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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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GREETINGS

Presently we will take our leave of 1960, and all the joys and sorrows which the Leap Year has brought. We face a New Year with pleasurable anticipation, though we may be pardoned for wondering what may lie in store for us. One matter is certain. Horticulturists will face the New Year with a smile.

To all our members, I extend cordial Seasonable Greetings.

JOHN HOUSTON, A.H.R.I.H.(N.Z.).

Dominion President.

VARIETIES VERSUS SPECIES

There comes a time in the life of a plantsman when he pauses to consider the comparative garden values of varieties of plants of garden origin and the wild species. He cannot generalise but must consider each genus on its own merits.

The late Captain Kingdon Ward expressed his opinion that the species of *Rhododendron* were superior to the varieties of garden origin. Generalisation is dangerous and can be misleading, but certainly such species as *R. grande*, *R. falconeri* and *R. nuttallii* possess a dignified charm that has not yet been approached by the plant breeder. Neither has *R. yunnanense*, with its graceful branching habit and its lovely pale lavender pink flowers, speckled in the throat, any rival among the hybrids. The best of the 'x Loderi' group, yellow flowered varieties like the Crest Form of 'Hawk' or the new, as yet undistributed Moonshine g. 'Bright' and certain others have, so far as knowledge goes, no rivals among the species. Azaleas, perhaps, display the greatest improvements by plant breeders and there is nothing, among the wild species, to compare with the hybrids raised by Waterer, Rothschild and Stead. Among trees and shrubs generally our gardens rely largely upon the wild species and their natural forms and, except in the case of a few genera, little has been done by way of hybridisation.

The modern majestic spires of the descendents of *Delphinium elatum* that have made the names of Langdon, Samuel, Bishop and Reinelt famous have left the wild European species far behind in the matters of form, colour and size of floret and spike. But there are still delightful miniatures that have escaped the attention of the hybridist, *D. tatsienense* from Szechuan with its small graceful blue butterflies on slender, wiry stems and the elusive yellow species *zalil*, from Afghanistan, of which so many of us have heard but never seen. These are charmers of quite a different order and there are no hybrids to take their place. When we consider herbaceous perennials, their popularity owes a great deal to the plant breeder and, apart from delphiniums, there are the late George Russell's lupins, Ernest Ballard's perennial asters, Isaac House's *Scabiosa caucasica* hybrids and many others. But there are still many wild species without which the perennial border would lose much of its seasonable beauty.

In the vast race of alpine plants there is only a mere handful of hybrids and not many of these possess the pristine charm of the wilding. Is it because man seems ever to be seeking for 'bigger and better' flowers and thereby sacrifices much of their original beauty? It is difficult to imagine any possible improvement on such plants as *Gentiana verna* 'angulosa,' *Meconopsis betonicifolia* 'Baileyi,' *Eritrichium nanum* or *Cypripedium spectabile* unless it was to cause them to be easier in cultivation. Yet I, for one, would not like to see such plants made so easy that they became as common as pansies. They are plants like these that maintain the plantsman's enthusiasm on a keen edge and leads him on his path, ever seeking to attain what is possibly unattainable.

G. A. R. PHILLIPS,

Editor.

THE VEGETATION OF FIORDLAND

J. T. SALMON, D.Sc., F.R.S.N.Z. (Victoria University of Wellington)

Fiordland, that vast area of southern New Zealand that extends southwards from Milford Sound to the south western tip of the South Island embraces a region much of which is still unexplored botanically and zoologically. It is a naturalist's paradise where a man may pit his wits and stamina against Nature in all her wildness of rugged terrain, torrential rains, blizzards and mists. A place where the parting storm split by the piercing sun of a midsummer's day reveals row upon row of majestic peaks, some young, fresh and jagged, others older, more weathered and serene, their snow caps presiding over an expanse of deep bifurcating valleys whose floors and lower slopes are clothed with luxuriant forest that gives way skywards to rolling golden

tussock meadows and screes of alpine plants. Here and there the scarlet of a misletoe plant poised high on a beech tree breaks the varying pattern of green, and small tarns, like the larger lakes, reflect the azure blue of the clearing sky. The many waterfalls cascading from the heights cut across this tranquil fastness with glistening streaks of white foam, the distant ones silently making their way to the sea, those nearer at hand breaking into the all pervading quiet with the music of tumbling waters. As the departing wind sighs with exhaustion round the peaks and the last of the mist melts away the kea soaring with scarlet and green against the blue vault cries with plaintive curiosity at this invasion by man of his domain. This is New Zealand's Fiordland, the land of the Takahe, of Sutherland and the Murrells, which along with the Urewera Country of the North Island forms the two last remaining great fastnesses unspoiled and largely unharmed by man. At least this was so up to about twelve years ago but since then and in the last few years particularly herds of introduced animals, deer, wapiti, thar and others are eating the soul out of this wonderful place ruining the forests, destroying the alpine meadows, the things we used to cherish and admire. I was at the Homer when the first of these animals broke through into the Upper Hollyford and now plants I used to know and look for year by year disappear or perhaps are marked by a few chewed off stems which may or may not survive if left alone to grow and flower again.

I have visited Arthur's Pass on numerous occasions. I have been to the Mt. Arthur Tableland, to the Lewis, Mt. Cook and other places in our mountain regions but never have I seen alpine flowers in such abundance nor growing with such luxuriance as I saw on the first few times I visited Fiordland. In their unharmed state the alpine meadows in this region once seen at their best in early or mid December are a sight never to be forgotten. Of all the localities the Harris Saddle and the Homer-Grave Talbot Pass were supreme. The first time I saw the Homer it was almost impossible to walk anywhere without treading upon flowers which sprouted around and over boulders, and covered the flats and screes with a profusion born of abandon. It forms a vivid memory of great beauty but, be it the McKinnon Pass, The Wilmot, Key Summit, or other heights the story was much the same.

In the forests, too, Fiordland showed a magnificence equalled only in some parts of Westland. Though the beech forests of the Eglinton are much admired the finest forests of Fiordland are found in the lesser known parts such as the hinterland beyond Lake Manapouri, the Spey Valley and southwards towards Lake Poteriteri. On the western slopes and in the lower Hollyford the beech forests of the eastern side of the divide give way to a mixed forest of great luxuriance which extends out over the small river flats into stands of rimu and kahikatea. In many of these places the undergrowth is extremely dense with mosses, ferns, supplejack, astelias and shrubs, such as *Coprosma* sp., *Nothopanax* sp.

including *anomalum*, *simplex* and *colensoi*, *Griselinia littoralis*, *Weinmannia racemosa* the kamahi and *Elaeocarpus hookerianus* the pokaka. The southern rata, *Metrosideros umbellata*, and Miro, *Podocarpus ferrugineus* also occur sparingly on the steep slopes of the fiords in restricted localities. The mountain lacebark *Hoheria glabrata* and *Fuschia excorticata* are commonly found associated with scrub formations around the foots of scree slopes on both sides of the divide.

The scarlet mistletoe *Elytranthe tetrapetala* is common throughout these beech forests often attaining to plants of considerable size. The flowers appear during December and January in great profusion. On the steep slopes of the western side of the divide mountain beech *Nothofagus cliffortiodes* is still predominant and in many places the trees appear to cling precariously to the rocky walls of the glaciated valleys. It is interesting to see this country during times of drought which occasionally do occur. After about four weeks without rain these beech trees commence to turn brown and after about six weeks look as though they are dead. When rain again falls they quickly revive and in a few weeks are completely recovered clothing the rocky slopes with a new lush green. How long they could exist without rain and still recover is not known as long dry spells are very rare in this region.

The forests of the western slopes with their dense undergrowth contrast markedly with the more open types of beech forest found on the eastern side of the main divide. In more sheltered places stands of *Hoheria (Gaya) lyallii* occur particularly alongside stream banks in forest or on the edges of subalpine swamps.

As one ascends the valley slopes the forest gives way between 2000-3000 ft. altitude to a region of sub-alpine shrubs consisting largely of species of *Olearia*, *Hebe*, *Dracophyllum*, *Phyllocladus alpinus* and stunted beech trees.

These plant associations pass almost imperceptibly above 3000 ft. into stands of tussock and snow grass, *Danthonia flavescens* intermingled with such alpine herbs as *Ranunculus lyallii*, *Celmisia* sp., *Aciphylla simplex* and related forms, *Anisotome* and *Viola cunninghamii*. Above 4000 ft. alpine herbs are the only vegetation and on rock outcrops and screes in December through January New Zealand's wild alpine flowers may be seen blossoming in the greatest profusion. The fine *Celmisia coriacea* is common everywhere and appears to be the dominant *Celmisia* of these regions.

The Homer and Gertrude Cirques form a great ampitheatre at the head of the Hollyford Valley and with their sheer rock walls reflecting the heat of the sun seem to act as a 'natural hothouse' which results in the development of a remarkable profusion of alpine plants.

Here occur many forms of *Senecio*, some white, some deep yellow, others in varying intermediate shades. They grow most luxuriantly and flower abundantly during December and early January. The species

are not known, probably they are hybrid forms, but, whatever they are they are very beautiful and most interesting. The Fiordland *Celmesia*, *C. holosecicea* grows well in the Homer and Gertrude Cirques, forming quite extensive 'mats' amongst the rocks.

In sheltered localities the glorious white flowers of *Ranunculus lyallii* with their butter-yellow centres held in great clusters on erect or gently curving stems form dense patches of gleaming white cascading down the mountain sides in the early morning sun. This plant, one of the largest ranunculi in the world, is often erroneously referred to as the 'Mount Cook Lily' or 'Shepherds' Lily' and is characterised by its enormous oval, dark green, glossy leaves which often measure eighteen inches across. Being concave these leaves in the early morning after heavy dew or rain will be found full of water. *R. lyallii* grows in profusion throughout Fiordland as well as further north at Mt. Cook and Arthur's Pass but the finest stands of this plant I have ever seen have been at the Homer and on the McKinnon Pass. High on the Grave Talbot Pass I have come across fine plants of the yellow flowering *Ranunculus haastii* while lower down in this region *Ourisia caespitosa* with its dainty off-white flowers forms glistening mats which sometimes are very extensive indeed on the sides of scree. The *Helichrysum* sp. are rarer in these parts than they are further north but other cushion and mat plants of all kinds are common in these scree regions as well as many species of *Dracophyllum* such as *uniflorum*, *longifolium*, *politum* and *prostratum*. Some of these often form conspicuous plants of considerable size that sprawl out over the scree. At the Homer for instance, *D. uniflorum* and *D. pronotum* grow into huge plants some of which may measure 10-15 ft. across. On Mt. Alexander above Caswell Sound extensive stands of the tall *D. fiordense* occur though this plant is probably sparingly distributed over the entire region. It occurs on the Wilmot Pass and I once came across a splendid group of specimens in the Cleddau. In wet places one occasionally finds plants of *Bulbinella hookeri*, the 'Maori Onion Plant' and in the Upper Hollyford I once found a magnificent specimen, the finest I have ever seen, that stood 4 feet high with beautiful big flower heads of a very rich deep golden colour.

One of the most extraordinary areas in Fiordland is Key Summit a large flat topped mountain between Marion and Lake Howden whose top forms a vast bog extending some three miles in a north-south direction. Here one finds all manner of subalpine swamp and bog plants belonging to such genera as *Gainardia*, *Oreobolus* and *Donatia*. Plants of *Celmesia sessiliflora* are scattered amongst these and *Dracophyllum prostratum* and *D. rosmarinifolium* grow luxuriantly, everywhere. Key Summit is swept by strong winds and the beech trees which grow sparingly there tend to become low, stunted, and gnarled sometimes almost prostrate; they grow on the higher undulations between the tarns and bogs and are seldom more than 10 feet high. Places similar to Key Summit but smaller occur on the mountains behind Caldwell

Sound. Similarly, at Milford Sound the delta of the Bowen Falls is another curious place botanically. Here under the influence of the icy cold spray from the falls, whose waters reach the sea in less than one mile from the snow fields that form their source, celmesias and other subalpine plants normally found around the 3000 ft. level, grow at sea level.

On the river flats in the fiords such as Milford Sound fine specimens of the native broom *Carmichaelia arborea* often occur, and on the lower saddles the wineberry *Aristotelia serrata* sometimes occurs, its rose coloured flowers born in abundance in early December making a fine display.

In these mountain regions the rainfall per year is high averaging, for instance at the Homer Tunnel over 250 inches per year. Milford Sound has 150-200 inches per year and in regions such as this moss and lichens, liverworts and other wet loving forms of vegetation flourish. In the Gertrude Cirque there is a small stand of stunted beech forest composed of trees none of which are more than 12-14 ft. high; their branches gnarled and twisted by the rigours of the climate loom through festoons of lichens and mosses or rise goblin-like from behind great blocks of rock which themselves are covered with a most luxuriant growth of mosses, lichens and ferns. Entering this place is like passing into another world, cold, eerie and damp it has a kind of deathly stillness and silence which pervades everywhere. Any noise is absorbed by the thick blanket of mosses and lichens which clothes everything. I first went into this forest with the late George Howes of Dunedin, and, as we entered Howes' voice faded away and a small bird flew noiselessly past. Walking on this living carpet was almost noiseless and to talk to each other Howes and I almost had to shout. The place was known as the 'Goblin Forest', an apt name, for looking around at the extraordinary shapes of trees and mosses one's imagination could run riot and conjure up almost anything! Overshadowed by the great bulk of Mount Talbot this little patch of forest was in the 250 ins. rainfall area and was continually swathed in mists sweeping down from the mountains, conditions which probably accounted for the lush growth of the mosses and lichens that, in some places, were so deep I could bury my arm to the elbow in them.

Some years later I visited this place again but the growth was not so wonderful. This season was drier than on the former occasion and deer had been through. Probably in any case, its condition varied with the season, according to the rainfall. Other similar areas occur in these mountain regions. I found one like this in the Clinton Canyon during 1958 when the season also was a very wet one down there. A luxuriant growth of mosses and lichens in the forests is characteristic of much of the Fiordland area, particularly in towards the main divide of mountains on the eastern side and right down the western side to the sea. From every point of view Fiordland is a fascinating region both

for the botanist and for the average person interested in observing some of New Zealand's finest forests and alpine meadows with their profusion of wild flowers. In these meadows, while it is true that white is the prevailing colour, broken occasionally by a gleam of yellow, and there is none of the brilliant colour such as characterises the alpine meadows of the Alps in Europe. There is still, in the New Zealand scene, no disharmony of tone amongst these white flowers set in their background of ever varying green and bronzy green foliage. The very profusion of their blooms makes for a scene of astounding beauty.

THE CHEESEMAN MEMORIAL SHOW

M. C. GUDEX (*Hamilton*).

The Cheeseman Memorial Show which opened in Auckland on 24th September, 1960 and continued until 27th September was even more comprehensive and more interesting than all its predecessors, fine though they were. For the last four years this annual function had to be abandoned, because of the additions and alterations to the War Memorial Museum, but these now provide more space and better facilities for the holding of such an exhibition.

Mr. R. A. Dickie, principal of the Auckland Teachers' Training College, had the honour of declaring the show open. In the course of his speech he pointed out that this function had three distinctive features. First, it was a tribute to the memory of T. F. Cheeseman, who had been Curator of the Auckland Museum for fifty years, and in that time had made a great name for himself as a botanist. His *Manual of the New Zealand Flora* was still the most authoritative textbook for students of our native plants, and his herbarium was a cherished possession of the Museum. This Memorial Show was inaugurated in 1931 by the well-known botanist, Miss Lucy Cranwell, and was held every year until 1955, except for an interval during the Second World War.

The second feature mentioned by Mr Dickie was that the purpose of the War Memorial Museum and its high place in the cultural and educational life of Auckland were illustrated and emphasized by this exhibition. Finally, this kind of function always afforded a wonderful opportunity for co-operation, as proved by the large number of groups and societies and the hundreds of individuals who had sent in or staged so many plants. This was one of the few things in life that children and adults could share equally, and it proved a remarkable meeting ground for them.

The truth of the speaker's remarks was borne out by the number of contributing groups in the Auckland Province and by the collections of plants sent by Mr E. S. West, Taupo; Dr. P. Allington, Gisborne; Duncan and Davies, New Plymouth; Levin Native Flora Club; Director

of Parks, Wellington; Wellington Botanical Society; Miss N. Adams (the well-known illustrator of plants), Wellington; University of Canterbury; Director of Parks, Christchurch; Otago University and many others' (as a notice stated).

These collections sent from a distance formed a most varied and interesting exhibition, and one which, without any help, would itself have been worthy of the title 'Cheeseman Memorial Show.' It included a vegetable sheep, rare species of *Pittosporum*, *Olearia*, *Coprosma*, *Hebe*, *Dracophyllum*, *Hymenanthera*, native brooms; a series of celmisias; 'The Pride of Marlborough' (*Pachystegia insignis*, formerly called *Olearia insignis*); herbaceous plants such as *Cotula*, *Anisotome*, *Raoulia*, *Vertera*, *Gentiana*, *Craspedia*, *Helichrysum*, *Ourisia*, various 'Spaniards' (bayonet plants) and orchids.

In the fern section staged by Miss Margaret Crookes were many species known only by name or by planted specimens to even advanced students of our flora. Some of these are listed now for the benefit of botanists who were unable to attend this exhibition: *Lindsaya viridis*, a dainty fern with light-green fronds, found near the spray of waterfalls or in other damp places; *Asplenium obtusatum* (the fine specimen on show came from Stewart Island); *Blechnum durum* and *B. banksii* (Coastal ferns); *Asplenium colensoi*; *Nephrolepis cordifolia*, found in the thermal area, and the giant maidenhair, *Adiantum formosum*.

In the children's section there was a remarkable form of the large-leaved *Alseuosmia macrophylla*; instead of the ordinary narrow, deep-pink tubes, this plant had wide-mouthed, pale-pink flowers massed together. In another exhibit there was a form with long tubular flowers of a cream colour. In several other exhibits there were specimens of *Alseuosmia banksii* in full bloom; this species has narrow, serrated leaves and fragrant reddish flowers. An accompanying note stated that the four native species of *Alseuosmia* hybridize freely. That is the experience of both amateur and professional botanists, for they find bewildering groups of hybrids in the bush wherever two or more of the species occur.

It was a delight to many visitors to see the display illustrating the work of Captain Cook, Joseph Banks and Dr. Solander. Cook's maps, a picture of Banks, and a generous and well preserved specimen of rewarewa collected by Banks and Solander crowned a series of plants discovered during their famous first voyages. In their five months in New Zealand, 360 distinct species were collected by the two botanists, chiefly from the East Coast of the North Island. In 1958, 120 of their specimens were honourably repatriated to New Zealand. Some of the plants collected during the first voyage were the ordinary cabbage tree, Banks's cabbage tree, manuka, kanuka, rewarewa, kawaka (*Libocedrus doniana*), koromiko, pohutukawa, *Alseuosmia*, karaka, tutu, *Geniostoma*, *Pittosporum eugenioides*, *Cassinia retorta* and rangiora.

The Tree Society of Auckland had staged a well planned series of exhibits to tell the story of the kauri. These included fresh unripe cones, ripe cones, seeds and protective scales, bark, heartwood, foliage, seedlings in cylinders, plants one, two and three years old, and a number of photographs. These showed trees being climbed for gum, giants of the forest including Tane Mahuta, felling, logging, milling and other features of the kauri timber industry.

The Auckland branch of the Forest and Bird Protection Society had staged a patio with flagged floor, chairs and table (period, 1960!), basket seat, sunshade, wall-boxes, and a number of native plants, growing in pots. These included rimu, lancewood, flax, cabbage-tree, kawaka, creeping *Fuchsia* (*F. procumbens*), the Kermadec Island plant *Homalanthus polyandrus*, and a variegated form of the bird-catching plant (*Pisonia brunoniana*).

In the two sections staged by Mr. A. Farnell of Auckland, and by the people of Northland were several plants that had been discovered in recent years — some so recently that the only description of them is to be found in scientific journals or museum records not available to the ordinary plantsman. One of the rare plants was *Tecomanthe speciosa*, our only native representative of the *Bignonia* family. Like many others of that family, it is a climber or scrambler. Only one plant has been found in its native state, and that was in 1945, on Great Island, one of the Three Kings Islands lying to the north-west of Cape Reinga. Its discoverer, Professor G. T. S. Baylis of Otago University, brought back fresh material from which Mr. J. Hunter of the Plant Diseases Research Station in Auckland was able to raise plants (though with great difficulty) by means of cuttings. The leaves of *Tecomanthe* are compound, rather thick, leathery and shiny, and the flowers are cream-coloured, tubular, 2 to 3 inches in length, grouped in clusters and followed by stout capsules full of winged seeds.

Elingamita johnsonii is a tree with leaves like those of the karaka, but its flowers are pinkish panicles, followed by red berries. As stated by Professor Baylis in the September, 1960 issue of this Journal, *Elingamita* is found only on the West Island of the Three Kings group, and the name commemorates the intercolonial S.S. 'Elingamite' which foundered there in 1902.

It is recorded by Professor Baylis that 13 of the species growing on the 1000 acres of land in those islands are found nowhere else in the world — not even on the mainland which is little more than 30 miles away. Several other rare species from the Three Kings Islands were on exhibition. These included a 'new' species of rangiora (*Brachyglottis arborescens*), a cabbage-tree with bluish flower-head (*Cordyline kasper*), a new species of karo and milk-tree, and a remarkable tree, *Plectomirtha baylisiana*, which is a member of the *Anacardiaceae*, discovered in 1945. As this single tree is the sole representative of its species and even of its genus, it is surely the rarest plant yet discovered.

Mr. Farnell had many other rarities such as *Xeronema*, a liliaceous plant with flowers like those of the Australian bottlebrushes, hybrid forms of kumarahou and tainui (*Pomaderris*), of *Nothopanax* and *Rubus*, and strange forms or species (still unnamed) of *Olea*, *Pittosporum*, *Melicytus*, and *Coprosma*.

If a scribe may misquote the poet to describe Mr Farnell's exhibit, 'He nothing common had or mean; Upon that memorable scene.'

The people who say that New Zealand has few kinds of beautiful flowers should be urged or even forced to study such an exhibition as the Cheeseman Memorial Show. At least fifty kinds of native plants were seen in bloom in the various sections, even though September is almost the beginning of the floral year.

Red and deep pink shades were provided by two species of *Alseuosmia*, carmine rata (*Metrosideros carminea*), the two forms of the kaka-beak (*Clianthus*), puriri, manuka, *Xeronema* and *Rhabdothamnus*.

White predominated and appeared in *Clematis*, heketara (*Olearia rani*), lawyer vine, rangiora, northern white rata (*Metrosideros albiflora*), white kaka-beak, the iris-like *Libertia ixioides*, two species of koromiko, Banks' cabbage-tree, the grassy leaved epiphytic orchid (*Earina mucronata*), Kirk's epiphytic groundsel (*Senecio kirkii*), mairehau (*Phebalium nudum*) and taranga (*Pimelea longiflora*), two of our choicest shrubs.

Blue was sparingly represented by *Colensoa physaloides* and *Solanum aviculare* (the horoporo). Cream and yellow were displayed prominently by kowhai, kumarahou, toru (*Persoonia toru*), *Senecio lantus*, tarata (*Pittosporum eugenioides*) and the unusual forms of *Alseuosmia macrophylla*.

True green or greenish flowers were seen on Banks' hooded orchid (*Pterostylis banksii*), broadleaf (*Griselinia*), ribbonwood (*Plagianthus*), hangehange (*Geniostoma*), mahoe, toro (*Suttonia salicina*), *Hymenandra novae-zelandiae* and *Nothofagus truncata* (clinker or hard beech).

Purple and nondescript shades were provided by karo, koromiko, *Fuchsia*, kohuhu and other species of *Pittosporum*.

This large and interesting part of the exhibition included both competitive and non-competitive displays. It was evident that the children of the Auckland Province are taking a healthy interest in our native plants, either growing in their natural habitat or cultivated for their beauty of foliage or flower. Some very good decorative effects were secured by girls and boys of various ages, not merely with the usual saucers, sand trays, troughs and jugs. Drawings, paintings and collections of fresh specimens covered a wide field. One exhibit displayed native plants which provide nectar and other food for birds. The general standard was good, but at least one Auckland authority said that more or better coaching was called for to bring out the educative as well as the decorative features of our plants.

Mr. A. C. A. Caldwell, of Hamilton, had sent up fresh specimens of sixteen species of native conifers. Two more species were displayed in other parts of the exhibition, so that students of our flora had a good opportunity to see eighteen out of our twenty conifers. The missing species were *Dacrydium biforme* and *D. intermedium*.

Women of the Maniopotō and other tribes showed the very interesting features of the preparation of flax and the plaiting and weaving of food kits and cloaks. Perhaps they will demonstrate at next year's Memorial Show the preparation of food from bracken, tree-fern, nikau, hinau, cabbage-tree and other native plants.

A large collection of sea-weeds deserves special mention. As a result of seeing this exhibit a holiday at the beach should be more interesting in future for both young and old.

In many parts of the show there were beautiful floral arrangements of our native plants.

One vase of heroic proportions was a suitable holder for *Astelia*, whau, toetoe, flax, *Lycopodium* and the sedges *Mariscus* and *Carex*. Another large-scale arrangement comprised puka, nikau, lancewood, and red-leaved forms of kohuhu (*Pittosporum tenuifolium*), rangiora *Fuchsia*, flax and ramarama. Others made skilful use of *Clematis*, poroporo, kaka-beak, carmine rata, kowhai, hard beech, coloured manuka, and the fruits of taraire, pigeonwood, supplejack, titoki and kahikatea.

Congratulations are sincerely offered to Professor Cooper and Mrs. P. Hynes (the botanists at the Museum) and to all the other people who helped to plan and to stage this latest Cheeseman Memorial Show, for it was a triumph of organisation.

SEAWEED AS A PLANT FOOD

J. J. S. CORNES, B.A., B.Sc., F.N.Z.I.C. (Wellington).

Looking from the cliffs south of Titahi Bay toward Mana Island, you can see a brown line stretching from the tide-rip northward. This represents a big bed of *Macrocystis* weed, a partly-submerged forest anchored to a reef offshore. Or again, when howling southerlies bring the breakers pounding into Lyall Bay, big brown rafts of the weed can be seen in the distance drifting north-east toward the beach. These tangled masses of cord-like stems, floated fronds and big hold-fasts may have been torn from the huge bed, at least one mile wide by five miles long, near Cape Campbell. Other great beds occur about Banks and Otago Peninsulas, Foveaux Strait and Stewart Island, demanding only the oxygen of cold, moving waters and the rocky foothold obtainable near harbour or headland.

Macrocystis, in the stormy and reef-strewn seas off Tierra del Fuego, has excited the wonder of sailors from Cook and Humboldt

to Darwin and Shackleton. Darwin wrote: 'Every submerged rock seems buoyed by this floating weed,' and Cook: 'In some of its habitats we did not strike ground with a line of twenty-four fathoms. It must grow to a length of sixty fathoms and upwards.' Shackleton credited it with a length exceeding the height of tallest *Sequoia* or *Eucalyptus*. We can only speculate as to how the lanky giant begins its growth, for even at only twelve fathoms the light is comparable with moonlight.

World Distribution of *Macrocystis*

Macrocystis occurs widely in the Southern Hemisphere, but only between latitudes 40 and 60 degrees, so that, for instance, it does not grow far north of Cook Strait. It is absent also from the coast of Westland north of the Otago Sounds, probably from lack of harbours and anchorage, but partly perhaps because of the warm East Australian current, which thereabouts sweeps northward. Only in the Pacific Ocean, and that in spite of the fact that its beds are known to decay when the sea gets warmer than 20 degrees Centigrade, has it somehow crossed the Equator, forming, on the coast of California, huge beds which in World War I were reaped for their potash, when Stassfurt supplies were cut off.

The Mineral Content of Seaweeds

Seaweeds in general, possibly because in the absence of roots they can absorb all over their surface, contain far more mineral, incombustible matter than do land plants. Thus, while the ash of leaves or grass is only a tenth of the dry weight, that of sea-weeds may amount to half.

In the smaller brown seaweeds, or 'wracks,' of the inter-tidal zone, however, this ash consists largely of ordinary salt, sodium chloride. It is only in the large brown Laminarians or 'tangles,' growing partly or wholly submerged, even at low tide, and often offshore, that the proportion of valuable potassium chloride is high. In *Macrocystis*, for example, potassium chloride, amounting to a quarter of the dry weight, is three times as plentiful as ordinary salt. Considering that in the sea outside it potassium chloride is only one-thirtieth of the sodium chloride, this selective preference and ninety-fold enrichment is remarkable enough.

Efflorescence, Pure Muriate of Potash

But who would expect an additional enrichment in potash, by hindrance to soda, to occur when the cell-sap passes, outward now, through the skin of the drying, and apparently dead weed? You have probably seen the white salty crust left by the drying sap on those sun-desiccated outcasts on sand or rock, beyond reach of normal tide and wave. This consists of pure potassium chloride — or so nearly pure that only the spectrograph can detect any sodium in it — the result of a sort of double filtration. It contains no potassium iodide. Under ideal conditions of drying (shade and a gentle, dry southerly) the

crystals of chloride are seen to grow outward like the finest of clear, glistening hairs, single or clustered, to a length of about one-eighth of an inch, and almost as if being extruded through fine pores. Yet under the polarising microscope they show the isotropic structure of ordinary cubical crystals of potassium chloride.

In passing, I should mention, with strange transition from most metallic to most non-metallic of elements, the preference shown by *Macrocystis* for iodine to bromine. This is even more striking and convincing, for the live weed contains quite four or five times as much iodine as iodised salt and very much less bromine, although in sea-water bromine is over a thousand times more plentiful than iodine. But as this organic, combined iodine may remain largely insoluble and unavailable to other plants, this fact may not seem quite so important to the gardener as interesting to the chemist.

Value As Fertiliser

Macrocystis is obviously best gathered when freshly stranded, before loss of potash by leaching or drying. Of course, in common with other fresh plant material such as lawn cuttings, it should be dug in, preferably with some agricultural lime, and allowed to rot for a month or two before soil or compost is again turned over for sowing and planting.

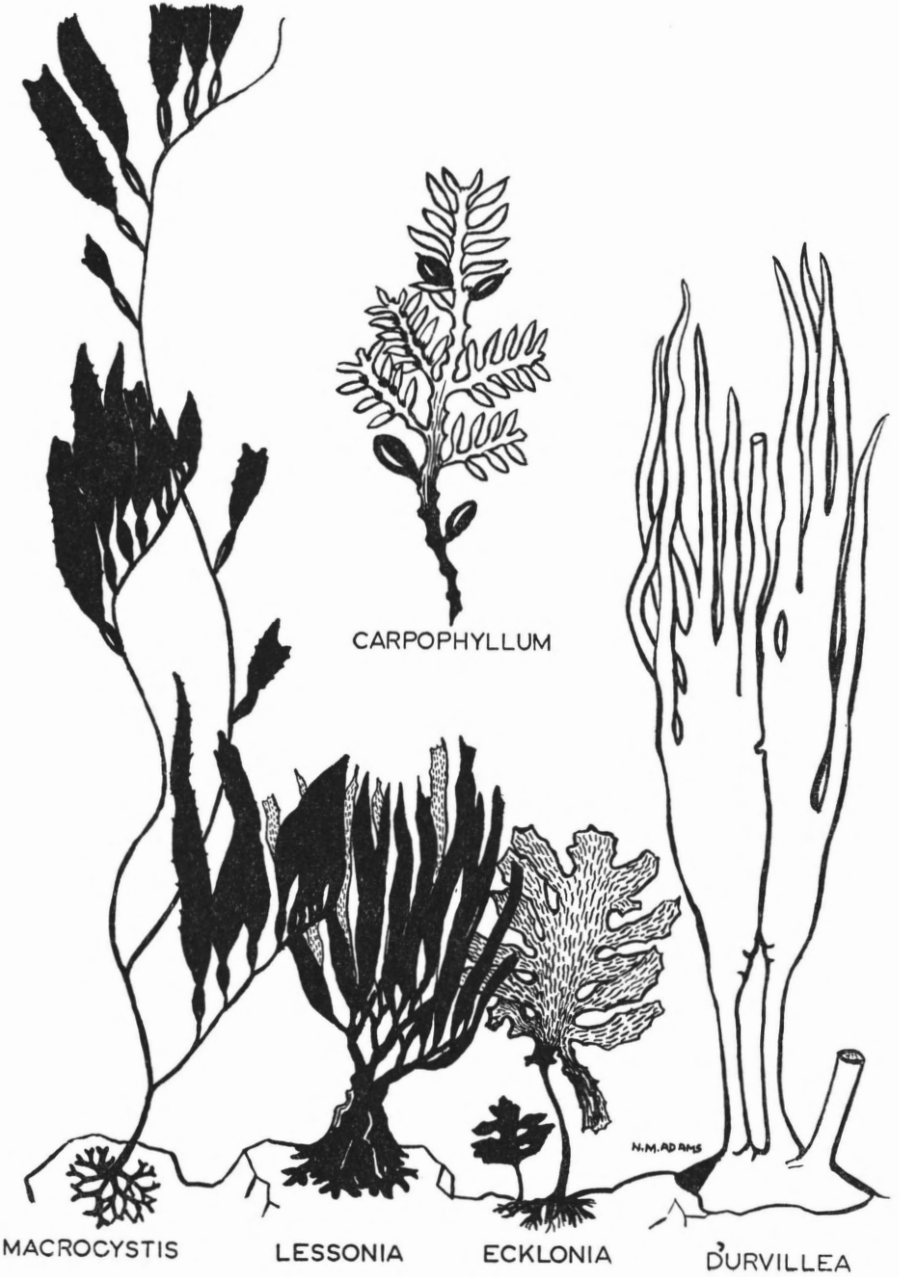
Macrocystis provides almost as much nitrogen and organic, humus making matter as farmyard manure, with much more potassium but less phosphorus. Consequently, with the addition of a little superphosphate, it is an ideal fertiliser for starch-forming or sugar-forming plants, such as potatoes or tomatoes, or for salt-loving plants such as asparagus or beet.

It provides plants also with at least some of its plentiful iodine, along with many essential trace elements from the sea — all these, and humus for the soil, it gives without weed-seeds or fungus spores.

Alternatives to *Macrocystis*

Although anchored beds of *Macrocystis* are not found much north of Mana and Kapiti Islands, nor Cape Palliser to Cape Turnagain, yet big living and fresh rafts of it may drift up either coast, and on the west even to the Ninety-Mile beach. Moreover, there are two Laminarian (strap-leaved) relatives of *Macrocystis*, far more widely distributed, and almost equally rich in potash, though smaller and floatless, growing on rock just below low-tide. They are *Lessonia* and *Ecklonia*. *Lessonia*, however, consists largely of a foot-high, conical and buttressed holdfast of woody texture so resistant to decay as to be useless. *Ecklonia*, with its unique cylindrical stalk and spade-like blade, after gales may cover northern beaches, as at Takapuna or Milford.

All around our coasts the snake-like thongs of the big bull-kelp, *D'urvillea*, swirl and slither in the strongest surge on the rocks. When worms and molluscs weaken the grip of its elephant foot, the monstrous,



CARPOPHYLLUM

MACROCYSTIS

LESSONIA

ECKLONIA

DURVILLEA

N.M. ADAMS

buoyant plant may drift to far-distant beaches. Gathered fresh it decays rapidly, first to a jelly and then to humus, giving a surprising growth on such crops as tomatoes. At the opposite extreme for size are those fine weeds which build up into masses of deep drift, consisting in muddy estuaries largely of the green sea-grass, *Zostera*, but in harbours or on open beaches more mossy and multi-coloured. These are tempting, as easily bagged for transport. While doubtless best on asparagus beds, they are, when applied in reasonable moderation, very beneficial to other crops also. Indeed, the only really useless, nuisance sort of weed is such as the very common *Carpophyllum* called 'flapjack,' which forms a thick, brown band just below low tide around most rocky coasts. Cast up on sandy beaches, it lies a long time above high-tide level, becoming black and stiff as it dries. Buried in your garden, this decays no faster than old boots, and is scarcely more useful!!

Overcoming Difficulty of Transport

The bulkiness of seaweed can be overcome in various ways. The simplest is sun-drying, though this is not always advisable, as some species, for example *D'urvillea*, when thus case-hardened rots in the ground only very slowly. But *Macrocystis* and other Laminarians can be dried without such damage, and then, having something of the brittleness of rather tough straw, could well be chopped up for more compact bagging by means of that old-fashioned and hand-operated chaff-cutter with a big bladed wheel that cuts 'chuf-chuf' like a Model-T Ford! (But perhaps it would be easier nowadays to find a Model-T Ford! — actually, I have used, for chemical analysis, a fast breaker-type machine).

For a still more concentrated product, dried sea-weed may be burnt to ash, a process recalling the old kelp-burning days of Western Scotland and Ireland, when the ash of Laminarians (tangle-weeds) was extracted for its iodine, only that here the ash is to be applied direct to the soil. Hence burning must be thorough, to ensure that all plant-poisonous sulphide is completely oxidised to sulphate, and for this no fire on rocks or open beach will suffice. But in a drum-type incinerator with good bottom draught the dry weed alone burns fiercely, giving a loosely-friable frit or incipient slag, through some measure of fusion of its alkali with admixed sandy, siliceous impurity, while the inside of the iron drum is coated white with volatilised and condensed chloride. There is thus some slight loss of potash, and of course complete loss of nitrogen and of humus-making organic matter.

Loss of nitrogen may, however, be avoided by the very different commercial process of wet-digestion or autolysis, whereby the whole weed is put into solution. This concentrated product, marketed as complete fertiliser by an English firm, retains all the plant foods, including trace elements, of the Laminarian weed, and is very convenient in small-scale use. But in the large scale of farm-cropping or pasture-management you can now buy more cheaply a serpentine — superphosphate

yielding not only its magnesium but also added traces of molybdenum, copper, or cobalt in amounts safe to plants yet sufficient on the individual soil. And at the level of home — or market — gardening there is surely room for more transport and use of our natural or dried weed, in a country which, for a thousand miles of length, possesses some 4000 miles of coast with capes and bays, and no place 100 miles from the sea.

THE LATE DAVID TANNOCK

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

David Tannock, O.B.E., A.H.R.H.S., A.H.R.I.H.(N.Z.), was born in 1873 in Ayrshire, Scotland, where he received his early training in horticulture. In 1895 as a student gardener he entered the Royal Botanic Gardens, Kew. After two years' service he was promoted to foreman in charge of the large palm house which still remains one of the great structural features of Kew. After three years at Kew he was one of those selected to accompany Sir Daniel Morris to the West Indies for the purpose of reorganising and rehabilitating the sugar cane and other horticultural industries which had suffered a recession. At the West Indies he was appointed to the Agricultural School at Dominica. After four years at Dominica, where he rendered excellent service, he sought a change to a more temperate climate and in June, 1903, was appointed by the Dunedin City Corporation as its Curator of Botanic Gardens and Superintendent of Parks and Reserves.

In this new country David Tannock applied all his energies and enthusiasm in building up the Botanic Gardens and Parks to a state that was to become the standard for the rest of New Zealand. His careful administration and wise planning soon earned the respect of the Councillors and citizens of Dunedin and in a few years he became recognised throughout the Dominion as an authority on horticulture. His advice was frequently sought by local authorities and private establishments.

Among the many improvements he effected in the Dunedin Gardens, were the construction of a large rock garden, for many years the largest of its kind in New Zealand, a bog and water garden, an extensive rose garden, a large and comprehensive herbaceous border, and a number of shrubberies which contained many subjects new to cultivation in this country.

It was through his representations that the Winter Garden was constructed. At the time, 1908, it was the largest glasshouse in Australasia.

Not content with transforming and adding new features to the Gardens, Mr. Tannock extended them to cover a much larger area.

The manuka covered hill overlooking the Gardens and Dunedin itself, was cleared, a municipal nursery was established, an extensive area for the cultivation of all types of native plants was prepared and planted, an azalea garden formed, and a natural gully or ravine transformed into a delightful rhododendron dell. Today it is one of the best horticultural features of Dunedin and has become famous throughout the Dominion. These are only some of the many improvements that were planned and brought to fruition by David Tannock. Among his other worthy achievements was the reafforestation of the tussock covered mountain sides which form the watershed of Dunedin. It must have been a great consolation to him to live to see many of the exotic forests for which he was responsible grow to maturity and the plantations to become, in area, the largest municipal forest in the British Empire.

Another of his feats was the planning and planting of the park and pleasure gardens for the Otago and South Seas Exhibition held in 1926 in what is now Logan Park. The whole area of over 30 acres had been a shallow salt water lake (the writer as a youth had sailed a dinghy on it) which had been filled in with saline mud and silt dredged up from the shipping lanes of Otago Harbour. Such was the uninviting material that was to be landscaped in a little over a year. Yet under David Tannock's management and foresight it was achieved. Drive-ways and pathways were formed, lawns established, trees and shrub-beries planted, bedding displays and flower borders provided, a rose garden made and a fernery constructed.

Like most Scots he was a firm believer in education, and as a lecturer on horticulture in all its aspects, he was always in demand. In the 1900's for several years he was engaged by the Otago Education Board to instruct its teachers in practical horticulture and school gardening, and for a number of years he conducted courses on horticulture at the Dunedin Technical College. For over 30 years and up till the time of his death he provided the Gardening Notes for the Otago Daily Times newspaper. He was also the garden expert for the weekly broadcasts by 4.Z.B. Dunedin.

He was the author of several hand books on horticultural subjects.

He was a past president of the Dunedin Horticultural Society and one of the foundation members of the Royal New Zealand Institute of Horticulture. He convened, in 1926, the first meeting of park superintendents and became the first president of the New Zealand Institute of Park Administration, or as it was then called, the New Zealand Superintendents of Botanic Gardens and Parks Association. On relinquishing the office as president, he became the honorary secretary and treasurer, a position he held until 1948, seven years after he had retired from his position with the Dunedin City Corporation.

He was a kindly man, sincere, and always ready to render assistance to all worthy projects, and to help and encourage those interested

in gardening as a career. When he came to New Zealand, most of the prominent men in horticulture were from Britain. This, David Tancock, contended, should not continue, and it was due to his influence and guidance that young men who had taken up horticulture as a profession, journeyed to Kew and other famous establishments to gain further knowledge and experience. To his credit it can be stated that a number of these men now hold responsible positions in horticulture in New Zealand.

For his services to horticulture he received in 1935, the Jubilee Medal, in 1948 the O.B.E. and was one of the original recipients of the A.H.R.H.S.

In his latter years he was affectionally known as the Grand Old Man of Horticulture in New Zealand.

While on a visit to England in 1952 the death of this distinguished man occurred in his 80th year at Richmond on the 3rd June. So passed one who had devoted the whole of his life to horticulture, to improving the lot of his fellow men, and who did so much to place horticulture on a sound basis in New Zealand.

STEWART ISLAND PLANTS

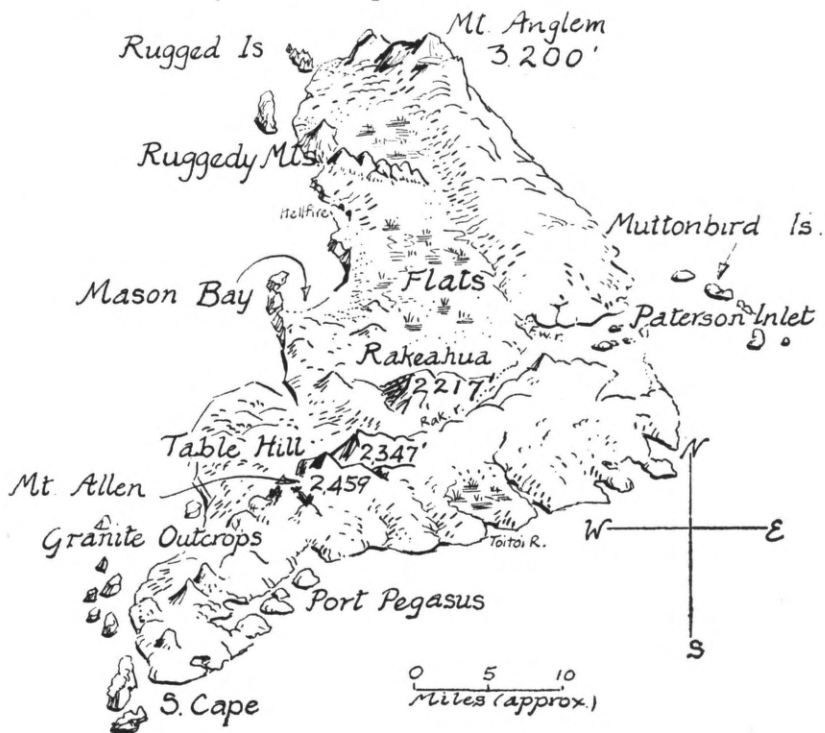
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SHEILA NATUSCH, M.A. (Wellington).

Stewart Island is about the size of Banks Peninsula and its immediate hinterland. It is separated from the mainland by the shallow windswept and tide-scoured Foveaux Strait, the settlement, Oban, being some 26 miles from the port of Bluff. The general outline of Stewart Island is that of a right-angled triangle: the N.E. side is cut into by Paterson Inlet (about the size of Lake Manapouri); the S.W. side by the somewhat smaller Port Pegasus. The third and longest side, or hypotenuse of our triangle, has several large bays, including the fine 10-mile sweep of Mason Beach. Once the sea flowed from here through to the head of Paterson Inlet, across what are now swampy flats and sandy dunes; the rest of the Island is largely taken up with the high country.

Mt. Anglem (3,250ft.) is the highest point of a rocky glaciated range which runs from N. to N.W., dropping down towards the rugged coast; lower bushclad ridges and foothills slope towards Paterson Inlet, continuing beyond it. Mt. Allen (2,459ft.) and Table Hill (2,347ft) are the highest points of the backbone range which runs from the S.W. arm of Paterson Inlet to Port Pegasus; the southerly branches of this range outcrop in fantastic granite cones. A low but jagged and knobby range, the Ruggedies, rises from the sea north of Masons and Hellfire, and runs for a few miles inland along the flats towards the Inlet.

The prevailing wind is the westerly. This reaches gale force in the high tops, and sends tremendous seas rolling in on the wild cliffs between Ruggedy and Big South Cape. It can also whip up a nasty sea as it races down Paterson Inlet and out to the Straits. A westerly, though it can be a violent and salty experience, lacks the bitter and shrivelling effects of the southerlies that sometimes blow up from the Antarctic with very little to stop them.



SKETCH-MAP: STEWART ISLAND

Because of the prevalence of westerlies, bringing humidity, and also because of a mild ocean current from Australian waters, the Island weather is not as a rule cold; Bluff, Invercargill and Dunedin are all less mild in winter. Frosts are light about Half Moon Bay though heavy on the inland flats, which are also hot in summer. Winter snows generally keep to the high country, where conditions can certainly be unpleasant; when they do descend briefly to the shores of the Inlet, the sight of sparkling snow-laden branches hanging low over the water is worth a few chilblains and slushy roads. Though rain occurs during many days of the year, it seldom lasts all day. This climate and

this topography have produced a varied and characteristic vegetation which, although modified to some extent by introduced mammals, has suffered little direct damage by man. The rest of New Zealand is bald by comparison!

A little clearing has been done about Half Moon Bay; here and there along the roadsides appears characteristic second-growth of young rimu, stinkwood and other coprosmas, wineberry and other small trees and divaricating shrubs. This has gone a stage further in old milled bush up the Inlet. Sheep are run on the inland plains. There is a fringe invasion of naturalised plants in settled places, and a sprinkling of plant immigrants, mainly composites, throughout the open country; but regeneration, where the deer have not inhibited it completely, is mainly a reversion to type. A hillside on the Mason Bay islands, where dense *tete-a-weka* scrub had been burnt off, was coming back in a pure cover of *tete-a-weka* seedlings.

'Stewart Island is, as far as its natural history is concerned, one of the least explored portions of the New Zealand biological area.' Thus Cockayne in 1909. And, apart from his own magnificent contribution, this is still largely true.

The southern Maoris had names and uses for many of their plants, but the history of Stewart Island botany, as far as the Europeans are concerned, begins round about 1850, when Lyall, surgeon on board the survey-ship 'Acheron,' sent a handful of plants to Kew. There was a gap of some thirty years, followed by a period of considerable botanical activity. Some adventurous expeditions by sea and overland were undertaken by Petrie and Thomson, and Stack; these involved pushing through heavy bush, fighting thick tupari scrub, and tossing about in small sailing boats. There were no tracks then, no auxiliary launches — and no deer! The brothers Traill, Orkney men who had settled on the Island, collected much valuable material for Kirk, who himself visited the area in the '90's; Cockayne's *Report* gives a graphic account of an expedition by these men up Mt. Anglem. Visitors to the Island may be surprised to find nikaus and other northern trees still flourishing in Charles Traill's garden on Ulva Island.

Cockayne himself called at the Island in 1903 on his way to the Snares, revisiting the district in 1907, when he covered an astonishing amount of territory during the few weeks he spent there. His species lists and detailed ecological studies are the basis of his admirable *Report On a Botanical Survey of Stewart Island*, published by the Lands Department in 1909, and long since out of print. This report, still the standard work on Stewart Island botany is eagerly pounced upon whenever it comes up in sales of second-hand books. I am writing this article with one eye on my copy. In the field, it is a rare thrill to come across a plant not listed by Cockayne.

The study of Stewart Island bryophytes begins with Brown and Bell, who went moss-gathering there in the '90's. Fifty years were to

elapse before Mr. William Martin of Dunedin turned his attention in the same direction. Meanwhile, Poppelwell had been exploring the inland flats and outlying muttonbird islands, and Simpson and Scott-Thompson ('The Firm') were embarking on their long series of inquiries into the status and relationships of New Zealand plants, including those of Stewart Island.

There have always been naturalists on the Island itself; names like Trail and Leask are well-known to botanists elsewhere, who owe many of their Stewart Island specimens to field-workers on the spot. In the recently-opened Stewart Island museum a representative herbarium is gradually being assembled; this includes seaweeds, mosses and other cryptogams as well as the higher plants. The fungus flora is represented by a fine set of life-paintings, which bring this group to life far more entertainingly than the more orthodox shrivelled brown soup-ingredients, beloved of mycologists, ever could. A name which deserves always to be associated with Stewart Island botany is that of Miss Noeline Baker, who established a living museum of native plants, including most of the endemics, in her garden at Half Moon Bay; unfortunately, its purpose was somewhat misunderstood when she gave her property to the government.

Modern transport makes it easier for botanists from other parts of New Zealand, and indeed the rest of the world, to see Stewart Island vegetation for themselves. There is still plenty of work to be done, and it is good to see co-operation between people who live among the plants and those who can compare them with the vegetation of other areas. Those of us who have grown up on Stewart Island tend to regard Stewart Island plants as normal; it is only when we get a chance to explore the rest of New Zealand that we realise how many of the 'mainland' plants are a little 'out-of-step'! Cockayne showed what a trained botanist could do in a few weeks: could not somebody spend a year there in research?

Cockayne's list has been modified slightly down the years, more the result of general botanical revisions than the discovery of new species; his list of endemics remains substantially unaltered. This includes three sedges, a Maori onion, two buttercups, a spaniard, and other related plants, a stunted inaka, a tiny foxglove, a sharp little mountain-grass, and several daisies, ranging from shrubs, vegetable sheep and mountain-daisies down to tiny herbs visible only to the sharpest eye. Mt. Anglem's whipcord *Hebe* turned up later on Wilmott Pass, one of Simpson's finds, so must be struck off the list of Island endemics.

Perhaps one of the most striking things about the vegetation of Stewart Island and its outlying islets, in relation to the rest of New Zealand, is the absence there of the elsewhere ubiquitous beech and kowhai. This, along with the presence of the endemics mentioned, at first gives the impression that Foveaux Strait must be of great geological age. But Bluff Hill, sticking up out of miles of flat Southland plains,



Olearia colensoi - *Tupari*

is also without beech and kowhai (beech reappears in the Longwoods), and the coastal scrub characteristic of Stewart Island is repeated on the bleaker parts of the Southland coast. G. M. Thomson, exploring near Pegasus in 1878, discovered *Suttonia chathamica* growing there:

what is this Chatham Islander doing at Stewart Island? Botanists and geologists could well put their heads together to work out the age and former boundaries of Foveaux Strait; perhaps Captain Cook's chart was but a few million years out of date?

There are other puzzles too. On Mt. Anglem, and possibly also Mt. Allen (a peak badly in need of exploration) there grows a vegetable sheep which Cockayne identified tentatively with one found also in the Tararuas. It has been suggested that the Tararua plant is a hybrid between the common Tararua vegetable sheep and the North Island edelweiss, the Stewart Island plant having as its parents the common Stewart Island vegetable sheep and the South Island edelweiss. The coastal tupari (*Olearia*), thought by Cockayne to be possibly allied to the sub-antarctic *O. lyallii*, was described by Simpson as a variety of the true leatherwood, *O. colensoi*, common throughout the high country of New Zealand.

My own observations seem to back up Cockayne. The mountain tupari of Stewart Island, however, comes closer in flower head size and shape and leaf-venation to the mainland tupari, commonly called leatherwood. Then, some of the mountain daisies are far from tailor-made to current specifications. Cockayne found a strange buttercup on Table Hill summit; was a single plant I collected there during a sleety squall the same as his *Ranunculus crosbyi*? It was planted carefully in Miss Baker's garden, but a well-meaning caretaker dug it up to make room for his black-eyed Susans.

(To be continued)

THE VISIT OF THE LORD WAKEHURST TO NEW ZEALAND, SEPTEMBER, 1960

A. M. W. GREIG, N.D.H.(N.Z.), A.H.R.I.H.(N.Z.).

In the year of the Tarawera eruption, 1886, a young Englishman, Gerald Loder, visited New Zealand and was so impressed with the New Zealand flora that 40 years later he presented the Loder Cup 'to encourage the protection and cultivation of the incomparable flora of the Dominion.' In September, 1960, a new bond was forged between the donor's family and New Zealand when the Lord Wakehurst, son of the donor, visited this country and in the course of a fortnight called at ten of New Zealand's principal cities and towns in his capacity of Lord Prior of the Most Venerable Order of St. John. At each civic reception the Mayor made reference to the Loder Cup and Lord Wakehurst was very gratified to find the high and widespread esteem in which the Cup is held. Every district thought it was an honour to have a Loder Cup winner among its residents. At some centres, previous holders of the Loder Cup were mentioned or presented to Lord

Wakehurst, but undoubtedly the highlight was the visit to Tauranga on Thursday, 29th September, 1960, when Lord Wakehurst was the guest of Mr. D. S. Mitchell, Mayor of Tauranga and met the 1959 winner of the Cup, Mr. Charles Cameron, of Tauranga.

On arrival Lord Wakehurst was met by Mr. A. M. W. Greig, Wellington, Chairman of the Loder Cup Committee and then called on His Worship the Mayor of Tauranga and inspected the Borough Council Chambers and then accompanied by Mr. Mitchell, Lord Wakehurst was driven up Cameron Road to its far end where the road forks and at the junction stands the home of Mr. and Mrs. Charles Cameron, of Greerton, Tauranga. There Lord Wakehurst met for the first time a Loder Cup winner and was able to see the Cup itself. Close to the home is the fernery which constantly reminds the visitor of Mr. Cameron's continuing interest in ferns. Some of the most prized and attractive native ferns are the kidney fern, *Trichomanes reniforme*, *Asplenium tripinatum*, *Davalia tasmanii*, *Peliathrum velutinum*, *Loxsonoma cunninghamii* and the umbrella fern *Gleichenia cunninghamii*. Some photographs were taken in the fernery and Lord Wakehurst and Mr. Cameron had a brief talk before his eye caught sight of a plaque, which read:—

Strolling round mid ferns and mosses
 Searching hill and woodland glade,
 Always seems to bring contentment,
 From the plants that haunt the shades.

Lord Wakehurst commented that the words on the plaque were typical of Mr. and Mrs. Cameron's charm and love of the beautiful in nature.

Several miles beyond the Cameron home is Pye's Pa school, a primary school of about 100 pupils and there Lord Wakehurst was met by Mr. W. J. Kennedy, Chairman of the school committee and Mr. E. Merry, Headmaster and saw a practical demonstration of Mr. Cameron's work, as the school grounds were sheltered and bounded by a plantation of New Zealand trees and shrubs, some of the most noticeable being rimu. *Dacrydium cupressinum*; tanekaha *Phyllocladus trichomanoides*; totara, *Podocarpus totara*; miro *Podocarpus ferrugineus*; kowhai, *Sophora tetraptera*; rewarewa *Knightia excelsa*; five finger, *Nothopanax arboreum*; lancewood *Pseudopanax crassifolium*; matipo *Suttonia australis*; pohotukawa, *Metrosideros excelsa*; red-flowered manuka *Leptopermum scoparium*; and the black tree fern mamaku *Cyathea medullaris*.

Lord Wakehurst addressed all the pupils of the school, making reference to the interest his father had taken in New Zealand plants and how many he had acclimatised in England and concluded by congratulating the school on the beauty of the grounds and appealing to the children to continue the wonderful work begun by Mr. Cameron.



Hebe Meadow, Upper Hollyford Valley (See page 3) (Dr. J. T. Salmon, A.R.P.S.).



Flower head of Dracophyllum fiordense (see page 5) (Dr. J. T. Salmon, A.R.P.S.).



In the 'Goblin Forest,' Gertrude Cirque (see page 6) (Dr. J. T. Salmon, A.R.P.S.).



Ourisia caespitosa (see page 5).
(Dr. J. T. Salmon, A.R.P.S.).



Celmisia coriacea (see page 4).
(Dr. J. T. Salmon, A.R.P.S.).



Ranunculus lyallii (see page 5).
(Dr. J. T. Salmon, A.R.P.S.).



Bulbinella hookeri, the 'Maori Onion'
(see page 5) (Dr. J. T. Salmon,
A.R.P.S.).



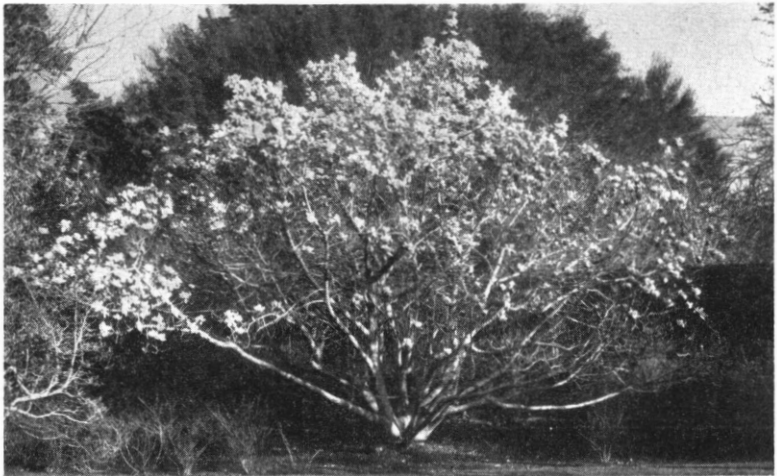
Helichrysum bellidioides (see page 5)
(Dr. J. T. Salmon, A.R.P.S.).



Old glacial lake on Mt. Anglem at about 2300 ft. surrounded by sub-alpine scrub (see page 18) (Dr. J. F. Findlay.).



Vegetation around rocky western extremity of eastern plateau, Mt. Anglem (see page 18). (Dr. J. F. Findlay).



Magnolia campbellii at the Botanic Gardens, Dunedin (see page 29).



Cheeseman Memorial Show: Flax weaving (see page 11). (N.Z. Herald.)



The late David Tannock (see page 16).



The Lord Wakehurst (extreme right) at Pye Pa's School, Tauranga, in conversation with Mr. Charles Cameron, recipient of the Loder Cup for 1959, Mrs. Cameron, the Headmaster and Chairman of the School Committee and Mr. A. M. W. Greig, Chairman of the Loder Cup Committee (extreme left). (see page 24). (Bay of Plenty Times Ltd.).

Before leaving Tauranga, Lord Wakehurst was guest of honour at an informal luncheon attended by the Mayor and Mayoress, Mr. and Mrs. Mitchell, Mr. and Mrs. Cameron and local representatives including the Forest and Bird Society (Mr. A. Hunter) and the Tauranga Horticultural Society (Mr. C. F. Washer). The Loder Cup was artistically placed in the centre of the table. From his own personal observations Lord Wakehurst was able to congratulate Mr. Cameron on the remarkable success he had achieved in school plantings and in arousing the interest and enthusiasm of school children and concluded by stating that Tauranga had reason to be proud of Mr. Cameron and owes him a deep debt of gratitude.

This visit by Lord Wakehurst to Tauranga arose directly from his own request at an informal meeting with the Loder Cup Committee at the office of the Hon. C. F. Skinner, Minister of Agriculture on Friday, 23rd September. Mr. P. W. Smallfield, Director-General, Department of Agriculture and the following members of the Loder Cup Committee were present — Mrs. A. J. du Pont; Messrs. W. K. Dallas, A. M. W. Greig, E. Hutt, K. J. Lemmon, L. F. Sired, Professor H. D. Gordon and Dr. L. J. Wild.

During his brief visit to New Zealand, Lord Wakehurst made full use of his cine-camera to take a colour pictorial record of his visit. Not only did he take Mr. and Mrs. Cameron with the Loder Cup but he also photographed the Pye's Pa school-children coming out at lunch time and at work in the young plantation.

Earlier he had shown his eagerness to obtain scenes depicting the New Zealand rural scene. In Central Otago he saw and recorded a farmer working two sheep dogs to put sheep in a pen and a fruit-grower carrying out the spraying of his fruit trees. Passing Foxton he noted the New Zealand flax *Phormium tenax* drying on the fences and obtained a record of some of the flax being conveyed to the drier.

Lord Wakehurst, K.C.M.G. is the present Governor of Northern Ireland, a position he has held since December, 1952. Before that he was for nearly nine years Governor of New South Wales. Before the Second World War he was Conservative member of the House of Commons until he succeeded his father, the first Baron and entered the House of Lords.

John de Vere Loder (later the second Lord Wakehurst) was born on 5th February, 1895 and educated at Eton where he was interested in foreign languages. He saw service in the first World War and won mention in despatches. He has been interested in travel and international affairs, having visited Siberia and the Caucasus and other parts of Russia in 1930. As Chairman of the English Speaking Union he visited Canada and the United States more than once. Since 1948 he has been Prior of the Order of St. John and has largely been responsible for the post war world wide expansion of the Order.

Lord Wakehurst is married and has three sons and a daughter. He is the author of several books and actively used a cine-camera to produce a collection of colour films taken in various parts of the world. He is also greatly interested in opera and ballet.

At the conclusion of his visit to New Zealand he expressed a hope that a personal relationship had been established between himself as representing the donor and the Loder Cup Committee, the Minister in whom the Cup is vested and those who have won the Cup.

It is intended to forward to Lord Wakehurst each year a copy of the winning citation for the Loder Cup award.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

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

This year we have had an exceptionally good spring, and many people have remarked that they have never seen the Gardens looking better. Certainly the blossom trees and other flowering shrubs could not have flowered any better and the absence of strong winds which are usually a feature of September and October did much to prolong the displays. Frosts were noticeably absent and although the overall rainfall was below average, what rain did fall came at the right times. Generally both September and October were fine mild months with sunshine below average, both earth and air temperatures above average, so that conditions have been very good for spring growth. So far November has been about average and a very sharp and heavy fall of rain on the 7th will do much to prolong growth.

During the spring and early summer months there is one little known section of the gardens which is very colourful and contains some interesting plants and that is the *Primula* garden. Although only 5 years old it is already assuming quite a mature appearance and as it becomes better known will prove increasingly popular. After the Canterbury Horticultural Society's centennial flower show which was held in the woodland in February, 1955, the area was ploughed up for renovation and at the same time the opportunity was taken to landscape a portion of the banks of a deep drain which ran through the area. The banks between two footbridges were bulldozed down to water-level and a basin shaped depression formed. The banks were edged with large rocks to prevent scouring by flash floods which occur in this drain and also to give a somewhat natural appearance. A nearby artesian well was piped across to supply water for a small stream flowing into the drain and an intersecting pathway laid out. As a change from stone or *Buxus* edging, and to be more in keeping with the area oak logs were laid down along the edges of the path. Once

the area was laid out the soil was enriched with plenty of leafmould and then planted up with Asiatic primulas, small *Rhododendron* species and similar types of plants.

At present many species of *Primula* are in flower, the main ones being *Primula japonica* and its varieties, *P. pulverulenta*, *P. beesiana*, and *P. bulleyana*. However, it is not intended to discuss the various species of *Primula* here but rather to mention some of the other unusual plants growing there.

During October and November the most outstanding plant is probably *Ferula communis* the Giant Fennel. A native of southern Europe and Syria, it is an imposing sight when in flower. The foliage is light green, very finely cut and forms a very fine clump. During the late winter the leaves are produced from the huge rootstock and reach their maximum development by September; then the stout flowering stem commences to appear and eventually grows to a height of 8 - 10 feet. The flowers are yellow, about 40-50 to an umbel, and are quite showy.

A little known plant belonging to the *Apocynaceae* and which never fails to arouse comment among those who see it, is *Amsonia tabernaemontana*. It is a perennial herb growing about 2 ft. or so high, the stems being clothed with light green, willow-like leaves. The pale blue flowers have narrow petals and are borne in terminal panicles. Flowering commences towards the end of October and continues right through November, the narrow petalled flowers being particularly attractive. In fact it is rather hard to understand why this plant is not better known.

Another very attractive blue flowered plant which is perhaps better known but is still not often seen in gardens, is *Mertensia virginica* or Virginian Cowslip. The Virginian Cowslip is a glabrous perennial with smooth oblong leaves and a flower stem 1—2 ft. high. The flowers are bell-shaped and borne in more or less drooping clusters in September. Soon after flowering the plant dies down and does not reappear until early the following spring.

The species of *Dodecatheon* do very well in the *Primula* garden and the common name of Shooting-star is most appropriate. The flowers are rather like a small cyclamen and they definitely give an impression of motion. Species grown are *Dodecatheon pauciflorum*, *D. salinum*, and *D. jeffreyi*.

In the New Zealand section there are several plants which are always outstanding during this period and this spring the best was undoubtedly *Corokia cheesmanii*. Although fairly well known in the North Island it is a rarity in Christchurch which is a pity because *Corokia cheesmanii* is equal to many exotic shrubs which are grown in our gardens. It literally smothers itself in the spring with small bright-yellow starry flowers and they are followed by orange-red berries in the autumn.

Persoonia toru is a shrub which is infrequently met with in gardens and the fine specimen in the Botanic Gardens shows just what a handsome garden plant it is. The brownish-yellow flowers are produced over a long period from September till December and they stand out very well against the dark foliage.

There are two species of *Olearia* which although not beautiful in flower are nevertheless worth having in some corner of the garden on account of their delicious perfume. *Olearia odorata* is a shrub growing up to 12 ft. high, rather erect growth and linear-spathulate leaves about 1 in. long. The heads which have no ray florets are borne in fascicles of 2-5 on short branchlets and they are very fragrant. The best species however is *O. fragrantissima* which grows from 6-12 ft. high, has dark reddish-brown bark and rigid zig-zagging branches. The leaves are light green in colour, $\frac{3}{4}$ - $1\frac{1}{2}$ inches long and have a silky tomentum underneath. The heads are borne 8-12 together and are yellowish in colour, and have the most delicious scent of ripe peaches. Both species are natives of the South Island.

The last shrub to be mentioned is *Epacris pauciflora* which although it cannot compete with the Australian members of the genus is still a very attractive small shrub. It usually grows from 3-6 feet high and makes a fairly compact shrub. The small white flowers are freely produced towards the ends of the branches and although the main flowering period is in the late winter and spring months, it is often possible to find flowers on it throughout the year.

NOTES FROM THE DUNEDIN BOTANIC GARDENS

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

One of the most attractive parts of Dunedin in spring and early summer is the Azalea Garden and Rhododendron Dell, in the Upper Botanic Gardens. Being situated on rising bushclad ground, it commands many enchanting glimpses of the city, harbour and surrounding hills. Shelter and background are provided by some very fine natural stands of kanuka (*Leptospermum ericioides*) and native *Fuchsia* (*Fuchsia excorticata*), while many large specimen trees of southern kowhai (*Sophora microphylla*), ribbonwood (*Plagianthus betulinus* and *Hoheria angustifolia*), lemonwood (*Pittosporum eugenioides*), broad-leaf (*Griselinia littoralis*), lancewood (*Pseudopanax crassifolium* and *P. ferox*), give strength and character to this blending of exotic rhododendrons and azaleas, with typical New Zealand flora. However, some introduced trees are used, in particular American Oaks (*Quercus coccinea* and *Q. palustris*) to give semi-shade, flowering cherries (*Prunus cerasus* vars.) and Japanese maples (*Acer palmatum* vars.), which give colour and lightness of flower and leaf to the more sombre foliage and heavy blooms of the massed rhododendrons. Several large Monterey pines

(*Pinus radiata*) in an open area with towering trunks are most impressive.

Towards the end of August each year the main attraction is undoubtedly *Magnolia campbellii*, which occupies a focal point in the Azalea Garden, an irresistible subject for the amateur colour photographer. Of good form and colour, this tree — now some forty years old — is 25 feet high with a spread of 30 feet, and is believed to be one of the best specimens in this country. This year it was indeed a superb sight, with its thousands of huge pink blossoms seen against a background of evergreen trees, with the misty blue of *Scilla* and *Chionodoxa* massed beneath its spreading leafless branches. Less spectacular, but very colourful, free flowering magnolias which carry on the display in its vicinity are *M. kobus*, *M. soulangeana*, *M. stellata*, *M. denudata* and *M. liliflora*, while *M. tripetala*, *M. parviflora* and *M. grandiflora* extend the flowering season well into the summer months.

The last week in October sees the massed beds and flowering borders of deciduous azaleas in full bloom. The earlier blue carpet of *Scilla* and *Chionodoxa* is now faded, but the sweeping lawns make an effective setting for the riot of colour, while the heavy scent from *Rhododendron flavum* pervades the air. The recent plantings of evergreen azaleas (*R. indicum* and *Kurume*), already very colourful, give promise of a good display in the years to come.

In the Dell, there are rhododendrons in flower from the end of July until the New Year, though the latter half of October and the the beginning of November is the period of greatest bloom. Good specimens of the larger growing species are much in evidence, *R. falconeri*, *arboreum*, *delavayi*, *kingianum*, *grande*, *griffithianum*, *sutcheunense*, *thomsonii*, *discolor* and *maddenii*. Prominent among the older hybrids are 'Mrs. Thistleton Dyer,' 'Alarm,' 'x Loderi,' 'Marquis of Lothian,' 'Pink Pearl,' 'Cynthia,' 'Countess of Haddington,' 'Alice' and 'Fastuosum flore pleno.' In recent years extensive plantings have been made of the more modern hybrids, and the most attractive species, particularly the large leaved ones. In addition, large numbers of seedlings have been raised and planted out of crosses made in the Botanic Gardens itself. With the use of parents such as *R. arboreum*, *kingianum*, *williamsianum*, *bullatum*, *burmanicum*, 'Cornubia,' 'Treasure,' 'Britannia,' 'Azrie,' *orbiculare*, *neriiflorum*, *grande* — to mention but a few — some most interesting results have already been obtained.

To lengthen the flowering season, and add interest, extensive plantings of bulbs and herbaceous plants have been made among the rhododendrons. Primulas of all types, Blue Tibetan poppies, erythroniums, *Crocus*, anemones, scillas, *Iris*, *Astilbe*, *Eremurus* and lilies, have been planted, some of which are naturalising freely.

Due to extensive areas of native bush in the vicinity, bird life is abundant and a delight, for as well as the numerous birds of European origin native pigeons, bellbirds, fantails and tuis are quite commonly seen.

The essential woodland nature and seclusion of an extensive rhododendron planting in a public reserve brings its attendant problems of damage by vandalism and loss of choice young plants through theft. Correct labelling of species and varieties, which is so desirable, is difficult to maintain where the chief delight of certain young people is to switch the labels around from plant to plant. In order to maintain a true record, plans have been drawn during the past five years of all parts of the Dell; all recent plantings are carefully plotted, with relevant data, as well as all older plants where they can be identified. For rhododendron enthusiasts, apart from the appreciation of the beauty of this magnificent genus of plants, the chief interest lies in knowing the history, breeding and name of each individual, and this can only be attained by correct and efficient labelling.

NOTES FROM THE WELLINGTON BOTANIC GARDENS

I. D. GALLOWAY.

One of the wettest winters on record was responsible for the roses being extremely late in starting into growth and even now, mid-November, a number of varieties in the Lady Norwood Rose Garden are not yet in full bloom.

The most conspicuous rose is 'Korona,' a fiery red floribunda with excellent growth. 'Daphne Gandy' is a vigorous deep scarlet, but burns somewhat. 'Commonwealth' is another brilliant red, and is a good grower. 'Jiminy Cricket' is well worth its place in the garden, and 'Ohlala' is a showy variety and does well. 'Capriole' has a very dwarf habit but is a mass of pink blossom. The deep red 'Alain,' is an old friend and always does well in Wellington, and 'Golden Delight' makes a particularly bright bed. 'Wildfire' is a free flowering salmon and good, and 'Frensham,' somewhat late this year, is of course always worth growing for its scarlet unfading flowers. 'Hobby' is a very free flowering pink, and 'Vogue,' carmine rose, is consistent and a good doer.

Of the newer floribundas, 'Lys Assia' is a unique tone of red and is very promising, and St. Pauli may prove a better orange red than 'Masquerade.' 'Gletscher' is an unusual colour, pale mauve, and is popular with the ladies. 'Orangeade' is a rose of remarkable colour, bright red deepening at the petal edge, and looks promising.

Other roses flowering early and doing extremely well are 'Sutter's Gold,' the best of its colour, 'Diamond Jubilee' makes a perfect bed of buff yellow, 'Peace' as always is good, and 'Sir Winston Churchill' is a grand salmon pink suffused crimson, 'Roundelay' is a disappointing deep crimson and will have difficulty in retaining its place in the Garden. The way 'Queen Elizabeth' with its large warm pink flowers stands up to heavy winds, in spite of its tall growth, is really remarkable.

Recently, Sir Charles Norwood, a former Mayor of Wellington, gave to the City the sum of £20,000 for a new Begonia House and Winter Garden to be built immediately south of the Lady Norwood Rose Garden. This is an interesting structure designed by the Parks Department, and is being constructed with the Department's own labour. It is approximately 200 feet long and 40 feet wide, and is to be opened before Christmas.

When completed, the house will have a cooling system with large volume exhaust fans mounted on each end of the house, and air will be drawn into the house through continually wet fibrous pads. Air will pass through the pads and be cooled by evaporation of the water, the cooled air will remove heat from the growing area as it passes through the house and the warm air will be exhausted from the house by the fans. This is a type of ventilation being used in the United Kingdom, but somewhat new to this country.

The camellias in the new Camellia Garden are making very satisfactory growth after the small plants had provided a wealth of bloom throughout the winter and spring. *C. reticulata* 'Captain Rawes' did particularly well and flowered freely, but, of course in common with all the *reticulata* varieties, it is not a continuous bloomer.

Other shrubs doing extremely well and prominent in the Gardens are *Callistemon citrinus* 'Splendens,' which appears to be one of the best of the bottlebrushes, *Felecia angustifolia*, a wealth of colour over a long period, and *Rhus cotinus* 'atropurpurea' which is most colourful and appears to be doing exceptionally well this year. *Hypericum leschenaultii* is a shrub which commands a lot of attention.

Bedding out for summer and autumn display is now in full swing, and this year fibrous rooted begonias are being featured. A number of new varieties have been imported from Germany and these will be watched with much interest.

In the rock gardens *Arthropodium cirrhatum* and *Libertia chilensis* have been prominent, and the *Leptospermum scoparium* 'nanum' hybrids are most interesting subjects for the rock garden.

NOTES FROM THE AUCKLAND PARKS

G. F. FILLMORE (*Auckland*).

In compiling this first article on parks in the winterless North and of Auckland in particular one feels that this year at any rate the following verse is most applicable and describes very fully the conditions under which gardeners in general and parks staff have been labouring this past winter season.

Ninety in the Shade

We have sneezed and we have shivered, we have plodded in the rain,
 We have sat and watched it trickle down outside the window-pane,
 We have braved the stern north-easter and have faced the driving sleet
 And the torrents sweeping madly down the middle of the street.
 But that's all left behind us, we can rush outside and play,
 We can throw the old umbrella and the macintosh away,
 The heat wave is upon us and the sun is in the sky,
 The temperature is rising and it's fine and hot and dry.
 We can fall on ball and racket with enthusiastic vim,
 We can cast off stuffy clothing, and enjoy the morning swim.
 That's all I've time to tell you, for I'm going out to buy
 An overcoat and muffler and a plentiful supply
 Of lozenges and ginger and quinine and peppermint,
 For, of course, it may be freezing by the time this is in print!

Owing to these conditions plantings for the summer season are behind schedule, but strenuous efforts have been made to ensure that the usual Christmas display at Albert Park will be up to standard. Masses of *Gladioli*, cannas, *Kniphofia*, Shasta Daisy (*Chrysanthemum maximum*) together with most of the summer flowering annuals such as marigolds, asters, zinnias, *Salvia* (blue and red) *Ageratum*, *Celosia*, to mention only a few, have been planted and should be making a good show during the Christmas holiday period. In addition, special mass plantings of *Luculia gratissima*, *Telopea speciosissima*, and *Leucospermum reflexum* underplanted with *Lantana sellowiana* are all coming away well and will make a good showing in season.

The *Leucospermum* mentioned above comprises a genus of some 32 species of evergreen shrubs found mainly in South Africa. As they belong to the *Protea* family the same conditions as for proteas are needed for the best results — namely, a lime-free, rather acid soil, full sun and good drainage. They cannot stand frosts. Of the different species in cultivation here *L. reflexum* is the best known, forming an erect branching shrub 6ft. to 10ft. high. The flower heads, a sight in late spring, are about 4in. across being composed of numerous protruding scarlet styles with yellow stigmas. *L. bolusii* is a semi-spreading shrub 4ft. to 6ft. high and resembles *L. nutans*. The former flowers from October to December and has orange flowers, while *L. nutans* flowers in Spring and has pinkish orange flowers. Both are excellent specimens and like most of the leucospermums are valuable for cut flowers. *Leucospermum conocarpum* has bright lemon-yellow flowers and grows to a height of 9ft. This species is excellent for planting in coastal situations. The above mentioned species may be considered the best of the genus for Auckland conditions.

Other plants worthy of note at Albert Park are *Photinia serrulata* and *Strelitzia reginae*. *Photinia serrulata* (syn. *dentata*) was truly a magnificent sight being some 35ft. high and nearly as wide covered with 4in. wide white flowers in large flat terminal panicles 4in. to 6in. across, and these contrasted well with the coppery-bronze young

growth. In the autumn the leaves will turn a crimson scarlet before they fall. *Photinia glabra* 'Rubens,' is very prominent around Auckland. It forms a neat hedge and in the spring the fiery red new growth is very attractive. If cut after the colour begins to wane you will get another crop of bright foliage in the Autumn.

Strelitzia is a genus of about 4 or 5 species, the best one being *Strelitzia reginae* (Bird of Paradise). It grows to a height of 5ft. and the flowers are orange and purple. Clumps of these plants are growing up the main border fronting Princes Street and they have been flowering right throughout the winter and are still going as strongly as ever. During the depths of winter they gave one of the few splashes of colour in the Park.

In the Auckland Domain which is our nearest approach to a Botanic Garden early flowering trees and shrubs made a very brave display in spite of the continued wet weather, while a new innovation this year, namely the planting of spring-flowering bulbs such as *Narcissi*, *sparaxis*, *watsonias*, along the main drive leading through the bush area, augers well for future displays.

In the Winter Gardens glasshouses the usual displays of *Primula obconica*, *P. sinensis*, *P. malacoides*, *cinerarias*, *Schizanthus*, *Moschosma*, etc., have been maintained, special mention being made of displays of *Calceolaria* Covent Garden Strain, and *Kalanchoe flammea*. There are about 125 species of *Kalanchoe*, mainly natives of Africa and Madagascar. They are erect branched succulents with *K. flammea*, the red and the yellow variety, being easy to grow both indoors and outdoors. *K. blossfeldiana* and *K. blossfeldiana* 'Tom Thumb' are another two good coolhouse subjects, being more squat and bushier than *K. flammea*. *Kalanchoe marmorata*, the 'Penwiper Plant' and *K. tomentosa*, the Panda plant, are both grown for their marked leaves and as such are not as useful for display purposes as the other flowering species.

The Tropical House is at its best during this period with its lovely displays of *Euphorbia pulcherrima* (Poinsettia) and African violets and orchids. The cymbidiums and dendrobiums were excellent following a good display of cypripediums and cattleyas. A flowering evergreen shrub, native of the Malayan and Pacific Islands is attracting much attention with its rosy-pink flowers borne in very large terminal pendulous racemes. The plant is *Medinella magnifica*, and it grows to a height of 3ft. The leaves are opposite, broadly ovate, smooth and a rich shining green 7in. to 10in. long. The *Medinella* does very well given the right conditions, namely a moist atmosphere, high temperatures and a fairly light compost of well decomposed leafmould, peat and light loam in equal proportions. For a little trouble this species of *Medinella* will keep its flowers to perfection for 2 to 3 months.

Also with a profusion of bloom is the *Stephanotis* of which there are 14 species, all twining, often tall climbing hothouse shrubs. The species we have is the most popular one, *Stephanotis floribunda*. The

flowers are of the purest white, highly fragrant and borne freely in large bunches. It grows to a height of 10ft. and does well in an ordinary compost of good leafy loam. When trying to propagate the *Stephanotis*, always take cuttings of the previous year's growth during August or September and place them in a close frame. Another plant attracting attention is *Tacca laevis*. The genus *Tacca* comprises about 9 species, 3 of which come from tropical America while the remainder inhabit various tropical regions. One of the species, *T. pinnatifida*, has tubers containing a great deal of starch and is known as South Sea Arrowroot being used extensively as an article of diet throughout the tropics. *T. laevis*, which is at present in flower, is unusual inasmuch as the flower is practically black in colour.

Finally one must mention the vriesias. These plants belong to the family *Bromeliaceae* and are ideal for use as house plants. They will tolerate either very wet or very dry conditions and still thrive. The genus is a very large one, consisting of handsome, epiphytal, or rock-loving plants being in the main natives of tropical America. *V. splendens* var. *major* is particularly striking at the time of writing with its outstanding foliage and highly-coloured flowers.

NOTEWORTHY PLANTS

The Catalpas

The genus *Catalpa* is a member of the *Bignoniaceae* and comprises a number of species of trees, mostly deciduous, native to North and South America and also Eastern Asia. Of the dozen or more species those of the *bignonioides* group are the best known in gardens. Known popularly as the Indian Bean Tree, *Catalpa bignonioides*, native of the East United States of America, is perfectly hardy and will, in time, reach a height of 30 feet or more. The writer well recalls a fine specimen growing in the Bancroft Gardens, Stratford-upon-Avon, England, that had attained this height. It had been trained as a shade tree with a bare stem up to 6 or 7 feet with the spreading head above. The foliage is large, rich green and heart shaped and in early summer the flowers appear. These are bell shaped, rather reminiscent of *Diervilla* in their formation, blush white with yellow and purple spots on the lower lobe and are borne in clusters. The fruit is long, round, narrow and a foot or more in length.

C. bignonioides var. *aurea* is probably the most ornamental deciduous small tree with golden foliage in our gardens today. It is equal in vigour to the type, has similar flowers, but the foliage is a rich yellow, valuable for contrasting with a darker background. It is more suitable for light to medium loam than the lighter sand and peat soils that tend to dry out in summer and cause root scorching. There is a dwarf, green foliaged form var. *nana*, a white and green variegated one var. *pulverulenta* and an in-

ferior yellow foliated species var. *koehnei*. All these are of inferior value as garden plants compared with *C. bignonioides* and its golden form var. *aurea*. The large leaves, being easily damaged by wind, make it desirable to plant in a sheltered situation.

**1961 ANNUAL DOMINION CONFERENCE
OF THE**

ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE
INC.

THIRTY-EIGHTH ANNUAL MEETING AND
CONFERENCE OF DELEGATES

NOTICE IS HEREBY GIVEN that the THIRTY-EIGHTH ANNUAL MEETING and CONFERENCE of DELEGATES of the ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE INC., will be held in the St. Columba Hall, Alexander Street, Greymouth, on WEDNESDAY, 1st FEBRUARY, 1961, commencing at 9.30 a.m.

K. J. LEMMON,
Dominion Secretary.

1961 BANKS LECTURE

The 1961 BANKS LECTURE will be delivered in the St. Columba Hall, Alexander Street, Greymouth, on WEDNESDAY, 1st FEBRUARY, 1961, at 8 p.m. The lecturer will be Mr. D. Kennedy, Conservator of Forests, Hokitika, and the subject of his address will be "CHARACTERISTICS OF WEST COAST VEGETATION."

Members of the Institute and delegates from affiliated organisations are specially invited to attend the Dominion Conference and the Banks Lecture. A most interesting bus EXCURSION has been arranged for THURSDAY, 2nd FEBRUARY, by the Lands Department for those attending the Conference, to inspect the West Coast's native bush scenery and forest regeneration.

DISTRICT COUNCIL REPORTS**CANTERBURY**

A number of successful activities were arranged, sub-committees attended to various matters and ten new members joined during the year. Officers for the year — Chairman, J. H. Glazebrook; Secretary-Treasurer, G. G. Henderson.

Canterbury candidates were prominent in the Institute's examination results, Mr. E. J. Martin being awarded the J. A. Campbell Memorial Prize and Mr. R. F. Millichamp being the first recipient of the Junior Memorial Prize.

Following the decision to hold all oral and practical examinations in Christchurch, Canterbury District Council has endeavoured to assist, where possible, to ensure smooth running of the examinations. Members have kindly offered to billet candidates who have had to travel long distances.

General activities during the year included:—

November 14—All day visit to Homebush and Rawallan, the delightful properties of Mr. and Mrs. James Deans and Mr. and Mrs. Douglas Deans.

June 22—A successful horticultural brains trust with Professor L. W. McCaskill as quiz-master.

August 3—One day Conference on 'Ornamental Trees and Shrubs for the Home Garden' — the highlight of the year — full programme of prepared papers, informal discussion and demonstrations attended by 330 people. Spare copies of proceedings available at 5/- from the Conference Secretary, S. Challenger, Lincoln College, Christchurch.

September 7—Illustrated address by Col. T. Durrant, President of the N.Z. Camellia Society.

October 20—Annual General Meeting and an illustrated address on Hybrid Clematis by Mr. I. F. Bonisch.

NORTH TARANAKI*AUGUST—*

The August meeting was held in the Y.W.C.A. Hall, Powderham Street, New Plymouth, and this was slightly different to our usual meetings in that three 20-minute talks were arranged instead of one speaker. The following subjects were heard:—

Mrs. R. Armstrong, secretary, Taranaki Rose Society, dealt with 'The Rose Garden.'

Mr. J. M. Goodwin, N.D.H.(N.Z.), Curator, Pukekura Park, spoke on 'Some Aspects of Rock and Water Gardening.'

Mr. D. I. West, President, Stratford Horticultural Society, took 'Growing Prize Dahlia Blooms,' as his subject. Despite the limited time, all speakers gave a very comprehensive and informative coverage on all the more important aspects of their respective subjects. Mr. West included some coloured slides depicting the types of dahlias usually met with in present day exhibitions.

Mr. W. J. Terrill, F.R.I.H.(N.Z.) thanked the speakers for their most instructive talks.

The change from one speaker to three speakers in the one evening (all experts in their own right) gave him the opinion that it was one of the most interesting meetings the Executive had arranged, and he hoped it would be the fore-runner of others to come. Those present showed their appreciation in the usual way. Supper concluded a most enjoyable evening.

SEPTEMBER—

The September meeting was a 'Picture Evening' by Miss M. Pennington, of Waitara. This was a return visit by Miss Pennington to show further coloured slides of a holiday trip she had made through parts of Denmark, Finland, Norway and Scotland.

Mrs. J. W. Hynes proposed the vote of thanks to Miss Pennington for her fine collection of holiday slides and remarked how the audience appreciated them, also the witty commentary accompanying them.

We were pleased to have on the same evening the following visitors: Mr. and Mrs. Chillingworth, Brooklyn, Wellington, and Mr. and Mrs. R. St. Barbe-Baker, silviculturist, Fairlie.

Mr. St. Barbe-Baker, well known as 'The Man of the Trees' briefly spoke on his recent visit to America, and his love of trees, particularly the Redwoods. Mr. H. George thanked Mr. St. Barbe-Baker for his inspiring message, and for the wonderful experience of having him speak so unexpectedly.

OCTOBER—

On 8th October we had a day's outing to the Pukeiti Rhododendron Trust grounds, and Mr. M. G. Maxwell's garden at Rahotu. A picnic lunch was enjoyed by all in Mr. Maxwell's garden — a lovely old garden with expansive lawns and many fine specimen shrubs and trees, native and exotic.

Pukeiti was again a treat and it was noticed that considerable advancement had been made since last year, both in growth and layout.

The Labour Day Week-end trip to Masterton was a wonderful success with brilliant weather, beautiful gardens, and fine hospitality everywhere we went. The following gardens were visited by two bus loads and two cars to convey our members. Mr. and Mrs. Norman, 'Woodchester,' Cole Street, Masterton; Mr. and Mrs. Colin Deans, 77 Cole Street, Masterton; the Masterton Park; Mr. and Mrs. P. Borthwick's, 'Te Whanga'; Mr. and Mrs. A. M. McWilliam, 'Te Taumata'; Mr. and Mrs. R. D. Perry 'Waireka', Matahiwi; Mr. and Mrs. H. B. C. Holmes, Matahiwi; and Mr. and Mrs. White, Matahiwi.

SOUTH TARANAKI

At Labour Week-end two buses conveyed a party of South Taranaki members on a week-end visit to the Paraparaumu and Waikanae areas.

On arrival the party was met by Mr. and Mrs. G. A. R. Phillips, accompanied by Mr. A. J. Hyder, President of the Kapiti District Horticultural and Beautifying Society Inc., Mrs. Hyder, Mrs. J. M. Mackenzie, President of the ladies' floral group, and other members. Afternoon tea was served in Mr. and Mrs. Phillips' beautiful garden at 'Journey's End,' where the visitors saw a number of unusual and interesting plants.

In the evening the party were entertained to a talk on the wild flowers of Western Australia illustrated with colour slides by Mr. and Mrs. Colin Lewis. Visits were paid to the Marine Gardens, Raumati Beach which were being developed under the skilful management of the curator, Mr. E. Dryden and also to the small but extremely well kept garden of Mr. J. Gibson which was a veritable horticultural *multum in parvum*. Further visits were paid to the wonderful garden of Mr. Haskell Anderson, Waikanae, where a number of exotic plants are happily growing in a frost free area. In the beautiful garden of Mr. J. W. Mathews, also at Waikanae, there were many items of interest, particularly a paved cherry walk ('Shimidsu Sakura') and an extensive planting of magnificent gerberas which were greatly admired. Morning and afternoon tea were generously served at these places.

More gardens were enjoyed on Monday morning including Mr. and Mrs. Lewis's where there was a very comprehensive collection of African plants.

The farewell morning tea was taken in the garden of Mr. and Mrs. Hyder, the last garden to be visited. Here the grateful and appreciative thanks of the party were conveyed to the hosts and hostesses, who had so spontaneously provided so much of beauty and of unstinted hospitality, by the Secretary of the South Taranaki party, and the hope was expressed that next Labour

Day would see a goodly party from the 'Golden Coast' in South Taranaki on a return visit. Mr. J. Houston, Dominion President of the Royal N.Z. Institute of Horticulture (Inc.), took occasion to thank Mr. and Mrs. Phillips who had given so generously of their time to organise the arrangements for the party. Mr. Houston also spoke of the great work done by Mr. Phillips as editor of the official journal of the Institute 'N.Z. Plants and Gardens.' On the return journey to South Taranaki visits were paid to the Esplanade in Palmerston North and the Winter Garden at Lake Victoria, Wanganui. Altogether a most enjoyable week-end spent in congenial surroundings and among congenial friends.

WAIROA

SEPTEMBER—

The September and annual meeting of the Northern Wairoa District Council of the New Zealand Institute of Horticulture was held in the Band Room, Mr. B. Berry presiding in the absence of Mr. P. Walden, who was on holiday in Australia.

Mr. Berry welcomed members and read the president's report which showed a full year of interesting activities.

The financial statement presented by the secretary-treasurer, Mrs. J. Russell revealed a satisfactory financial position, putting the Institute on a sounder footing than at any other time since its activities commenced in Northern Wairoa. The holding of trading tables each month has assisted in raising funds to the present total.

The election of officers was as follows:—

Patron, Mr. W. L. Hughes; chairman, Mr. H. Gaukrodger; vice-chairman, Mr. A. Hitchcock; secretary-treasurer, Mrs. Russell; committee, Messrs. P. Walden, L. G. Whalen, J. Grant, Mesdames J. Grant, A. L. Little, F. Sanford, W. G. Hammond, G. Lendrum and M. Jones; hostesses, Mesdames Hughes and S. P. Day; trading table stewards, Mesdames S. J. Newby and T. Mason.

The auditor, Mr. J. R. Alderson, was re-appointed and thanked for his past services.

It was announced that a photograph of the 'Lady Cobham' dahlia, raised by Mr. E. Le Feuvre, would be on display in a Dargaville shop window and that orders would now be accepted. Mr. G. Danks will represent the institute at the planting of trees at the Town Hall site, the planting to take place this month.

On display were two lemons with citrus scab — or verrucosis, which is common among citrus trees in New Zealand. It affects fruit and leaves at an early stage and the treatment is to remove affected fruit and spray with Bordeaux mixture, 3/4/50 (4oz. bluestone, 5oz. hydrated lime and 4 gals. water). Trees should be sprayed before flowering and when the young fruit has just formed at petal fall. Further spraying should be carried out in December April and June.

Also on the display table was a ladybird orchid grown outdoors by one of the members, and specimens of *Leptospermum walkeri*, *Cantua buxifolia* *Pimelea ferruginea* and *Rondeletia amoena*.

Mr. Gaukrodger spoke of the planting and growing of *cymbidium* orchids. Blooms were displayed by Mr. Gaukrodger and he also used coloured slides to illustrate his address.

OCTOBER—

Members held their October meeting in the Band room, Mr. H. Gaukrodger presiding over a good attendance.

A welcome was extended to members and visitors, who included Mr. and Mrs. A. Cameron, Whangarei, formerly of Dargaville. Mr. and Mrs. P. Walden were also welcomed back after their recent visit to Australia.

Mr. Cameron was the guest speaker, dealing with the many aspects of vegetable gardening. The speaker urged his audience to 'grow your own, grow it well and grow continuously.' Mr. Cameron also advised gardeners to fertilise a little and often and demonstrated a suitably planned garden for town sections.

Further advice was to plant and sow in the evenings and to make small planting and often, advising gardeners against buying large bundles of seedlings at a time. For sowing carrot seed, best results were obtained if seed was mixed with sifted soil or sand. Lettuce crops were best watered in the heat of the day, with the water circulating around the roots but not on the foliage. Tomato plants responded well if fresh lawn clippings and blood and bone manure were dug into the soil at planting time.

WHANGAREI

JUNE—

The speaker for the June meeting was Mr. J. A. McPherson, Director of Parks and Reserves, Auckland, and an Associate of Honour of the Royal N.Z. Institute of Horticulture. His subject had been set down as the Garden Specialist but he begged leave to change it and spoke instead on New Zealand Plants, Exotic and Endemic with special reference to their culture in various parts of New Zealand.

Though our country had been settled for little more than 100 years a great wealth of plant material had been brought to it. Early settlers in many parts of New Zealand had come with much the same horticultural outlook, but soon found special limiting factors in different parts of the country which caused them to change or modify their gardening methods. Apart from geographical situation there were other factors influencing or controlling growth even within areas in the same district, perhaps even in the same street. These special conditions, known as micro-climates were of great important and should be carefully observed in order to make the best choice of plant material.

Mr. McPherson then invited us to forget our kauri outlook and substitute for it an alpine outlook, and so, taking us to Invercargill we travelled north with him reviewing plant life in the varying climatic conditions on the way.

In Invercargill the limiting factor in horticulture was the cold wind from Foveaux Strait. Until shelter was obtained it was impossible to grow deciduous trees, so thick hedges of *Cupressus macrocarpa* were planted and in their shelter such things as rhododendrons, azaleas and polyanthus flourished.

In Mataura trees suffered less from the wind and were straighter. In Gore rhododendrons did well, but in a severe midwinter manuka died of drought because the ground was frozen and moisture was not available to the roots, but on the contrary seed of the native *celmisias* germinated on the soil surface.

Dunedin was a city with a definite horticultural personality with its rhododendrons, azaleas, Japanese maples, our native *Ranunculus lyallii*, the Himalayan *Meconopsis betonicifolia* 'Bailey' and its polyanthus. Mr. McPherson said polyanthus should not be bought in flower but raised from seed, put out in autumn when they would make strong crowns and flower well in spring. Older plants were apt to get red spider in hot weather. Best results were obtained if plants were set in a bed of cow manure.

Oamaru and Timaru had much the same horticultural potentials as Dunedin.

Christchurch was the home of exotic deciduous trees and shrubs. Its climate was sunny and dry, with only about 26 inches of rain a year. In such conditions wood ripens well in summer and autumn and rests in the cold winter. Such things as flowering cherries, apples, lilacs and oaks flourished. Oaks grown under milder and wetter conditions were liable to disease. Ham, at the head of the Avon, had good shelter and so was able to grow rhododendrons well, but the Canterbury plains on the whole were not suited to their culture. Polyanthus and forget-me-nots were well grown in the south. Wallflowers, sown

in boxes in November, were later lined out like cabbages 6 to 8 inches apart and flowered profusely in the spring. Christchurch was also a good place for alpine gardens.

Wellington, although a most difficult place in which to garden on account of its strong winds, accomplished a great deal when shelter had been obtained.

New Plymouth on the contrary was favoured with a good climate and good soil and water. Rhododendrons, camellias and azaleas did well, also all evergreens.

Palmerston North had a cold windy climate rather like Christchurch and grew a variety of deciduous trees. Hamilton on the border line between warmth and cold was able to grow hardy plants as well as some sub-tropicals such as poinsettias.

Auckland gave us a sort of garden salad, a mixture of temperate and tropical climate plants, evergreens being dominant, with less deciduous plants which needed a colder and drier climate. These climatic factors should always be remembered when choosing plants, and our micro-climates especially should be studied if we were to achieve maximum success in our gardens.

Mr. McPherson then turned to the consideration of our native plants, four fifths of which were not found in any other part of the world. Many of the alpine plants which had their headquarters in the South Island, were among the world's marvels. These were generally plants of the very high country. The lower foothills were in general clothed with taxad rain forest, above these came the subalpine scrub, 1½ feet to 6 feet high, forming an almost impenetrable thicket of *Asiphylla*, *Olearia* and *Senecio*. Above this was the alpine herb field with its acres of beautiful flowering plants, celmisias, giant mountain daisies, their leaves almost as striking as their flowers, the ourisias or mountain foxgloves, euphrasias, often called eyebrights, with many ball shaped whipcord veronicas, and countless other small plants. In all these, herb fields approximated to those of the Himalayas with their primulas and dwarf rhododendrons. Many plants in this association were remarkable either in the size of flower, their colour or their leaf formation.

On the shingle screes the black daisy, *Cotula atrata* with golden anthers dotted over its dark blossoms, was an example of special adaption to its habitat on moving shingle. Its long wiry taproot went down through the shingle to penetrate the solid ground and reach the icy water that flowed there. On this account it was a difficult plant to propagate even on artificial screes.

Another remarkable plant of high country was *Dacrydium laxifolium* the tiniest pine in the world. Its blue-green leaves and prostrate habit made it an ideal plant for the alpine garden. It was generally less than a foot high.

The largest buttercup in the world, *Ranunculus lyallii* also had its home in the Southern Alps, as well as the rarest, *R. paucifolius*, which is confined to an area of 20 acres on Castle Hill. Through the agency of some enthusiasts this area was fenced after some Government help had been given, and the plant has now increased considerably.

One of the most remarkable of all alpiners was that known commonly as the Vegetable Sheep from the fact that it formed large woolly masses reminding of sheep and lambs. In botany it is called *Raoulia eximia*, and its home at 4000 ft. on Mt. Torlesse, has been the goal of many visiting botanists. In company with Professor Skottsberg, the celebrated Antarctic and South American botanist, Mr. McPherson visited the area to see this wonder of the plant world. Here among the stony debris were fields of sheep and lambs, their fleeces made from impacted leaves and woolly stems and flowers. So tightly are they packed and compressed by wind and weather that they are almost stone hard. After looking at them for some minutes in silence, Professor Skottsberg said, 'It was worth coming 12,000 miles to see.'

New Zealanders therefore should prize their plants, so few of which were found in any other part of the world. They could do much to preserve these rarities said Mr. McPherson and members of the Royal N.Z. Institute of Horticulture had a special duty to prevent the loss of our plant celebrities.

Presentation of Award

Mr. McPherson made the presentation of the award of Fellowship of the R.N.Z.I.H. to Mrs. E. M. Sands for her services in the interests of horticulture. In doing so, Mr. McPherson mentioned the fact that the Royal N.Z. Institute of Horticulture bestowed a number of different awards, some by examination and some were honorary.

QUESTION SESSION

These were presented by Mrs. Sands.

Question: Gerberas are showing wilt and browning of leaves.

Answer: Very wet conditions and inadequate drainage cause a bacterial infection. Give plants a complete 'hair-cut' in May. To reduce danger spray with Bordeaux or Zineb but in any case reduce leaves and pull off and burn older ones.

Question: Fuchsia with greyish leaves. What is the cause?

Answer: Thrips, which thrive in dry conditions. Spray with Malathion.

Question: The bark of an apple tree has split.

Answer: Conditions of dryness followed by over wetness may cause this, or it may be a deficiency of phosphate.

Question: Poppies (Iceland) are turning yellow and rotting off at the root.

Answer: Poppies take a virus disease from dahlias if grown in the same bed, or where dahlias have been grown. Plant in a place well away.

Question: How can one recognise citrus canker?

Answer: Until 1913 it was confused with the much less dangerous disease *Verrucocis*. The symptoms of canker: A scab appears on the leaf with a yellow crater in the centre. It is worse on lemons and grapefruit than on oranges or mandarins. There is no known cure. All infected trees must be burnt. If infected plants are not destroyed the whole citrus industry in N.Z. could be ruined.

JULY—

Practical advice and demonstration with living material was given by Mrs. Norma Lees, of Kamo, at the July 1st meeting when she discussed 'Propagation in the Home Garden.'

Mrs. Lees said that plants could be propagated by green tip, hardwood, root or leaf cuttings, by layering, and for some lilies by scales or bulbils.

Green tips cuttings are a quick and easy way of propagating a wide range of plants, she said.

A whisky box makes an excellent container.

Bore holes for drainage, and then put in a nich of broken brick, crock or similar material with some sphagnum moss, bracken fern, or coarse roots from leaf mould. Top this off with three inches of sharp river sand sieved and washed till no organic material is left in it.

Mrs. Lees said that damping-off of cuttings is caused mainly by organic material in the sand.

Put the box on a firm surface where it will remain till the cuttings are rooted, and tamp the sand down hard with a level piece of 3in. x 2in. wood. It must be very firm.

Have plastic or glass to cover the box to shade it from sunlight which is disastrous to young cuttings, or put the box in the shade where they will remain till well rooted.

Most soft-wooded plants — tomatoes, chrysanthemums, dahlias, salvias, manuka, *Prostanthera* root readily in sand.

Take cuttings only from vigorous plants or they will fail. The stem should snap cleanly and not just bend. October is usually a suitable month.

Take tips with three nodes, and as they are cut with sharp secateurs, razor blade or knife, cut through the bottom node and drop them in a bucket of water.

Open a slit in the packed sand, dip the end of the cutting in a rooting hormone and plant them three to an inch in the rows and then ram them tight. They should be too firm to pull out.

Water, cover and keep the sand just moist, never letting it become too dry or too wet.

Crushed scoria is a good rooting medium for fleshy leaved plants — *Begonia rex*, *Coleus*, conifers, *Peperomia*, *Hoya*, but fine leaved plants like manuka and *Boronia* do better in sand. Prepare scoria in the same way as sand.

Lily scales, *Lachenalia* leaves and geraniums grow quickly in scoria, so do herbaceous plants.

Root cuttings do well in scoria; bouvardias, daturas, *Daphne genkwa* were easily increased from them.

Lift the plant while dormant, remove a third of the long roots and cut into 2-inch lengths. Put these in scoria right away, tamp firm and keep them just moist till leaves form. Reduce the top of the parent plant and replant it, and it will do better than ever.

Some shrubs may be propagated by cutting the roots with a spade about a foot away from the main stem. New plants grow from the cut roots and may be planted out the following autumn.

Cuttings of evergreen hardwood can be set in the open ground and need less attention than softwood cuttings. Plant in shade and cover with muslin. Make a small trench filled with sharp sand tamped tight, and set the cuttings in in February or March about two inches apart before the ground is cold.

Remove the shade as the wet season comes, and plant them out the following spring.

Increase lilies by removing some scales, laying them in a trench of scoria and covering them with some scoria. Stems may be treated the same, and bulbs will soon form plants.

Protect difficult cuttings like ericas and frail seedlings with glass. Preserving jars are suitable.

For azaleas, take a few cuttings in the autumn, ram very tightly, heap old sawdust around them, and in six months a fair strike may be had.

Rhododendrons may be layered in spring by pegging down bushes in the soil. Scrape the bark away on the underside where the plants are to root. Peg them firmly with wire. Tie the branch to a stake to keep it steady in wind. In a year it may be severed. Layers must be kept damp right through the hot weather. A brick or stone on top of the layer helps conserve moisture.

AUGUST—

'Wild Flowers of Western Australia,' was the title of a talk given at the August meeting by Mrs. M. Martin, F.R.I.H.(N.Z.) who visited Australia last spring where she saw wild flower shows in Melbourne, Perth, Geraldton and Adelaide, besides travelling over 1200 miles through the special wild flower areas of Western Australia.

Flying from Auckland, a short stay in Melbourne enabled her to see the Melbourne Botanical Gardens, and the very large Wild Flower Show in the Town Hall. This is an annual event and flowers are flown from every State to make a marvellous array, bewildering in its diversity and beauty.

Specially interesting were the collections of Eucalypts with *E. caesia* a favourite. *Boronias* were of many kinds with many more beautiful than are

grown here. *Eriostemons* were in numbers; one with large bright cerise flowers being specially admired.

The Melbourne Botanical Gardens were in all their spring glory, their splendid trees, extensive lawns and vistas of woods and waters a fine setting for banks of azaleas, flowering peaches and plums and the late camellias.

Three plants of special beauty were noted, a good bush of white *Podalyria*, a lovely *Amelanchier*, probably *oblongifolia* and most impressive of all *Cedrela sinensis* in its spring dress of beautiful pink. This first class tree should be grown here.

Perth also put on a Wild Flower Show and gave, in it, a foretaste of the wonders to be seen on the tours to north and south of this lovely city. This show was well staged and the plants well named. A whole section devoted to floral art was done entirely with wild flowers. Seen here was the truly remarkable Qualup Bell, *Pimelea physodes*, its large pale green or crimson bracts forming a hood over the flower.

King's Park, the pride of Perth, 1000 acres in extent, is entered by a mile long avenue of tall gums, *Eucalyptus citriodora*, their slender silver grey trunks crowned with dark green. The park with its formal gardens and War Memorial overlooks the Swan with banks of the Geraldton Wax flower in shades of pink and purple just below, but most of the area is in its natural state, with numerous pathways from which a great variety of wild flowers can be seen. Banksias, grevilleas, kangaroo paws, orchids and the blue lechenaultias were plentiful.

Soon after leaving Perth the roadsides were dotted with flowers, blue lechenautilias predominating. Over the Darling ranges and through citrus groves and farmlands, and the flowers becoming more plentiful, till this great Sand Plain is reached, the home of most of West Australia's 6000 species, a wild garden excelling in beauty any other in the world. This Sand Plain stretches from the coast inland for 100 miles, and maybe 800 miles from south to north. Most of the area is flat with low vegetation, very little settlement and extensive views on every side. The soil is gritty or pebbly and varies in colour from off-white through pale yellow to a rich apricot, and is a good foil for the lovely blues, yellows, pinks, purples and orange of the millions of flowers.

Several great plant families were abundantly represented — the daisy family by acres upon acres of everlastings, in whites or yellow or cerise, pea flowers in every colour and combination of colour either as tiny foot high shrubs or scrambling climbers, hosts of the *protea* family, the dryandras, banksias, hakeas and grevilleas with topogons in every shade and colour and in every shape and form of foliage. A third great family — the Myrtles — gave beauty unbelievable with their beaufortias, baekias, callistemons, wax flowers, kunzeas, darwinias, melaleucas and verticordias.

These last were the most spectacular among the throng, and were pink, yellow, red, orange and purple with some two-toned for good measure. Their pet name of feather flower was very apt, as every sepal and petal was fringed with fine silky hairs giving the flowers that soft downy appearance that justified the name, whilst the same applies to their botanical name of *Verticordia* which means 'to turn the heart' — a thing which happened to at least one person.

Fields of blue were made by the brunonias, a scabious like flower, often mingled with dampieras, lovely little shrubs of a foot or two. A few taller plants up to 10 feet rose high among the dwarfs; *Grevillea excelsior* with 6 foot flower stalks, bearing foot long plumes of pure orange and *Hakea bucoulenta* with heads of coral.

Interspersed were lechenaultias in blue, red, scarlet and most unusual of all the wreath lechenaultias in two-tone flowers of cream and salmon. These plants grew in hundreds flat on the ground, the flowers in a circle around the edge and all the leaves in the centre, never the two mixed, though the plants varied in size from a few inches across up to several feet.

Smoke bushes were a feature of the landscape and dotted the countryside at intervals of a few feet. Species of *Conospermum* varied in colour from silver grey to misty blue, waving silky plumes above the dark green shrubs and giving an illusion of smoke.

Adelaide in South Australia showed us splendid avenues of trees along its well planned streets and its Botanical Gardens were a model in regard to naming of plants, small and great. Here was an impressive avenue of huge *Ficus* trees, and a long pergola of wisterias single and double.

In a private garden a remarkable coral tree was seen, a sport or hybrid of *Erythrina indica* of bright orange instead of the usual red.

Another private garden grew New Zealand, South African and Australian native plants to perfection. Heaths from South Africa were masses of colour, tea trees from New Zealand the same, whilst one of Australia's rarest and most difficult subjects, a double pink and white form of *Eriostemon obovalis* was flourishing — all of them on very hard, dry and poor looking hillsides. These lovely sights brought to a close the delights of tours to be long remembered.

Colour slides of many of the plants seen were shown to members, and a collection of Australian flowers kindly brought by friends helped to illustrate the talk.

SEPTEMBER—

Mr. A. Farnell, F.R.I.H. (N.Z.), of Auckland, was the guest speaker at the September meeting, and in describing some of the more notable aspects of New Zealand's flora opened up some interesting fields for discussion and investigation.

The vegetation of New Zealand, Mr. Farnell said, was remarkable in a number of ways. First of all it had the character of sub-tropical rain forest, though it inhabited a temperate climate, it was, to the extent of about 87 per cent, endemic, which term applies to the plants which are not found in any other part of the world.

Over and above all this we possess many plants which are markedly divergent in form from their relatives in the old world. In the lily family we have its tallest member — the common supplejack, as well as the tree-like *Cordylin*; in the violet family small tree species of *Meliccytus*, and among pines the tiniest in the world.

Many plants had special adaptations to ensure fertilisation and dispersal. The insignificance of many of the flowers was explained by the lack in former times of bees and other insects.

In the large *Coprosma* genus of over 50 species and many hybrids there were no showy petals or sepals, but the stamens of the male flowers were heavily laden with pollen, and the pistil of the female was prominent, and cross fertilisation was done by the wind. Many other plants had special adaptations to ensure survival.

Mr. Farnell showed a beautiful range of colour slides of a wide variety of plant life, fungi, club mosses, ferns, orchids and finally some of the larger shrubs and trees with their fruits. The beautiful colour of the smallest flowers highly magnified was a revelation to many.

A picture of the only golden form of the kawaka (*Librocedrus plumosa*) was of great interest, and sorrow was felt that it is now dead without leaving any successors, as it had proved impossible to propagate. *Coprosma depressa* with red fruits instead of yellow made us long to grow it, but perhaps best of all we enjoyed the sight of the two recently discovered plants from the Big King, *Tecomanthe*, a cream flowered climber of the *Bignonia* family and *Elingamita johnsonii*, a relative of our own common *Suttonia*. A collection of native flowers and fruit largely got together through the efforts of Miss Maddren was a source of great interest. Among the many, were flowers of *Ackama rosaeifolia*,

Freycinetia banksii, *Knightia excelsa* and two orchids, *Pterostylis banksii* and *Earina mucronata*. A bold splash of colour came from a branch of *Metrosideros carminea* grown by Mr. Purser.

Specimen Table: Shown here were fine samples of *Gladiolus tristis*, *Exochorda*, *Azalea mollis* and *Acer palmatum* 'Chishio.'

PUBLICATIONS RECEIVED

PROCEEDINGS OF THE CONFERENCE ON ORNAMENTAL TREES AND SHRUBS FOR THE GARDEN, published by the Canterbury District Council of the R.N.Z.I.H., Christchurch.

The Canterbury District Council is to be congratulated on the publication of a most useful series of papers dealing with trees and shrubs, presented at their Conference held on 3rd August, 1960. Each of the eleven contributors is an authority in his particular field and what each has to say is sound both in principle and practice. It could not well be otherwise.

Readers must realise, of course, that each paper has been prepared to accord with conditions in the South Island and particularly in Canterbury itself. The Conference opened with an address on 'Landscape Design and First Steps in Your New Garden' by E. C. Hale. The importance of shelter, shade, privacy, beauty and a dignified background is stressed. The pros and cons of hedge planting and fences are considered and a timely warning given about the dangers of planting climbing plants without giving them regular attention in after years. The importance of foliage and the virtues of both deciduous and evergreen shrubs is considered. The emphasis laid on the value of large trees to lend character to a garden will, it is to be hoped, tend to place the brake on the all too common tendency to clear a section by use of a bull dozer before a lay-out is planned and many a useful, old tree is destroyed needlessly. A little more emphasis on the dangers of overcrowding shrubs and trees could, I think, have been made to advantage. This is where the paper on 'Small Trees for the Home Garden' by G. G. Henderson should prove valuable for much overcrowding is undoubtedly due to ignorance regarding the likely ultimate size of a tree, details of which are given here. Trees, attractive for berry, flower and foliage are described with commendable clarity. I am pleased to find emphasis laid on the value of conifers and their importance in a garden planting. Mr. H. W. Gourlay's paper entitled, 'Roses' followed mainly the well trodden paths dealing with hybrid teas, the floribundas and climbers. The uses to which these types lend themselves in gardens is covered well but I would like to have seen more space given to the new shrub roses which are widening the scope for the rose as a landscape subject. Also no mention is made of the miniature roses which are enjoying considerable popularity today. The old gallica, bourbon, musk and moss roses also deserve attention when one considers the great revival they have enjoyed as gardeners have realised their value as flowering shrubs.

'Rhododendrons' comprised a paper by J. Deans, who has much sound advice to give. The danger of long periods of dry weather, the necessity of wind protection for all but the alpine forms, the need for the combination of moisture at the root with good drainage, the fact that large leafed species and varieties need more shade than others, due to their tendency to sun scorch — all these are points of vital interest for the rhododendron enthusiast. Mr. M. J. Barnett's recommendations concerning 'Planting and Maintaining Trees and Shrubs' should be made compulsory reading for everyone who owns a garden! In it are laid down the principles that are essential for success. The importance of double digging for deep cultivation is rightly emphasised. The value of

organic manures, the importance of cleaning the planting sites with, if necessary, the aid of weed killers, dangers of water-logging are other important matters. Methods of planting, maintenance, including pruning and the control of pests are also dealt with.

Shrubs for difficult sites, is a problem common among gardeners and C. H. Jones' recommendations for 'Planting on Hillsides and Warm Situations' contain much valuable information. Mr. L. J. Metcalf confines himself to 'New Zealand Trees and Shrubs for the Home Garden' and gives much sound and valuable advice on their use. He states that there are two schools of thought about the use of native plants in gardens, one maintaining that they look out of place with other plants and the other that they associate with exotic plants to greater effect. This shows the danger of generalisation and emphasises the importance of skilful association where our native plants in many instances blend extremely well with suitable exotics. Mr. J. H. Glazebrook's paper on 'Trees and Shrubs for Winter Effect' is timely when he states that many gardens, especially in Christchurch, are without interest in winter. A quick glance over the great variety of plants recommended for winter effect encourages the hope that this condition of affairs will soon be remedied.

'Climbers and Wall Shrubs' is the subject of the paper by S. Challenger and he has much of interest to write on the subject. He rightly decries the attitude towards these plants that is largely utilitarian such as the use of climbers to hide an ugly wall rather than make use of the wall as a means for the cultivation of climbing plants. A very wide range of climbing and wall shrubs is given and many are dealt with in some detail. The table of wall shrubs and climbers for Canterbury, giving name, habit and growth and position is most useful for reference at a glance. One of the most difficult types of soil to handle is sand that is so porous and dries out very rapidly. In his paper on 'Trees and Shrubs for Sandy Soils' J. O. Taylor faces this and other problems. He advocates the introduction of much compost to increase the water holding content, sowing a green crop and the ample use of water in summer, with emphasis on the necessity for a thorough soaking. Included is a useful list of subjects suitable for this type of soil. Mr. J. Watling's paper 'My Choice of Trees and Shrubs' provides useful information relating to suitable kinds for planting in Christchurch and locality. Altogether this publication is a valuable contribution to the horticultural literature of New Zealand.

NEW ZEALAND CAMELLIA BULLETINS, Nos. 5 (March) and 6 (July), published by The New Zealand Camellia Society Inc.

The popularity of the camellia and the enthusiasm and drive of its admirers is borne out by the fact that this Society now enjoys the support of nearly 1000 members. The earlier bulletins have already been reviewed in these pages and those now received widen the interest. In the March issue it is interesting to find extracts from an old magazine *The Cottage Gardener*, published in London 1848-49. Many of the old garden books, prior to 1840, contained most attractive and true-to-life hand coloured aquatints of camellias and these must always possess a valuable antiquarian interest. Unfortunately they are extremely scarce and costly. A useful article on growing camellias in containers is contributed by Dr. John D. Lawson, of California. Camellias make excellent tub plants for furnishing a large area of paved terrace. Also, by growing in tins or earthenware pots, they may be planted, without root disturbance, at any time of the year. A selection of stocks for grafting, some observations on camellias in New Orleans and advice on colour photography of camellias make up an interesting issue. It is sad to record the passing of that great camellia enthusiast Ralph S. Peer at his home at Los Angeles, California.

The July bulletin contains the announcement of the Annual Show and Conference, sponsored by the South Taranaki Branch, which was held at Hawera

on 12th August. Lady members from various localities provide interesting reading in selecting their six favourite varieties with supporting reasons. Detailed information about *Camellia saluenensis* will interest the breeder, the Kunming forms of *C. reticulata* are reported and it will be interesting to make a comparison of these when in flower. There are interesting gossip columns for novices. Dr. B. W. Doak, D.Sc., writes some sound sense about cultivation and very rightly attacks the indiscriminate use of sulphur which can be dangerous. A description of camellias featured in a Wanganui garden terminates this pleasing issue. In both bulletins the illustrations are of the high quality this flower deserves and the photographs of the Kunming camellias provide a useful record.

AUCKLAND DISTRICT CARNATION AND GERBERA SOCIETY,
Bulletin No. 10, August, 1960.

As with its predecessors this bulletin contains much of interest for devotees of these two charming flowers. It is often valuable and always interesting to read of plants growing in their native habitat. For that reason J. H. Hitchcock's notes on gerberas in South Africa, following a recent visit to that vast country, makes good reading. The race of single gerberas with black centres reported sounds most attractive. Ailments and pests of gerberas are dealt with by R. W. Litherland and J. A. Robinson contributes a general article on carnations with special emphasis on the ills that this fragrant favourite is heir to. The article on the cultivation of gerberas under glass in Christchurch reminds the writer of the wonderful specimens the late Carl Englemann, Saffron Walden, England used to grow in his carnation houses before the Second World War.

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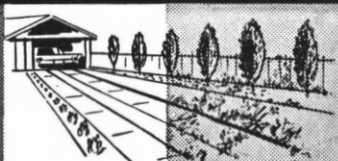
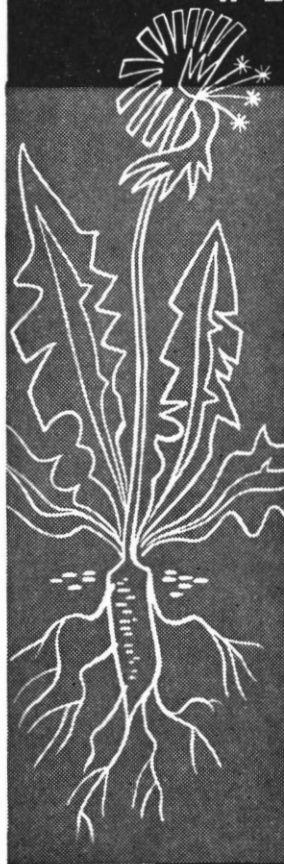
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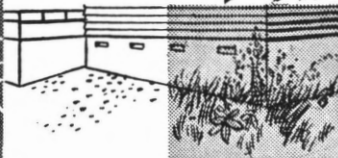
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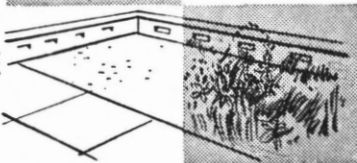
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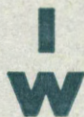
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