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NEW ZEALAND PLANTS AND GARDENS

The Official Journal of the Royal New
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Volume VI.

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RETIREMENT

The recent retirement from active horticultural practice on the part of one of New Zealand's most well known and respected nurserymen may well cause us of the older generation to pause and consider the question.

There are various reasons for retirement. In the case mentioned it was a happy one with the knowledge that the business would continue under good and carefully trained management. There are other cases where retirement is made necessary for reasons of failing health or faculties. In the professions there is a definite retiring age and happy, indeed, is the man who can lock his office door for the last time, consign the key to oblivion, and devote the remainder of his days to his hobbies.

But those who have had a lifelong contact with the soil and the plants it grows never really retire. They may seek relief from the routine of business and find escape from the busy and exacting commercial aspect of horticulture. But they never desert their plants with which their lives have become so intricately interwoven in the course of many years. It is during this harmonious period that uninterrupted concentration on various aspects of horticulture becomes possible. The development and improvement of plant genera and species by cross-breeding has often been undertaken by retired horticulturists, both amateur and professional, with the emphasis on plants that do not take long to flower from seed. There is the testing of new experiments in propagation, pest and weed control and other vitally important matters that need uninterrupted practice but involve no onerous manual labour.

Looking back into the past we realise the debt we owe to horticulturists who have devoted a portion of their retirement to recording in book form the knowledge they have gained from many years of experience, often specialised and invariably valuable. One of the tragedies of the past has been that so many horticulturists, with an immense store of knowledge, have bade farewell to life, leaving no records behind them to serve as guidance for the generation of plantsmen that was to follow. True, by word of mouth, knowledge born of experience has been handed down from father to son with a measure of success. But words become forgotten or their meaning misunderstood whereas the written word is there for the benefit of all.

G. A. R. PHILLIPS,
Editor.

PLANT RAISERS' AWARD

The following have received the Plant Raisers' Award for 1964:

Dr. B. W. Doak (now of Sydney) for *Camellia* 'Phyl Doak'.

Mr. H. Blumhardt, of Auckland, for the miniature *Cymbidium* hybrid 'Little Tiki'.

BANKS LECTURE 1965

Some Remarkable Plants of the Waikato Bogs

E. W. E. BUTCHER, M.A. (Hamilton).

Banks in Waihou River

On November 20th, 1769, nearly two hundred years ago, Cook, Banks and Solander travelled by ship's boat up the Waihou River, in order, to use Cook's words, 'to see a little of the interior part of the country and its produce'. The produce that aroused their intense interest was the magnificent Kahikatea forest that clothed the swampy banks of the river. At a point about 12 to 14 miles from the mouth they landed on the west bank where Captain Cook Road now ends. A large Kahikatea was found to have a girth of 19ft. 8in., 6 feet above the ground, and to be 89 feet to the first branch. It seems that a Mr. Bagnall, the owner of the property when this tree was finally felled about the turn of this century, retained a piece from the trunk on which were carvings attributed to Cook's party.

The fact that this would be the furthest inland point reached by the botanists highlights their skill as collectors. Although they landed at only seven places, Banks and Solander collected about one-sixth of the species of vascular plants in our flora — 343 from a total somewhat less than 2,000.

The word 'incomparable' is often used to describe the New Zealand flora, but the incomparability does not lie in the number of species. We compare poorly in this respect with other similar archipelagos and the following table, for which I am indebted to Dr. Millener, brings out this point.

<i>Archipelago</i>	<i>Comparative Area</i>	<i>Species of Vascular Plants in Thousands</i>
N.Z.	104,000 sq. miles	2
New Caledonia	One twelfth	3
New Guinea	3 x	11
Borneo	2 x	11
Java	One half	5
Japan	$1\frac{1}{3}$	6
Cuba	$\frac{1}{2}$	7

The incomparability of our flora lies particularly in the great diversity of plant communities packed into so small an area, and in the strange forms and adaptations of many of the species. Cook, Banks and Solander were in a typical swamp forest community, but within 7 or 8 miles of them lay one of the rare bog communities of which only five or six have been known. Miss Campbell, describing aspects of two of them in 1964, coined the apt term 'Restiad bogs', from the name of their dominant plant family. Three such bogs are in the Hamilton area, one, a rather mixed type, in the Hauraki Plains, while one has been drained out of existence near Kaitia.

Had Banks and Solander been transported a few miles to the Hauraki bog, their attention must have been drawn to the dominant plant of this association, the most distinctive of our endemic bog plants — *Sporadanthus*. With its bamboo-like stems and young shoots, and its gracefully drooping brown flower panicles, it would soon have been recognised as well worth collecting. New species meant much to these two: Solander, a favourite pupil, and Banks, an ardent disciple of the great classifier Linnaeus, the most inspiring natural science figure of his age.

Swamp and Bog Development

During the three hours spent in examining the swamp forest, Banks must have been struck by the similarity of the habitat to that surrounding his home estates. His training in botany, his very presence on the voyage, and his provision of £10,000 towards the cost, all had been made possible by the swamp draining activities of his forebears. As a result, valuable estates had been built up, at Revesby Abbey, in the fen regions surrounding the Wash in Lincolnshire.

Fens or swamps differ from bogs in being fed with relatively mineral rich water and in being less acid. Swamp conditions are described as eutrophic. Bogs, on the other hand, are fed by relatively mineral-poor rainwater, and are very strongly acid, their condition being oligotrophic. Under certain circumstances, a swamp may gradually develop into a bog, and an intermediate or mesotrophic state is present during transition.

Eutrophic swamps are found in many parts of New Zealand and characteristic species present are raupo, flax, toetoe, *Carex* and *Scirpus* sedges, swamp Coprosmas, cabbage trees and willows. The entry of

Wire Rush (*Hypolaena*) and umbrella fern may often indicate that the eutrophic conditions are changing to mesotrophic, and the development may continue to oligotrophic.

Oligotrophic bogs are very interesting eco-systems and are characteristically found in regions with temperate oceanic climates. In the vicinity of Hamilton, they have, in the past, formed at Motumaoho, Rukuhia and Moanatuatua. Their formation has been a consequence of geological, topographical and climatic conditions, and of the availability of spores and seeds of a specialised group of plants.

Moanatuatua is the least modified, and appears to have had its beginnings when the Waikato River was building its gravel fan during its meanderings across this area. As successive loads of alluvium were deposited and the river eventually entrenched itself, the drainage from the hills to the east and south east was impeded. The eutrophic plants became established, we may presume, and under favourable climatic conditions grew well. In most natural vegetation, the production of plant material is counter-balanced by its decomposition through the action of bacteria and fungi. Under wet conditions the decomposers slow down due to lack of oxygen. The surface level thus gradually rises, and this leads to a series of changes favouring the growth of bog rather than swamp species. The rising surface comes to depend on mineral-poor rain, and plants tolerant to low-mineral supply gradually take over.

The second basic factor in bog formation then arises, because the incoming plants, a select few, possess the property known as cation exchange to a high degree. This results in acid conditions, which in turn further reduce the activity of decomposing bacteria and fungi. Growth and formation of new plant material now tend to be greatly in excess of break-down, and peat accumulates rapidly. When this process occurs over a large area, the peat-forming conditions are most favourable towards the centre, and least favourable towards the margins, where some mineral-rich water is usually available.

The bog surface gradually rises in the central region leading to a raised, convex or high-moor bog. In such bogs in the British Isles, Sweden, Russia and parts of Canada and the United States, *Sphagnum* mosses are the plants which fulfil the bog formation requirements: the ability to grow under low mineral conditions, to create acid conditions, and to hold water so that the water table remains at or near the surface.

Sphagnum mosses are fascinating plants that well repay microscopic study. The structure of the leaf and stem cells is such that they can absorb and hold fifteen to twenty times their own weight of water. The cell walls and fibres have to a high degree the property of cation exchange, this bringing about high acidity. These two properties make *Sphagnum* sterile and thus extremely resistant to decay under moist conditions. In these overseas bogs, *Sphagnum* is not the only plant present by any means, although it has the greatest influence on the course of events. Two other groups are characteristically present,

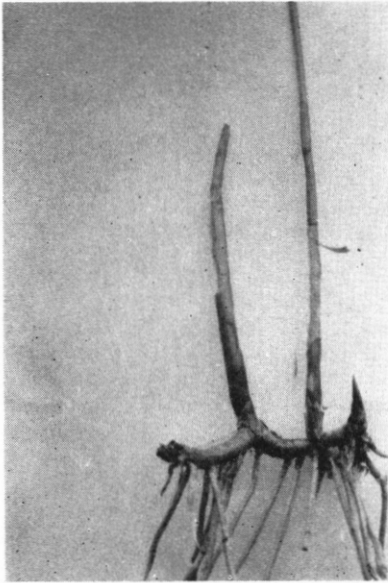
monocotyledons, represented by sedges, rushes and grasses, and ericaceous plants such as heather. These add their quota of plant material to the peat which, however, remains basically *Sphagnum* peat. In New Zealand, *Sphagnum* mosses have contributed to the bogs, although not as predominantly as in the Northern Hemisphere ones.

Sporadanthus and *Hypolaena*

In the Waikato bogs, two members of the Restiad family take the place of *Sphagnum* in producing the dynamic bog-building process. Restiads differ from sedges in stem anatomy and flower structure, and seem to have had their origin in the dry plains of South Africa, spreading to Australia, parts of South-East Asia, Chile, New Zealand and the Chathams. Although the family has not yet been found to have economic importance, it does possess significance for the plant geographer, and for the student of evolutionary change and adaptation. *Sporadanthus* and *Hypolaena* form a partnership in these Waikato bogs and each, in its distinctively different way, complements the activities of the other. Moanatuatua, in its primitive parts, reveals the two processes.

Sporadanthus was first discovered in 1840 in the Chatham Islands by Dr. Ernest Dieffenbach, Doctor and Naturalist to the New Zealand Company. Although Dieffenbach could have found it at Moanatuatua as he tramped from Kawhia, via Mount Pirongia to Te Awamutu and thence to Taupo, it was not till January 1879 that Cheeseman found it growing magnificently in the Rukuhia bog. Here, he described it as dominating the central parts of the bog, 'covering hundreds of acres, to the exclusion of almost all other vegetation'. Large clumps still growing in a few areas of Moanatuatua reach 7 feet, and may contain over two hundred jointed green stems, packed densely into roughly circular areas 4 to 5 feet across. Such clumps increase steadily in size as the thick underground rhizomes spread outwards, sending up attractive green and brown spear-like young shoots. The tall stems branch above and terminate in brown panicles, drooping outward at the tips. Although all parts of this vanishing species seem to have distinctive structure, the basal node, the rhizome and the long stringy roots are worth special attention. The basal node is covered with a thick water-proofing sheath, beneath which are light-brown vertical rows of dead cell walls that hold a reservoir of air. The base of this aeration layer is connected with an air-filled layer just beneath the scales covering the horizontal rhizome. From this rhizome descend long brown stringy roots. Sectioning shows these to have a central vascular core surrounded by a relatively wide sheath of air-conducting tissue. At the root tips, often 2 feet down in the water-logged peat, is a white actively growing region. Oxygen is vital to the metabolism of actively growing roots, and this singular plant thus has a direct diffusion channel from the node above the surface, to the root tip. Of the bog plants it is the most deeply anchored and the most difficult to remove.

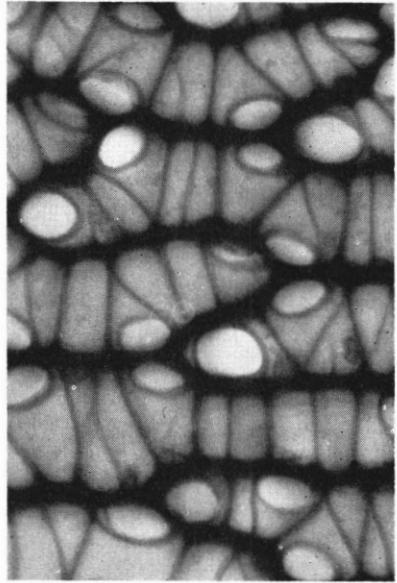
Sporadanthus is one of the plants that shows New Zealand to have been a natural laboratory for evolutionary change during its long isolation (some 18 million years) from other land masses. It is very closely related to a large Australian genus *Lepyrodia* but whereas all the latter have fruit with three sections and three seeds, *Sporadanthus* has a fruit with a single seed. Other structural features of the New Zealand plant are at the present time under investigation.



Sporadanthus. Basal node sheath removed to show aeration tissue.

(See Page 57)

(Photograph—E. W. E. Butcher)



Leaf cells *Sphagnum cristatum*, showing fibres and pores.

(Highly magnified.)

(See Page 56)

(Photograph—Macqueen)

The development of the aeration tissue around the basal node appears to me to be an unusual process. In early stages of development there is a sheath of small thin-walled cells surrounding the vascular cylinder. As growth proceeds, the cells in this surrounding sheath would appear to enlarge so rapidly that the walls break. This leaves the area filled with a zig-zagged pattern of cell walls between which the air is held.

Hypolaena, the other Restiad, presents sharply contrasting features. Unlike *Sporadanthus*, it is not endemic, and further there is little chance of it vanishing from our vegetation. Whereas *Sporadanthus* has descending roots, *Hypolaena* has ascending ones. Its aerial parts are thin straggling stems that reach to 6 feet when supported by more robust plants, but in the open the abundant stems sprawl over the surface, dying underneath but green and active at the tips.

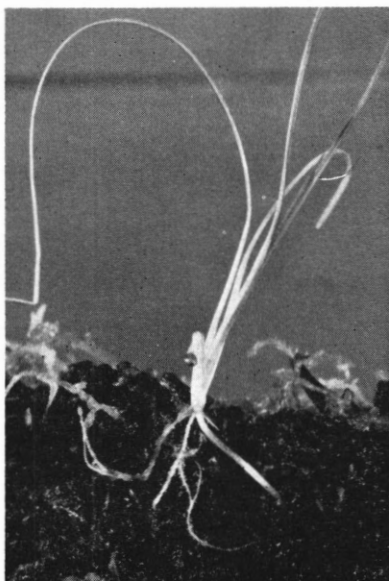
Because of the tremendously active lateral and upward growth of its roots it is the prime peat former of these bogs. In a young seedling only the first root grows downward. From its rhizome all other roots grow laterally over the surface and curl upward at the tips. These lateral roots are thickly covered with long persistent root hairs which, in shade under *Sporadanthus*, often cover the entire surface. They rise in conical masses, especially around the bases of *Sporadanthus*, but also of the other plants. They engulf their own stems and all other plant debris on the bog surface. After a burn which recently swept part of a dense stand on the bog, it was found that a hawk, dead on a nest, was being bound down with *Hypolaena* rootlets that had grown up over it, some 5 to 6 inches above the surface. When growing away from the shade or in shallow exposed pools, these rootlets develop a pink pigment, that gives them a most distinctive appearance.

This rampant root growth forms the bulk of the fibrous peat characteristic of these bogs. *Hypolaena* roots substitute for *Sphagnum* and have the same properties of water retention, cation exchange and creation of acid conditions. However, when this Restiad grows in other habitats, as it does throughout New Zealand this special surface rooting activity does not take place.



Corybas carsei in flower.
(Enlarged) (See Page 62)

(Photograph—R. Cooper)



Hypolaena lateriflora seedling showing upturning roots.

(Photograph—Macqueen)

These two Restiad plants, *Sporadanthus* and *Hypolaena*, have played the greatest part in building this extensive roughly oval bog over an area of about 18,000 acres. In the process, peat to a depth mainly between 10 and 40 feet has been formed.

Each of the bog species present has made its contribution to this peat in the form of shed parts during growth and serescence. One of the most ubiquitous of New Zealand plants, manuka, grows widely in most parts of the bog, usually as a very dwarfed plant. It may be in full flower at a height of only 3 to 4 inches and it seeds copiously. As soon as aeration of the turf improves, manuka responds with an increased growth rate. This is strikingly shown along drain edges. It is also shown where well established *Sporadanthus* clumps promote, in their shade and by their stabilisation, a rapid raising of surface level above the surrounding wet areas. *Sphagnum* and/or *Hypolaena* quickly accomplish this. Benefiting by the improved aeration of the freshly raised surface, manuka grows more rapidly and reaches about the same height as *Sporadanthus*. It is almost invariably present in older stands of the Restiad. One sees this particularly clearly after fire has swept over the surface, when the raised *Sphagnum* cushions, exposed and unburnt, have protruding from them charred stems of both plants. The other woody dicot present, *Epacris pauciflora*, also reaches its greatest height among the older stands of the Restiad.

Mineral Supply

That the Restiads and the other contributors are plants able to grow satisfactorily in an acid medium and on a low mineral diet is made clear by consideration of the figures in this 'quick' analysis of raw bog turf carried out at the Rukuhia Laboratories.

Sample	pH Acidity	Calcium	Potassium	Phosphorus
Turf loam	5.8	7	22	6
Moanatuatua raw peat	4	1	1.5	3
Rukuhia raw peat	3.8	1	6	2

The figures for the elements must be compared vertically but not horizontally as different scales are used for each mineral for comparison with fixed values.

However, it is interesting to note that the rainwater which plays such an important part in maintenance of bog conditions, does supply a small quantity of mineral ions. Miss Cooper, who has collected and analysed rainwater falling in this area over a period of years, has supplied these figures for one year's fall of rain:

	Mineral Ions				
	P.	Mg.	Ca.	K	NH ₄ -N
Parts per million	0.01	0.56	0.71	0.21	0.25
Equivalent in lbs. per acre.	0.07	3.8	4.8	1.4	1.7

Species in the Bog

On this specialised plant habitat we have found a mere twenty-three species of plants representative of groups above the algae and fungi. The groups within this community form an interesting commentary on the habitat.

Dicotyledons:

	No. of Species
(1) Woody:	
manuka (<i>Leptospermum scoparium</i>)	
<i>Epacris pauciflora</i>	2
(2) Insectivorous:	
<i>Utricularia</i> — 2 species	
<i>Drosera binata</i>	
<i>Drosera spathulata</i>	4

Monocotyledons:

Restiads —	<i>Sporadanthus</i>	
	<i>Hypolaena</i>	2
Sedges —	<i>Schoenus brevifolius</i>	
	<i>Cladium teretifolium</i>	2
Orchids —	<i>Thelymitra venosa</i> (blue and white varieties)	
	<i>Corybas carsei</i>	
	<i>Microtis unifolia</i>	3

Lycopods:

	<i>Lycopodium laterale</i>	
	<i>Lycopodium serpentinum</i>	2

Ferns:

	Umbrella (<i>Gleichenia circinnata</i>)	
	Comb fern (<i>Schizaea fistulosa</i>)	2

Mosses:

	<i>Campylopus kirkii</i>	
	<i>Sphagnum cristatum</i>	
	<i>Sphagnum falcatulum</i>	3

Liverworts:

	<i>Goebelobryum unguiculatum</i>	1
	<i>Riccardia</i> species	1
	<i>Lepidozia</i> species	1

TOTAL 23

Particularly noteworthy is the presence of four insectivorous plants in a total of thirteen flowering plants. This 30 per cent emphasises the low nitrogen availability, since droseras and utricularias catch and digest small animals and microscopic plants to obtain their nitrogen compounds.

Corybas carsei

In addition to the two Restiads there are other plants with particular claims to importance. The orchid *Corybas carsei* is the rarest plant present, and probably has about the same status as *Ranunculus paucifolius* when the latter was first found to be confined to a few acres at Castle Hill Station, near the Arthur's Pass Road. The tiny purple *Corybas* was first found by Carse and Matthews in the Lake Tangonge bog near Kaitaia in 1911. It was again found in the Motumaoho bog by Carse in 1925. In 1961 it was found in its third and only remaining locality at Moanatuatua.

Lycopodium serpentinum, bright green and prostrate, has been found only in bogs where *Sporadanthus* and *Corybas carsei* have also grown.

The curious comb-fern is a most unusual member of its group, while the sundews and bladderworts are very interesting for their insect trapping and digesting activities.

Bog Conservation

Considering the rarity of these unique plants, it is regrettable that these bog habitats are slowly but steadily disappearing as the need for more agricultural land becomes urgent. But it is encouraging to find official awareness of the need to attempt to conserve areas of great natural science significance. Mr. F. B. Thompson, formerly of the staff of Rukuhia Soil Research Station, acting through the Waikato Branch of the Royal Society, supported by officers of his own and other interested departments, and by Mr. I. A. E. Atkinson, New Zealand Ecological Society, was instrumental in having the Government purchase an area of primitive bog to be maintained as a reserve. Attempts will be made to shield this area from the lowering of the water-table, and from fire, so that the plant habitat may be preserved for as long as possible.

Climatic Time Scale and Bog Pollen

Dr. Watson Smith, formerly Miss Lucy Cranwell, a noted New Zealand botanist, has made special studies of New Zealand and world bogs, and considered that a deterioration in world climate as affecting bog growth was established by the work of Von Post and his associates. Most branches of science are vitally interested in checking geological and climatic time scales, and in the Northern Hemisphere a fairly reliable and cross-checked scale has been worked out for post-glacial time. New Zealand has unique opportunities for the Southern Hemisphere, since it is one of the regions where glacial retreat has left many clues for the geologist. But our bogs contain especially valuable information. Pollen grains are resistant to decay and the pollen rain falling on a peat bog is preserved in the peat being formed at that time. By differences in size, shape and surface sculpturing it is usually possible to identify the genus to which any particular grain belongs.

If growth conditions for a particular genus of plants are fully appreciated, the climatic conditions can be inferred from pollen frequency diagrams.

Dr. Watson Smith carried out pollen analysis on some South Island bogs and took borings in peat on the western margin of Moanatuatua. The results of these are most interesting in that they show in a 27 feet profile of peat, that the top 24 feet is comprised of relatively uniform peat, built up by plant communities still represented on the less modified parts of the bog surface.

A very interesting feature in Dr. Smith's investigation is the thin layer of airborne pumiceous ash found at one foot depth, where she took borings on the margin. Geologists have dated this layer as being deposited about 130 A.D. from the Taupo ash showers. Near the central parts the pumiceous layer lies at about 30 inches. Careful investigations in the least modified parts could give clues to the average rate of peat formation since 130 A.D. Dr. Newbould, writing of Irish bogs in a 1958 publication, gives an average rate of peat formation in Irish blanket bogs over the last 2,500 years, as about 3 inches per century.

Dr. W. F. Harris, a palynologist with the Geological Survey, has carried out pollen analysis on a Hauraki Plains bog, and has investigated the formation of a bog at Wallaceville in the Hutt Valley. Considering the results of these various investigations, he has published a climatic time scale corresponding to that of Cranwell and Von Post. This would indicate that Moanatuatua has formed following the end of the last late glacial period — 12,000 to 8,000 years ago. As the world climate continued becoming warmer and wetter, bog formation reached its greatest growth at the period known as the climatic optimum, 5,000 to 3,000 years ago. Since then there have been both less favourable and then more favourable periods, with finally a general deterioration in the immediate past.

With such information buried in its layers, the bog becomes a climatological laboratory as well as a botanical one.

Use of Peat

From a more utilitarian point of view it is also, of course, a tremendous mass of raw material with a variety of potential uses. Dried peat as a fuel for electricity generation is used extensively in both Ireland and the Soviet Union. In 1961-62, one million tons was earmarked for this purpose in Eire, and a station with a capacity of 166 megawatts was operating. In the Soviet, fifty to sixty million tons are used annually for power generation. To us as horticulturists, our peat has a much greater appeal as a soil improver. In spite of our own large deposits we actually import overseas peat for horticultural purposes.

However, a great expansion in the use of our own product is taking place. An urgent need is for basic research into the special properties of our different peats, and particularly into the effects of bacterial action on nitrate content during harvesting, weathering, drying and storing. American firms use the term 'bactivation' for beneficial changes taking place during these processes. A correct assessment of such changes is essential to the marketing of standardised peats for particular horticultural uses.

Miss Bates, horticulturist at the Rukuhia Station of the Ruakura Agricultural Research Centre, is doing particularly valuable work. It involves measuring the growth responses of a range of plants, raised in various peat mixtures, fortified with varied selected plant nutrients. Such work has already led to the successful establishment of the American High Bush Blueberry on peat soils.

However productive the peats may become, the great bulk of the bog material will remain below ground as a witness to the remarkable partnership of the two Restiads. In the meantime there is a breathing space for ecologists. Before the relatively un-modified parts disappear, there is much to learn about the life cycles and nutrition of many of the plants. The gathering of such information is a challenge to conservationists if the new reserve is to keep growing the plants. For instance, most plants with stout rhizomes use these storage organs for re-growth. But after searching burnt areas during the past two years we have been unable to find a single case where a *Sporodanthus* rhizome, deep enough to be unharmed by fire, has produced any re-growth. But the seeds in burnt-over areas have produced young vigorous plants of 12 to 14 inches in the two years.

The so-called lower plants, algae and fungi, are present, several species of each, and may be found to play an essential role in the nutritive cycle of the bog.

I hope I have been able to convince you that the plants of these bogs are remarkable, that they are of interest and value to the horticulturist, and the scientist, and—importantly—that they have their own particular type of beauty.

References:

- Campbell, E. O. 1964. *Restiad Peat Bogs at Motumaoho and Moanatuatua*. Trans. R.S.N.Z. Botany. Vol. 2, No. 16.
- Cranwell, L. M. 1953. *An Outline of N.Z. Peat Deposits*. Proc. 7th Pac. Sci. Cong. 5; 186-206.
- Harris, W. F. 1951. *N.Z. Plants and their Story*. N.Z. Science Review. Vol. 9 (1-2), pages 5-14.
- Newbould, P. J. 1958. *Peat Bogs*. New Biology, 26 pages, 88-105.

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Dr. E. B. Davies, Senior Principal Scientific Officer, Galloway Laboratory, Ruakura Agricultural Research Centre, and members of his staff, for rainfall and soil analysis figures.

A HORTICULTURAL JOURNEY TO WESTERN AUSTRALIA

(VI)

W. R. STEVENS (*Wanganui*)

In recording a journey through a country with so rich and varied a flora as that of the Albany and Stirling areas, it is very easy to overlook mention of a number of the less spectacular, but nevertheless most noteworthy and interesting plants, particularly where these are common and widespread in the area. I see I have not so far referred to *Xanthosia rotundifolia*, commonly called Southern Cross. This common name is quite apt as the slightly irregular compound umbel is produced in the form of a cross. From below a tiny central cluster of pink tinged flowers, four white pedicel tubes, a little more than $\frac{1}{2}$ inch long, are produced. These tubes terminate in white, $\frac{1}{2}$ inch flat bracts, each half surrounding more small clusters of pink tinged flowers. These bracts are divided into three parts, which point outwards from the pedicel tube. It generally occurs in semi-shade, and its habit of growth is rather untidy, as it sprawls about unless it has other plants to lean on. The somewhat sparsely produced leaves are variable in size, stiff, and toothed at the outer margins. The uniquely shaped and delicate flower heads more than compensate for any growth deficiencies. In cultivation here, it seems quite happy, and flowers freely over a long period. *Xanthosia* belongs to the same family as the carrot — *Umbelliferae*.

Another very interesting plant from the Stirling area, is *Stirlingia tenuifolia*. This grows about 18 inches high, the fine and dainty fern-like foliage springing from a shortly produced woody growth stock. Above this foliage, it sends up many annual flowering stems, which branch into multiple laterals. These stems are extremely fine and wiry. The multihedded laterals each terminate in tiny clusters of creamy yellow flowers. The whole effect is very light and dainty. As a foil for floral work it is superb. An intriguing character of the inflorescence is the manner in which it develops. At first the very fine wiry stems develop and form more and more branchlets, but until the whole shape of the inflorescence is completed, there is no sign of bud clusters on the bare and completely leafless stems. I am growing a number of plants of *Stirlingia tenuifolia* in my garden, and it does not appear to require any special conditions. A member of the *Proteaceae*, the genus was named after Sir James Stirling, who was the first Governor of Western Australia. Altogether, there are five species of *Stirlingia*, but the only others I am acquainted with are *S. latifolia*, up to 3 feet or more high and with somewhat coarse leaves and large brown flower heads; and *S. simplex* var. *abrotanoides*, 15 inches, with fine glaucous foliage, and simple, small, closely rounded flower heads.

Let me return to our journeyings. Returning to our base camp at the foot of the Stirling Ranges on the second day of our stay there, we noticed the weather was deteriorating, and the weather forecast was for rain. So we decided to return to Albany on the following

morning. The forecast was only too true, and we ran into very heavy rain just before we reached Alf Gray's house.

That night we had a long discussion on the areas we should go to, and eventually it was decided that we make a three-day trip east to the Gairdner River and the old Qualup homestead, not far from the West Mt. Barrens.

Next morning we went into Albany, and stocked up for the trip which was to take us far beyond the confines of what to us was to represent civilisation. Prominent place names on the map were to prove to be the distantly scattered general store, cum post office, cum petrol station. Alf had decided to take us by a secondary road, and he and Freda were to drive ahead of us to guide us. The following day we set off soon after 8 o'clock, and after a while found ourselves travelling in a more or less straight line across a slightly irregular, undulating plain, with low scrub growth stretching for miles on either side, with the distant blue, jagged outlines of the Stirlings to the north of us. The roadsides were a mass of colour, but by this time we were able to recognise many plants without stopping for a closer examination. After several hours driving, the Landrover ahead of us waved us to a stop. We were about to be given an explanation of a small incident that had puzzled us when, earlier on in our trip, we had first made Harry Chittick known to Alf and Freda. They had seemed unduly interested in his name, and had asked how it was spelt, after which we several times heard Alf murmuring to himself, 'Chittick, Chittick?' Now Alf, twinkling with amusement, and looking somewhat mysterious, called to Harry, 'Come on, I want to show you *your* plant,' and led us off, much puzzled, to some lean and straggly 8 foot shrubs grouped back a little way from the road. As we reached them, we recognised them for *Lambertia inermis* which, while not commonly grown, is far from unknown in New Zealand gardens. Throwing out his hands, Alf said, 'Here you are, Harry! This is *your* plant—this is "Chittick". That is the only name the settlers know it by, though why it was called "Chittick" nobody seems to know! They only say, "But it has always been called that".'

A little further on, we decided to stop to make a cup of tea on the caravan gas stove. While we were thus refreshing ourselves, we became aware of a sweet *Boronia*-like scent, strong yet subtle, being brought to us by the gentle northerly breeze. At once we scattered through the low scrub trying, with raised heads and sniffing nostrils, to locate the flower which produced that lovely tantalising scent. We never did find it and, although Alf agreed it was probably some species of *Boronia*, he was not able to tell us what it might be. Time was moving on, and we had a long way to go to reach our planned night stop, so off we drove, leaving behind that mystery scent.

Some distance further on, we observed an unusual, seemingly showy group of small shrubs about 2 feet high. This proved to be *Chamae-laucium megapetalum*, which to us looked far more attractive than

its well-known relative, *C. uncinatum*, the Geraldton Wax Flower. The flower clusters appeared to be composed of several colours, but the various colour tones are due to the age of the flowers. They open white, slowly assume a rose shade, and finally in the aging flower, become a rich red. Later we found this delightful myrtaceous shrub to be widespread in the Gairdner River area. I am sorry to report that we managed to raise only one plant from the seed Alf later sent us, and this has been so slow growing that it is still slender, less than a foot high, and has so far failed to produce any bloom, despite careful attention to drainage, and its possible requirements. It has no look of purpose, and I fear it is only looking for an excuse to pass out. However, it is never advisable to generalise when there is only one plant. Maybe my story would be different if I had fifty seedlings to experiment with. With only one specimen, one cannot try different soils and aspects. So often we spend much thought in selecting what we think are the right conditions, only to find out later that we could not have selected a worse spot. It is not always easy to approximate conditions of soil and climate from one country to another—there are often too many unrecognised factors.

While two of us prepared a meal, the rest of the party browsed around. Suddenly there was an excited shout from Harry. From various directions we converged on him to see what all the excitement was about. We found him standing in front of a group of upright growing shrubs, busy with his camera. One look at the shrubs, and we shared his excitement. It was a group of *Hakea victoriae*, one of the few shrubs in Western Australia, which produces vari-coloured foliage. Large, very stiff and rounded leathery leaves, with sharp edges, closely clasp the rigid branches. The colour varies greatly, and some individuals produce only yellow and green leaves, while others flaunt the whole range of brilliant colour, from yellow through orange to vivid gorgeous reds. This is not a plant to inspire affection—admiration, certainly, but also due respect! It has been grown in New Zealand, but I have yet to see a specimen here showing anything like the startling colour we saw that day. The flowers are not significant—occurring as they do in sessile clusters on the heavier older wood, and almost hidden by the leaves. When wresting the horny seed capsules off, it is wise to wear heavy gloves. The only specimen that I have grown was perfectly happy in almost pure gravel, and lived for seven years, before giving up the ghost. It produced only yellow clusters of leaves near the flowering branches. I am inclined to think the bright colour forms occur only adventitiously in a limited number of seedlings, as we saw that day many with only golden leaves, and only a few showing the vivid glory of reds and golds.

Our next stop was many miles further on when we ran into a stand of the beautiful fern leaved *Grevillea hookeriana*, with its large tooth-brush like spikes of vivid red flowers. It is quite a few years since I introduced this plant into New Zealand, and it was apparently no effort to it to adapt easily to our conditions and soils. It was like

meeting an old friend when we came so suddenly and unexpectedly on it in its natural habitat. Some twelve miles on from this stand, we came on another group which—to use an Irishism—were the same, only different! These particular plants were consistently taller, much coarser in their fern-like leaves, and obviously more robust growers. The flowers were also larger, though exactly the same shade of vivid red. I cannot think that it would be justified to separate this plant from *Grevillea hookeriana*, but it certainly deserves the status of a form. It did occur to me that it might be a naturally evolved tetraploid form, but the study of the Western Australian flora is still very much in its infancy, and I doubt whether, in my lifetime, problems such as these will attract the interest of the botanical world of science. There is so much else that is basic yet to study in this highly individual flora. Whatever standing this large form of *Grevillea hookeriana* will gain in the botanical world, there is no doubt in my mind that, horticulturally, it is the finest of the toothbrush grevilleas from the point of view of growth, habit, decorative foliage, brilliance of colour, and—not least—ease of culture. I should perhaps explain the term ‘toothbrush’, as applied to grevilleas, as although this term is widely used in Australia, I am not sure how generally it is known and accepted in this country. The inflorescences in these grevilleas are in the form of spikes which may be borne either terminally or laterally. In all cases, the brush faces upwards, with the main flowers completely one-sided. The showiness of the flower is caused by the long prominently held styles exerted far beyond the clustered flowers. It is this one-sided clustered style display which produces the toothbrush-like effect. Other well-known ‘toothbrush’ species are the much duller coloured Eastern Australian *Grevillea*, *G. asplenifolia* and the lesser known *G. caleyi*.

The area through which we were travelling remained almost flat, though here and there we descended to cross ancient watercourses, where streams still ran intermittently after rains. Generally speaking, the shrubs and trees rarely exceeded 8 to 10 feet, except in these watercourses, where eucalypts and acacias up to 30 feet prominently mapped the drainage system of the area. In time we came to the Bremer River which, though still as early in the season as mid-September, was already an intermittent trickle, and which later would obviously become a dry watercourse, rather than justify the appellation of ‘river’. A consistent feature of these watercourses and ‘rivers’ is the fact that when the surface flow of water dries up during dry spells, there appears to be always some subterranean water flow, which encourages and maintains the growth and development of trees, as in contra distinction to shrubs and lower vegetation.

We had no trouble whatever in crossing the Bremer River, even though it was not bridged. Some waterholes (and many frogs, some intriguingly small ones about an inch or less in length) were to each side of the roadway crossing, but our vehicles drove dry footed—or ‘dry tyred’!—to the other bank.

Two plants stand out in my recollection of the Bremer River watercourse, one the rankly growing *Boronia tetrandra*, with lush green foliage and small, untidy, yellowish green flowers, which are almost scentless. So far as I know, this species is confined to that area. Though I still grow a plant of this easy and adaptable shrub, I confess I keep it only as a collector's item—certainly not for its decorative value! The other plant which was prominent in this area, was a *Pimelea*, which we were informed on several occasions was a form of *Pimelea spectabilis*, though I *cannot* believe that this shaggy headed, lax growing plant, with its smallish flower clusters, can be the same species as the exquisitely regular large, lacy and perfect heads of *P. spectabilis*, as we saw it in other areas of the country, and which has been known and grown in New Zealand gardens for almost a generation. The plants were nearly 5ft in height, quite showy with their pink and white effect, but far from exhibiting the aristocratic air of the typical *P. spectabilis*.

Our destination which we planned to reach at the day's end was one of the newly developed Soldiers' Settlement farms, cleared and broken in by the Government, and sold for farms. But this farm was still some miles beyond. After crossing the Bremer River, the road deteriorated a lot as Alf tried to make a cross country detour to pick up the main road to the Gairdner River district. Soon we found ourselves winding and twisting down the sides of a broad dry watercourse, where at one point all except the driver left the car to make it possible for our Ford Falcon to draw the heavy caravan through to the other side, and up a very steep bank. On the far side we found what we at first thought was a farmhouse, but later discovered that it was a combination farm house, general store and petrol pump, where petrol was hand pumped from drums. For some distance around, the land had been cleared, though the 'pasture' was so poor and almost non-existent as to hardly justify the name. As we walked, a tiny, low growing, fine leaved irid, with miniature lavender flowers met our eyes, and we realised that this covered the ground for as far as we could see. What shocked us was the realisation that here in this isolated area, we were seeing an alien plant, a South African *Moraea*, which had run riot and become a weed!

Having obtained some petrol at the house, our driver, Noel, manoeuvred car and caravan around the track until again we had reached near level ground, and were able to get back into the car and proceed on into the wilderness. By this time we were becoming anxious to reach our camping place and decided we had better not make too many more stops, but push on to Alf's friends, Mr. and Mrs. Grown's farm, and their farmyard where we had been invited to set up camp.

Shortly we joined up with the main road to the soldiers' settlement farms. Thereafter the road appeared to just aim at the horizon, mile after mile, but every now and then it dipped down to shallow watercourses, usually quite dry and often very sandy. Coming to one of

these dips, we found it steeper than usual, and practically a one-way track cut through low sand banks to the shallow water at the bottom. We had not seen a house nor met any traffic for several hours. However, as we drove down to the water, Noel, by this time really adept at towing our bulky caravan, realised he would need to accelerate a little to get us up the sandy slope opposite. Just as we reached the water, a large 'bus of school children appeared down the bank and came over the water. Car and 'bus, radiator to radiator, pulled up. There was no room to pass, and the 'bus driver told us he could not back, but that if we could back a few yards, he thought he could scrape by. So we backed those few yards, only to find that one of the heavy caravan's wheels had sunk deep enough into the sand to make it impossible for the car to pull us out. By this time, Alf and Freda, in their Land-rover, were out of sight. However, after much grunting and every shoulder pressed into service, we got the caravan back on to firmer ground. Then just as we were again mobile, Freda appeared over the brow of the further bank, and told us that Alf, missing us, had attempted to return and come back to see what had happened to us. Unfortunately, he had stalled the Landrover in attempting to turn on the sandy roadside. On trying to re-start the engine, he found the self-starter jammed! Could we come along and rock the Landrover back and forth to free the self-starter? So, tired and very hot from freeing our own vehicle, we drove along to where Alf was stuck with all four wheels in soft sand, and started rocking. There was nothing doing, and the starter remained jammed. Then Alf told us the Grown's homestead was only a few miles further on, and would we go on with Freda, and get Mr Grown to drive his tractor back along to where Alf was stuck, and haul him out. This we did, and arrived at the homestead as dusk was falling. Mr and Mrs Grown and their three children were just driving the tractor into the backyard after a hard day's work. A quick explanation from Freda, of the quandary we were in, and most cheerfully Mr Grown mounted his tractor and drove off to rescue Alf. While he was gone, Mrs Grown turned on cold drinks, and set to work to cook a big dinner for the six of us, and for her family of five. The copper fire was lit, and kept stoked so that as many of us who wished could have warm baths before we made up our beds, and tumbled into a dreamless sleep.

CHEIROSTEMON PLATANOIDES

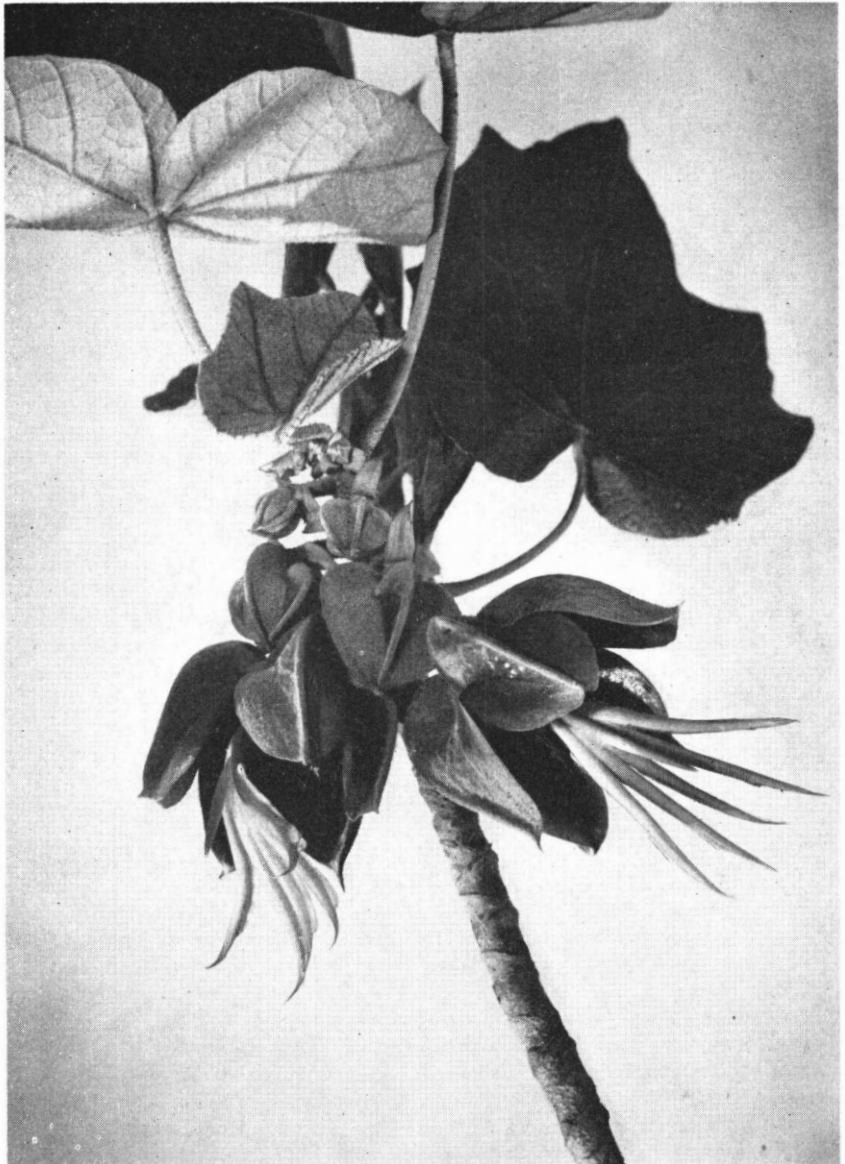
W. R. SYKES, B.Sc.(Hons.), N.D.H. (Christchurch).

A new encounter with a plant which is not only strikingly handsome but also quite bizarre, is not a very common event. I can still recall the first time I saw *Puya alpestris* in flower in an English glasshouse, my introduction to *Beschorneria yuccoides* in a Whangarei garden, or the surprise meeting with certain strangely shaped and coloured aroids in the gloom of a dense dripping Himalayan forest.

My recent introduction to the subject of this note is also an event which I shall not easily forget. *Cheirostemon platanoides* (syn. *Chiranthodendron platanoides*) has a number of common names, some of the English ones being: Mexican Hand Plant, Handflower Tree, Monkey's Hand and Devil's Hand. Those lead one to expect an unusual plant and I could not help but reflect upon the possible thoughts of the naturalist who first saw the species in flower. The accompanying photograph gives some idea of what I mean. The ancient Maya and Aztec people knew this plant and regarded it with wonder, which was almost certainly mingled with considerable awe, I imagine. A lady even confessed to me that she felt that it was just a little sinister, so I feel that I can refer to *Cheirostemon* as the Devil's Hand with more confidence.

As I have hinted, the original home of the species is in Mexico, or to be precise, a range of mountains on either side of the Mexican Guatemalan border. Here it grows on volcanic soils and in the wild state is actually a very rare plant. Thus for a long time it was only known to the Spaniards and other European people from one cultivated tree growing on a small volcano near a ruined Aztec city in the Valley of Mexico. The Devil's Hand belongs to a monotypic genus of the *Sterculiaceae*. There are only two small genera to which it is closely related, the chief one being *Fremontia*, a fairly familiar subject to New Zealand gardeners. It is interesting to recall that this latter genus has only two species, one native to southern California and the other to the adjacent regions of northern Mexico. Although it may be said that *Fremontia* has not got a 'hand' such as *Cheirostemon* has, I find, that in other respects the latter genus is to all intents a bigger version of *Fremontia*. The Devil's Hand makes a much bigger plant, the tree which I saw being about 25 feet high and only about 6 years old. The leaves are also palmate, hence the specific name *platanoides* or plane-like, and when young are covered with rusty-brown star-shaped hairs as in *Fremontia*, but both leaves and flowers are larger in the Devil's Hand. The Devil's Hand tree also seems to be very floriferous and blooms for a long time as the two *Fremontia* species do. In both genera the petals are absent and the ribbed perianth is composed solely of the calyx. In the case of the Devil's Hand this perianth is dark red, the outside appearing dull because of the hairy covering, but inside it is quite glossy. At the base of each of the five lobes is a deep pouch, and a peculiar greenish colour is present in this region. These pouches act as nectaries for honey secretion and therefore have a glandular lining. They are probably also responsible for the production of what I considered as a rather sickly smell. The 'hand' of the flower is, of course, comprised of the essential organs. The stamens and pistil are united to form a column in the lower part, a feature which is also present in *Fremontia* and other *Sterculiaceae*. The striking hand is composed of five elongated anthers held at an oblique angle to the flower, as shown in the photograph. The fine tips tend to curl with age and become more claw-like. The thumb-like extra 'digit' held

erect behind the anthers is the style and stigma, the latter also a fine pointed organ, unlike most stigmas. The bright red colouring of the 'hand' shows up strongly against the more lurid background of the perianth.



Cheirostemon platanoides.

(Photo—Plant Diseases Division, D.S.I.R., Auckland)

The flowers are positioned vertically or horizontally and one naturally speculates about its pollination. I think that it is probably a bird-pollinated flower; there are so many small nectar-sipping humming birds, etc., in Central America. From the position of the pollen sacs on the lower side of the anthers it did occur to me that a bird or insect could easily get nectar from the pouches without coming into contact with the pollen, but probably with repeated visits some contact would be made. I note that Knuth's *Handbook of Flower Pollination*, a standard reference work, says that specimens growing in Palermo, Sicily, set no fruit. The reason for this was presumed to be that there were no pollinating agents present, and in addition the species was reported as self-sterile. The latter fact is certainly not true because the specimen which I saw in an Auckland garden has formed fruits and seeds. This tree is rare in New Zealand, and this appears to be the only one in this vicinity. I have seen the fruits and they much resemble those of *Fremontia*, apart from the larger size. The small black seeds bearing a caruncle or appendage definitely reminded me of the latter genus.

I feel that this interesting species could be given a trial in other warm sheltered areas of New Zealand. Once the tree gets more than a few feet high strong winds would be probably more influential than low temperatures in inhibiting growth. Finally, I should like to thank Mr J. A. McPherson, Director of Parks and Reserves (Special Duties), Auckland, for bringing the Devil's Hand to my notice, and taking me to view it. Also I am grateful to Mrs G. S. Stuckey of Campbell's Bay, North Shore, Auckland, for permission to visit her garden where the tree is growing.

Since writing these notes initially I have had my attention drawn to several other plants growing in the country. It flowers and fruits in the Bay of Plenty and Gisborne areas, and is reported from near New Plymouth. In the South Island it grows in Nelson and Mr. R. W. Balch describes it from Dunedin in this number of *Plants and Gardens*.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

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

In common with most of the eastern half of the South Island, Christchurch is suffering the worst drought since 1915 and in the past five and a half months only about $5\frac{1}{2}$ inches of rain have been recorded. With only 16.56 inches of rain, 1964 finished the fourth driest year within the last hundred years. Every month of the year was warmer than average, and the summer temperatures over the past few months have been consistently very warm. With conditions such as they have been, and show every sign of continuing, it has been a difficult time for plant growth. The greatest difficulty has been keeping everything

sufficiently watered, and in particular getting the water to penetrate to the roots of the big trees. We were very fortunate in November when, doing the summer bedding, timely rains followed the planting and helped the plants over that difficult period. At present water is being used in the Botanic Gardens at the rate of approximately 2,000,000 gallons a week and we are very fortunate indeed to have our own water supply.

Throughout the summer months, one question frequently asked by numerous visitors is 'where are the lily ponds?' Every year keen photographers take hundreds of colour films of the water lilies in the Botanic Gardens so that, during the summer at least, they must be one of the most photographed groups of plants in the Gardens. Nor is this surprising when one considers the flawless beauty of most water lily flowers. It is not only of recent years and with the introduction of new cultivars that waterlily flowers have been held in high regard, for their history goes back for thousands of years. *Nymphaea* flowers have been found buried with mummified remains from ancient Egypt, and dating back to 2000 B.C. However, it is not only for the beauty of its flowers that the waterlily is important. From the earliest times waterlilies have had economic uses, both in medicine and as an article of food. The seeds and the rhizomes being eaten while various parts of the plant and extracts from it have been used to stop bleeding, for poultices, and as a cure for various ailments.

Many of the cultivars grown today were raised in the south of France by Latour Marliac who started hybridising waterlilies before 1880. Marliac crossed and recrossed the species and varieties that he had available to produce many superb cultivars. Unfortunately, he kept his methods secret and even today they remain a mystery.

Without doubt one of the finest, and most popular, waterlilies is 'Escarboucle'. This is a Marliac variety raised in 1909 and it has very large flowers of a rich wine-crimson colour. Also it is usually very free flowering and a strong grower. Another exceptionally fine cultivar is 'Sunrise' which has huge bright yellow flowers which usually stand right up out of the water. The flowers are of very fine substance and are fragrant, although generally people are not able to get close enough to detect the fragrance. However, it is not unknown for keen photographers to take off their shoes and socks, roll up their trousers and to paddle in the water in order to get a close-up shot of this one.

Although too vigorous in habit for a small pool, *Nymphaea* 'Gladstoniana' is regarded as one of the finest where space permits. The large flowers are pure white with golden stamens and contrasted against the dark green foliage they make a beautiful picture. 'Marliacea Chromatella' is another good yellow, although it is nowhere near as outstanding as 'Sunrise'. It is a more compact growing type with canary-yellow flowers and the foliage is mottled with brown. Another of the 'Marliacea' group is 'Marliacea Rosea' which has fragrant flowers of a deep rose-pink.

One of the darkest coloured waterlilies is 'William Falconer', which has relatively large flowers of a bright ruby colour with contrasting yellow stamens. The young foliage is also of a dark purplish-red and as it matures changes to a dark green. The last to be mentioned is 'Conqueror', another fine red. The insides of the sepals of this cultivar are white and make an effective contrast with the bright red petals. These, then, are some of the hardy waterlilies which are grown in the Botanic Gardens. There are many more beautiful plants to be found amongst the species and cultivars of the tender waterlilies but unfortunately the southern winter is just a bit too severe for their cultivation out of doors.

Let us now leave the queen of aquatic plants and consider some of the other aquatics and semi-aquatics which are grown in and around the ornamental waters in the Botanic Gardens. While none of them can match the beauty of the waterlily there are nevertheless some handsome plants to be found amongst them.

The pickerel weed (*Pontederia cordata*) is without doubt the most handsome of these aquatics and it is a very accommodating plant. *Pontederia cordata* is native to eastern North America where it grows in bogs and ponds from Texas to Nova Scotia. It grows up to 2 feet or so in height, has glossy green leaves and an inflorescence of attractive blue flowers. The best type of situation for this plant is in the mud near the edge of a pond where the water is from 3-12 inches deep. Although their flowers are not as beautiful as the pickerel weed, the species of *Sagittaria* have very handsome foliage. The common arrow-head (*Sagittaria sagittifolia*) is the best known and grows up to 2 feet in height with scapes of white flowers up to about the same height. The thick, tuberous rhizome is edible, and being stoloniferous can cause the plant to become a nuisance. A contradiction amongst the arrow-heads is *Sagittaria lancifolia*, the leaves of which are never sagittate. This species grows in swamps in S.E. North America and the West Indies. It is an erect growing plant from 2-5 feet in height with lanceolate oblong leaves. The flowers are white and are borne in whorls.

More interesting than beautiful is the sweet flag (*Acorus calamus*), which is a reed-like plant belonging to the *Araceae*. From ancient times *Acorus* has been used medicinally, while in Turkey the candied roots have been sold as a sweetmeat. The type is not grown in the Botanic Gardens, but the horticulturally more desirable *A. calamus* 'Variegatus' is. With this form the foliage is attractively variegated in grey-green and creamy-white. Usually one does not think of ferns when talking of hardy aquatic plants, although there is a tropical genus of truly aquatic ferns. But there is one species of hardy fern which may be included with aquatic plants. This is *Onoclea sensibilis*, the so-called sensitive fern of northern Asia and North America. Although *Onoclea* will grow under a wide variety of conditions it flourishes best in a damp soil, and if planted by the waterside will grow out and carpet over the

surface of the water. In the Botanic Gardens a colony of it is only just being established in the Kiosk Lake, and it is hoped in time to see it rambling about on the water.

The marsh marigold (*Caltha palustris*) is like *Onoclea*, not a true aquatic, for it will grow in a variety of conditions. However, it is nowhere happier than when planted in the wet muck at the water's edge, where its creeping rhizomes can ramble around in the shallow water and form patches a yard or more across. In Christchurch the marsh marigold flowers for slightly more than a month, from the middle of September onwards and when the bright yellow, 2-inch flowers stand out of the water on their stout stems they add a welcome touch of colour to the Bog Garden.

New Zealand is not very rich in aquatic plants of any note but where space permits a colony of the raupo or bulrush (*Typha muelleri*) is most effective, the rich brown of the flower heads being most ornamental. Although it has a widely creeping rhizome the raupo is easily kept under control. All that is necessary is to trim back the perimeter of the colony when the dead foliage is cleaned off in the winter.

There are one or two other plants which are not true aquatics, but are useful for planting around the edges of ponds and lakes, because they like marshy conditions and often they will grow out into the shallow water. The common yellow flag (*Iris pseudacorus*) while a weed in some parts, is nonetheless a beautiful and stately waterside plant and it will readily grow out into the shallow water. Its vigorous growth precludes it from being grown in any except the largest ponds, but its bright yellow flowers are equal to those of many of the rarer species. One very handsome plant which is only just being established is *Lysichitum americanum* which is often erroneously called the skunk cabbage. *Lysichitum americanum* has large ovate-lanceolate leaves up to 4 feet long by 15 inches wide, which develop after the flowers appear in early spring. The flowers are yellow and the spathe is up to 6 inches in length. The name *Lysichitum*, meaning a loose or free cloak, refers to the hooded appearance of the spathe. *Lysichitum* grows best in wet marshy places by the edge of water but it will also grow in 2 or 3 inches of water. The last plant to be mentioned is the common arum lily (*Zantedeschia aethiopica*) which is generally scorned by North Island people as being a 'weed' but is without doubt a very fine plant for the water garden. It will grow in 9-12 inches of water and when it is in full bloom with the large white flowers arising from amongst the thick glossy leaves, and the whole reflected in the still waters of a lake or pond, then there is no question about it being a very beautiful garden plant.

NOTES FROM DUNEDIN

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

Dunedin in summer is usually conspicuous for its greenness, to visitors from the north. The areas of native bush in and around the city and the surrounding hillsides, part agricultural land, part scrub-covered, are always green. The sportsgrounds and lawns of parks and gardens do not burn up as they are apt to in some other districts, while the many trees and shrubs in public places and home gardens complete the restful scene.

Although the annual rainfall is not high, usually 28 to 30 inches, it is delivered in small quantities, fairly well spaced throughout the year. The advantage of this is that watering by can and garden hose is not often necessary, except in special instances. Golf greens, grass tennis and croquet courts and bowling greens need some attention at times, but home garden lawns, if well looked after, remain green throughout the year without artificial watering. Where good cultivation and mulching is maintained in vegetable and flower garden, it is only newly planted out seedlings that may require a little help for the first week or two until established. Under these conditions, the flowers of trees, shrubs and herbaceous plants last well and are of good colour, especially in the softer and lighter tones. In addition to this effect, the range of plants which flourishes particularly well is as extensive, if not more so, than in many other parts of the country. Many Australian and South African shrubs, often thought of as being half-hardy, are quite at home in selected areas. Most European plants are, of course, perfectly happy, while alpine and rock garden plants generally succeed well. North and South American trees and shrubs from the western regions seem particularly at home when given the conditions they desire.

The reasons for these good general gardening conditions are probably partly climatic and partly due to the nature of the soil. The light, well-dispersed rainfall and the comparative lack of weather extremes must certainly play a part. Severe winters are seldom encountered, nor is scorching sunshine in summer. Although there can be periods of strong winds they are rarely bleak and harsh or dry and withering. Soils are generally on the heavy side with a clay subsoil, not always easy to cultivate but give good sturdy growth when correctly handled. Being generally neutral or slightly acid, means that the majority of plants have the root conditions they require.

With these conditions prevailing it is not a difficult matter to have colourful gardens for nine months of the year by the careful selection of flowering trees, shrubs and herbaceous plants. Where colour is desired without depending on annuals and bedding plants, however, in the summer months, thoughtful planning is necessary, otherwise an obvious gap will occur between the host of late spring and early summer flowering plants, and the coloured leaves and fruits

of autumn. There are quite a number of eminently desirable plants for the Dunedin district which flower during the summer months, that should be more widely grown, resulting in more interesting gardens with a better continuity of bloom.

For this purpose several excellent plants, native to the west coast of South America come readily to mind. *Berberidopsis corallina*, the Coral Plant, with bright crimson flowers in drooping racemes, is a beautiful evergreen, semi-climbing shrub that grows and flowers well in almost complete shade. It comes from the forests of Chile, flowering for several months, from mid-summer to autumn. It is an ideal shrub for a sheltered shady corner in reasonable soil without too much root competition from more vigorous growing trees and shrubs. It is very seldom seen and roots well from half-ripe cuttings too.

Desfontainea spinosa, a densely branched shrub, with holly-like foliage but of a lighter green, has brilliant scarlet, funnel-shaped flowers, tipped with yellow, throughout the summer. It forms a rounded bush broad at the base. An old specimen in the Dunedin Botanic Gardens is said to be the original plant imported into New Zealand. It is 7 to 8 feet high, over 10 feet across and in splendid health in spite of being transplanted when a mature plant. It prefers a little shade and a cool root run. In fact most of these South American shrubs delight in a cool moist soil with good drainage, plenty of humus on the surface and a certain amount of shade.

Another scarlet-flowered Chilean shrub is *Mitraria coccinea*, smaller than the previous two and spreading in habit. It also flowers during the summer months, making a fine shrub for the front of the border or for the rock garden. It is easily propagated by suckers. Another of these South American shrubs that is probably more widely known is *Tricuspidaria lanceolata*, sometimes called *Crinodendron hookerianum*. It is really striking with its deep crimson, waxy, pendulous, urn-shaped flowers in early summer. It is upright in growth, attaining 15 to 20 feet in partial shade. It roots readily from half-ripe cuttings taken in mid-summer.

Perhaps choicest of all among this select group of summer flowering shrubs from Chile and Peru is *Lapageria rosea*, the Chilean Bell flower. This is a climbing shrub belonging to the lily family, with large bell-shaped blooms. The form usually grown is deep pink in colour but the colour can range from deep crimson through shades of rose pink to pure white. It flowers on the previous season's growth but each spring sends up a number of vigorous young shoots from below ground level that twine to a height of 10 feet or so. It flowers from mid-summer to late autumn and delights in a cool, moist, semi-shady situation.

Eucryphia pinnatifolia and *E. cordifolia* are two fine white flowered shrubs with golden anthers, from Chile that bloom in late summer. *Eucryphia* x Nymansay, a hybrid between these two species, is a very

beautiful white and gold flowered shrub with golden anthers, more desirable even than its parents.

Most of these South American shrubs I have mentioned are evergreens which is a distinct advantage in a garden where so many of the earlier flowering shrubs lose their leaves in winter. A small, deep blue deciduous shrub from China, *Ceratostigma willmottianum*, flowers continuously from mid-summer to autumn. It forms a rounded bush 2 to 3 feet high. When pruned well back each spring it grows more vigorously and blooms better. It is most useful at a time of year when blue shrubs are few. *Hydrangea paniculata* var. *grandiflora*, another late flowering deciduous shrub, is cream with large conical-shaped panicles of flowers. It commences to flower in January, the flower heads remaining until late autumn, gradually assuming a pinkish tinge. As it blooms on the current season's growth it is best pruned in winter, cutting the previous year's shoots back to two or three buds, if a compact bush is desired.

Clethra arborea, the Lily of the Valley tree, from Madeira, with long racemes of white flowers, is a very beautiful tall growing evergreen shrub. Although slightly tender when young it grows rapidly, attaining a height of 20 to 25 feet, being then quite hardy in Dunedin. In February and March it is a fine sight, and is very useful for floral work. It thrives in a cool semi-shady situation with a mulch of decayed leaves or similar material.

The most colourful of all small growing shrubs for this district in summer and autumn are undoubtedly fuschias. Although cut back by frost in winter unless in sheltered corners, once well established they soon shoot away again in spring. In fact the strong young growths from the base of the frost damaged ones flower much better than an old woody unpruned bush. They are invaluable in their infinite variety of colour and shape for dotting among other shrubs, particularly where the emphasis has been on spring flowering shrubs such as rhododendrons and deciduous and evergreen azaleas.

In the border devoted to plants from Florida and Mexico in the Dunedin Botanic Gardens, a rare and most distinctive small tree flowered this summer for the first time since it was planted some fifteen years ago. *Chiranthodendron platanioides*, about 18 feet in height, evergreen with large handsome palmate leaves of a leathery texture with rust coloured indumentum on the young shoots, produced seven or eight solitary flowers during November and December. Belonging to the family *Sterculiaceae*, the flowers are devoid of petals having instead a large fleshy dull red calyx with bright red and yellow stamens 3 inches in length overall. Bailey's *Standard Cyclopaedia of Horticulture* speaks of it as the celebrated Handflower tree of the Mexicans. It is also known as the Monkey's Hand and Devil's Hand. The remarkable feature of the flower is the form of the bright red stamens, which resemble the fingers of a human hand and are tipped with appendages

like claws. From the base of the fingers issues the style which is more or less like a thumb. A single tree growing near the city of Toluca was known to the ancient Mexicans who regarded it with superstitious veneration. It was of great age, and was supposed to be the only tree of its kind in the world, but an entire grove of the trees was later discovered in Guatemala.

NOTES FROM PUKEKURA PARK

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

I have no doubt there is, in most gardens, at least one area which lends itself to the use of 'ground cover' plants, to compete with weed growth and reduce the maintenance. In many situations the use of ground cover is beneficial to other plants by keeping the soil cool and moist, and reducing the risk of root injury by gardening tools. In New Plymouth and places of higher rainfall, ground cover can be used to prevent soil erosion on sloping areas, thus stabilising the soil. Banks created by earthworks, no matter how unsettled, can be anchored by the use of sturdier plants. Commonplace, in our city of varied elevations, is the use of tree fern trunks tied against earth terracing where a great variety of plants are used to cascade down over them, and clamber up them. Lastly there is the untidy corner in the garden where you fill it up with cannas or something similar which will give you a show without much work. All these situations require a plant which could be termed ground cover.

Firstly consider the plants suitable for a situation of light shade, where weeds grow quickly and yet other plants are difficult or don't grow very well. *Ajuga* is an excellent choice. It has attractive rosettes of foliage, multi-coloured in some cases, and handsome spikes of rich purple or blue flowers in the spring time. From the rosettes each plant sends out runners, like a strawberry, and so increases and spreads rapidly. *A. reptans* is probably best known especially the variety with bronze leaves spangled with yellows, pinks and other colours. These plants have short spikes of flowers whilst *A. genevensis* and *pyramidalis* both have 6 inch spikes. You could well broadcast forget-me-not seeds on such places but I'd prefer to use its closely related *Omphalodes cappadocica*. This plant has attractive foliage similar to the forget-me-nots with small blue flowers held daintily on slender stalks above the foliage. *Omphalodes* multiply quite quickly and soon form quite large dense clumps. Although taller in growth than the foregoing, *Anemone hupehensis* and its varieties warrant more use beneath trees and taller shrubs. This is the *Anemone* you see growing wild or perhaps know as the Woodland Anemone. The flowers are single, ranging from white to purple and flower in the autumn months. The white variety flowers here in time for Easter and lasts quite well as a cut flower. Good use along shady borders can be made with the stronger growing

epimediums, a group of plants that has handsome heartshaped leaflets and dainty yellow flowers, similar to those of barberries. Propagation is from creeping rhizomes and, although not as rapid as other small plants, soon make sturdy bushes.

At our local crematorium we created a 'Garden of Memories' which was planted mainly in shrubs of a great variety. All the borders sloped inwards to the spacious lawn and with regular rainfall (over 60 inches annually) considerable soil wash resulted and roots became bared. To overcome this problem the garden was interplanted with some stocky low growing shrubs and a variety of perennials. These plantings helped to break the soil wash considerably, but to completely arrest it a continuous border of dwarf Michelmas daisy, *Aster dumosus* var. 'Peter Harrison', 'Blue Baby', 'Audrey', 'Snow Sprite' and others were planted. Along another border the Catmint, *Nepeta x Faasenii*, were used very successfully to make a most attractive border of summer blue.

Three larger plants that can be used on banks of soil filling or similar positions are *Agapanthus*, *Kniphofia* and *Hedychium*. All these plants have the common characteristic of cord-like roots which can anchor firmly into loose soil. Clumps form quickly and in a few years little upkeep is required save the removal of dead flower heads. All give a display at varying times of the year, and are always tidy in appearance. In Pukekura Park widespread use of *Agapanthus* is made on banks and hillsides. On the damper banks, colonies of *Hedychium gardnerianum* flourish, their strong scent filling the air throughout late summer. In May the colonies of less showy *Hedychium flavum* flower with equally fragrant properties. The only attention given to these plants is the cutting of all flowered stems after Labour Weekend, thus the new shoots are completely unfurled by Christmas.

Of the numerous banks that form frontages locally many are terraced in some way while others are just battered slopes plastered with plants. Fortunately, there is a wide range of plants suited for this purpose.

Plants for the sloping unprotected bank must be dense and one of the best of these is the *Arctotis* which, if planted in a pocket of fertile loam, will grow rapidly and cover extensive areas. Plants grow easily from cuttings and in a short time stock of a desired colour could be built up and a prolific long lasting display provided for. Another useful plant for this purpose is the low growing *Dimorphotheca barberiae* with its purple daisy flowers, and the white forms with the bluish reverse. The stems of these plants creep along and they take root into the surface below. The variety African Queen is available on local markets and is a vigorous grower with masses of dusky purple flowers. *Santolina chamaecyparissus* is one of those grey foliaged, fragrant leaved, bachelor's buttons type of plants very suited for banks. Its habit is rather loosely sprawling, but very dense and vigorous.

Fortunately, it is easily raised from cuttings and stocks can be increased quickly. Widespread use of *Rosmarinus lavandulaceus* is made locally and like *Arctotis* dividends are paid if pockets are dug out of the clay bank and some fertile loam put in. By giving the young plants a couple of dressings of balanced fertiliser during the season a vigorous cover will soon develop. Individual plants will hang down as much as 6 feet. This creeping rosemary has pale blue flowers which smother the plants during the winter and so give a display when flowers are not always so plentiful.

Let us now take account of plants for uncovered banks which will climb up and cling to the surface. Throughout the summer the visitor to New Plymouth will be struck by banks covered with the cerise flowers of *Heterocentron rosea* (known locally under its synonymous name *Heeria rosea*). This plant is frost tender and has small leaves and fine creeping stems that clasp and set root into banks. With ample soil moisture plants will grow readily and soon cover quite large areas. At the zenith of the flowering season the buttercup-shaped flowers absolutely dazzle your eyes and almost smother the foliage. A less common climber needing a hot sunny bank is *Phaedranthus buccinatorius* (syn. *Bignonia cherere*), a red flowered, yellow based *Bignonia*. The drooping flowers are about 2 inches long, the foliage is small, dark green about *Bougainvillea* size, and the long, wiry stems will root into the bank to secure themselves. If you have a shaded bank the ivies are well worth while, particularly some of the small leaved types. *Hedera helix* vars. 'Glacier', 'Chicago', 'Elegantissima' and *H. canariensis* 'Variegata' are all useful varieties. Another clinging plant which attaches itself by suckers as do the ivies is the *Euonymus radicans* 'Variegata'. Despite its slow rate of growth, an established plant will cover a good deal of embankment. Some use has been made of the various varieties of flowering passion fruits, but whilst they have dense foliage they prefer a frame or at least something to scramble through. The best suited to this purpose are *Passiflora anti-oquiensis* and *A. mollissima*. Use in a similar way can be made of the Burmese honeysuckle, *Lonicera hildebrandtiana*. This plant has large, glossy foliage and handsome, summer borne flowers up to 6 inches long with the characteristic fragrance. The flowers, partially hidden among the foliage, are followed by green guava-like fruit.

The problem that faces the person with a bank protected by ponga or tree fern walling is a reasonably clear cut one in that unless a cover of vigorous plants is quickly established weed growth and native scrub will arise. The main offending native plants are Kamahi, *Weinmannia racemosa* and the Weki fern, *Dicksonia squarrosa*. These together with grass and other weeds soon make a bank look untidy. One of the best covers if you don't want variety is the creeping fig *Ficus stipulata*. This plant has a small puckered leaf in its juvenile form and when established its adult leaves are light green, leathery and often over 2 inches long. The stems will cling to the wall and the cover is very dense and most attractive. Old banks of this require

trimming as a hedge each year. If you want a shrub with a long flowering season a good choice would be the mauve flowered *Lantana sellowiana*. In a sunny spot plants will form densely foliated specimens, with scarcely a day when there is an absence of flowers. One favourable aspect of this vigorous plant is that it can be pruned back quite severely if needed, and it will make a splendid recovery.

Good use can be made of the prostrate cotoneasters. The best is undoubtedly *Cotoneaster horizontalis* which has masses of small white flowers followed by persistent red berries all along the stems. Despite its infrequent use, one of the best cover plants for a bank is *Juniperus procumbens*. Plants will trail well over 8 feet and the dense sea green foliage creates a welcome contrast to many of the other plants I have listed. Some of the grevilleas are wonderful for cascading down walls.

The white flowered *G. paniculata* and red flowered *G. obtusifolia* are not startling in flower, but give dense foliage cover. On the other hand, *G. fasciculata* with its bright red flowers and *G. alpina* 'Baueri' with its red and yellow spider-like flowers are little short of brilliant during winter and spring, both covering quite extensive areas. Even a more startling performance can be seen if you chance to see a plant of *G. lavandulacea* 'Black Range' spreading 6 feet by 4 feet as a brilliant mass of cochineal red flowers in the springtime. Apart from a sunny location the grevillias demand little more than the light trimming of late summer and autumnal growth to encourage a denser branch system.

Bougainvillias can be trained to scramble up over sunny walls and give a very colourful summer display. We have done this very thing at the entrance to Pukekura Park where the bank has been terraced and walled with tree ferns. For each plant site the clay was removed to a depth of 18 inches and the subsoil broken up. The sites were then filled with equal parts of broken down strawy stable manure and black fertile loam and duly fertilized. Both *Bougainvillia magnifica* 'Trailli' and the modern varieties were planted. All of them have grown vigorously but, as yet, the best displays have been from 'Killie Campbell' and the modern varieties. The magenta *B. magnifica* 'Trailli' seems to be concentrating on making growth rather than flower but I have no doubt that when it becomes a little starved a regular display will result.

ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE
(Inc.)

ANNUAL REPORT OF THE DOMINION COUNCIL FOR
THE YEAR ENDED 30th SEPTEMBER, 1964

Ladies and Gentlemen,

The Dominion Council has much pleasure in presenting the Annual Report for the year ended 30th September, 1964, which is the 42nd Annual Report of the Royal New Zealand Institute of Horticulture (Inc.).

The many matters dealt with during the year by the Dominion Council are herein reviewed for the benefit of members and delegates.

1. *Meetings:*

- (a) *Annual Conference 1964:* The 41st Annual General Meeting and Conference of Delegates was held in Dunedin on 13th February, 1964. The local District Council extended very cordial hospitality to those attending. The Conference was officially opened by the Mayor of Dunedin, Mr T. K. Sidey. It proved to be a very successful Conference with much discussion on important matters. It was not as well attended as some previous Conferences.

The Banks Lecture, so ably delivered by Mr. J. T. Holloway of the New Zealand Forest Service, Rangiora, on the subject of "Man and the Vegetation of the Mountain Lands", proved one of the most outstanding Banks Lectures delivered at an Annual Conference. Mr. Holloway was complete master of his subject and his pleasing manner of address appealed to the large attendance of public and delegates.

- (b) *Dominion Council:* The Dominion Council met on four occasions during the year and the average attendance at those meetings was 14. Greater attendances at these meetings would be very welcome and District Councils and affiliated bodies are urged to endeavour to be better represented at these meetings.
- (c) *Sub-Committees and Examining Board:* The Dominion Council again acknowledges with gratitude the co-operation and help received from the various sub-committees and the Examining Board. They have met regularly throughout the year, attending to the specialised business delegated to them.

2. *In Memoriam:*

It is with most sincere regret that the Dominion Council records the passing of several esteemed members during the year. Their passing is keenly felt and our sympathies are extended to their relatives. Particular reference is made to the passing of

Mr. M. J. Barnett, M.B.E., A.H.R.I.H. (N.Z.) of Christchurch.
Mr. J. Bennett, A.H.R.I.H. (N.Z.) of Palmerston North.
Mr. R. McC. Miller, A.H.R.I.H. (N.Z.) of Wellsford.
Mr. P. J. Cox, A.H.R.I.H. (N.Z.) of Wanganui.
Mr. M. C. Gudex, M.B.E., A.H.R.I.H. (N.Z.) of Hamilton.
Mr. C. E. Foweraker, A.H.R.I.H. (N.Z.) of Christchurch.
Mr. C. J. Cuming, F.R.I.H. (N.Z.) of Taupo.
Mr. H. H. Chittick, F.R.I.H. (N.Z.) of Wanganui.
Mrs. Olive Houston of Hawera.

These have all given outstanding service to horticulture and to the Institute for several years. These, and others whose names are not mentioned, will long be remembered for their contributions and service. Mrs. Houston was the widow of our immediate past Dominion President, a life member, and a very loyal supporter of the Institute.

3. *Membership:*

The total membership as at 30th September, 1964, stands at 1948, including 38 Associates of Honour. A strong membership is vital to the

well-being of the Institute and District Councils are urged to do all they can to enrol new members. We welcome all new members who joined during the year.

4. *Finance:*

- (a) *Annual Accounts:* The financial position of the Institute needs immediate and considerable strengthening. A strong membership is the key to this. Capitation of 5/- per financial member has been paid to District Councils. The Accounts for the year are appended to this Report, showing a serious loss for the year. This deficit is attributable (to the extent of £400) to the non-receipt of the usual previous annual grant of £400 from Internal Affairs for the Journal. Consideration of our application for this grant was deferred and, we understand, will now be considered sometime in January 1965. Rising costs of the Journal and other items of expenditure also have contributed to the deficit. The overall financial position of the Institute calls for urgent and careful review which the Dominion Council is undertaking and will bring recommendations before the forthcoming Annual Dominion Conference.
- (b) *Trust Accounts:* These are clearly set out in the Annual Accounts. Trust funds are properly invested.
- (c) *Publications Account and Loder Cup Account:* These, too, are clearly set forth. Attention is drawn to the Notes appended to the Publications Account.
- (d) *Examinations Grant:* The Dominion Council acknowledges with thanks the capitation received from the Department of Agriculture for examination purposes.

5. *Publications:*

The Institute's Official Journal 'New Zealand Plants and Gardens' (Editor, G. A. R. Phillips, F.R.I.H. (N.Z.)) published quarterly, has been continued throughout the year and has again maintained a high standard with a wide range of authoritative articles by qualified authors on New Zealand and overseas horticulture.

The sale of advertising space continues to be a problem and the need of revenue from this source is keenly felt.

The Dominion Council expresses its appreciation of the continued, good work of the Editor, Mr. G. A. R. Phillips, and of the quality maintained. Appreciation is also expressed to the contributors of articles, particularly those who have submitted articles and illustrations free of charge.

The Publications Committee, under the Chairmanship of Mr. A. M. W. Greig, has given careful attention to the business entrusted to it, and a separate report from the Committee is appended.

6. *Historic and Notable Trees:*

The task of checking the lists and verifying the existence of the trees has proved a major one, and the continued help of all District Councils in this is needed. Mr. M. G. Dunne, of the New Zealand Forest Service, has generously offered his personal assistance with this work with a view to publication. Consideration is now being given to a separate publication for this valuable information. A suitable design for official labels for Historic Trees is being prepared.

7. *Arbor Day:*

This annual observance was again fully supported throughout the Dominion by the Institute taking an active and leading part.

8. *Loder Cup Award:*

This Annual Award is offered to 'Lovers of Nature in New Zealand to encourage the protection and cultivation of the incomparable flora of the Dominion'. Mr. R. Syme, A.H.R.I.H. (N.Z.) serves on the Loder Cup

Committee as the nominee of the Institute. The 1964 Award has been made to Dr. D. A. Bathgate of Hastings and our congratulations are extended to him.

9. *Examining Board:*

The Examining Board is appointed by the Dominion Council annually and bears the full responsibility for the conduct and administration of the Institute's examinations. The Institute has full statutory authority to issue diplomas and certificates as follows:

- National Diploma in Horticulture (N.D.H.N.Z.)
- National Diploma in Fruit Culture (N.D.F.C.N.Z.)
- National Diploma in Apiculture (N.D.Ap.N.Z.)
- Certificate in Vegetable Culture (C.V.C.N.Z.)
- Certificate in School Gardening (C.S.G.N.Z.)
- Seedsmen's Certificate (S.C.N.Z.)

Under the Chairmanship of Professor H. D. Gordon of Victoria University of Wellington the Examining Board has given meticulous attention to the business entrusted to it and has concluded another successful year of examinations. The Board comprises eminent persons engaged in both the practical and educational fields of horticulture and has thus been able to bring balanced judgment to bear on all its deliberations. The Horticultural Trades Association was invited to nominate a representative on the Board and Mr. P. C. Gardner of Levin was elected. The N.Z. Fruitgrowers' Federation also has been invited, but a nominee has not yet been submitted.

The separate Examining Board Report is appended, to be read in conjunction with this Annual Report. The Dominion Council places on record its sincere appreciation of the fine co-operation and assistance rendered by the Canterbury District Council, the Christchurch City Council, the Director of Reserves and his staff at Christchurch, also officers of the Department of Agriculture in Christchurch and members of the National Beekeepers' Association in the conduct of the Oral and Practical examinations again this year.

10. *Plant Raisers' Award:*

This Annual Award is now operating (closing date 30th June), and three nominations were received during the year. Two awards were made:

- Dr. B. W. Doak (Auckland) for the camellia 'Phyl Doak'; and
- Mr. H. Blumhardt (Auckland) for the miniature Cymbidium Hybrid, 'Little Tiki'.

The Award is in the form of a Bronze Medal. Our congratulations are extended to these two successful nominations. The third nomination was deferred pending additional trial plantings.

11. *Award of Garden Excellence:*

This new Award has been advanced to the stage where it can now be introduced. A sub-committee has been appointed, with Mr. J. A. Hunter of Auckland as chairman, to finalise the scheme and receive nominations.

12. *Nomenclature:*

The Dominion Council expresses its appreciation of the work of the Nomenclature Committee, and of the interest shown and the assistance received particularly from those serving on this Committee who are not members of the Dominion Council. The publication of the Check list of *Leptospermum* Cultivars during the year has been a major step forward in compiling the Register. The collection of *Hebe* cultivars at Christchurch is continuing and the first list of names has been prepared. Early literature on the subject is being sought out and studied. The Nomenclature Committee's Report is appended to this Report.

13. *Fellowship:*

The Dominion Council has been pleased to confer the distinction of Fellow (F.R.I.H.(N.Z.)) on 7 members duly nominated by District Councils during the year.

14. *Associates of Honour:*

The Dominion Council's special sub-committee this year received and considered four nominations from District Councils. Two nominations have been endorsed by Dominion Council for submission to the Dominion Conference, recommending their election as Associates of Honour of the Royal New Zealand Institute of Horticulture (A.H.R.I.H.(N.Z.)) They are: Mr F. P. Knight, V.M.H., F.L.S., Director Royal Horticultural Society's Gardens, Wisley;

Mr. K. B. Burns of Timaru.

The distinction of Associate of Honour is conferred only on persons who have rendered distinguished service to horticulture. The maximum number of Associate of Honour at any one time, sanctioned by the Constitution of the Institute is 50.

15. *District Councils:*

The activities of individual District Councils are set forth more fully in the separate reports appended hereto. The Dominion Council acknowledges with gratitude the work carried out by the Executives of District Councils. It is through District Councils that much of the work of the Institute is performed and particularly the direct contact and association enjoyed with members. The establishment of new District Councils in areas not already being served would be warmly welcomed and encouraged by the Dominion Council. District Council executives are urged to seize every opportunity to increase membership. This need cannot be over-emphasised.

16. *University Chairs of Horticulture:*

The establishment of a Chair of Horticulture at Massey University of Manawatu and at Lincoln College of the Canterbury University has marked a big advance in horticultural education in New Zealand. The Institute expresses its real pleasure at such advancement. The appointment of Dr. J. A. Veale, M.Sc. (N.Z.), Ph.D. (London), D.I.C., F.R.I.H., M.I.Boil. to the Chair at Massey University was announced during the year. Dr. Veale immediately showed his interest in the Institute's work and readily associated himself with the Dominion Council and consented to election to the Examining Board, where he has already given valuable help. The appointment to the Chair at Lincoln College has not yet been announced. Full degrees in horticulture and horticultural science will be available at these Universities.

17. *Remits placed before the 1964 Dominion Conference:*

Details of remits and discussions therefrom have already appeared in the report of the 1964 Conference, March 1964 issue of Journal, p. 280.

As for Remit (a) from North Taranaki District Council:

Moves have been made to have the disparity between cash rewards for passes in these two examinations removed. Representation on the Committee has comprised employers and employees. Representation of other organisations on this Committee has not been customary. However, two very prominent members of the Dominion Council are members of the Committee, and the views of the Institute are always available to the Committee through them.

As for Remit (b) from Wellington District Council:

The Wellington District Council has been asked to draw up a suitable brochure.

As for Remit (c) from Wellington District Council:

In fact the Railways Department discourages the growing of anything likely to blow or fall on to the tracks. Beautification around stations is feasible and is often undertaken by Local Bodies.

As for Remit (d) from Taupo District Council:

It was felt that District Councils could do a lot in educating local folk on the use of modern sprays, and also to invite the local engineers and contractors undertaking roadside spraying. The final responsibility for the damage done by roadside sprays rested in the hands of the men actually doing the work and an endeavour should be made by District Councils to instruct these men in the materials they were using.

As for Remit (e) from Canterbury District Council:

The Dominion Council will take this matter up at an appropriate time when other amendments to the Act are contemplated.

18. *National Parks Boards:*

During the year the Dominion Council submitted nominations for election to the following National Park Boards:

Urewera	—	Mr. J. A. McPherson of Auckland
Nelson Lakes	—	Mr. W. H. Jolliffe of Stoke
Abel Tasman	—	Mr. D. Leigh of Nelson
Fiordland	—	Professor G. T. S. Baylis of Dunedin (endorsed nomination)
Westland	—	Mr. J. P. Bonisch of Hokitika
Mt. Cook	—	Mr. Geo. Guy of Christchurch

19. *Research in New Zealand:*

During the year the Government announced the Advisory Council appointed under the National Research Advisory Council Act 1963. The Dominion Council had submitted the names of Dr. J. S. Yeates of Palmerston North and Mr. R. J. Ballinger of Blenheim for consideration for appointment but without success. However, Mr. Ballinger and Dr. Yeates were subsequently appointed to the Horticultural Working Committee set up by the Advisory Council to enquire into and report on existing scientific research and services in horticulture; the need for new or modified work, selective priorities, and other matters relating to research. The Dominion Council now awaits the release of such report which, if it becomes available for inspection, it will study with care to see that all vital aspects of horticulture are embraced in any recommendations for future research.

20. *Horticulture and Floral Art Show Handbook:*

Progress, although perhaps slow, is being made with this rather sizeable job.

21. *Careers in Horticulture Booklet:*

Messrs. C. S. Challenger and G. Thiele of Christchurch, assisted by a local committee, have done excellent work in fostering interest in this publication. Much has been done towards the publication of this booklet and it seems certain to be available during 1965.

Thanks are expressed to those undertaking this project.

22. *Anti-Litter Campaign:*

In recent years the Dominion Council has taken active steps in building up a national consciousness of the need for overcoming the problem of litter in public places. Government Departments and the Local Bodies' Municipals Association, have been approached. District Councils have been urged to take local steps to increase public awareness of the problem. There are increasing signs of greater attention being given by local authorities to the provision of litter bins. The Dominion Council will continue to pursue a persistent policy of pressing for a cleaner and tidier country and a firmer attitude for the enforcement of their own by-laws by Local Bodies.

23. *Holiday Camp:*

The proposal for a Holiday Camp at Lake Waikaremoana in January 1965 was carefully considered at the 1964 Dominion Conference, but it

was decided not to accept the kind offer of the proposer, Mr. Bernard Teague of Wairoa.

24. *Eleventh New Zealand Science Congress:*

Horticulture has again been included in the N.Z. Science Congress sponsored by the Royal Society of New Zealand. The Congress is to be held in Auckland in February 1965 and the Horticultural Session, on 16 February, has for its theme "Factors Affecting Horticultural Crop Production." The Auckland District Council has accepted some responsibility in the conduct of this Session.

25. *Circulation of Minutes of Dominion Council Meetings:*

The circulation of these minutes to all Fellows and Associates of Honour of the Institute has been duly considered but in view of the additional cost involved, in the present financial circumstances, this could not be undertaken.

26. *Training Scheme for Forest Nurserymen:*

At the invitation of the N.Z. Forest Service the Institute conferred with Staff Officers on the possibilities of an examination scheme for forest nursery trainees.

27. *"Eastwoodhill" Property—Gisborne:*

Much time and detailed consideration was given during the year to ways and means for the preservation of this valuable Tree Park in Gisborne, planted and developed by Mr. Douglas Cook over the past 60 years. The property was inspected and reported on by well-known qualified persons and a submission made to the Government confirming the value and importance of the property and the absolute need to preserve it for posterity as a national asset, and at the same time soliciting financial aid to enable a suitable scheme to be initiated.

The result of the submission is still awaited with interest.

28. *"Charitable" Organisation:*

The Commissioner of Stamp Duties and the Commissioner of Taxes have both confirmed that the Institute is a "charitable" organisation for the purposes of Gift Duty and Income Tax Exemptions.

29. *Opossum Menace:*

The Dominion Council has continued to keep this subject before it. Statistics as to damage done and the numbers of opossums in and around Auckland City have been received. These give cause for every citizen to be vitally concerned with the growing menace of opossums.

30. *Highway Plantings:*

The Dominion Council has communicated with the National Roads Board emphasising the need for beautification in new Highways projects and asking for the appointment of permanent horticulturists to the Ministry of Works to take care of this important aspect of landscaping road works. The Forest Service and Ministry of Works are co-operating in their beautification schemes on hydro-electric projects in the South Island. The Ministry of Works has appointed landscape officers in the main centres throughout New Zealand and as they become available, more will be appointed. The Ministry of Works considered that Local Bodies had some responsibility for the beautification of highways within the city and borough boundaries. The Ministry of Works was, in general, sympathetic towards the Institute's viewpoint in the matter.

31. *Thanks:*

The Dominion Council extends its sincere thanks to all who have contributed to the successful running of the Institute throughout the past year. Particular thanks are expressed to:

- (a) The Government, Ministers of the Crown, and Departmental Officers for their courteous attention to the needs of the Institute whenever they have been brought to their notice.
- (b) Local Bodies for their continued interest and support, and the Directors and Superintendents of Reserves.
- (c) Examiners, supervisors and all others who have co-operated to facilitate the conduct of the examinations during the year. Special reference is made again to the fine assistance received from the Director of Reserves and his staff, and officers of the Horticulture Division of the Department of Agriculture and members of the National Beekeepers' Association at Christchurch, in the holding of the Oral and Practical examinations there.
- (d) District Council Presidents and Executives who have continued to maintain an active front in their respective localities.
- (e) The New Zealand Forest Service, for valuable assistance in registering and recording the list of Historic and Notable Trees in New Zealand.
- (f) Mr. John T. Holloway of Rangiora for his memorable delivery of the 1964 Banks Lecture.

32. *Conclusion:*

As Dominion President, I wish to place on record my personal thanks to all members of the Dominion Council and of District Councils, and others, who have worked solidly throughout the year in the interests of the Institute and of horticulture.

It was my personal pleasure during the year to visit Dunedin, Canterbury and Wellington District Councils where I had the joy of meeting local members and of presenting certificates and diplomas. I regret that it has not been possible to visit other District Councils also. Perhaps this might be possible during the ensuing year. Attendances at meetings convened by District Councils is often disappointing. This is no reflection upon the quality of the addresses or of the speakers but is probably symptomatic of the very busy and full lives we are living in this present age. Instruction and advice in gardening is so expertly given by means of television, radio, newspapers and journals that there is possibly not felt the urge or need to attend other evening talks and lectures. The "Day Conference" type of meeting has proved successful, though. However, the social aspect of meetings of members is important and should be kept in mind. "Man does not live by bread alone" and I again make mention of the need for a proper balance to be maintained in life between the physical, mental and spiritual. Horticulture has a valuable and vital part to play in the health and wealth of all peoples and the Institute occupies a key role in that part as far as our Dominion is concerned. The Institute must therefore be made and kept a strong body. It has entered into its 43rd year of activity. At present the Institute is hampered in its work, and particularly in its extension, by lack of adequate financial support. I therefore appeal to all who can and are concerned to assist in rectifying this deficiency because I fully believe the Institute has a vast field of service and worthwhile endeavour opening up before it in the immediate future. "Where there is no vision, the people perish!" Let us not be without vision within our Institute; let us bring the possibilities of the Institute's worthwhile role into our vision afresh; let us set a goal before us, then by assiduous effort and determination we shall succeed and see our objectives realised.

On behalf of the Dominion Council,

J. F. LIVING, F.R.I.H. (N.Z.),

Dominion President.

REPORT ON PROCEEDINGS OF THE FORTY-SECOND ANNUAL MEETING AND CONFERENCE OF DELEGATES HELD IN HAMILTON ON THURSDAY, 18TH FEBRUARY, 1965, COMMENCING AT 9.00 A.M.

Present

Mr. J. F. Living, F.R.I.H.(N.Z.), Dominion President, presided over the Conference which was attended by approximately 63 delegates, members and representatives of affiliated organisations and the Institute of Park Administration.

Apologies for non-attendance were announced to the meeting.

Welcome to delegates and visitors was extended by the Dominion President.

In Memoriam

The Dominion President asked those present to stand in memory of several loved and honoured members who had passed away during the year. Particular reference was made to the following members who had held office in the Institute:

Messrs. M. J. Barnett (former Dominion President) and J. Bennett, both of whom were members of the Dominion Council and Associates of Honour;

Messrs. R. Miller, P. J. Cox, M. C. Gudex, M.B.E., C. E. Foweraker — Associates of Honour;

Messrs. C. J. Cuming (Chairman of Taupo District Council), and H. H. Chittick—Fellows of the Royal New Zealand Institute of Horticulture.

Mrs. Olive Houston, widow of a former Dominion President.

Procedure Rules

These rules, as defined on page 4 of the Conference papers, were formally adopted as the Rules of Procedure for the Conference.

Dominion President's Address

In a brief address to the Conference, Mr. J. F. Living, F.R.I.H.(N.Z.), said that we were fortunate to be living in New Zealand with its excellent climatic conditions. It is little wonder that New Zealanders take an active interest in horticulture which is to play an increasing part in the New Zealand economy. From early days there have been groups of interested horticulturists and the Royal New Zealand Institute of Horticulture was established by enthusiasts forty-three years ago. We owe much to those stalwarts of early vision who began linking all the horticultural interests under one organisation. The Institute has Dominion-wide coverage and wide representation. The average member is possibly not aware of the good work being done by the Dominion Council in conducting examinations for certificates and diplomas in various branches of horticulture. The establishment of University Chairs would give great satisfaction to the early founders. The President welcomed Professor J. A. Veale who has been appointed to Massey University Chair of Horticulture and stated the appointment to the Chair at Lincoln College had not yet been announced. Other work of the Dominion Council has included attention to judging handbook, careers booklet, naming historic trees, preservation of historic woodlands, nomenclature, town and country planning, careful planting of highways, anti-litter, and opossum control. The title 'Royal' means something as a prefix—the Institute is more than just a Horticultural Society. In the years ahead the status must be raised still further—the aim for all District Councils should be 'to be the head body locally in horticultural matters and ultimately to speak for all horticultural interests thus doing something of great benefit for our country. We must have an object—we can 'achieve much if we work not for self alone'—the spirit of helping others is characteristic of horticulturists. If we strive for a better place in which to live then we may in this way please Him from whom all blessings flow.

Official Opening

The Mayor of Hamilton, Dr. Denis Rogers, and Mrs. Rogers were welcomed by Mr. R. T. Fear (Chairman Waikato District Council), who said it was a privilege to have the annual Conference in Hamilton in its centennial year:

Waikato District Council would do all possible to make the stay a happy one. The District Council was grateful to Dr. and Mrs. Rogers for their keen interest in horticulture and Mr. Fear expressed pleasure at the presence of Dr and Mrs. Rogers, Senior, whose names were synonymous with horticulture in Hamilton. Flowers were presented to the Mayoress and to Mrs. J. F. Living by the Waikato District Council secretary, Mrs. D. M. Yendell. The Dominion President, in welcoming the Mayor and Mrs. Rogers, said how pleased the delegates were to be in Hamilton and spoke of marked development and beautification of parks and gardens. As a river city it has particular interest and the growth in recent years has been most striking.

His Worship spoke appreciatively of his parents who had come to Hamilton many years ago and made a garden from what had been an area of waste land littered with rubbish. In this lovely garden he had grown up and now was most grateful that he had been able to build in one part of the garden and see his children enjoying it too. The Institute was a small organisation with serious responsibilities: its work appeals to many and its ramifications are wide. It needs much support and is worthy of it. The work should be publicised as it is vital to the development of New Zealand. It is the foundation of horticulture throughout the Dominion. We should impress on the community the fundamental and vital necessity of its work. The membership should and must be increased so that instead of 1900 members we should have 19,000 all working together for the common cause. We must keep the vision before us: conservation is urgent: the preservation of native trees in subdivisions is important, but we must go further and plant and encourage regeneration of native trees. There has been too much destruction in the past. Dr. Rogers felt that the beautification of highways could become a major tourist attraction. In formally opening the Conference he hoped that all would have a happy stay in Hamilton and that the Conference would be a worthwhile one.

Mr. R. Syme (Hawera) spoke in appreciation of the presence of the Mayor and Mayoress and particularly of the thoughtful words of the Mayor. He congratulated the Hamilton City Council on the work being done in the city Reserves and Parks. Mr. Syme also thanked the Waikato District Council for their hospitality which was so much appreciated.

Associates of Honour

The matter of increasing the number of Associates of Honour in any one year was brought forward from the 1964 Conference.

Resolved: 'That Rule 3(d) (iic) be amended to provide that the Dominion Council may annually recommend not more than six names for consideration of election by Conference, by substituting the word "six" in place of the word "four" in such Rule 3(d) (iic).'

Annual Report

As the Annual Report had been circulated in the Conference Papers, Mr. Living moved that it be taken as read. Mr. W. J. Wendelken seconded this motion.

Mr. Living, in moving that the Report be adopted, made reference to various matters in the Report, particularly:—

- (1) The generous offer of Mr. M. G. Dunne to assist in the detailed checking of the list of Historic Trees.
- (2) The Loder Cup Award, urging District Councils to put forward more nominations each year.
- (3) The awarding of the Plant Raiser's Award (1964) to Dr. B. W. Doak (*Camellia*) and Mr. H. Blumhardt (Miniature *Cymbidium* hybrids).
- (4) The newly-established Award of Garden Excellence.
- (5) The scheme in respect of Eastwoodhill property.
- (6) The recognition of the Institute as a charitable organisation for the purposes of gifts and donations with respect to Gift Duty and Income Tax exemptions.

- (7) The need for vision and having an objective before the Institute, striving for greater attainments.

The motion for the adoption of the Report was seconded by Mr. H. Beveridge (Oamaru).

Discussion:

1. **Plant Raiser's Award:** Mr. C. Reader (Auckland) enquired why the Award had been given for only one bloom when two had been submitted. Could the other be submitted later? It was pointed out that the Award was given to the raiser, not the plant.

2. **Floral Art Handbook:** Mr. J. P. Salinger (Wellington) reported that he had now the first final draft: it was an authoritative and understandable book. A typed copy of the proof would be circulated to interested people before being printed.

3. **Historic and Notable Trees:** Mr. A. Farnell (Auckland) asked that the list be circulated to all District Councils before printing so that the information could be checked. It was pointed out that much of the information comes from District Councils and delays in publication are largely because this information has not been supplied.

4. **Eastwoodhill:** Mr. J. F. Living moved that the Conference go into Committee for discussion on this matter. This was seconded and carried.

5. **National Park Board Nominations:** Mr. R. Syme (Hawera) reported that New Zealand's tenth National Park had now been created, namely Mt. Aspiring National Park in West Otago. A Board would soon be appointed and the Otago District Council was asked to give thought to the matter of a suitable nominee for the Board.

6. **Loder Cup:** District Councils are urged to make nominations with due regard to the qualifications of the nominees. There seems to be a reticence on the part of nominees when it came to having their names put forward a second or third time. Mr. R. Syme, a member of the Loder Cup Committee, hoped that these nominees would not be deterred by not receiving the Award on their first nomination, but would allow their names to be re-submitted.

At the conclusion of the discussion the Annual Report was duly adopted.

Annual Accounts

The Dominion President stated that the year had not been a happy one financially. He moved that the accounts be adopted. Seconded by Mr. M. R. Boothby (Wanganui). The delay in receiving the annual grant of £400 from the Internal Affairs Department was explained. It was hoped that this money would shortly be forthcoming.

The Annual Accounts were duly adopted.

Rumble Estate: Mr. V. C. Davies (New Plymouth) presented a financial statement of the Rumble Estate. This house had been left to the North Taranaki District Council and had been let for a number of years but it was now an uneconomic asset and steps were being taken to obtain permission from the Court to sell it. The capital from this, according to the terms of the will, had to be used 'in and around Stratford' and at present no acceptable suggestion for its use had been received. However, the position was being examined carefully and a report would be made in due course.

Examining Board Report

In the absence of the Chairman, Professor H. D. Gordon, this Report was presented by Mr. J. A. MacPherson (Auckland). He assured the Conference that the Examining Board is determined not to lower the standard of the National Diplomas and Certificates. The Board has been strengthened by the addition of Dr. J. A. Veale and Mr. P. C. Gardner. Special thanks are due to the Canterbury District Council for their hospitality and help in the conduct of the Oral and Practical examinations in Christchurch.

Opportunity was taken to congratulate Mr. E. H. Latimer of Auckland who was present, on winning the J. A. Campbell Memorial Prize for the

candidate completing the Intermediate Examination and gaining the highest average marks.

The Report was adopted.

Publications Committee Report

This was presented by Mr. J. P. Salinger (Wellington). Having been circulated this report was taken as read. Mr. Salinger said that the financial side of the Journal gave cause for concern. It produces so little income and the District Councils were again appealed to for help in soliciting advertisements.

Mr. J. A. Hunter (Auckland) said he wished to congratulate the Publications Committee on the Journal; he was proud of it. He felt it compared very favourably with the highest quality horticultural journals.

The Report was adopted.

Nomenclature Committee Report

This was taken as read.

Mr. J. P. Salinger (Wellington) said that the Check List of *Leptospermum* cultivars had aroused considerable interest overseas among horticultural organisations and a number of requests for copies had been received from overseas libraries. This is an activity which puts the Institute on the world map, said Mr. Salinger, in expressing appreciation of the work of the committee.

Mrs. M. M. Martin (Whangarei) who seconded the adoption of the report said she was well aware of the difficulties of a long term project and felt the Committee should be congratulated and thanked for their work.

Mr. C. S. Challenger (Christchurch) made an appeal for early catalogues of New Zealand nurserymen and suggested that Botany Division, D.S.I.R. Christchurch should be approached to see if they would receive and house such catalogues.

Mr. J. A. Hunter (Auckland) said that considerable work had been done in the past in collating old catalogues. The Alexander Turnbull Library is already holding quite a collection and enquiries should be made from them before making any final plans.

Mr. Salinger (Wellington) said that New Zealand now has its own history and good private libraries of old horticultural books have recently been discovered. These are most valuable. Publicity should be given to this in the hope of discovering other valuable collections.

Mr. J. G. Short (Wellington) said that D.S.I.R. Botany Division is engaged in studying introduced plants and the sorting out of related information.

The Report was adopted.

Subscriptions and Capitation

The Dominion President said that the opinions of District Councils, when sought, had been against increasing subscriptions, but the Dominion Council, after fully and carefully considering the overall situation, had brought forward recommendations for increases. Reference was made to the Mayor's comments in which he had said that the work of the Institute should not be allowed to lapse and every effort must be made to increase the work it was doing. This was impossible without an improvement in our finances. A Royal Society should make a bold step and make itself more self-supporting. The last increase in subscriptions was in 1957.

The Dominion President thereupon moved the following motion seconded by Mr. J. A. Hunter (Auckland):

That the following rates of annual membership subscription be fixed by this Conference, in accordance with Rule 10 of the Institute's Rules and Constitution:

- (a) Persons eighteen years of age and over, £1/10/-.
- (b) Societies, Associations, Companies, Corporations, Firms or other bodies:
 - (i) of a commercial nature, £10/10/-;
 - (ii) of a non-commercial nature, £5/5/-.

(c) Fellows (as defined in the Institutes Rules), £2.

That the annual membership subscriptions so fixed and set out above be apportioned between the General Funds of the Institute and the funds of District Council Executives in the proportion of 5/- per member (capitation) to District Council Executives (unchanged) and the remaining balance to the General Funds. Rule 10 (i).

Discussion:

A local member considered that the proposed increases were not enough. He said the Institute does a lot behind the scenes and that even with the increase the subscription would be less than 1/- a week. He felt the minimum subscription should be £2/2/-. Mr. M. R. Boothby (Wanganui) said that a member at Conference realises the work that is done but at District Council level little is known. He felt sure there would be a drop in membership in Wanganui.

Mr. R. T. Fear (Waikato) said his District Council supported the motion but said it seemed only a stop-gap. He observed from the summary of membership and District Council reports that those Councils who provided regular monthly meetings were the ones with the large membership. He felt a drive for members must be made. Programmes must be designed to interest garden lovers who are not necessarily horticulturists.

Mr. J. G. Short (Wellington) endorsed Mr. Fear's remarks and added that increased membership is the real solution—we have made similar resolutions in the past but have done little about membership. A real challenge exists as there is much competition with other activities.

Mrs. M. M. Martin (Whangarei) felt that increased membership was the key to the problem. Each District Council should have regular meetings and fixed programmes. Increasing the subscription would result in a loss of membership; so many members were also members of other organisations. The Whangarei District Council felt it would have been better to reduce the Journal to one per annum meantime and resume the full publication when in a better position. There is poor support for advertising in a quarterly magazine and especially when the circulation is so remote from the advertiser's business. Whangarei District Council did not favour increased subscriptions.

Mr. A. E. Smart (Waikato) felt that the secret was to get more members and to keep their interest by providing stimulating programmes.

Mr. J. A. McPherson (Auckland) said that, in order to justify the prefix 'Royal', our affairs must be conducted as a 'Royal' Society. Our work is important and we should have faith in ourselves. All organisations are increasing subscriptions. Auckland District Council had discussed the financial problems and had decided to make a donation of £50 to the Dominion Council while an Auckland member had added a further £10 anonymously. Mr. McPherson then presented the cheques to the Dominion President.

The Dominion President expressed his sincere thanks for this generous gesture. These donations were acknowledged with acclamation.

Mr. C. Reader (Auckland) said that it was difficult to get members as there were so many societies in Auckland. The Auckland Horticultural Council represented 61 different societies.

Mr. V. C. Davies (North Taranaki) said that half of the membership was in Taranaki, Wanganui and Waikato. He felt that the secret lay in the number of activities and trips arranged. Enthusiasm would always lead to new members.

Miss R. McKelvie (Taupo) said that one copy of the Journal per family should be sufficient even if both husband and wife paid full subscriptions.

Mrs. M. M. Martin (Whangarei) said affiliated Societies should not have to pay £5/5/-, as proposed, instead of 30/-; the increase was too much. They have many branches of National Societies in Northland.

Mr. J. H. Edwards (North Taranaki) suggested that the aims and objects and responsibilities of the Institute should be put in printed form for publicity in getting higher subscriptions from affiliated Societies.

Mr. R. Syme (South Taranaki) asked if the affiliated Societies directly represented on the Dominion Council are the ones to be asked for £5/5/- per annum, or whether all Societies, National and local, were included.

Amendment: Mr. R. Syme moved the following amendment which was duly seconded and carried:

That sub-clause 1(b) of the motion be amended to read: 'Societies, Associations, Companies, Corporations, Firms or other bodies:

(i) of a commercial nature, £10/10/-;

(ii) of a non-commercial nature, being the National body of a Society, Association, etc., £5/5/-;

(iii) of a non-commercial nature, being a local branch of the National body of a Society, Association, etc., or a local horticultural, kindred or other society, £2/2/-.'

The amended motion now became the substantive motion and on being duly put to the meeting was carried.

Life Membership Subscriptions

The Dominion President conveyed to the Conference a recommendation from the Finance Committee that the present rate of subscription for Life Membership be increased by £5 for each classification as follows:

(i) up to 30 years of age, from £25 to £30;

(ii) from 31 to 40 years of age, from £20 to £25;

(iii) from 41 to 50 years of age, from £15 to £20;

(iv) over 50 years of age, from £10 to £15.

The recommendation was adopted and the increases approved.

Remits

(1) From North Taranaki District Council:

'That District Council notes be re-instated in the Journal with restricted space and re-edited where necessary: the exclusion of such notes causing concern as they are considered to be of interest to the majority of members—the general readers—the parochial nature of the notes creating such interest.'

Resolved that the remit be adopted. It was urged that the notes be edited to make them of interest to the non-technical members of the Institute and be restricted to one-quarter or one-third of a page for each District.

(2) From Auckland District Council:

'That the Dominion Council of the Royal New Zealand Institute of Horticulture be asked to have the provisions for the control of opossums by Rabbit Boards clearly defined: that the Institute press for more appropriate action to be taken, not only within the Boards' respective areas, but also in those areas outside the control of Rabbit Boards.'

It was stated that the damage done to pohutukawas in the eastern part of the Auckland province was alarming. Information about the responsibility for opossum control had been sought and the following facts were given. An amendment in 1963 to the Rabbit Board Act of 1955 provides for rabbit or opossum control inside city, borough or town districts but the Rabbit Board must obtain the consent of the local authority to operate and half the cost of the work must be paid to the Board out of city, borough or town district General Account. The other half is met by Government. Since then arrangements and legislation provide that County Councils in areas not covered by Rabbit Boards are to take up rabbit and opossum work on the same financial basis as Rabbit Boards. The Forest Service is responsible for protecting from opossum re-infestation from unoccupied Crown or Maori land, the lands covered by the Boards or Councils.

The following papers were tabled:

1. R. Mason — 'Food of Opossum'
2. Kean and Pracey — 'Opossum in New Zealand'
3. Kean and Pracey — 'Effect of Opossum on Indigenous Flora'
4. Pracey — 'Liberation of Opossum'
5. Pracey — 'Control of Opossum in Exotic Forests'

It was felt that, even so, not enough was being done and it was **resolved**

to ask the Government to set up a national body to control and eradicate opossums.

(3) From Auckland District Council:

'That the Institute make representations to the Government to amend Section 26a of the Fencing Act 1908 and its amendments to exclude land held for Reserve purposes.'

Under this clause of the Act, the Court (Magistrate) may order the removal or trimming of trees on properties in residential areas. Cities and towns are really made by their trees, and it seemed unreasonable that persons, with full knowledge of neighbouring trees when purchasing property, should subsequently be able to obtain their removal. There should be a limited distance to boundaries in considering the removal of large trees. The Amendment sought should give some guidance to magistrates. Trees should be registered under the Town and Country Planning Act as Amenities and their removal would not be so hasty. It is an offence in Britain to cut down a tree, even on one's own property, without permission. Public interest in trees should be more greatly respected. Any amendment to the Act should qualify the word 'nuisance' into 'serious nuisance'.

The Remit was adopted.

(4) From Wellington District Council:

'That the Institute look into the matter of shortage of skilled horticulturists and gardeners with a view to urging the Government to bring in more assisted immigrants in these categories.'

It was stated that there was a serious shortage of skilled labour in Wellington; gardeners were being attracted by higher pay to other trades; at present it seemed that gardeners were not in the category of assisted immigrants: the suggestion of finding female gardeners was put forward.

Resolved that the Remit be adopted.

(5) From Whangarei District Council:

'That arrangements be made to hold the Institute's Junior and Intermediate Oral and Practical examinations in both the North and South Islands and until satisfactory facilities are available in the North Island the Stage III Oral and Practical examinations continue to be held only in the South Island.'

The actual difference in air fares from Whangarei to Palmerston North and Christchurch was quoted (£31 against £18). This issue had come before the Conference three years ago. The Whangarei District Council felt that the expense involved in travelling to Christchurch was a real deterrent to students, and that facilities could be found in the North Island for Junior and Intermediate examinations. Mr. J. O. Taylor assured the Conference that Christchurch did not wish to appear to be holding on to the examinations centre. It was important, however, that the examinations be maintained at the highest level. As soon as facilities were available in the North the Canterbury District Council would be happy to see a centre set up there as an alternative to Christchurch.

Resolved that the Remit be referred to the Examining Board.

(6) From North Taranaki District Council:

'That in view of the growing demand for consistency in floral art judging (and that certain District Councils have already carried out courses for judges, and others wish to do so) the Institute assume responsibility for these courses and provide Certificates of Award.'

It was decided, with the agreement of Auckland District Council delegates, to take the above remit in conjunction with remit No. 8.

Resolved to insert the words 'consider assuming' in place of the word 'assume' in the above remit.

(8) From Auckland District Council:

'That the Dominion Council consider setting up an examination for horticultural show judging and issuing of certificates to those who have passed examinations.'

The absence of certificates after taking courses in floral art and show judging was disappointing many. There are often inconsistencies in show judging which are frustrating to exhibitors. The revised handbook to be published shortly will help but the next step should be the holding of judging courses.

Resolved to adopt these two remits.

(7) From North Taranaki District Council:

'That the Institute pursue with the utmost vigour the question of the anti-litter campaign.'

It was stated that Newmarket in Auckland had passed a by-law making it an offence to cast litter in public places. It was felt that the Institute should make representations to the Education Department on this matter.

Resolved that the remit be adopted.

Associates of Honour Awards

On the unanimous recommendation of the Dominion Council the nominations of the following two persons for election to the distinguished office of Associate of Honour of the Royal New Zealand Institute of Horticulture (A.H.R.I.H.(N.Z.)) came before the Conference.

Mr. F. P. Knight, V.H.M., F.L.S., Director, Royal Horticultural Society's Gardens, Wisley, England;

Mr. K. B. Burns, F.R.I.H.(N.Z.), of Timaru.

Resolved unanimously that the distinction of Associate of Honour be conferred upon these two persons, in virtue of their outstanding service to horticulture over many years.

Mr. K. B. Burns, being present, received his certificate with warmest congratulations from the Dominion President.

It was decided that the High Commissioner for New Zealand in London should be asked to arrange for the presentation of the certificate to Mr. Knight in conjunction with the Royal Horticultural Society.

Election of Officers

The election of Officers and Dominion Council ensued in accordance with the Rules, but space does not permit the insertion of names of those elected, save the Patron, His Excellency the Governor-General Sir Bernard Fergusson; Vice-Patron, The Minister of Agriculture, the Hon. B. E. Talboys; Dominion President, Mr. J. F. Living, F.R.I.H.(N.Z.), Wellington; Auditors, Messrs. J. L. Arcus and Co., Public Accountants, Wellington.

General

1. **Life Membership:** A member suggested that if there was any fear of losing members through the increase in subscriptions District Councils might encourage them to become life members. This would also give additional funds to the Institute.

2. **Award of Garden Excellence:** Mr. J. A. Hunter (Auckland) reported that work is proceeding on this and the sub-committee will soon be inviting District Councils to submit plants for consideration.

Venue of 1966 Conference

It was announced that the 1966 Conference of the N.Z. Institute of Park Administration would be held in New Plymouth.

An invitation was received from the North Taranaki District Council for the Institute's Conference to be held there, too. The invitation was accepted with warm appreciation.

Address

At the close of the formal business Mr. S. Challenger gave a stimulating talk with excellent colour slides on 'Horticulture in Perspective: Impressions from America and the Continent'. Mr. C. Reader (Auckland) proposed a vote of thanks to Mr. Challenger for his fine address.

Banks Lecture

An outstanding lecture on 'Some Remarkable Plants of the Waikato Bogs' was delivered in the evening by Mr. E. W. E. Butcher, M.A. Mr. V. C.

Davies of New Plymouth thanked Mr. Butcher for his lecture saying that it had been a Banks Lecture par excellence.

Closing

The Dominion President brought the 1965 Conference to a close with an expression of thanks to the Waikato District Council who had made the delegates so welcome and done so much to make their stay in Hamilton so enjoyable.

Citation in support of the Nomination of

MR. K. B. BURNS.

Nominated by the Dominion Council

Mr. Burns has been actively interested in horticulture for more than 40 years and has been especially well known to plantsmen throughout New Zealand on account of his garden at Otiritiri, Timaru. Here in some 6 acres he laid out grounds with choice and rare trees, shrubs and other plants. On many occasions the gardens have been open for charitable and horticultural benefits. He is well known for his generosity and has freely made available seeds, plants, cuttings and other material to parks and reserves and to private gardeners throughout New Zealand.

As patron of the Middlemarch Horticultural Society for many years he did much to raise the standard of gardening and of country flower shows in Central Otago before World War II. He was a foundation member of the South Canterbury tree planning Association and for two years held office as President. He is a member of the National Daffodil Society of New Zealand and has successfully raised many varieties by cross pollination. He is a former President and now a Vice-President of the New Zealand Rhododendron Association and is President of the South Canterbury district council of the Royal New Zealand Institute of Horticulture.

He has long been a familiar figure where plantsmen gather and he is always one of the first to be sought out when it comes to trying to identify some uncommon plant. He is a fluent and popular speaker and an able judge, and his services in both capacities have always been in keen demand far beyond the confines of South Canterbury. Always willing to help, Mr. Burns enjoys the reputation of being a man who is able to get things done, and his cheerful enthusiasm has not gone unnoticed. He has the unique distinction of having served on each of the management committees set up to arrange the great floral exhibitions which were part of the Centennial celebrations in Dunedin (1948), Christchurch (1950) and Timaru (1956).

Citation in support of the Nomination of

MR. FRANCIS PHILIP KNIGHT, V.M.H., F.L.S.

Nominated by the Dominion Council

**Director, Royal Horticultural Society's Gardens, Wisley, England,
for an Associate of Honour, Royal New Zealand Institute of Horticulture.**

Francis Philip Knight was born in Devonshire on October 5th, 1902. He commenced gardening as 'Garden Boy' on the estate of Mr. J. C. Williams at Werrington Park, Launceston, Cornwall. Mr. Williams, who owned both Caerhays Castle and Werrington Park, was supporting the plant collecting expeditions of George Forrest in Western China and it was to Werrington Park that seeds of many plants were first received in Great Britain. This provided a unique opportunity to learn a great deal about plant introductions from W. China and this original love of rhododendrons, primulas, magnolias, etc. has remained with Mr. Knight from boyhood and never diminished.

From Werrington Park he went as a probationer to the Royal Botanic Garden, Edinburgh, and took the full course of instruction there. From Edinburgh he entered the Royal Botanic Gardens, Kew, as a student gardener and he later was appointed Arboretum Propagator, a position which he held for about four years.

In the late 1920s he entered the Nursery Trade as foreman of the Alpine Plant Department of Messrs. Bakers of Codsall, and very shortly after taking



MR. FRANCIS PHILIP KNIGHT, V.M.H., F.L.S. Director of the Royal Horticultural Society's Gardens, Wisley, England, elected an Associate of Honour, Royal New Zealand Institute of Horticulture, 1965.

(Photograph Daily Mail)

up this work he was given full charge of the Landscape Planting carried out by the firm. After about two years at Bakers he was offered the position of Nursery Manager of Knap Hill Nursery Ltd., and in 1937 was appointed General Manager of this firm. He remained at Knap Hill for about ten years, and personally carried out the hybridising programme during that time of the Knap Hill strain of azaleas and also bred several useful rhododendrons.

During the war he spent over four years as a Horticultural Officer in the Directorate of Camouflage, Ministry of Home Security. In 1944 he was appointed General Manager and later Managing Director of Messrs. R. C. Notcutt, Nurserymen, of Woodbridge, Suffolk. In January, 1955, he was appointed Director of the Royal Horticultural Society's Gardens at Wisley, which position he now holds. In 1959 he was awarded the Victoria Medal of Honour by the Royal Horticultural Society and is a Fellow of the Linnaean Society. He has contributed a good deal in the way of articles on plants to the R.H.S. Journal and other publications and is co-author of *The Propagation of Trees and Shrubs* with the late G. C. Taylor. He is also active on various committees concerned with horticulture, being chairman of the Education Committee of the Royal Forestry Society of England, Wales and Northern Ireland, and in horticultural broadcasting and television. He is well known to New Zealanders for his generous hospitality, and for his willing co-operation in supplying plant material wanted in this country.

CONFERENCE HIGHLIGHTS

By a Delegate.

This was the first Conference organised by the Waikato District Council. Those of us from other areas were keen to meet personalities and see the area where the Institute has such a strong membership. It was soon evident that, to a great extent, the success of this District Council was a combination of the enthusiasm of its individual members with the high standard of horticulture in the area. The visits which took place gave us every opportunity to enjoy both aspects.

On arrival at their hotels, members found in their rooms bowls of good horticultural produce, and a large folder describing Hamilton and the Waikato. On the Wednesday evening arrangements were made for us all to visit the home of Mr. and Mrs. D. M. Yendell. There we met many local representatives as well as members who had been attending the Conference of the Institute of Park Administration. The home itself is delightfully situated above the Waikato River and one could enjoy the planning of the locality whereby each house retains its privacy and yet is not separated from its neighbours by physical barriers such as fences—an example of localised housing development. Good fellowship and hospitality went hand in hand. This meeting assisted greatly by inducing a happy atmosphere which set the tone of the whole Conference and eased the discussion of what could have been, on the following day, quite thorny matters.

Following the general business of Conference on Thursday, members heard a most interesting illustrated talk from Mr. S. C. Challenger of Lincoln College on his recent overseas visit. One could not fail to be impressed by the imaginative landscaping, particularly in Sweden, the application of science to immense commercial undertakings in ornamental horticulture, and the excellent overseas facilities for education and research in horticulture. These made one realise the reason for the 'brain drain' from New Zealand.

On Friday afternoon we were given a conducted tour through Hamilton, and were impressed by the high standard of home gardening which no doubt has been stimulated by garden competitions and the beauty of the Hamilton gardens, and the Hamilton Lake, and the layout of the Founders' Theatre. The drive through the grounds of the Mormon Temple and Church College indicated again a feeling of horticultural landscaping, and we obtained a view of the peat bogs of which we had heard in the Banks Lecture on the previous evening.

The afternoon tour finished at the delightful home of Mr. and Mrs. J. C. Pollock where we enjoyed typical Waikato hospitality in delightfully laid out grounds which included an area of native plants set out along the banks of the Waikato River. The maturity attained in this garden in 12 years through enthusiasm and wise guidance was truly impressive. Here we said farewell to our hosts, congratulating them on a most successful and enjoyable Conference.

During the Conference we visited the horticultural show organised to coincide. This was held in the Winter Show Building and was a model for horticultural shows, being a blend of specialised plants, floral art, education and display, with sufficient room and good lighting. The North Island National Dahlia Society Show provided the basis of the horticultural exhibits and this was complemented by a good selection of trade exhibits. The Waikato District Council of the Institute displayed some most beautiful floral art, and also an educational exhibit for which they obtained a gold medal. It was pleasing to see a large display by the Hamilton Junior Naturalists' Club, thus stimulating the interest of the younger generation in their native flora and fauna. The Department of Agriculture demonstrated the varied uses of peat and the Camellia Society showed an interesting display of the various species of *Camellia*.

One must also congratulate the Parks Department of Hamilton and other municipalities which organised both beautiful and interesting displays—altogether a really good show and credit is due to all who were associated with it.

NOTES FROM DOMINION COUNCIL MEETING, 17th MARCH, 1965

Award of Garden Excellence:

The special sub-committee has developed the machinery for the handling of this new Award. This will be sent to all District Councils to inaugurate the Award this year.

Plant Raiser's Award:

Annual Award—nominations close with the Dominion Secretary on 30th June, 1965.

Horticulture and Floral Art Show Handbook—also Horticultural Careers Booklet:

These two separate publications are developing well.

Examinations:

Twenty-six applications for registration were dealt with by the Examining Board. This is a record number to be dealt with at a meeting of the Board and were for the Horticulture, Fruit Culture and Apiculture Diplomas and Certificate in School Gardening.

Charitable Gifts:

The Institute has been approved a charitable organisation for the purposes of the Land and Income Tax Act 1954 (donations up to £25 qualify for exemption for Income Tax purposes) also for Gift and Estate Duty purposes.

Finance and Policy:

An informal meeting will be held amongst members of Dominion Council to discuss matters of finance and policy.

Presentation of Associate of Honour Certificate to Mr. Knight:

Plans are being made to have this Certificate presented at a function in England to which the other two Associates of Honour at present living in England, Professor J. P. Hudson and Mr. J. Glazebrook, will be invited. Mr. V. C. Davies, A.H.R.I.H.(N.Z.), of New Plymouth, will be visiting Britain shortly and it is expected that he too will be present at the function.

Remits from Dominion Conference:

1. District Council Notes in the Journal:
This was referred to the Editor who will consult with the Publications Committee.
2. Control of opossums:
It was agreed to join with the Royal Forest and Bird Protection Society of New Zealand in forming a committee to press for greater action against opossums.
3. Fencing Act 1908 and its amendments:
A small sub-committee is looking into ways and means of putting this remit into effect.
4. Shortage of skilled gardeners:
It was agreed to write to the Department of Labour about this matter.
5. Holding of Oral and Practical examinations in the North Island for Junior and Intermediate candidates:
A sub-committee is making a detailed study of facilities available in Palmerston North.
6. & 8. Issuing of certificates for horticultural show judging:
The issuing of certificates for show judging in floral art and other subjects was agreed to in principle subject to certain conditions. District Councils will be invited to join in consultations on this prior to finalising.
7. Anti-litter:
It was suggested that one District Council should be asked to investigate this matter in all its aspects, on a national scale, deciding where responsibility should lie and making constructive suggestions to the Dominion Council for subsequent action.

Historic and Notable Trees:

Mr. V. C. Davies of New Plymouth reported on the existence of a group of tainui trees growing on the main highway between Awakino and Mokau. This group, which is the only known group of such species, is closely linked with Maori legend.

Membership Income:

The Dominion Secretary reported that about half the income from annual subscriptions had been received to date. (Perhaps those members who have not yet paid will oblige by sending in their payments without delay!)

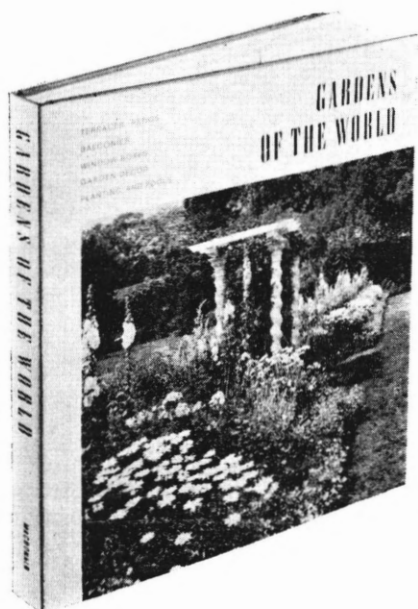
Eastwoodhill Property at Gisborne:

Mr. W. R. Sykes of Botany Division, D.S.I.R., Christchurch, had reported that many rare specimens of trees are included in Mr. Cook's plantings at Gisborne. Many are not growing anywhere else in New Zealand. The Dominion Council is endeavouring to obtain funds for the preservation and development of this valuable and extensive planting.

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