VOL. V. DECEMBER, 1962 NO. I.

NEW ZEALAND PLANTS AND GARDENS

THE JOURNAL OF THE ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE

(INCORPORATED)

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NEW ZEALAND PLANTS AND GARDENS

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

Volume V. *DECEMBER, 1962.* *No. 1*

GREETING

It is with much pleasure that I take this opportunity of sending a message to all our members. We are aproaching that time of the year when we celebrate the most important event in the history of mankind — the birth of Jesus of Nazareth, the Man of Galilee, the Light of the World.

We look back on a year that has seen many tensions in this troubled world. We can think of the message He left behind to be a guide and light to all the races of man, the beginning of the story of Christianity and its gradual overcoming of evil; the foundation of the Church, whose work it is to keep before us, in our troubled days, the life and beauty and wonder and glory that came long ago from Galilee.

Let us think of those members and friends who have passed away during the year. In particular we would remember Mr. Houston, who was held in such high regard by us all. Our thoughts go out to their loved ones in their loss.

I am delighted to know that most District Councils have had successful seasons, and I deeply regret that it has not been possible for me to pay visits to particular areas. Horticulture has a very important place in the future economy of our country, and I am sure all members are amply rewarded for the labour they expend in their gardens and in helping others.

May I wish you one and all a very Happy Christmas and much pleasure during the holiday season. The Conference at Christchurch should be really outstanding, and I look forward to seeing many of you there in February next.

J. F. LIVING,
President.

STREET PLANTING.

Dr. J. S. Yeates' article 'Trees on Streets and Roadsides,' which appeared in the September issue of this journal, seems to have aroused considerable interest. That is all to the good.

In the past much roadside planting has been carried out in our townships and cities. Later developments have caused some of these roadside trees to be removed. Whether this was really necessary, or whether it could have been avoided is open to question. It certainly appears, in some instances, that a degree of vandalism has occurred.

Three major weaknesses appear to be common when roadside planting is undertaken. The first is the choice of the most suitable tree for the position. Often not sufficient thought is given to the ultimate size of the tree, or the size at which it may be controlled by judicious use of the pruning knife or secateurs. There have been many cases in various countries where large trees, such as oak, elm or ash have either been planted, or where an old established tree has been merged in with a new planting. They have grown out of bounds and the unpleasant practice of 'pollarding' has had to be used, with all the attendant mutilation of a noble tree.

A further mistake is to plant specimens with a branching habit from ground level. As they develop, they impede the progress of the pedestrian and encroach upon the roadway. Trimming becomes necessary, and the contour of the tree is often ruined. In countries like Britain, where street planting is a regular practice, standard trees are grown by nurserymen especially for this purpose. By a standard tree is meant an ornamental tree budded on to a suitable stock which will cause a strong single whip or sapling to develop in the first year. This is staked at a height of between 6 and 7 feet to give good head clearance. Above that height a bushy head is encouraged to develop, but is kept within bounds by being given an annual pruning.

The third weakness in street planting is either inexperienced pruning or complete neglect of this important operation. Cases have come to my knowledge where flowering cherries have been planted along the roadway. They were never pruned until the top growths began to fall foul of the power wires. This made it necessary to use a pruning saw extensively, and the shape of the trees suffered in consequence. Had a standard tree of the right type been planted, and pruning given regular annual attention, the result would have been very different.

With the many housing estates being developed throughout New Zealand, local bodies will do well to take a serious interest in street planting, and give it careful thought.

G. A. R. PHILLIPS,
Editor.

NEW ZEALAND ALPINE PLANTS IN GREAT BRITAIN.

ROYTON E. HEATH, F.L.S., F.R.I.H. (N.Z.), (Kent, England).

New Zealand alpine plants have interested me over a long period, twenty-five years to be exact; and during that time I have successfully cultivated a reasonable number here in Great Britain. Many are easy, doing well in the open rock garden, although in West Kent where the majority have been grown they seem to resent full sun, doing much better in a westerly position, where they can obtain shelter from the mid-day rays. The altitude is 400 feet and the average rainfall 22 inches, so that the climate cannot be classified as wet, and the prevailing wind S.W. with the rain invariably coming from that quarter. There has been a tendency for a cold dry period in late April during the last decade, often accompanied by a drop in temperature to 24 degrees Fahrenheit during nights, after clear fine days. That there has been no adverse effect on the plants after the cold spell leaves one in no doubt as to their hardiness.

As the majority of these are easy and well known species and varieties I am confining my attention to the more difficult, which need pan culture to give of their best in Great Britain. Not that their hardiness is suspect, but some of the high alpine flora protected as they are against wind and sun dessication, with their intense covering of woolly hair structure, would soon fall victims to our ever changing climatic conditions. During winter we experience long periods of mild weather often accompanied by rain causing premature growth, followed invariably by cold foggy weather. This quickly deposits a film of dirt impregnated atmospheric moisture and minute doses of sulphuric acid which is readily absorbed by the sponge-like tissues, blocking the stomata on the leaves, often with fatal results. No plant adapted to a winter's rest under snow, or removal of excessive moisture by an everlasting drying wind in its natural habitat can cope with these conditions successfully. A classic example of this type of plant is *Raoulia eximia.*

Not all plants listed here are high alpines, some being from the sub-alpine scrubland containing such genera as *Coprosma* and *Hebe,* (the invalid name of *Veronica* is still more widely used in Great Britain for the last), also a number of gaultherias are grown here in pans, providing both spring flowering and autumn colouration with their fruits.

A few hints on method of cultivation may not be amiss. The growing of alpines in pans under some form of glass protection would be almost universal in climates similar to those of Great Britain, bearing in mind that in the southern half of the country more shade is required than in the northern counties and Scotland. The reverse of this would be the rule in New Zealand. For the really difficult high alpines a standard mixture is used consisting of 25 per cent flaked leafmould rubbed down between the fingers and not sieved, mixed

with 75 per cent Cornish sand, this consisting of particles from the size of a pea to a pin's head and is definitely silicious in nature, the larger pieces resembling hard quartz. Plants grown in this medium can be given water in large quantities during the growing and flowering season without any ill effects, and the open texture allows no trace of stagnant moisture round the vulnerable neck of the plants. In winter the compost is just kept moist to prevent flagging. For the sub-alpine plants a standard compost of equal parts of loam, leaf-mould and coarse sand is an ideal mixture for plants which require a light porous medium with good drainage. A word in passing — it is difficult to define loam, for there are innumerable types and qualities, but one with a medium texture full of fibre from decayed roots which has been made from turf, stacked for a period of eighteen months, should be used. The loam should be pulled down, never sieved; not only is a granular texture required but the fibres should be cut into pieces and retained. Nothing will kill quicker than the use of sieved loam, thus removing all the mechanical properties like small stones etc. and creating a medium which, when mixed with sand, will form a hard pan, impervious to the vital oxygen so necessary for the health of the plants. This mixture will allow plants to be watered normally while growing and flowering; then they can be kept dry, but not arid, in winter. All plants should be kept moving when young and are best potted up immediately after flowering. But where seed or fruit is required early spring potting must be employed, once growth has commenced.

The following list with the exception of one dwarf conifer, is given alphabetically as the plants are taken from an extensive work, which I have just completed, on alpine house plants. The dwarf conifer is *Dacrydium laxifolium,* more quaint than beautiful with its lax horizontal spreading branches and deep green glossy leaves. A New Zealand endemic, it is one of the few natural small species of conifers which has settled down in cultivation, *Carmichaelia* has given us two dwarf shrubs in *C. enysii* and its variety 'Nana', the species rarely above 6 inches high but the variety is only 1 inch, both bearing on the leafless flat branches pea shaped fragrant deep violet flowers in short racemes. *Celmisia* is confined to the Southern Hemisphere and many are endemic to New Zealand of which *C. argentea* makes a tufted mound, only a few inches high, of silvery-grey and small daisy-like flowers. Also good are the narrow leaved *C. gracilenta; C. hieracifolia; C. major,* a dwarf species with white daisies on 8 inch stems: *C. incana,* of low spreading habit, covered with white wool, and short leafy stems bearing the open many rayed white flowers; the rare *C. sessiliflora,* just a tight silver-grey cushion, the linea leaves densely clothed with a fine silky down and in June the large sessile white daisies with a yellow disk appear. It must be admitted this is a difficult plant to keep in good health. *Coprosma* gives us two dwarf shrubs in *C. acerosa* and *C. petriei* with inconspicious flowers but unsurpassed for their fine

rounded fruits of light translucent blue and rich purple respectively. In *Cyathodes* the two best species grown here are *C. colensoi,* with racemes of fragrant cream flowers and pink drupes, and *C. empetrifolia* which is similiar, but with white fruits. For us the only *Fuchsia* species which has any claim to be included is not an alpine, but *F. procumbens* is often seen in collections with its unusual yellow and purple flowers followed by large red berries aging to purple. *Gaultheria* provides us with *G. depressa,* white flowers followed by red rounded berries, and *G. rupestris* which has similar fruits.

Cultivators in this part of the globe always think of blue when gentians are mentioned, but New Zealand's alpine flora is predominantly white and the striving after 'Alba' forms in the Northern Hemisphere can be better met by growing two species viz., *G. bellidifolia,* a high alpine with glistening chalices of white, and the charming *G. saxosa,* from the lowlands with black stems, deep shiny linear-spatulate leaves and open white veined purple stars. A geranium, *Geranium sessiliflorum,* is a fine tufted perennial with silver-grey leaves and stemless rounded white flowers enhanced with black anthers.

A whole article could not do justice to the genus *Hebe* let alone just a passing mention, for a collection containing all the available material in cultivation today would in itself be large and interesting. All are evergreen and with few exceptions easy to grow, providing a diversity of shapes among a collection of alpines. Of these the following are representative *H. armstrongii, H. astonii, H. buchananii* 'Minor', a real treasure only an inch or so high; *H. epacridea, H. gibbsii, H. haastii,* quite small with contorted branches; *H. lavaudiana,* another dwarf only a few inches high and unlike the majority, which bear white flowers, these are rosy-pink; *H. tetrasticha,* a rare charming plant, requiring care in cultivation here, to give of its best. Space does not allow mention of more but there are many, and all are worth cultivating. Helichrysums are attractive with their different forms and everlasting daisies. Of these *H. bellidioides, H. coralloides,* a rare high alpine with the appearance of coral stems and terminal cream flowers, and *H. selago* with erect stems and apical white flowers are representative of the genus.

In all European countries, including the British Isles, the edelweiss has been built into a legend which even the dynamic criticism of the late Reginald Farrer could not dispel; yet if grown side by side with its New Zealand counterparts *Leucogenes grandiceps* and *L. leontopodium,* words would be futile. Both these species do well here with a little care, and always attract attention with their symmetrical pattern of silver-grey leaves borne round the stems and short apical laterals bearing the light yellow flowers surrounded by radiating silver woolly bracts. These plants can be kept close and compact by a periodical cutting back of straggling shoots, as they break readily from the base.

A near relative to the heaths, *Leucopogon fraseri* is a delightful plant, forming a compact mat only a few inches high, with pinkish white fragrant flowers followed by edible cylindrical deep reddish yellow drupes. Both *Mazus pumilio* and *M. radicans* make charming pan plants, the former lilac tinged violet on 2 inch stems and the latter white with violet markings. Forget-me-nots are invariably associated with shades of light blue, but the New Zealand *Myosotis explanata* loses nothing in comparison, (although a pale blue form has been found) with its mat of prostrate hairy stems and short racemes of almost stemless white yellow eyed flowers. In England the plant has a fatal attraction for all forms of aphids which will quickly weaken and kill if not controlled.

The crucifer most likely to cause despair here is the penwiper plant, *Notothlaspi rosulatum,* which at its best is only short lived, possibly being only a biennial. We find the problem is to bring the plants through into the second season for flowering but it is worth all the skill lavished upon it, the reward being a basal leaved rosette formation of grey-green and, on a 3 inch fleshy stem, white fragrant flowers in a congested conical raceme. A small shrub which always arouses the curiosity of many gardeners is *Pentachondra pumila* with its congested habit of thick prostrate branches and erect 6 inches twigs covered with bright glossy green ciliate leaves; flowers are solitary almost sessile, white followed by large bright red berries. Akin to this is *Pernettya nana* only 3 inches high with white flowers and round appressed red fruits with a persisting swollen calyx.

The New Zealand daphnes present us with one good species and also a mystery for there is another grown under the name of *Pimela coarctata* which has no botanical standing. The origin of this name is wrapped in obscurity, although even today a plant so labelled is growing in the scree at the Royal Horticultural Society's gardens at Wisley. Any information would be welcome for there is a great difference in the plants. *P. prostrata* is only an inch high with glabrous black crowded branches and laterals, leaves opposite sessile minute ovate to obovate, tapered to base grey-green; flowers up to ten in axillary terminal cluster, white silky daphne-like, fragrant followed by oval white berries. *P. prostrata* var. *(P. coarctata)* forms an inch high shrublet with congested interlaced stiff wiry greyish green branches and twigs. Leaves opposite sessile ovate grey-green. Flowers and berries similar.

Another high alpine which has persisted with us, requiring careful cultivation is *Pygmea pulvinaris,* a real gem for the alpine house with its tight cushions less than an inch high of small grey-green hairy leaves in rosette formation, topped with sessile open saucer-shaped pale blue flowers with blue anthers. The plant is not difficult in the juvenile state the problem being to cultivate a large specimen, as it rarely attains a greater size here than 3 inches.

No article on New Zealand alpine plants would be complete without mention of the Mountain Lily, *Ranunculus lyallii* with its 2 to 3 inch white flowers on 2 to 3 feet stems, but unfortunately it is generally monocarpic in this country. Very little success can be recorded with the high alpine scree plants of this genus for all are intractable, with the possible exception of *R. paucifolius,* which existed with me for a short period, and is notable for its prostrate ring of three-lobed glaucous leaves and open orange yellow petals enhanced with the alternate pale yellow sepals.

Raoulia has always held a fascination for me and I have grown a number of the species, but the two which have interested me more than any are the vegetable sheep, *R. eximia* and *R. grandiflora.* Both different in habit, they require skill in cultivating them in Great Britain but have managed to survive, the former with its dense cushions of individual rosettes of minute grey-green leaves covered with white wool-like hairs making a pad of soft greyish white silk. The only method of telling a living plant is that the rosettes seem to give off an indescribable blue-grey iridescent sheen. A dead plant will remain whole as an Everlasting for a long period. Unfortunately there is no record of its ever flowering in cultivation. *R. grandiflora* is different in habit but just as temperamental, making a low cushion, only an inch high, of needle shaped metallic silver leaves in rosette formation increasing by small stoloniferus runners and many petalled white flowers on short stems. Two other species which form dense scab like cushions are *R. lutescens* and *R. subsericea;* the former has the appearance of molten gold when in bloom with its almost microscopic flowers, and the latter a sheet of white. Both are easy to grow although slow. *Wahlenbergia* brings us to the end of the New Zealand genera noted in this article and its representative is *W. matthewsii* with its small wiry stoloniferious stems from a woody rootstock about 4 inches high and erect bell shaped flowers of pale lilac with white median stripes on the corolla lobes.

It must be fully realized that one is only able to give but a fraction of New Zealand alpine plants that can be cultivated, some admitted with a certain amount of difficulty, in the British Isles. That there are many more waiting to be introduced or re-introduced goes without saying, and it is to be hoped, with transglobel travel becoming ever faster, it will be possible to obtain fresh viable seed or living material in the attempt to establish many of the high alpine plants that are endemic to New Zealand.

PLANT HUNTING IN NEW CALEDONIA.

PART III L. J. METCALF, N.D.H. (N.Z.).

The following morning I was collected at half past seven and we set off on the Yate road for the Montagne des Sources. During the night a considerable amount of rain had fallen in the mountains, and

from the appearance of the weather it was doubtful as to whether we would be able to reach our destination. Just past La Coulee we left the main road and branched off to the left, following a road up the valley which led to the Montagne des Sources. A short distance along the flooded river flowed right across the road, and a native assistant, who accompanied us, slipped off his sandles and waded through the muddy water to test the road for wash-outs, and to guide us along the road. Once that was negotiated we experienced no further trouble for some distance. The farmlands were soon left behind and the road then wound its way up the valley, always close to the river. On either side was the serpentine maquis, and shortly I was very excited to see *Nepenthes vieillardii*, scrambling up through the bushes. The green pitchers were quite conspicuous as they hung out from the ends of the leaves. An *Osmanthus* sp. L.M. 224 *(O. badula* or *austro-caledonica)* was pointed out to me and also *Oxera*. One of the commonest plants in the scrub was the same *Hibbertia* that I had seen on the way to the Plaine des Lacs.

The track was very rough and there was ample evidence of the cyclone which had devastated the island a few months previously, as we cautiously made our way round deep cuts in the road. Several kilometres up the valley the road started climbing, and the vegetation changed from serpentine maquis to humid cloud forest. Tree ferns, palms and various species of the *Araliaceae* were prominent as well as *Joinvillea elegans* which grew into very robust plants in the moist forest climate. Of particular note, however, were the distinctive candelabra-like trees of *Araucaria muelleri*. It grows into quite a large tree and has the largest leaves of any New Caledonian species of *Araucaria*. Some steep climbing brought us up onto a high ridge where the forest thinned out and there was a scrub which consisted chiefly of *Callitropsis araucarioides, Dracophyllum* spp. and some stunted trees of *Araucaria muelleri*.

The road stopped on a flat part of the ridge at an altitude of about 3,000 feet, and after gathering together our gear we set off along a foot track for the high part of the Montagne des Sources where I hoped to collect several species of podocarps. At first the track crossed open country covered with a low scrub 1-2 feet high, the principal plants being a *Hibbertia* sp., *Dracophyllum* and a *Callistemon* sp., probably *C. suberosum*. A bit further on and some clumps of a plant I would have recognised anywhere were seen by the track. This was *Xeronema moorei* and before going many more yards it became very common and even at that time of the year some had their bright red spikes of flowers. By now it had started raining, and for the first time I had to don my parka which, even at that altitude, soon became uncomfortable and sweaty. The track crossed a small gully and after rounding a low spur entered the bush.

Hibbertia baudouinii was a conspicuous tree; it grows to 20 feet high, has ovate-lanceolate leaves about 8-12 inches long and bright yellow flowers about 3-4 inches across. A short distance into the bush I collected plants of *Dacrydium taxoides* L.M. 238 which grew as a straggling under scrub among the trees. It is a shrub 3-6 feet high, often repandent and has foliage which is quite different from any other species of *Dacrydium* I have seen. The leaves are flat, broad-lanceolate, 15 x 4 m.m. and obtuse. On a rocky part of the ridge where the track came out into the open *Podocarpus nidioides* L.M. 220 was found growing out of a crevice in the rocks. It was a small bush about 1 foot high with a few branches spreading out to about 2 feet, and it must surely be one of the rarest of the New Caledonian podocarps. In general appearance the foliage very much resembles that of the New Zealand miro, and as a bush it was so small that it was only possible for me to take about a dozen cuttings.

Down in a mist and rain filled gully below we would hear New Caledonia's national bird, the cagou *(Rhinocetus jubatus)* clucking and calling out. The cagou is a flightless bird with certain similarities to the kiwi, it is apparently quite rare and I only heard it the once on the whole trip. One thing that had been very noticeable was the paucity of bird life in the bush, and nowhere did I notice the same quantity of birds that one would find in the New Zealand bush.

The track continued along the top of the ridge and for the first time I felt that I might be back in New Zealand. The bush was stunted, the trees and shrubs grew close together, everything was covered with moss and was soaking wet and the water dripping down my neck just completed the illusion. I was having a field day with the orchids, there being numerous terrestrial and epiphytic species and apart from Table Unio this was the best locality I had visited. There were numerous ferns including tree ferns, *Pandanus,* one or two palms, *Freycinetia* and *Astelia neo-caledonica* all of which helped to make me think I was in some New Zealand bush. Upon turning one corner I was delighted to come across *Nepenthes vieillardii* growing alongside the track. It was sprawling along the ground and the pitchers were of different form to those I had seen earlier on. They were 3-4 inches long, quite fat and a bright rosy red in colour, whereas the ones I had seen scrambling among the bushes in the valley were rather thin and just green in colour. Usually the pitchers change when the plant starts climbing but I did find one growing along the ground that had green instead of red pitchers.

While I was digging up some *Nepenthes* Luc had gone a little way ahead and found a plant of *Podocarpus ferruginoides* L.M. 221 which was another of the plants I was seeking. It was so similar to the New Zealand *P. ferrugineus* that had I not known anything about it I could have quite easily mistaken it for the latter species. No seedlings were to be found so I had to content myself with cuttings.

Growing in the tangled undergrowth near the *Podocarpus ferruginoides* was *P. decumbens* L.M. 222 which is a sparse, straggling shrub, the stems of which grow along the ground and ascent at the tips. The foliage is lanceolate and 1-1½ inches long.

After walking along the track for a few chains we came across *Libocedrus austro-caledonicus* L.M. 223 and a search amongst the undergrowth rewarded me with a few seedlings. With the rain pouring on to us through the trees above we stopped and had lunch, and then started back to the jeep. I was beginning to feel chilly and so was glad to be moving again. Quite a number of plants had been noted for collecting on the way back, and so it was necessary to keep my eyes open and look for a broken branch or an overturned rock which would indicate something I had noted on the way through.

Several of the orchids looked quite promising and one species with mottled leaves (L.M. 242) was particularly attractive. A *Pterostylis* sp. L.M. 248 was in flower and except for the colour of the flower was very similar to *P. montana*. One plant familiar to me was *Tmesipteris tannensis* which was epiphytic on logs and tree trunks, and recognisable, although quite new to me, was the terrestrial *T. vieillardii* L.M. 256. In the bush along the tops the giant of the genus, *Leucopogon dammarifolium* L.M. 273, was quite common. It grows into a small tree and the handsome foliage may attain 8 inches in length. The rain was, if anything, heavier and, our collecting finished, we hastened back to the jeep where we changed into some drier clothes and tried to get some warmth back into our bodies. The journey down the hill had its moments of excitement as the clay track was very slippery, and several times gullied-out portions of the road had to be carefully negotiated; however, by then I had complete confidence in Luc's ability as a driver, and so I was able to sit back and think of other things. We arrived back at Anse vata at dusk, and it was arranged to take me up to the Plateau de Dogny on the Tuesday of the following week.

The next morning, Friday, was spent dashing around packing plants and arranging to have them inspected for a phytosanitary certificate. Then in the afternoon the three cartons were taken down to the T.A.I. office. While I was on my way back from the Department of Agriculture with the phytosanitary certificate M. Monin the proprietor of the Lantana Hotel picked me up and much to my surprise he had the plants I had left with T.A.I. It turned out that a change in schedule meant that the plants would not leave for Auckland until Monday, so there was nothing to do but to take them back to the hotel. Monday May 1st was the traditional holiday and I had to have the plants in at the airways depot quite early; once the consignment note had been made out and the cartons taken from me I was much happier.

On Tuesday morning the jeep arrived just after half past seven. Luc Chevalier was unable to come and so had sent the assistant who had accompanied us to the Montagne des Sources to take me up to the Plateau de Dogny. The Plateau de Dogny is in the Chaine Centrale about 80 miles north of Noumea and it took about 2½ hours of fast driving to reach the foot of the Plateau. We passed through Tontouta, Boulouparis and La Foa in succession, and then, a few kilometres past La Foa, turned off to the right on the road to Canala. At a little village called Sarramea we left the main road and followed a narrow road until it finished in a coffee plantation at the foot of the hills. We left the jeep a short distance inside the plantation, and followed a track which eventually crossed a small stream and started climbing up the hill.

At the first the way was through an induced association which consisted chiefly of *Lantana* scrub, some wild oranges, a few Niaouli trees and one or two other plants. However, after about 10 minutes' climbing we entered the forest and the vegetation immediately became more interesting. Alongside a river large clumps of *Blechnum gibbum* on quite stout trunks 2-3 feet high luxuriated while higher up in the drier parts of the bush was another *Blechnum* sp. L.M. 289 which had attractive fronds and grew on a thin trunk (1 inch thick) up to 3 feet in height. This locality was very rich in ferns both in quantity and the number of species, and I managed to collect 15 species all told. A few tree ferns began to appear and, as I was anxious to get some of the different types, a watch was kept for young plants.

A large leaved plant on the site of the track caught my attention and, too late, I realised that it was *Laportea photiniphylla* and for some time after my fingers tingled. A white-flowered shrub which appeared to be an *Ixora* sp. L.M. 294 was quite attractive and a note was made to collect it on the way down. The track zig-zagged up the face of the hill and at about 3,000 feet we stopped before the object of our visit, *Austrotaxus spicata* L.M. 283. *Austrotaxus* is found sparingly throughout the island from Mont Ignambi in the north to the Plateau de Dogny in the south. Its status is somewhat uncertain as it has affinities with both *Podocarpus* and *Taxus*. It grows into a large tree 75-80 feet high with a trunk 3-4 feet in diameter; the bark is rather similar to that of the New Zealand totara, foliage is linear-lanceolate 3-6 x $\frac{3}{8}$ inches, dark green and rather like some of the larger leaved podocarps. Seedlings were plentiful under the tree and very easily collected. As it was a good spot for collecting we stopped there for lunch before proceeding up the hill.

In the vicinity a number of elegant tree ferns grew, one in particular being really outstanding (L.M. 279) as it had a trunk up to 5 feet or so high, often no thicker than my thumb and a crown of very graceful fronds. Another (L.M. 272) grew to 10 or 12 feet in height with a trunk the thickness of my wrist and as it produced offsets from the base it formed a very handsome plant. A small fern

with very hard, dark-green fronds had me puzzled until I found some plants with distinct fertile fronds and it proved to be a *Blechnum* sp. L.M. 273 which appears to have affinities with the New Zealand *B. frazeri.* Several terrestrial orchids were common plus a couple of *Freycinetia* species and a palm. Somewhere up in the trees could be heard the cooing sound of the notou *(Phoenorhina goliath),* another species of indigenous pigeon, and also the wristling of the siffieur *(Physocarax* sp.) which helped to liven the bush a little.

After lunch we proceeded up the hill, and a bit higher up came across a group of a very handsome *Dicksonia* sp. L.M. 284. It grew on a short rather thick trunk with the fronds forming a somewhat erect crown. The rachis and stripes were clothed with bright red-brown hairs and the trunks were of the same colour. It was stoloniferous after the fashion of *D. squarrosa* and young plants were easy to collect. At about 3,400 feet we came out of the bush and on to the plateau, which was covered with a low scrub about 3 feet high together with *Pteridium esculentum* and *Gleichenia circinata,* this latter being quite dominant in parts. In general appearance the association was very similar to some of the Pakihi country in Westland. Growing out of some rocks were dense rounded bushes of a *Metrosideros* sp. L.M. 288; this is probably *M. operculata.* While up on the plateau a collier blanc *(Columba hyphoenochroa)* landed on the trig point, and my companion threw some stones at it to show me how playful they are. It is a smallish bird, grey in colour with a distinct white band around the throat. Every time a stone was thrown at it, it would spring into the air and then fly back on to the pole as if inviting us to have another try.

We made our way down from the plateau, and after collecting a few plants returned to where we had left our gear at lunch time. What looked to be a rather promising species of *Dizygotheca* L.M. 281 and L.M. 282 was collected in two forms. In one the stems, petioles and midribs are red and with the other they are black and there is every possibility that it will make a good pot plant. A plant of *Vittaria zosteraefolia* (?) L.M. 296 was collected; I had noticed this fern when in the bush at Table Unio but had been unable to collect any. It is a very elegant epiphytic fern and the dark green, pendulous fronds often reach 30 inches in length while they are no more than $\frac{3}{8}$ inches wide. By the time we left the bush my pack was very full and, after stopping to eat some wild oranges, we made our way back to the jeep. When I arrived back in Noumea I had to make sure that all the plants were properly moistened and wrapped in plastic, because for the next three days they would be unattended.

My sojourn in New Caledonia was drawing to a close and the next day I had arranged to go to the Ile des Pins for three days, consequently I had much to do before I was to leave in the morning. The plane was due to leave Magenta airport at 10.45 a.m. The

Magenta airport is only 10 minutes from Noumea and it is similar to Wellington's Rongotai except that as an extra refinement it has the sea along one side as well as both ends of the runway. The Ile des Pins is about 70 miles south-east of Noumea and in the little D.H. Heron took about 25 minutes' flying time. As we came in over the island it was easy to pick out the tall dark green shapes of the columnar pine *(Araucaria cookii)* which gives the island its name; the islets in particular being heavily forested with it. The airstrip is in the centre of the island on the iron plateau, and a bush journey of about 25 minutes took us from there to the hotel at Kanumera. This hotel is set in a very picturesque location in a narrow isthmus, the dining room being built after the fashion of a Tahitian meeting house, and the sleeping bungalows are set back under some broad spreading trees. Dazzling white beaches sloped down to a clear blue water and it was the perfect place for a restful holiday.

There is a narrow coastal strip around the island which is covered with a scrubby bush, Gaiac scrub, Niaouli scrub, or is cultivated by the natives. The central part of the island is an iron plateau rising up to 800 feet at the highest point, which is covered with a serpentine maquis with bush in the gullies. I hired a car to have a look around the island and set off around the coastal road. After a few miles the road crossed some maquis country which was mainly covered with bracken, amongst which I could see the pink flowers of an orchid. This was *Spathoglottis unguiculata* L.M. 258 and in parts of the maquis was one of the principal constituents. The flower stems grew up to 2½ft. high, and carried numerous pink flowers with purple and yellow on the lips. The colour varied from pale to deep pink, and I was able to select one or two good forms. The Gaiac trees *(Acacia spirorbis)* which lined the road in places were almost in full bloom and were very reminiscent of Australia. Along the streams *Blechnum gibbum* was very common and grew most luxuriantly.

In the bush *Asplenium nidus* was more common than in any other place I had seen it. Due perhaps to the drier climate, it was rarely epiphytic on the trees but grew mostly on the limestone rocks and in the thick accumulation of humus which gathered in the pockets among the rocks. Also, instead of forming huge clumps as it does on the trees it tended to grow up on a short stocky trunk.

Around on the northern part of the island near a village called Gadji I came across *Nepenthes vieillardii* growing in a bog under some Niaouli trees. It was quite common and was everywhere scrambling up through the rushes and low shrubs, the green pitchers shining handsomely in the sunlight. On parting the rushes to dig up a plant I found a whole mass of small red pitchers clustered around the base of it. Up on the plateau apart from the *Spathoglottis* there was not a great deal of interest except *Baeckea ericoides* which was in flower.

On the way back to Kanumera I found a specimen of a most beautiful yellow-flowered *Loranthus* growing on a tree above the road. The flowers were a bright golden yellow and up to 2 inches long.

In the afternoon following my drive I decided to investigate the highest part of the island which lay a short distance behind the hotel. A dusty road wound its way through the tall *Araucaria* trees and after about 1½ miles I left the road and started following a small dry stream through the maquis scrub. This scrub appeared very barren and contained virtually no undergrowth between the taller bushes. On the hillsides above the stream the vegetation became quite stunted and was often dwarfed to small bushes 2-3 feet high. Fairly high up on a ridge I found a small white flowered *Dendrobium* sp. L.M. 267 growing on the fibrous roots of a *Cyperaceae*. Down in a gully near the creek a *Grevillea* which was probably *G. gillivrayi* was covered with spikes of salmon-pink flowers and nearby was a podocarp (possibly *Podocarpus longifoliathus* L.M. 269) which formed quite an attractive bush. On my way back down the creek I was most surprised to find a *Dendrobium* sp. L.M. 260 epiphytic upon the branches of gaiac bushes. It was quite common but how it managed to survive in that apparently quite arid scrub was most puzzling.

The following day was spent swimming and exploring a couple of rocky islets just off the beach. One one small rock some white flowers attracted my attention so I swam out to investigate and found them to be *Nicotiana fragrans*. It has rosettes of small obovate leaves, a woody root stock which was firmly imbedded into the limestone and fragrant white flowers about 1½ inches long. Also growing on the same rock was a small shrub which was unmistakably a *Senecio (S. caledoniae* L.M. 265) and this was a most fortuitous discovery. Just before leaving for the Ile des Pins I had received a letter requesting specimens of this *Senecio,* if it was possible, but as I had finished most of my collecting I never held much hope of finding it. However, due to several chance factors I had been able to fulfil the request. While collecting specimens of the *Senecio* I was surprised to see a specimen of a black and white banded sea snake sunning itself a few feet away, however, a quick flick of my trowel sent it flying into the sea and left me in undisputed possession of the rock.

Saturday morning came all too quickly and by lunch time I was back in Noumea. My first task was to have all my plants ready for inspection on the Monday morning so that I would not have to worry about them at the last minute. Then the remainder of the weekend was spent sightseeing around Noumea as the guest of a French family who were very kind to me. Monday was one furious rush getting everything organised and doing some last minute shopping and finally just after 5 p.m. we took off from Tontouta airport and winged our way back to New Zealand.

By way of a conclusion I would like to pay tribute to M. Corbasson of the Forestry Department, and M. Luc Chevalier, both of whom did everything possible to help me. Also throughout the island the hospitality and kindness extended to us by the inhabitants was really wonderful and most helpful. And, lastly, I must mention that without a generous donation towards expenses and extended leave given me by the Christchurch City Council, plus the confidence of my Director, this expedition would not have been possible.

TRESCO ABBEY GARDENS.

By CHRISTOPHER CHOWINS (Tresco).

I hope, in this account of the famous Sub-Tropical Gardens at Tresco Abbey, in the Isles of Sicily, Cornwall, to give a real impression of the Gardens as a whole and not merely a list of plants together with their descriptions. It has been calculated, that at one time, there were 3,500 distinct species and varieties growing here; to this figure has been made both subtractions and additions over the years. Augustus Smith, a noted banker from the County of Hertfordshire in England, made his gardens and built his house on Tresco in 1834. The island, when he came here, was a singularly bleak prospect, somewhat flat, with no point anywhere higher than 160 feet above sea level and nothing growing taller than gorse bushes, save in the old Vicarage Garden.

Now, I must discuss the biggest limiting factor to plant growth on the whole Island and that is wind. Gales blowing from the Atlantic from South West and North West achieve a force of 80-100 m.p.h., at regular intervals and cause great limitations to successful plant growth. These terrific gales break down the sheltering trees, which protect the more tender subjects within their protection. Also, of course, the continual onslaught of salt laden wind, even in milder forms, proves most damaging to tender evergreen material. Between 1929 and 1930 the wind rose to over 80 m.p.h., on no less than fourteen occasions. So, then, winds and gales are the biggest menaces. What are then the factors favourable to such singularly exuberant growth of so many plants from so many parts of the world? The temperature, affected by the kindly influence of the Gulf Stream, has a yearly average of between 40° and 60° F. Frost is seldom if ever felt, even in its milder forms, and, incidentally, there are only very slight differences in day and night temperatures. The yearly rainfall is between 30 inches and 32 inches, and as most of this rain is accompanied by wind, it is seldom that this interferes with the work in the gardens, as places of shelter can always be found in which to work comfortably during rain. The hours of sunshine on the Island are amongst the highest in the British Isles.

When Augustus Smith built his gardens and home here, he laid down a pattern of architecture and husbandry which has been upheld closely through three after generations. Smith was mainly interested to see the beautiful and more unusual plants in his garden, subjects which would not grow on the mainland because of limiting climatic factors. It was realised initially, as it is now, that shelter for all these tender and semi-tender subjects is of primary importance. The trees which gave the shelter originally and now are the same, namely *Quercus ilex, Pinus radiata* and *Cupressus macrocarpa*. At Tresco, *Cupressus macrocarpa* grows much larger than any that I have observed on the British mainland. To keep them well furnished over the maximum of areas the *Quercus ilex* are regularly either cut back or trimmed. In fact, there are some magnificent tall hedges up to 70 feet tall in the Gardens, which serve both as windbreaks and attractive architectural features. In 1896 after a particularly violent storm, *Pinus radiata* was first noted as being able to resist high velocity wind force. Since then there has been, and still is, much of this planted to renew existing shelter belts.

Later, it was observed that, once established, the most attractive evergreen *Metrosideros tomentosa* was found to be particularly wind resistant, and now serves as a most beneficial buffet to the high winds. In one particular area these are planted in a rough line, and in June and July their hundreds of red flowers are a delightful feature; there are many of these 'Red Trees' planted all over the Gardens, and I am told there has never been a mature specimen uprooted by the fiercest gale.

So much for the larger forms of windbreak, but what of the damaging draughts near and around particularly tender subjects? There are many hedges in the Gardens, some apparently serving no useful architectural feature, but these are planted solely as protection against cold draughts sweeping in at comparatively low levels. All the subjects used for these hedges have some merit, whether from attractive flowers, foliage or both. *Pittosporum* hedges are much used in this County of Cornwall and *P. tenuifolium* is a good one which also has a ready market value as cut foliage. Besides this species there are at least nine others in the Gardens, including the large flowered *P. tobira* from China and *P. crassifolium* from New Zealand, with its chocolate flowers and shiny black seeds.

Olearia traversii makes a reasonably quick hedge, but does tend to grow a little bare at the base. *Escallonia macrantha* is much used and there are several varieties of this which are said to be better than the type. These include 'Red Guard and 'Crimson Spire'. As a specimen shrub the variety of *Escallonia* called 'C. F. Ball' is my particular favourite for its particularly good red colour. I must mention, before leaving the escallonias, the insignificant flowers of *E. viscosa,* which, at a distance of about 5 yards, has a most pungent odour reminiscent

of pig oil. Veronicas are lovely shrubs anywhere, whether as hedges or specimens. Most used on this Island is *V. macrantha,* which makes a reliable hedge in most situations. *Veronica speciosa* var. *headfortii* is a particularly fine dark purple; the November-February flowering *V. lewisii* with its two-toned flower colour of white and pale purple is worthy of inclusion in any garden where it may thrive.

How are the Gardens laid out? The windbelts of tall trees surrounding the Gardens within, the many hedges of varying lengths running at different strategic angles, which together with the sheltering walls of Cornish stone, and the plenteous use of local stone for rock work, give a rough idea of the skeleton make-up of the Gardens, which consist of about 12 acres on the Southern slope of the Central Hill of the Island. The soil is light, a mixture of sand and peat with outcrops of granite rock; below this topsoil is often found a subsoil of almost pure sand and then rock. The soil is hot and dry in the summer and so particularly suitable to the South African flora.

Broadly speaking, the Gardens are divided into three main sections, known as the Top Terrace, Middle Terrace and Long Walk. The Top Terrace is nautrally at the top of the Garden and from east to west for about 300 yards. The Long Walk runs parallel with the Top Terrace, on level ground towards the bottom of the Gardens. The Middle Terrace is a shorter walk between the other two. There are various paths connecting these main Walks.

The main way down from the top of the Gardens to the bottom is by a series of steps from the sculptured stone head of Father Neptune 150 yards down to an old iron brazier taken from an old lighthouse which once existed on a neighbouring island.

Standing at the eastern end of the Top Terrace one can enjoy a good overall picture of the Gardens, and the sparkling blue Atlantic beyond, with its snowy white breakers splashing against the isolated rock outgrowths.

Without noting any subject in particular and by concentrating the attention on the one colour green, you will enjoy a most beautiful and interesting sight. The considerable variations in this one colour of green, whether on a dull or a sunny day, is a feature comparable with the rich colours of the plants actually in flower.

I will isolate, whilst still at this vantage point, the trees which really stand out to the eye. There are the *Metrosideros tomentosa,* unpruned and untrained, which have such a magnificent natural shape. Mention must be made of the huge *Quercus ilex* hedges up to 70 feet tall, and in some instances as much as 20 feet across at the top—these are the subject of some ingenuity, when receiving their annual and expert trimming. *Pinus radiata* and *Cupressus macrocarpa* have been mentioned as among the tallest trees on the island.

The sub-tropical effect is realised most typically by the palms growing in the Gardens. Of these *Phoenix canariensis* really is outstanding. Not only are these in the majority, but they mature to truly magnificent specimens. *Trachycarpus fortunei* and *Chamaerops humilis* are much in evidence, together with the more rare *Jubaea spectabilis, Cocos campestris* and *Livistona australis.* The Nikau palm in the Long Walk attracts much attention from visitors, when the large waterproof leaf sheaths of this *Rhopalostylis sapida* fall to the ground to expose the bunch of pink rods of flowers.

There are many New Zealand Cabbage Trees *(Cordyline australis)* which are, perhaps, over planted to some extent. The other species grown here do not seem to thrive like the type, though they are of considerable interest, i.e., *Cordyline indivisa, C. stricta,* and *C. australis* 'Aureo-striata'. The leaves of *C. australis* severed at just the correct stage of development are much used as ties to stakes, etc., and have the advantage of not cutting into the bark of a supported tree, as string often does; the leaves of *Phormium tenax* may be also used in a similar manner.

I would like now to isolate some of the outstanding features of these unique Gardens. These consist of many species of single genera, planted in groups, small and large, and flowering at approximately the same time.

To the casual visitor the masses of blue flowers of *Agapanthus orientalis* and the white of *A. orientalis* 'Alba' are one of the most evident features; these will indeed be found to be growing all over the island. These flower well annually and seem to grow almost anywhere without the slightest trouble. The deciduous *A. campanulatus* is represented by one very dark, almost navy blue form; there are only a few clumps growing of the *A. orientalis* 'Monstrosus' with its flowers fully 9 inches across. The very dwarf *A. africanus* is most suitable for rock work, and increases itself quite rapidly.

On a sunny day in the spring and early summer, the mesembryanthemums are a joy to behold, cascading down over the rock faces with almost the whole of the total surface area studded with their dainty flowers. The splitting up of this genus into other genera is still confusing to some, but here are some of my favourites . The comparatively large flowered *Lampranthus aurantiacus, Drosanthemum framesii* and the pink, white and red *Lamprantus blandus.* Perhaps one of the most appealing in flower form is *brownii.* The fast growing *Oscularia deltoides,* may be seen together with *Mesembryanthemum edule* growing all over the Island. The real winter flowering species is the dark purple *Lampranthus zeyheri.*

The pelargoniums, mostly from South Africa, grow here as rampant shrubs and are planted in large quantities. The scented leaved species and varieties really do give a characteristic fragrance to the whole

Gardens. These consist of the true species, e.g., *P. crispum, denticulatum* and *cucculatum; P. violareum* with its three distinct flower colours and dainty small leaves is most attractive. Then there are the zonals, not so well represented but varieties 'Vesuvius' and 'A. M. Mayne' are particularly good. The regals are undoubtedly represented in the largest numbers, and are really most vigorous in their growth, needing at times considerable pruning. Some of the best of these regals are 'Blytheswood', 'Royal George', 'Black Prince', 'Moore's Victory', 'Pretty Polly' and 'Monsieur Norin'. There is no trouble in propagating the majority of these pelargoniums. Cuttings are merely inserted, at almost any time of the year, where they are desired to grow outside.

Cinerarias *(Senecio cruentus)* grow really well here and seed themselves abundantly. The resultant mature specimens are as handsome and the flowers can be compared favourably with the pot grown greenhouse plant; the colour variations are excellent.

There are several different and delightful forms of *Amaryllis belladonna* flowering towards the end of summer. These have been widely planted in the Gardens, even along path edges where they prove quite happy and free flowering. Another late summer flowering feature is the watsonias from South Africa, the seed heads of which are greatly prized by the flower arranger. *Watsonia marginata, galpinii,* also *filifera* are represented together with several hybrids.

I must digress here to say a word about the many things in the Gardens which have been found to be most valuable in the popular art of floral arrangement. Naturally, dried seed heads from the exotic subjects are much in demand, e.g., aeoniums, wachendorfias, *Rhopalostylis sapida,* and *Agapanthus.* For green foliage the choice is wide and includes *Corynocarpus laevigata, Coprosma baueri, Myrsine africana, Myrtus bullata, Olearia forsteri, Suttonia australis,* etc. In the western part of England deciduous trees bearing lichen are quite common and this is particularly apparent here; this material appears to be most popular with the modern flower arranger.

The echiums are extremely popular, these being planted literally everywhere. The biennial *E. pinnatum* forms huge flowering spikes up to 30 feet tall and these seed themselves in great numbers and have to be thinned drastically; these, of course, die back after flowering. There are three shrubby species in the Gardens, with their different shades of this particularly fine blue. From the Canary Isles, *E. callithyrsum* and *E. fastuosum,* the former bearing the typical red stamens, are the true species. These true species have, however, been cross-fertilised, and the resultant hybrid *E.* x *scilloniensis* has largely superseded both these and there are now very few true species.

Together with the palms the feature which adds to the sub-tropical effect are the aeoniums. These are again most numerous and planted literally everywhere near rock work. There they grow on

rocks and at the base of them in great profusion, also on paths and even on roofs of buildings. These seem to exist on nothing and I can only suppose that the annual dieback of a proportion of the leaves must give them what little food they need. Probably over 30 species exist here, mostly from the Canary Isles. *Aeonium cuneatum* provides a reliable source of yellow flower trusses, *A. tabulaeforme* is one of my favourites, the form is so perfect, *A. glandulosum* is a large growing species and much planted. The shrubby types, e.g., *Aeonium arboreum* tend to be more tender and suffer from dampness during winter.

Concerning the succulents, of which there are many, I propose to isolate four which I consider outstanding. The huge sharp-pointed agaves, i.e., *A. americana* and *A. offoyana* from Havana, take many years before flowering, after which they die. These agaves, however, produce suckers, and provided these are severed from the parent plant before flowering, the plant may continue its life in much the same position.

The specimens of *Furcraea longaeva* with their huge leaves and immense spikes of creamy white flowers are a wonderful sight. In 1944 there were as many as fifty-seven in flower, the tallest being 40 feet tall. There have been some sixty species of *Aloe* in these Gardens. Of these I can mention the deep red *A. arborescens* flowering during winter; also, from the Cape Province, the delicate *A. ciliaris, A. striata* from the Southern Mediterranean area really grows well and soon covers a large area of ground. The colouring in the foliage of *A. mitriformis,* together with the delicate warty outgrowths, make this a striking plant.

The most remarkable of any colour of flower in the Gardens, in my opinion, is that of that strange bromeliad, the *Puya.* I was lucky to see the lovely gun metal blue-green of *P. caerulea* in 1961, the first time this species had thrown a flower spike for 10 years. Also from Chile is *P. chiliensis* with its much larger yellowish flower trusses.

I will now, at random, mention what to my mind are subjects of either great beauty or interest.

The correas are a genus of great merit, from the tough fast growing *C. virens* which is so useful for low windbreaks and cut foliage, to the terribly slow growing but so lovely *C. cardinalis* from New South Wales. *C. cardinalis* is a plant which defies the propagator's art, scarcely making any growth at all but covered with its deep red bells of flower, it defies all artificial attempts at increase and does not set viable seed; this is a rare *Correa* indeed. For the decoration of a low wall there is little better than the pale pink *C. speciosa* 'Pulchella'.

On a very dry bank containing poor soil, above the Top Terrace, grow and thrive several of the South African proteas; *P. incompta, P. latifolia* and *P. longiflora* do amazingly well, and almost at any time of the year can be seen a flower of one or more of the species.

I am glad to have seen the largest of the loniceras called *hildebrandtiana* from Siam, but I do not consider it a shrub of great beauty compared with the smaller species. The leaves of this giant are 6ins. long and the flowers of comparative size. Two blue trees from South Africa are among my particular favourites, *Podalyria calyptrata* whose violet blue flowers appear as early as January, and *Psoralea affinis* flowering much later in the summer with a deeper shade of violet; both these belong to the *Leguminosae*.

There cannot be many trees in the *Scrophulariaceae,* though the two I mention are of both great interest and beauty, i.e., *Paulownia tomentosa* from China and *Bowkeria gerrardiana* from Natal.

It may be of interest to mention plants in the Gardens which are so prolific in growth as to be considered necessary to remove as weeds or keep severely curtailed. *Muehlenbeckia complexa* from New Zealand has even established itself on the sand banks of some of the beaches, whilst *Senecio mikanioides* becomes quite a nuisance amongst the rock gardens. *Helichrysum petiolatum* will soon smother a shrub if allowed too much freedom. The seedlings of *Myrtus luma* have to be regularly hoed, the specimen trees of this, of course, have a fine bark colour of light brown. Although so free growing, I am glad to say that the sweetly-scented *Freesia refracta* is not curtailed to any extent.

There are so many interesting plants growing in the Gardens at Tresco and although I hoped not to make this article a mere catalogue of names, I fear that it is fast becoming one. How difficult it is to describe a flower, save botanically, by means of words?

There is much that I have not mentioned, but I hope that readers will achieve some idea from what I have written, of the diversity of plant material growing in the Tresco Abbey Gardens.

SOME UNUSUAL TREES AND SHRUBS IN EASTERN SOUTHLAND

I. D. GILCHRIST (Superintendent Parks and Reserves, Gore).

The plants described grow in the private garden belonging to Mrs. S. L. McGibbon at McNabb, a distance of approximately 3 miles from Gore. Mrs. McGibbon, an Englishwoman, has a very deep interest in trees and shrubs, particularly those which she knew in her home country, or those which she has read or heard of as growing in some of the more famous gardens there. In her collection one sees few natives of Australia or South Africa. They are predominantly of European, Asiatic or North American origin. Most of the trees and shrubs mentioned are in a section of the garden known as the 'Gully'. This is quite deep with fairly steep slopes and faces into the north west. Good shelter has been provided on the western, southern and

eastern boundaries. All plants are growing on the sides of the gully, and no attempt has been made to maintain them in a formal garden-like way. Apart from careful planting and an occasional clearing of the rough grass around them, when they are small, they are left to their own devices. A mown pathway is maintained so that a complete circuit of the area can be made. Although, because of the lie of the land, plantings have been of an informal nature, due regard has been paid to the cultural likes of particular plants, and the ultimate landscape pattern.

The average rainfall is approximately 32 inches and, as the land lies open to the north west, in some seasons all of the plant inhabitants receive a severe battering from the nor'-westers. These blow during October, November and December and are the most destructive winds we have.

On visiting Mrs. McGibbon's garden most gardeners would be impressed by the health and vigour of the plants growing in it. Admittedly there have been failures, but they have been few in number. The particular charm of this garden lies, I feel, in the location chosen, the selection and placing of plants and the lack of fussiness in upkeep. It can be seen in the distance from the Dunedin-Invercargill highway and in the autumn a 30 feet specimen of *Betula papyrifera* is outstanding. While it lacks the refinement and gracefulness of *B. pendula* in a good form its bark is vividly white and remains so even when the tree is relatively mature. The autumn foliage is a deep rich yellow. *Acer ginnala* is a maple not often seen in this district, and yet in Mrs. McGibbon's garden it is one of the finest shrubs for autumn colour. The leaves are not deeply lobed, the habit is rather untidy and this particular plant carried a heavy crop of seed this season. It is much more wind hardy than any of the many types of *A. palmatum* and becomes outstanding when its leaves ripen to yellow-orange. It is unfortunate that it is not better known. One leading nursery ceased to propagate it some years ago because there was little demand for it. An upright growing form rather similar in appearance is sometimes incorrectly sold under this name.

About 10 years ago Mrs. McGibbon raised a plant of *Sorbus hupehensis* from seed and the resultant plant is now about 12 feet high. The leaves are a greyish green on the upper surface and pale green beneath. These shadings make for a pleasant softness of foliage colour. However the unique feature of the plant is the unusual colour of its berries. Last autumn this tree carried a heavy crop of fruit. It is questionable whether one would say these were pink tinted white or white tinted pink. However they are extremely beautiful, especially as they still hang on the bare branches after the leaves have fallen.

Populus lasiocarpa perhaps cannot be considered an unusual tree, but by local standards the growth rate of this particular specimen has been spectacular. Planted in 1954, as a normal nursery grade, it has

now reached a height of between 40 and 50 feet. It grows near the bottom of the gully and is obviously enjoying abundant moisture there. This species has most handsome large shiny green leaves with the stalk and midrib distinctly red. The colour change in autumn is of little consequence.

Most authorities describing *Parrotia persica* mention its spreading rather awkward habit and in this instance the description fits admirably. Side branches tend to grow horizontally and some make more vigorous growth than others. The resultant rather lop-sided look is one of the most attractive features of the plant and in this case it has not been restrained by pruning. It is 15 to 18 feet high and about as wide. It is quite a heavily leafed tree, and when the leaves become deep yellow in the autumn it is a tree of outstanding merit.

Malus sargentii is a distinctive species in that it has a rather shrubby habit of growth quite unlike any other crab. It freely bears pure white flowers. These are about 1 inch across and appear in clusters of five or six. The fruit is very tiny, about one-third of an inch wide and bright red in colour. This particular specimen fruits heavily.

Malus toringoides is unusual and very beautiful. Of rather loose habit it has typically apple-like foliage which tints rather prettily in autumn. However its particular beauty lies in its hanging bunches of small fruit. These are yellow, flushed deeply with scarlet on the sunny side, and viewed from a short distance they appear apricot coloured.

In this district members of the ash family cannot be considered reliable. One sees more poor trees than good ones. However, Mrs. McGibbon has a fine specimen of *Fraxinus americana,* a species not often seen here. It is a quick growing, shapely tree with quite large leaves which turn a purplish brown shade before falling.

Prunus tomentosa is a cherry of rather spreading habit, and the dense woolliness of the undersides of the leaves is most marked in spring. The flowers are about $\frac{3}{4}$ inch across, white strongly tinted with pink. In horticultural literature rather meagre mention is made of this species and even less mention is made of its beauty in autumn. This plant assumes quite outstanding flame shades. W. J. Bean quotes its height as 4 to 8 feet, but this one is 12 to 14 feet high. *Prunus mahaleb* (St. Lucie cherry) is usually esteemed for its flower and fragrance, but as yet this plant has not produced the abundance of bloom for which the species is noted. However, in autumn, its foliage assumes a pleasing butter-yellow colour.

Crataegus tanacetifolia is a handsome, almost thornless tree. The foliage is grey-green, the 1 to 2 inch individual leaves quite deeply cut into narrow oblong lobes. The generally pleasing appearance of the plant is probably more important than its flowering or fruiting qualities. The blooms are white, about an inch across, and the fruits yellow suffused red.

C. douglasii and *C. stipulacea (C. mexicana)* are also grown. As yet the former has not flowered and consequently has not fruited but it shows the vigour typical of this thorny species. It turns on a fine display of autumn colour. *C. stipulacea,* when not in fruit, is a rather undistinguished semi-evergreen. However, when in berry, it is an important plant. These are quite large and bright yellow in colour, rather like small crab apples, and they last well on the thornless branches. As a species it is less subject to attack from pear slug than some of the other thorns.

Laburnocytisus adamii is interesting in that it is a graft hybrid *(Laburnum vulgare* x *Cytisus purpureus),* resulting in a part fusion of the parents and occasional reversion to either. The fusion of the parents is incomplete so that at times it will bear three types of flowers on the one tree, the yellow of *L. vulgare,* the purple of *C. purpureus* and its true colour, a coppery pink. It is perhaps for the collector's garden, rather than for general use. This one was damaged by heavy snow and also a falling neighbour, but is still growing lustily.

In this district one rarely if ever sees the fern-leaf beech *Fagus sylvatica* 'Laciniata'. This specimen is only a small one and having been shifted again quite recently is still settling down. The name fern-leaf hardly describes the type of leaf. It is quite distinct and unlike the common beech in that the leaves are narrow and lightly lobed with more of a cut-leafed pattern. However, evidently there are considerable variations of leaf shape in this plant. W. J. Bean rates it very highly as a specimen tree, stating that it is the most handsome of all beeches marked by differences in shape of leaf.

Two closely related members of the *Cornus* family, *C. mas* and *C. officinalis* grow in the Gully. Both are robust growers and very alike, but *C. mas* does appear to have a more sprawling habit . It carried a crop of bright yellow flowers for the first time this season. *C. officinalis* has similar flowers and both should when more mature bear small oval-shaped red fruits. In this garden their greatest beauty is in autumn when both carry leaves of yellow, apricot and deep red.

For the tree and shrub enthusiast it is interesting to be able to view two members of the *Eucryphia* family growing side by side, *E. glutinosa* and *E.* x *nymansensis.* Neither is commonplace and few gardens possess both. The former has rather rose-like leaves, mid-green in colour and shiny, most of which are shed in late autumn. During this season they assume quiet autumn colour which holds for a considerable time. The flowers are large, four-petalled and white with conspicuous stamens. This species flowers quite early in life and makes only moderate annual growth. Grown in cultivated soil a large specimen will quite readily layer itself. *E.* x *nymansensis* was planted at the same time as the former species and at 10 to 12 feet is now considerably taller. Individual leaves are larger but this does not make them more handsome and being an evergreen it lacks the beauty which autumn colours can bring.

Plant Hunting in New Caledonia: Callitropsis araucarioides, with the Author standing alongside, on the Plaine des Lacs.

(See page 8)

Plant Hunting in New Caledonia: Blechnum gibbum in a gully on the Ile des Pins.

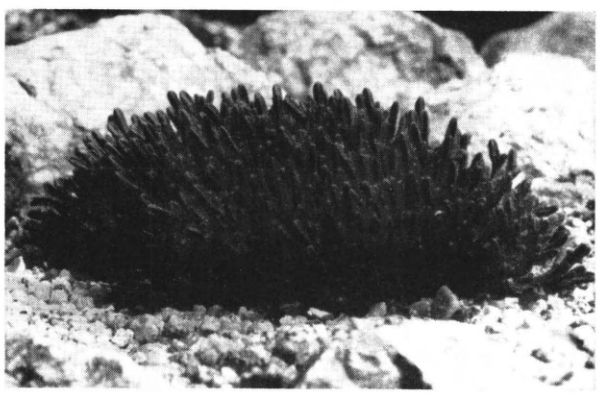
(See page 11)

Plant Hunting in New Caledonia: Nepenthes vieillardii among low vegetation in a swamp on the Ile des Pins.

(See page 9)

David Houston F.L.S.

(See page 30)



Leucogenes grandiceps

(See page 5)

Hebe tetrasticha

(See page 5)

Tresco Abbey Gardens: Neptune steps showing Dasyliorion, Mesembryanthemum, Crassula and other plants.

(See page 17)

(photograph James Gibson).

Tresco Abbey Gardens: Echiums and other plants.

(See page 19)

(photograph James Gibson).

Tresco Abbey Gardens: Dracaenas and yuccas used for foliage effect along the Middle Terrace.

(See page 17)

(photograph James Gibson).

Serruria artemisifolia
(See page 40)

(photograph Douglas Elliott).

Chrysanthemum ptarmiciflorum
(See page 40)

(photograph D.S.I.R. Lincoln)

Serruria florida
(See page 39)

(photograph Douglas Elliott).

Sorbaria arborea is a Chinese species which, when it reaches quite large proportions as the specimen in this garden has done, is a handsome plant. Its blooms are plume-like and a creamy white colour. The fairly large pinnate leaves assume very quiet but attractive autumn tints.

Siphonosmanthus delavayi is a neat but unremarkable evergreen, except perhaps when carrying its crop of small jasmine-like flowers. These are pure white, scented, and at this stage it becomes an attractive plant. Also it is a hardy trouble-free species.

In her choice of plants, Mrs. McGibbon has placed a good deal of emphasis on those which have autumn colour, but evergreens have not been overlooked, especially conifers. The collections of these is not extensive as collections of conifers go, but they are well chosen and well grown.

If one has not grown *Abies concolor* previously, to see this 25 feet specimen is to want it, space permitting. From the viewpoint of a gardener it is possibly at its most desirable stage of growth. Later as it becomes more massive it is equally important in a garden scene, but in a different sense. At present one could consider it a very large beautifully-shaped shrub. It is clothed in branches and foliage right to the ground, is most symmetrical in shape and has distinctly glaucous colouring. (This could possibly be *A. concolor* 'Violacea' — Editor.) The branches grow at right angles to the trunk and are arranged in regular tiers. An 18 feet specimen of *A. nordmanniana* is another good example of this very decorative species. It has the same brush-like arrangement of leaves as the previous species but in this case they are shorter, perhaps 1 inch long. Their undersurface is silvery whilst the upper surface is mid-green. The branches are also held horizontally and tiered. Both these species are growing on the slope towards the top of the gully, a comparatively dry site. A 30 feet specimen of *A. pinsapo* grows nearby. It is a handsome tree, densely branched right to the ground and forming rather a broad pyramid.

In contrast to the formal outline of the *Abies* is *Chamaecyparis lawsoniana* 'Imbricata Pendula', a New Zealand raised form. R. E. Harrison in his *Handbook of Trees and Shrubs* comments that it is probably the most attractive form of weeping conifer known. This particular specimen is about 16 feet high and with its long slender whip-like branchlets is a truly elegant tree. Although it has made good growth since planting it does not give the appearance of ever being likely to reach massive proportions. Much of its charm lies in its slenderness and softness of outline. *Chamaecyparis lawsoniana* 'Intertexta' is an interesting and distinctive variety now 10 to 12 feet high since its planting here in 1950. The branch system is open and spreading, and the general habit pendulous. It is a handsome tree at present and will probably become more so as it increases in stature.

Ultimately it should be of tall slender outline. The foliage is smooth in texture, mid-green in colour. *Chamaecyparis lawsoniana* 'Wisselii' is well known as being a distinctive conifer and this one is no exception. The branchlets are arranged in a curiously tufted manner which gives it a rather ill-clothed look, but this combined with a narrow upright habit and dark-green colouring make for an unusual plant.

Commenting on *Cupressus torulosa* most overseas writers fail to mention its value as a purely ornamental tree. Perhaps it loses some of its beauty as it matures but when small it is a most elegant tree. The branchlets are pleasingly pendant and at present this particular plant is carrying a heavy crop of cones.

From a 7 feet specimen it is not possible to determine the true merit of *Picea smithiana* from a garden viewpoint. However at this stage it is a lovely little tree with the dull green leaves contrasting with the young bark. It grows in gracefulness, the long needle-like leaves pendulous, and a grey-green look about the whole tree.

Architecturally *Picea ormorika* must be regarded as one of the finest of all conifers. This one has a long way to go before it reaches maturity but already it is showing the characteristic proportions which make a large specimen so impressive. A trunk as fine as a ship's mast supports branches and foliage which are so arranged as to form a slender pyramid.

Four years ago Mrs. McGibbon planted a *Pinus patula* (specimen grade) at the top end of the gully. It is now 15 feet high, which for this district is extraordinary growth. In its particular site it has almost complete shelter and plenty of moisture, conditions which have fostered to the full the development of the distinguishing features of this species, its slender graceful habit and long drooping leaves. Particularly when young it is a most elegant tree.

The trees and shrubs described are mainly selected from one area of this property but further plantings are being made around the new homestead. Appreciating Mrs. McGibbon's love and enthusiasm for unusual plants we look forward to the extensions of this garden.

ROBERT MALCOLM LAING. 1865—1941.

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

Born in Dunedin, R. M. Laing gained a Junior University Scholarship at the age of fifteen and, entering Canterbury College in the beginning of 1882, spent the remainder of his life in Canterbury. I met him once or twice about 1930 when he visited Dunedin to lecture to the Naturalists' Field Club and act as leader of some of its outings. But I had little interest in his subject, the local seaweeds, and missed the opportunity to get to know him.

Marine algae had a perennial fascination for R. M. Laing whose first paper, *Observations on the Fucoideae of Banks Peninsula* appeared in the *Transactions of the New Zealand Institute* in 1886. In all he published some twenty papers on marine algae, the last being in 1931. In those days New Zealand botanists had little interest in the subject and, as Dr. H. H. Allan remarked, Laing 'experienced to the full the difficulties of a pioneer in an almost untouched field, working in a country remote from the centres of learning in his specialty. He persevered in spite of all difficulties, with less than the support and encouragement he deserved from his contemporaries, and his unflagging enthusiasm brought him success and some measure of recognition. With the recent revival in our marine algae the students of today have recognised the debt they owe to Laing for the excellent foundation on which they can build.'

If his work on seaweeds made little impact on the botanical world, it was completely ignored by the general public and it was Laing's interest in the higher plants that earned him an enviable reputation among naturalists and field botanists. A teacher at the Christchurch Boys' High School for 38 years until his retirement in 1924, he had ample leisure during the long vacations for botanical research at home and exploration in the back country. He published many papers in the *Transactions* and was one of the three editors responsible for the *Natural History of Canterbury*. He contributed three chapters to that work; *The Botany of the Canterbury Foothills, The Botany of Banks Peninsula* and a *History of Botanical Research in Canterbury*.

In the latter I feel that he does less than justice to J. B. Armstrong's *Flora of the Province of Canterbury with a Catalogue of Species*. He points out that it is the only list purporting to deal with the whole Canterbury area that has yet been published. It has however to be used with discretion, as it contains many species particularly in the Cryptogamic section, that were not seen by Armstrong. Amongst the flowering plants too there are some species that may well be questioned; e.g. *Ranunculus crithmifolius, Pittosporum obcordatum,* etc. Unfortunately no definite localities are given.

Purporting indeed! At that time there was a definite tendency to denigrate Armstrong's work in Christchurch, the local pundits refusing to credit him with finding several species he claimed to have found in Canterbury. Laing is himself credited with the discovery of the *Ranunculus* in the Cameron River valley and *Pittosporum obcordatum* was collected at Akaroa by Raoul in 1840. It has not been found since in Canterbury, probably on account of bush clearing, but Armstrong had every justification in including it in his catalogue. There is a botanical convention that makes botanists look down their noses at any claim to have found any species, in any given locality, unless the claim is supported by a herbarium specimen. Of course a specimen does give an air of authenticity, but the Piltdown episode shows that the mere production of a specimen does nothing to deter the man who

intends to defraud. The discovery of his herbarium after his death has done much to rehabilitate Armstrong and it may be that the criticism about his lack of definite localities is likewise unjustified. It may be that evidence may yet be found to show that he collected much of the material credited to Haast, during the expeditions when Haast was mapping and naming the localities in which the plants were found. If that is so, surely it was more honest to leave the localities indefinite than to fill them in where uncertainty existed.

His cottage at Arthur's Pass formed a useful base for much of Laing's filed work. His papers on the vegetation of the upper Bealey basin, prepared in collaboration with W. R. B. Oliver and H. W. Gourlay are still of great value to all botanically minded persons, who visit the Arthur's Pass National Park.

But it is the assistance which his *Plants of New Zealand* has given to the amateur botanist and nature lover that is the real foundation of Laing's reputation. Published as long ago as 1906, it has run into six editions, and I am told by the publishers, Messrs. Whitcombe and Tombs, that a seventh will soon be necessary and that arrangements are being made for revision, presumably to bring it into line with the new flora. I am told that the sales are in excess of 23,000 copies and I should think this must be something of a record for New Zealand books. There must be very few that have been on the market for nearly sixty years and are still selling merrily.

If you look on the title page you will find R. M. Laing and E. W. Blackwell (Mrs Thomas Maidment) are given as the authors. But it has been what is known as an open secret that the book is almost entirely the work of R. M. Laing. Miss Ellen Blackwell, as she then was, seems to be something of a mystery. So far as I have been able to discover she helped with some of the classifications, and supplied 160 photographs, which were used as illustrations, while her brother F. B. Blackwell helped with indexing. There is a tale of a romance between the two authors. Miss Blackwell went home to England and Laing went haring after her, had no luck and returned home to remain a bachelor to the end of his days. There is no truth in this little bit of gossip and I mention it only to kill it. Laing did go for a trip to England, but it was in 1903 and the *Plants of New Zealand* didn't see the light of day until 1906.

The Canterbury branch of the Institute endeavoured to secure some recognition of Laing's work by nominating him for the Loder Cup in 1940, but, unfortunately, he did not receive the award. I think many will agree with Dr. Allan that 'Many generations will yet draw inspiration from the pages of this classic work'. He thought 'Probably no book has done so much to assist the amateur botanist and nature lover to secure an accurate and vivid knowledge of the flora of New Zealand. No publication has done so much to educate and delight the general public interest in our plants.'

A kindly diffident man, modest, generous and retiring, Laing had to turn on a fierce bulldog expression to keep discipline in the classroom and we are told that many new boys found the performance rather terrifying. This earned him the nickname of 'Dog' when he first went to Christchurch Boys High School, but as the years passed by his bark was found to be worse than his bite and he became known to many generations of boys as 'Puppy Laing'. There are rumours that in those far-off pre-social security days, more than one bright youngster whose education became too much of a burden for the family, was quietly and unostentatiously helped with books and fees by 'Puppy Laing'. Just how much of this happened will never be known because he was one of the last men to let his left hand know what his right had been up to.

1963 ANNUAL DOMINION CONFERENCE

of the

Royal New Zealand Institute of Horticulture Inc.

FORTIETH ANNUAL MEETING AND CONFERENCE OF DELEGATES

NOTICE IS HEREBY GIVEN that the Fortieth Annual Meeting and Conference of Delegates of the Royal New Zealand Institute of Horticulture (Inc.), will be held in the GIRL GUIDES' HALL, 217 ARMAGH STREET, CHRISTCHURCH, on WEDNESDAY, FEBRUARY 20th, 1963, COMMENCING AT 9 a.m.

The 1963 Banks Lecture will be delivered by Mr. W. Martin, B.Sc., at 8 p.m. on that day; his subject — "THE FLORA OF BANKS PENINSULA."

Members of the Institute and delegates from affiliated organisations are specially invited to attend the Dominion Conference and the Banks Lecture. Other activities are being planned by the Canterbury District Council for the benefit of visitors.

Rail, Air, and Steamer Concession fares are available to all attending the Conference; apply now to the Dominion Secretary for appropriate certificates entitling you to the concessions.

It is recommended that those attending the Conference make early hotel reservations.

K. J. LEMMON,
Dominion Secretary.

GENESIS OF THE ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE.

A. H. SHRUBSHALL, A.H.R.I.H., (N.Z.), (Christchurch).

Reading in the June issue of the journal, the In Memoriam notice of the Institute's late very worthy President, John Houston, A.H.R.I.H. (N.Z.), brought memories and thoughts of the genesis of the Institute which go back to David Houston, F.L.S., uncle of John Houston. In the chain of complex related sequences we summarise as causes and effects, the effects becoming causes in the sequences, I was a link which inspired the founding of this Institute, but that inspiration derived from the dynamic influence of David Houston, F.L.S.

In the ferment of a youthful adolescent mind, I developed an unconventual idealism and decided to break from the environment of built up London suburbia and a city office life. With idealistic concepts of rural living, from 1898 to 1900, I was actively associated with two groups of business and professional people aiming to establish idealistic rural communities at Purleigh and Downham in the county of Essex. Taking advantage of some short term sessions at the Essex County School of Horticulture, Chelmsford, I qualified for a bursary and in 1901 became a full-time student at the laboratories and gardens of the School. David Houston was the county agricultural biologist and principal of the School of Horticulture anl impressed on me his views as to the refining cultural values of aesthetic horticulture, and associated botanical and related sciences. This appealed to my idealism and shaped an outlook on life generally.

David Houston was a Fellow of the Linnean Society, and on the Scientific Committee of the Royal Horticulture Society and, at the beginning of 1902, took an appointment as Agricultural Biologist with the Department of Agriculture and Technical Instruction for Ireland, Dublin. This led to my getting a job with the Department, mainly concerned with horticultural education, for nearly three years. In 1905, I came to New Zealand and took employment in the horticultural trade.

As a member of the New Zealand Association of Nurserymen in 1915 at a Christchurch branch meeting, discussing means to a better standard of training in the trade, I suggested the possibility of the technical schools and this suggested a paper at the coming Dominion Conference at Wellington. I compiled such a paper with the title, *Education in Horticulture,* covering the subject in a general way and pointing out the cultural importance of horticulture in civilised living. This paper roused deep interest and discussion at the Conference and it was decided to approach the Government for possible advice and help in founding suitable means for such education.

I followed up this paper to the 1917 Annual Conference suggesting the advisability of a New Zealand Institute of Horticulture which could be to this country what the Royal Horticultural Society was to Britain. This idea was adopted by that Conference and the nurserymen's organising secretary, Mr. Geo. A. Green, was authorised to make contacts through the country with people likely to be interested, and to publicise the idea as opportunity occurred. Mr. Green did very effective work during the next few years. Eventually in early 1922, at a public meeting in Christchurch, arranged by Nurserymen's Conference there, an establishment of a New Zealand Institute of Horticulture was definitely launched, with Mr. Geo. A. Green as the organising secretary in addition to his work for the organised nurserymen. The outcome has been a firmly established organisation of great value to New Zealand.

Whether in any way the views and career of David Houston may have influenced his nephew, John Houston, as regards horticulture, I do not know, but his term as President has helped the status of horticulture as a profession, in many ways.

The views of David Houston, which so influenced my outlook, I later found had been expressed largely by Sir Francis Bacon in the opening lines of his famous *Essay on Gardens;* as true now as when written three centuries ago.

'God Almighty first planted a garden and indeed it is the purest of human pleasures, it is the greatest refreshment to the spirit of man, without which buildings and palaces are but gross handwork, and a man shall ever see that when ages grow to civility and elegance men come to build stately sooner than to garden finely as if gardening were the greater perfection.'

THE CHRISTCHURCH BOTANIC GARDENS CENTENARY.

In 1963 the Christchurch Botanic Gardens will celebrate the completion of their first hundred years, and the dawn of a second century, as the foremost public garden in New Zealand. Although work on the actual formation of the Botanic Gardens did not commence until 1864, a government nursery existed in the Domain, as it was then known, for several years beforehand, and as early as 1857 it is known that this area was referred to as the Domain and Garden. Eventually it was decided to accept the date of the first recorded planting of a tree in the Domain as the foundation date of the Gardens. This tree is the Albert Edward Oak which was planted on July 9th 1863, and is now a very fine specimen 110 feet in height with a spread of 100 feet. It is still growing well and looks as though it will be good for another hundred years or more.

The main part of the centennial celebration is being arranged for February when both the Institute of Park Administration and the Royal New Zealand Institute of Horticulture will be holding their conferences in Christchurch, and the Canterbury Horticultural Society will be staging its largest ever flower show in Hagley Park. During this time it is intended to hold a staff reunion which will take the form of a conducted tour through the Gardens with afternoon tea in the Tea Kiosk, a dinner in the evening followed by a conversazione and to finish off a church parade in the Christchurch Cathedral on the Sunday morning. It is hoped, that to make this a memorable occasion, as many past and present staff as possible will be present. At the same time the new fence along the Rolleston Avenue frontage will be dedicated and there will be a ceremonial tree planting to mark the commencement of another hundred years.

As a prelude to the centennial celebrations and also as a permanent record, the Christchurch City Council is having published a book on the history of the Gardens. Titled *A Garden Century,* this book gives the history of the Gardens, from their foundation just a few years after the first settlers arrived in the province of Canterbury, until the present day. Considerable space is devoted to the Gardens as they are today, the plants therein, and one chapter deals with the birds which frequent the Gardens so that this book should have wide appeal. It is well illustrated, there being approximately 80 pages of illustrations of which 16 are in full colour. As far as this country is concerned the publication of a book of this nature is a new venture and it should serve as a most fitting way of marking this occasion.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS.

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

In Christchurch it is amazing that, no matter how wet the first half of the year may be, the second half generally evens out and brings the annual rainfall to near average. The average annual rainfall in the Botanic Gardens is approximately 26 inches, and over the past 60 years the yearly average has remained remarkably constant. In fact during this period there have been only 17 years when the average has exceeded 28 inches. Abundant rains early in the winter brought forecasts of a wet year. However, the past few months have been rather dry and it was necessary to start watering in September. Following an unusually mild winter, abundant sunshine and above average temperatures brought about good growth conditions, and the absence of the usual strong winds brought about ideal spring conditions. The flowering displays of trees, shrubs and annuals were all

exceptionally good, while newly planted trees and shrubs have grown away to a good start. The planting of trees and shrubs this season was concluded in the spring when a number of conifers were planted in the new extension of the Pinetum. The planting included several species of *Picea, Abies, Pinus, Pseudolarix amabilis* and *Juniperus communis*. Also a new pine mound was planted with the stone pine *(Pinus pinea)* and it is hoped that in time this will be an attractive feature of this area. Although somewhere about 24 trees were planted in this area ample space remains to enable planting to extend over several years.

Many visitors to Christchurch remark on the way conifers are featured in the home gardens, but this is not so surprising when it is considered how well many of them do. This trend in local horticulture possibly emanates from the Botanic Gardens where conifers of all sorts have formed a conspicuous feature ever since the early days, and today no fewer than 168 species and varieties are grown. J. F. Armstrong was the first curator to plant conifers in the Botanic Gardens and many of the fine specimens which exist today are of his planting. The row of *Sequoiadendron* along the Archery lawn is one of the best examples. The largest cedars and the clumps of *Pinus pinaster,* which are so well known, are also of Armstrong's planting. Originally Armstrong intended laying out the whole western portion of the Gardens as a pinetum with the species planted geographically. However, changes in administration and his retirement prevented the scheme from being properly developed.

A number of fine specimens of *Cedrus* are in various parts and undoubtedly one of the best is the specimen of *C. atlantica* 'Glauca' on the Archery Lawn. It is now over 70 feet in height and probably over 80 years old. On the Armstrong Lawn is a Lebanon cedar planted before 1880 and a good specimen of *C. deodara*. On the Stafford Lawn and near the Rock Garden there are two beautiful young specimens of *C. atlantica* 'Glauca' which are both good forms and always much admired.

More than 36 species of *Pinus* are grown and this is by far the largest group in the Gardens. They range from the smaller growing species such as *Pinus mugo* var. *mughus* and *P. aristata* to giants of the stature of *P. lambertiana*. Probably one of the best known and most beautiful pines in the Gardens is the specimen of *P. patula* just near the Bog Garden which is best just after the new foliage has matured.

In the Pinetum several of the soft coned pines are grown, the most notable being *P. wallichiana,* the Bhutan pine. It is a tree of very elegant growth, and it is characterised by the long soft, pendulous cones, up to a foot in length, which are covered with white, waxy resin. Other soft coned species are *P. ayacahuite, P. strobus* and *P. peuce*. The knobcone pine *(P. attenuata)* is well distinguished from other

pines by its curiously one-sided knobby cones. Botanically it is closely allied to *P. radiata* but differs in the larger, stiffer, grey-green leaves and narrower cones. The cones persist on the tree for a very long time.

The *Cupressus* is quite well represented, and two exceptionally large specimens of the Monterey cypress *(C. macrocarpa)* are most prominent. One exists just near the propagating department, and the other between the Bog Garden and the New Zealand Section. Both have a very wide spread and thick butressed trunks. The most unusual of the cypress in the Gardens, is *C. cashmeriana* which is growing in the border behind the Rock Garden. It is a very elegant tree with pendulous branchlets and glaucous foliage and it is now a tree about 35 feet in height. Several specimens of the Bhutan cypress *(C. torulosa)* exist in the Gardens and it is interesting to note that they occur in two forms, one with a rather open and irregular habit and the other with a close and very upright habit of growth. This latter is the more desirable type.

Chamaecyparis is represented by numerous cultivars. However, the species have not been neglected, and throughout the Gardens the principal ones may be seen. The largest specimen of *C. lawsoniana* is on the Paulownia Lawn. However, it is in a very dry shingly situation and tends to show the effect of previous dry summers by a

browning of its foliage. Nearby on the same lawn is the Nootka cypress *(C. nootkatensis)* which is very much more suited to the dry, poor soil and even under the driest of conditions has never shown any signs of damage.

On the northern side of the Archery Lawn, and near the northern entrance of the Bog Garden, are good specimens of the Sarawa cypress *(C. pisifera)* which are now about 40 feet high. This species together with its cultivars grows very well in dry conditions and particularly *C. pisifera* 'Squarrosa' of which there are one or two good specimens. The Hinoki cypress *(C. obtusa)* is a much more pleasing tree of slower growth, and a good sized specimen of it is growing in the border by the Pine Mound. Just alongside it is a large specimen of *C. obtusa* 'Crippsii' which is now 35 feet high.

Of the junipers the coffin juniper *(Juniperus coxii)* is probably the most notable. Several specimens have been planted throughout the Gardens, but it cannot be rated as a success on the light, sandy soil. The effect of this becomes apparent during the summer when the trees suffer badly from the attacks of mites and assume a very dowdy appearance. *Juniperus rigida* in the Pinetum promises to be a handsome tree. It is a Japanese species attaining a height of 20-30 feet and is much cultivated in Japanese temple gardens. The leaves are rigidly awl-shaped, and up to 1 inch long, while the tree has a weeping habit in the young state, but it is not known whether this persists into the adult form. *Juniperus virginiana* is one of the larger growing species, and it is famous for being the source of the best wood for lead pencil casings. A young specimen in the Pinetum is growing well and promises to make quite a handsome tree.

The genus *Araucaria* is represented by three species and it is possible that one of two others may be hardy although as yet they are untried. The first species planted in the Gardens was the monkey puzzle *(Araucarua araucana),* and the best known specimen is just near the Hereford Street Gate, having been planted by Sir George Bowden in 1870. It is a large, well shaped specimen and is now starting to assume the umbrella-shaped top which is characteristic of these trees. The bunya-bunya *(A. bidwillii)* grows very well, and surprisingly *Araucaria cunninghamii,* another Queensland species, is perfectly hardy too.

Generally the spruces do not do well on the flat in Christchurch. However, the Servian spruce *(Picea omorika)* is an exception and there is a fine young specimen in the Pinetum. The rather pendulous branchlets give it a very pleasing appearance, while the pendulous cones are also quite attractive.

The firs *(Abies)* mostly do very well, and one or two quite large specimens exist. The tallest are *Abies firma* and *A. cephalonica* both of which are 90—100 feet high. The Japanese fir *(A. firma)* is just near the eastern end of the Rock Garden and is a very handsome

tree with branches almost down to ground level. The Greecian fir *(A. cephalonica)* is growing opposite the Cherry Mound and is also an outstanding tree. On the Stafford Lawn is the Algerian fir *(A. numidica)* which appears to be very well suited to a dry sandy soil. One ornamental species is *A. fargesii,* which has very dark green foliage with conspicuous white stomatic bands and rather attractive cones. The cones which are 3-4 inches long, are plum-coloured with a slight waxy bloom on them, and the exerted bracts are spreading and somewhat reflexed.

Finally mention must be made of *Cephalotaxus harringtoniana* var. *drupacea,* which is quite uncommon in cultivation in this country. It is a wide spreading shrub, 10-12 feet high in cultivation, which somewhat resembles a yew. The leaves are arranged in one plane along the branchlets but they spread outwards and upwards in a V-shaped manner which gives the plant a distinctive appearance.

NOTES FROM THE DUNEDIN BOTANIC GARDENS

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

On the morning of Saturday 15th September a memorial to the late Mr. David Tannock was presented to the City of Dunedin by the Dunedin Amenities Society. It is in the form of an attractively constructed stone terrace with seats, steps and walls situated above the rock garden overlooking the Lower Gardens. A bronze plaque bears the following instription:—

THE DAVID TANNOCK MEMORIAL

David Tannock O.B.E., A.H.R.H.S., A.H.R.I.H. (N.Z.), 1873—1952. Superintendent of Reserves, Dunedin 1903—1940. Erected by the Dunedin Amenities Society and City Council in appreciation of his outstanding work in the Botanic Gardens, Parks, Reserves and other amenities of this city and of his great contribution to horticulture.

Dr. Ronald F. Wilson, President of the Dunedin Amenities Society, gave a resume of Mr. Tannock's long service as Superintendent of Reserves and spoke of his influence on horticulture in general in New Zealand. The Memorial was accepted by the Mayor of Dunedin, Mr. T. K. S. Sidey. Other speakers were Mr. M. W. D. Anderson, Chairman of Reserves, Mr. J. Tannock and Mr. M. J. Barnett. Representatives from kindred societies and past and present members of the Reserves Department staff were prominent among those who participated in the ceremony.

In spite of the heavy crop of flowers in 1961, this season the Azalea Garden and Rhododendron Dell again produced a brilliant

display, commencing in late July and extending until December with the peak of bloom in the latter half of October. This continual good flowering in successive seasons is probably due mainly to the reduction of excessive overhead shade and the elimination of poor and crowded specimens, which work has been carried out during the past few years.

Magnolia campbellii opened the season with a flourish towards the end of July. Although it did not bear the mass of bloom of the past two seasons its several hundred blooms were even larger than usual. The other well-established and dependable magnolias — *M. soulangeana, M. kobus, M. lilflora,* and *M. stellata* were once again a mass of colour during September and October. Plants of other varieties of the larger growing magnolias were planted this season in appropriate settings, among the rhododendrons, to extend the display of this spectacular genus.

The removal of poor plants, the opening up of vistas, the introduction of a stream and pools with waterside plants, the establishing of further ground cover subjects, in conjunction with the planting of many more rhododendron species and hybrids, either in groups or as individuals, has been steadily continued. It is interesting to note that of a number of lapagerias, planted at the base of certain trees several years ago, those growing with kowhais are making very good growth.

Once again the ever-increasing range of *Rhododendron* species was conspicuous for attractiveness of form, foliage, shape and colour. The well established large growing specimens of *R. grande, R. falconeri, R. arboreum, R. delavayi, R. kingianum, R. thomsonii, R. sutchuenense, R. fictolacteum, R. griffithianum, R. decorum* all bloomed well at their appropriate times. Of particular merit among the smaller species have been *R. ciliatum, R. spiciferum, R. scabrifolium, R. burmanicum, R. bullatum, R. moupinense, R. schliffenbachia, R. elliottii* K. W. 19083, *R. leucaspis,* and *R. orbiculare.* During the next few years numerous other species should have grown into good flowering specimens.

The range of modern hybrids is also steadily increasing. Of those planted in recent years some outstanding varieties which bloomed well, some for the first time were 'Ibex', 'Penjerrick', 'Carita', 'Laura Aberconway', 'Loderi Venus', 'Loderi Irene Stead', 'Loderi King George', 'Ilam Violet', 'Scarlet King', 'Red Glow', 'Mariloo', 'Lady Chamberlain', 'Lady Rosebery', and 'Azrie'. The older hybrids such as 'Marquis of Lothian', 'Countess of Haddington', 'Mrs Thistleton Dyer', 'Pink Pearl', 'Cynthia', 'Kewense', 'C.B. van Nes', 'Britannia' and 'Sappho' still provide the great mass of colour however.

The group plantings of crosses made in the Dunedin Botanic Gardens over the past 16 years become more interesting each year as additional plants come into bloom. This interest is being maintained as each year several more crosses are made between carefully selected parents.

Among the many visitors to the Azalea Garden and Rhododendron Dell this spring were eighty members of the New Zealand Rhododendron Association. As the weather at the time of their visit was a light drizzle, colour and scent were at their best under those conditions. Being the third week in October the visit proved to be made just prior to the peak of bloom. This also was an added attraction as plants bearing partially opened flower buds are often more attractive than those with a mass of fully opened trusses just past their best.

NOTES FROM THE WELLINGTON BOTANIC GARDENS.

IAN McGREGOR.

In 1959, work began on clearing the old Camellia Garden of camellias planted probably more than 50 years ago. The garden had been planted with seedlings which unfortunately were inferior types.

The main path through the garden was realigned and regraded, and extended to the top of the gully to connect with the Garden of Remembrance. Rough native scrub at the top of the gully was removed and the area was cultivated and planted, producing a pleasing landscape. In common with much of the area of the Botanic Gardens, the topography of the Camellia Garden is such that more than thirty cubic yards of soil, thirty-five of peat and ten of sawdust had to be carried by hand for preparation for the planting of the new camellias.

Now, under the ideal conditions of a sheltered valley, first class growing medium and with a pleasing background of native growth and specimen trees, over two hundred camellias representing eighty varieties, several species and some of the recent hybrid introductions are well established. They are planted in informal groups, and the grading of the main walk, together with the contours of the valley facilitate easy viewing.

Camellia species represented included *C. japonica, C. reticulata, C. sasanqua, C. saluenensis,* and *C. sinensis.*

Crosses between *C. japonica* and *C. saluenensis* have produced many hardy free-flowering hybrids which bloom over a period of several months. 'J. C. Williams' is representative of these. It flowers early, freely producing single flowers of pink shading to darker pink.

Other hybrids are 'Salutation' *(C. saluenensis* x *C. japonica* 'Donckelari') which has large single to semi-double delicate pale pink flowers 'Barbara Clark', *(C. saluenensis* x *C. reticulata)* has long lasting semi-double deep pink flowers. Growth is upright and open.

Three *C. japonica* varieties well worth mentioning are 'Debutante', 'Guest of Honour' and 'Ville de Nantes'. 'Debutante' has a beautiful

peony-form flower of pale pink shading to near white at the petal edges. It is hardy and lasts well. 'Guest of Honour' is a salmon pink, large semi-double and a free flowerer. 'Ville de Nantes' has large flowers, semi-double with deeply serrated petals. Flowers are dark red with variable white markings. Growth is compact and upright.

'Apple Blossom', white flushed with pink, is a representative of *C. sasanqua* which is early flowering. It has small leaves and slender willowy growth.

Grouped among the camellias are large drifts of Dr. Yeates's *Lilium auratum* hybrids which provide a glorious summer display. With the almost constant movement of air in Wellington, their perfume is noticeable over large areas of the Gardens. 'Pink Beauty' and 'Pink Delight' are two varieties which attract a lot of attention and admiration. The overall effect is most pleasing.

In spite of heavy and gusty winds, the roses in the Lady Norwood Rose Garden seem to be doing better than ever, and the Garden is a mecca not only for keen rosarians, but also for large numbers of the general public.

Among the first of the floribunda roses to come into flower this year were the outstanding favourites 'Korona', 'Fire Signal' — a new dwarf and promising orange scarlet — 'Rosenelfe', 'Allgold' and 'Orangeade'. In the hybrid teas, 'Mojave', 'Picture' — an old favourite — 'Aztec', 'Tally-Ho', and 'Fred Alesworth' were varieties that got away to an early start with their blooming.

Trial groups of new roses are planted each year to permit the public to judge their worth under Wellington conditions.

BLUSHING BRIDE.

DOUGLAS ELLIOTT (New Plymouth).

Blushing Bride is the whimsical popular name of *Serruria florida,* a very rare South African shrub that is now being grown in a few New Zealand gardens.

The flower-heads resemble those of some of the proteas, which is to be expected, seeing that the serrurias belong to the *Protea* family. There are two distinct kinds of bracts; the outer ones, which are white, are smooth and broad, the inner ones slender and feathery with a tinge of pink. The head is 2½ to 3 inches across. The leaves are divided into thin wiry segments which are sharply pointed. The flowers must surely top the list for commercial value. One bloom alone has been known to sell for £1 in Wellington.

The plant is extremely hard to propagate, and even when raised from seed is very tricky and does not always reach maturity. For this reason it is not likely to be on the market for some years and I under-

stand that the few growers who have raised it from seed prefer to keep the plants and sell the flowers.

Another species of very different appearance is *S. artemisifolia.* This is illustrated in *Wild Flowers of the Cape of Good Hope* by Rice and Compton under the old name, *S. pedunculata.* The furry flower-heads are about 1 inch across and are a mixture of pink and pale purple. Several flower-heads appear at the end of the branch. They are slightly fragrant. This species is occasionally offered for sale.

Both require perfect drainage and do best in a dry climate.

CHRYSANTHEMUM PTARMICIFLORUM (Webb) Brenan.

W. R. SYKES (Christchurch).

The Canary Islands have provided horticulturists with a number of attractive plants, many of which flourish very well in our maritime climate. In the genus *Chrysanthemum* there seems to have been quite a tendency for the evolution of shrubby species in this group of Atlantic islands. *Chrysanthemum frutescens* and its forms are very well known and have escaped from cultivation in such places as the Port Hills, Christchurch. A more graceful, although less common, plant is the glaucous leaved *C. foeniculaceum,* while the subject of this note has very finely dissected greyish-white leaves, constituting the main feature of attraction. In fact the whole plant has this colour, due to its covering of short down and is therefore very useful as a foliage subject.

Chrysanthemum ptarmiciflorum forms a shrub several feet high naturally, but often tends to become rather straggling if left to itself and it is usually pruned hard back each year. It has rather small flowers considering the other cultivated shrubby species, but like most of them, the ray florets are white. I do not know how or when this species entered New Zealand but it seems to be grown now in most of the main cities at least. Probably it is slightly less hardy than the better known species already mentioned, but I noticed a large specimen in the Botanic Garden at Dunedin, and it comes through the hard winter frosts at Christchurch. It is also grown in Australia and South Africa but seems to be almost unknown in the northern hemisphere. It receives no mention in the R.H.S. *Dictionary of Gardening,* and of the reference books edited by the late L. H. Bailey only *Hortus Second* makes a brief reference to it. It appears that it was long thought to be extinct on Gran Canaria, its natural habitat, but has quite recently been found on one precipitous slope.

The person, who has cleared up the problem of the identity and the correct name *for Chrysanthemum ptarmiciflorum,* is Mr. J. P. M. Brenan of the Kew Herbarium, whose findings are set out in the *Kew Bulletin* of 1949. Like other species of *Chrysanthemum* it was originally described under the genus *Pyrethrum,* but since the latter is now

united with the former the specific name has been officially transferred to *Chrysanthemum* by Brenan. However, Messrs. Pitard and Proust, in their small flora of the Canary Isles in 1908, had given the name *ptarmicaefolium* in error. This last name is further misleading since it is an old synonym of a well known European weed and herbaceous border plant now called *Achillea ptarmica,* whose double form 'The Pearl' is a common garden plant. I can only remember seeing *Chrysanthemum ptarmiciflorum* once in cultivation in Britain and that was in a glass-house at the R.H.S. Gardens, Wisley where it had another wrong name. It is interesting that Brenan received the plant from South Africa (where it had yet another wrong name) and was told that it was difficult to propagate vegetatively. However, in New Zealand, it has been found at Christchurch that the most satisfactory method of increase is by sowing seed, although cuttings will root fairly well. As is the case with many woody plants the climate must be nearer the optimum in order to result in seed production, and this seems to be the reason why the Port Hills form the most reliable source of seed in the Christchurch area.

PUBLICATIONS RECEIVED.

TURF CULTURE by Ian Greenfield (Published Leonard Hill (Books) Ltd., London, England.). (English price £2/15/-).

Recently I was handed a copy of the above publication for perusal with a view to assessing its value for New Zealand conditions.

First impressions are that it is a very useful addition to the subject, comprehensive in its coverage of all aspects of turf culture, very well illustrated with photographs and excellent line drawings and diagrams, and presented in a well bound volume.

The section on soils is very well prepared, and gives an excellent introduction to the subject, providing as it does some idea of the origin and classification of soils, with the various types well described in language that is simple enough to enable the average layman to find it easy to follow.

In dealing with grasses the writer commences with a description of the morphology of grasses, followed by descriptive notes on the various species which should prove most helpful in their identification. In general, however, emphasis is placed on English species, a number of which do not occur or are very rare in this country. I found, too, that the recommendations on mixtures for our purposes would need some modification from those submitted.

The section dealing with turf formation contains much of value, particularly that part dealing with drainage. Likewise, turf nutrition is very well presented, with special emphasis on the functions of the various elements, the types and analyses of common fertlisers, and the methods of evaluating fertilisers on a unit basis.

On turf maintenance and management I would sound a note of warning to New Zealand readers that the practices recommended are essentially for English conditions, and would require some modification for ours. In this respect it was noted that rates, frequency, and types of fertilisers recommended in this book are somewhat at variance with our standard practices; and points such as heights for mowing for specific sports do not conform to New Zealand requirements.

In the section on turf diseases the subject is dealt with quite comprehensively, and offers much of value. However, that on pests of turf deals with many that are not encountered here.

Turf weeds are very well covered, both from the point of view of identification and of modern control.

In a concluding section the author deals in an interesting manner with turf and its problems in other countries, making brief references to variations that occur.

Altogether, the publication is one that offers much to the keen student of turf culture, and could be read with interest and benefit by all keen greenkeepers, provided they recognise the fact that in certain detail our local conditions call for some departure from practices recommended for English conditions.

— C.W.

DISTRICT COUNCIL REPORTS.

WAIKATO.

The Waikato District Council had a very successful year for 1962. At the Annual General Meeting held in October officers were elected.

The Speaker for the Annual Meeting was the President who, with his wife, had just returned from a six months tour of the world. Both being Fellows, their tour was made more enjoyable by visiting many beautiful gardens.

His address was illustrated by coloured slides of Kenkonoff Gardens in Holland, Chelsea Flower Show, Powis and Kilsean Castle gardens, Belle Island Gardens, alpine and wild flowers in Switzerland, Edinburgh Botanical Gardens, Bodnant Garden in Wales, Rainbow Bowl at Windsor Park, and Hampton Court Gardens, as well as many lovely pictures of cottage gardens in England, Scotland and Wales.

The monthly meetings were well attended and an excellent panel of speakers gave addresses, in most cases illustrated with coloured slides. The speakers were Mr J. Burton, Te Awamutu, on care and maintenance of indoor plants; Mr Snelling of Rosella Park, Auckland, cactus their care and cultivation; Dr. J. S. Yeates of Massey College on lilies; Mrs. Leo Drummond of Gordonton, on European plants in early New Zealand; Mr. N. D. Martin, Hamilton, on modern technique in plant propagation; Miss P. Bates, Hamilton, winter flowering shrubs; Mr. A. Scott, Morrinsville, on Rose Culture; A special feature of the monthly meeting was the identification of plants, shrubs and flowers. Mrs. Harrison has done a great deal of work in making this part of the programme such a success.

Members of the Waikato District Council have subscribed to a fund for a memorial to the late Mr. A. W. Green who did so much for Horticulture. This fund now stands at £392/4/6 and a memorial is to be started on a site given by the Hamilton City Council for this purpose. It is a section of land overlooking the new Road Bridge at Sillary Street, Hamilton, and commands a wonderful view of the Waikato River and surrounding district. During the year one of the members received an honour by the Queen, this being the award of the M.B.E. the recipient being one of our senior members Mr. M. Gudex M.C., M.A., M.Sc., N.D.H., A.H.R.I.H., (N.Z.) This is a just reward for distinguished service to the community in the field of Horticulture, and many other aspects of service.

Certificates of Fellowship were presented to Mesdames H. H. Fow, J. C. Polloch, M. Harrison and Messrs. P. J. Devlin and P. Scarrow all of Hamilton. A Diploma was presented to Mr. E. J. Martin and Junior Certificates to Messrs. Pick and Mander.

During the year the Council had some field days. In November the winning gardens in the Hamilton competitions were visited. In March Auckland was visited and members were conducted over the gardens by the Auckland District Council.

WELLINGTON

As in the past, the Wellington District Council continues to hold members' evenings in conjunction with the Wellington Horticultural Society. The subject for September was 'Plants to Grow in the Home Garden for Picking or Floral Art Work,' and the speakers were Miss R. A. Campion and Messrs. J. Salinger, J. Stirling and D. Anyon.

The speakers clearly showed that the growing of flowers, and their arrangement in the home, should be something that has an overall plan. Mr. Stirling took as his subject 'The Focal Point of an Arrangement'. This called for the perfect bloom and he discussed the growing of camellias, rhododendrons, magnolias, roses, dahlias and several annuals, citing varieties most suitable for picking for the focal point of an arrangement.

Miss Campion, using material from an impressive collection of foliage plants, illustrated what varieties were suitable for line, form, colour and texture both in the garden and in an arrangement of flowers indoors.

Mr. Salinger gave his audience a vivid mental picture of the five areas in a garden, and the range of material to grow in each. The floral arranger would pick most of his or her material from these areas.

Mr. Anyon concluded by creating two floral pictures — one modern and set against a modern background; the other more traditional, although some of the plant material used had only just made its appearance in this country.

On Saturday November 3rd, a 2 hour symposium on sprays and equipment was held in the Begonia House at the Botanic Gardens. The Wellington District Council are grateful for the co-operation of the Wellington Parks and Reserves Department, in helping with this project, which proved to be most successful. Outside weather conditions were not pleasant, but over 100 people were seated in comfort in the foyer of the Begonia House where they could listen to the speakers, and yet look out to the Lady Norwood Rose Garden where the roses were just coming into bloom. This was the first time the Begonia House had been used for such a purpose, and it certainly will not be the last. The lecturers were Miss R. A. Campion, and Mr. H. W. Johnston, and a short practical demonstration of spraying roses was given by a member of the Parks and Reserves Department staff.

The lecturers explained the need for spraying, the best materials to use, how to mix insecticides and fungicides, measures of protection which should be taken when mixing sprays and how often plants should be sprayed.

Mr. Johnston strongly advised New Zealanders to start hybridising for disease resistance, particularly roses, so that plants were selected not just for colour, size, or shape. There was great scope for plantsmen in this country to do something in this field.

The success of the Wellington District Council's recent Floral Art Judging Course is now becoming noticeable, as many of the newly trained judges are being asked to judge in suburban horticultural shows. With further experience these newcomers will undoubtedly be a great help in Wellington not only for judging but also by working in various groups and societies. Reports on the floral art definitions handbook, issued in October 1961 by the Wellington District Council, are coming in from other district councils but there are still a number who have not yet made any comment. The booklet is still being issued in its original form, all suggested amendments being held back until it is decided to try and introduce it in to final form as a New Zealand standard.

The final activity for the year will be the Christmas Party to be held in the Shell Theatrette. Representatives from horticultural and floral art groups will be invited as usual to attend this function. The guest speaker for the evening will be Mr. John Watling F.R.I.H. (N.Z.) from Christchurch who will be showing slides of horticultural activities in Canterbury.

WHANGAREI.

AUGUST.

Mr. R. Waterhouse, an old and valued member of the Royal N.Z. Institute of Horticulture, gave the August lecture. Mr. Waterhouse has established himself as a skilled and successful grower of an extremely wide range of plants in pots, both indoor and outdoor, in lath house or glass house, so that his lecture was received with great interest and respect, though he remarked in the beginning that he did not set himself up as an expert, but offered his advice as the result of experience. He had become an enthusiast after seeing the collections of friends and those in public gardens, notably Pukekura Park, New Plymouth. He was then inspired to find out all he could about begonias, where they grew in nature, their discovery and collection, as well as their introduction to England and Europe.

A Franciscan monk (Charles Plumier) a botanist and plant collector, discovered the *Begonia* in the West Indies in 1690, and it was named in honour of his patron Michel Begon, Governor of St. Domingo, but it was not until New Plymouth. He was then inspired to find out all he could about begonias, have been discovered in most moist tropical parts of the world, except Australia. Plants came to Kew, to Belgium and France. Individuals and societies, as well as some of the great horticultural firms, financed collectors. Then the hybridisers got to work, and by crossing suitable species, evolved many news forms.

In 1885 the English firm of Blackmore and Langdon became the most notable breeder of tuberous begonias, a position they retain to this day.

In the United States the firm of Vetterle and Reinelt worked on the same lines, but using a different method. Their aim was to improve the quality of the seed so that they could ensure truer reproduction, whereas Blackmore & Langdon used the vegetative means. We now have several distinct types of tuberous begonias — the rose form, the picotee, the ruffled, and the pendulous or basket begonia. Among singles are large flowers, frilled *(crispa)*, crested *(cristata)*, from the frilling of the inner petals. 'Gorgeous Gussie,' a name given to one of the latter, recalls the dress of a famous tennis player. Hybridists now aim to get the perfect rose form, but all the forms have been evolved from the native species by crossing and re-crossing. Named varieties are expensive, especially as some plants don't provide many cuttings, but in the United States, with careful methods of seed gathering, seed can be bought in separate colours and separate types, which give a high percentage true. Sometimes a specially good form results. From a packet of seed costing 2 dollars one might expect about 100 plants, and from three packets over 300 seedlings. From these 20 to 30 of the best should be selected and the rest discarded. Tubers could cost up to £3 each, or from £1/10/- per dozen, but the latter, though they give good plants, are not as good as the named varieties. Tubers should be planted on 1st September, using John Innes formula. The tuber should be just covered until it sprouts, and should have plenty of roots before being potted on to 7-inch pots. The mixture should not be too rich. When flowering begins, feed with foliar spray Atagrow.

Mr. Waterhouse recommends this because its formula was given. Liquid cow manure was also reliable when flowering began. Female flowers should be removed, these being the small flowers at either side of the central bloom, which is the male. When flowering ceased about March or April and plants began to die, cease watering, lay pot on its side and let the plant wither and fall off the tuber naturally. Do not break it off. Take the tubers and store in dry sand, and dust with lindane until September.

Seed should be sown about 7th August, and takes about 3 weeks to come up. Prick out into square plastic pots (these are convenient and economical of space). Plant the adults in 5-inch pots and they should flower around Christmas or January. Begonias need plenty of air and light but must not have burning sunshine. For that reason the house top needs to be high, with plenty of air above the plants. Daily watering is essential. Mr. Waterhouse showed a series of colour slides illustrating the various types, and the many ways of growing them. Of great interest were the methods used in growing outdoors, where only morning sun could be tolerated, as burning would result if plants were exposed to the heat of mid-day or afternoon. In his own garden a canopy of polythene three feet wide sheltered a splendid array of plants in pots. Only gale force wind did damage there. In another picture a bed of begonias 130 yards long and five feet deep was flourshing in the shade of a hedge of *cupressus macrocarpa*, showing that begonias are really good plants for outdoors if given suitable places. The single-flowered *Begonia multiflora* was also hardy outdoors and should be so grown. An increasing number of growers in Whangarei should find Mr. Waterhouse's advice and suggestions extremely useful in avoiding mistakes, and improving their cultural methods.

SEPTEMBER.

At the September meeting the guest speakers were Messrs. E. Arcus, F.R.I.H. (N.Z.) and D. A. McLaren, F.R.I.H. (N.Z.). Their subject was 'Soil Types and Their Management.' They brought samples of various soils and described them — the poor quality clay from gumfields, a sod of clay which was being improved by manures, growing good grass and of better consistency, good soil from the top of a cliff, and coarse sand from the bottom where the sea had washed the humus out. Also poor volcanic earth, loose and dry, and a sample with a really good 'crumb.' This means that a handful squeezed up will retain its shape, but at a touch will crumble, just the right consistency, plenty of humus and neither too wet nor too dry. Mr. Arcus stated that he had become interested in soil construction as related to the nutrition of animals when he worked on sheep farms from Wellington to Hawke's Bay, where the soils had distinct differences, but were good without being topdressed, and the nutriment in them was not leached out by heavy rains as it is in our lighter northern soils. From the Puketoi Hills in Hawke's Bay, none higher than 2,000 feet, one could see nearly 40 miles of undulating, grassy land, the only trees being shelter belts, not topdressed in those days, but still carrying good feed after almost 50 years. At Cape Stevens, near Wellington, the terrain was rugged and the sheep very strong and healthy. The hills were constantly swept with salt-laden winds from the sea, and the flavour of the mutton was out on its own. After listening to a talk by Col. Allen Bell, Mr. Arcus and other young men came North. The others took up bush land near Dargaville, cut and burnt the bush, grassed the land and put on sheep. The first lambs were good, but each year, as the potash from the burning was used up, and other elements leached from the soil by rain, the lambs became so poor they were sent back from the 'Works.' Much of the comparatively new soils of the North, where kauri and rimu have grown, are acid, like all soils where conifers have been.

Mr. McLaren said one must understand one's soil type, that is, volcanic, clay or pipe clay, and to know how to handle it to give the best production. In the soil where conifers had grown there was very little humus, and what there was had been broken down by fungi, not bacteria. If plants do well there is no need for the soil to be tested, but if plants won't grow with ordinary treatment and the test is below a PH of 6.5, there will not be much available plant food. A dressing of 1 ton of lime, 1 cwt. sulphate of potash and 5 cwt. serpentine super per ¼-acre is not excessive and has been used successfully. From then on normal manuring is carried out for each group. Soil fertility is maintained by always growing a crop of oats, rye or barley on plots not in use. Artificial manures are no good at all if there is no humus for them to work on. Drainage is also most necessary. Every three years the subsoil should be well stirred — not brought to the top but just loosened up. Waterlogged soil causes a poor root system, and plants often die in summer after being too wet in winter. A good general manure consists of superphosphate 41%, blood and bone and bonedust, each 19%, dried blood 6%, sulphate of potash 10% and sulphate of ammonia 5%.

Mr. Arcus mentioned that Italian ryegrass is excellent for a green manure as it has a heavy root system, and when rotting after being turned under, helps to keep the soil aerated and adds nitrogen. He told of a farm in Manawatu where alternative halves are planted each year in potatoes and ryegrass, the seed saved from the ryegrass being used to plant the half where the potatoes were dug. This has been done for many years with no loss in soil fertility.

In answer to questions, members were told that seaweed is an excellent manure, it decomposes rapidly and contains very necessary trace elements. Potash is used to give strength to plants and improve the colour of flowers and fruit. For quick action use sulphate of potash. Muriate of potash is very slow. When mixing one's own manures, do not put lime with manures such as blood and bone unless using the mixture immediately. Most gardening advice is to spread lime several weeks before manuring or planting.

SPECIMEN TABLE

Several native plants were displayed, the golden heads of kumarahoe, and the flax-like *Libertia* with its three petalled white flowers, coming from Mrs. Connell's garden. Mrs. Reynolds sent a magnificent stem of the *Xeronema callistemon,* with its 9 inch tip of scarlet bottlebrush. This year her large plant, growing in a container, sheltered by brick walls, has sent up 20 flowering stems. A delightful yellow floribunda rose which will grow in the shade is 'Yellow Hammer,' shown by Mr. Clark. Mrs. Thompson brought two interesting acacias, *glandulocarpa* and *riceana,* also scarlet *Brodiaea coccinea* and the scented *Gladiolus tristis,* Mrs. May's perfect bloom of *Camellia reticulata* 'Captain Rawes' was much admired, and Mrs. McKinnel described a large bowl of grey foliaged plants suitable for growing for the Exhibition Garden, to be held next March.

HONEY AS FERTILISER

The use of honey or honey residues is an aid to soil fertility, and particularly for use in compost. If the fragments of wax, comb, etc., which remain after extracting honey are composted, they make excellent plant food, and do facilitate the rooting of cuttings. Honey itself will encourage rooting, but I found the residues superior.

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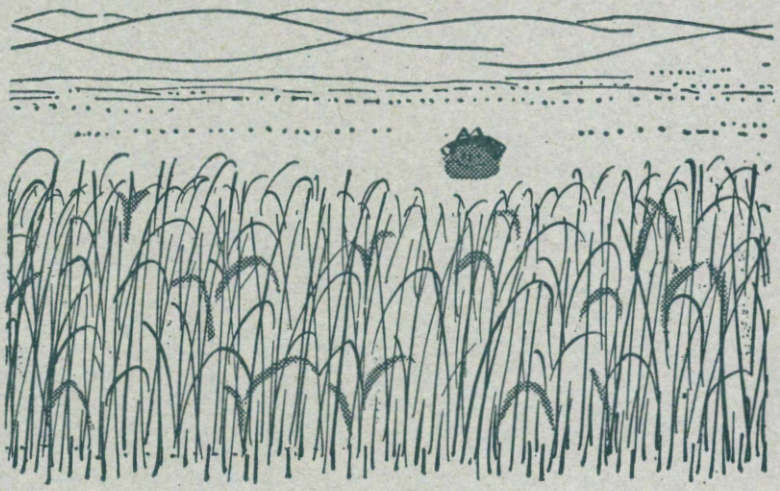

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