

VOL. V.

SEPTEMBER, 1963

No. IV.

NEW ZEALAND
PLANTS AND GARDENS



THE JOURNAL OF THE
ROYAL NEW ZEALAND
INSTITUTE OF
HORTICULTURE

(INCORPORATED)

Dominion Secretary:

K. J. Lemmon, A.P.A.N.Z., A.C.I.S., Suite 1, First Floor,
British Sailors' Building, 10 Brandon Street, Wellington.

Correspondence and articles for publication should be addressed to: The Editor, 'New Zealand Plants and Gardens,' Journey's End, Paraparaumu ('phone 154). All enquiries concerning advertisements should be addressed to the Editor.

No articles or photographs contained in this journal may be reproduced without written permission from the Editor.

CONTENTS

	Page
EDITORIAL: HERITAGE OF TREES	137
EXPLORING THE PLANT KINGDOM (Illustrated): R. E. Lycette	138
A YELLOW PARSONSIA: Robert Cooper	144
DWARFS IN THE GARDEN (Illustrated): Douglas Elliott	146
CROCUS CHRYSANTHUS AND ITS VARIETIES: A. W. Anderson, A.H.R.I.H. (N.Z.)	151
NOTES FROM CHRISTCHURCH: L. J. Metcalf, N.D.H. (N.Z.)	156
NOTES FROM DUNEDIN: R. W. Balch, N.D.H. (N.Z.)	159
NOTES FROM PUKEKURA PARK: A. D. Jellyman, N.D.H. (N.Z.)	161
PUKEITI RHODODENDRON TRUST: A. D. Jellyman, N.D.H. (N.Z.)	163
1964 ANNUAL DOMINION CONFERENCE	166
NOMENCLATURE COMMITTEE	167
OVERSEAS EXHIBITIONS	167
PUBLICATIONS RECEIVED	168
DISTRICT COUNCIL REPORTS	168
SUPPLEMENT; LIST OF EXOTIC TREES (Illustrated): S. W. Burstall	175

Articles on subjects of horticultural interest are invited and, if published, will be paid for. All such articles must be clearly typed with double spacing, one side of page only. Although all care will be taken the Editor cannot hold himself responsible for loss of or injury to any material sent to him.

EXTRA COPIES OF 'NEW ZEALAND PLANTS AND GARDENS'
AVAILABLE FROM THE DOMINION SECRETARY,
AT 2/6 EACH, POST FREE.

**THIS PAGE HAS KINDLY BEEN SPONSORED BY MESSRS.
HOPE BROS., CUBA STREET, WELLINGTON.**

NEW ZEALAND PLANTS AND GARDENS

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

Volume V.

SEPTEMBER, 1963.

No. IV.

HERITAGE OF TREES

A great deal of man's love for his native land is based on the charm of its countryside, its vegetation and trees, and its historic past. In the course of urban development the problem is sure to arise concerning which of the existing trees are to be removed and which retained. Too often is insufficient consideration given to this question and there is a public outcry after the damage has been done. The time to deal with questions of this nature is before the crisis of public removal becomes imminent.

A tree that is worthy of retention must be healthy and well grown or, if particularly desirable but suffering from external damage, capable of being restored through skilful surgery. Trees of this kind can roughly be divided into three categories viz. trees with historic associations, trees noteworthy on account of their excellence or rarity, and other trees that may possess what we will call amenitive value. This latter type of tree may occupy an important part of the landscape and may comprise single specimens or groups. The trees may be indigenous or exotic.

The trees in undeveloped areas will probably comprise natives. But there have been cases, in our country, where large plantations, made during the last century, have developed magnificent specimens, including a number of exotics. These plantations would form part of country estates which have come under urban development, and been divided into sections. There is a far too common practice of getting in the bull dozer and 'clearing the decks for action'. This has been the death knell of many a noble tree.

Another form of tree development has been the planned planting of residential areas. Here the right choice of tree for roadside planting is of considerable importance. Of equal importance is the right attention to maintenance from the time of the initial planting. By careful attention to pruning, the application of suitable fertilisers and manures, sensible control of pests and diseases, and that fond attention a good plantsman gives to a tree, a distinctive beauty can be given to all districts where man decides to make his home.

The New Zealand Forest Service has done much to preserve specimen trees throughout the country. In this issue of the Institute's Journal is contained a supplement comprising a List of Noteworthy Exotic Trees classified, for easy reference, under districts and located by Mr S. W. Burstall. In conjunction with Mr Burstall's introduction to this list should be read Mr J. G. Short's Report on the Town and Country Planning Act Amendment, published in the June issue of this Journal, where it will become clear that a real effort is being made to preserve as many of these noble trees as is practical.

All District Councils are urged to note the trees in their various localities that already appear in this list. They are also urged to note any others of especial beauty or historic significance, and see that they are maintained and preserved in the best possible manner. So may we honour that debt we owe to the early planters, and fulfil our own duty to posterity.

G. A. R. PHILLIPS,
Editor.

EXPLORING THE PLANT KINGDOM

R. E. LYCETTE

(Department of Economic Botany, Royal Botanic Gardens, Kew)

A series of articles on the experiences of a young New Zealand botanist in various parts of the world.

THE BUSH BOTANISTS OF SWAZILAND

In the course of my botanical work in southern Africa I stayed for six months in the British Protectorate of Swaziland, collecting plants for several South African botanic gardens and learning at the same time something of the intriguing 'bushcraft' of the Swazi people. Of the numerous localities visited I found that the greatest rewards were to be obtained in a few places among the isolated Lubombo mountains. This article is about one such locality, Abercorndrift, a handful of native huts and derelict 'labour recruitment buildings' scattered along the Usutu River, at the point on the map where Swaziland, Portuguese East Africa and Natal adjoin.

The Lubombo are a range of mountains rarely exceeding 2000 feet, extending in a north-south direction and forming part of the border between Swaziland and Portuguese East Africa. They are remnants of the volcanic activity which occurred about 25,000,000 years ago in the Tertiary period, when vast amounts of lava welled out of the great fissures in the African continent. At first the lavas were acidic and viscid, covering a limited area near to the mouth of the

fissures; later more basic freer flowing lavas poured out completely inundating the solidified acidic lavas, *rhyolites*, and extending far beyond the first extrusion. In time the basic rocks weathered and eroded leaving behind the fertile lowveld soils while the resistant *rhyolites* remained to form the Lubombo.

As may be expected the Lubombo contains small pockets of basic soils: it is in these and along the dissecting river valleys that an interesting vegetation has grown up. Primarily the vegetation consists of plants belonging to the Cape mountain flora, the Lowveld and Bushveld floras, and the East African coastal plain flora, but there are representatives from more northern tropical regions. Some of the plants are endemic to very small areas, but there are comparatively few of these, and the vegetation as a whole consists of well known, well distributed species.

The Swazi people arrived on the Lubombo about 400 years ago. They were one of the 'offshoot' tribes which broke away from the main Bantu migration. In about the year 1750, Ngwane II, a descendant of Chief Dlamini the original leader, led his people then known as the Abaka-Ngwane to a location somewhere close to where Abercorn-drift is now situated. It was during the reign of Sobhuza I, the next king, that the Swazi nation greatly increased its power by systematically attacking and absorbing all the weaker tribes within reach.

Since their arrival on the Lubombo the Swazi people have learned a great deal about their environment; some of the 'elders' of the nation possess a wealth of simple knowledge about their animal and plant co-inhabitants, using it consistently throughout the day.

I arrived at Abercorn-drift in the District Commissioner's Land-rover, driven by his uniformed official driver, and escorted by Constable Lawrence Sifunda of the local Police Command. We pitched the 'tax tent' a structure of very satisfactory proportions, but locally infamous because in the past government officials used it to visit isolated districts and collect the 'taxes'. Its sudden reappearance in the district brought a remarkable and rapid thinning out of the population: all at once the inhabitants of Abercorn-drift had sick relations or dying parents and found it necessary to cross the river into Natal, or cross the fence into Portuguese East Africa. What a great start—for one who depended on the co-operation of the local inhabitants. Hurriedly I disposed of the vehicle and its driver, and Lawrence was forced into some old clothes of mine. After the word had got around that this was not an 'official' visit, the inhabitants returned, all mysteriously summoned back from their ailing and dying families.

When at last curiosity overtook fear, we were visited by some of the men. 'Whatever could an "umlungu" and a policeman be doing here other than on some official government business? The

only people to visit Abercorndrift are police patrols, agricultural officers and native recruiting companies.'

To everyone's amazement the new invasion was perfectly peaceful, and apparently the intruders only wished to gaze at trees and ask ridiculous questions.

When the inhabitants became more confident in me, I handed out stocks of tobacco, sweets and matches, and was given in return gifts of sugar cane, fowls, eggs and fruit: but most important were the offers of assistance. The older men were to divulge their knowledge, while the younger men were to help around the camp. The cook, Mlane Khtembe, was a fine young Swazi, dressed in the tribal cloth which hung loosely round his waist. He wore his hair in true Swazi style, bushy and bleached. To obtain this effect the hair is plastered in a mixture of wood-ash and goat droppings, allowed to set hard, and after several days is carefully cleared of the cast.

Each day we made excursions into the surrounding bush, taking care to travel during the early and late parts of the day because of the oppressive heat near noon. It is always surprising to me how comparatively accurate these 'bush botanists' are. Often their naming is based on incredibly fine detail, and they need to examine at close range to give a final pronouncement. It is natural to assume that greatest attention has been given to the useful plants; most Africans know these, but there are few plants which cannot be given a name. The following examples I have selected from my notes will show the diversity of naming and usage.

At Abercorndrift the inhabitants had constructed their huts from a framework of timber packed with mud, and thatched with various grasses or palm leaves. *Mimusops caffra* (um-Phushana or um-Phushoshana-Swazi) is one of the sources of heavy timber for the uprights and supports etc.; *Grewia flavescens* (um-Siphine), a tree of the river-side bush which produces long straight branches of considerable durability is most suitable for cross members, (and is often used for spear handles). *Dodonaea viscosa* (isi-Thathatha) having similar branching to the latter may also be used for these purposes. It is interesting to note that *Dodonaea* has a very extensive southern hemisphere distribution, and was also used by the Maoris for hut construction. Grasses, the leaves of sugar cane, and in some cases *Phoenix reclinata* (isundu) the 'wild date palm', are used to loosely thatch the roof.

Furniture although extremely simple and usually consisting of stools and head rests, is mainly made from a very serviceable timber, Rhodesian Mahogany, *Azelia quanzensis* (um-kolikoli). Flat bowls for food mixing and storing are made from *Sclerocarya caffra* (um-Ganu); its grey sapwood and pinkish heartwood being light, tough and tasteless, is excellent for the purpose. The bark of um-Ganu is used in the treatment of skin ailments and the plum-like yellow fruits

*A young Swazi clad in traditional clothes and holding a ceremonial axe made from *Grewia flavescens* (um-Siphane).*

(See Page 140)



O u r Landrover passing through typical Lubombo scenery on the way down to Abercorn-drift.

(See Page 140)





*My Swazi helpers enthusiastically gathering the woody fruits of *Oncoba spinosa* (um-tongwane) for use as snuffboxes.*

(See Pages 138-143)

The author (middle) with two helpers. The shot gun was a necessary precaution against black mambas, particularly common in the area.



yield a refreshing pulp. By fermenting the fruits an alcoholic beverage is made. Fortunately the fruiting season lasts only a few weeks as one may often encounter Africans reeling homeward after a session on the 'utshwala'. My informants told me of frightening encounters with drunken elephants which had over indulged on the fermenting fruit. I could well imagine that the vast interior of an elephant's stomach would make an excellent brewery.

So that cattle can be harnessed to implements or wagons, yokes are made almost universally from *Schotia brachypetalata* (u-Vovovo) a light but very durable timber. The cattle are kept at night in a kraal. If this is temporary it may consist of a circle of thorn branches of various species of *Acacia* (um-Kaya, um-Kayana, um Dongola), or if it is to be more permanent poles cut from any convenient tree are driven into the ground. When inside, the cattle may be engulfed with smoke created by burning the green leaves of *Clausena* sp. (um-Nuke tambiba), whose odorous leaves are attributed with powers of fattening. After the death of a child the cattle are 'smoked' with the leaves of *Sutera* sp. (Lubaga), to prevent the spirit of death entering the kraal and causing fatalities. This does not mean that cattle are more valuable than children: in fact female children are worth cattle themselves and the widespread African custom of lobola, still operates, when the girl is marriageable she is paid for by the groom—per so many head of cattle. A chief's daughter may be worth thirty head of cattle.

At the time of birth the crushed bulb of *Hypoxis* sp. (in-Kofe) is added to water and taken by the mother to alleviate pain and discomfort. This is important as in the African way of life the birth of a child is rather incidental, and shortly after confinement the mother is back on her feet wielding her hoe in the fields, the baby strapped comfortably in a blanket on her back. Early in life a charm may be placed around the baby's neck, or small cuts administered to the body. If the fontanelles do not close within a certain period a concoction of the roots and leaves of *Euclea* sp. (um-Ndelanyama zane) is applied.

The African people are afflicted with no mean assortment of illnesses and injuries and still resort to their traditional treatments. These cannot always be considered inferior to the bottle of medicine produced for the ailing 'umlungu', and do on occasions relieve the condition. It should always be understood, however, that relief is not always cure, and cure is not always possible, nor properly effected and some treatments may either mask or aggravate the complaint. On occasions I have tried the safer and less discomforting potions and have found a degree of success in the treatment of simple and short-lived complaints.

Emetics form perhaps the principal treatment not only for direct stomach upsets, but for a whole host of rather unrelated complaints. Most of the emetics are obtained from the bark of trees, leaves and roots of various plants. I cannot believe that these emetics are always

the primary factor in bringing about vomiting, as usually the mechanical action is inducted by a feather or such like, and as vomiting is often carried out regularly, perhaps once a day, it is extremely unlikely that it is due to voluntary muscular action.

I remember once when Lawrence informed me of his daily routine of vomiting he said:—

‘Often Europeans take a morning drink of water with fizzing powder. I clean myself out this way’.

On one occasion I discovered two of my helpers chopping wildly at a root with great gusto. This was obviously a prize and I hastened an enquiry:—

‘This plant, Nkosi, is very good. From its roots we make a potion to improve the appetite’.

‘Well, that certainly sounds useful’ I added, as I had in mind the whole buck we had confiscated from poachers the previous day. ‘How do you use it?’

‘Simple, Nkosi, when you feel full you drink the preparation, and vomit’.

A cure for deep seated pain is based on the assumption that pain when shifted to the surface area leaves its embodied position and disappears with healing of the lacerations. I do not know which would be more preferable to endure, especially after watching a treatment performed. The plant used for the treatment was, *Dicoma zeyheri* (isi-hlabane), a low growing herb which produces a spiky thistle-like flower head in mid-summer. The roots were taken, bent, and ground to a fibrous paste, and blood from the lacerations made over the pain area was mixed in, this concoction was wiped into the wound with vigorous rubbing movements; the spiky flower head was grasped firmly in the hand of the ‘udokotela’ and dabbed quite unmercifully on the wound. I am sure there was sufficient surface pain to subdue any internal troubles, at least temporarily. The patient’s face gave that away!

Great importance is stressed on the power of spirits, both good and evil, and there are numerous potions for their attraction or repulsion. It is widely believed that among other things health, marital harmony, longevity and success or failure in hunting and fishing are all in the hands of spirits. If evil spirits are causing a particularly long run of misfortune, the roots of *Euphorbia* sp. (um-Hlohlo) are obtained; placed in a bowl and covered with hot water. The rising steam is allowed to circulate around the body within the confines of a blanket and it is hoped, causes the evil spirit to leave and seek embodiment elsewhere. By then drinking the potion the patient is immunised against the spirit’s return.

When the young man wishes to take a wife or attract a particular girl of his fancy, he may wash his body in a potion of Macwashi (a

leguminous herb) roots and water, or even select an emetic capable of making him internally clean. Love potions are as diverse as they are numerous varying from simple treatments to elaborate rituals, depending largely on the complexities of the relationship.

Thunder and lightning, both unexplainable phenomena to most Africans, are quite rightly considered as far beyond control and therefore to be feared and respected. Through experience, Africans have come to recognise certain plants which can apparently withstand direct contact with lightning. These plants are not always of the same species, but I noticed among other things they are either geophytic (with a bulb or corm etc.), succulent or herbaceous, i.e. plant forms capable of withstanding the fire which may follow a lightning strike. Whenever an African kraal is visited it is usual to find somewhere close to the hut, little groups of these plants, even if there is little else growing.

On the occasions when some unfortunate traveller is caught in the middle of exposed ground during a thunder storm, he is likely to search for something like *Vernonia* sp. (Indlangushoshane) and pull it bodily from the ground, take pieces of the roots, chew them, spitting small pieces first to the left then to the right, and at the same time crossing his body with the upper twigs of the plant. This is considered to protect him against being struck by lightning.

From the few uses mentioned it can be seen that recognition of the plants as well as knowledge of preparation, concoction and administration are essential in the practising of African medicine. It should be remembered that some plants have been attributed uses as a result of centuries of primitive experimentation, and although these 'bush' cures are sometimes effective, any adaptation to western medicine requires a lot of refinement and preparation. Many of the drugs available to us today, are refinements of 'bushcraft medicine'. The rituals performed during preparation and administration have their equivalent in our society and may be well performed by most doctors when at the bedside.

There are certain uses of plants which although not physically harmful, can prove undesirable. This can best be explained by reference to the 'fattening of cattle by engulfing the kraal in smoke'. There can be no possible way in which this can help; it is far better to grow a few more fodder crops which, although involving work, are proven successful.

Nowadays with more and more Africans coming into close contact with western influence, a lot of the European's habits, clothes, food, medicine, knowledge and beliefs replace those traditional to Africa. In some cases this is good, in some it is bad, but now that Africa is being governed more and more by its own people, it is up to them to select and modify the advantages we can offer; and it is up to us to seek out more of the knowledge and benefits Africa has to offer us.

A YELLOW PARSONSIA

ROBERT COOPER (*Auckland Institute and Museum, Auckland*)

Mr V. C. Davies, O.B.E., of New Plymouth, has sent me some specimens of handsome, yellow-flowered *Parsonsia*, found by the Hon. E. Corbett on his farm at Okato, Taranaki.

The genus *Parsonsia* belongs to the *Apocynaceae*, or Dog-bane family, and includes perhaps fifty species, found in South-East Asia, Australia, New Zealand and the Pacific Islands. Most of them are woody climbers. The two New Zealand species are endemic to this country. Dr. H. H. Allan, in Volume 1 of the *Flora of New Zealand*, 1961, separated the two native species in the following key:

1. Flowers 6-8mm. long; calyx distinctly less than the corolla-tube; anthers not or hardly reaching beyond the throat — *heterophylla*.
2. Flowers hardly up to 4mm. long; calyx nearly equalling the corolla-tube; anthers distinctly exerted beyond the throat — *capsularis*.

Allan described the flowers of *P. heterophylla* as white to yellow and the flowers of *P. capsularis* as white to yellow to dark red.

The flowers of the Okato plant are 5-6mm. long when dry, 6-7mm. long in a fresh state. The calyx is 1.5-2mm. long and markedly shorter than the corolla tube. The anthers protrude slightly from the throat. On these characters the Okato plant belongs to *P. heterophylla*, but in view of the abundance of flowers and their rich yellow colour I propose to name it as a variety.

As long ago as 1855, Joseph Hooker, of Kew, in Volume 2 of the *Flora Novae-Zelandiae*, (Botany of . . . the 'Erebus' and 'Terror'), commented on the variability of *Parsonsia* (and *Gentiana*) in New Zealand. He remarked that more numerous specimens of these plants increase the difficulty of distinguishing them, and give a still greater idea of the variability of each. Pages might be filled with descriptions of their forms, but to little profit, as it appears to me . . . I am far from convinced that there is more than one species (of *Parsonsia*). Such genera cannot be well investigated without selected suites of specimens from the same individual, and from different individuals in the same localities; also a fair selection from all the localities the species inhabits should be examined.

The confusion regarding the New Zealand forms of *Parsonsia* has not been resolved in the hundred years that have elapsed since 1855. In Volume 1 of the *Flora of New Zealand*, 1961, Dr. Allan remarked that *P. heterophylla*, though clearly separated from *P. capsularis* by floral, remains ill-defined as to vegetative characters. No form has had its life-history adequately studied . . . Allan described briefly four provisional groups based on leaf-form in adult plants, and mentioned three other names of uncertain value, *P. variabilis* Lindl., *P. albiflora* Col., and *P. macrocarpa* Col., which might represent portions of this complex. Under *P. capsularis*, Allan listed varieties *capsularis*, *rosea* (Raoul) Ckn., *ochracea* Col., *tenuis* Simpson & Thompson, *parviflora* Carse and *grandiflora* Carse, and remarked that both species are highly polymorphic and hybridism between the species and varieties appears to be frequent.

I have compared the specimens from the Okato plant with dried material in the Cheeseman herbarium, but I am unable to match it exactly with any of the varieties of Colenso or Carse. I do not wish to add to the botanical confusion, but the Okato plant will be a worthy addition to the cultivated native plants of New Zealand, and merits a horticultural name.

The *International Code of Nomenclature for Cultivated Plants*, 1961, provides that a description of a new cultivar (variety) name must be published and accordingly the following notes have been prepared:—

Parsonsia heterophylla A. Cunn. 'Okato yellow'

A woody climber with coriaceous, lanceolate leaves. In the specimens received, these are 3-4cm. long x 1.5 cm. wide, borne on petioles 5 mm. long.

Remarkably floriferous (e.g. there were over 400 flowers in 19 axillary and terminal cymes on a branchlet 27 cm. long).

Flowers fragrant, corolla tube, sap green (62/3); leaves, saffron yellow (7/1 on the R.H.S. colour chart).

Origin: farm of Hon. E. B. Corbett, Okato, Taranaki.

Parentage: unknown.

Illustration: The flower is similar, in its characters and proportions, to those of *Parsonsia heterophylla* A. Cunn. shown in tab. 135 of the *Illustrations of the New Zealand Flora*, 1914, by T. F. Cheeseman.

Voucher specimen: No. 71130 in the Cheeseman Herbarium, Auckland Institute and Museum.

DWARFS IN THE GARDEN

DOUGLAS ELLIOTT (*New Plymouth*)

Have you any dwarfs in your garden?

No, I don't mean fairies at the bottom of the garden or those revolting pottery or concrete gnomes with painted pointed hats.

The dwarfs I'm speaking of are dwarf shrubs.

A dwarf shrub is not merely a small shrub like a *Daphne* bush. According to the dictionary it is a shrub considerably below the usual size of the species.

An example is one of the dwarf forms of Lawson's cypress, which is usually a very big tree capable of reaching a height of 200ft.

There are two kinds of dwarf plants, the natural and the artificial. The natural just happens; the artificial is man-made or in this country more often woman-made and the system by which it is usually done is known as bonsai.

The artificial dwarf is a plant that would have grown to its normal size but for special treatment it was given, usually throughout its life, which may be a very long one. Constant pruning of the roots and shoots and a near-starvation diet are the main features in this dwarfing. The dwarf fruit tree is an example of the artificial dwarf which is developed by grafting a normal scion on to a dwarfing root-stock.

The natural dwarf is a very different thing. Not only will it stay dwarf without any special training but, what's more, its offspring or at least its vegetative offspring will be equally dwarf. 'Vegetative' is a gardening word referring to any kind of propagation except by seed. So your dwarf plant may be grafted, layered, or grown from a cutting.

The cultivation of bonsai plants is a highly specialised art which I'm not going to tell you about just now. But almost anyone can grow natural dwarfs.

There are three special uses for them. The first is in the small town garden where the owner has no space for big plants nor the time to keep them under control. The second is in the rock garden where they are not only the right size but, unlike the ordinary small shrubs, give an effect of age. The third use for dwarf plants is in containers such as tubs. In some of the landscaping books from the United States you will see them growing in very handsome wooden tubs placed at focal points in the garden. Sometimes they are used against screens that show them up well. This is a kind of bonsai treatment.

Now let's see what dwarf shrubs are available from New Zealand nurseries. Catalogues refer to many shrubs as dwarfs which are merely small shrubs but as long as you're on your guard you can usually pick out the true dwarfs. Quite a few of them have the Latin word '*nana*' attached to their names. It means dwarf.

Going through the list alphabetically we find that our first dwarf is a very pretty Japanese maple, *Acer palmatum* 'Chishio'. It grows only 4 ft. high, is very bushy, and has small leaves which are blood red in spring, green in summer, and red again in autumn. It's a very colourful little chap.

The weeping maple is well known for its graceful habit and its very lacy leaves. Its height depends on the height of the stock on which it is budded although you could train one of the branches upwards if the stock was too short for your liking. This is an excellent shrub for planting near a pool as it will make interesting reflections in the water. Three varieties are obtainable: the plain green *Acer palmatum* 'Dissectum'; the purple 'Dissectum Atropurpureum', which looks a bit browned off during the summer when the purple leaves lose their first freshness; and finally 'Dissectum Ornatum' which is a mixture of green, cream and pink. They all colour well in the autumn. You're wasting your money if you try to grow these very charming plants in a windy garden. Their tender new growth and leaves will be burnt and shrivelled.

Dwarf azaleas are available in a wide and increasing range of beautiful forms and colours. They are excellent for planting in masses, preferably in dappled shade. The most definitely dwarf varieties are the gumpos, sometimes referred to as the Lilliputian azaleas. Growing no more than a foot high, they come in white, pale pink, pink, and salmon; but although they are small plants they have large flowers which in my opinion rather spoil the effect. They suffer sorely in drought as I know to my cost; for I lost a couple by not watering or mulching during one hot summer.

Several of the kurume azaleas are dwarfs; they have small flowers too. 'Beni Giri' is an old-timer, with brilliant cerise flowers in such masses you can hardly see the leaves. 'Goodson's Red' is a favourite of mine. It was raised in Hawera. The colour is dazzling red. 'Rosebud' is one of the recent introductions. Its name is so apt that I need only mention that its colour is rosy-pink and it blooms late in the season. It is usually still blooming in November here in New Plymouth.

Barberries are not so popular as they used to be. Perhaps people got fed up with being stung by the vicious thorns. But one that is still grown quite a bit is the handsome *Berberis thunbergii* 'Atropurpurea'. It is the parent of 'Little Favourite' and 'Crimson Pygmy'.

One catalogue says the first is 2ft. high, another says the second is 1ft. high; but another authority suspects they are one and the same thing.

Anyway they are very effective in rockeries where their rich red foliage contrasts very pleasingly with the grey of the rocks.

The heather or ling, *Calluna vulgaris*, is not what you'd call a big shrub as it only grows about 2ft. high at the most but it has several dwarf forms that are considerably smaller. 'Foxii Nana' makes a dense deep green cushion 6in. high. The flowers, in slender spikes, are lavender purple. 'J. H. Hamilton' is a few inches higher and has clear pink double flowers. Both are ideal for natural-type rock gardens. Don't forget that they like an acid soil and no lime.

Some of the *Chaenomeles* (cydonias or 'japonicas') are dwarfs. With a little subtle training they can be given some really oriental shapes. 'Crimson and Gold' has an almost self-explanatory name except that it doesn't tell you that the gold refers to the stamens and that the flowers are semi-double. 'Yaegaki' is another semi-double with creamy apricot flowers which, like those of the popular 'Falconet Charlotte', deepen to salmon as they age.

I don't know whether dwarf hydrangeas should be included in this list. They are not in quite the same class as most of the other plants and are rather small than dwarf, if you know what I mean. But they are good and are especially valuable in the small garden where their big brothers would be hopelessly out of place. They are also just the thing for tubs. There are so many good named varieties that I shan't go into details but refer you to any up-to-date catalogue.

The only true dwarf New Zealand plants I know of are the dwarf manukas, varieties of *Leptospermum scoparium* 'Nanum'. These are delightful little fellows with masses of flowers in shades of pink. They grow 1ft. high and look fine in rockeries. Unfortunately they are susceptible to manuka blight and should be sprayed with lindane fairly frequently.

The dwarf Chinese bamboo, *Nandina domestica* 'Pygmaea,' which is not a true bamboo nor even much like one, is a little winner. Its pretty leaves, some of which are brightly coloured almost all the year round, are very useful in floral work. A special feature is that they last indefinitely out of water and still keep their colour.

The new dwarf peaches, which bear double flowers in the spring and white-fleshed freestone fruit in the summer, sold like hot cakes during the recent planting season. Three different colours are available—white, soft pink, and rosy red. The branches are stiff and lack the grace of the normal varieties but they are thickly wreathed with flowers and make a wonderful display in the garden.

The dwarf pomegranate, *Punica granatum* 'Nana', is a chirpy little deciduous plant seldom more than 2ft. high and bright throughout the



Juniperus Communis Compressa.

(See Page 150)

Photograph: Douglas Elliott.



Thuja occidentalis "Rheingold"

(See Page 151)
Photograph: Douglas Elliott.

summer with numerous double orange flowers that look as though they were made of crepe paper. I've never seen it fruit.

Several varieties of dwarf roses are now on the New Zealand market and there are even some miniature climbers.

So far we have been considering only what are sometimes classed as broadleaf plants. Now we come to the conifers which include such things as pines and cypresses. Among them are many interesting and remarkable dwarfs, so many that whole books have been written about them. Unfortunately very few are available in New Zealand. These are stocked by general nurserymen and also by one or two who specialise in rock plants.

Abies balsamea 'Nana' is a very slow grower. The mature leaves are dark green but the young growths are bright yellow. It grows about 15ins. high.

Chamaecyparis lawsoniana provides us with several dwarfs. The 2ft. high 'Argentea Nana' is a round plant whose light green foliage has silver tips. Shelter from strong summer sunlight should be provided for 'Erecta Aurea' which has bright yellow foliage and reaches a height of 3ft. There is some doubt about the classification of 'Filifera Aurea' which is sometimes listed as a variety of *C. obtusa*. It has stringy, but attractive weeping branchlets. Because it is mostly grown as a flat mass about 1ft. high and up to 4ft. across few people realise that it can form a leader, grow 3 to 4ft. high, and look much more natural and attractive that way. It is very dense and with its all-over yellow foliage makes a striking feature amongst green plants. The plain green form, 'Filifera Nana', is sometimes available.

A particularly choice dwarf is *C. l.* 'Forsteckiana' which has grey-green mossy foliage and a height of no more than 15ins. It is rare but at least one New Zealand nursery stocks it.

C. l. 'Minima' is a dark green form with an ultimate height of 3ft. The foliage is so arranged that the rigid upright branches look like the leaves of a book.

To Hinoki cypress has a few good dwarf forms. *Chamaecyparis obtusa* 'Nana' will eventually reach a height of 6ft. and a width of about the same distance but takes such a very long time over it that you can consider it a small plant. It can easily be kept to your choice in sizes by careful pruning. The branchlets are in thick flattened fan-shaped clusters. The golden form 'Aurea' is one of the most beautiful conifers for the small garden. Its shape, texture, and colour make it a natural for the large rock garden.

Chamaecyparis pisifera 'Plumosa Rogersii' has fine almost feathery foliage and makes a dense compact plant. Its outer foliage is golden.

Cryptomeria japonica 'Bandai Sugi' is a dwarf form of the Japanese cedar. It grows up to 8ft. high and has both long and short branches. *C. l.* 'Pygmaea' (sometimes listed as 'Nana') is a very compact plant with thick rounded clumps of branchlets. It grows 4ft. to 5ft. high but is slow and can be kept small by pruning. It is perfect for a large rock garden. Although I see it occasionally I don't know of any nursery supplying it.

The New Zealand pygmy pine, *Dacrydium laxifolium*, is not a true dwarf but I think it warrants a place here because with a mature height of only 12in. it is the smallest conifer known. The leaves are like those of the rimu.

Amongst the junipers are several dwarfs. *Juniperus chinensis* 'Plumosa Aurea' is different from most golden conifers in being not bright yellow but rather bronze-gold. A low growing plant, it has jutting nearly horizontal branches with nodding tips. The leaves are scale-like which means they are not prickly but blunt like those of the common Lawson's cypress. A very attractive plant for landscape effects and for the large rock gardens. Plant it in full sun if you want it to colour well.

Juniperus communis 'Compressa', known as the Noah's ark juniper, is one of the most perfect dwarfs. It has the shape of the Italian cypress—narrow and spire-shaped—but never exceeds 3ft. in height. The sharply pointed leaves are grey-green. This is the ideal plant for emphasis in a rock garden where there are many horizontal lines. It also looks well when three or more specimens are planted in a miniature grove. Prune by pinching out the tips of the branches with your thumb nail.

One of the daintiest dwarf junipers is *J. c.* 'Depressa Aurea', a very low-growing plant with horizontal branches on which the young growths are bright bronze-yellow. They lose their colour as they mature. This is a very pretty plant for the rock garden or the front of a border. Like most other golden conifers it colours best in the sun.

J. sabina is represented by two dwarfs. 'Knap Hill' has dense prostrate branches of bright green foliage and is, like the next variety, very good for covering banks or for planting in large rock gardens. 'Tamariscifolia' is a very wide-spreading shrub with grey-green leaves. It has been known in cultivation for over 200 years.

A dwarf *Picea* that is sometimes available is one of the most striking of these small plants because of its extremely neat habit and its rounded cone shape. I have a suspicion that it is not always correctly labelled but as there is, so far as I know, only one other variety available and both are extremely good you won't be disappointed whichever one you get. *Picea abies* 'Globosa' (sometimes listed under its old name

of *P. excelsa*) seems, according to the books I have referred to, to be what is sometimes sold as *P. albertiana* 'Conica'. Bean, who named the last-named variety, says it resembles the old-fashioned candle extinguisher in shape and a photograph of this variety in Hornibrook's *Dwarf and Slow-growing Conifers* agrees with this. *P. abies* 'Globosa' is apparently a more rounded shape. Either one is first-rate in the rock garden. They are extremely slow growing and you'll seldom see one more than 2ft. high.

The American arbor-vitae, *Thuja occidentalis*, is a tree growing 50 to 60ft. high which has produced several dwarf forms. 'Ericoides' is a pretty rounded bush with needle-like foliage that is blue grey in summer, bronze in winter. It grows about 4ft. high. 'Hoveyi' is a rounded bush whose light green leaves take on a tinge of bronze in the winter. This plant is sometimes described as egg-shaped; it is capable of growing 6ft. high but can easily be pruned. 'Little Gem' (which bears the botanical name of 'Globosa') is a dwarf that seldom exceeds 3ft. in height. The densely-packed green foliage turns bronze in winter. 'Rheingold' is a prostrate form hardly more than 3ft. high but 4 to 5ft. across. It has a slightly orange tinge in the summer and turns brown in the winter.

Thuja orientalis 'Aurea' (sometimes listed as 'Nana Aurea') is a compact slow grower reaching a height of 3 or 4ft. The foliage is bright gold in the spring, greenish-yellow in late summer and winter.

CROCUS CHRYSANTHUS AND ITS VARIETIES

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

Crocus chrysanthus has been in cultivation since 1847, and has given rise to something in the region of 50 named varieties since the beginning of the present century, and still it remains all but unknown in New Zealand gardens. I think the long dominance of the large flowered Garden Varieties may be one of the main reasons for this. These are often called Dutch Hybrids, and no doubt many of them did originate in Holland, but it seems to me that they are mostly large-flowered seedlings of *C. vernus* that were selected and grown on as clones during the latter part of the nineteenth century before the great influx of plants from eastern Asia gave us so many winter-flowering plants. Their names, 'Pickwick', 'Little Dorrit', 'Ivanhoe', 'Sir Walter Scott', 'President Lincoln' and so on, give a pretty fair indication of the time when they were most popular.

Now, *Crocus vernus* comes from the mountains of Central Europe and is found high up in the Swiss Alps, places where it suffers a winter chill and comes into bloom when the ground is saturated with moisture from melting snow. But many crocuses do not normally have to endure

such conditions. There are at least 80 well-defined species and perhaps as many wild varieties scattered over southern and middle Europe, North Africa to western Asia, at least so far as Afghanistan, between sea-level and 7000 feet. Many of those, from the islands of the Mediterranean and low altitudes start into growth with the autumnal rains. They flower, set their seeds, and disappear before the arrival of summer, without experiencing any cold. They should be perfectly happy in our gardens.

In all I have well over 100 species and varieties in my garden—names anyway, because many are extremely difficult to tie down—which always come into bloom early in March and keep up a steady procession of blossom until well into September. When the Editor invited me to write something about my crocuses I thought of reviewing the parade from the first *C. pulchellus* right through to the last *C. candidus* 'Subflavus', but decided that a long recital of unfamiliar names might be rather boring for the readers. Instead I chose the *chrysanthus* varieties because some of them are on the New Zealand market. Last summer an acquaintance of mine found about half-a-dozen in a Christchurch shop.

If the bulb-dealers' lists are anything to go by the *C. chrysanthus* varieties are now more popular in Britain and the Continent than the large-flowered Garden Varieties, with some 40 listed against 33 of the latter. I think the reason for this ever-increasing popularity is because in their own modest way these plants have everything. They combine elegance with beauty and variety of colouring; they are fragrant with a pleasing honey-scent; they are easy to grow and increase rapidly from off sets once the trials and tribulations of acclimatisation are over; they can be relied upon to come into bloom during the coldest weeks of the year and they are easily raised from seed while the seedlings have the charm of variety.

C. chrysanthus was named and described by Herbert in 1847 from a dried specimen that had been collected in the Rhodope Mountains of Bulgaria and is now known to be one of the most widespread of them all. It ranges over the Balkans from sea-level up to 5000 feet and is found through Greece and Asia Minor to the mountainous country where Armenia and Persia meet. As is to be expected with all widespread species it is very variable. The type is a good buttercup-yellow with beautifully formed flowers that open to their full extent on a warm day whether the sun is shining or not. They are about 1½ ins. high, rising from the 2 in. tubes to overtop the thin grassy leaves. The buds show much variation in the feathering, pencilling and marking of the outside while the open blooms show a bright yellow throat and the three stamens of the same colour that are distinguished from all members of the race by having black barbs to the anthers. The glowing orange-red stigmata gives the whole ensemble a finishing touch of great charm.

On the western fringes of its territory *C. chrysanthus* seems to cross with some of the local forms of *C. biflorus* and something of the same sort happens with *C. aerioides* in Persia. Both of those neighbours have flowers of varying degrees of lavender-blue and under cultivation they have given us some of the loveliest of the early crocuses. These are mainly listed as varieties of *C. chrysanthus* because of the black barbs of the anthers but some are without this distinguishing feature. At least six wild forms have been given varietal rank but, besides being very difficult to obtain, they are of more interest to the collector than to the general gardener.

The following are brief descriptions of the varieties in my garden with the dates when they first come in flower.—

- 'Blue Bonnet' a soft ethereal blue, paler on the inside; not so
12/7/61. sturdy as some of the other blue shades.
- 'Blue Butterfly' the inner segments are much paler than the outer
23/7/61. and form a pleasing contrast, enhanced by the
 yellow throat.
- 'Blue Pearl' a soft pearly shade on the outside with a milky-
23/7/61. white interior; very free-flowering. F.C.C. Haar-
 lem. 1953.
- 'Blue Peter' rich purplish-blue exterior, lovely in the bud;
20/7/62. inside delicate lavender.
- 'Buttercup' rich buttercup yellow; flowers of very pleasing
31/8/62. form.
- 'Canary Bird' large oval flowers; rich golden yellow with bronze
23/7/60. shading on the outside.
- 'Cream Beauty' attractive globular flowers with short stems; the
4/8/61. bright orange stigmata contrasts beautifully with
 the soft cream petals.
- 'E. Aug. Bowles' one of the earliest and best with large flowers;
4/7/60. butter yellow with a brownish-grey base on the
 outside.
- 'E. P. Bowles' slightly deeper colouring than 'E. A. Bowles'; dis-
27/6/61. tinguished by the purplish-brown feathering on
 exterior.
- 'fusco-tinctus' introduced from Smyrna, 1876; flowers smaller
15/7/63. and more star-like than type, dwarf; golden
 yellow.
- 'Harlequin' sulphur yellow with beautifully pencilled purple
26/8/62. lines on outside. A.M. 1959.

'Goldlocks' 23/7/60.	deep yellow with purple-brown base; stigmata intensely dark orange-red; very free flowering.
'Peace' 12/7/61.	large snowy-white flowers, slightly flushed cream; with five slaty-blue stripes on exterior of bud.
'Princess Beatrix' 25/8/62.	one of the sturdiest of the blues; soft heliotrope on outside, interior silvery-blue, feathered.
'Moonlight' 25/8/62.	soft chrome-yellow, fading to pale colour with age; grey markings at base; very bright orange stigmata.
'Saturnus' 14/7/63.	very early buttercup yellow with buds finely feathered with purple; interior warm yellow colour.
'Snow Bunting' 23/7/61.	a delicate and more refined 'Peace' F.C.C. 1925
'Suzie' 12/7/61.	globular medium-sized blooms; soft yellow with violet feathering. A.M. 1949.
'Warley White' 10/7/60.	beautiful white, good texture and substance; exterior dark grey-purple; does not show through. A.M. 1933.
'Zwanenburg Bronze 28/6/60.	lovely bright golden yellow with intense bronze shading on the outside. A.M. 1938.

The dates on which the first flowers make their appearance may vary considerable from year to year, depending partly on the arrival of the first soaking rains of autumn, and partly on the severity of the winter. The same varieties will always be among the earliest and the others will follow very much in the same order.

ORIGINAL VARIETIES

The *chrysanthus* varieties are now so popular overseas, with two or three new ones appearing every year, that it is worth pausing for a moment to see how the race began. Some time about 1870 George Maw found three distinct forms of *C. chrysanthus* among the mountains of northern Turkey. One of them, the sulphur-coloured *C.c. var. pallidus*, proved itself an interesting seed-parent in the hands of Thomas Hoog of the famous Van Tubergen nursery at Zwanenburg, Haarlem, Holland. By the turn of the century E. A. Bowles of Myddleton House, Enfield, was the leading fancier in England. He later became a world authority and his *Handbook of Crocus and Colchicum* is still an indispensable guide to all who are interested in the genus as a whole. He is commemorated in the variety 'E. A. Bowles' still one of the best, and he tells of its origin in *My Garden in Spring*:—

'The 22nd February, 1905, stands out as an event in the Crocus world for me, for a little packet post-marked Haarlem lay on my

breakfast table and brought me five blooms from Mr Hoog of *Crocus chrysanthus pallidus* seedlings, which for size and delicious creamy, moonlight yellows surpassed anything I had dreamed of. One had a deep band of purple on the outer segments, another greenish-blue feathering, and the largest of all was as soft a yellow as the pat of butter in front of me, with a feathering patch of warm brown madder at the base of each segment that set off the yellow in such a manner as the spiral patch of brownish-black does on the forewing of the lovely Pale Clouded Yellow Butterfly. My admiration of this new race went to Holland by post, and had the pleasant sequel in a generous gift of corms of these varieties and the naming of the butter-yellow giant after me.'

I have been unable to trace the other four with any certainty, but it seems possible that the one with the deep band of purple on the outside may have been 'Warley White' while the feathered one became 'E. P. Bowles.' It is known that 'Warley White' was raised by Hoog and that it reached Miss Ellen Willmott through Bowles. It flourished exceedingly in her garden at Great Warley and became known as the 'Warley Variety,' the more familiar 'Warley White' being bestowed as an afterthought. From then on Bowles himself took a hand in improving the race. His many seedlings were all named after birds but 'Canary Bird' and 'Snow Bunting' seem to be the only two to survive in the nurserymen's lists into the 1960's.

CULTIVATION.

With the exception of some of the blues these crocuses have a good constitution and can stand up to both cold and heat, but none of them like rain. Flowering as they do in mid-winter they will do best in a warm sunny pocket of the rock garden. In a cold sunless border they will give just as much blossom but are likely to appear a week or two later. They delight in a warm open soil, a nice turfy loam that has been well tilled and given enough grit to provide good drainage. They will not last very long in cold wet soils. Be very careful about manuring, a light dusting of bone meal should do no harm but all cruder forms of nitrogen are sure to end in disaster. I have no experience of the *chrysanthus* race growing in grass, but should say that they are too short in the stem to do well in any but very short turf.

All who are interested soon begin to think of importing because the prices, 7/- to 200/- per hundred in Holland and 1/6 to 5/- per dozen in England, are very inviting. Acclimatisation requires both skill and patience. The corms arrive from August to October and are best by air mail. They should be planted immediately on arrival in either pots or boxes, according to quantity, and it is best to keep to one variety in each receptacle which should be well supplied with drainage material. A mixture of equal parts of loam, leaf-mould and sand makes an excellent compost and the corms should be bedded down

in about 1 in. of sand. Plunge in the coldest part of the garden, in shade, and water copiously until the leaves begin to show signs of dying down.

If the corms arrive in, say, October 1960 and are potted up immediately they, being ready and eager to bloom, are likely to come into flower just a little earlier than they would in the northern hemisphere and are likely to be over by Christmas. By March, 1961, they are dying down and this may take until April or later. It is better to let them dry off for a little and then give a thorough soaking by plunging the pots or boxes in water. If this is successful they may start into growth and flower in August-September 1961, and by next winter they are thoroughly in tune with the rhythm of the southern hemisphere. But it is much more likely that they will just lie dormant until about March 1962, and flower in their normal season, i.e. in July. It often happens, however, that these dormant corms mistake the season and rush into bloom in the cooler days of March-April 1962, and will not be ready to adjust themselves to the southern seasons until July 1963. During the period of adjustment the flowers are not likely to be at all typical of the variety in either colour or substance, and these out-of-season flowers are often a great disappointment.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

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

It is amazing, when compiling weather statistics, how often the weather seems to be the hottest, the coldest, or the worst, and this last winter has been no exception. May, which is the wettest month of the year, (average 2.89 inches) recorded only $\frac{3}{4}$ inch of rain. However, July more than compensated, with more than 5 inches which is the heaviest July rainfall since 1939, when a record $8\frac{3}{4}$ inches were recorded.

The most noticeable feature of June and July was the general lack of sunshine, both months being exceptionally cloudy. In the first 17 days of July only 23 hours of sunshine were recorded and on eleven of those days there was no sunshine at all. The daytime temperatures of July were colder than usual, although surprisingly the mean temperature was about average. This was mainly due to the lack of frosts, which were frequently dispelled by cloudy conditions.

In spite of the generally cold, damp and unpleasant conditions practically all plants have come through surprisingly well, and no casualties have so far been noticed. However, one noticeable feature has been the effect of the weather on the flowering of various plants. From records kept over the past few years it has become apparent that while the flowering pattern of many plants is affected by the weather there are many which flower to a set time or pattern regardless of the conditions prevailing.

This year it has been noticed that plants such as *Rosmarinus lavandulaceus*, *Hebe* 'Andersonii', *H.* 'Alicia Amherst' and *Prunus subhirtella* 'Autumnalis' which normally flower throughout the winter, have this year flowered only spasmodically as warmer spells permitted. On the other hand some, such as *Grevillea rosmarinifolia*, *Correa rubra* and *C. backhousiana*, quite undaunted, continued to flower right through the winter.

The Cootamundra wattle, *Acacia baileyana*, is very susceptible to seasonal conditions and whereas with last year's mild conditions it commenced flowering in May, this year flowering did not commence until some time in July.

There are quite a number of plants which normally flower in the winter, and they appear to commence flowering at a certain time regardless of weather conditions. The Japanese apricot, *Prunus mume* for example, always opens its delicately scented blossoms in early July and, apart from a week or so either way, very little variation has been noted. Some of the other plants which have a fairly fixed flowering time are *Hamamelis mollis*, *H. japonica*, *Chimonanthus praecox*, *Leucopodium aestivum* (so-called summer snowflake), *Mahonia japonica*, and *Garrya elliptica*. One noticeable feature about all of these plants is that, even during the severest weather normally experienced, their flowers are quite uninjured.

Quite a number of varieties of Japanese camellia appear to flower according to plan and not the weather, some coming out regularly in the middle of winter. All too frequently, however, the flowers of these early varieties are damaged by the weather.

With camellias in particular, but also with other winter flowering plants it has become obvious that while the flowers will withstand quite low temperatures without damage, they will not tolerate wetness at the same time. In other words the damage is often caused by wet conditions in association with cold rather than straight out dry-cold conditions.

During the early spring months the various bulbs are one of the most welcome sights in any garden and of these the *Crocus* is among the most precious. Its flowers always appear to be so delicate and fragile and yet it can withstand the last truculent storms and frosts as winter gives way to spring without turning a hair. One little known fact about the *Crocus* is that the opening of the flower is governed by air temperature and not by direct light. In fact it is quite interesting to note how, on a bright sunny day, if there is a cold wind blowing or the air is cold, the *Crocus* flowers will remain tightly closed against the sun, whereas on a dull sunless day, if the air temperature is sufficiently high, the *Crocus* will respond with open flowers.

Of the species grown in the Botanic Gardens the first to flower is *Crocus tomasinianus* which opens its first flowers in late July and continues until about the end of August. It increases rapidly from seed and is quite a problem in the Rock Garden when the seedlings become mixed among other groups of *Crocus*. However, the large informal drifts of it spreading in and out among the stones are so attractive that it would take a hard-hearted gardener to remove them.

Crocus chrysanthus is a most variable species but is usually identified by its anthers having two black-tipped barbs. The typical form grown here has a pale yellow flower with a slightly grey-green feathering at the base of each outer segment. In the one known as *C. chrysanthus* 'E. A. Bowles' the flowers are larger, the grey-green feathering is more pronounced and the butter-yellow flowers when fully open in the sun make a fine showing in the Rock Garden. Two other yellow-flowered species which are grown are *C. aureus* which exists in a number of closely related forms, and *C. susianus*, the cloth-of-gold crocus. This latter has been in cultivation since 1587 and is most appropriately named. When the flowers are closed the three dark, purple-brown stripes on the backs of three outer segments renders them rather inconspicuous. But when the temperature rises and the starry flowers open flat the deep, golden-yellow flowers truly look like a cloth of gold.

In some aspects *C. imperati* is more striking when the flowers are closed, for then the deep-purple feathering on the backs of the buff-coloured outer segments may be seen. It is a large flowered species, the open flowers being 3-4 inches across and the contrast of the rosy-purple colour of the inner with outer segments makes it a most handsome addition to the rock garden.

Two of the most charming of the *Crocus* species also happen to be two of the least known. *C. pestalozzae* var. *coerulescens* is a native of Turkey and is certainly one of the smallest and daintiest flowered *Crocus*. The bluish-mauve goblet-shaped flowers are less than $\frac{3}{4}$ inches long and, with the thin foliage which barely overtops them, form most attractive clumps. Fortunately in spite of the diminutive size it is a good garden plant. The other species is *C. fleischeri* from Asia Minor. It is a very frail looking plant with pure white flowers which may have purple stripings or markings near the bases of the outer segments. The stigma is a bright orange-scarlet and its bright colour is easily seen through the thin segments of a closed flower. *C. fleischeri* has very fine grassy foliage and is a most unmistakable species.

NOTES FROM DUNEDIN*R. W. BALCH, N.D.H. (N.Z.).*

It is probably true to say that most people, who have chosen one of the many branches of horticulture as their life's calling, commenced their working lives either as gardeners, or in dealing with plant-life in some form or other. Consequently in this sphere it is very often found that a person's work is also his hobby, probably more so than in another trade or profession. This is particularly so where, in the normal course of promotion or advancement, a direct contact with plants is gradually lost, being superseded by administrative and office work. A large amount of time must then be devoted to matters which, looked at superficially, seem quite divorced from gardening. This is very evident in commercial horticulture, and parks and reserves work. Fortunate indeed is the occasional person who has been able to rise in his profession and, at the same time, keep in direct contact with the growing of plants. Thus many of us enjoy working in our own gardens, in our leisure time, and become so involved in other horticultural activities outside working hours that there is likely to be little time left for other interests.

It was with something of the foregoing in mind that last autumn, with an accumulation of leave in hand, I decided the time was ripe to get away from it all for several weeks. A motoring holiday through some of those areas of New Zealand that were unknown to me appealed, to explore, enjoy the scenery, meet old friends along the route and generally get to know the country better. With a carefully planned itinerary and a comprehensive collection of road maps, accommodation handbooks, provisions, spare parts and other accessories, in fact prepared for all eventualities, a start was made. The route followed was up the east coast to Timaru for a day or two, on to Kaikoura for the night, to Picton and the daylight crossing to Wellington on the 'Aramoana', so simple and pleasurable for those with cars and caravans, then off the ferry straight into the surge of six o'clock traffic out of the city. A steady drive to Waipukurau the next day, followed by several days in and around Napier, proved most rewarding. Glimpses of Gisborne, Ruatoria, Cape Runaway, the Bay of Plenty came next with the wonders and delights of Rotorua to be enjoyed at leisure, then on to Tauranga, Hamilton, Waitomo and New Plymouth. The homeward journey was by way of Picton, Nelson and the Lewis Pass.

On arriving back in Dunedin after three and a half weeks on the road it was to realise that a most satisfying holiday had been enjoyed with all aims but one achieved. If ever there had been a busman's holiday that had been one. From the first day until the last most of the daylight hours not spent in driving had been devoted to visiting commercial nurseries, parks and reserves, botanic gardens, private gardens, and scenic reserves — inevitable and unavoidable, possibly on such a trip when work and hobbies have allied interests, and friends and

acquaintances are also gardeners at heart. This being so it may be of interest to recount some random impressions gained from this holiday-cum-horticultural tour.

Possibly of greatest interest was the varying popularity of certain plants in particular areas, the gradual change from south to north and from east to west. It was very pleasing in some places to note the way in which plants obviously suited to the locality were being used to good effect. For instance in Napier good grouping of brilliant large-flowered *Hibiscus* in the motor camp welcomed the weary traveller with an exotic touch. A drift of large cacti, agaves and other succulents marching across the beach towards the sea beside the Aquarium was arresting in its unexpectedness. The fine old street tree rhododendrons of Rotorua well known by repute, and the extensive recent plantings of them in newer streets were surprising to see in that thermal city. The magnificent specimens of *Camellia sasanqua* in full bloom in April in New Plymouth (and such blooms too!) were a striking example of how important it is to grow in any particular locality the plants that are happy there, and to avoid planting those which flourish far better in other parts of the country. Now that the travelling public is increasing year by year, and more and more overseas tourists are visiting New Zealand, this is of ever greater importance in providing attractive displays, not only in streets and parks but in private gardens also. For each town or city to aim to be different with a charm and character of its own, is surely of far greater interest than for these people to follow a trail round the country of fibrous begonias, geraniums and French marigolds on the one hand and coloured fountains, wishing wells and floral clocks on the other. Is it advisable to have so many elaborate, formal bedding schemes? — colourful maybe, but expensive to provide and maintain, uninteresting in detail and sometimes with inappropriate and clashing colours. Extensive lawns and flowing contours and outlines, planted with specimen trees and an occasional highlight or focal point of shrubs or bedding plants giving colours that blend with the landscape and buildings and with one another, can appear so much more spacious, restful and pleasing to the beholder.

It was a delight to see in the display houses of public gardens in Hamilton, Rotorua and New Plymouth the very effective planting of tropical plants in borders with curving paths instead of the more usual system of rows of pot plants on straight benches. Instead of entering a structure of glass, wood and metal containing batches of colourful plants, which is the effect often created, the visitor seems rather to be walking into a natural tropical garden with a little overhead artificial protection — the plants and not the building being the more prominent feature.

Coming from a city, it must be confessed with shame, where electric power, post and telegraph and trolleybus poles, with their accompanying maze of overhead wires and cables are an accepted feature of the

landscape and skyline, it was a relief to discover that such conditions need not necessarily be so. So great was the impact of many North Island towns is this respect that instead of natural scenery being the main subject for the colour camera, more often it was focussed on ornamental street lamp standards devoid of power cables, untrimmed street trees displaying their beauty of form and outline and fine buildings unmarred by poles, crossarms and wires. This is not to suggest that these places are models of their kind, but the will to illimitate this offence to the eye, so common in New Zealand urban areas is obviously present. Definite progress is being made there.

From the parks and reserves angle it was interesting to see that certain problems are common to all parts, while others are peculiar to certain localities. The continual damage to turfed areas, to park amenities and buildings by thoughtless and inconsiderate individuals, the theft of choice plants from carefully planned plantings, and the ever recurring demand for the removal or decapitation of street trees because of minor inconveniences caused by their presence have to be taken philosophically everywhere and countered where possible by realistic measures. We all feel at times that some of our problems are not encountered in other places. Maybe so, but those other places have peculiar ones of their own and on seeing them we are thankful they are not ours. Such things as river encroachment of public gardens, thermal activity with its ever present, potential dangers in children's playgrounds and parks, the building of industrial premises which produce objectional odours adjacent to natural scenic spots and the laying of asphalt to provide parking right up to the boles of fine trees to smother, parch and starve, provide additional headaches for those responsible for their maintenance.

After travelling for close on 3000 miles with but one wet day and one puncture on excellent roads it was a joy to return to one's own district refreshed in spirit, broadened in outlook, and keen to strive for perfection once more, unattainable though it may be.

NOTES FROM PUKEKURA PARK

A. D. JELLYMAN, N.D.H., (N.Z.), (Assistant Curator).

The past few months have been busy, active ones, as the preparations and planting during the winter season have been underway. Planting this season has not been in any new areas, but rather consolidation and improvement of those existing, so not greatly increasing the problem of seasonal maintenance. When I call maintenance a problem, I should point out that in Pukekura Park planting and improving an area usually entails removal of shrubby growth, which is mostly native, and often seedling *Cornus capitata*, before sites can be prepared. These areas are usually inaccessible by mowers, so maintenance must be manual i.e. either by scything growth or removal of encroaching

scrub growth. This practice must be carried out not only until the plants are established, but thereafter to prevent suppression by the rapid growth of some shrubby plants.

Of the exotic trees and shrubs, the three most useful and common genera seen in the park are camellias, azaleas and rhododendrons. Firstly camellias: These range from some really mature specimens, scattered about the park, to a planting of this year at the North of the Curator's house. There are four points which commend the camellias to use. 1. They are tolerant to considerable degrees of shade which occur in most parts of the park to a more or lesser degree; 2. Bushes remain densely furnished from ground level upwards and make excellent foils for ground draughts; 3. Their flowering period occurs during the winter months when their blooms greatly invigorate the sombre green of their foliage and enlivens the winter scene; 4. During the winter months the native birds find their food scarcity supplemented by the flowers of camellias. Azaleas both kurume and Indian varieties are planted extensively along the banks besides the main tracks and in groups at various points. Plants are usually moderate in growth, and the more vigorous varieties are kept shapely by annual selective pruning out of excessive growth. By being shade tolerant azaleas are aptly suited to planting and grow happily in their various sites.

Rhododendrons are also widely grown, and plantings in the park are widespread with the main dell situated at the Brooklands end of the Park. There are a number of impressive specimens of 'Sir Robert Peel' of which the best may be seen in August by the caretaker's shed at Brooklands. The habit both foliar and floral, is pleasing, this variety being suited to larger gardens where it may develop freely to its tree-like stature. How many rhododendrons can supersede it for virtue of early, free flowering and compact habit? Rhododendrons demand rather more open conditions than do camellias and azaleas, so the main dell is an open area situated on the bottom and a sloping side of the valley. The eastern, northern and north western boundaries surround the dell with native bush, while the dell itself has deciduous trees to give dappled shade during the summer months. The main part of the area was planted during the mid-thirties by the late Mr T. Horton. Today many of the plants are large mature trees.

To keep these trees in an active state of growth and health, a yearly application of acid fertiliser is made, usually during November when most flowering has ceased and new season's growth is commencing. Application of fertiliser so late may be questionable, but the volcanic nature and porosity of the soil together with high annual rainfall cause rapid leaching of soil nutrients, thus the necessity to apply fertiliser which is easily available to a plant at a time when the plant can best use it. In addition to the fertiliser, leaves from the nearby plane trees are spread beneath the plants and also sawdust to build up the

organic material in the soil. Besides its use as a mulch, sawdust will also suppress weed growth to a degree. From results of spraying in the autumn, good weed and grass control has been obtained by the use of Phytozal A and with a further mulch of sawdust this spring before weeds get away it will give an even better control. Whatever plant one may specialise in there is always a disease or pest to put fat in the fire. In the case of rhododendrons, it is thrips that cause concern. Since attack must be prevented, our first spraying takes place in early December applying Lindane gammaisoner and Thiram, with a spreading agent. Further sprayings are applied during January and late February, which give adequate control not only of thrips and fungus but also of red spider which was in prevalence while D.D.T., P.P.I. was in use. December is the best month to apply Lindane spray to azaleas to prevent thrip infestations. Last season application was not made until January, by which time infestation was considerable.

Perhaps of the collections of rhododendrons the most noteworthy plant growing is the large specimen of *Rhododendron auriculatum* found at the head of the Primula Dell. This species is noted for its lateness of flowering and I feel that because of this it does not readily set seed. I find that the flowers of the large leaved species attract considerable attention from the general public *R. grande* and *R. macabe-anum*, gaining the most attention.

I was most interested in a recent discovery of the wood oil plant, *Aleurites fordii*, growing in the bush behind the fernery during the last season. The tree was in full fruit and it was this factor alone that led to any notice being given to what previously appeared to be a whau, *Entelea arborescens* from which the trunk appeared to originate. The tree had a slender trunk no more than 4 inches in diameter, scrambling towards the light. The leaves were heart shaped, rather resembling those of *Idesia polycarpa*, and the fruits hung in small bunches which were orbicular in some cases measuring over 2 inches in diameter. The fruits were quite heavy, each weighing between 2 and 4 ounces and consisting of two or more fleshy nut-like seeds which exuded a sticky sap upon dissection. *Aleurites* is a genus belonging to the order *Euphorbiaceae* and the oils are used for fuel, paints and varnishes. I understand that an attempt was made during the depression days to establish a wood oil industry in Northland which failed because of various reasons. The Chinese species *A. fordii* is more hardy than its tropical associates and I see no reason why it could not be grown satisfactorily in New Zealand.

PUKEITI RHODODENDRON TRUST

A. D. JELLYMAN, N.D.H. (N.Z.), (New Plymouth).

Over the last twelve years Pukeiti Rhododendron Trust has developed from a mere 153 acres to a large reserve of 900 acres. During these twelve years innumerable hours of voluntary labour from local enthusiasts and members, together with careful planning and thought

have helped to make this reserve unique as it stands today. Bush has been cleared and planted; tracks made, sown in grass and mown; many choice plants collected and planted; seeds from overseas and one thousand and one other contributory actions.

As Pukeiti stands today there are many features that must appeal to the garden enthusiast. The spaciousness of plantings is one of the striking features. One area is devoted to the growing of rhododendron species. This area is being enlarged and extended as more material is being collected. The reserve is situated at an altitude of between 1400 and 1600 feet and has an average rainfall of 160 inches per year. The soil is volcanic, and a dark brown in colour, so is well suited to the cultivation of rhododendrons. The situation is generally sheltered from the blast of cold winds by the adjacent Kaitake and Pouakai Ranges.

From the Trust Lodge one may branch out in various directions to see the area which may be of the most interest. Behind the lodge is a walk to the water wheel, and a walk along a bush track from whence can be seen vines of supplejack (*Rhipogonum scandens*) in berry and a delightful little glade of Prince of Wales ferns (*Todea superba* 'Colensoi'). Another walk will take you to the species area where will be found areas devoted to various series of species. Quite a large area is devoted to the *Rhododendron arboreum* series and here may be found *R. ar.* 'Sir Charles Lemon', 'Kingianum', 'Helgan', 'Album Roseum' and *arboreum* seedlings. Further along a larger area has been devoted to the large leaved species such as *R. falconeri*, *grande*, *sino-grande*, *mollyanum*, *macabeanum*, *giganteum* and *argenteum*. As most of these species are large growing, some reaching 30ft. or more, these plants are given plenty of room, and a greater degree of shade. The same treatment was given to some *R. nuttallii* in the *maddenii* border. These plants have not responded at all well and seem to demand more intense light for healthy growth. This season it is hoped to considerably extend the large leaved species area in the locality of the Giant Rata.

Another area is devoted to hybrid rhododendrons, and no doubt in the flowering season this block has the most public appeal. This area consists of a space completely clear of trees excepting those which encircle it. The best forms of hybrids available are used, and planted generally in threes grouped to give contrasts at flowering time. Among these trees to give light shade have been planted. Beyond is the Ilam Block which is devoted to a collection of *Rhododendrons* 'X Loderi'. New Zealand raised hybrids, a collection which should be of great interest to enthusiasts and rhododendron collectors and growers.

This year an area has been cleared to establish camellias on the reserve. With this new planting only large plants are intended to be used and an additional safeguard of electric fencing is to be utilised to prevent vermin damage. News of this project will no doubt delight

the members of the Camellia Society of New Zealand and it is hoped that they may be able to contribute in some way to the project.

At the Douglas Cook Entrance, work has been done with bulldozing the track to the Pukeiti Summit with the view of eventually sealing the road for public access. It is hoped to establish a Pinetum upon the slopes of the summit hill and have roadside plantings of rhododendrons featured.

Besides *Rhododendron* collections Pukeiti has quite a register of other choice trees. Take, for instance, the *Magnolia* collection which includes such choice plants as *Magnolia sprengeri*, 'Diva' and *M. grandiflora* 'Goliath' an overseas clone said to be the finest of this group.

Closely allied to magnolias are the plants of *Michelia doltsopa*, of which the larger leaved clone flowers regularly and prolifically. A collection of lilies is gradually being assembled and some of the best *Cardiocrinum giganteum* I have ever seen are growing here. In the wall gardens at the back of the Curator's Lodge a collection of rock garden plants are grown together with small growing rhododendrons *scintillans*, *chrysomanicum*, *russatum*, and similar species. In these gardens *Fritillaria persica* and *missanensis* grow while *Gentiana verna* 'Angulosa', and *cashmeriana* are also present.

Despite the tremendous amount of clearing done, tracks made and areas planted, Pukeiti still remains bush clad. The area had been milled and few giant trees can be seen apart from the Giant Rata. The bush is dominated by hinau, *Elaeocarpus dentatus* and kamaki, *Weinmannia racemosa*, while miro (*Podocarpus ferrugineus*); rimu (*Dacrydium cupressinum*); pukatea (*Laurelia novae-zelandiae*); tawa (*Beilschmiedia tawa*); horoeka (*Pseudopanax crassifolium*); help make up the forest. Of the shrubbier native plants toro (*Persoonia toru*); kaikawaka (*Libocedrus bidwillii*); mahoe (*Melicytus ramiflorus*); karamau (*Coprosma lucida*); porokai whiria (*Hedycarya arborea*); whau whaupaku (*Neopanax arboreum*); perching puka (*Griselinia lucida*); mako mako (*Aristolelia racemosa*); and kotukutuku (*Fuchsia excorticata*) are present. Ferns are dominated by the mamaku (*Cyathea medullaris*), and whe (*Cyathea smithii*) whilst on the forest floor *Asplenium bulbiferum* and *Blechnum fluviatile* predominate. Epiphytic life is also abundant and much kie kie *Freyinetia banksii* can be seen scrambling up the trunks of trees. Besides this various ferns clamber up tree trunks and clumps of *Farina mucronata* and *Dendrobium cunninghamii* together with *Lycopodium billardieri* may be seen high up in the trees. Some magnificent plants of puawanangea (*Clematis paniculata*) give added lustre to the bush in the spring time.

As can be seen Pukeiti has not only rhododendrons as its items of interest, but a cross section of plants which can be used in the home garden, from rock garden plants to tree like material, and a wealth of native flora which itself commands the interest of many horticulturists.

1964 ANNUAL DOMINION CONFERENCE
of the
ROYAL NEW ZEALAND INSTITUTE OF
HORTICULTURE (INC.)

NOTICE IS HEREBY GIVEN that the Forty-first Annual Meeting and Conference of Delegates of the Royal New Zealand Institute of Horticulture (Inc.) will be held in the **Auditorium, Otago Museum, Great King Street, Dunedin** on **Thursday, 13th February 1964**, commencing at 9 a.m.

The **1964 BANKS LECTURE** will be delivered at 8 p.m. on that day.

BRIEF PROGRAMME:

12th and 13th February — Dunedin Horticultural Society Show.

12th February—Civic Supper (Evening).

13th February—Conference and Banks Lecture.

14th February—Scenic Tour of Dunedin (if sufficient members present).

Members of the Institute and delegates from affiliated organisations are specially invited to attend this Conference. The Otago District Council is planning arrangements for the complete comfort and enjoyment of visitors.

Rail, Steamer and Air Concessions (10% reduction) will be available to delegates (dependent upon minimum numbers using) upon application to the Dominion Secretary.

Those attending the Conference are strongly advised to make early Hotel reservations direct with the hotel of their choice.

HOTELS (licensed):

City, Princes St.	65/- to 90/- per day.
Grand, High St.	57/6 to 75/- " "
Wains, Princes St.	55/- to 60/- " "
Excelsior, Cnr. Dowling and High Streets	56/- " "
Law Courts, Cnr. Stuart and Cumberland Streets	55/6 " "
European, George St.	52/6 " "
Criterion, Moray Place	50/- " "

HOTELS (Private):

Leviathan, Cnr. High and Cumberland Streets	34/6 per day.
Chalet Gfeller, 62 Walter Street	38/- D.B.B., 31/6 B.B.
Hosford House, 23 London Street	36/- D.B.B., 29/6 B.B.
Hotel Central, 100 Princes Street	25/- B.B.

K. J. LEMMON,
Dominion Secretary.

NOMENCLATURE COMMITTEE**Report to Dominion Council 26th June, 1963.**

Although the Nomenclature Committee has not been able to meet, its members have been in correspondence with each other on a variety of appropriate subjects. It is pleasing to report that it should be possible in the near future to publish a complete list of *Leptospermum* cultivars. This will at least ensure that the plants are correctly named although the final Register cannot be completed until we have examined further plant specimens.

The Committee is also preparing a list of cultivars of *Pittosporum*, and would welcome information regarding this genus.

In preparing any Register it is most desirable that the earliest publishing date and the name of the cultivar should be noted in the Register. For this reason therefore, the Committee would welcome the receipt of copies of nursery catalogues prior to 1950, which give in particular the first date of the introduction of *Leptospermum* cultivars.

J. P. SALINGER, Convener.

OVERSEAS EXHIBITIONS

- (1) FLORA INTERNATIONAL EXHIBITION to be held in Paris from 24 April to 3 May, 1964.
- (2) INTERNATIONAL EXHIBITION OF HORTICULTURE IGA 63 to be held in Hamburg from 26 April to 13 October, 1963.
- (3) WORLD CONGRESS OF FLORISTS AND HORTICULTURISTS and the International Congress of the International Association of Horticultural Producers to be held in Hamburg from 22 to 25 October, 1963.
(Items (2) and (3) are somewhat too close to be of interest, but information came to hand too late for earlier publication.)
- (4) INTERNATIONAL GARDEN SHOW to be held in Vienna from April to October, 1964.

PUBLICATION RECEIVED

TREES AND SHRUBS OF NEW ZEALAND, by A. L. Poole and Nancy M. Adams. (Published by R. E. Owen, Government Printer, Wellington), 25/-.

This book takes a position between the technical botanical treatise and the popular gardening book. The combination of scientific accuracy, and a presentation that will easily be followed by the normal garden lover makes this a book of wide appeal.

It is sufficiently technical to appeal to the botanical student as a work of speedy reference. The naturalist, the gardener and, in fact, anyone who studies our native flora will find this book an essential companion. In the introductory chapter the authors state 'The aim of this book is to assist all those interested in our native vegetation to *identify* the woody plants of the forest and shrub land, and the authors hope that it will stimulate *some* to make a *closer study* of the plants themselves and so to begin to understand the vegetation patterns the plants form'. The italics are those of the reviewer.

The Introduction is divided into sections dealing with: the effect of environment and the grouping of plants, the change that is constantly taking place among plants through both artificial and natural influences, the impact of the Maori and, later, the European settlers on the vegetation and forest. It also deals with the commercial aspect of native timbers and their regeneration. There is also the sad story of the depredations of exotic animals particularly the opossum, the deer, the goat, the pig and small animals.

There are 213 pages of illustrations and descriptions of genera and species, which should simplify identification of many native hardwoods. The excellent drawings by Miss Adams form a valuable feature of this book. The formation of the leaf, flower seed pod or berry is shown and bring out clearly the characteristics of the various species by which they may be recognised. In the descriptions, technical terms have been used only when necessary and the authors have been wise to give particular emphasis to leaf characteristics, rather than the complications of flower structure.

Mr A. L. Poole, formerly Director of the Botany Division, Department of Scientific and Industrial Research, is now Director-General of Forests. Miss Nancy M. Adams studied botany at the university and was recently with the Botany Division, where she worked mainly as botanical artist. She possesses the rare faculty of combining artistic skill with botanical accuracy. Without hesitation I recommend this book to all lovers of our native flora.

DISTRICT COUNCIL REPORT

TAUPO

It is with considerable pleasure that we are able to report sustained enthusiasm by members of this Council as we approach the commencement of our third year of activities.

The roll-call is in the vicinity of eighty and all meetings are well attended, due largely to our good fortune in obtaining the generous services of a number of prominent horticulturists as guest speakers. An indication of the range of subjects covered during the past year by these talks (usually accompanied by excellent slides) is as follows:—

'The Construction and Planting of Rock Gardens', by Mr J. Holden of Rotorua; 'The Cultivation of Lilies' by Mr H. Redgrove of Auckland. It may be mentioned that various species of lily grow particularly well in

Taupo and local interest in this attractive plant is rapidly increasing. At the February meeting Mr I. Atkinson of the D.S.I.R. spoke on the research that is now being undertaken in the National Park area with a view to reducing erosion by the judicious planting of suitable alpine flora. The next meeting saw a large attendance to hear Dr. E. J. Godley, Director of the Botany Division, lecture on his five months visit to Chile where he investigated the relationship between some of the South American and N.Z. flora; he also gave a short talk on a visit to the Auckland Islands.

In May Mr Arthur Farnell of Auckland provided much of interest when he took his audience from North Auckland to the West Coast per medium of excellent slides and discussed aspects of New Zealand native flora. At our most recent meeting Mr J. A. McPherson, Director of Parks and Reserves, Auckland, gave valuable advice on street planting and the care of trees. This is a subject of much interest in Taupo, where planting of the Lake front and other areas is now being undertaken. Several of our members have assisted the Taupo Horticultural and Beautifying Society in this work.

From the foregoing it will be seen that the Council has had ample opportunity for expert instruction in several branches of horticulture. In addition, field days were held during the summer, to the National Park area and to the native beech forest at Poronui on the Napier road. At most evening meetings it has been customary to provide one or two specimens of plants for special study and discussion and this has proved to be a popular and instructive practice. His Worship, the Mayor of Taupo, Mr J. Storey, attended the December meeting and presented Certificates of Fellowship to Miss R. McKelvie and Messrs E. S. West, K. E. Young and C. J. Cuming. It was with considerable regret that we recently farewelled Mr Jack Bennett, F.R.I.H., on the occasion of his retirement to Palmerston North. He had been primarily responsible for the founding of the Taupo District Council and his unflinching enthusiasm was an inspiration to its members who presented Mr Bennett with a small token of their appreciation.

WHANGAREI.

MAY

A large attendance of members was present at the May meeting to see and hear Mr A. Cederman, of Kaikohe, when he demonstrated the pruning of common orchard trees — peaches, nectarines, apples and plums.

Mr Cederman began by saying that less harm could be done by pruning inexpertly than by not pruning at all. Skill could be acquired by observation and experience. The choice of trees to be grown was of the greatest importance. Those selected should be the most suited to our climate. Up to ninety per cent of fruit trees grown in Northland were unthrifty here because they were not happy under our conditions. Do not choose a tree because you have seen it doing well in Hastings. Get advice, and moreover, don't order your plants by telephone or through someone else, unless that person is qualified to choose well.

Have your ground, and especially those holes where you plant, ready beforehand. Dig a good hole at least two feet square, take out the soil to the necessary depth, put in your general purpose manure, cover with a little good soil and plant your tree to the same depth as it was in the nursery, having cut off cleanly any roots damaged in transit. Putting the manure below the plant enables the roots to obtain food quickly, where as, if at the surface, it takes time to wash down. Then comes the most important part of the operation — the pruning.

Many people think all the necessary pruning has been done by the nurseryman. This is not so, and unless quite drastic pruning is done at planting time, you will have an impossible task to shape the tree to bear the maximum crop. This is especially true of peaches and nectarines. Mr Cederman advocated the use of Roll-cut secateurs for clean cutting. If the new trees were pruned hard after planting, in two years there would be a well-developed tree with a big framework, producing ten to twelve cases in third or fourth year.

Mr Cederman demonstrated the pruning needed for a new tree, reducing the top to balance the roots, which are severely cut back in the nursery when the plant is lifted. When finished the tree consisted of its main stem and three of the stoutest branches, reduced to about 8 inches in length. This severe initial pruning obviated any further severe pruning in later seasons. However, attention must always be given to maintaining a good framework. Dead wood, damaged wood and weak growth should be removed to give good spacing. Red wood was fruiting wood and should be kept. If a branch was required to be cut out, it should be removed completely. Never shorten, but either leave in completely or take out completely. If a tree is too big, cut out alternate big branches one year, and remove the remainder the following year. The vigorous new shoots will soon be fruiting again.

For Northland's climate 'Paragon' was the most consistent fruiter, 'Grey's Seedling' was an earlier variety, with white flesh and good flavour. Maori peaches were often good and disease resistant, and could be grafted. 'Golden Beauty' and 'Brigg's Red May' were also recommended. Apple pruning was not as simple a procedure as with peach and nectarine, as it varied with the variety and habit of growth. The general rule was to get a good frame. Pruning then forces growth, and leaving unpruned tends to make fruit. In a heavily fruiting tree, pick the fruit off the ends of the branches early to maintain shape, otherwise the weight draws the branches down to the ground. 'Granny Smith' tends to make strong growth, so cut to a definite bud. Apples recommended were 'Gravenstein', 'Golden Delicious', 'Red Delicious' and 'Granny Smith'.

Pears were not recommended for growing in Northland, unless one tries 'Wm. Bon Cretien', as a colder climate was necessary for success. Among plums the Japanese varieties suited our climate better than English. 'Satsuma', 'Barbank' and 'Sultan' were recommended. 'Masterpiece' or 'Elephant Heart', is subject to *Glomerella*. The long shoots which commonly appear on plums should be taken out in summer, and if a shoot grows in the wrong direction, summer prune.

Chinese Gooseberries need drastic pruning to ensure fruiting. Prune old growth severely and space out new growth along the supports. Passion fruit should be pruned in the spring, and every second year very severely. If allowed to grow rampantly fruit would wilt and fall, or develop greasy-spot.

Two Tree Tomato plants were ample for a family. If they received pruning in alternate years, in spring, a more regular supply of fruit was assured. Citrus should be pruned in the spring to prevent congestion. All weak and borer-infested brush should be removed.

The aim of all pruning is to build a strong and shapely framework which will carry the maximum crop.

Questions Session

Should self-blanching celery be hoed up as its grows? There is no need to do this.

When should shallots and tree onions be planted? It is an old-established practice to plant shallots on the shortest day and harvest on the longest. Tree onions: In light soils plant in May, but on heavier types defer until spring.

Black spots on 'Granny Smith' apples, and pitting on the surface: The pitting is due to a soil deficiency of boron. Remedy is to apply a small quantity of borax.

Bougainvillea 'Killie Campbell' has bloomed well this season. What can I do to ensure the same next year? Bouganvilleas flower better in a hot, dry season, but often make too much leaf and stem growth in wet seasons. Shorten long shoot back after flowering, and new blooms will come on the short side growths.

Daphne odora has very yellow leaves. This seems to indicate soil deficiency. Daphnes are acid-loving plants, and an old remedy is to put tea leaves around the plant — not touching the stem and not forming a sticky mass. Sulphate of iron would meet iron deficiency and Epsom Salts mixed in water would correct lack of magnesium. This last is an old and common cure for sick *Daphne*. Stones around the root help to give a cooler root run.

Citrus for Identification. This is the Japanese Mandarin 'Satsuma' Its real name is 'Unshiu'. The true mandarin is a Chinese fruit.

Avocado Pear: I grew an Avocado from seed and it reached 9 inches in the first year. Should I graft this, or will it produce fruit as it is? It would be advisable to get wood of a variety proven in our climate for best results.

Small mandarins. Smallness is often due to lack of pruning, too much energy going into stem and leaf instead of fruit. Start at bottom of tree and prune out all weak, thin brush. This should be done after fruit is picked — in Spring.

Apple 'Granny Smith' affected by *Glomerella*. A regular spraying programme would prevent this. Weakly trees are always liable to disease. Soil should be improved.

Sooty mould on apple: This forms on the sticky exudation from aphides, spray with nicotine sulphate.

JUNE

The June meeting was addressed by Mrs Evison, of Te Aroha, who is a noted enthusiast and grower of orchids, and has proved a most successful exhibitor at the Auckland shows.

On a recent visit to New South Wales, Mrs Evison had the pleasure of seeing the Orchid Festival in Sydney Town Hall, as well as visiting the orchid houses and collections of some of the best known and largest exporters of orchids in the country. Notable among these was the firm of Dos Pueblos, which sent many thousands of blooms to the United States every year. The area under glass or lath house was enormous and many

different species or hybrids were grown. These were cut with long stems, carefully re-selected, packed in special containers for air transport, and the less perfect blooms sold on the Australian market.

The type of house used for orchid growing varied according to the amount of heat, light, air, shade or moisture required by different species. In New South Wales all the big growers favoured a steel structure to support the glass, using steel rods for benches, with two-inch spaces between the rods to ensure ventilation and with the advantage of permanency, and also giving less harbourage for insects or fungi. Where necessary these houses were shaded with Saron cloth, a part nylon fabric lasting four years or more.

Mrs Evison then gave some account of how she herself began growing orchids in a small glasshouse, along with cacti and various pot plants. She soon found that her orchids needed more specialised treatment, and that among the various species the requirements also differed. *Cymbidiums* were perhaps the most suited to New Zealand conditions. They did not need a heated house, and could indeed be grown outdoors for part of the year, but as soon as buds began to form, should be taken inside. Some types of *Cypripedium* were moderately easy for beginners. Those with green leaves needed cool, shady and humid conditions, but those with mottled leaves needed much more warmth, and in fact were among the rarest and most highly-priced orchids. *Phalaenopsis* need the same conditions as the warm *Cypripedium* and *Cattleya*.

Mrs Evison said she bought the potting mix from Beck, Hauraki Plains. She crocked a third of the pot, put a little dried bracken on it to prevent soil washing out, and then filled with the mix to within half an inch of the pot rim. When questioned about starting a new plant she gave the following directions: With a very sharp, clean knife, remove the back bulb and set on top of the soil in a small pot and in due course it will form roots. This operation is done between the months of August and December. Stake, and date at the same time. Watering and manuring must be done with care, and different growers favoured different manures. She had used liquid turkey manure successfully. Water should never be allowed to lie in the sheaths at bud time as it would rot them. Copper wire was used for tying *Phalaenopsis* and *Vanda* to slabs of Punga fern. If growing orchids from seed the utmost cleanliness was essential and could only be obtained under laboratory conditions. These were described in a recent issue of the *New Zealand Gardener*, which gave an outline of work done at the orchid houses of Mr and Mrs Bradley, of Stoke, Nelson.

Mr and Mrs Evison gave a most kind invitation to members to visit their orchid houses at Te Aroha, where they could see many orchids not displayed on the films shown.

Display Table

This was again a feast of colour, with a great variety of plants on show. In honour of Mrs Evison's visit a number of orchid species were brought — *Vanda coerulea* by Mrs Lees, a lovely *Cypripedium* from Mrs May, and a spray of *Cymbidium* by Mrs Ayling, and rivalling these, some magnificent flowers of pink *Magnolia campellii* from the garden of Mrs McKinnel, who also displayed the long, coppery-yellow trusses of the Brazilian fire-creeper *Pyrostegia venusta*. There were also a number of camellias, some unnamed, but two beautiful pink specimens, Queen Elizabeth and Spencer's Pink, were from Mrs Connell. Mrs Hobson's bowl

of coloured foliage showed a wide range of plant material for the floral artist, whether in garden or house display. Members envied Mrs Waterhouse for the colour achieved in *Nandina domestica* 'Pygmaea', and the scarlet berries of *Ardisia crenata*.

Question Session:

Miss Pitney presented a number of questions from members:

Question: What is the cause of yellowing of Stock plant leaves, set out on well prepared soil, manured some weeks before planting time?

Answer? The specimen shown had mealy-bug. Over-wetness could also be a cause of unhealthy condition. Stocks need rather dry conditions and perfect drainage. Those who have seen them growing wild and in great abundance on shingle slopes below the railway line at Paekakariki north of Wellington, would appreciate this. Some lime is essential for health.

Question: What causes the damage to oranges which show holes in the skin?

Answer: Leaf-roller caterpillars make their homes between leaves and fruit, and feed on the latter. These pests have been very prevalent this, fine dry autumn.

Question: Malformation in orange?

Answer: Sectorial chimera, common in certain varieties. Best's Seedless is particularly susceptible, but though unsightly it does not damage the fruit.

APRIL

The programme for the April meeting consisted of a Quiz Session, followed by a series of colour slides of Christchurch Show, and pictures of a number of South Island gardens.

The Quiz Session was conducted by a Panel of Fellows of the Society—Mesdames McKinnel and Reynolds, with Messrs Arcus and Cameron, and Mr Purser acting as Quizmaster. The questions were many and varied, with replies from the Panel and additional comment from members, resulting in a wide range of information. This is presented in a condensed form.

Question: Please name what may be considered the six best small Australian shrubs suitable for volcanic soil.

Answer: *Chamaelaucium uncinatum* (Geraldton Wax Flower); *Grevillea lavandulacea* 'Black Range' form, *Thryptomene saxicola* 'Rosea', *Boronia denticulata*, *Eriostemon* and *Beaufortia sparsa*.

Question: In constructing a glasshouse, which is the better way of preventing leaks, by laying panes in with putty, or making a drainage groove under the glass? The latter method is said to allow slaters and other insects to get under the glass.

Answer: Flat roofs need putty, but for other types the drainage groove is best but should be so made that access is easy, and should be cleaned out at least twice a year to remove debris and algae.

Question: I have cut down a large Australian gum tree, but the stump keeps sprouting. It is 4ft. high and 2ft. in diameter. It is desired to grow a creeper over it.

Answer: Several remedies were suggested. The simplest way was to remove all suckers as they appear. A certain way was to use the hormone spray 2-4-5T, but great care was necessary. Use only a pump kept for hormone sprays, or take infinite pains to wash out the pump thoroughly after use. An older method is to bore holes in the stump and insert saltpetre.

Question: What treatment does the Panel advise to obtain a good flush of bloom on roses in the autumn?

Answer: Pick regularly right down to heavy wood to an outside bud, water in summer, feed well to keep planting growing, and spray for disease. Give basic slag at Easter. Leave hips on in autumn. Eight weeks should be allowed between the time of tip pruning and the autumn flowering period.

Question: I have a Frangipani plant several years old, 2ft. 6in. high and very healthy. It has been under glass, but is now outside in a warm, sheltered place. How can I make it flower?

Answer: If the plant is healthy and in a warm place it will flower in time. Plants in Auckland flower outdoors. Keep dry in winter, feed well with blood, sheep or cow manure. Old *Cupressus macrocarpa* compost is good.

Question: What is the best way to propagate *Daphne odora* 'Rubra'?

Answer: Layering in Spring is the best way, but cuttings of young wood 2½ in. long may be taken in April. Dip in a rooting hormone, plant in sand or fine scoria, and cover with polythene. The stem may be slit and an oat grain inserted. This is an old and proved method.

Question: There are gaps in my cypress hedge, and I would like a quick-growing shrub, not too tall, which would stand wet, and cold south winds.

Answer: *Abelia chinensis*, the plant sold as hedging.

Question: Kikuyu grass is to be sprayed with Dowpon. Will the spray harm shrubs nearby?

Answer: Dowpon is a selective spray and will not harm the roots of other plants, except citrus.

Question: Cauliflower has rotted at the heart and dropped to the ground?

Answer: This is caused by a soil deficiency of boron.

Question: How can I dry the seeds of this Long White Cucumber, which is of extra good flavour?

Answer: Spread them out on paper to dry in hot sun, and rub off the dried pulp.

Question: Will the Panel please advise on the mineral deficiencies of volcanic soils.

Answer: Volcanic soils tend to leach out, especially with heavy rains, and are deficient in manganese and magnesium. Humus should be supplied as much as possible, with a dressing of basic slag once a year. Potash leaches out rather quickly.

NOTABLE EXOTIC TREES

BY

S. W. (BOB) BURSTALL,
NEW ZEALAND FOREST SERVICE

Little over a hundred years ago in New Zealand there began a great horticultural change. The new settlers felled and burned the native forests to make farms, and planted trees, shrubs, and herbs that they knew in their native lands. The climate and soils suited these exotic species, which had become accustomed to living with humans and their domestic animals better than the indigenous plant life was able to.

Trees planted in those early years have grown prodigiously. Some have historic significance, marking events both local and national. Others are noteworthy only for their outstanding development in size or symmetry. Some have fallen in the name of progress but there are still many, especially in old estates, which live on to inspire reverence in the beholder.

My work has taken me to the larger tree-bearing estates throughout the country, so that I have had the opportunity to admire many of these fine old trees, to measure a great number of them, and to collect historical and other information where this was available. My interest soon developed into a fascinating hobby. From 1955 to 1960 hundreds of trees were measured and many have been remeasured after the lapse of several years. From a vast accumulation of data the following schedule has been derived.

Identification of the trees has been done with the aid of Makins' *Identification of Trees and Shrubs* and generous help from my botanical colleagues at the Forest Research Institute. My original names have since been checked with Bailey's *Standard Cyclopaedia of Horticulture*.

A few words about my notable trees. Wherever possible they were measured for diameter at breast height, i.e. 4ft. 6in. from the ground. Heights were often obtained by climbing and measuring down from the top but in some cases instruments had to be used.

The most outstanding all-round tree is, in my opinion, the 212-ft. *Eucalyptus regnans* near Pukeuri, North Otago. It was planted between 1855 and 1860 and has a perfect trunk and well shaped crown as well as being close to the maximum height. This and others in the list which are outstanding for straightness of trunk and crown symmetry have been marked with an asterisk (*).

The tallest tree is another *E. regnans*, at Newstead near Hamilton, planted in 1873 by Captain Runciman. When measured in 1957 by a surveyor its height was 219 ft.

The greatest height reached by a conifer is 202-ft. (measured by a surveyor) — a *radiata* pine which grew in Eighty-eight Valley, Nelson. Unfortunately a freak wind blew it over in 1959.

At the time of writing the biggest diameter belongs to a *Eucalyptus globulus* growing on a farm near Richmond, Nelson. In December 1961 it had reached 131 in. at 4ft. 6in. from the ground.

The oldest tree I met was a pear planted in 1818 at Port Kerikeri. Its origin is said to be linked with Samuel Marsden and the early missionaries. It is still healthy enough to bear fruit but is in need of some tree surgery.

The list makes no pretence at being complete — it is as good as I can make it at the moment. If its publication inspires others to make it more complete it will have served a useful purpose.

d.b.h.(o.b.), diameter at breast height (outside bark);

g.b.h.(o.b.), girth at breast height (outside bark).

Insertions such as "at 2ft." refer to the measurement below.

Botanical and Common Names	Species and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
NORTHLAND									
<i>Acmena floribunda</i> Monkey-apple tree		*48	13	75	30	100	Jan. 1962	Sth. America	Mill Rd., Whangarei.
<i>Albizia julibrissin</i> Pink siris		17	4	20	40	70	Jan. 1962	Orient	School House, Port Kerikeri
<i>Araucaria araucana</i> Monkey puzzle		55	14	85		120	Jan. 1962	Chile	Anglican Mission, Waimate North.
<i>Brachychiton populneum</i> (<i>Sterculia diversifolia</i>) Kurrajong		*34	9	40	45	90	Jan. 1962	Australia	Radcliffe St., Whangarei.
<i>Bumelia lycioides</i> Southern buckthorn		20	5	20	25	50	Jan. 1962	Sth. United States	Hatea St., Whangarei.
<i>Carya pecan</i> Pecan		18	5	45	45	30	Jan. 1962	United States	Jesse St., Whangarei.
<i>Cedrus libani</i> Cedar of Lebanon		*56	15	80	90	100	Jan. 1962	Mountains of Syria	Ohaeawai, Nth. Auckland.
<i>Cinnamomum camphora</i> Camphor tree		*41	11	55	60	90	Jan. 1962	Japan	Kensington Ave., Whangarei.
<i>Erythrina crista-galli</i> Coral tree		19	5	30	35	90	Jan. 1962	Brazil	Port Rd., Whangarei.
<i>Magnolia grandiflora</i> <i>Myrtus communis</i> Myrtle		54	14	50	60	100	Jan. 1962	Sth. United States	Russell Rd., Whangarei.
<i>Olea europaea</i> Olive		25	7	50	45	90	Jan. 1961	Mediterranean	Potter Memorial Home, Banks St., Whangarei.
<i>Paulownia tomentosa</i> Foxglove tree		30	8	20	25	90	Feb. 1962	Sth. Europe	Park Rd., Kaikohe.
<i>Pinus pinea</i> Stone pine		24	6	25	40	90	Jan. 1962	China	Whangarei.
<i>Pyrus communis</i> Pear		*52	14	50	90	100	Feb. 1962	Portugal to Asia Minor	Near Opononi, Nth. Auckland.
<i>Quercus robur</i> (<i>Q. pedunculata</i>) English oak		38	10	20	30	144	Jan. 1962	Europe and Asia	Port Kerikeri, Nth. Auckland.
		*10	27	89	130	123	Feb. 1962	Europe and Asia	"Mission Oak", Waima, Nth. Auckland.

AUCKLAND

<i>Agathis palmerstonii</i> Nth. Queensland kauri	34	9	85		97	Jan. 1962	Nth. Queensland	Owens Rd., Auckland.
<i>Agathis robusta</i> Sth. Queensland kauri	37	10	90		100	Jan. 1962	Queensland	Domain, Auckland.
<i>Ailanthus altissima</i> (<i>A. glandulosa</i>) Tree of heaven	23	6	45	40	60	Jan. 1962	China	Near Albert Park, Auckland.
<i>Araucaria excelsa</i> Norfolk Island pine	*60	16	148		100	Jan. 1962	Norfolk Island	Manukau Rd., Auckland.
<i>Brachychiton acerifolium</i> (<i>Sterculia acerfolia</i>) Flame or parasol tree	18	5	35	35	80	Jan. 1962	Australia	Mountain Rd., Auckland.
<i>Cercis siliquastrum</i> Judas tree	at 2ft. 25	7	20	30	90	Jan. 1962	Mediterranean	Mountain Rd., Auckland.
<i>Erythrina corallodendron</i> Coral tree	32	8	30	50	90	Jan. 1962	West Indies	Parnell Rose Gardens, Auck.
<i>Erythrina indica</i> Coral tree or dadap	55	14	45	65	90	Jan. 1962	India, Polynesia	Domain, Auckland.
<i>Eucalyptus citriodora</i> Lemon-scented gum	26	7	50		90	Jan. 1962	Australia	Parnell Rose Gardens, Auck.
<i>Ficus macrophylla</i> Moreton Bay fig	*105	28	75	120	100	Feb. 1962	N.E. Australia	Great South Rd., Auckland.
<i>Ficus platypoda</i> Small-leaved Moreton Bay fig	*82	21	50	90	95	Mar. 1962	Nth. N.S.W. and Sth. Queensland	Albert Park, Auckland.
<i>Ginkgo biloba</i> Maidenhair tree	34	9	53	45	97	Jan. 1961	China	Cnr. Gillies Ave and Owens Rd., Epsom, Auckland.
<i>Phytolacca dioica</i> Bottle tree	85	22	50	60	100	Jan. 1962	Sth. America	Albert Park, Auckland.
<i>Quercus castaneaefolia</i> Chestnut-leaved oak	27	7	45	50	90	Feb. 1962?	Caucasus	Albert Park, Auckland.

Botanical and Common Names	Species and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
AUCKLAND (Cont.)									
<i>Q. ilex</i> Holm oak		*70	18	80	85	100	Jan. 1962	Mediterranean	St. Barnabas Church, Auckland
<i>Schinus molle</i> Sth. American pepper tree		47	12	35	60	100	Jan. 1962	Peru	Mountain Rd., Auckland.
<i>Stenocarpus sinuatus</i> Wheel-of-fire tree		36	9	48		97	Jan. 1962	Australia	Cnr. Gillies Ave and Owens Rd., Auckland.
<i>Taxodium distichum</i> Swamp cypress		37	10	75		100	Jan. 1962	Sth. United States	Myer's Park, Auckland.
WAIKATO									
<i>Araucaria bidwillii</i> Bunya bunya pine		53	14	75	65	80	Jan. 1962	Queensland	Hamilton Rd., Cambridge.
<i>Castanea mollissima</i> Chinese chestnut		22	6	45	35	80	Jan. 1962	China	Peach Grove Rd., Hamilton.
<i>Castanea sativa</i> Spanish or sweet chestnut		*74	19	60	105	90	Nov. 1961	Europe, Nth. Asia, Nth. Africa.	Ohaupo, Waikato.
<i>Chamaecyparis lawsoniana</i> Lawson cypress		39	10	85	30	90	Feb. 1962	Western Nth. America.	Newstead, Waikato.
<i>Eucalyptus fastigata</i>		97	25	120	90	89	Jan. 1962	Australia	Woodlands Estate, Gordonton, Waikato.
<i>Eucalyptus regnans</i> Mountain ash		123	32	219		89	Dec. 1958	Australia	Scott's Farm, Newstead, Waikato.
<i>Eucalyptus saligna</i> Sydney blue gum		78	21	148		90	Feb. 1962	Australia	Butler's Farm, near Cambridge
<i>Garrya elliptica</i> Silk-tassel bush		24	6	30	30	44	Oct. 1961	California	"Bellevue", Strange's Rd., Te Aroha.

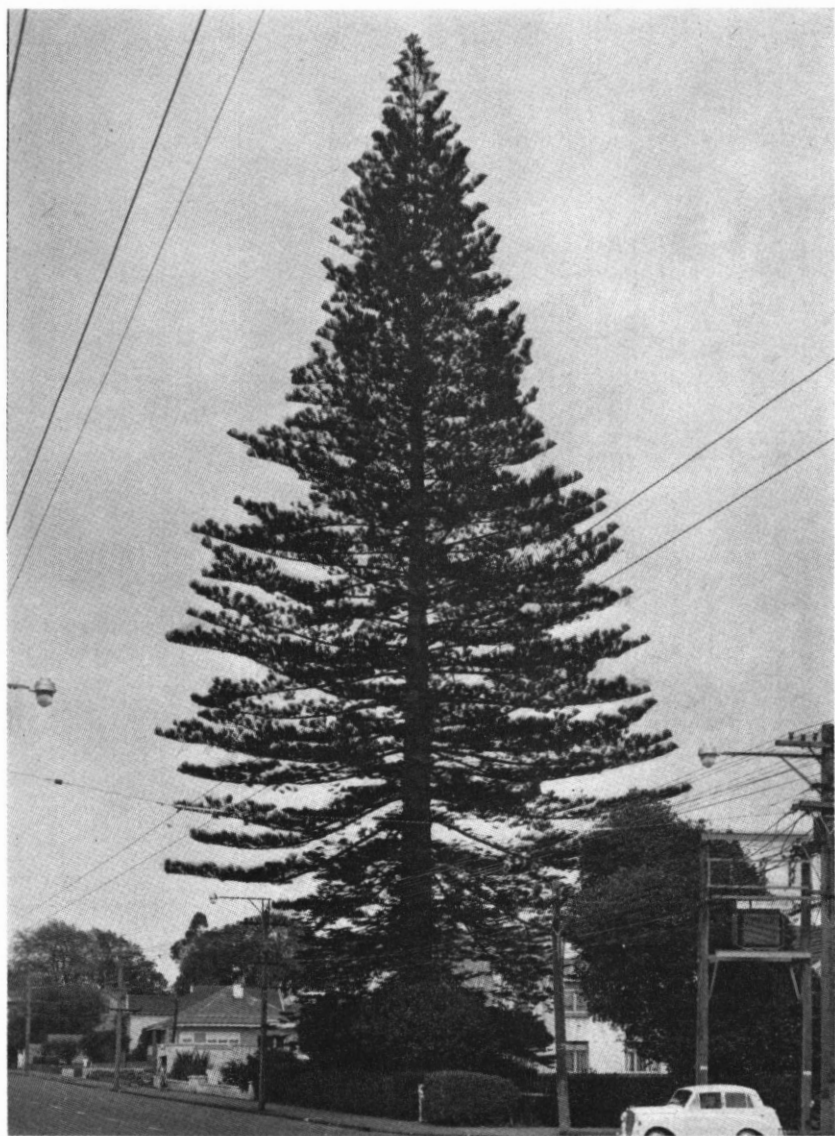
WAIKATO (Cont.)

<i>Ginkgo biloba</i> Maiden hair tree	*30	8	64	40	44	Oct. 1961	China	"Bellevue", Strange's Rd., Te Aroha.
<i>Liriodendron tulipifera</i> Tulip tree	46	12	100	45	90	Jan. 1962	North America	Woodlands Estate, Gordonton, Waikato.
<i>Melia azedarach</i> Pride of India, bead tree.	22	6	50	30	44	Sep. 1961	India	"Bellevue", Strange's Rd., Te Aroha.
<i>Picea smithiana</i> Himalayan spruce	35	9	85		80	Feb. 1962	Western Himalaya	Hamilton Rd., Cambridge.
<i>Pinus ponderosa</i> var. <i>mayriana</i> Mayr's pine	31	8	85		80	Nov. 1961	Arizona	Ohaupo, Waikato.
<i>Prunus cerasifera</i> Cherry plum	32	9	25		90	Nov. 1961	Caucasus	Ohaupo, Waikato.
<i>Quercus edulis</i> Japanese evergreen oak	*38	4	45	66	87	Nov. 1961	Japan	Late H. S. Duncan's Farm, Bruntwood, Cambridge.
<i>Ulmus glabra</i> , var. <i>pendula</i> Spreading elm	20	5	18	38	90	Feb. 1962	North Europe	Railway Station, Hamilton.

ROTORUA

<i>Cryptomeria japonica</i> Japanese cedar	*33	9	124		58	Dec. 1961	Japan	Forest Research Institute, Rotorua.
<i>Cryptomeria japonica</i> var. <i>elegans</i>	34	9	80		58	Dec. 1961	Japan	Forest Research Institute, Rotorua.
<i>Cupressus lusitanica</i> Mexican cypress	*29	8	99		58	Dec. 1961	Mexico	Forest Research Institute, Rotorua.
<i>Liriodendron tulipifera</i> Tulip tree	58	15	80	50		Mar. 1961	United States	Old Arawa House, Hospital, Rotorua.
<i>Pinus echinata</i> Short-leaf pine	14	4	45		58	Dec. 1961	Eastern United States	Forest Research Institute, Rotorua.
<i>P. Elliottii</i> Slash pine	23	6	105		58	Dec. 1961	Sth. Eastern United States and Cuba	Forest Research Institute, Rotorua.

Species Botanical and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
ROTORUA (Cont.)								
<i>P. contorta</i> (<i>P. murrayana</i>) Lodgepole pine	28	7	95		58	Mar. 1962	Nth. America	Waiotapu Forest, Rotorua.
<i>P. leiophylla</i> Smooth-leaved pine	25	7	100		58	Dec. 1961	Southern United States and Mexico	Forest Research Institute, Rotorua.
<i>P. patula</i> Patula pine	32	11	78	55	40	July 1962	Mexico	Wairapakau, Kaingaroa Forest
<i>P. torreyana</i> Torrey pine	*36	9	130		58	Dec. 1961	Santa Rosa Is., San Diego	Forest Research Institute, Rotorua.
<i>Quercus robur</i> (<i>Q. pedunculata</i>) Common English oak	*63	17	75	115		Mar. 1961	Europe and Asia	Old Arawa House, Hospital, Rotorua.
<i>Sorbus aucuparia</i> Rowan	18	5	30	40	40	Mar. 1962	Europe and Asia	Wairapakau, Kaingaroa Forest
<i>Zelkova serrata</i>	*31	8	38	60	58	Dec. 1961	Japan	Forest Research Institute, Rotorua.
COROMANDEL, BAY OF PLENTY								
<i>Grevillea robusta</i> Australian silky oak	*33	9	70		80	Dec. 1961	Australia	Waihi Road, Tauranga.
<i>Pinus sondereggeri</i>	20	6	94		32	Dec. 1961	(hybrid)	Tairua Forest, Coromandel Peninsula
<i>Populus monilifera</i> Canadian black poplar	*99	26	118	90	110	Dec. 1961	E. Nth. America	Near Post Office, Tauranga.
<i>Quercus suber</i> Cork oak	*41	11	65		85	Dec. 1961	Sth. Europe and Nth. Africa	Waihi Rd., Tauranga.



Araucaria excelsa, Manukau Rd., Auckland.

(See Page 177)

Photo: N.Z. Forest Service (B. McKay)



Ficus macrophylla, Great South Rd., Auckland.
See Page 177

Photo: N.Z. Forest Service (B. McKay).

POVERTY BAY

<i>Acacia melanoxylon</i> Tasmanian blackwood	*46	12	70	80	100	May 1962	Australia	Harris St., Gisborne.
<i>Aesculus indica</i> Indian horse chestnut	11	3	35	30	26	May 1962	Western Himalaya	"Eastwood Hill", Gisborne.
<i>Cladrastis lutea</i> (<i>C. tinctoria</i>) at 1ft. Yellow wood	14	4	35		27	May 1962	Eastern United States	"Eastwood Hill", Gisborne.
<i>Dacrydium franklinii</i> Huon pine	7	2	18		20	May 1962	Tasmania	"Eastwood Hill", Gisborne.
<i>Elaeagnus angustifolia</i> Oleaster	19	5	45	45	11	May 1962	Mediterranean Region.	Public Gardens, Gisborne.
<i>Eucalyptus ficifolia</i> Red flowering gum	36	10	45	40	190	May 1962	Australia	Russell St., Gisborne.
<i>Fagus sylvatica</i> , var. <i>lusciniata</i> Cut-leaved beech	8	2	25	30	20	May 1962	Europe and Asia Minor	"Eastwood Hill", Gisborne.
<i>Idesia polycarpa</i>	20	5	30	55	20	May 1962	China and Japan	Haronga Rd., Gisborne.
<i>Juniperus communis</i> var. <i>aurea</i>	8	2	25	20	25	May 1962	Europe, Asia and Nth. America	"Eastwood Hill", Gisborne.
<i>Lagunaria patersonii</i> Norfolk Island hibiscus	43	11	60	50	90	May 1962	Australia and Norfolk Island	Near Museum, Gisborne.
<i>Ligustrum ovalifolium</i> Japanese privet	40	10	40	40	90	May 1962	Japan	Public Gardens, Gisborne.
<i>Quercus robur</i> (<i>Q. pedunculata</i>) var. <i>hodginsii</i>	15	4	45	40	25	May 1962	Europe and Asia	"Eastwood Hill", Gisborne.
<i>Sophora japonica</i> Pagoda tree	27	7	40	70	90	May 1962	China	Customhouse St., Gisborne.
<i>Taxodium distichum</i> Swamp cypress	*34	9	100	45	90	May 1962	Sth. United States	O. F. Barker's home, Gisborne.
<i>Ulmus procera</i> Common English elm	61	16	90	75	100	May 1962	Sth. England and W. and S. Europe	Esplanade, Gisborne.

Botanical and Common Names	Species	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
HAWKE'S BAY									
<i>Aesculus hippocastanum</i> Common horse chestnut		44	12	50	70	90	Oct. 1961	Europe	Frimley Park, Hastings.
<i>Banksia serrata</i> Red honeysuckle		13	3	30		90	Oct. 1961	Australia	Frimley Park, Hastings.
<i>Betula verrucosa</i> (<i>B. alba</i>) Silver birch		40	10	40	75	90	Oct. 1961	Europe and N. Asia.	Frimley Park, Hastings.
<i>Casuarina glauca</i> She-oak		44	12	75		90	Oct. 1961	Australia	Frimley Park, Hastings.
<i>Cinnamomum camphora</i> Camphor tree	at 3ft.	64	17	50	65	90	Oct. 1961	China and Japan	Frimley Park, Hastings.
<i>Eucalyptus sideroxyloa</i> Red ironbark		34	9	65		90	Oct. 1961	Australia	Frimley Park, Hastings.
<i>Juglans nigra</i> Black walnut		29	8	30	40	50	Oct. 1961	Nth. America	Corwall Park, Hastings.
<i>Koelreuteria paniculata</i> China tree		14	4	18	30	30	Oct. 1961	China	Cornwall Park, Hastings.
<i>Liquidambar styraciflua</i> Liquidambar		31	8	75	40	90	Oct. 1961	Eastern United States	Frimley Park, Hastings.
<i>Morus alba</i> White mulberry		22	6	30		50	Oct. 1961	China	Cornwall Park, Hastings.
<i>Photinia serrulata</i> Chinese hawthorn	at 1ft.	28	7	40		90	Oct. 1961	China	Frimley Park, Hastings.
<i>Populus nigra</i> Black poplar		104	28	135	115	90	Oct. 1961	Europe and Nth. Asia	Frimley Park, Hastings.
<i>Quercus robur</i> (<i>Q. pedunculata</i>) Common English oak		*62	16	65	100	90	Oct. 1961	Europe and Asia	Frimley Park, Hastings.
<i>Tristania conferta</i> Brush box		17	4	25		90	Oct. 1961	Australia	Frimley Park, Hastings.

MANAWATU

<i>Sophora japonica</i> Pagoda tree	37	10	25	60	75	Oct. 1961	China	Square, Palmerston North.
--	----	----	----	----	----	-----------	-------	---------------------------

TARANAKI

<i>Castanea sativa</i> Spanish or sweet chestnut	83	22	50	118	118	Dec. 1961	Europe, Nth. Asia, Nth. Africa	Brooklands Park, New Ply- mouth.
<i>Cupressus macrocarpa</i> Monterey cypress	91	24	70		120	Nov. 1961	California	Brooklands Park, New Ply- mouth.

WAIRARAPA

<i>Casuarina stricta</i> Coast she-oak	at 4ft. 21	6	20		70	July 1961	Australia	Gardens, Masterton.
<i>Cupressus torulosa</i> Bhutan cypress	*47	12	98		83	June 1961	Himalaya	Gardens, Masterton.
<i>Pinus excelsa</i> Bhutan pine	29	8	30		72	July 1961	Himalaya	Queen Elizabeth Gardens, Masterton.
<i>P. strobus</i> Strobus pine	32	8	73		80	July 1961	Eastern Nth. America	Queen Elizabeth Gardens, Masterton.
<i>Quercus palustris</i> Pin oak	37	10	65	50	90	July 1961	United States	Queen Elizabeth Gardens, Masterton.
<i>Ulmus campestris</i> English elm	*66	17	119	65	100	June 1961	Sth. England and W. and S. Europe	Main Street, Greytown.

MARLBOROUGH

<i>Juglans regia</i> English walnut	54	14	86	75	75	Feb. 1962	Caucasus to Hima- laya	Budge Street, Blenheim.
--	----	----	----	----	----	-----------	---------------------------	-------------------------

Botanical Species and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
NELSON								
<i>Abies alba</i> (<i>A. pectinata</i>) European silver fir	43	11	102		112	Aug. 1959	Europe	Isel Park, Nelson.
<i>Acacia melanoxylon</i> Australian blackwood	47	12	50	100	112	Dec. 1960	Australia	Isel Park, Nelson.
<i>Ailanthus altissima</i> Tree of heaven	30	8	70	50	90	Dec. 1960	China	Gardens, Nelson.
<i>Araucaria cunninghamii</i> Moreton Bay pine	22	6	95		90	Dec. 1960	East Coast Aus- tralia	Wakefield Domain, Nelson.
<i>Chamaecyparis nootkatensis</i> Nootka cypress	*41	11	85	70	100	Dec. 1961	S.W. Alaska to Oregon	Old House Rd., Upper Mou- tere, Nelson.
<i>Cupressus funebris</i> Chinese weeping cypress	35	9	65		90	Dec. 1960	West China	Gardens, Nelson.
<i>Eucalyptus globulus</i> Tasmanian blue gum	131	34	156		100	Dec. 1961	Australia	Farm near Richmond, Nelson.
<i>Ilex aquifolium</i> English holly	30	8	45	30	112	Dec. 1960	Europe	Isel Park, Nelson.
<i>Metasequoia glyptostroboides</i> Dawn redwood	12	3	30		12	Dec. 1960	Central China	Gardens, Nelson.
<i>Morus nigra</i> Black mulberry	22	6	30		110	Dec. 1960	Asia	Isel Park, Nelson.
<i>Picea sitchensis</i> Sitka spruce	50	3	145		112	Aug. 1959	West Nth. America	Isel Park, Nelson.
<i>Pinus canariensis</i> Canary Island pine	33	9	135		112	Aug. 1959	Canary Islands	Isel Park, Nelson.
<i>P. lambertiana</i> Sugar pine	43	11	112		112	Aug. 1959	W. Nth. America	Isel Park (felled 1961).
<i>P. nigra</i> (<i>laricio</i>) Corsican pine	*44	12	121		112	Aug. 1959	Sth. Europe to W. Asia	Isel Park, Nelson.

<i>P. palustris</i> Longleaf pine	31	8	117		112	Aug. 1959	E. Nth. America	Isel Park, Nelson.
<i>P. radiata</i> Radiata pine	*33	9	202		57	July 1959	California	Shuttleworth's Farm, 88 Valley Nelson (wind thrown 1959).
<i>P. torreyana</i> Torrey pine	43	11	95		112	Aug. 1959	Santa Rosa Is., San Diego	Isel Park, Nelson.
<i>Quercus cerris</i> Turkey oak	42	11	60	100	100	Dec. 1960	Sth. Europe and Asia Minor	Langbrien's homestead, Nelson.
<i>Sequoia sempervirens</i> Redwood	*73	19	160	50	120	Aug. 1959	California	Collin's Valley, Nelson.
<i>Tamarix pentandra</i> Tamarisk	at 4ft. 30	8	30		100	Dec. 1960	S.E. Europe to Cent. Asia.	Nelson.

WESTLAND

<i>Cedrus deodara</i> Himalayan cedar	49	13	38	75	100	Sep. 1962	Himalaya	Church St., Reefton.
<i>Kalmia latifolia</i> Calico bush	at 1ft. 9	2	15	15	80	Sep. 1962	Nth. America	"Langbiens", Greymouth.
<i>Magnolia campbellii</i>	at 1ft. 20	5	30	50	80	Sep. 1962	East Himalaya	"Langbiens", Greymouth.

CANTERBURY

<i>Abies grandis</i> Grand fir	35	9	116		90	Sep. 1962	W. Nth. America	Conical Hill, Hanmer.
<i>Abies pindrow</i> West Himalaya fir	39	10	98		105	Feb. 1960	Himalaya	Riccarton Bush, Christchurch.
<i>Abies pinsapo</i> Spanish fir	33	9	80		68	Feb. 1960	Spain	Riccarton Bush, Christchurch.
<i>Acer campestre</i> Common or field maple	35	9	45	65	90	Dec. 1959	Europe	Botanical Gardens, Christ- church.

Species Botanical and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
CANTERBURY (Cont.)								
<i>Acer cappadocicum</i> Cappadocian maple	19	5	25	30	80	Dec. 1959	Caucasus	Botanical Gardens, Christchurch.
<i>Acer griseum</i> Paper-bark maple	3	1	16		20	Dec. 1959	Sth. Europe and N. Asia.	Botanical Gardens, Christchurch.
<i>Acer monspessulanum</i> Montpelier maple	20	5	20		80	Dec. 1959	Sth. Europe and W. Asia	Botanical Gardens, Christchurch.
<i>Acer negundo</i> Box elder	12	3	40		40	Dec. 1959	United States	Botanical Gardens, Christchurch.
<i>Acer pseudoplatanus</i> Sycamore	40	11	80		95	Feb. 1960	Europe and W. Asia	Riccarton Bush, Christchurch.
<i>Alnus glutinosa</i> Common alder	29	8	50	45	80	Dec. 1959	Europe, N. Africa, Nth. W. Asia.	Botanical Gardens, Christchurch.
<i>Arbutus menziesii</i> Madrona	67	18	55	75	90	Dec. 1959	California	Botanical Gardens, Christchurch.
<i>Betula papyrifera</i> Paper or canoe birch	23	6	55	60	90	Sep. 1962	Nth. America.	Botanical Gardens, Christchurch.
<i>Betula verrucosa</i> (<i>B. pendula</i>) Silver birch	35	9	45	60	90	Dec. 1959	Europe and Nth. Asia.	Botanical Gardens, Christchurch.
<i>Betula verrucosa</i> var. <i>youngii</i>	39	10	45	50	90	Dec. 1959	Europe and Nth. Asia.	Botanical Gardens, Christchurch.
<i>Cedrus atlantica</i> Atlas cedar	*56	15	55	85	90	Dec. 1959	Nth. Africa	Botanical Gardens, Christchurch.
<i>Chamaecyparis pisifera</i> Sawara cypress	24	6	60		90	Dec. 1959	Japan	Botanical Gardens, Christchurch.
<i>Cupressus macrocarpa</i> Monterey cypress	*52	14	128		100	Nov. 1955	California	Homebush, Mid. Canterbury.
<i>Fagus sylvatica</i> , var. <i>cuprea</i> Copper beech	47	12	40	75	70	Nov. 1959	Europe and Asia Minor	Methodist Wesley Lodge, Park Ter., Christchurch.
<i>Fraxinus excelsior</i> , var. <i>aurea</i> at 2ft. Goldon ash	24	6	50	40	80	Dec. 1959	Europe	Botanical Gardens, Christchurch.
<i>Gymnocladus dioica</i> Kentucky coffee tree	20	5	35	50	75	Dec. 1959	Nth. America	Botanical Gardens, Christchurch.

<i>Ilex aquifolium</i> var. <i>heterophylla</i>	21	6	30	35	80	Sep. 1962	Europe	Botanical Gardens, Christchurch.
<i>Libocedrus decurrens</i>								Cheviot Park, Nth. Canterbury.
Incense cedar	62	16	113	35	100	Feb. 1962	W. Nth. America	
<i>Maclura pomifera</i> (<i>M. aurantiaca</i>)								Botanical Gardens, Christchurch.
Osage orange	8	2	27		25	Aug. 1962	Sth. United States	Botanical Gardens, Christchurch.
<i>Maytenus chilensis</i>								Botanical Gardens, Christchurch.
Maytens tree	34	9	40	50	90	Sep. 1962	Chile	Botanical Gardens, Christchurch.
<i>Pinus aristata</i>								Botanical Gardens, Christchurch.
Bristlecone pine	8	2	36		20	Feb. 1962	California	Hammer Forest, Nth. Canterbury.
<i>P. muricata</i>								Cheviot Domain, Nth. Canterbury.
Muricata pine	*29	8	117		61	Nov. 1957	Coastal California	Cheviot Domain, Nth. Canterbury.
<i>Pinus ponderosa</i>								Cheviot Domain, Nth. Canterbury.
Ponderosa pine	61	16	153		100	Sep. 1962	W. Nth. United States	Kaiwarra Station, Nth. Canterbury.
	*45	12	166		100	Feb. 1962	W. Nth. United States	Botanical Gardens, Christchurch.
<i>P. ponderosa</i> var. <i>jeffreyi</i>								Glen Wye Station, Lewis Pass Road.
Jeffrey's pine	53	14	116		95	Nov. 1957	California	Cathedral Square, Christchurch
<i>P. rigida</i>								Botanical Gardens, Christchurch.
Northern pitch pine	28	7	90		90	Dec. 1959	Nth. America	Riccarton Bush, Christchurch.
<i>P. sylvestris</i>								Botanical Gardens, Christchurch.
Scots pine	26	7	75		90	Sept. 1962	Europe, Nth. Asia	Cathedral Square, Christchurch
<i>Platanus acerifolia</i>								Botanical Gardens, Christchurch.
London plane	71	19	60	105	90	Dec. 1959		Riccarton Bush, Christchurch.
<i>Populus yunnanensis</i>								Botanical Gardens, Christchurch.
Chinese poplar	29	8	60		90	Dec. 1961	China	Riccarton Bush, Christchurch.
<i>Prunus avium</i>								Botanical Gardens, Christchurch.
Gean, or wild cherry	33	9	35		107	Mar. 1962	Europe and W. Asia	Botanical Gardens, Christchurch.
<i>Prunus serrulata</i>								Botanical Gardens, Christchurch.
Flowering cherry	29	8	30	50	90	Sep. 1962	China and Japan	Botanical Gardens, Christchurch.
<i>Quercus coccinea</i>								Botanical Gardens, Christchurch.
Scarlet oak	25	7	35	50	80	Dec. 1959	Nth. America	Botanical Gardens, Christchurch.
<i>Quercus rubra</i> (<i>Q. borealis</i>)								Botanical Gardens, Christchurch.
Red oak	33	9	50		80	Dec. 1959	Nth. America	Near Cashel St. bridge, Christchurch.
<i>Salix babylonica</i>								
Weeping willow	50	13	71	54	80	Feb. 1962	China	

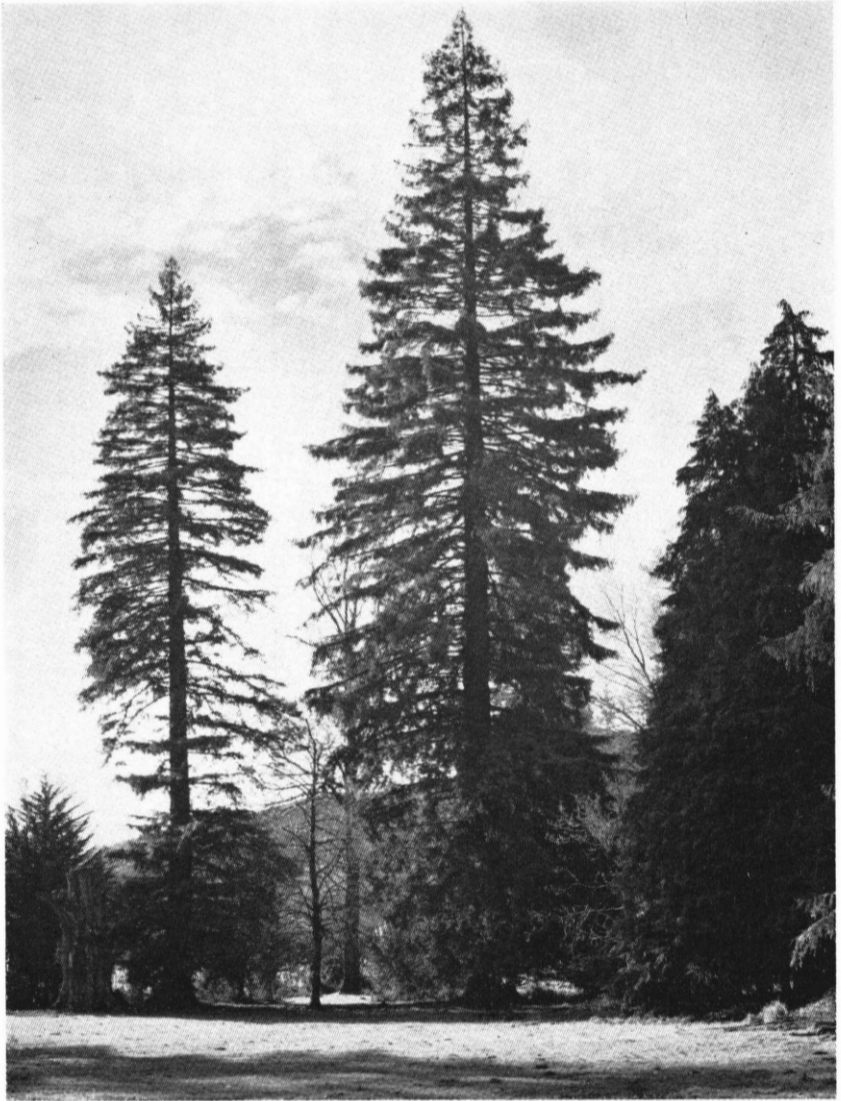
Species Botanical and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
CANTERBURY (Cont.)								
<i>Salix alba</i> White willow	36	10	35	30	90	Sep. 1962	Europe	Botanical Gardens, Christchurch.
<i>Sciadopitys verticillata</i> Umbrella pine	15	4	36		60	Feb. 1962	Japan	Helmore Lane, Christchurch.
<i>Taxus baccata</i> English yew	*44	12	45	50	90	Dec. 1959	Europe and Asia	Botanical Gardens, Christchurch.
<i>Thuja occidentalis</i> American arborvitae	28	7	45		90	Dec. 1959	E. Nth. America	Botanical Gardens, Christchurch.
<i>Tilia cordata</i> Small-leaved lime	*33	9	65	85	90	Dec. 1959	Europe, Nth. Asia	Botanical Gardens, Christchurch.
<i>Tilia petiolaris</i> (<i>T. tomentosa</i> , var. <i>pendula</i>) Weeping lime	*45	12	80	60	107	Feb. 1960	East Europe	Riccarton Bush, Christchurch.
<i>Tilia vulgaris</i> Common lime	43	11	80		90	Dec. 1959	Europe, Nth E. America	Botanical Gardens, Christchurch.
<i>Tsuga canadensis</i> Eastern hemlock	33	9	80		90	Dec. 1959	E. Nth. America	Botanical Gardens, Christchurch.
<i>Ulmus foliacea</i> (<i>U. carpini- folia</i>) Smooth-leaved elm	36	10	75		90	Sep. 1962	Europe and Nth. Africa, W. Asia	Botanical Gardens, Christchurch.
<i>Ulmus glabra</i> (<i>U. montana</i>) Wych elm	34	9	70	40	100	Feb. 1960	Nth. Europe to Japan	Riccarton Bush, Christchurch
<i>Ulmus glabra</i> , var. <i>camper- downii</i> Camperdown elm	22	6	50	45	90	Dec. 1959	North Europe	Botanical Gardens, Christchurch.
<i>Ulmus major</i> (<i>U. hollandica</i>) Dutch elm (hybrid)	42	11	15	60	90	Sep. 1962	Europe	Botanical Gardens, Christchurch.
<i>Umbellularia californica</i> California laurel	37	10	60	60	90	Dec. 1959	California	Botanical Gardens, Christchurch.
<i>Zelkova ulmoides</i> (<i>Z. crenata</i>)	at 3ft. 20	5	25		90	Dec. 1959	Caucasus	Botanical Gardens, Christchurch.



Castanea sativa, Brooklands Park, New Plymouth.

(See Page 183)

Photo: Douglas Elliott.



Sequoia sempervirens, Collin's Valley, Nelson.

(See Page 185)

Photo: N.Z. Forest Service (J. H. G. Johns, A.R.P.S.)

SOUTH CANTERBURY

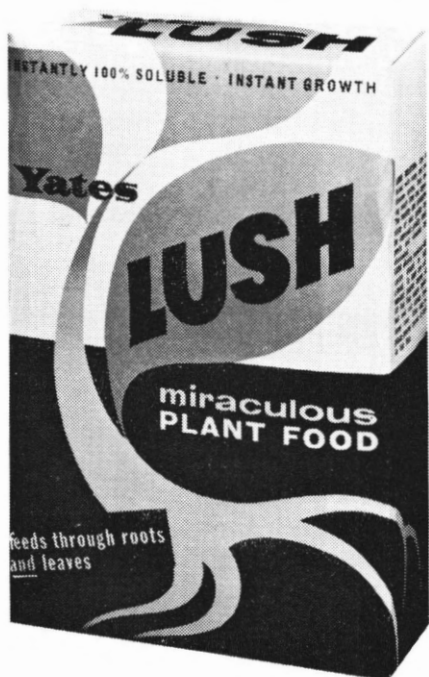
<i>Cedrus deodara</i> Himalayan cedar	47	12	35	70	100	Nov. 1955	Himalaya	Orari Est., Sth. Canterbury.
<i>Corylus avellana</i> Common hazel	36	9	22	35	90	Dec. 1961	Europe and W. Asia	Mt. Cook Station, Sth. Canterbury.
<i>Larix decidua</i> European larch	35	9	120	50	78	Mar. 1955	Europe	Raincliff Forest, Sth. Canterbury.
<i>Picea abies (P. excelsa)</i> Norway spruce	35	9	110		100	Nov. 1955	Europe	Raincliff Station, Sth. Canterbury.
<i>Pinus coulteri</i> Big-cone pine	44	12	115		102	Feb. 1960	California	Albury Park Station, Sth. Canterbury.
<i>P. muricata</i> Muricata pine	38	10	115		90	Sep. 1959	Coastal California	Domain, Ashburton.
<i>P. pinaster</i> Maritime pine	43	11	105		90	Sep. 1959	Mediterranean	Domain, Ashburton.
<i>P. radiata</i> Radiata pine	87	23	156		100	Mar. 1959	California	Grey's old homestead, Geraldine.
<i>Pseudotsuga taxifolia</i> Douglas fir	*69	18	161		95	Mar. 1960	W. Nth. America	Peel Forest, Sth. Canterbury.
<i>Pseudotsuga taxifolia</i> Douglas fir	*38	10	156		95	Nov. 1957	W. Nth. America	Woodside Farm, Geraldine.
<i>Sequoia gigantea (S. wellingtonia)</i> Californian big tree	*106	28	129	81	103	Nov. 1955	California	Raincliff Station, Sth. Canterbury.
<i>Thuja plicata</i> Western red cedar	*57	15	104		102	Nov. 1955	Nth. America	Raincliff Station, Sth. Canterbury.

OTAGO

<i>Eucalyptus regnans</i> Mountain ash	*48	13	212		105	Jul. 1961	Australia	Skinner's Farm, Pukeuri Nth., Otago.
<i>Fagus sylvatica</i> European beech	*52	14	80	95	90	Feb. 1960	Europe and Asia Minor	Botanical Gardens, Dunedin.
<i>Fraxinus excelsior, var. pendula</i> Weeping ash	*21	6	25	25	90	Feb. 1960	Europe	Botanical Gardens, Dunedin.

Botanical and Common Names	d.b.h. (o.b.) (in)	g.b.h. (o.b.) (ft)	Total Height (ft)	Crown Spread (ft)	Age (years)	Date Measured	Original Habitat	Locality
<i>Pinus montezumae</i> Mexican pine	27	7	80		62	Feb. 1960	Mexico	Old Forest Service Headquarters, Tapanui.
<i>Populus alba</i> Silver poplar	78	21	100	95	90	Dec. 1960	Europe and West Asia	Botanical Gardens, Dunedin.
<i>P. angustifolia</i> Willow-leaved poplar	22	6	55	37	90	Feb. 1962	Nth. America	Vicarage, near Hospital, Roxburgh.
<i>Prunus communis</i> Almond	33	9	35		90	Apr. 1960	Asia	Hospital Gardens, Roxburgh.
<i>Prunus subhirtella</i> <i>Quercus robur</i> (<i>Q. pedunculata</i>) Common English oak	8	2	16	39		Oct. 1962	Japan	Glenfalloch, Dunedin.
<i>Quercus velutina</i> Black oak	*60	16	70	90	99	Feb. 1960	Europe and Asia	Botanical Gardens, Dunedin.
<i>Robinia pseudoacacia</i> Black locust	27	7	50	40	75	Apr. 1960	Nth. America	Park, Queenstown.
<i>Sorbus aucuparia</i> Rowan	at 3ft. 43	11	55		90	Feb. 1960	East United States	Botanical Gardens, Dunedin.
<i>Tsuga heterophylla</i> Western hemlock	14	4	20	27	30	Feb. 1962	Europe and Asia	Near Library, Queenstown.
	*39	10	120		80	Apr. 1960	W. Nth. America	Park, Queenstown.
SOUTHLAND								
<i>Cedrus atlantica</i> Atlas cedar	at 2ft. 74	19	90	85	100	Apr. 1960	Nth. Africa	Castlerock Station, near Lumsden.
<i>Fraxinus excelsior</i> European ash	39	10	30	60	90	Feb. 1962	Europe and W. Asia	Castlerock Station, near Lumsden.
<i>Pinus nigra (austriaca)</i> Austrian pine	30	8	100		97	Apr. 1960	Austria, Hungary	Castlerock Station, near Lumsden.
<i>P. ponderosa</i> Rocky Mountain pine	53	14	123		97	Feb. 1961	W. Nth. United States	Castlerock Station, near Lumsden.

BOOST AND MAINTAIN GROWTH WITH ...



YATES WONDER PLANT FOOD

Home gardener or Professional — you'll give a real boost to your garden and reap the maximum reward for your efforts with Yates LUSH, the wonder fertilizer that produces healthy stable growth with the utmost rapidity. LUSH is easy to use, clean, free running; dissolves immediately; has no smell; will not harm the hands. LUSH provides all the benefits of Nitrogen, Phosphate, Potash and trace elements, so necessary for top results.

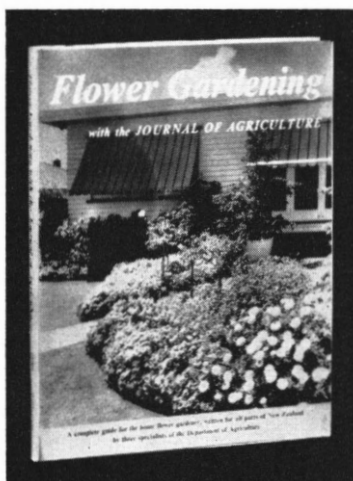
Yates

Quality product of

ARTHUR YATES AND CO. LIMITED

Available from seedsmen everywhere.

**SOLD OUT — BUT A
NEW EDITION READY SOON**



FLOWER GARDENING

with the

**JOURNAL OF
AGRICULTURE**

by

J. P. Salinger, J. S. Say and K. H. Marcussen

Horticulturists of the New Zealand Department of Agriculture.

Never before has such a superb book been offered to amateur and professional flower growers. The chapters dealing in detail with perennials, bedding plants, corms, shrubs, trees, lawns and so on, are lucidly presented and a monthly schedule provides a handy guide to successful flower gardening throughout the year. There are nearly 200 photographs and diagrams, including twenty-six full-colour plates.

168 pages, 8½in. x 11½in, indexed.

To be Published in October — Price 32s. 6d.

. . . published by . . .

Whitcombe & Tombs Ltd.

SELECTION

Is a simplified matter when you visit our nursery.

FREE ADVICE

If you require sound advice relating to your planting problems you need only ask and our staff can draw on our background of 35 years of practical nursery experience.

OUR SHOP DISPLAY

Is known throughout the country and is always a centre of interest whether you wish to buy or not.

OUR FREE CATALOGUE

Is a modest publication of 50 pages but you will find it lists all the requirements for an average garden without over-emphasis on the virtues of any plant.

BEAUMONTS' NURSERIES LIMITED

281 Gt. South Rd., Manurewa, Phone 7095-M.
(400 yds. north of the Takanini Motorway Junction).

Growers of Quality Lines of Hedge and shelter trees for all purposes and positions. Ornamental and flowering trees and shrubs to suit all tastes. Climbers, conifers, fruit and citrus trees, roses, house plants.

An Invitation . . .

PLANT & GARDEN LOVERS

Are cordially invited to visit our extensive Nurseries at New Plymouth. Our unique collection of TREES and SHRUBS is widely known as the most comprehensive in the Southern Hemisphere. New and interesting novelties are constantly being added to the vast range of established favourites.

For visitors who need transport, the Westown bus brings you to the main nursery gates.

And for those who like to GIVE PLANTS AS GIFTS, OUR GIFT VOUCHER SCHEME is always available.

In return for your cheque or postal note (10/- up to any amount) you receive a gift coupon which entitles the recipient to a choice selection of plants to the value named, at any time during the planting season.

Duncan & Davies Ltd. P.O. Box 129, NEW PLYMOUTH

HOME GARDENERS...

does your garden break
your heart with poor results?

Make sure of **GOOD RESULTS**

with *Coopers*

FRESH SEEDS

**YOU WILL SAVE MANY HEARTBREAKS
AND ENSURE ABUNDANT YIELDS
YEAR AFTER YEAR IF YOU INSIST UPON
"FRESH" DEPENDABLE SEEDS**

**COOPERS OLD STOCKS ARE
DESTROYED EVERY YEAR**

THE NAME COOPERS
ON THE PACKET IS
YOUR GUARANTEE
THAT THE SEEDS ARE

FRESH

GET THE BEST OUT OF YOUR HOME GARDEN
by using seeds that are Government tested
for germination and purity

Coopers

SEEDS OF SUCCESS

From leading seedsmen
and discriminating stores

