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NEW ZEALAND PLANTS AND GARDENS

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(INCORPORATED)

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This Document was presented to Mr. John Houston, O.B.E., LL.B., A.H.R.I.H. (N.Z.), at the Annual Conference held at Palmerston North on 14th February, 1962, on his retirement from the Presidency of the Royal New Zealand Institute of Horticulture (Inc.)

Royal New Zealand Institute of Horticulture (Incorporated)

Members of the
Royal New Zealand Institute of Horticulture
Incorporated

present their warmest greetings to

Mr. JOHN HOUSTON, O.B.E., of Hawera,

On the occasion of his retirement from the office of Dominion President of the Royal New Zealand Institute of Horticulture Incorporated, and herein express their deep appreciation of his able administration of the affairs of the Institute during his term of office, 1955 to 1962.

Members wish to pay tribute —

to the sincerity of his purpose and selfless interest . . .

to the generosity of his sharing his knowledge and experience . . .

to the clarity of his guidance and counsel . . .

to the quality and dignity of his leadership which has enriched the status and influence of the Institute . . .

and finally, but not the least, they widely acclaim the excellence of his chairmanship.

In all, members highly esteem Mr. Houston for the outstanding service he has rendered to the Institute and, on the occasion of his retirement, express in this document their very sincere thanks. They convey to Mr. Houston their very good wishes, recognising also the considerable help given to him by Mrs. Houston in the exercise of his important duties.

Presented at Palmerston North on 14th February, 1962.

NEW ZEALAND PLANTS AND GARDENS

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

Volume IV. *JUNE, 1962.* *No. VII*

A GARDENER'S LIBRARY.

Horticultural text books, written by experienced gardeners, are essential for the amateur. A degree of knowledge, gained from actual experience is, however, essential, otherwise a book, unless it is fully understood, can be misleading. In gardening it is necessary not only to know what has to be done, but why we have to do it.

The New Zealand gardener has been faced with a difficulty. This has been brought about by the fact that the main mass of horticultural literature has been written by British and American authors, for Northern Hemisphere conditions. But this is being gradually remedied by the steady advance of horticultural literature in New Zealand. Mr R. E. Harrison's two books on bulbs and perennials and trees and shrubs are the first of their kind to be published in the Southern Hemisphere. Both provide valuable practical guidance for the identification and cultivation of a wide range of plants. Valuable practical handbooks have been published by the New Zealand Department of Agriculture, and various specialist societies and organisations publish, from time to time, authoritative booklets. The *New Zealand Gardener* is now well established and has a popular appeal.

The value of a horticultural text book is measured by the qualifications of its author. Since it first started publication *New Zealand Plants and Gardens* has been most selective in the matter of contributors. The fact that each contributor is an acknowledged authority on the subject on which he writes, and also that horticulture is covered from Northland to the Bluff makes this of unique value to the advanced gardener and the amateur. The two reports, published by the Canterbury District Council, on *Ornamental Trees and Shrubs for the Garden* and *The Flower Garden* each contain a series of papers prepared by some of the best known authorities in the South Island.

Two botanical magazines, published overseas at regular intervals, are much valued by all who subscribe to them. The first is Curtis's *Botanical Magazine,* published in London regularly since 1787. *Flowering Plants of Africa,* published in South Africa, is of similar format and contains coloured illustrations of a similar high standard. It is essential,

too, to be up-to-date with horticultural activities overseas. There are a number of authoritative horticultural journals being published, and that produced monthly for its fellows by the Royal Horticultural Society of London heads the list.

There is a veritable treasure chest of horticultural literature of a past age that has an immense appeal to the bibliophile. This comprises the quaint old herbals of Gerard, Parkinson and others, those wonderful books with hand coloured aquatints, now exceedingly rare, and the works of William Robinson and Gertrude Jekyll, who truly may be said to have been the pioneers of modern gardening.

G. A. R. PHILLIPS, Editor.

XVIth INTERNATIONAL HORTICULTURAL CONGRESS, BRUSSELLS (Belgium)

Following the decision taken by the International Committee for Horticultural Congresses in Nice, at the April 15th, 1958 session, Belgium's offer to organise the forthcoming XVIth International Horticultural Congress has been accepted. The Congress will take place from 31st August to 8th September 1962, under the auspices of the International Society for Horticultural Science. The activities will include General Papers; Section Papers (Vegetables, fruit, flowers, arboriculture, tropical and sub-tropical plants). Under each section will be handled selection and plant breeding, soil and manuring, diseases and insects, environment, technology and technique; Symposia; Special Meetings; Excursions; Publications. Further particulars are available from the General Secretariat, 233, Coupure links, Ghent, Belgium.

HORTICULTURAL SECTION IN TENTH SCIENCE CONGRESS

The Tenth Science Congress, being held in Christchurch from 15th to 17th August, 1962, by the Royal Society of New Zealand, has a section devoted to horticulture. This is the first time that horticulture has been represented as a separate section since the Science Congresses were first organised, and is a tribute to the increasing importance of the scientific work being conducted in horticulture. The Royal New Zealand Institute of Horticulture Inc. is acting as the sponsoring body for this section, as it has done in previous congresses, when horticulture was only able to be given limited space in the sections devoted to other subjects.

This year, the horticulture section will have three half-day periods devoted to reading papers on scientific developments in horticulture, as well as a whole-day trip on Sunday, August 12th, the day prior to the

actual opening of Congress. The periods will be devoted to vegetable production, fruit growing, and ornamental horticulture respectively, whilst the tour will be around the Port Hills, to study the influence which they have on horticulture in Canterbury, and upon its economic importance. It is hoped to corelate this tour with the general theme of the whole Congress—'The Changing Face of Canterbury', for the Port Hills are slowly being lost to horticultural production as urban sprawl develops.

The sessions devoted to the reading of papers are aimed at presenting the scientific work being carried out in horticulture to a non-specialist audience, so that although papers will deal with technical subjects, they will be readily appreciated by those without a scientific background. The Royal New Zealand Institute of Horticulture Inc. feels honoured to have been chosen to sponsor horticulture in this way, and it is hoped that as many Institute members as possible will be present at the reading of horticultural papers. The section chairman is Mr K. C. Hockey, Head of the Horticulture Department at Massey College, and the section convenor is Mr S. Challenger, Lecturer in Charge of the Horticulture Department, Lincoln College. Further information on full Congress membership may be obtained from the Congress Secretary, Mr N. P. Alcorn, P.O. Box 2112, Christchurch.

VEGETABLE GARDEN CONFERENCE

The Canterbury District Council of the Royal N.Z. Institute of Horticulture is again planning to conduct a full day conference along the same lines as previous years.

Many of you will remember the previous conferences on 'Ornamental trees and shrubs for the garden' in 1960 and 'The flower garden' last year.

This year the day's subject will be 'The vegetable garden'. Well-known practical horticulturists will be discussing such topics as soil management and fertilisers, Seasonal planting, sowing and rotation, herbs, pest and disease control, early cropping, harvesting and storage, and uncommon vegetables.

In the evening a brain's trust will be chaired by Mr. L. W. McCaskill. The date to mark off on your calendar is Tuesday, 11th September, 1962. The venue this year has been changed to the Chamber of Commerce Hall, Oxford Terrace, Christchurch. All members of the public are welcome, whether they be home gardeners or commercial growers and whether or not they are members of the Institute. As in previous years the proceedings of the conference will be printed in booklet form and issued to all conference members free of charge. Further details are available from the conference secretary, G. F. Thiele, Lecturer in Horticulture, Lincoln College.

MORE SOUTH AFRICAN SUCCULENTS
CRASSULA AND COTYLEDON

F. R. LONG, A.H.R.H.S., (South Africa).

No succulent enthusiast should be without some species of the two interesting genera—*Crassula* and *Cotyledon*. It is convenient to deal with these two genera together as they are related botanically, and have similar habits that call for uniform treatment.

They are both truly South African, a few species only being found in East Africa and Arabia. Many are found in my particular area, namely the Eastern Province of the Cape, particularly from Port Elizabeth and East London on the coast and then extending into the Karoo, including Cradock and Graaff Reinet, that is to say to the drier inland areas. There are also many species to be found round about Cape Town and stretching to South West Africa.

Crassula.

When the word *'Crassula'* comes up I immediately think of two outstandingly lovely species, *C. falcata* and *C. perfoliata*. As this is a horticultural article rather than a botanical one, my readers will, I am sure, permit me to concentrate my remarks on the more attractive and suitable ones for the average collector. So, these two brilliant scarlet flowered beauties with attractive leaves, must take first place in my article.

Both are found in the area round Port Elizabeth, usually in well drained banks amongst scrub in open situations. *C. falcata* has of course falcate leaves in a beautiful grey green, gracefully curving back from the stem. The flowers are small but densely packed in a terminal corymb, somewhat like the shape of the 'Cockscomb' *(Celosia)* but curved outwards. When in flower, it is about 18 inches high. *C. perfoliata* is similar but taller, the leaves are pale green and narrow. Both may be increased by seed. There is a white form of the latter, known as *C. albiflora*.

All crassulas like a sandy, gravelly, well drained soil in full sun. Manure, unless very old, should be avoided.

There are several shrub like species running to 4ft. in height. These have clusters of white flowers, some with a pink shade, smothering the bush. *C. arborescens, C. portulacea* (6 feet) and *C. argentea* are in this group, and make attractive evergreen shrubs, low hedges or edgings. They may be increased by cuttings but be careful to see that these are well dried off and inserted into sharp sandy soil with moderate watering, otherwise they will quickly rot away.

There is one attractive trailing species with very ornamental leaves, grey with red-brown edges, namely *C. rupestris,* very suitable

for hanging over the stones in a rockery. The stems seem to penetrate the small leaves in such a way that it is known by the children as 'Cats' Meat'. The flowers are small, white to pink. A similar species is *C. perforata.*

Another species *C. tecta* has attractive almost downy leaves, dull grey in colour with flower spikes 1 foot high. Another unusual one is *C. barbata* somewhat like a *Haworthia*—quite small.

Then there is another group with columnar stems, surmounted with a head of flowers, *C. archeri* (see illustration) and *C. columnaris,* both well worth growing.

There is quite a common species that grows well in shade and makes a filler to the fernery or an awkward site under a tree, namely *C. multicava.* Pieces of the stalks will root if allowed to touch the soil. Sometimes plantlets are formed below the flowers.

A quaint small species found in the Cape with white flowers is *C. capensis.* This has a tuber below the ground and this sends up stems, leaves and flowers every spring.

A very well known and popular plant, seen in their thousands in the London markets as a pot plant that should be included under *Crassula* is *Rochea coccinea.* This has dense heads of scarlet flowers. It is found in the mountains of the Cape, such as Table Mountain and there it is very conspicuous. Sixty years ago this lovely plant was grown in thousands and could be seen for sale on Covent Garden Market growing in 4½ inch pots.

There is quite a collection of smaller succulent species of crassulas to be had. These are ideal for the succulent collector. To mention a few, *C. teres, C. cornuta, C. hemisphaerica, C. barbata, C. corallina, C. pyramidalis, C. columnaris* and *C. alstonii.* None of these is difficult, and are ideal for the small rockery and for the ornamental bowl.

Returning to the shrubby crassulas again, the hill sides on the railway route going north out of Cape Town, as the first mountains are traversed, are covered in these lovely plants, standing singly, 4ft. high, covered in clusters of white flowers edged pink. Then again on the hills surrounding Port Elizabeth there are two or three other species to be seen. All these make ideal shrubs for the well drained rocky slope and are of course evergreen.

Cotyledons.

The second group and closely related to *Crassula* is *Cotyledon.* These have larger individual flowers usually hanging in loose umbels 2ft. in height and rich crimson-red in colour. *C. orbiculata* (see illustration) can be seen in their thousands, usually in clumps scattered in the veldt that is under grazing grass. Cattle leave them alone and so they become conspicuous, surrounded by closely cropped grass and weeds. These fields are usually on the slope and so are well drained,

the soil on the sandy side. The leaves are thick, succulent, in a pale grey with red edges. The local name, 'Pig's Ear', whilst hardly complimentary, is very descriptive.

Two other species well worth a place in the rockery are *C. decussata and C. teretifolia* (yellow); these have narrow pencil-shaped leaves springing from soil level. The latter species will form an attractive pan or shallow pot as the growth becomes crowded and if grown in the sun, will soon throw up flower stalks, 18 inches in height, yellow in colour.

There are one or two species with stem-like growth, namely *C. wallichii* and *C. cacalioides,* almost cactus like in appearance. These make a welcome addition to the succulent collection.

A fairly common species found in many collections is *C. undulata.* This is an upright one with almost white-grey leaves attractively waved at the edge. Then another quite in the opposite direction is *C. lycopodioides,* a low growing species in dense masses. As its name suggests, it can easily be mistaken for the fern-like *Lycopodium.* I have frequently found it nestling under the ledge of a rock and at first sight one would not take it for a *Cotyledon.*

These two genera of succulent, *Crassula* and *Cotyledon* should most certainly be represented by certain species in any collection. *Crassula* is represented by 99 species and *Cotyledon* by 22 species (vide *Flora capensis* 1894). No doubt this record needs bringing up to date as it is well over 60 years old.

Practically all species are easy to grow, just requiring ordinary succulent treatment, that is to say sandy loam, old leaf mould, old manure in restricted quantities, full sunlight, periodical watering; they enjoy an occasional dry period. Many of them have very attractive flowers and all have quaint, fascinating leaves.

One *Cotyledon,* but only one, namely, *C. ventricosa,* has an evil reputation. It has a deadly poisonous property in its old leaves. It is a dwarf plant with an underground root. It is perennial, sends up leaves after rain, and these die down as the weather becomes hot and dry. It is at this period that the plant is deadly to sheep and goats as it grows on the open veldt where these animals graze.

A farmer friend of mine who had an exceptional knowledge of wild plants but at the same time no botanical knowledge at all (in fact he was brought up on the farm with little or no schooling), eradicated this *Cotyledon* on his farm by employing gangs of native women to weed his fields in systematic lines. He also observed that this plant was only deadly as it died down. This took him many years of close study. Well, he saved his sheep and became prosperous. Some years later his neighbours went bankrupt one after the other through stock losses. This farmer had an idea it was caused by *Cotyledon ventricosa.*

He took a chance, bought up his neighbour's farms, eradicated this little dwarf succulent which only showed at certain times of the year and thus made the farm safe for stock. Now, he had studied wild plants since a youngster, in fact boasted that he would live for several days on end on roots, plants and seed without food from his home. He closely observed what his flocks ate and so discovered the evils of *Cotyledon ventricosa,* or 'Nenta'. This is the only poisonous species.

Other plants, such as the closely allied 'Spekboom' or 'Elephants food' — *Portulacaria afra,* supplies a constant nutrious succulent food in its leaves. It is said that cattle and elephants can live on this alone without water. This plant, a 20ft. high shrub with beautiful masses of mauve flowers, can be seen by the hundreds of acres not 30 miles from where this is being written. It is here that the last remaining herd of elephants, 30 in number, may be seen in the Addo Elephant Park. *P. afra* makes a lovely shrub and a first-class hedge. There is a golden leaf form, most attractive as it makes a brilliant golden show from one year's end to another.

There are other genera closely allied to this group which also make charming subjects for the succulent collector. I refer to *Andromischus Kalanchoe* and *Bryophyllum,* which together with the vast group included under *Mesembryanthemum* must provide matter for further articles.

Publications Recommended.

A very useful book for the amateur is *Succulents for the Amateur* by J. R. Brown, Alain White, Boyd L. Sloan and G. W. Reynolds, edited by Scott E. Haselton — published by Abbey Garden Press, Pasadena, Cal.: U.S.A. (1939) with 800 plants, illustrating 400. Another is *Succulent Plants* by H. Jacobsen — translated by Vera Higgins, M.A., published by Williams and Norgate Ltd., London (1935).

THE GARVIE MOUNTAINS

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

For the botanist and plant hunter, one of the most fascinating areas in New Zealand is that of Otago-Southland. This is a vast region ranging from the wet mountain regions of Fiordland to the drier ranges of Central Otago, and no matter which part of it the botanist explores he will find many unusual species and forms which are peculiar to that region. Lying just south-east of Lake Wakatipu are the Garvie Mountains which in the past have been fairly well explored by collectors such as Poppelwell, Speden, Simpson and Thompson. For quite some time I had been thinking of the many fine alpine plants to be found there and wondering just when I would be able to make a visit into the area.

Then in February of this year the opportunity offered itself and so, with two friends, a collecting trip into the Garvie Mountains was quickly planned. The party consisted of John Jeffery of the Ministry of Works Landscaping Division, Michael Hartshorn of the Chemistry Department, Canterbury University and myself. Michael had arrived in Canterbury only recently and intended doing some work on the chemistry of certain New Zealand alpines.

Permission to go into the ranges was readily given by Mr. Pinckney, owner of Glenaray Station, and in the middle of February we motored down to Glenaray station which is about 9 miles up the Waikaia River from the township of Waikaia. Glenaray station is a vast establishment and covers about 250 square miles of the Garvie Mountains, much of it being on high country between 4,000 and 6,000 feet. The Garvie Mountains for the most part consist of high rolling tips with a few rocky peaks. On the lower slopes and in the gullies there is *Nothofagus* forest and above the forest there is an almost complete absence of subalpine scrub. This to anyone used to the thick scrub frequently met with in western regions, is most unusual, but it makes for easier travelling. The high country has very much of a moorland appearance and strongly resembles the Scottish Highlands. The tops are particularly exposed and bleak and are largely covered with *Danthonia raoulii, Celmisia coriacea* and hybrids, *C. lyallii* and *C. verbascifolia* while in the gullies and along the banks of streams there frequently occur boggy areas in which grow *Utricularia monanthos, Donatia novae-zealandiae, Euphrasia* spp., *Gaimardia* spp., and sphagnum. Patches of *Hebe* scrub occur and at one time were no doubt more extensive, while in some parts there are extensive areas of *Senecio revolutus*. Most of the associations have probably been considerably altered over a period of time by burning-off and grazing and the dominance of certain *Celmisia* spp. is no doubt in part due to this. Although under fine conditions it is easy walking country, the lack of shelter makes it hard country and the frequent fogs which come down very suddenly can cause even those who know the region well to lose the way.

Having assembled our gear and sorted out the loads we were ready to start and Mr. Pete Pinckney kindly drove us up the hill in the Landrover and set us down on the start of the track. After receiving directions on how to find the huts we set out for the Titan hut some three hours walk away. About an hour before reaching the hut the rain, which had been threatening for some time, started falling and consequently we were very glad to see the hut.

The next morning dawned beautifully fine and by 9 o'clock we were packed and on our way to the Blue Lake hut which was to be headquarters. From the Titan hut the track went through some silver beech forest and then made its way across some open country, steadily climbing higher all the time. Just before reaching a fence-line which was to be followed up to the ridge the track passed between some fine

clumps of *Celmisia coriacea* which had the leaves covered with a beautiful bronzy indumentum and *Senecio revolutus*. This was our first indication of the type of flora we would encounter and not realising that I would soon be walking over acres of it, I made a small cairn to remind me to collect cuttings of the *Senecio* on the return.

Once on top of the ridge the track followed the peaks around, and from the higher points there were extensive views of the main peaks of the Garvie Mountains and of the country to the south. After about forty-five minutes walking around the peaks the track started dropping into a broad but rather boggy valley. The main vegetation so far observed being *Danthonia raoulii, Celmisia coriacea, C. densiflora, C. sessiliflora, Donatia novae-zealandiae* and a few small herbs. Another hour's walk brought us to the brow of a small rise and the Blue Lake hut was sighted. This hut sits near the outlet of the Blue Lake and is very exposed, there being no shelter of any sort from what appears to be a perpetually blowing wind.

After a much needed lunch it was decided to make a quick tour round the lake to get an idea of the lay of the land and also to start the important task of collecting plants. Some cliffs along the north-eastern side of the lake looked promising and so we headed for them. The dominant plants on the slopes were *Senecio revolutus,* which in places appeared to make up fully 50% of the ground cover, *Celmisia coriacea, C. verbascifolia* and their hybrids. Along the cliffs in crevices and on ledges a number of interesting plants were growing, some being species which I had never previously collected. Growing on shady ledges were plants such as *Anisotome brevistylis* very much like a small form of *A. haastii* in general appearance, *Celmisia brevifolia, Celmisia ramulosa* which is a shrubbery species most unlike a *Celmisia, Cheesemania fastigiata* and *Aciphylla spedenii.* The latter often forming large clumps a foot or more in diameter. Unfortunately it was not a good season for flowers and very few of the Celmisias had flowered. Likewise many of the other plants which should have been in flower showed no signs of doing so.

Further up towards the head of the lake the cliffs became sheer walls of rock 100 - 300 feet high, and underneath some of the overhangs where they were completely sheltered from overhead moisture were a few plants of an interesting looking *Myosotis.* Unfortunately they were just out of reach. However a diligent search produced one or two accessible plants and best of all one with a few flowers left on it. At this stage after witnessing my attempts to scale the cliff and reach the first plants, one member remarked that perhaps the party would be returning with its leader after all. This *Myosotis* formed large clumps up to 12 inches across and the flower stalks stood or in most instances projected out about 9 inches, the flowers being a bronzy green-yellow in colour. It was later identified by Miss L. B. Moore as *Myosotis oreophila* Petrie, and apparently it is the first recording of

this species since it was originally discovered near Naseby by Petrie about 1896. Other plants found growing along the cliff were *Parahebe linifolia, Craspedia uniflora* variety, *Geum parviflorum* and *G. leiospermum.*

A circuit was made around the head of the lake and the south-western side, and on these warmer slopes the vegetation was mainly Snow-grass and a rather compact form of *Hebe odora.* On a small boggy flat near the hut *Dracophyllum prostratum* was found, and as well as the typical form a rather attractive glaucous form was collected. It is a somewhat variable plant, some being very lax in growth, but the best forms make very neat and compact plants which should be ideal in the rock garden.

The sun was well down behind the ridge when we arrived back at the hut and we very quickly busied ourselves making a fire and preparing a meal. Around the Blue Lake there is absolutely no wood of any sort and what is probably unique in a New Zealand high country hut is the fact that peat blocks are used for fuel. The peat is cut out of a nearby bog and stacked up to dry before being stored away in what remains of the original hut. Once it starts burning it gives out a fierce heat which soon warms the hut.

Next morning we were up early and after a good breakfast headed out into the wind which was still blowing very strongly. A sheep track around the north-eastern side quickly took us up to the head of the lake and we then followed the small stream which flows into the Blue Lake from Lake Fred some 200 feet above. The boggy flats at the head of the lake were starred with a large flowered Gentian, *G. amabilis?* which was most attractive. Also common in the bogs were the Sundew, *Drosera arcturi* and *Donatia novae-zealandiae* both of which were in flower. In the turf along the banks of the stream were carpets of *Celmisia haastii* while bright green cushions of *Abrotanella caespitosa* intermingled with *Pernettya nana, Pratia macrodon* and *Raoulia hookeri.* In the turf where it rolled over the edge of the bank to the water *Polystichum cystostegia* and *P. cystostegia* x *vestitum* flourished. Growing wedged between two boulders in the stream was a fine clump of *Aciphylla pinnatifida* which was in full flower. This is a very handsome species which has pinnately divided leaves of a rich golden-brown and it is happiest where it can get its roots into running water.

Lake Fred sits in a large cirque, overshadowed at its head by towering cliffs and so we climbed up the slopes above the north-western side towards a very prominent feature known as the Remarkable Gap. Half way up a stop was made in a small basin to boil the billy and have lunch. In the immediate vicinity quite a number of plants were collected. On the moist shady rocks were plants of *Ranunculus buchananii* and nearby on a rock ledge over which a small stream was flowing were more plants of *Aciphylla pinnatifida.* In among the rocks was *Hebe buchananii* together with another species, somewhat similar to

H. biggarii, which may be *H. dilatata;* however the most prominent plant was *Celmisia hectoris* which, on the stable talus slopes made great silver carpets many yards in area. The Remarkable Gap was only 300-400 feet above the basin, the way lying over numerous rocky ledges on which grew *Ourisia glandulosa, Aciphylla spedenii, Lycopodium selago, Dracophyllum prostratum* and *Celmisia densiflora.* The Remarkable Gap is truly named and it has been described as being like a great semi-circular bite out of the ridge. From it extensive views of the surrounding country were obtained.

Growing in the Gap were plants of a rather stout little Spaniard, *Aciphylla divisa,* which grows from 6 - 12 inches high and looks rather like a small plant of *A. aurea.* Above the northern side of the Gap is a rocky peak which could only be reached by climbing from around the back. On the way up a plant of *Pygmea armstrongii* was found. This species forms a small cushion about 12 - 18 inches across which has small creamy-white flowers set on it. *Raoulia hectoris* was common and tended to form rather large hummocks, while nearer the top in the fellfield were *Cotula goyenii,* most unlike a *Cotula* in general appearance, *C. pectinata, Ranunculus pachyrrhizus, Plantago lanigera, Senecio bellidioides* var. *orbiculatus* and *Phyllachne rubra.*

The top of the peak was a quite extensive plateau-like area on which grew a particularly hardy moorland type of association. This consisted principally of clumps of *Aciphylla simplex* so hard that it was possible to stand on them without bruising any of the spines, *Celmisia viscosa, Myosotis pulvinaris, Plantago lanigera, Phyllachne rubra* and *Poa colensoi.* On top a tearing westerly was blowing and even to stand still was difficult. What had been a warm wind was now very cold; so, wrapped in our parkas we sheltered behind some rocks to eat a handful of scroggin, the standby of many a mountaineer.

Descending from this peak a traverse was made around the ridge which partially encircles the lakes. On the way *Hebe hectoris* was collected; this is a species of the whipcord group and has stout yellow-brown stems. After following along the ridge until well round above the south-western side of Lake Fred it was possible to look down into Lake Laura and Gows Lake which lie on the opposite side of the ridge. Although it was getting on in the afternoon we decided after a hasty consultation, that there was enough time to go down to Gows Lake. The descent was steep but quick and once down at the lake we skirted around the shore to the far end. Gows Lake is in more or less of a hanging valley and empties out over a rather spectacular waterfall which is estimated to be about 800 feet high. From Gows Lake there was a tiring walk along several miles of a boggy valley in which we hopped and tripped over tussocks and clumps of *Celmisia* which all seemed to be in the wrong place and eventually about 7 p.m. three tired people arrived back at the hut. While I was packing my plants Michael and John went up the hill to collect a bag-full of *Senecio revolutus* leaves and stems,

this being one of the plants on which Michael had decided to work, and they returned after dark with what appeared to be an enormous quantity of material.

The following morning dawned in a threatening manner with the same blustery wind blowing and after a quick breakfast we packed and after cleaning the hut shouldered our packs and set off for Glenaray. We had been walking for about an hour when the wind dropped a little and the rain which had been threatening, began to fall. However, worst of all the clouds lowered down on the tops and by the time the start of the climb over Misery was reached, visibility was reduced to about 1 chain and we were in the middle of one of the fogs for which the Garvies are notorious. From then on great care was required in following the track and even then we strayed off it once or twice. Icy cold rain and some sleet showers dampened everyone's spirits and we were quite relieved when eventually we came to the boundary fence which led down off the ridge.

Another hour's walking brought us back to the Titan hut where hot soup revived dampened and half frozen spirits, and after some lunch we set off at a brisk pace for Glenaray. Just after leaving the hut and possibly due to the heavy rain which started falling again and made me look downwards, a small *Hebe* was found growing in the grass alongside the track. It turned out to be *Hebe propinqua*. Two hours walking brought us back to Glenaray where we checked in at the homestead. As it was too late in the day to proceed further Mr. Pinckney very kindly gave us accommodation in the shepherd's hut. The next day we returned to Christchurch and looking back as we left Glenaray we saw that the peaks had a considerable sprinkling of snow on them. Altogether somewhere about 200 plants covering approximately 66 species and varieties were collected.

THE HYBRID CLEMATIS

I. F. BONISCH, F.R.I.H.N.Z., (Superintendent of Parks and Reserves, Ashburton).

The story of our modern hybrid *Clematis* starts with the species, some 200 in number, distributed widely throughout the world and varying from herbaceous and sub-shrubby types to vigorous woody climbers capable of growing to a height of 40 feet. Belonging to the buttercup family, the *Ranunculaceae,* the species include both evergreen and deciduous members, monoecious and rarely dioecious specimens *(C. indivisa)* and a wide variety of leaf forms. Although mostly woody climbers, the genus has no tendrils, the leaf petioles doing the same duty very effectively as any gardener who has tried to disentangle them will know. The flowers produced either singly or in panicles have no petals—the sepals, usually four in number, taking their place. The

stamens form a conspicuous part of the flower and as well as being attractively coloured, are modified in some species (e.g. *C. macropetala*) as petals or petaloid staminodes giving the plant a double appearance. Numerous pistils form a tuft, each connected to a single seed-like fruit which in some species, notably *C. vitalba* and *C. tangutica* have a long bearded plume attached. Flowers are mostly small but in some of the Chinese and Japanese species, *C. lanuginosa* for instance, they may be 7 to 8 inches in diameter. All *Clematis* are very deep rooting but have only a moderate lateral spread. Moisture and shade around the base of the plant is a general requirement.

The *Clematis* has a comparatively short period of garden history and prior to 1590 only *C. vitalba* was known in England. This species was widely spread throughout Europe and some 200 common names had been given to it, but in England, the name Virgin's Bower was the most popular and is reputed to honour Queen Elizabeth 1 who took great pride in her title of Virgin Queen. By 1600 the species *C. flammula, C. integrifolia* and *C. viticella* from Europe had been brought in and for the next 150 years they were the only *Clematis* grown in England and on the Continent. Some of the American species were introduced about the middle of the 18th century and *C. florida,* the first important Chinese discovery appeared in 1776. The species from China and Japan, which were to be used to transform the *Clematis* into the queen of climbing plants we know so well to-day, arrived in the middle of the 19th century.

C. lanuginosa and *C. patens* with some varieties of the latter given at that time the status of species, were introduced by Robert Fortune and Philipp Franz von Siebold from China and Japan. Their arrival coincided with the peak period of the large nursery firms and associated personalities in the horticultural world, so the stage was set for the raising of the wonderful hybrids resulting from the crossing of the species available to those fine plantsmen. The first hybrid on record, reputedly between *C. viticella* and *C. integrifolia,* had already been raised in 1835 by a Mr. Henderson, *C.* x *hendersonii* or x *eriostemon* as it is now known has deep blue, four-sepalled flowers and is herbaceous in habit. Mr. Isaac Anderson-Henry crossed with *C. lanuginosa* a variety of *C. patens* which had been imported as a species, producing x *reginae* as the first offspring of these two wonderful parents. Then at the Woking Nurseries of Messrs. George Jackman and Son crosses were made between *C. lanuginosa, C.* x *eriostemon* and *C. viticella* x *atrorubens.* These crossings were made in 1858 and on flowering in 1862 x *jackmannii* and x *rubroviolacea* were selected and named from among many very fine seedlings. Here again there is uncertainty about the actual parentage of x *jackmannii* as apparently no record was kept of the crosses and we can only speculate whether *C. integrifolia* played any part in producing this famous offspring. Mr. Whitehead, in his book *Garden Clematis,* gives the breeding as *C. lanuginosa* x *C. viticella* x *C.* x *eriostemon* but Mr. Jackman himself gives as definite dates in the book *Clematis as a Garden Flower,* 1858 for the fertilization of the

flowers and 1862 as the date when *C.* x *jackmannii* was named and certified. This does not give enough time for two generations to have been raised.

Parallel work was being done on the Continent of Europe and Messrs. Simon Louis of Metz made the cross *C. lanuginosa* x *C. viticella* 'Grandiflora' and claimed for their selection *C.* x *splendida,* the role of type plant for these new hybrids. There seems some justice for this claim as this plant was flowered in 1861 and put into commerce in 1862, at least a year earlier than *C.* x *jackmannii* but this claim was gently but firmly dismissed, showing the disadvantage of not being born an Englishman in those days.

Many hybridists used *C. lanuginosa* and *C. patens.* Mr. Noble produced 'Miss Bateman,' a beautiful white, still popular to-day. Mr. Anderson-Henry crossing *C. lanuginosa* and a double white variety of *C. patens* obtained *C.* x *lawsoniana* and *C.* x *henryi,* two large flowered hybrids much grown to-day and Jackmans raised a new batch of seedlings with *C. patens* and its varieties crossed with *C.* x *jackmannii* and some of the best of the original seedlings. Again no records were kept of these crosses and the only variety still listed is 'Fair Rosamund.' Messrs. Cripps and Sons of Tunbridge Wells raised at this time 'Star of India,' 'Lady Caroline Neville' and 'Sensation.' During this period it was noted that deep purple and blue were difficult to link with large size and this problem has continued to remain unsolved by hybridists, all the largest flowers being mauve or white.

It became evident that the limit had been reached with *C. lanuginosa* and *C. patens,* so *C. veticella* was then used with some of the hybrids to produce slightly smaller flowers with rich wine reds and red purples. 'Royal Velours,' with small port-wine coloured flowers, and 'Minuet,' with cream flowers edged purple, are two small flowered hybrids and 'Ernest Markham,' shining wine red, 'Ville de Lyon,' carmine red and 'Huldine,' a transparent white with a red bar along the back of the sepals, are larger flowered varieties. 'Ernest Markham,' one of the best known names in the clematis world, used *C. coccinea* or *C. texensis* as it is now called and crossed it with *C. patens* to produce 'Gravetye Beauty.' This is a distinctive type with downward-facing, pitcher-shaped flowers, with thick leathery sepals, of a rich deep red colour. Ernest Markman in charge of the gardens of William Robinson at Gravetye Manor, had access to an extensive collection of *Clematis* for hybridizing and selection. In addition to a book on *Clematis* written in 1935 the name Markham or Gravetye will be perpetuated by the fine varieties he produced. Other raisers are now busy taking advantage of the increasing interest in *Clematis* and new varieties are being offered every year to the public in the British Isles. A great fillip has been given to hybrid *Clematis* by the nurseries specializing in these plants, Messrs. George Jackman and Son, Pennell, Hilliers and especially Fisk's who grow nothing but *Clematis.* It is worth noting that only plants growing on their own roots are put out by these nurserymen; grafted plants and unnamed seedlings, as offered in New Zealand, are not recommended.

The use of hybrid *Clematis* as climbers on walls, fences and pillars is well known but the fact that they are adaptable as backgrounds in perennial borders, for bedding and as tub and pot plants is not so widely appreciated. Whatever their chosen role, initial preparation of the site is very important. The heavy root system which penetrates deeply for food and moisture must have an adequate supply of both to give the long season of growth and flower of which *Clematis* plants are capable. Deep trenching over an area of 30 square feet is not too much with plenty of humus and bone meal mixed with the soil. If the soil is deficient in lime a good dressing of ground shell can be applied. The site should not be a sump for winter rain or liable to dry out in the summer. Water lying about the roots in winter or spring and dryness and heat in the summer can cause *Clematis* to collapse and die. Shade over the roots, sunshine above, an annual topdressing with blood and bone and compost will keep *Clematis* vigorous and healthy for many years.

Planting should be done from June to September and the heavy roots inserted as deeply as possible and not spread out as usually advocated. This allows the new roots which are quickly formed plenty of room to spread. The crown or the lowest visible growth or healthy buds, are placed so that they will eventually be about 3 ins. below the ground. This can be done by planting in a small depression and filling it in when the growth has come away. A twiggy branch to which the new growth can cling must be provided at planting time as *Clematis* can grow as much as half-an-inch an hour and will soon blow down if not supported. New plants scrambling over the ground in search of something to cling to will never establish as quickly as those properly provided for.

Most hybrids will grow 8 to 10 feet when established and like nothing better than rambling through tall shrubs and small trees. Flowering currants, forsythias, viburnums and flowering apples have sufficently open growth and will appreciate some added interest during summer and autumn. To grow *Clematis* in such a position the site should be prepared and a bottomless box or tub filled with a suitable compost sunk at the base of the tree. *Clematis* planted in this box will make early growth unhindered by tree roots, and watering, very necessary in such a position, can be done much more effectively. In the 1870's supports of old tree stumps on their sides, with roots to the sky, were used for *Clematis* to ramble over and this feature went by the delightful name of 'rooteries.' Tripods of branches can be used as support during the summer and can be removed, *Clematis* and all, as soon as frost stops the growth. If spring bulbs are planted around *Clematis* supported in this way the bulbs can be enjoyed before it is necessary to put in the tall stakes whilst the climbers hide the dying bulb foliage later in the season. As tub or pot plants *Clematis* can be made to produce a glorious display of perfect blooms especially when finished off under glass. Containers must be as deep as possible and filled with a rich open compost. The plants well grown during the first season are removed from their supports when dormant and wound round them again almost

horizontally. This causes all buds along the stems to break into growth and produce blooms. Forcing is only moderately successful and heat, which is weakening to the plants, should be given only when flower buds are well developed.

Pruning of hybrid *Clematis* is always a subject which seems to present difficulties and one is usually referred to the horticultural grouping of the different types. This grouping has no official standing but is used for convenience to list the hybrids with the dominant parent. This is sometimes difficult to follow owing to lack of agreement among authorities, the same varieties for example being listed by different authorities under *lanuginosa, patens* and x *jackmannii.* Whitehead puts 'The President' under *patens* on one page and under x *jackmannii* on another, 'Nelly Moser' is *lanuginosa* according to Markham, *patens* according to Whitehead. Observation of the way plants grow and when and how they flower is the gardener's best guide to pruning.

The first year after planting all *Clematis* should be cut back to within about a foot of the ground. This will encourage those vital buds below the ground to break into growth, ensure a number of stems and plenty of cover for the support, and prevent damage by slugs or the gardener's hoe being completely fatal. The early blooming *C. macropetala, C. montana* and *C. alpina* produce their flowers on growth matured during the summer and autumn so must be pruned after flowering, tied into place during the summer, and unwanted growth removed in winter. The hybrids producing double rosettes such as 'Duchess of Edinburgh' and 'Belle of Woking' and those with prominent stripes and bars down the sepals, 'Nelly Moser,' 'Barbara Dibley' and 'Edouard Desfosse' bloom early from short side growths. These types can be pruned when the first flush of bloom is over, cutting back the stems below the point where flowers formed. More flowers will be produced as the new growth matures.

The remainder of the hybrids if required to cover a considerable area can have dead and weak growth removed, the remainder trained out to cover bare places. For a smaller area or where it is wanted to spread blooming over a long period pruning must be more severe, one third of the stems being cut back to the node immediately above the soil, one third shortened to half their length and the remainder tipped. Given a plentiful supply of moisture and nourishment during the summer this system will induce almost continuous blooming until frosts intervene with the varieties such as x *lawsoniana,* 'Sensation' and x *henryi.* Plants grown on stakes or stands in the border should be cut back to ground level in May and the supports removed. When growth commences in September twigs about 2 feet high are put in and the main supports returned at the beginning of November thereby removing the only disadvantage of *Clematis,* their untidy appearance in winter.

Clematis are less prone to damage by pests and diseases than most of our garden plants but a few can give some trouble. Leaf roller caterpillars can do some harm to the leaves in the spring but if they get into the leaf axils they will eat out the bud and part of the stem causing it to break. Damage is rarely serious enough to warrant spraying but arsenate of lead, DDT or Lindane would make short work of these pests. Powdery mildew attacks some varieties particularly if they are in a draughty spot. Karathane has proved effective but sulphur is likely to cause damage to the foliage. The complaint known as *Clematis* wilt is the real problem confronting the grower. Intense research has been carried out but apart from the suggestion that the leaf spot fungus *Ascochyta clematidina* may be the culprit by entering the leaf petiole and penetrating and girdling the stem, this wilt has remained a puzzle. The writer has made some observations on this during the propagation and growing of many hundreds of hybrid *Clematis*. Collapse of young plants in full growth lead to the theory that the root system in these cases was not able to keep up with transpiration on a hot day and a point was reached beyond which plants could not recover. Some tender stems were literally cooked at ground level on a very hot day while others had been twisted by wind and unable to function properly. A few cases were found where some organism could have been responsible, entry being gained through damage to the stem below ground or stubs of old growth. Once during layering some very tender stems lightly wounded to induce better rooting, rotted at the point of wounding.

J. L. Russell in a paper read to the Royal Horticultural Society in 1932 gave his opinion that excessive sun is a primary cause of die back usually affecting plants in full growth, exposed to the sun, and during a hot day. He mentions a plant of *C.* x *jackmannii* that collapsed for three years in succession each time when about to bloom. This plant flowered successfully the fourth year and continued in perfect health and vigour for 14 more years. Whatever the cause of *Clematis* wilt, if plants are on their own roots and not grafted specimens the wilted tops should be immediately cut off and new and healthy growth will soon replace it. Adequate shade and moisture at the roots will go a long way towards preventing *Clematis* wilt.

Commercial propagation of hybrid *Clematis* is usually by grafting or cuttings. Grafting is suspected of causing heavy losses of plants in the hands of the customer. Some reasons may be poor unions on unsuitable stocks and the fact that when planted to ensure buds growing from below ground level disease can gain entry through the union. Only when the stem has produced new roots is the grafted plant secure. Cuttings can be struck either in November under close conditions with gentle bottom heat or under cooler conditions in January. Roots form equally well from stems between the nodes or at the nodes themselves but a cutting with two nodes is most likely to be successful. A cut is made $\frac{3}{4}$ inch below the bottom node, the stem is slit up to the node and

the lower leaves removed. The leaves from the top node are reduced to about two leaflets and the prepared cutting is given some rooting hormone. A mixture which has proved very successful is indole butyric acid 50 ppm, and boric acid 50 ppm, in which the stems are soaked for 12 hours. Cuttings taken in January by this method can be successfully rooted in a sandy mixture, given light shade and a cover of glass or plastic. A jam jar will give good results for half a dozen cuttings. When rooted the cover can be gradually removed and the cuttings lined out in a sheltered position in the spring. Growth usually comes from the bottom node, the top part of the cutting dying back during the winter.

By far the most satisfactory and reliable method of propagation is by layering. Provided stock plants are established to provide an ample supply of vigorous new stems, many new plants can be raised from a few square yards. In an area less than 10 square yards the writer has produced 25 first class saleable plants and about 60 small plants for lining out as well as enjoying a mass display of lovely blooms.

Layering can be started on a warm day when growth is about two feet long. A trench about three inches deep is made and the stem gently bent down into it serpentine fashion, one node up and one down. The last six inches should be turned up at right angles to encourage further growth. After about 10 days a further 2 feet of stem should be available and the layering can proceed about 2 feet at a time to a total of 8 feet if a very vigorous variety is being used. Important considerations are to keep the growing point upright and to operate on a warm day or the stem will snap. When layering is completed the stem must be well staked and it will grow on and flower in the autumn. When lifted in May it will be found that a strong root system has developed below the end growth and usually roots will have been produced on each node pushed down to the bottom of the trench. A node with even one root below it will soon make a strong plant if lined out or potted up. It would be an advantage to everyone wanting to purchase *Clematis* if nurserymen would adopt this method of propagation and so produce much superior plants to the weakly specimens normally available. Hybrid *Clematis* can be lifted and transported bare rooted as easily as roses but they must not be allowed to dry out and the stem should always be firmly supported by a light stake.

Varieties of the large flowered hybrid *Clematis* have been in short supply for so long that the gardener has had very little choice. Most of the varieties appearing in catalogues are the hardiest and easiest to propagate but the lists will extend again as new varieties brought into the country are grown into stock plants and propagated. Before restrictions were placed on their importation large quantities of cheap plants were brought in but a *Clematis* less than 2 years from a cutting is a delicate subject and losses were very heavy. Two year old plants from reputable growers in England are not too difficult to establish and for the private gardener consignments up to £10 in value can be imported subject only to quarantine regulations.

The following is a list of reliable early flowering varieties requiring light pruning only:—

'Barbara Dibley': Reddish violet deeper bars. Very free flowering.

'Belle of Woking': Large double mauve rosettes fading to dove grey.

'Duchess of Edinburgh': Double rosettes of pure white.

'Edouard Desfosse': Violet mauve with dark bars to sepals. Largest flower of all.

'Nelly Moser': Pale mauve pink with deep carmine bar. Free flowering and still the most popular.

'Proteus': Pink overlaid purple. Double flowers from the old wood, single from the new.

'Sensation': Deep mauve with wavy sepals.

'Sir Garnet Wolseley': Blue overlaid with bronzy sheen, reddish bar. Very early flowering.

Later blooming types which flower mainly on new growth and can be severely pruned if necessary:—

'Comtesse de Bouchard': Saucer shaped blooms of soft pink, mauve tinted.

'Ernest Markham': Shining wine red, one of the best in this colour.

'Gipsy Queen': Dark purple star shaped flower. Vigorous grower. Pinch out growing tip to induce flowering.

x *henryi*: Pure white flower with dark stamens. Fine flower of perfect shape.

x *jackmannii* 'Superba': Violet blue. Very free flowering.

x *lawsoniana*: Clear mauve, can be grown to a very large size.

'Mrs. Hope': Deep mauve, perfectly formed flower.

'The President': Large violet purple, a beautiful flower on a strongly growing plant.

'Ville de Lyons': Velvet red with edges of sepals a deeper colour.

Smaller flowered varieties requiring hard pruning in winter:—

'Countess of Onslow': *texensis* hybrid with hyacinth shaped flowers of violet purple overlaid scarlet, very striking flower.

x *durandii*: *C. integrifolia* x *C.* x *jackmannii*. Flower of four sepals but of the most beautiful velvet blue. Non-clinging.

'Gravetye Beauty': *texensis* hybrid. Rich deep red—flower more open than 'Countess of Onslow.'

'M. Koster': Rosy pink flowers in mass.

'Minuet': Cream centred flowers with a broad band of purple on the tips of each sepal. Very free flowering.

PLANT HUNTING IN NEW CALEDONIA (1)

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

For a long time one of my ambitions had been to do some plant collecting overseas and when early this year the stimulus provided by a friend's intended visit to New Caledonia roused me into making definite plans, that ambition was realised. The friend, Allan Cookson who is a well known Canterbury mountaineer, in a weak moment volunteered to help me collect plants if I happened to be there during the time he was on vacation, and so accordingly my trip was planned for April. Plans were quickly formulated, plane bookings made, my rusty and limited French received an intensive do-it-yourself refresher course and on April 8th I boarded the T.A.I., D.C.4 at Whenuapai and set off for New Caledonia.

About 5 hours flying brought us over the coral reef which surrounds the island and a few minutes later we were flying over the savannah country which dominates the island's vegetation and the plane was circling round to land at Tontouta airport. During the war Tontouta was a vast American base; however, nowadays there is little to remind the traveller of its wartime occupation. The humid heat which greeted me when I stepped from the plane was an instant reminder that I really was in the tropics and I immediately began thinking of the days to come. Having been passed through the customs control I boarded the 'bus for Noumea, some 30 miles away, and sat back to enjoy the scenery along the road. Allan was waiting for me in Noumea and took me to the hotel at Anse vata beach which was to be my base in Noumea for the duration of my stay.

Before continuing further it may be appropriate to give a few details about New Caledonia. The island of New Caledonia is approximately the same size as Canterbury, being about 250 miles long and 30 miles wide. It is 1,000 miles north-west of New Zealand and is situated within the tropics, lying between the Tropic of Capricorn and Lat. 20°S. The temperature generally ranges between 60°—94°F. (average 68°—81°F.) and even on the tops of the higher mountains seldom drops to 32°F., while humidity is generally high. In winter it occasionally drops to 53°F. at night, the average annual temperature being 74°F. January to July may be classed as the wet season. However, rainfall is often variable and at times, in the dry months may be heavy. The west coast has the lowest rainfall, about 41 inches per annum, the east coast being the wettest with the region from Mt. Humbolt to Yate in the south having 120 inches or more of rain per annum. The terrain is very hilly and mountainous with the chaine centrale dividing the island along its length. Mont Panie in the north is the highest peak, being just over 5,200 feet, while the majority of the mountains are from 3,000—5,000 feet high.

The western side of the island is mainly covered with a savannah type of vegetation while on the eastern side the savannah vegetation is not so pronounced and there is a more tropical type of rain forest. The forest line commences at about 1,300 feet and most of the mountain tops are covered with a humid cloud forest. Throughout the island there are large areas of serpentine scrub (Maquis Serpentineux) and smaller areas where the ground is so heavily mineralised that the only vegetation is a few scattered shrubs (Terrains nus). Mangrove swamps are common along the west coast and provide ideal breeding grounds for mosquitoes.

The flora of New Caledonia is of particular interest to the botanist particularly on account of the large number of peculiar endemic forms, and also on account of its relationship with New Zealand and Australia on one hand and the Palestropic element on the other which unites it with the Malaya-Indionesian region. In fact I found it a most peculiar mixture being one moment strongly reminiscent of Australia, the next of New Zealand and then suddenly it would become quite tropical. The flora is very rich and altogether there are about 2,000 different species of plants.

When it became known that I was going to New Caledonia I received several requests and what was originally a busman's holiday began to assume the status of a full scientific expedition. At the request of Dr. J. B. Hair of the D.S.I.R. Botany Division I agreed to try and collect speciments of certain rare Podocarps which he required for cytological work. This proved to be most fortunate because it brought me into contact with M. Corbasson the director of the Department of Eaux et Forets and M. Chevalier, both of whom were exceptionally kind and helpful. In fact they helped me to visit places which would have been otherwise very difficult.

The first two or three days in Noumea were spent becoming orientated, making plans to tour the island and swimming in the pleasantly warm waters of Anse vata Bay.

Noumea is a cosmopolitan town, a mixture of old and new colonial French, which is situated on a small peninsula in the southern portion of the island, and in many ways quite a fascinating town. There is a large native population and in addition to the local Melanesians there is quite a mixture of Javanese, Tahitians, Wallisians, Chinese and a few others, all of whom have been brought in at various times to augment the local labour force. A large fleet of mini-buses provides an efficient transport service and a very convenient means of getting around the town and it is a system which could well be carried out in New Zealand.

Arrangements were made to hire a car and we planned to leave on the following Tuesday. However, the non-arrival of our vehicle delayed our departure until the Wednesday afternoon. In the meantime I had been busy contacting M. Corbasson, and several trips, which would enable me to obtain some of the rarer plants, were arranged for our return from the north of the island.

Finally everything was arranged and on the Wednesday after lunch we started out for the far north of the island. The road north goes past Tontouta airport and just a few miles north of Tontauta a *Grevillea* in bloom caught my eye and the first collecting stop was made. This *Grevillea,* probably *G. heterochroma,* grows up to 12 feet high and has 3—4 inch long racemes of white flowers. It was growing in a scrub of *Melaleuca leucadendron* (Niaouli) and *Acacia spirorbis* (Gaiac) under which grew sundry plants such as *Lygodium articulatum, Baeckea pinifolia, Scaevola* sp., *Gahnia* sp., and several grasses and ferns. Unfortunately in this locality, as with many others on the west coast, the mosquitoes were of a vicious nature and they made such stops rather uncomfortable. From Tontouta the road wound through farmlands and Niaouli country and after crossing a high pass we came down into the Boguen Valley and arrived at Bourail just after dark.

Bourail is about 106 miles from Noumea and is the largest town of any size apart from Noumea. Although Bourail is the second largest town on the island it is still quite small and has something of that sleepy old world charm which seems to be characteristic of many French towns and villages. Mons. and Madam Bresil, our hosts at the hotel, were very hospitable and at short notice set before us a gargantuan meal which seriously taxed our capacity.

It was after dinner while sitting on the terrace that the value of being able to speak French was brought home to us. We were talking with our hosts explaining the purpose of our visit and upon learning that I was searching for plants, M. Bresil, who is a bulldozer contractor during the day, offered to take us to a native village back in the hills where he was working and arrange for two native guides to take us into the bush to collect plants and for Allan to hunt the native pigeon. And so accordingly we arranged that when we returned to Bourail the following week, M. Bresil would take us out to the village. In the morning plants already collected had to be sorted and packed and after having a look around the town we departed for the north.

At first the road wound through a fertile river valley but after a few miles rose up onto higher country where Niaouli savannah predominated. For mile upon mile we drove through the white trunked Niaoulis, the road occasionally dipping down into a gully which was usually marked by a richer vegetation. Near the Cap River a stop was made to have a look at the vegetation in one of these gullies. One of the conspicuous plants was a species of *Pandanus* which grew right along the edge of the stream. A small *Freycinetia* sp. grew in mats along the water's edge and some plants of *Pteris ensiformis* were collected.

The huge mining trucks carting nickel ore down to the coast became more numerous on the road and upon the hills the great red scars which typify the open-cast mining of nickel became a common part of the landscape. From Poya to Pouembout the Niaouli country continued with patches of Gaiac (*Acacia spirorbis*) on the drier country and in the

wetter situations *Casuarina*. It was in one of these patches of *Casuarina* forest that a beautiful *Crinum* species was found. This was probably *C. asiaticum* and produced large heads of pure white, very sweetly scented flowers. Between Pouembout and Kone there were numerous coffee plantations and the country appeared to be much more fertile. Most of the bridges around this region were of peculiar design and were set so low in the water as to be half bridge and half ford. Indeed from the evidence of past floods it appeared that at times they must be covered by several feet of water. A bit further along the road we stopped to photograph a very picturesque native village which lay between the road and the sea. However, the hordes of mosquitoes which quickly gathered around explained the very smokey fires in the huts and dispelled our visions of the idyllis life we imagined the natives would lead in such a village. A few more miles brought us to Voh and then another 20 miles over mostly open country and we arrived at Ouaco which is about 109 miles from Bourail.

Ouaco is situated on a small promontory and consists of a meat works and a few houses and huts for the staff. We stayed there for the night with an old war-time friend of Allan's and early next morning we set out for Poum at the northernmost part of the island. About 25 miles from Ouaco the road forked and we turned inland and almost immediately started climbing into some hill country. Around an old mining area named Chagrin we stopped to examine the serpentine maquis and collect plants. This scrub although superficially similar to some types of Australian scrub was quite different to anything I had previously encountered. Not only were many of the plants quite unknown to me but the general appearance of them was so different from anything I knew that it was almost impossible to hazard a guess as to their relationships.

Growing along the banks of the creek was a species of *Metrosideros* which much resembled our *M. umbellata* in foliage. It is possibly *M. operculata*. A small *Blechnum* L.M. 53 (possibly *B. orientale*) grew along the stream and a yellow flowered shrub which could have been a *Hibbertia* sp. was very attractive. A large *Leucopogon* species was easily recognisable and various species of *Araliaceae* were quite common.

Further on in the vicinity of Oune the road wound across Niaouli uplands and at times dropped into river valleys where there were patches of tropical jungle along the rivers. There I encountered the first plants of *Raphidophora neo-caledonica* a high climbing aroid somewhat like a *Monstera* and it is by the latter name that it is known to the islanders. However apart from that and a *Piper* sp. (probably *P. austrocaledonicum*) there was not much of interest. One plant which did catch my eye was *Flagellaria neo-caledonica*, a tall climbing plant, somewhat like a giant reed, which uses the tendril-like leaf tips to hold on to other plants. Its habit together with green leaves and white farinose stems made it quite ornamental. In the Niaouli scrub where it tended to be rather boggy the climbing fern, *Lygodium reticulatum*, was very abundant and on a ridge where the Niaolis gave way to Terrain,

IN MEMORIAM

JOHN HOUSTON, O.B.E.

WILLIAM KERR DALLAS

WITH DEEP SORROW WE RECORD THE PASSING OF TWO DISTINGUISHED AND HIGHLY ESTEEMED MEMBERS OF THE INSTITUTE, AND HEREBY PAY TRIBUTE TO THEIR ABIDING INTEREST IN AND ASSIDUOUS ENDEAVOUR FOR ITS WELFARE AND ADVANCEMENT.

JOHN HOUSTON, O.B.E., LL.B., A.H.R.I.H. (N.Z.), of Hawera, Dominion President, 1955-1962, *passed away at New Plymouth on 20th June. His passing has taken from our midst one who endeared himself to all members of the Institute by his outstanding qualities of leadership. During his seven years of office as Dominion President, Mr. Houston brought a rare dignity into the performance of his duties—a dignity which is reflected in the growth in stature of the Institute. During that term the strength of his leadership and the unifying influence of his marked personality were an inspiration to the local District Council, where Mr. Houston served also as President for more than ten years from its inception.*

Mr. Houston was a man of wide personal interest in the affairs of Pakeha and Maori peoples. It is therefore not surprising to learn of the long and noble service he has rendered to many public bodies and organisations within the Dominion. Appreciative recognition showed itself in this regard with his becoming an Officer of the Most Excellent Order of the British Empire. In recognition also of his outstanding service to horticulture, the distinction of Associate of Honour was conferred upon Mr. Houston in 1960.

WILLIAM KERR DALLAS, A.H.R.I.H. (N.Z.), N.D.H. (N.Z.), *of Wellington, a former Dominion President, passed away suddenly and unexpectedly at his home on 15th June. Although a man of quiet and reserved disposition, Mr. Dallas possessed a profound knowledge of the activities and affairs of the Institute, which has been a source of great strength to the Dominion Council over the long years of his association with it as a member up to the time of his death. A professional horticulturist of considerable ability and knowledge, Mr. Dallas was formerly Director of Horticulture of the Department of Agriculture up to his retirement from the civil service. Throughout his lifetime, Mr. Dallas maintained the close link with horticulture. For almost a quarter of a century he was actively associated with the administration of the affairs of the Institute.*

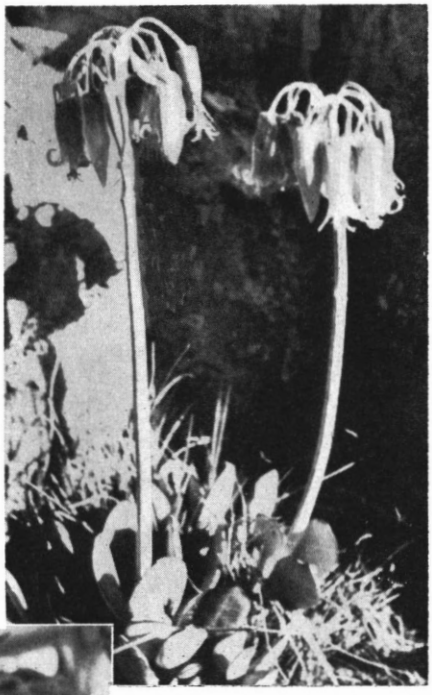
In 1929, Mr. Dallas qualified by receiving the National Diploma of Horticulture (New Zealand), and in 1950 the distinction of Associate of Honour was conferred upon him. From 1939 he has served on the Loder Cup committee and on the Institute's Examining Board, where he has rendered great and valued service. His sudden passing has called away from us one whose sterling worth cannot easily be measured, and one whose long years of service to horticulture in New Zealand has left an imprint that will not quickly fade.

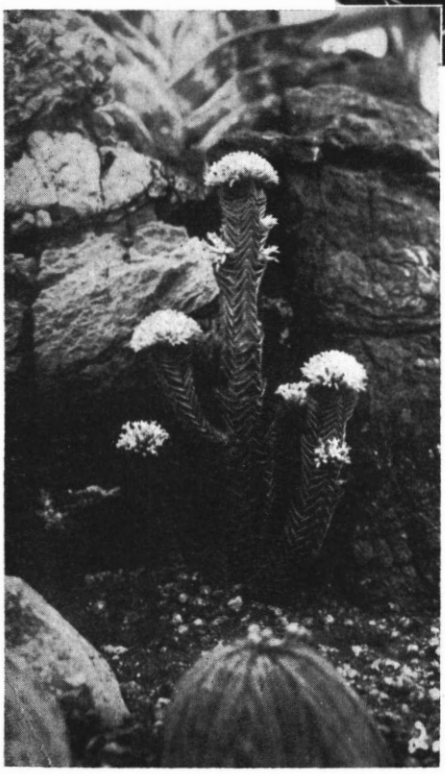
THEIR LIVES HAVE BEEN SPENT AS A LIGHT WHICH HAS SHOWN THE WAY TO OTHERS AND HAVE LEFT US AN EXAMPLE TO FOLLOW. WE VERY SINCERELY MOURN THEIR PASSING; WE ARE THE RICHER IN OUR OWN LIFE'S EXPERIENCE FOR HAVING KNOWN THEM; THEIR MEMORY WILL REMAIN FRESH AND SWEET IN SPITE OF THE INEVITABLE PASSAGE OF TIME.

OUR CONDOLENCES ARE WARMLY EXPRESSED TO MRS. HOUSTON, AND TO MRS. DALLAS AND FAMILY.

Cotyledon orbiculata

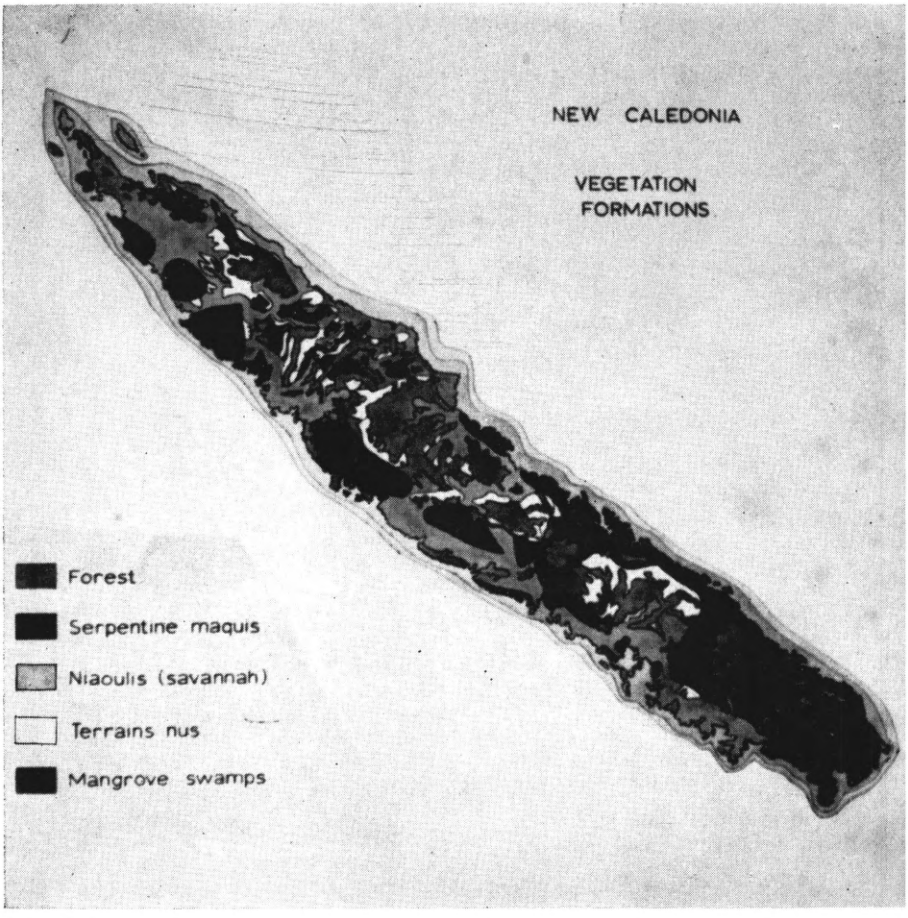
(see page 305)



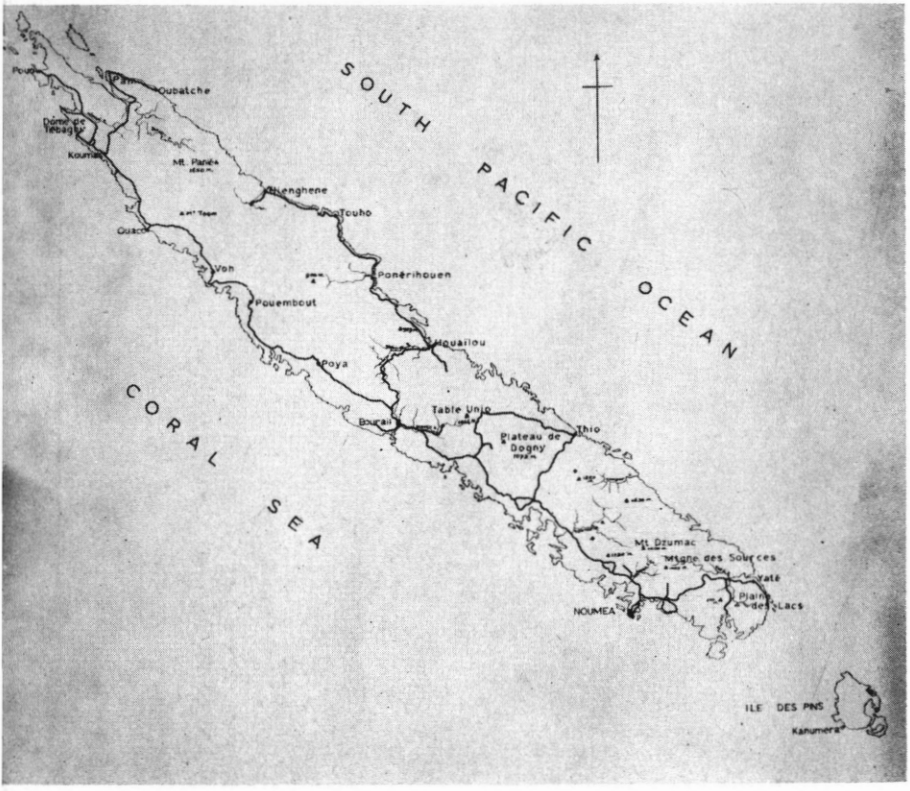


Crassula archeri

(see page 305)

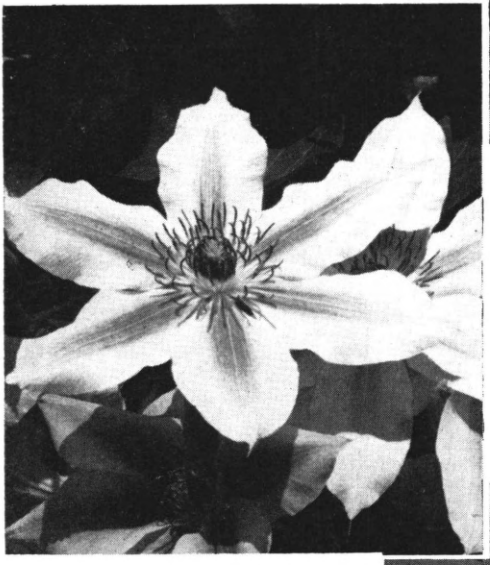


Plant Hunting in New Caledonia (see page 320)

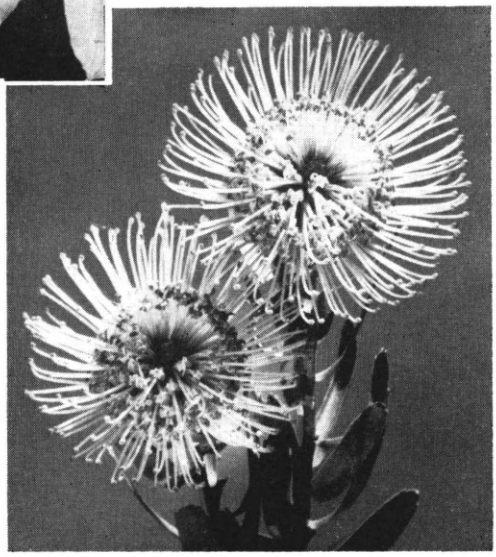


Plant Hunting in New Caledonia (see page 320)

Leucospermum bolusii
(see page 525)
(Photo Douglas Elliott)



Clematis 'Nelly Moser'
(see page 316)
(Photo Douglas Elliott)



Leucospermum tottum
(see page 326)
(Photo Douglas Elliott)

Dracophyllum verticillatum was encountered. This is a small species, in foliage very similar to our *D. menziesii,* but the elongated, terminal raceme (1 foot or more) of white flowers placed it in a different group to any New Zealand species.

Poum is a small settlement at the end of the main road and consists of the gendarmerie, school, a few huts and the 'hotel.' The 'hotel' which consisted of two corrugated iron buildings, one the store and office and the other the kitchen and dining room, would probably be looked at askance even in the most out-of-the-way part of New Zealand, however, the excellent meal we had there was quite incongruous with the appearance of the place. Around the shore the dominant tree apart from the coconuts was *Acacia simplicifolia* which has large oval phyllodes and deep yellow flowers. Underneath the palms *Acacia farnesiana* formed impenetrable thickets about 10—12 feet high.

Returning from Poum later in the day we stopped near Oune to look up at the Mine Tiebaghi which was our destination that evening. The Dome de Tiebaghi is a large hill about 2,000 feet high situated between Oune and the sea and contains the biggest chrome mine on the island. Access to the mining village on the top is gained by means of a very steep road which starts at the port of Paagoumene and goes almost straight up the side of the hill. We arrived at Paagoumene at dusk and after enquiring the way started up the hill. Our little '2 horse' Citroen took the hill without any hesitation and about 15 minutes later we arrived in the village and sought out our host, Mr. Rodda the assistant mining engineer.

The next morning dawned very fine and clear and we were rewarded with a fine view over the country we had traversed the previous afternoon. After a quick look around the village we bade our host goodbye and started down the hill. From the top there was a breathtaking view of the coastline with Paagoumene immediately below and the unruffled blue sea stretching out to the thin white line of the reef some miles out. Just down from the top we stopped to see what the local serpentine maquis contained and in this dry and rather sparse scrub I was rather surprised to find tree ferns thriving. It is presumably a *Cyathea* sp. (L.M. 301) and while more common in the gullies it seemed quite at home among the hot sunny rocks. Another member of the *Flagellariaceae, Joinvillea elegans* L.M. 48, was quite striking with handsome plaited leaves and terminal heads of fluffy white flowers and would make quite a good pot plant.

We stopped for lunch at Koumac and after sampling the wonderful island hospitality at one or two places on the way we arrived back at Ouaco. In the morning I was laid low with an attack of dysentery and Allan had to drive most of the way back to Bourail. Towards evening some fortuitously provided anti-dysentery pills began to take effect and by the time we arrived at Bourail I was ready for a light meal. M. and Mme. Bresil were very pleased to see us back and after dinner we made plans for our trip into the hills the next morning.

(To be continued.)

LEUCOSPERMUMS

DOUGLAS ELLIOTT (New Plymouth).

During the past few years leucospermums have become very popular amongst New Zealand gardeners and it is likely that more species are grown here than in gardens in other parts of the world.

They are easy to grow provided they have perfect drainage and an open sunny position. The flowering season extends from September to November and the strong wiry flowers last a long time either on the plant or in a vase.

Belonging to the *Protea* family, the *Leucospermum* resembles the *Telopea* in its flowers and the *Leucadendron* in its leaves.

The flowers are without petals and the showy part is the strong wire-like style. The colours are very pretty in soft shades of yellow, orange, and crimson.

The best known is *L. reflexum* which was the first to be introduced over 30 years ago. It differs from the others in the way the styles straighten after they are about a week old and eventually lie parallel with the long straight stem. In this second stage the flower head has an entirely different appearance so that you might think, seeing it on its own, that it was a distinct species. The colour is mainly orange-red. The leaves, covered with silky down, are silvery-grey and closely set along the stems.

The mature plant is thickly branched, clothed with leaves to ground level, and 8 to 10ft. high and as much or more in width. A good specimen will bear over 300 blooms each season.

Sometimes the first buds rot because rain-water or dew lodges in them. For this reason the plant flowers better in a windy position where the branches are shaken and the water is thrown out.

L. reflexum soon became so popular that other species were imported and though these are less spectacular they are more suited to the small garden because they do not grow so big.

L. bolusii is one of the best with pale orange flowers and greyish leaves. It flowers when small and makes a fine display. I have seen it doing very well planted alone on a sunny lawn.

L. catherinae is distinct in having the flowers arranged in a circle with an open centre. Towards the tip of the style is a sudden kink which gives the whole flower-head an odd mechanical appearance as though it was some kind of wheel. The colour of the newly-opened flower-head is yellow but this changes to apricot with age. As there are often two buds together at the tip of a branch, one opening before the other, there is a bi-colour effect.

L. muirii is a strong grower with rather small orange-yellow flowers on stiff leafy branches. It grows 6 to 8ft. high.

L. nutans is similar to *L. bolusii* in growth and colour. In one catalogue it is listed as crimson but the only ones I have seen have been a sort of pinkish orange, a far cry from such a strong colour as crimson.

L. tottum is a compact grower with light pinkish orange flowers with a red centre. The tips of the styles are also red.

I have not seen *L. album,* a recent introduction with small white flowers in clusters. It is unusual in being scented.

L. lineare is a low-growing bush with long grassy rather untidy leaves and small orange-yellow flowers. The thin leaves and willowy stems give it a dainty appearance. So far as I know it is not on the market.

Like the closely-related *Protea,* the *Leucospermum,* which also comes from South Africa, has a very poor root system. This means that, although the branches, leaves, and flowers are unusually resistant to wind, the plant will need careful staking when grown in an exposed position.

L. reflexum does well near the coast and is not injured by salt spray. It will also stand 8 or 9 degrees of frost but the other species would probably be damaged by less than that.

NOTES FROM THE AUCKLAND PARKS

G. F. FILLMORE (Auckland)

Following on the long hot, dry summer, autumn and early winter has been heralded with heavy rains and exceptionally mild temperatures. Many of our deciduous trees are still in full leaf, which is very unusual for this time of the year. This is in contrast to the heavy leaf falls which occurred during the late summer, due no doubt, to the dry conditions. Evergreens in particular were the worst offenders in this respect, *Ficus macrophylla,* of which we have large numbers in our parks, shedding much of it's foliage during this period. Many of our trees, planted during the past three or four years, are now also showing signs of the exceptional conditions which we have experienced. The fatalities amongst them are higher than usual, young Kauris (*Agathis australis*) suffering greatly.

On the other hand, trees of tropical origin came into their own, *Sterculia acerifolia* flowering prolifically all round the town. *Stenocarpus sinuatus* (Queensland firewheel tree); enduring temperatures as low as 20 degrees, but requiring a hot dry summer to flower well, is also making grand displays at the time of writing (May). Again, at this time of the year, one starts to think about the planting of trees and shrubs, and although consideration should be given throughout the year, this is very rarely done. Most of us leave the decision of what to put in until we have to do the planting.

To many people there is a certain amount of trial and error in this. Quite often many seasons are wasted trying to get a tree or shrub which will grow to a certain size, in a particular situation, with a habit of growth to fit in with various styles of architecture. Public Parks meet this need, as one can see there just how a plant does grow, ascertain its good points, and also weigh up its vices. Unfortunately it is very difficult to keep collections up to date, but I feel the Department should make every endeavour to do so. Autumn bedding is now practically completed, and under the mild conditions growth has been phenomenal, early planted stocks, pansies and Iceland poppies, etc., already showing colour.

At the Domain glasshouses, displays have been well up to standard. *Cyclamen,* chrysanthemums and fuchias provide the main displays in the cool house, and cattleyas, cypripediums, *Plumbago rosea*, gesneras, plus the numerous foliage plants such as *Dracaena* var., *Dieffenbachia* var., *Alocasia* var., *Philodendron* var., *Peperomia* var., etc., in the Tropical House. Also making their appearance are pots of poinsettia, these being a little earlier than usual, although in sheltered positions outside they are already in flower. Still creating interest in this house is the giant water lily *Victoria amazonica* (syn. *regia*). This plant has been successfully grown and flowered by the Department for a number of years, although a break was made last year due to house renovations.

Victoria amazonica was named after Queen Victoria, during whose reign partly because of the size of its leaves, its rapid growth, and the rapidity in which the flowers reach maturity; in the latter case it is possible to observe the actual bursting of the bud and the unfolding of the petals. *Victoria amazonica* is named after Queen Victoria, during whose reign it was brought into England and successfully grown at Kew Gardens. The plant is found growing naturally in still water of about 4 feet to 6 feet in depth in equinoctial America. It is not possible, of course, to provide that depth when growing it under glass here in Auckland, but it has been possible to grow it quite successfully in about 2½ ft. of water. The greatest difficulty with less water is the greater temperature variation, which is really the key to the successful growing of the plant. Once it is growing strongly, water should be kept at between 75° and 80°F. The plant is best treated as an annual, fresh seed being obtained each year. In practice, we have found that it is possible to keep seedlings for two years, by allowing them to become pot-bound in a 6-7 inch pot the first year, planting out during late spring in the second year, to give as long a growing season as possible. Seed takes from 25 to 30 days to germinate, and the young seedlings should be kept at a slightly higher water temperature than is necessary when they are growing strongly. Leaves under glass attain some 6 to 8 feet in diameter, and will support a good sized child standing on a piece of pinex soft board, so as to distribute the weight. Flowers, which appear during February to March are up to 1 ft. in diameter, white in colour turning to a rosy-pink as they mature. The plant always flowers during the early evening and just prior to opening gives off a very strong perfume, strongly reminiscent of pineapple.

Another interesting plant which is in flower at the moment is *Cochliostema jacobianum*. This plant belongs to the *Commelinaceae* and the genus contains but a single species. It comes from the Andes of Ecuador and has delicately scented blue flowers which are crowded at the end of the stalks, the whole being within the orbit of the foliage. Leaves are rich, dark green, edged with a narrow margin of purple and from 1 to 3 feet long. The plant is easily propagated by seed and should be sown as soon as ripe.

Last, but not least, a further plant worthy of mention is *Dichorisandra thysiflora*. This plant also belongs to the Order *Commelinaceae*. The genus comprises a number of herbaceous perennials, containing several beautiful flowered plants, many of which have also very ornamental leaves. *D. thysiflora* is a native of Brazil and has rich dark blue flowers with bright yellow anthers, which form a pleasing contrast.

NOTES FROM THE WELLINGTON BOTANIC GARDENS

I. McGREGOR.

We were fortunate to complete the planting of 25,000 tulips of selected varieties during the best of autumn weather. The newly-bedded polyanthus—Vetterle and Reinelt strains, and Japanese pink and blue shades—have been quick to respond to the mild temperatures. It is worth mentioning that this is the first time plants from polyanthus seed obtained in Japan have been grown at the Gardens. It will be interesting to see how they compare with New Zealand, English and American strains.

No doubt because of the extremely mild weather, *Luculia gratissima* has flowered much earlier than usual, and its abundant clusters of shell-pink blooms are the subject of a good deal of interest. *Hypericum leschenaultii* with its large rich gold flowers has bloomed equally well in the open and semi-shade. *Cotinus americanus, Cotinus coggygria* 'Folius Purpureus', *Stransvaesia davidiana,* and *Crataegus pyracantha* produced good autumn colour. They are hardy, need no special conditions and require little pruning.

Much interest is centred around the banana, *Musa velutina,* the finger or sweet banana. This tiny plant came from the Christchurch Botanic Gardens and has made almost phenomenal growth in the Norwood Begonia House. Flowers were produced in early April and are still being produced as the first of the fruits are formed like short, thick, upright thumbs.

Results from the mist propagation units have been most successful, though not without some disappointment with the experimental work. Once again the value of mist propagation has been proved.

The system used is the N.I.A.E. intermittent mist controlled by an artificial leaf. Water supply is controlled by a solenoid valve by means of relays. From the valve a main supply runs the length of the propogating house parallel to the benches. Short auxillary lines branch from the former at three foot spacing, spanning the bench and 20 inches above it. Each branch line is fitted with three nozzles.

The bench is heated by electric wires bedded in coarse sand and the cuttings, boxed in coarse sand, are placed over these. House heat is supplied by thermo-siphon hot water system from an automatic oil fired and thermostatically controlled boiler.

Boxing of cuttings is preferred to direct insertion in a propagation bed for ease of handling of the many types of plants we propagate by this means. Weaning off, hardening, and holding of quickly rooted plant varieties is made easier too.

Approximate average temperatures in the mist house during March and April have been

8 a.m.	12 noon	4 p.m.	Night Minimum
69°F	77°F	75°F	64°F

Maximum temperature recorded 90°F.

Shading has been very slight and ventilation only sufficient to control maximum day temperature during fine, clear weather.

It is recognised that the above figures are far from ideal, largely because a medium has been sought to provide suitable conditions for many plant species in various stages of rooting, and also due to insufficient mist coverage during the warmer weather. It is felt that the second factor could be eliminated by lengthening the period of each mist application (now 2 sec.) rather than increasing the frequency of applications.

Generally speaking, hardening off has presented no difficulties other than finding the space necessary for thousands of rooted cuttings which have been potted on. Increased ventilation and switching to manual control of mist in the propagating house was the first stage. The second stage, after potting on, included further increases of ventilation and manual mist control weaning-off in 7 to 14 days.

Some results from the nursery records are:

	Plant	*Days to Potting*	*Success*
*	*Ceratostigma willmottianum*	23	85%
*	*Azara lanceolata*	53	95%
	Ficus elastica	49	99%
	Ceanothus 'Marie Simon'	54	99%
	Cantua buxifolia	32	58%
	Choisya ternata	40	88%

* These had rooted well much earlier than the time of potting. The holding period did not greatly affect the % success figure.

Two batches of *Tibouchina semidecandra* 'Grandiflora' were inserted, the first group giving 90% success. The second group took twice as long to root and the strike was down to 25% because of inadequate mist coverage.

Cuttings of variegated *Abutilon* rooted twice as quickly under mist than those in a conventional bottom heat propagating pit.

Myoporum serratum rooted readily in about 40 days, the strike being 90%. However, after-potting losses have been about 10% which are attributable to delay in potting on. It is apparent that over-rooted cuttings do not pot on well.

Almost 100% success was gained by using mist propagation for the following subjects in half the time taken by any other means of our experience.

Euonymus radicans 'Variegatus', *Pittosporum* in variety,
Camellias and *Coprosma repens* 'Variegata'.

Plants in which success was 75% or more include *Leptospermum scoparium* and *L. scoparium* 'Nanum' hybrids in variety, *Photinia glabra* 'Rubens', most *Ceanothus* varieties tried, *Magnolia grandiflora*, hebes and veronicas.

Poor results were obtained from grevilleas, *Podalyria calyptrata*, *Polygala myrtifolia* 'Grandiflora' (grandis) and *Adenandra uniflora*.

Controlled experiments in mist propagation in Europe (notably in Holland) produced results showing that optimum temperatures, types of cuttings, rooting media and mist equipment vary considerably for different genera and species. We feel that considering the diversified stock we need to propagate at the same time, the results obtained are good.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

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

For the past few months Christchurch has been subjected to a variety of weather. However, generally conditions have remained good for plant growth. With the coming of the autumn rains at the end of February, and during part of March many plants which had grown little during the summer made good autumn growth. Grass seed which was sown just prior to the rains germinated exceptionally well and conditions were excellent for renovating lawns. Throughout March and April conditions have been very mild and only one or two very light frosts have been recorded to date. Conditions have favoured the development of autumn colour and this year some of the colours have been truly excellent. Also the mild conditions have enabled the camellias of the *sasanqua* group to produce a very heavy crop of blossom. On the week-end of April 16th and 17th a severe southerly storm swept New Zealand and gale force winds brought down much debris from the trees. However, in spite of the intensity of the wind, damage was comparatively light and only one or two large branches were brought down.

The numerous magnificent specimen trees which are planted throughout, are the most conspicuous feature of the Gardens and while local people tend to regard them in a somewhat prosaic fashion, the enthusiastic comments of overseas visitors make us realise that in these trees we have something of which we can really be proud. There is no doubt that the climate of Christchurch whatever else may be said about it, is ideal for growing a wide range of plants and in particular many trees do exceptionally well. Some of the so-called English trees have made exceptional growth, and visitors are quite incredulous when told that as yet no tree in the Gardens is 100 years old.

The first recorded tree planted in the Gardens was the Albert Edward oak which was planted on the 9th July, 1863, to commemorate the marriage of Albert Edward, the then Prince of Wales. It is situated on a small lawn near the Woodland Bridge and is by far the finest specimen of *Quercus robur* in the Gardens. It is now 110 feet in height and has a spread of more than 100 feet. On the same lawn is what is probably the most famous tree in the Gardens, viz. the madrona,

Arbutus menziesii. The date of its planting is unknown, but it was probably some time in the 1870s or 1880s when the Gardens were doing much exchanging of seeds. It is 76 feet high and although the snow storm of 1945 broke away one of its large branches, the shape of the tree is in no way spoilt.

On the Central Lawn is a very fine specimen of the Westfelton Yew, *Taxus baccata* 'Dovastonii', which must surely rank as one of the most symmetrical trees in the Gardens. It forms a beautiful dome-shaped specimen, the weeping branchlets coming right down to the ground, and measures about 44 feet high with a branch spread of 52 feet. This tree with its dark green foliage makes a wonderful foil for the adjacent specimen of *Prunus serrulata* 'Fugenzo' when it flowers in October. Also on the southern side of the Central Lawn is the golden elm, *Ulmus campestris* 'Vanhouttei'. The golden elm is one of the most outstanding features of this part of the Gardens during the summer, and viewed from the Rose Garden it is very conspicuous. American visitors in particular are most vocal in their praise of this tree.

Growing just by the northern end of the Woodland Bridge there is a large box elder *(Acer negundo)* which is particularly attractive in the early spring, when it is covered with clusters of yellow-green male flowers. Although the variegated forms are usually planted in preference there is much to be said in favour of the green form. One little known fact is that the box elder is one of the maples which yield sugar in America.

One tree seldom seen in New Zealand is the Californian laurel, *Umbellularia californica,* which in nature grows into a tree 100 feet high or in exposed situations may be dwarfed into a prostrate shrub. The specimen in the Gardens is in the border on the southern side of the Archery Lawn and is now a tree some 76 feet high. On the Archery Lawn along the southern side there are two fine linden trees *(Tilia europaea* and *T. cordata)* and on the northern side, in addition to the row of stately *Sequoiadendron giganteum,* there are the Himalayan white oak *(Quercus incana)* and the cork oak, *Q. suber.* Both of these are now trees 70-80 feet high.

Two other species of oak are worth noting. The first is the magnificent specimen of the Turkey Oak, *Quercus cerris,* on the Potts Lawn. It rises on a tall clean trunk to the height of 95 feet and has a spread of 71 feet. The diamond-leaved oak, *Q. obtusa,* is a very uncommon species and there is a handsome specimen in the Playground which is easily recognised because of its broad symmetrical head. This oak which comes from the S.E. of U.S.A. is almost completely evergreen, the old leaves falling in the spring as the new foliage expands. Apart from its beautiful shape the most outstanding thing about this oak is the young foliage, which is bright red and seen with the afternoon sun shining through it the tree appears to have a glowing halo.

On the lawn south of the Stafford Lawn are several species of *Eucalyptus* of which the most arresting is *E. delegatensis.* Although still a comparatively young tree it has a height of 100 feet and the trunk is 6 feet 8 inches in diameter. The present indication is that it will eventually be the tallest tree in the Gardens, the Monterey pine, *Pinus radiata,* by the Tea Kiosk with a height of 135 feet being the present holder of the title.

Since the remarkably quick growth of *Metasequoia* was first observed, various gardens throughout the world have claimed to have the biggest and best specimen of it in the world. However, while making no such rash claims, one of the specimens of *Metasequoia glyptostroboides* is nonetheless a very fine young tree. It is situated on the lawn in front of the Townend House and when measured recently had a height of 35 feet and a diameter of 7 inches. Nearby on the small lawn on the eastern side of the Cuningham House is a handsome specimen of the western red cedar which is very well shaped and clothed with foliage right down to the ground.

People often mistakenly refer to *Magnolia soulangeana* as the tulip tree. However, the true tulip tree, *Liriodendron tulipifera,* is a noble tree of large dimensions and the one growing by the Art Gallery is no exception. It has a height of 75 feet with a trunk 2 feet 8 inches in diameter and during the early summer is conspicuous with its orange and greenish flowers.

An article of this nature is not long enough to deal fully with all of the notable trees in the Gardens. However, before finishing, mention must be made of the cut-leaved beech, *Fagus sylvatica* 'Laciniata' growing on the Armstrong Lawn which is now a shapely tree some 55 feet high.

Although winter is coming quite a number of interesting plants may be seen by those who care to explore the various pathways. In the *Erica* border the various winter flowering heaths such as *Erica* x *darleyensis, E. mediterranea* and its varieties and *E. carnea* varieties. On the Pine Mound *Erica canaliculata* will be in flower and, nearby, *Crataegus pubescens* with its bright yellow fruits will be attractive until the end of July. Another *Crataegus* which retains its fruits well into the winter is *C.* x *lavallei.* In the Australian border several species of *Grevillea* and *Correa* will be in flower while in various parts of the Gardens the winter sweet *(Chimonanthus praecox)* and witch hazel *(Hamamelis mollis* and *H. japonica)* may be seen in flower.

NOTES FROM THE DUNEDIN BOTANIC GARDENS

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

The natural flora of New Zealand has always been of intense interest to botanists, although its comparative lack of vivid colour and size of individual flowers has denied it a prominent place in gardens in which such spectacular characters are desired. Its value is in its many striking characteristics, and its uniqueness as a plant association,

which may be accounted for by its having developed, until recent years, in complete isolation from other countries. Its links with plant-life of bygone ages, the giant members of some of its families, the juvenile and adult forms in others, as exemplified by tree-ferns, celery-topped pines, mountain lilies, cabbage trees and lancewoods, create the scientific interest.

In many overseas gardens, however, particularly in Great Britain, Europe, U.S.A., the few New Zealand plants which can be successfully cultivated are greatly valued and keenly sought after. Owing to climatic conditions, unfortunately, many of our choicer plants—in particular those from sub-alpine regions, and from the warmer parts of the country—are difficult to establish in those places. Mention of the successful flowering of some particular New Zealand plant is often made, with pride, in overseas horticultural periodicals by gardeners in those countries. It is because of this interest, both horticultural and scientific, in our native plants that we in New Zealand should do our utmost to foster their growth, or, to quote the inscription on the Loder Cup '—to encourage the protection and cultivation of the incomparable flora of the Dominion'.

In the Dunedin Botanic Gardens there is more space devoted to the growing and display of native plants than to any other collection of plants. Although there are many specimen native trees scattered through the 60 acres, and patches of original bush still standing, the main planting of native trees, shrubs and herbaceous plants is to be found as a geographical area in the Upper Gardens. This section covers several acres, and includes borders for different genera, in particular *Olearia, Senecio, Coprosma, Hebe, Myrtus, Pittosporum, Nothofagus* and *Metrosideros.* In addition, there is a scree garden, a *Celmisia* border devoted to podocarps or New Zealand conifers. There are also various beds and borders of the more ornamental trees and shrubs, including those forms with coloured and variegated foliage, as well as horticultural varieties.

Although not growing so luxuriantly as in their own localities, many of the North Island trees and shrubs are well established. Prominent among these are *Metrosideros tomentosa* (pohutukawa), *Metrosideros robusta* (North Island rata), *Vitex lucens* (puriri), *Knightia excelsa* (N.Z. honeysuckle), *Macropiper excelsum, Agathis australis* (kauri), *Cordyline indivisa.* Those trees which create the best effect with their blooms are the three ratas—*Metrosideros lucida, M. robusta* and *M. tomentosa*: *Hoheria sexstylosa* and *H. populnea* (ribbonwoods), *Gaya lyallii* (mountain ribbonwood), *Sophora tetraptera* and *S. microphylla* (kowhai), and *Fuchsia excorticata.*

Of the shrubs which make good garden plants, *Pachystegia insignis, Corokia cotoneaster, Pomaderris elliptica, Clematis paniculata, Drimys colorata,* are outstanding. The genera *Olearia, Senecio, Leptospermum,*

Hebe, Notospartium and *Pittosporum,* also provide a wide range of colourful and desirable plants. Perhaps the most attractive subjects of all are to be found among the herbaceous plants, for example, *Ranunculus lyallii, Myosotidium nobile, Stilbocarpa polaris, Coxella dieffenbachii, Aciphylla, Celmisia* and *Raoulia* species.

These are unfortunately more demanding in their requirements than the trees and shrubs, but are well worth the extra care and attention needed for their successful cultivation. For the rock garden enthusiast, there is a wealth of the smaller sub-alpine plants from which to choose.

As yet the hybridist and plant-breeder do not appear to have found much to interest them for the raising of improved garden hybrids, with two important exceptions. In the genera *Leptospermum* and *Hebe,* however, some very fine hybrids have been raised and named. Among them are to be found some of our most colourful native plants.

REPORT OF EXAMINING BOARD.

On behalf of the Examining Board, I have pleasure in submitting the following Report.

(1) **Meetings:** The Board met on five occasions during the year, with an average attendance of 10 members.

(2) **Syllabus of Examinations:** The Examinations Syllabus of the Institute includes the following Diplomas and Certificates:—
(a) National Diploma in Horticulture—N.D.H. (N.Z.)
(b) National Diploma in Fruit Culture—N.D.F.C. (N.Z.)
(c) National Diploma in Apiculture—N.D.Ap. (N.Z.)
(d) Certificate in Vegetable Culture—C.V.C. (N.Z.)
(e) Certificate in School Gardening—C.S.G. (N.Z.)
(f) Seedsman's Certificate—S.C. (N.Z.)

(3) **National Diploma in Apiculture:** The prescriptions for this examination have now been gazetted and candidates may now be examined. There is quite an interest being shown in the Honorary Diplomas which the Board may grant to practising apiculturists, subject to certain strict conditions as to age and length of practical experience. Such honorary diplomas may be issued only during the period of two years from the gazetting of the prescriptions.

(4) **Applications for Registration for Examinations:** During the year applications were received from new candidates for the following examinations:

		1960
National Diploma in Horticulture	26	(31)
National Diploma in Fruit Culture	3	(3)
Seedsman's Certificate	1	(3)
Certificate in Vegetable Culture	1	(—)
Certificate in School Gardening	4	(1)

(5) **Special Examination Prize Awards:** These are shown in the report on the results of the 1961 examinations.

(6) **1961 Examinations:**

(1) **Results:** these are appended separately.

(2) **Statistics:** the following tables will be of interest. 1960 correspond-figures are shown in parenthesis.

N.D.H. Examinations	**Junior**		**Intermediate**		**Diplomas**	
Number of Entries	(69)	56	(18)	21	(25)	17
Number of Passes	(43)	36	(14)	17	(20)	12
Percentage of Passes	(62.3)	64.3	(77)	81	(80)	70
Average Marks (passes only)	(59)	61.8	(60)	60	(62.2)	65
N.D.F.C. Examination:						
Number of Entries	(4)	7	(—)	—	(5)	4
Number of Passes	(3)	6	(—)	—	(5)	2
Percentage of Passes	(75)	85.7	(—)	—	(100)	50
Average Marks (passes only)	(58.3)	65.3	(—)	—	(69.5)	61.6

Extra Certificates: It is pleasing to report that two holders of the N.D.H. sat for the Extra Certificate in "Nursery Management" this year. One was successful.

	Cert. in Veg. Culture		**Seedsman's Cert.**		**Cert. in School Gard.**	
Number of Entries	(—)	4	(—)	2	(—)	2
Number of Passes	(—)	3	(—)	2	(—)	2
Percentage of Passes	(—)	75	(—)	100	(—)	100
Average Marks (Passes only)	(—)	55.6	(—)	60	(—)	87

(3) The following candidates completed sections of the examinations this year:

National Diploma In Horticulture:

Junior Examination: L. Baker (Palmerston North), J. D. Butler (Gisborne), G. L. K. Jones (Christchurch), G. D. Mander (Hamilton).
Intermediate Examination: G. C. Jackson (Napier), G. L. Macfarlane (Christchurch), M. W. L. Perkin (Mangakino).
Diploma (final): J. D. Dallenger (Levin).
Extra Certificate (N.D.H.): E. J. Martin (Hamilton).
National Diploma in Fruit Culture:
Junior Examination: J. K. Pick (Hamilton).
Seedsman's Certificate: B. L. Chisholm (Christchurch).

(7) Oral and Practical Examinations: The 1961 examinations were held in Christchurch for all candidates and again the holding of the examinations there proved successful. The facilities and conditions are of high standard and the co-operation of the Director of Reserves and his staff is all that could be desired. This co-operation and the facilities made available by the Christchurch City Council are much appreciated.
The retirement of Mr. M. J. Barnett from the position of Chief examiner in Oral and Practical examinations is here recorded with regret. His outstanding service to the Institute in this capacity over many years is greatly appreciated and cannot be adequately expressed. He continues as a member of the Board and his valuable advice and experience are therefore still available to the Institute and the panel of examiners.

The help received from the Canterbury District Council in billetting and extending hospitality to candidates and examiners attending the Oral and Practical examinations is sincerely appreciated.

(8) **Official Date for Receipt of Applications for Registration by Students:** This date has now been officially altered from 31st March to 30th April and the Examinations Prescriptions stand amended accordingly.

(9) **Constitution of Examining Board:** At the request of the Dominion Council the Minister of Agriculture formally approved an increase from 13 to 16 in the number of the Board.

Messrs. H. G. Gilpin (Christchurch) and J. A. Hunter (Auckland) who were associate members of the Board, were thereupon confirmed full members and Mr. A. J. Healy was invited to accept appointment to fill the vacancy caused by the death of Mr. C. M. Smith. It is sincerely regretted that Mr. Healy was not able to accept appointment on account of his pressing duties.

(10) **Fees payable by Examination Candidates:** The fees payable by examination candidates are being reviewed, in the light of present day costs, and it is expected that some increases must be adopted.

(11) **Theses:** The Board has considered, and agreed, to invite candidates to submit their Theses in duplicate, one copy to be retained by the Institute for reference purposes.

(12) **Standard of English:** The Board is concerned at the standard of English (including spelling) used by examination candidates. It has been resolved by the Board that, in future, English grammar will be a consideration to be taken into account by examiners in marking examination scripts.

(13) **Public Service Commission:** The question of adequate recognition of the Institute's National Diplomas within the Public Service has been fully reported in the Dominion Council's Annual Report.

(14) **Tuition for candidates for Seedman's Certificate:** The absence of tuition facilities for candidates for the Seedman's Certificate examination has come before the Board. Correspondence courses could be arranged if there were sufficient candidates forthcoming.

(15)..Associate Examiners: It is very desirable to have a good panel of examiners available from which appointments can be made each year as required. There have been occasions when it has not been easy to engage examiners in certain subjects. To assist in this, present senior examiners are invited to select associates whom they can initiate into the ways of the Institute's examinations.

(16)..Personal:

(1) It is with sincere regret that the Board records the passing of Mr. C. M. Smith. Tribute is paid to his outstanding scholarly achievements and contribution to horticulture. His wide knowledge and experience were most valuable to the Board.

(2) The Board expresses its good wishes to Mr. J. H. Glazebrook as he takes his departure to return to England. His help on the Board since March, 1959, has been much appreciated.

(17) **Acknowledgments:** The Examining Board acknowledges with sincere thanks the help and assistance received from all who have been associated with the conduct of the examinations this year.

(a) The Panel of Examiners.

(b) The Christchurch City Council Parks and Reserves Department for facilities and assistance with Oral and Practical examinations.

(c) Honorary supervisors at centres for written examinations.

(d) The Director and officers of the Department of Agriculture and Horticulture Division.

(e) The Canterbury District Council for hospitality and help given to Oral and Practical candidates in Christchurch.

On behalf of the Examining Board,
H. D. GORDON,
Chairman.

1961 EXAMINATIONS.

The results of this year's examinations conducted by the Royal New Zealand Institute of Horticulture in Horticulture, Fruit Culture, Vegetable Culture, School Gardening and Certificate for Seedsman, both written and practical, have been released. The oral and practical examinations were conducted at Christchurch which is now the permanent examining centre for all candidates in the oral and practical examinations.

A total of 61 candidates presented themselves for examination and the percentage of passes obtained was 65%.

The J. A. Campbell Memorial Prize for the candidate gaining the highest average marks in the Intermediate section of the examination was awarded to G. L. Macfarlane (Christchurch) and the David Tannock Memorial Prize for the highest marks in Oral and Practical Stage 3 examination to A. D. Jellyman (New Plymouth). M. J. Duffield (Christchurch) was awarded the Junior Memorial Prize for the Oral and Practical stage.

The subject in which passes have been gained by candidates are indented by code numbers as follows:—

Bookkeeping (2), horticultural botany (3), plant protection stage 1 (4), oral and practical stage 1 (5), principles of botanical classification (6), horticulture stage 1 (7), special subject (8), oral and practical stage 2 (9), horticulture stage 2 (10), plant protection stage 2 (11), oral and practical stage 3 (12), thesis (13), horticultural economics (14), fruit culture stage 2 (15), extra certificate (16), soils and soil management (17), principles and practice of plant protection (18), seedsman's written (19), seedsman's oral and practical (20).

Auckland:

Buchanan, B. L. 3, 4,
Curtice, R. L. 9,
Fillmore, J. W. F. 8, 9,
Hood, P. K. 3, 4,
McKenzie, B. L. 4,
Otto, J. W. S. 12,
Price, R. A. 3,
Walker, C. M. 10,

Bulls:

Eales, M. R. 17, 18,

Christchurch:

Bell, D. C. 10, 11, 12
Boffa, F. D. 8,
Chisholm, B. L. 19, 20,
Duffield, M. J. 3, 5,
Gill, R. C. 3, 5,
Hollow, G. M. 3, 5,
Jones, G. L. K. 2, 3, 4, 5,
McCartney, E. P. 5,
Macfarlane, G. L. 7,
Millichamp, R. F. 10,
Paterson, G. 8,
Scadden, W. J. 3,
Thompson, P. S. 3, 4, 5

Dunedin:

Scherp, L. A. 7,
White, R. R. 10,

Gisborne:

Butler, J. D. 5, 6, 7,

Greymouth:

Jackson, O. H. 5,

Hamilton:

Devlin, P. J. 3, 4,
Mander, G. D. 2, 3, 4, 5,
Martin, E. J. 16,
Perkin, M. W. L. 6, 7,
Pick, K. J. 4, 5,

Levin:

Broadbent, N. D. 18,
Dallenger, J. 13,
Van Der Mespel, G. J. 9, 11

Nelson:

Wells, I. M. 2, 3, 4, 5,

New Plymouth:

Jellyman, A. D. 10, 11, 12,
Laurenson, J. B. 12,
Robinson, W. 7,
Whittle, L. F. 3, 5,

Palmerston North:

Baker, L. 6, 7,
Jackson, G. C. 7, 9,
McLeary, W. H. 5, 6,

Tauranga:

Wallace, F. B. 3,

Wellington:

Cook, W. C. 5,
Feenstra, C. 4,
Finkelstein, Alma, 5,
Harris, R. G. 3,
Lokum, L. 3,

RECOGNITION BY THE PUBLIC SERVICE COMMISSION OF THE NATIONAL AND FRUIT CULTURE DIPLOMAS IN HORTICULTURE

Following representations by members of the Dominion Council of the Royal New Zealand Institute of Horticulture and personal approaches by Public Service members, the Public Service Commission has given additional recognition to the National Diploma in Horticulture and the National Diploma in Fruit Culture for time off for study and rewards for study.

Those who complete their examinations in the Public Service can be paid a double increment on grant of £35 under P.S.C. Manual Instructions K 70-77.

The recognition of their qualifications should not only encourage horticulturists in the Public Service to study for these examinations, but also signifies that the Public Service Commission recognises the high standards required to gain these qualifications.

PUBLICATIONS RECEIVED

TURF CULTURE, Published by the New Zealand Institute for Turf Culture, P.O. Box 347, Palmerston North, 1961.

For sports grounds, golf links and ornamental lawns turf, in a form suitable to the environment, is essential. But it is only through years of experience in its culture, on a wide variety of soils, that authoritative recommendations can be given. This important and very thorough treatise on turf culture deserves the careful study of all green-keepers and amateur gardeners, for it is based, as stated in the Foreword on 'the basic knowledge gained over the years on the science and practice of turf culture.'

The various sections have been compiled by authorities on the subject. The two initial chapters have been written by Mr. C. Walker and comprise the initial stages of cultivation and levelling, seed bed preparation and rates, times and methods of sowing. Then follows methods of growth control, manuring, acidity control, drainage and irrigation. Towards the end of the book Mr. Walker contributes a valuable General Information section, comprising useful tables covering the many requirements of those cultivating turf. Mr. E. H. Arnold writes comprehensively on soils, their composition and suitability for producing fine turfs for various purposes, also the types of soils suitable for coarse-turf playing areas and the conditioning of soils, with notes on the renovation of greens. In a further section Mr. Arnold deals with the insect pests that attack turf and their control. In collaboration with Mr. R. M. Brien, the same writer deals with the various diseases of turf, their causes and control. The effect of various fertilizers on turf, their use and application, with a mixing chart are dealt with by Messrs. E. A. Madden and G. S. Harris, who also contribute a useful section on weed identification. Herbicides, their place in turf culture and their general use, with information concerning the various weeds and their susceptibilities are subjects comprising a section by Mr. L. J. Matthews.

Greens composed of weeds may appear to be somewhat unorthodox, but the fact remains that bowlers in certain areas prefer a weed surface. An interesting section on this subject is by Mr. S. M. J. Stockdill. All bowling green areas benefit by the addition of wind breaks, shelter trees and ornamental shrubs and plants. The whole question is handled in a very capable manner by Mr. J. P. Salinger.

In the reviewer's estimation not the least valuable portion of this handbook is the section dealing with the identification of plants used in the production of turf for various purposes and under various conditions. One section deals

with grasses and no less than fifty-one different kinds are described fully giving name and distribution, habit, habitat and general information concerning its use or possibilities for making turf. This section includes such familiar items as fescue, buffalo grass, paspalum, Kikuyu grass, etc. The second section deals with legumes, largely clover and trefoil.

This excellent manual is completed by a section dealing with various green keeping equipment and the use of each.

THE LILY YEAR BOOK 1962, published by the Royal Horticultural Society, London, England. (Illustrated in colour and half tone.)

That such a specialised genus as the *Lilium* should be given a special annual publication is essential and that published by the R.H.S., now in its quarter century, occupies the highest place. In the 1962 issue there is an article of particular interest to Southern Hemisphere growers, written on behalf of the Australian Lilium Society, by J. M. Piesse and Dr. R. M. Withers, M.B.B.S. This deals with 'Lily Hybrids in Australia', and gives details of the most recent developments. There is an interesting chapter on *L. rhodopeum*, from Bulgaria, which appears to be new to cultivation. Another dealing with 'Lilies of the *nanum* and *oxypetalum* Group at Branklyn' by Dorothy L. Renton will also appeal to the specialist. In addition to notes from America there are chapters that will appeal to the less advanced grower. In addition to lilies, *Fritillaria, Colchicum, Trillium, Scilla* and *Chionodoxa* are featured.

THE RHODODENDRON AND CAMELLIA YEAR BOOK 1962, published by the Royal Horticultural Society, London, England. (Illustrated in colour and half tone).

The chapter that intrigued the reviewer most in this excellent publication, now in its 16th volume, is that entitled 'Some further Notes on Hybrids of *R. yakusimanum*' by P. Wiseman. The influence of this useful species is already being felt among some of the latest hybrids, whose features are a dwarf and compact habit and a colour range that now embraces cream, pink and rose to salmon red. A number of the articles are of only local interest, but rhododendron growers are always interested to have news of rhododendrons and camellias in the famous garden at Caerhays. Edmund de Rothschild writes on 'Some late-flowering Rhododendrons'. For the enthusiast, as well as the ordinary gardener, an extension of the flowering season would be most welcome, and it is difficult to understand why a variety like 'Polar Bear', that flowers very late in the season, is not seen more often in gardens.

PROCEEDINGS OF THE CONFERENCE ON THE FLOWER GARDEN, published by the Canterbury District Council of the Royal New Zealand Institute of Horticulture. Price 5/- from the District Secretary.

This publication consists of a series of papers given at the Conference on the Flower Garden held on 13th September, 1961. It is a worthy successor to the *Proceedings of the Conference on Ornamental Trees and Shrubs for the Garden* reviewed in *New Zealand Plants and Gardens* in December, 1960. Each paper is written by an acknowledged authority and the whole publication constitutes a valuable guide to professional or amateur. The first section deals with the constructional work involved in garden making with a particular eye on the flower garden; this is dealt with thoroughly by Mr. G. G. Henderson, Assistant Director, Christchurch Parks and Reserves. Mr. D. Combridge, the well known horticultural broadcaster gives good guidance on the siting of the house and garden. Mr. M. J. Barnett, former Director of the Christchurch Parks and Reserves gives readers the advantage of his vast practical knowledge in the construction and maintenance of lawns.

The second session opens with some very sound recommendations by Mr. H. G. Gilpin, Director, Christchurch Parks and Reserves, on bedding displays for the home garden. Mr. K. H. Marcussen, Horticulturist, of the Department of Agriculture contributes some valuable information and recommendations

on the planning and planting of a mixed flower border. The rock garden, dry walls and how to construct them and what to plant is dealt with concisely but thoroughly by Mr. S. Challenger.

'More Aspects of the Flower Garden — As They Appeal to Me' is the title of the final paper given by Mr. J. Watling, President of the National Rose Society and the Canterbury Horticultural Society. In it he deals with the important subject of plant association, the merits of a wide number of flowering plants, together with some unusual genera and special emphasis on bearded iris, which he has classified under colour.

Altogether a publication no gardener can afford to be without, especially for the modest price asked.

DISTRICT COUNCIL REPORTS

NORTH TARANAKI.

In January an enjoyable and instructive day was spent when members visited the Stratford Mountain House and Plateau on Mt. Egmont. Alpine and other native plants in flower provided much of the interest, as well as scenic views. In February a number of the most interesting gardens in the district were visited, thanks to the hospitality of their owners.

A visit of members to the newly formed Taupo District Council took place in March and all were impressed by the hospitality accorded them and the enthusiasm and keen interest in matters relating to the Institute and horticulture in general. During the month Mr George Smith, chief propagator of Messrs Duncan and Davies Ltd., gave an address on 'Some Aspects of Commercial Plant Propagation'. In it he described the continual experiments being carried out, with changing techniques year by year. Mr Smith commented on the favourable climate of New Zealand that made possible the cultivation of a very wide range of plants. There was a keen demand for these among gardeners. His firm propagated over 2000 species of about 300 genera, all requiring varying treatment. He describes the new mist method of propagation and likened it to an over large edition of the old 'sweat box' method, where the glass was lifted frequently and wiped clean of moisture and the cuttings given a fine syringe regularly. Polythene film is now being used in place of glass. The old propagating knife has been replaced with surgical scissors. With few exceptions the cuttings are wounded deliberately. Hormones are now considered rather as an aid than a necessity. The Taranaki climate favours autumn, rather than spring planting and the medium most promising for rooting cuttings and starting young plants is mainly sawdust, sand, pumice and peat. Time, rather than actual humidity control is used for regulating mist and water.

The speaker for the April meeting was Mr G. G. Atkinson, chief ranger for the Egmont National Park Board. 'A Visit to the Poor Knights' Islands' was his subject, illustrated by some excellent slides. These islands are situated off the east coast of New Zealand, 15 miles from the mainland and 26 miles from Whangarei, their name being derived from their shape suggesting two knights in armour lying on their backs. The islands are now a bird sanctuary, including the native pigeon, red parakeet, native hawk, shear-water, mutton bird. They are also the native habitat of the tuatara lizard. The islands have completely reverted to their natural state and are uninhabited by man. The soil is very fertile and a large worm is present a foot long and about 2 inches in diameter. The bush is composed mainly of pohutukawa, karaka groves and kawakawa, including some rare species, not found on the mainland. A great variety of spiders, some very large, find their home there.

TAUPO.

The recently formed branch had very successful functions during 1961. The most successful perhaps, was the field day at Opepe, organised by Mr C. J. Cuming.

Mr. Cuming has a great interest in Opepe Bush and mention has been made concerning the part played by him in having the bush set aside as a reserve.

Opepe is a very valuable stand of natural bush and is notable because of the many mature trees and of its closeness to Taupo.

The predominant large tree is *Dacrydium cupressinum* (rimu); followed by *Podocarpus spicatus* (matai). Five species of native pine have been noted in the area, the two previously mentioned: *P. hallii*; and *P. ferrugineus* (miro); *Libocedrus bidwillii* (pukautea).

It has been reported, that Mr. H. Hill had found a rare saprophite at Opepe, which bears the name *Bagnisia hillii*. Specimens have been found on few occasions and Mr. E. S. West says he has seen the plant and explains it as having a very pleasant perfume. *Dactylanthus taylori* is also known in the area; this woody plant has been found as a root-parasite on *Neopanax arboreum*.

A letter has been written to the Commissioner of Crown Lands, asking on behalf of the branch for an administrative part in the recently gazetted reserve. The Commissioner has replied it is proposed to set up a Domain Board to be formed of interested parties.

Pests and Diseases Affecting the Garden. The guest speaker, Mr. E. E. Toleman of the Department of Agriculture, Hamilton, gave an informative lecture at the Taupo-nui-a-tia College on Monday, 19th February, at 8 p.m. Mr Toleman dealt very precisely with the subject and spoke of the origin of some chemical sprays, the method of application of them—he pointed out to members the fact that many tend to use the wrong equipment for spray application. An important point was drawn from the lecture; that is, the caution required in the handling and storage of dangerous sprays.

Visiting Branch Members. The Taranaki District Branch visited Taupo and arrived at the Edgewater Lodge on Saturday, 10th March during the late afternoon. The Branch, led by Mr. V. C. Davies, was interested in seeing some noteable Taupo gardens and the Scenic Restoration Scheme run by the Department of Lands and Survey. During the morning of the 11th March, the members visited Huka Falls, Wairakei geothermal area and Aratiatia, finally arriving at the Lands and Survey Native Plant Nursery.

During the afternoon, Taranaki members were conducted round the gardens of Messrs West, Cuming and Young. The members appeared impressed with the wide range of plants which are grown in the three gardens.

Mr. West has a remarkable collection of exotic and indigenous plants, which have been planted over a number of years.

Mr. and Mrs. Cuming are very keen to develop their garden, using a good portion of native plants—Mrs. Cuming being quite a specialist with ferns.

Mr. K. Young's garden embraces a fine planting of native plants, in the main young and looking very healthy. The planting is on a natural east slope and is well set-up with walks through the bush.

Waihaha Bush. Mr C. J. Cuming conducted a delightful field day at the bush on Saturday, 17th March. The bush is on the western side of Lake Taupo and 45 miles by road from Taupo.

The interesting feature about the bush is the abundant seedling regrowth, which makes a distinct pattern after the milling of the large trees. *Aristotelia serrata* forms a large proportion of the regrowth material. The feature of the day was the *Podocarpus ferrugineus* of 30 feet tall, cropped with red drupes. *Dendrobium cunninghamii* and *Earina autumnalis* grow in the area and several interesting ferns such as *Dicksonia lanata*.

Landscaping of Public Parks and Reserves. Mr. J. Bennett, N.D.H. spoke on this subject at Taupo Tennis Pavilion on Monday, 16th April, at 8 p.m. Mr. Bennett spoke of the area of land required to serve sport in Taupo and his preference for the English style of plant surround for public parks.

General. The Taupo branch has started the year full of activity. The membership stands at 60.

The Executive are on their toes to build up interest in the functions of the Royal New Zealand Institute of Horticulture (Inc.)

Members of sister branches, may have occasion to pass through Taupo and may care to meet local members or may like to lecture to them. If any institute member is prepared to lecture or may know of someone who would, please contact the Secretary.

The branch has stated its willingness to support the Hawke's Bay A.A. in the campaign to preserve native bush covering the Opoto Maori Block and the Waipunga Valley.

WHANGAREI.

NOVEMBER,

The annual combined meeting, held on Wednesday, 22nd November, in the Gardening Club Hall, in association with the Ladies' Gardening Club, was a red-letter-day for gardeners in Northland, who came long distances and in large numbers to hear Mr. E. Farnell, F.R.I.H. (N.Z.), of Auckland, speak about Gerberas.

Although Mr. Farnell admitted that our own native plants were really his first love, Gerberas were his second, and since he has been cross-pollinating them for 28 years, has grown many thousands of plants, and at the present time has 5,000 seedlings coming along. It was not always possible to grow with success a plant taken from its natural environment, and in the case of the *Gerbera,* most species of which come from South Africa with the climate the opposite to ours—dry in winter and wet in summer, we were unexpectedly fortunate, and he had been assured by a recent visitor from Rhodesia that our Gerberas were better than those in Africa. The first essentials for success were perfect drainage, keeping plants dry in winter and well watered in summer. Soils should be fairly light and volcanic was very suitable. Dig the beds two spits deep and work spent hops, compost and bonedust into the bottom spit. Plants should not be set out until the soil has warmed up, about the last week in October. Before planting work into the top spit the following mixture to enrich the soil: Blood and Bone 1 part, Superphosphate 1 part and Sulphate of Potash ½ part. The deep digging was essential both for drainage and for giving room for roots to go down two feet or more. No manure should be added until the plants had made roots. When Gerberas were lifted and divided their long roots should be cut back to six inches, but it should be noted that plants which were repeatedly divided, deteriorated and fresh plants should be grown from seed. To ensure success, only good seed should be used, freshly harvested and sown at once, otherwise germination was doubtful. Seeds should be sown in boxes 2ft. x 1ft., in a good soil mixture, 100 seeds to the box using a pencil to make holes and setting each seed in with the tip of the parasol showing, the parasol being the feathery attachments on top of the seed.

Mr. Farnell then gave explicit directions for cross-pollinating Gerberas, so that growers could obtain new and better varieties. The single flowers were male and produced the pollen; the doubles were female and produced stigmas. The operation was best done between the hours of 11 a.m. and 2 p.m. Choose a double flower in the early stages with most of the petals unopened in the centre. Find the stigmas—there is a row to each row of petals—take the pollen grains carried on a watch glass, and using a camel hair brush or the fingers, place them on the sticky stigmas. Pollinate one row a day till the rows are finished. Cover the head with a paper bag and take inside to dry off. This should be when the flower had withered.

As Rust was the most serious disease of Gerberas, attention was being given to the breeding of Rust-resistant strains, and to this end yellows were being used. Dithane spray was a preventive, but as White Rust was a systemic disease, it was not a cure. Spraying should be done regularly during October and November, Thrips, Red Spider and Aphides were best controlled by Malathion, sprays given twice at weekly intervals. Growers were advised to choose good plants, preferably in flower; plants with crowns above soil surface and with-hold manure until growth is established. The Auckland Gerbera Society was the recognised authority for registering and classifying Gerberas, and for issuing descriptions of plants. It issued a quarterly bulletin to its members.

LETTERS OF FELLOWSHIP.

During the evening Mr. C. Cates, Chairman of the Whangarei District Council of the Royal N.Z. Institute of Horticulture, presented the Certificate of Fellowship of the Society to Miss Marjorie Maddren, who has for many years been prominent in horticultural activities in Whangarei, particularly in the Whangarei Ladies' Gardening Club, the Daffodil Society, and in the Native Forest and Bird Society.

MARCH

'My Experience with Orchids' was the title of a lecture given by Mrs. Norma Lees, F.R.I.H. (N.Z.), at the March meeting of the District Council. Mrs. Lees said she was rather diffident about offering advice on the growing of orchids, since she was only a novice, but she gave the information which she acquired from the mistakes and difficulties she had encountered in her initial attempts. Her first lot of orchids were bought from a firm in India, and arrived in a very poor condition after their long time in transit by sea. She did not feel any enthusiasm for growing them as some died, but others revived. Resolving to improve her knowledge she visited other growers, joined the Auckland Orchid Society and attended their shows and field days, and so began to fill some of the gaps in her knowledge.

Mrs. Lees then found it extremely helpful to visit various growers and listen to their remarks. There were so many types and kinds that the beginner could be very easily confused. Also every grower had his own pet theories, but from basic requirements, she found it best to try out what you considered best for your own locality. To ensure success get as near as possible to the conditions obtaining in the plant's habitat in air circulation, in air moisture, and in their rooting medium. The ability to compete with our climatic conditions, utter cleanliness in the glasshouse, together with correct fertilising are the essentials of success, and only practice and experience will make the expert.

Potting of orchids is not done until the new roots are formed. This happens after the flowering is over, and there is no difficulty in recognising them. Clean pots thoroughly with a weak solution of Condy's, dry and sweeten in the sun. Have labels ready with date and correct name of plant. Crock the pots about one-third full, and see that the drainage hole is larger than the one provided by knocking out a little more. Various mixtures are used by different growers, but Mrs. Lees uses chopped up bush roots and fine scoria. Pot firmly, using a potting stick, water sparingly and put in the shade till settled. Then follow up with good house care. Open ventilators in the morning and close at night at first, but as days get hotter allow more air. Fertilisers may be used sparingly, only when growth is receptive, and after watering. Cymbidiums may be put out under trees in November and left there until April, depending on the rainfall. Buds show up from February onwards, and watering should be slackened off to allow for ripening of wood in Autumn. Spray for thrips and scale. Buds should be protected from snails and slugs by applying cottonwool to the main flower stalk. Watering must always be done in the morning, and must

not be allowed to lodge in the flower sheaths as it rots them. Orchids must be housed again for the winter, when, after all care has been given they will reward with their blossoms. Mrs. Lees recommended Bruce Hogg's book, *Orchids and Their Culture.*

APRIL

The programme on this occasion was provided by Mr. C. Banyard of Whangarei, who showed us some very well chosen slides of gardens in England, Canada and New Zealand. These were a pleasant departure from the stereotyped selections so often seen, and gave more idea of layout and backgrounds, together with form and colour in trees as well as in foliage and flowers. The rich autumn colour of trees in Canada was particularly impressive, especially against backgrounds of sombre green conifers. The large private garden made in an old quarry might well lead to development of some of the old quarries in or near our own town. Such an effort would call for a great deal of skill and imagination—qualities not usually lacking in our gardeners. It was pleasant, too, to see glasshouses in our own country where a diversity of plants were grown. So, often the fortunate possessor of glass concentrates on special genera, overlooking the multitudes of tropical and sub-tropical beauties which would find equally happy homes there.

We are grateful to Mr. Banyard for the opportunity of seeing such a variety of garden features, such lovely gate-ways, lily ponds, azalea and rhododendron walks, grand trees and spacious lawns. They stimulate our imaginations and help us to improve our gardens.

The Display Table has become a very interesting and helpful part of our programmes. It provides an opportunity for every member to bring along any plant, fruit, flower or foliage which might be of interest to members. Rare plants, are, of course, especially welcome, but any well-grown specimen adds interest and pleasure. Exhibits which immediately drew the eye were outsize blooms of *Celosia cristata*, the crested form of Cockscomb. These were from the Laurie Hall Park. Mr. McLaren, the Superintendent, said that no special effort had been made to produce these plants (all over a foot across) but a little super and blood and bone had been put in the soil before planting. Three natives of interest were shown: *Leptospermum scoparium* 'Martinii' a good pink to red flower; the dainty native heath from the gumlands, *Epacris pauciflora,* and the showy red-berried *Corokia cotoneaster* 'Erecta'. Mrs. McMillan brought a good sample of chrysanthemums of various types, and a lovely bowl of *Cyclamen neapolitanum* added still further to the diversity. The lovely autumn tints of *Cornus florida* vied with the richness of a bowl of roses from the garden of Mrs. Hobson. Mrs. Reynolds provided the commentary.

A DISTINGUISHED BOTANIST VISITS NORTHLAND.

During November last Northland was visited by a very distinguished botanist, Dr. Ronald Melville of the Royal Botanic Gardens, Kew, where he is in charge of the Australian, New Zealand and Pacific collection of plants. He is in New Zealand for six months on a senior research fellowship of the Department of Scientific and Industrial Research, to make as wide as possible a collection of our Native Plants and to discuss their taxonomy—classification and identification—with N.Z. botanists. This is only the third collection in N.Z. for the Kew Herbarium, the last occasion being Sir Arthur Hill's visit in 1927. The first was that of the earliest botanists and explorers. Dr. Melville's visit, then, is one of great significance in New Zealand's botanical history.

During his brief stay in Northland he collected 320 numbers, 5 in each set, and reports that they all arrived back at the Botany Division, Lincoln, in good order. This represents a tremendous amount of work, as each specimen must be

carefully pressed, and notes affixed giving date, locality, collector's name and details of other plants in the area. I accompanied the party on two field trips, after which we worked far into the night attending to the material collected. Of the five specimens in each set, one will go to Kew, one to the Botany Division at Lincoln, others to other herbaria, to be available for research.

While working extremely hard, Dr. Melville has a great capacity for enjoyment. He appreciated the beauty of our Northland scenery and plants and spoke of the joy of meeting, in their wild state, plants that he has for so long handled as herbarium (dried) specimens. He recognised them all in the field even the smaller herbs and mosses.

My one regret was that his visit was so brief. This area is rich in beauty and botanical treasures, of which he was able to see little more than the minimum. A trip to the beautiful islands off our coast, in the perfect weather then prevailing, would I feel, have been a unique and unforgettable occasion for all, and particularly for Dr. Melville. We hope that he may return and accomplish this before he leaves New Zealand.

I found his first visit inspiring, and I am more than ever convinced that an interest in plants, whether it be the simplest form of caring for a few, for their beauty and the pleasure they give, or whether it be the endless seeking for further knowledge that is the pursuit of the horticulturist or botanist, is one of the most rewarding and satisfying things of life.

KATIE REYNOLDS, F.R.I.H. (N.Z.)

Appeal For Bequests

For the past 40 years the Royal New Zealand Institute of Horticulture Inc. has encouraged the improvement of every branch of Horticulture in the Dominion. It has been unsparing in its efforts to preserve our native flora. By its annual examinations, carried out by fully qualified examiners, it ensures a very high standard of efficiency among the younger generation of horticulturists, on whom will depend the maintenance of the beauty of our land, in town and country.

These and other objectives of the Institute, entail a high annual expenditure, and it is suggested that New Zealanders who have the beauty of their country and progress of horticulture very much at heart might care to give financial assistance by a bequest, which might be worded as follows:

'I give and bequeath the sum of £...../...../..... to the Royal New Zealand Institute of Horticulture Inc., and I declare that the receipt of the Treasurer for the time being of the said Institute shall be a complete discharge to my executors, for the legacy hereby given to such Institute.'

Royal New Zealand Institute of Horticulture (Inc.)

APPLICATION FOR MEMBERSHIP

I hereby make application for membership of the Royal New Zealand Institute of Horticulture, Inc., and agree to abide by the conditions and rulings of the Institute.

Enclosed herewith please find the sum of .....
in payment of the first year's subscription.
(Subscriptions become due on 30th September)

Subscription Rates (renewable annually from date of application):

Individuals	£1	0	0
Fellows	£1	10	0
Firms, Societies, Associations	£1	10	0
Non-Member Students (examination privileges only)		10	0
Junior Members (literature excluded)		2	6

PERSONAL DETAILS:

Full Name .....

Address .....

.....

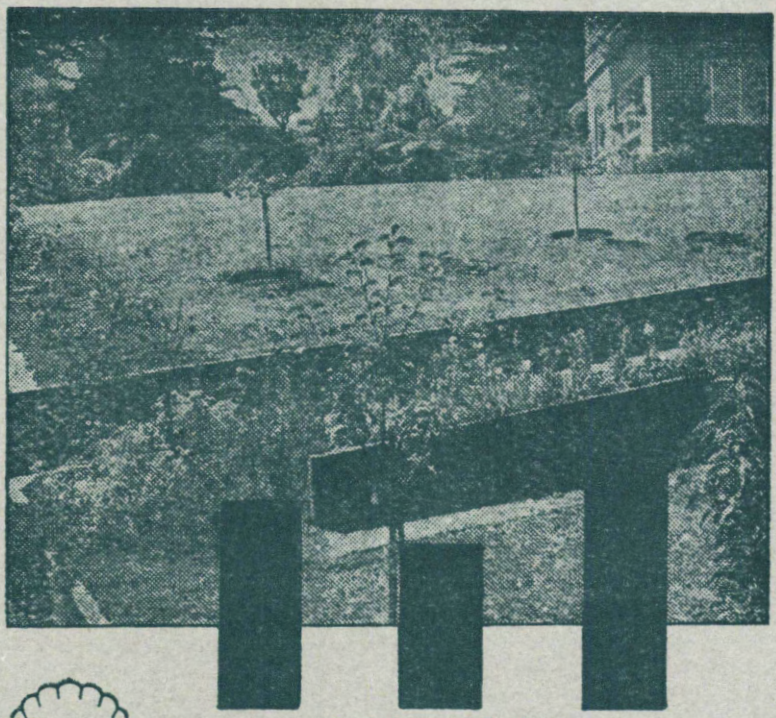
.....

Occupation .....

Date .....

Signature .....

This form should be completed and forwarded with accompanying remittance to The Dominion Secretary, Mr. K. J. Lemmon, Suite 1, First Floor, 10 Brandon Street, Wellington, C.1., or your nearest District Council Secretary.



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THRIPS **SHELL DIELDREX 15,** controls thrips, to give bigger yields with fewer sprayings.

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EEL WORM **SHELL D.D. SOIL FUMIGANT,** gives absolute protection from eel worm infestation.

Aldrex 2, Dieldrex 15 and D.D. Soil Fumigant are Shell insecticides available from your usual supplier.