large beds and always make an outstanding feature in red, pink, mauve and white. Seeds of species are on offer to members of the Botanical Society but there are others. These may be classed as permanent bulbs. Some species are evergreen and are invaluable for interplanting with shrubs.

The stately *Agapanthus*, although not truly bulbous perhaps, is always on show at Kirstenbosch, during November to January. There is that huge species with large umbels of blue flowers and broad leaves, down to some of the shorter species, namely, *A. campanulatus* and *A. inapertus*, some with attractive drooping deep violet-blue flowers. *Agapanthus* gives an annual show year after year without transplanting requiring little attention. In a wild garden, all species are very desirable.

The wild *Gladiolus* species of South Africa are well represented at Kirstenbosch. To keep track of the 80 or more described species is no mean task. To see such beauties as *G. pappei*, *G. hirsutus*, *G. tristis*, *G. spathaceus*, the 'Caledon Bluebell' and *G. bolusii* ('Tulbagh Bell') makes one wonder why these are not more often seen instead of the large flowered hybrids. They are so dainty, colourful and distinct in shape and grace.

Other bulbous plants that attract the eye are, first the 'Mossel Bay Kalkoentjies', *Tritonia crocata* and *T. hyalina*, with rich reds and yellowish-reds. Then the freesias that come from the Eastern Province, not forgetting *F. armstrongii*, that rich deep pink species found near Port Elizabeth. *Ixia*, *Babiana*, *Dierama*, *Homeria* and *Sparaxis* all receive attention as all are typical South African bulbous plants.

Another group seen at Kirstenbosch is the *Strelitzia* or 'Crane Flower'. The dwarf *S. reginae* and its near relative *S. parvifolia* var. *juncea* are outstanding. They seem to throw their conspicuous yellow

and ink-blue flowers throughout the year. The clumps will remain for many years, I daresay 50 to 100 years, without attention. The latter species *S. parvifolia*, var. *juncea*, has no blade to the leaf and is only found in two small areas near Port Elizabeth in the whole world. I actually know clumps that have been left undisturbed for 30 years and now are bigger and more floriferous than ever. *S. augusta* and *S. nicolai* are those handsome, tall (20 feet), palm like plants reminding one of the coastline in Natal. Grand subjects for parks.

Encephalartos

Perhaps one of the finest, if not the finest, collection of any one genus seen at Kirstenbosch is the *Encephalartos*,—attractively established over the years on a hillside. Here you may see practically all the species found in our country. Most of these have a very restricted habitat, for instance *Encephalartos latifrons* is only found in two valleys in the Eastern Province, not many miles from Port Elizabeth. *E. horridus* again is by no means widely distributed. Then *E. villosus* you will find near East London but not near Port Elizabeth. At Kirstenbosch you may study them all side by side. This collection of Cycads is unique and has a world-wide reputation.

Trees

Many South African trees can be seen, fully matured. The yellow woods *Podocarpus falcatus*, *P. latifolius*, and *P. henkelii* are indeed beautiful evergreen conifers that yield timber for furniture and house interiors. Then there is the stately *Widdringtonia*, a gem from the Cape and Transvaal Hills, and a stately conifer, a near relative of the *Cupressus*.

When talking of South African trees, the virgilians and bauhinias must always be in the picture with their colourful flowers. *Virgilia oroboides* (*capensis*) can be seen in the gardens, 30 to 40ft. high, one mass of pink to mauve leguminous flowers, a quick grower, easily raised from seed. The *Bauhinia galpinii*, a gem from the Transvaal, may be seen from January to March, one mass of rich red flowers, not strictly a tree perhaps but more of a bush of 10 ft. The well known tree, *B. purpurea*, is of course a native of India, so will not be seen in Kirstenbosch.

Two evergreen trees of moderate size and of well formed shape are *Ekebergia* (bosenhout) and *Harpephyllum*, the 'Kaffir Plum.' Both these can be studied here. They make ideal street trees for towns on the coast more or less free from frost.

A tree typical of the Cape is Cape holly *Ilex mitis*. This grows to 60 feet or more, there is a magnificent pair growing near Lady Ann Barnard's pool. There are many other trees here that can be studied.

Succulent Plants

As explained in a previous article, the climate at Kirstenbosch is too humid, the rainfall too high for the successful cultivation of most of our South African succulents. A garden to accommodate all species coming from the Karoo, South West Africa, and the dry areas of the Orange Free State and the Transvaal are therefore grown at the Karoo Garden, near Worcester, some 100 miles inland from Cape Town at a higher altitude, with a rainfall of 8 to 10 inches per annum against 50 inches at Kirstenbosch. Here Mr. F. J. Stayner is Curator, on the staff of the Director, Prof. H. B. Rycroft.

At Kirstenbosch however there is a fine collection of haworthias, gasterias, some *Aloe* species, a few groups of mesembryanthemums such as *Lampranthus*, also *Cotyledon* and *Crassula*.

The writer on the outbreak of the last war handed over his collection of some 250 species of *Haworthia* to Mr. Smith of East London, another enthusiast. He in turn at a later date, handed over the combined collections of haworthias to Kirstenbosch. These are to be seen and studied in one of the shade houses. These together with a considerable collection of photographs, including over 250 taken by the late Dr. Fourcade in the writer's pre war collection, are now awaiting an enthusiastic botanist willing and able to revise the genus and publish a long wanted up-to-date illustrated treatise.

Much work is being done on the genus *Gasteria*. Mr. Stayner is paying particular attention to the distribution of the species and collecting living material at the Karoo Gardens.

Shrubs

Finally I wish to mention a few outstanding shrubs to be seen at Kirstenbosch most of which may be raised from seed.

Rhigozum obovatum, that showy yellow flowered large shrub belonging to *Bignoniaceae*. It grows in the writer's district and he well remembers Dr. Hutchinson of Kew spotting it and naming it right off when they were on a trip in the Addo Bush in October, 1930.

Turraea obtusifolia, a white flowered shrub with scarlet seeded fruits, also found wild in the Addo Bush. Not far away is that magnificent *Gardenia thunbergia* with its long white trumpet like flowers, followed by large pear shaped seed pods that hang on to the parent stem for a year or two. Seedlings of this *Gardenia* are used for stock on which to graft the well known double, dear to the florist. It is a slow grower but is good for 50 years and more.

Another real hardy warrior is *Carissa grandiflora*, known locally as Num Num, as its edible fruit leave that effect in the mouth! It makes an impenetrable hedge and has white scented flowers.

Dais cotinifolia is a large shrub or small tree if grown on a single stem. This may be seen covered in pink button like groups of flowers in summer and should do well in New Zealand. It will withstand a few degrees of frost.

The ericas or Cape Heaths deserve an article to themselves. But go to Kirstenbosch to see a real cross section of these outstanding flowering shrubs. Three leguminous genera, namely *Indigofera*, *Podalyria* and *Psoralea*, also *Polygala*, specially the purple Cape Broom, *P. virgata* are outstanding and so easy to grow from seed that it is a wonder they are not more met with in gardens. *Psoralea* is an 8 feet shrub with blue flowers.

One Cape shrub I must mention before I close this article is *Oldenburgia arbuscula*, seen at Kirstenbosch. This weird composite plant with its large grey woolly leaves and thistle like flowers will live to a great age, defying all storms and fires. It is common on the hills in the Eastern Province and endemic to South Africa, quite outstanding.

I have not mentioned *Leucadendron* and *Protea* as I feel they are well known to New Zealand gardeners but many species are to be found at Kirstenbosch. These and most of the species mentioned above may be raised from seed obtainable from the Director by anyone becoming a member of the Botanical Society of South Africa.

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NOTES FROM AUCKLAND PARKS

G. F. FILLMORE (*Parks and Reserves, Auckland*).

Despite the exceptionally wet winter (June and July both nearly exceeding the 100-year-old record) gardens generally, and parks in particular, have come through in remarkably good condition. The early flowering peaches were well up to schedule during June, followed by the acacias and magnolias, while at the time of writing the first of the cherries in the form of *Prunus campanulata* is in full bloom. Less spectacular but nevertheless well worthy of a place in the garden, as they can always be depended on to give a good show, are the cantuas, daturas and *Sparmannia*, being a few of the genera not commonly found in the average garden.

The cantuas may be classed as a genus of half-hardy evergreen shrubs from South America and comprise six species. They will stand light frost, and once established they will also stand very dry conditions. The species most commonly found is *C. buxifolia* which has a pale pink corolla shading to a purplish-rose, while the tube is striped with yellow. It flowers over a long period and reaches a height of approximately 4ft.

Daturas, or trumpet flowers as they are commonly called, comprise a genus of some fifteen species and belong to the *Solanum* family. They are distributed over the temperate zones of the world and are generally classed as half-hardy, frosts of 6 to 8 degrees being as much as they will stand. *D. suaveolens* was one of the first of the species grown in Auckland, and although planted extensively in the early days did not enjoy the popularity which some of the coloured species are achieving to-day. *D. sanguinea* is one which is making quite a colourful display at the moment. Its long pendulous five-angled trumpets are pale green, the frilled end being orange-red. It is a native of Peru and grows to a height of 8ft.

Finally, *Sparmannia*: this plant was named in honour of Dr. A. Sparmann who, among other things, travelled with Captain Cook on his second voyage of discovery. *Sparmannia* is a small genus of three species, the one growing in the Domain being *S. africana*. They are natives of tropical South Africa and are related to the tilias. *S. africana* is commonly known as African hemp, has yellow flowers with purple tips and attains a height of 10 to 15 feet.

I must now make mention of a tree which is comparatively new amongst the flowering trees of Auckland and this is *Stenocarpus sinuatus* or Queensland fire-wheel tree. *Stenocarpus* is a genus of some eighteen species of evergreen trees and shrubs which are native of Australia and South Africa. *S. sinuatus* is the species which grows and flowers so well in Auckland being admired as much for its handsome foliage as for its flowers. The tree reaches a height of some 30 to 40 feet and during the winter months is covered with curiously-shaped 2 to 3 inch long scarlet flowers which are in umbles of 12 to 20, either solitary or in compound heads forming a compact group of blooms arranged like the rays of a wheel.

However, the main displays of colour during the period just past have been found in the display houses of the Winter Gardens. In the cool house cyclamen, cinerarias, lachenalias, *Primula malacoides* and *Primula obconica* have made a good show, while in the Tropical House, alocasias, anthuriums, poinsettias, dracaenas and orchids of various types have all contributed towards keeping the house bright. Plants of special interest and worthy of mention were *Tillandsia lindenii*, *Petrea volubilis*, *Bauhinea*, *Streptosolen jamesonii*, *Aphelandra aurantiaca* and a little orchid called *Calanthe vestita* which is one of the deciduous types.

Tillandsia is a very large genus of some 120 species mainly natives of tropical America but a few extending into North America. They are in the main handsome stone, epiphytal or rock-loving plants, and with some exceptions thrive best in a mixture of loam, peat and leaf-mould. *T. lindenii*, which was discovered in the Andes of Peru in 1867, is one of the most handsome of the genus with its bluish-purple flowers. Plants, when grouped in a house or used as single specimens, intantly draw attention to themselves.

Petrea is a very small genus of about 12 species of beautiful twining shrubs — natives of tropical America. *Petrea volubilis* is an extremely handsome twiner commonly called 'Purple Wreath.' The flowers are purple, on pedicels twice as long as the calyx tube, and disposed on a single, terminal, elongated, nodding raceme about 6 inches long. *P. volubilis* which is making a nice display at the moment is easily increased by cuttings and should be grown in rich soil mixture and kept in the warmth.

Making a very striking display with its bright orange yellow flowers is that small greenhouse evergreen *Streptosolen jamesonii*. This plant thrives in a common soil, but it does prefer a slightly sandy compost. Propagation is simply by cuttings.

The other plant noted for special interest was the genus *Aphelandra*. There are a number of species of these but the one which is making a good display in the Tropical House at the moment is *A. aurantiaca*. The flowers of this species are deep orange scarlet: the upper lip of corolla erect, bidentate and concave, the lower one spreading horizontally, three lobed. The aphelandras are reasonably-easily propagated from cuttings of half ripened wood, or when the cutting wood is very young taken with a heel. Leaf bud cuttings are taken quite easily with some species particularly *A. squarrosa*. For a potting compost the aphelandras like equal parts fibrous loam, leaf-mould and sand. This should be left in a rather lumpy condition as aphelandras resent being put in too free a soil.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

L. J. METCALF, N.D.H. (N.Z.), (Assistant Curator).

Over the past three months there has been a considerable variation of weather which at times has made work difficult. The latter part

of May was very cold and frosty and marked the beginning of what appeared to be an exceptional run of frosts. From May 11-16th only two hours of sunshine were recorded although the month's total was near average. In June on the other hand, sunshine was 40 hours above average (113 hours) and conditions generally were calm and sunny. On four days the temperature was above 60°F and on June 19th it reached 69.9°F. With July the picture was rather similar except that the middle of the month was very wet with 2 2-3 inches of rain falling on July 17th and 18th. Compared with other centres this might not appear much but for Christchurch it is very wet indeed. Temperatures in July exceeded 60°F. on three days and in spite of conditions was generally a mild month for mid-winter. Although the overall conditions were near average it has been a trying winter and up to 11 consecutive heavy frosts were a big hinderance. Strangely enough little damage to plants was recorded and plants such as *Leucadendron venosum*, *Leucospermum tottum* and *L. bolusii* have come through the winter undamaged.

During the winter months there are, in addition to the plants grown for their foliage or flowers, quite a number of trees and shrubs which display very attractive bark or stems. Some plants are grown mainly for the effect of their coloured stems or bark. However the visitor to the Gardens who has an eye for beauty will find that many of the trees during the winter months provide very handsome effects.

One of the commonest shrubs grown for its coloured stems is *Cornus stolonifera*, the red dogwood, which is a native of North America. It is a shrub which needs rather hard pruning to produce the clean, young, bright red stems which show so brightly in the winter sun. It always appears to look best when planted where the afternoon sunlight can slant through its branches and it is particularly effective when planted by water so that one has the reflection as well. There is also a yellow stemmed variety, *C. stolonifera* var. *flaviramea*, which is just as effective. The European *Cornus sanguinea* may in some situations be preferred to *C. stolonifera* because it does not have the latter's stoloniferous habit. *Cornus sanguinea* has dark red stems and is not quite such an effective plant: there is also a yellow-green stemmed form of it.

In the woodland a young plant of *Prunus serrula*, the birch-bark cherry, is making quite a good specimen. This cherry is grown entirely for its beautifully polished bark which is a dark mahogany brown. The exfoliating bark peels off in strips in the autumn and leaves the trunk looking as though it had been polished. *Prunus serrula* is often cultivated as *P. serrula* var. *thibetica* but according to Ingram this is just a geographical form which does not justify having a varietal status. The range of this cherry is through the mountains of Yunnan and Szechuan.

Another tree grown for its handsome exfoliating bark is *Acer griseum* from Central China. It grows into a tree up to 40 feet high

and even as a comparatively small plant shows its beauty. The bark is a light brown in colour and peels off in large flakes to expose the bright, orange-brown new bark underneath. As a specimen tree this maple has much to commend it. There are several plants in various parts of the Gardens. The snake-bark maple, *A. pennsylvanicum*, derives its common name from the white striations on the branches and stems. The young branches are green at first and in the second year become striped with thin white lines. It is a native of eastern North America and for a long time was the only species known with bark of that nature, however several Asiatic species are now in cultivation and have similar bark. *Acer hersii* from Honan, China, has olive green bark striped white and *A. rufinerve* from Japan is similar but more closely allied to *A. pennsylvanicum*. All of these species have good autumn colouring and with *A. rufinerve* in particular the leaves turn a rich crimson.

The common silver birch is well known for the effect of its bark in the winter but several lesser known species are of greater merit and deserve more attention from gardeners. *Betula papyrifera* the paper-bark birch, is more commonly known than some others but it still does not get the attention it deserves. Several fine specimens exist in the Gardens and are particularly noticeable during the winter when their clean white trunks are so outstanding. Over in the woodland three plants of *B. nigra*, the river birch, are making fine specimens and in a few years will form a prominent feature. With young plants the bark is whitish and curls off in large flakes after the style of *Acer griseum* while in maturity the bark becomes blackish and quite distinct from most other species of *Betula*. In the bog garden is a plant of *B. lutea*, the yellow birch, which has bark of a yellowish-brown and it is most distinct. Particularly on the young stems and when the old bark peels off the colour is quite yellow and looks particularly effective in the winter sunlight. All three species are native of North America.

Among the larger trees many are very handsome but space permits mention of only three. In the Australian section the greenish-white bark of *Eucalyptus viminalis*, Manna gum, attracts attention. It is a tree about 80 feet high and except for the first 6 feet of the trunk being clothed with the old rough bark, the remainder and all the larger branches are covered with a smooth greenish-white bark. *Pinus pinaster*, the cluster pine, with its tall thin trunk and deeply fissured, flaking bark can also be very attractive. There are two main groups in the Gardens, the most prominent being the pine mound near the Art Gallery and the other just past the western end of the Archery Lawn and by the cherry mound. Those people who have an eye for beauty will find that with dappled sunlight playing on the newly exposed bark these pines can be quite beautiful. And lastly attention must be drawn to what is probably the most famous tree in the Gardens, *Arbutus menziesii* or the Madrona. Although most people know the Madrona for its more obvious characters there are few who stop to consider

the beauty of its bark. On the main trunks the bark is shaggy and a dark-reddish-brown, but on the other branches it peels off to leave a smooth red or cinnamon coloured bark which is most outstanding.

A good botanic garden, like the plants in it, should develop and be in a constant state of change so that it serves its purpose and remains a living organisation. When a botanic garden becomes static and ceases to live it no longer fulfils the purpose for which it should exist. In Christchurch we are fortunate that there is still space for the development of the Gardens and the shifting of the rubbish dump from near Riccarton Avenue will enable a considerable area to be added to the already existing Pinetum. The area is approximately 1.1-3 acres and lies between the Pinetum and Riccarton Avenue. During the winter after the rubbish and leafmould heaps were cleared from it the next job was the removal of a large *Sequoiadendron* which was near enough to dead and two 80-year-old pine trees which were rather dangerous. This involved a considerable amount of digging with the bulldozer and the use of quite a few pounds of gelignite on the stumps after they had been dug out. Once the timber was cleared away the bulldozer was used to contour the area and take away the flatness which characterises most Christchurch sections. Recent heavy rains have prevented further work on the area but as soon as conditions permit it will be grassed down and specimen conifers planted.

During the coming months the Gardens will be at their best and undoubtedly the best period of all is in October when everything is green and fresh and so many plants are in flower. During this period one of the main features is the display of bedding plants in the different beds and borders throughout the Gardens. Each autumn approximately 27,596 bedding plants, including tulips and hyacinths, are planted out. In the beds on the front lawn wallflowers, polyanthus, violas and myosotis should provide good displays. Tulips have been planted with the three latter plants and varieties used are 'President Hoover', 'Valentine', 'Golden Age', 'City of Christchurch', 'Simon Bolivar', 'Indian Chief' and 'Ivory Glory'. In the border near the Hereford Street gate is a planting of mixed bulbs, while a little further round in the holly border a planting of mixed annuals has been made. Several varieties of *Myosotis* are now grown; by the administration block is *Myosotis alpestris* 'Carmine King'; *M. sylvatica* 'Blue Bird' is a useful tall growing variety while *M. Isolde Krotz* and the white form of it which was raised here may be seen in several beds. In one of the beds by Cunningham glasshouse are *Calendula* 'Orange King' and *C.* 'Golden King', and in the border near the eastern entrance of the rose garden is *Bellis perennis* in variety.

The numerous flowering trees are always good and the *Malus* such as *M. x purpurea*, *M. x purpurea* 'Eleyi', *M. prunifolia*, *M. floribunda* and *M. halliana* will delight the eyes of visitors in October. Also outstanding are the cherries and the most noticeable is the very large specimen of *Prunus serrulata* 'Fugenzo' on the lawn to the east of the rose garden.

From the middle until the end of October the *Azalea mollis* will be in full bloom and the row of *Paulownia tomentosa* near the *Azalea* garden promises a fine display. The specimen of *Arbutus menziesii* mentioned earlier is at this period literally covered with creamy white lily-of-the-valley like flowers and ranks as one of the finest specimens in cultivation. At the beginning of November the roses will be coming into full bloom and as usual should attract many hundreds of visitors. Towards the end of November quite a number of the wild roses in the species collection in the woodland will be in flower and it is a pity that more people do not discover this delightful and restful area of the Gardens. And lastly from mid November onwards the herbaceous border becomes very colourful and the big deciduous trees such as *Fagus sylvatica*, *F. sylvatica* var. *atropunicea* and the Golden elm with their newly matured foliage may be seen to perfection.

NOTES FROM THE DUNEDIN BOTANIC GARDENS

R. W. BALCH, N.D.H. (N.Z.).

It is apparent that many people who have never paid lengthy visits to or have lived in the Dunedin district have a somewhat erroneous idea of the climate here, and of the range of plants which can be grown successfully. By simply taking degrees of latitude into account, where say the distance south from Auckland is about 600 miles, maybe this is not surprising but to think of climate purely in terms of a greater or lesser distance from the Equator or South Pole is to be led astray. In the Dunedin district itself there is a great variation in degrees of frost, annual rainfall, strength of prevailing winds, hours of sunshine, aspect and altitude. For instance, there are localities within the sound of the Town Hall clock where early potatoes are planted in the open ground in June and lifted in November. On the other hand, within the same restricted area it is impossible to have new potatoes ready before the New Year. The average rainfall ranges from 29 inches to 40 inches within the distance of five or six miles. The heaviest frost varies from a very few degrees in some parts to an occasional twelve to fourteen degrees in others. Most winters' snowfalls are limited to one or two, with depths on the low-lying areas of but an inch or two and up to three or four inches on the hill suburbs. As in most hilly towns there are windy and sheltered localities, sunny and shady parts, cold hollows, exposed crests and sunny slopes.

Soil texture is generally on the heavy side, which means that correct cultivation and handling methods are most necessary for good gardening. It is perhaps true to say that home gardeners in Dunedin must be keen, knowledgeable, and prepared to put a good deal of hard work and effort into their gardens to get satisfactory results. Cultural operations must be carried out only when conditions are fit. Weeding and grass-cutting need constant attention throughout the growing season,

with very little easing up even in the middle of summer. The use of lawn sprinklers is seldom necessary except in the case of fine turf for sport, such as golf greens, croquet and bowling greens and grass tennis courts. Sunshine, rainfall and wind are spread reasonably evenly throughout the year, with due allowance for the seasons, there being few extremes either of heat or cold, rainfall or drought. While summers may not be hot, with few of the really sun-bathing days of more northern or central climes, the winters are as a rule not unduly severe.

The Dunedin Botanic Gardens are indeed fortunate to be situated in one of the sunniest and warmest parts of the city, though this statement must be qualified by distinguishing the Lower Gardens on the flat at the junction of the Water of Leith and Lindsay's Creek, from the hillsides and slopes of the Upper Gardens. Here, within the distance of a few hundred yards, and purely owing to the difference in altitude, there is a difference in frost severity of seven or eight degrees. It is in the more congenial climate of the Upper Gardens that the half-hardy trees and shrubs flourish, although the soil on the hillsides is heavier and more difficult to cultivate than on the alluvial flats. Here there is really no period of the year that lacks interest, even in the very depth of winter. No sooner has the last of the autumn coloured foliage fallen, and the native pigeons and other birds taken the final berries and ornamental fruits, than the winter flowering shrubs begin to open their flower buds here and there. In June *Chimonanthus praecox* (Winter Sweet), pale but sweetly scented, and *Hamamelis mollis* (Chinese Witch Hazel) with its quaint bright yellow delicately perfumed blooms, give promise of the wealth of bloom so soon to follow. *Daphne mezereum*, a former winter stalwart with its pink and white forms, has practically succumbed to virus disease and is now seldom seen. The long pendulous yellowish catkins of *Garrya elliptica* in July are always welcome. Far more eye-arresting, however, than any of these are the great black-tipped goblets, some pink, others cream, of *Protea neriifolia* and the nectar-filled pale pink pointed blooms of *Protea mellifera*, which have flourished for many years on the sunny side of a twenty-foot high *Cupressus macrocarpa* hedge, and are in flower for all the winter months. In the Australian border, which is possibly the area of greatest interest in the winter, the large greenish floral cones of *Banksia serrata* are most impressive, while *Grevillea rosmarinifolia*, and its brighter variety *G. rosmarinifolia* 'Jenkinsii', together with *G. williamsonii*, *G. alpina* and *G. oleoides* 'Dimorpha' — all with curious reddish flowers — attract the passer by. The tall growing *Acacia elata* and *Olearia gunniana* are also in flower at this time of year.

Some berried and fruiting shrubs which in Dunedin hold their fruits well into the winter months are *Myrtus ugni*, with fragrant palatable berries, *Pernettya mucronata*, *Cotoneaster conspicua*, *Actinidia chinensis* (Chinese Gooseberry) and *Malus* 'Jack Humm'. Roses in sheltered situations will hold most of their foliage and bloom right through to pruning time to a certain extent. Even in the Rose Garden

itself, which is one of the frostiest parts of the Botanic Gardens, rose-buds can be picked for floral work excepting during periods of heavy frosts or continuous rain. *Hypericum leschenaultii* also flowers to the end of June. Prominent among the winter-flowering heaths, are *Erica oatesii*, *E. canaliculata*, *E. persoluta* and *E. rubens*. *Jasminum nudiflorum* flowers throughout the coldest months.

Outstanding herbaceous plants in Spring include a wide range of dwarf hardy bulbous plants — Miniature *Narcissi*, *Crocus*, *Galanthus*, *Iris*, *Tulipa*, *Cyclamen*. *Primula* species and varieties also thrive particularly well. The most conspicuous trees and shrubs at this season are rhododendrons of all types, magnolias, flowering cherries, and the native kowhais.

Among summer's most happy plants are fuchsias, roses, ratas and hydrangeas. In autumn most of the deciduous trees of the Northern Hemisphere, such as elm, poplar, willow, beech, birch, chestnut, horse chestnut and rowan, colour particularly well and last for several weeks.

On the whole, it is, I think, true to say that Dunedin's climate and conditions in general favour the length of flowering period of any particular plant, the lasting of individual blooms, the strength of flower colour and early spring growth.

PUBLICATIONS RECEIVED

FLORA OF NEW ZEALAND, vol. 1, by H. H. Allan, pp. liv+ 1085 (Wellington Government Printer, 1961), £5/5/-.

The new *Flora of New Zealand* is the most recent in a series of such works which have been contributed during the past century by Hooker, Kirk, Cheeseman and in the present instance by the late Dr. H. H. Allan. Each new *Flora* has been made necessary by greatly increased knowledge since the appearance of its predecessor and as much still remains to be learnt about New Zealand's plants there will undoubtedly be other floras in the future. A *Flora* in this respect is a little like a year book although it does not become out-of-date quite so rapidly.

I imagine that many non-botanists interested in native plants may have found the first volume of Allan's *Flora* to be not quite what they had expected. Anticipating perhaps that such a comprehensive account would enable them to discover the name of any native plant with ease they were no doubt a little bewildered when faced with over 1,000 pages of technical descriptions and relatively few illustrations. A *Flora* is, in fact, a technical work primarily designed for the use of trained botanists, including the self-trained. Its first purpose is to enable identification of the native plant species and secondly to provide descriptions and discussions of these species as a basis for further research. The descriptions contain a number of botanical terms whose meanings are explained in a glossary. Such terms have the advantage of being concise and they are at the same time indispensable for many plant parts where no common names are available. However, although it may appear difficult at first, the layman can make direct use of the *Flora* by some mental effort and frequent reference to the glossary. As far as the botanist working with native plants is concerned the new *Flora* is to him what law books are to a lawyer. When such a botanist is asked to name specimens of native plants he will usually consult the *Flora* and if he should write a more popular account of some or all of our plants he will base it on the *Flora*.

So far I have been discussing floras in general. I should like now to comment more specifically on Allan's *Flora*. The text of this first volume is concerned with the ferns and allied groups, the *Gymnosperms* (cone-bearing plants) and part of the *Angiosperms* (flowering plants), namely, the large sub-group *Dicotyledonae* (mostly plants with broad, net-veined leaves and parts of the flower in fours and fives). The smaller sub-group *Monocotyledonae* (mostly plants with narrow, parallel-veined leaves and parts of the flower in threes) will be the subject of Volume 2 still in preparation, and introduced plants will be the subject of Volume 3.

The most striking feature at one's first sight of the new *Flora* is the dust cover, which bears a very attractive colour design by Nancy Adams depicting a representative sample of the plants described in the text. My only regret is that the format of the cover does not lend itself to framing. Miss Adams has also provided some very useful text figures illustrating diagnostic features of the more difficult groups.

The small size of the *Flora* by comparison with Cheeseman's *Manual* also comes as a surprise. Although there are over 1000 pages the book is novel size and only about one inch thick. The explanation lies in the paper used, which is exceptionally thin, and it is to be hoped that the advantage of portability will outweigh any disadvantages of the paper which is rather difficult to handle.

The book is dedicated very appropriately to Daniel Carl Solander, F.R.S., 1733-1782, who was the first botanist to study the New Zealand flora. Solander accompanied Sir Joseph Banks on Cook's first voyage and on his return to England prepared a thorough and beautifully illustrated account of about 200 New Zealand species. It is a great misfortune that this work was never published.

The introductory portion of the volume includes a preface by Miss L. B. Moore, Dr. Allan's chief collaborator, a year by year listing of most books and papers published on the New Zealand Flora from 1769 to 1958, a new and valuable feature, and a brief account of the physical background to the New Zealand botanical region.

Prominent features of the descriptive portion of the text are the keys to all categories from families to varieties. A key is designed to facilitate identification and consists of a series of numbered alternatives. The investigator examines the first pair of contrasting characters, decides which applies to his specimen, and is then led by a number to a second pair of alternatives and so on until a name is reached at the final selection. This name should not be accepted without further ado but the specimen should always be checked against the full description of the species. The two large keys to all families and all genera of native plants covered in the volume are particularly valuable, especially in cases where a plant is completely unfamiliar as it often is to the beginner. The ideal plant key is one where the characters used are all vegetative as flower and fruit characters are not always available. The *Flora* appears to have used vegetative features wherever possible.

A number of plant names have been changed in the *Flora* and although this is irksome it is entirely necessary. In earlier times there were no rules for the naming of plants and many species were described and named several times with resulting confusion. The present *International Rules* state that the name given with the first published description of a species is the only valid name and most of the changes have resulted from the application of this rule. A particular herbarium specimen is designated as the basis for each species or variety and this is known as the type specimen. Two valuable features of the new *Flora* for the research worker are the information given concerning the locations of these type specimens and the discussions and background information provided in small print in cases where the status of a species or group of species is still obscure.

There are approximately 100 more species recognised in this volume of Allan's *Flora* than in the corresponding portion of Cheeseman's *Manual*. Most of these have been published in the intervening period but some are newly described by Allan and his co-workers. It may seem surprising that new species are still being described but it must be remembered that there are still areas in New Zealand that have not been thoroughly investigated botanically. Also, although many of the newly-described species have been collected in the past the collectors have often been insufficiently familiar with the genera concerned to know that their specimens were undescribed.

The appendices include the Latin descriptions for varieties and species newly described in the text as required by the *International Rules*, a glossary of terms which includes drawings illustrating those terms applied to leaves, a list of Maori names and Latin equivalents, and a fairly lengthy section entitled Supplementary Notes. The last includes minor additions and alterations which are probably inevitable in a work of this size, but there are as well more substantial alterations. The latter have been made necessary by the appearance of publications on certain groups subsequent to their completion for the *Flora*. The decision to finalize each portion of the text as completed was probably reached to avoid the delays of subsequent alterations. However, as this has made necessary the rather cumbersome supplementary notes to bring the text up-to-date it would probably have been better to leave the text in alterable form in the first place.

This first volume of Allan's *Flora* has been long-awaited and it is gratifying to find that it is a real step forward towards a more complete knowledge of our native plants.

In the preface Miss Moore puts forward the view that a *Flora* is basically an incorporation of work published since the appearance of its predecessor rather than a personal revision. Where a *Flora* is the work of one person a complete revision is clearly impossible within a reasonable time, but if the work were to be shared among a number of people such a revision should be quite feasible. I think it probable that future floras will be produced in this way with a senior member in each group acting as co-ordinator with the primary task of maintaining evenness of treatment.

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AUCKLAND DISTRICT CARNATION AND GERBERA SOCIETY. Bulletins 12, 13. Gerbera Register, August, 1961.

These bulletins, published in February, May and August of this year provide valuable and interesting reading for those who possess a special interest in these two colourful genera. The articles are varied and authoritative. 'Carnations in Hawkes Bay' provides a theme for E. H. Haynes who grows over 40 varieties of perpetual and 20 varieties of border carnations. He gives particular attention to growing for winter flowers. R. Weir contributes an article on 'Carnations in the South Island' with some useful data on the behaviour of certain varieties in both islands. It is good to see emphasis being laid on the necessity for naming the best forms of gerberas, which is a sign of progress with any outstanding genus. J. H. Hitchcock gives useful information about 'Winter Care For Gerberas' and E. A. Bond's article 'Adventures in Breeding Perpetual Carnations' should stimulate further efforts in this important direction. Methods of controlling white rust of gerberas is the subject of R. W. Litherland's article.

It is a step in the right direction to organise a register for named varieties of gerberas. It is only by so doing that the irritating and obvious danger of duplication in nomenclature can be avoided. This register contains, in addition to the names of nearly 100 varieties, descriptions of each and, where available, the name of the raiser. It is to be hoped that the time will not be too far distant when varieties can be grown in a properly organised trial ground where those that are too similar can be eliminated.

DISTRICT COUNCIL REPORTS

NORTH TARANAKI

There was an excellent attendance at the May meeting, where Mrs. I. M. Hines, F.R.I.H. (N.Z.), reported on our recent project 'Flower of the Week'. A different flower is displayed each week in the new library, with its botanical name, country of origin and any literature contained in the library relating to the plant is displayed. A framed card informed visitors that this was exhibited by the North Taranaki District Council of the Institute.

Mrs. A. C. MacAlister of Kaponga exhibited and described 20 specimens of winter flowering plants growing in her own garden, where the winter is less congenial than that of New Plymouth. The guest speaker was Dr. George Mason of New Plymouth. His subject was 'The Plants of the Coast, Desert and Mountains of California'. Dr. Mason was for some time resident in California and exhibited some excellent slides of various genera growing in their natural habitat. These included *Sedum*, *Mesembryanthemum*, *Primula*, Larkspur, *Eschscholtzia*, *Calochortus*, *Tamaria*, *Mimulus*, *Pentstemon*, Alpine *Phlox*, Evening Primrose and *Ranunculus*.

In June there was the annual visit to members in the Okato district. Our President referred to the recent honour conferred on the Dominion President, Mr. J. Houston of Hawera, a very worthy recipient of the O.B.E. Congratulations had been sent to Mr. Houston. Mr. J. W. Goodwin, A.H.R.I.H. (N.Z.), who spoke on 'Some Aspects of Garden Planning for the Smaller Section', prefaced his remarks with an expression of pleasure that the J. C. Campbell Memorial Award had been received by Mr. Alan Jellyman of New Plymouth. Mr. Goodwin was the first recipient and had assisted in coaching the next two winners. In the course of his address, Mr. Goodwin covered the initial preparation of the soil, the consideration of existing trees or shrubs, planting to hide fences and to provide a suitable background, the importance of allowing ample space for future development, choice of shrubs for flower, fruit, bark, leaf and habit. He favoured curved lawn margins but discouraged the use of a central specimen or several in a small lawn. Mrs. H. V. George displayed coloured slides of the botanical gardens of the South Island, also items of horticultural interest in the North Island. Further slides of a small lake, south of Mt. Egmont, were shown by Mr. B. A. Norman and rhododendrons in flower at Pukeiti by Mr. W. J. Messenger.

Mr. J. P. Salinger addressed the July meeting at New Plymouth on 'The Choice of Plants for the Garden'. The speaker contended that a New Zealand type of landscape gardening should be evolved, that the original plant cover indicates the type of plant likely to flourish under local conditions, and that in Taranaki the foundation planting should be woody plants. Selective choice was important and time was a big factor — the Norfolk Pine can be grown as a pot plant when young but develops, with age, to a timber tree. The main items to consider when selecting plants were type, growth habit, speed of growth, density of colour (flowers, fruit, foliage, stem). On this basis Mr. Salinger was sure we could not only grow the plants we wish to grow, but also grow them where they should be grown. His address was illustrated by an interesting selection of coloured slides. On 19th July a visit was paid to members in Waitara and there was a good attendance. An address on 'Garden Investment' was delivered by Mr. Keith Downes of New Plymouth. He considered the earth worm a first class investment and they could be encouraged into the home garden by digging in household refuse. This address was full of wise council accompanied by witty remarks. Mr. Downes specialises in gerberas and displayed some attractive slides of hybrids of his own raising. Mr. and Mrs. Terrill also displayed some excellent colour slides of Blenheim, Picton, Rotorua and the surrounding thermal region.

SOUTH TARANAKI

Trees grown from seeds of 'blue butterfly' trees in the garden of a woman in Athens, Greece, who sheltered New Zealand soldiers during the Second World War were planted outside the Hawera Returned Services Club in a simple ceremony held recently.

The seeds were brought back from Athens by Mrs. A. E. Joll, Hawera, and given to Mr. T. H. Reader, who raised four seedlings. One each will be given to the prisoner-of-war associations at Wellington and Auckland.

Mr. Reader said the trees would be a reminder to the servicemen who had been overseas and also to the younger generation.

It is planned to plant flowers from Greece at the base of the trees — which grow about eight feet high in Greece — and poppies grown from seeds from Gallipoli at a later date.

The president of the Royal New Zealand Institute of Horticulture, Mr. John Houston, a life member of the South Taranaki Returned Services Association, said the trees would renew the bonds of friendship between New Zealand and Greece.

The first tree was planted by the vice-president of the association, Mr. F. G. Holm, and the mayor of Hawera, Mr. F. W. Finer. Mr. Houston assisted by Mr. F. Eades, planted the second tree.

WHANGAREI

MAY

Mr. D. R. Purser, F.R.I.H. (N.Z.), gave us a refreshing change from the usual methods of dealing with 'Plants for the Perennial Border'. Choosing plants which would make a display before the Christmas holiday season as well as those which needed less attention in the way of lifting and dividing, and which could largely look after themselves. Too much attention had been given to such plants as perennial *Phlox*, Michelmas daisies and *Delphinium*, whereas the fleshy rooted plants such as *Agapanthus*, *Kniphofia*, *Hemerocallis* and *Eryngium* are more accomodating, withstand dryness better and don't require the same amount of lifting and renewal. Platycodons and Oriental poppies were useful for the same reasons but did best in light soils. We could be made more adventurous in our choice of material whether of herbaceous or shrubby types.

Under trees we could grow such things as *Hemerocallis* and dwarf cannas, lifting these every third year. Clivias were good also in dry shady places, *Alstroemeria* 'Ligtu' hybrids, echiums, *Eucomis* and gerberas also preferred dry situations. Other dry loving plants were *Arctotis*, *Armeria* (Thriffts), *Aubrieta*, catmint, *Stokesia* and bilbergias. For wet situations astilbes, hostas, Japanese irises, *Lobelia cardinalis* (recently exhibited) and the giant leaved *Gunnera* were suitable plants. *Anemone japonica*, *Eupatorium Thalictrum* and *Helleborus* were shade tolerant.

Bearing in mind these requirements one could choose suitable locations, but it was necessary to feed plants if results were to be good. Poor performance was often due to starvation. Some general directions as to feeding were given with the basic requirements of nitrogen, phosphate and potash. Bulbs should not be manured except with bone dust. Some suggestions about the choice of plants for a perennial border were given. Attention must be given to arrangements for height, keeping taller subjects to the back, and to providing contrasts in leaf colour and leaf formation. A silvery grey leaved shrub *Teucrium fruticans* was a suggestion for either end of the border, with the red leaved *Photinia*. *Berberis thunbergii* 'Atropurpurea,' and yellow leaved *Aucuba* between. The small red leaved *Phormium* would provide leaf and colour

contrasts in front of *Teucrium*. Some of the small *Cupressus* could also be used with effect. In suitable places *Gladioli* and delphiniums could provide colour in early summer while many of the longer blooming subjects such as *Hemerocallis* could be interspersed. For the fore front imagination should be exercised in plantings of such things as *Begonia semperflorens*, *Alternanthera*, variegated *Geranium*, with spaces left for such annuals as dwarf *Ageratum* to provide contrast. The dwarf *Nandina pygmaea* with its brilliantly coloured leaves was a distinctive plant.

Colour slides showed a diversity of gardens and plant arrangements. Some of the rare and as yet little known plants were the lovely *Allamanda neriifolia* described in the April issue of *Gardening in Northland*, *Petrea volubilis* a rare plant in New Zealand, the new *Phaenocoma*, a shrub from South Africa with everlasting flowers. *Alberta magna* another South African shrub with bright red flowers followed by red bracts persisting over a long season, some splendid Australians, *Boronia heterophylla*, *Isopogon triloba* and *Petrophila biloba*. These and many more brought an end to a most enjoyable lecture which provided fresh inspiration for colour and variety in our gardens.

SPECIMEN TABLE

This was again well supported, and a centre of interest. A fine collection of conifers displayed by Mrs. Hobson was especially admired and as names were attached, members were able to choose those they wished to order. Early *Cyclamen*, a good *Camellia sasanqua* and the lovely foliage of *Eucalyptus cinerea* as well as that of *Berberis thunbergii* 'Atropurpurea superba' were much admired.

LANDSCAPING A HILLSIDE

Those members who did not attend at Laurie Hall Park on Saturday, April 8th., missed a very profitable and interesting demonstration of landscaping in a rocky and difficult terrain. Mr. McLaren, Superintendent of Parks, gave us some useful ideas on planting in such a situation, and showed us the methods used in rock walling and in constructing the rockeries. He thought the section, or pockets, in many such gardens too small for effective displays. The making of 'dry walls' was shown—double rock walls with earth between, in which many showy subjects could be displayed to advantage.

Trees and shrubs recently planted on the eastern slopes have made remarkable progress and many have flowered. Altogether Laurie Hall Park is being remarkably transformed from the wilderness which formerly disfigured the site.

QUESTION SESSION

A great variety of questions came up for discussion.

Dead leaves on bananas: Should they be removed? Yes, but as the whole plant dies after fruiting this may be wasted labour. When the fruit has been harvested cut down the plant, chop up the leaves and stem and use as fertiliser for the remaining palms.

Daphne burkwoodii: What manure does it require? In the absence of detail as to the nature of soil and situation, the answers given were of limited value. Old cow manure would be safe and beneficial under all conditions. Epsom salts in solution if magnesium deficiency existed, tea leaves to help acidify the soil, but never in such quantity as to create a sticky mat. Fairly hard pruning after flowering is another requisite for success.

Grape vine: Should manure be applied during the dormant season? As it would be leached away by winter rains, apply in spring.

Scale Insects: What is their life cycle and how do they move about? The life cycle is of 12 months. As the old scales shrivel the young emerge

to settle on the leaves and be wind borne to attach themselves to various hosts. The mangrove is host for one of our most troublesome scales. White oils applied three times during autumn at the rate of one tablespoonful to the gallon is the remedy.

Moth Plant: Has anyone seen white butterflies caught by this plant? The flowers of this plant (*Araujia sericofera*) from South America, do trap butterflies when the proboscis is inserted in the sticky pollen grains.

Hard patches in Pumpkin: It was suggested that these might be caused by insect damage to immature fruit, but since some growers find only a few pumpkins so affected out of large crops the evidence was inconclusive.

Crickets and Lettuce: Would crickets eat lettuce? As crickets eat so many things it is possible. Use Dieldrin mixed with fertiliser as a preventive. In the house, crickets may be destroyed by ordinary slug baits.

Rose pruning: In Northland roses are usually pruned later than in colder districts. Floribundas in June and late July for hybrid teas. It was further resolved to ask advice of Mr. Hunter of the D.S.I.R. when he lectures to us.

Celery and Silver Beets How soon may these vegetables be eaten after being sprayed with Bordeaux? They may be used immediately if well washed.

JUNE

Mr. Keith Wilson, the well-known grower and nurseryman of Kerikeri, gave us an unusual and interesting insight on the growing of citrus, not only from the commercial angle, but also from the point of view of the home gardener.

Some suggestions were made as to choosing oranges for the home garden. Navel oranges, Mr. Wilson said, had a tendency to dwarfing, the causes of which were at present being investigated. They often over-blossomed, and probably could be helped by extra feeding in February. Disbudding on their first year out caused them to throw extra growth. 'Matthews' Jaffa' and 'Omana' were both recommended varieties, but though thought to be identical, 'Matthews' Jaffa' matured two weeks later. 'Harwood's Late' which originated in the Bay of Plenty, gave us good fruit over a long period—from December till May, thus bridging the gap between the grapefruit and mandarin crops. Among mandarins the 'Clementine' and 'Satsuma' were proved, and 'Silver Hills', a newer variety has vigour and quality when ripe. The Cumquat 'Maruni' was not only ornamental as a specimen or tub plant, but made the best marmalade.

The Tangelo 'Seminole' did better on *trifoliata* stock than sweet stock. Lemons generally grown were the 'Lisbon' a thorny plant, 'Eureka' and 'Genoa' but 'Villa Franca' promised well.

Two newer citrus mentioned were 'Ugli' which did not come true from seed but of which bud wood had been obtained and plants should soon be available. The 'Ortanique' however came true from seed and therefore could be easily propagated.

Some general advice about cultivation, manuring and time to pick was given. Citrus, generally speaking, should not be picked till ripe, the exceptions being the 'Emperor' and 'Awanui' mandarins which should be picked when lemon coloured.

When planting citrus, the roots should never be allowed to dry, nor put in too deep. The soil should be firmed as air pockets caused drying out of roots and subsequent death of the trees.

In Kerikeri the liberal use of blood and bone had proved beneficial, and good results obtained by the use of nitrophoska which came in the form of coloured pellets, the blue and the yellow being those used. Muriate of potash

should be avoided and sulphate of potash substituted with side dressings of basic slag, blood and bone at planting and again in autumn. Magnesium deficiency could be remedied by Epsom Salts given at the rate of a handful to each tree several times a year.

Lime should be used with caution and sparingly. Plants on *trifoliata* stock showed a special aversion to lime.

Malathion was recommended for aphid and scale— $\frac{1}{2}$ pint to the gallon, and Bordeaux for all fungoid diseases.

Some useful information on citrus canker was given. It appeared on leaves and on fruit as a grey raised mass surrounded by a yellow halo. If the disease was suspected instant action should be taken and samples sent to the Plant Diseases Division. If disease is present all trees must be destroyed as it is wind borne and any twig or leaf left can be the source of new infections over a wide area. Bordeaux was still the best preventive spray.

Mr. McKenzie thanked the speaker for his very practical help to the home grower of citrus.

JULY

Mr. J. A. Hunter, A.H.R.I.H. (N.Z.), of the Department of Scientific and Industrial Research, Auckland, the guest speaker at the June meeting of the Whangarei District Council, gave a most comprehensive account of the causes of disease in roses, their recognition, and methods required to control or cure them.

Mr. Hunter thanked members for their warm welcome, and remarked that, as one who had helped in the forming of the Royal N.Z. Institute of Horticulture, he was always pleased to meet both old friends and new ones.

However skilful the gardener might be, he always had the weather and pests with which to contend, but should accept these with a brave heart. There were three aspects of disease as it affects our plants: First, their susceptibility to the particular variety of disease; second, the environment, and third, the organisms associated with the disease. It was well-known that certain varieties were more prone to disease than others; for example, 'Brazier' and 'Golden Emblem' took black spot; 'United Nations', 'Picture' and 'Pinochio' were prone to mildew, and 'Hector Deane' was very susceptible to rust. The cause lay in the type of leaf. Leaves differed in shape and texture, some were tender, some tough and waxy; some smooth, others rough or hairy.

The state of health of the plant was also a factor. When a plant was fatigued after heavy blooming, or in a hot dry spell, black spot and rust could follow. The environment of the rose was the most important factor for health or disease, and in this regard the choice of site, the nature of the soil and its preparation should receive the greatest attention. Failure was bound to follow where small holes (of only nine inches in a case quoted) were prepared, and worse still, where holes were not prepared till the day of planting. To ensure the best results the beds should be prepared a year ahead. Drainage should be attended to, and if on heavy wet clay, tile drains banked up with scoria should be provided. In spring, add silage or some correspondingly good nutrient, and a liberal dressing of the coarsest bone dust. Then plant dahlias or zinnias, and roses in the following winter. This was the ideal way and was a good preparation for the battle against disease.

Next came the choice of plants. Do not choose your roses from those on the show bench. Go to the nursery in December, and make your list, go again in February and see them under harder conditions, when you may

change your selection, remembering that those varieties which did well on your soil type, and in your own locality, would be more reliable performers.

Mildew was a very bad and troublesome disease, but differs from black spot in that it grows on the surface of the leaf, and so is more amenable to sprays. Rust was due to seasonable conditions of cold and wet, and seldom reached epidemic proportions.

Verticillium wilt was a major disease of roses and may appear about 2 p.m. on a hot day, when the plant droops. It is a vascular disease, and causes a blockage in the flow of plant nutrients. A soil-inhabiting fungus gets into the roots and does this damage. It can be communicated by stock or bud wood. A disease not hitherto suspected or recognised in Northland was crown gall, which was known in parts of Auckland. Large callouses formed below soil level on the principal roots. Bacteria from the soil made entry through injuries and caused abnormal cell growth. There was no cure. Plants should be destroyed and the soil in which they grew sterilised by burning. If French marigolds would maintain health on the site, it would be safe to replant. The marigolds should be lifted and the roots examined at the end of their season.

Chlorosis, whether true or virus caused, prevented the proper functioning of leaves, and could be the result of unsuitable soil conditions, or too much lime. In spite of all that had been said, roses grew well on a soil slightly on the acid side of neutral, and neither did they need a heavy clay soil. Excess lime locks up iron from the soil. Sequestin iron, 1 oz. to 6 gallons of water, was a quick cure for iron deficiency. One ounce of Epsom salts to the gallon was a good control of magnesium deficiency, and helps to combat mildew. Trace elements should be supplied in very small quantities and were best included in the general manurial programme. Basic slag was a good source of these, but should be applied only once in three years.

Slides illustrating different root systems of seedling and grafted roses were shown, also the results of various diseases, in particular crown gall and die-back. High temperatures and insufficient moisture were two conditions which could favour die-back. Faulty pruning and the use of blunt secateurs were other factors. A sharp knife made a cleaner cut without bruising. Mr. Hunter did not advocate summer pruning, which tended to produce weak growths susceptible to disease.

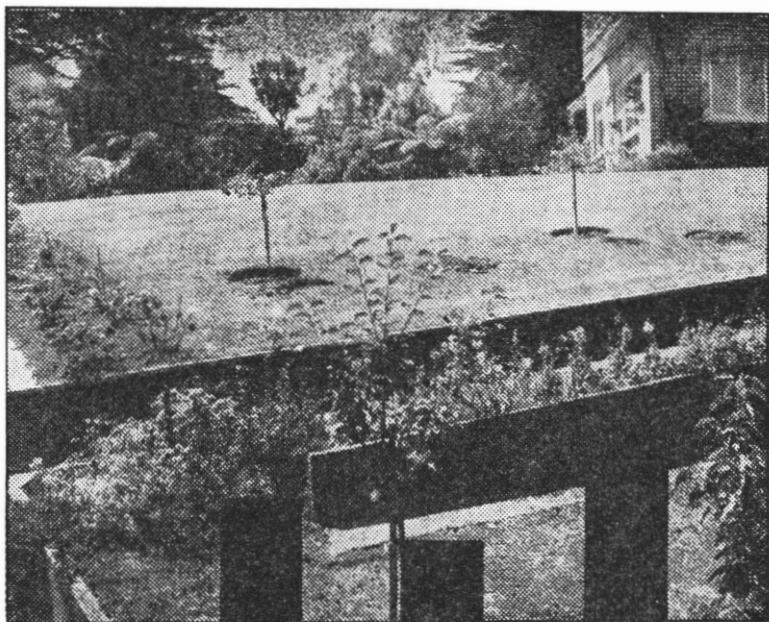
Roses should be planted with their roots at least six inches below the soil, especially in light soils. Phaltan plus malathion was a good general purpose spray for control of black spot and aphides.

Mrs. Bowyer, President of the Rose Society, whose members were present by invitation, thanked Mr. Hunter for his very lucid and comprehensive information, and many informal and interesting discussions followed, to close a memorable evening on roses.

QUESTION SESSION:

Hibiscus: What sprays should be used? Demalin would control aphids and weevils. Stem borer is, however, their worst enemy and the cause of sudden collapse. Go over plants from time to time, cutting out broken and old wood.

Anemone: Leaves are distorted and plants unhealthy. Various causes were discussed, but too much feeding, together with very wet, cold spells, often caused these symptoms.



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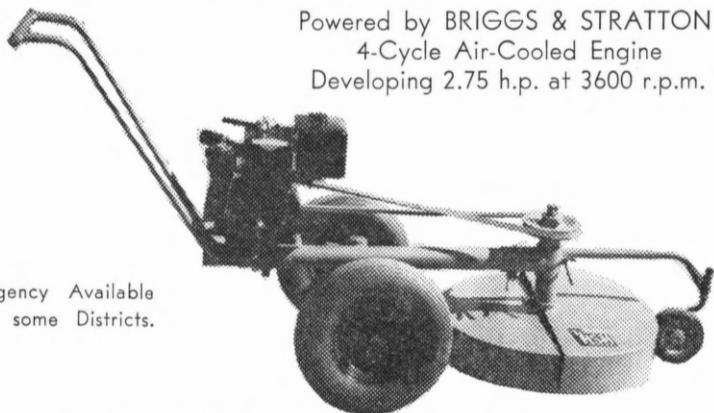
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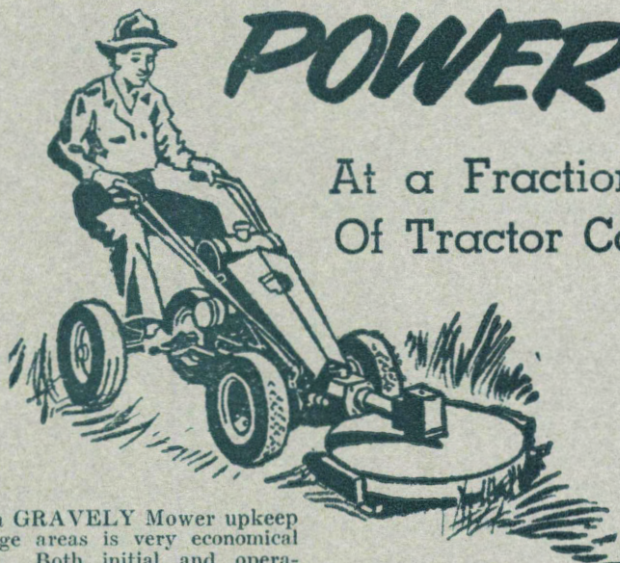
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