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(INCORPORATED)

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Editor:

G. A. R. PHILLIPS, F.R.I.H. (N.Z.)

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NEW ZEALAND PLANTS AND GARDENS

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

Volume V. *MARCH, 1963.* *No. II*

CONFERENCES.

The conferences organised by the Canterbury District Council of this Institute, held over the past three years, have been most valuable. This value has been extended to others by the publication of all the papers read at these conferences. The subjects were "Ornamental Trees and Shrubs for the Garden" (1960), "The Flower Garden" (1961), and the "The Vegetable Garden" (1962). A significant feature of these conferences lay in the fact that the papers were prepared by horticultural authorities of Canterbury, who were familiar with local conditions, and were able to deal with the various subjects from a local point of view. Let me hasten to add that this in no way detracted from their value as authoritative guides for gardeners throughout New Zealand.

Now this provides food for thought, and there seems to be no reason why the essence of these conferences should not be put to good use in all localities where there are horticultural societies. It is logical that a gardener, who has been successful in the cultivation of certain plants locally, is better able to give advice in cultural matters than is anyone from another district, where conditions may well be quite different and gardening has to be approached differently.

I know of at least one horticultural society that is holding a vegetable conference during the coming winter. Local gardeners who have been conspicuously successful in the cultivation of one of the four main groups have agreed to give brief practical addresses on Legumes, Roots, Leaf Crops and Tubers. There will be a question and answer session after each address. The organisers contend that advice based on local experience is likely to be of greater use than an address given by someone from a distant district, whose knowledge has been gained under different conditions of climate, soil, rainfall etc. The chair will be taken by a horticulturist of authority.

Local knowledge, gained by experience of local conditions, can be of immense value. Horticultural societies and other organisations will do well to consider the question and give the lie to the old proverb 'A prophet is not without honour save in his own country.'

G. A. R. PHILLIPS.
Editor

BANKS LECTURE, 1963.

The Indigenous Flora of Banks Peninsula

WILLIAM MARTIN, B.Sc.

On February 16, 1770, while sailing south in the 'Endeavour', Cap- Cook saw at a distance of some 12 to 15 miles what he believed to be a large island of circular shape and rather rugged terrain which he named Banks's Island after the youthful but distinguished naturalist Mr (later Sir) Joseph Banks, F.R.S., who with Dr. D. Solander accompanied him on this historic voyage, and who were the first to collect and study the unique plant cover of this Dominion. It was not till almost 40 years later (1808) that Captain Chase of the ship 'Pegasus' discovered the supposed island to be united to the mainland, necessitating the change of name to Banks Peninsula.

The choice of topic for this year's Banks Lecture was prompted by the fact of Banks Peninsula itself being New Zealand's best known monument to the father of New Zealand botany, and to the added fact that I had, during the past 50 years, acquired some first hand knowledge of its indigenous flora. I am well aware of several previous accounts of the plants of Banks Peninsula, the first three at intervals of 40 years by E. Raoul, J. B. Armstrong and R. M. Laing respectively. Dr. L. Cockayne and Prof. Arnold Wall have also written a detailed account of the flora of the Port Hills, and in 1927 Laing wrote a summarised account of the Peninsula flora in the *Natural History of Canterbury*. In the time available for this address, only the salient features of the flora can be referred to, and for more detailed obervations, recourse will still be necessary to the writings of Laing, Wall and Cockayne.

Raoul in 1840, the year marking the beginning of organised settlement in New Zealand, had the advantage of studying the Peninsula flora in its pristine, unmodified condition, but was hampered by the lack of roads and tracks, by the density of the forests, and by the abundance of supplejacks and other lianes. Armstrong's account, though more detailed was in many ways inaccurate, and Laing's studies though accurate were made after most of the original forests had disappeared.

BRIEF HISTORY OF BOTANICAL INVESTIGATION

As I have indicated, the first to collect and study the plants of Banks Peninsula was Dr. M. E. Raoul, surgeon and botanist on the frigate 'L'Aube' which accompanied the Compe de Paris, bringing French settlers to Akaroa in 1840. During a sojourn of 27 months, he gathered a rich harvest of plants, many previously unknown and unnamed. These he later described, named, and figured in the *Choix de Plantes de la Nouvelle Zelande* (1846). Next on the scene was Dr. David Lyall, surgeon and botanist on the survey vessel 'Acheron' which paid a short visit to Akaroa and Lyttelton harbours in 1849, but long enough for several further novelties to be discovered.

Further investigations were carried out during the 1860's, mainly by W. Travers, Thos. Kirk, J. F. and J. B. Armstrong, T. W. Potts and Sir Julius von Haast. Towards the close of the century T. Naylor Beckett and Robert Brown, both of Christchurch, paid some attention to the moss flora.

Robert M. Laing began his researches early in the present century first with the marine algae and later with the flowering plants and ferns of which he published a catalogue in 1919 accompanied by ecological and distributional notes, followed by a supplementary list in 1924 by Prof. Wall and himself. Forty years previously a similar census had been published by J. B. Armstrong at a time when considerable areas of forest had still been unmolested. When it is recalled that of the 250 square miles of forest existing in 1840, less than 1000 acres remained in 1900, and that the grasslands had been continuously grazed and frequently fired, it is not surprising that 100 flowering plants and 50 ferns listed by Armstrong could no longer be located by Laing, though it is clear many plants enumerated by Armstrong had never been present. More remarkable was the discovery by Laing and Wall of over 100 species not detected by Armstrong. How many species had succumbed in the intervening years will never be known. Faulty identification will account for some of Armstrong's erroneous records, but more of those not seen by Laing were probably present than is generally believed.

From 1914 to 1920, the speaker spent considerable time investigating the fern flora of the eastern half of Banks Peninsula and, thanks to information supplied by D. G. Riches and L. Vangione, both resident in Akaroa, he was able to locate many ferns classified by Laing as doubtful or improbable indigens of Banks Peninsula. At the same time numerous observations of the flowering plants were made.

During this same period, the plant life indigenous to the Port Hills was closely investigated both by Prof. Arnold Wall and Dr. Leonard Cockayne, each of whom published separate accounts of the local flora. Prof. Wall also paid close attention to the Mt. Herbert area and, near the summit, located many grasses and sedges not previously recorded from Banks Peninsula. If, therefore we exempt the bryophytes, lichens, and fungi, the indigenous flora of the Peninsula is now as well known as it ever will be. It is, however, difficult to believe that all trace of such floriferous, ornamental, and conspicuous subalpines as *Celmisia coriacea, C. spectabilis, C. lyallii, Gentiana montana* and *Anisotome pilifera*, reported by Armstrong as abundant, should have vanished without trace in the space of 30 to 40 years. It should be noted that none of these from Peninsula habitats exist in Armstrong's herbarium preserved in the Canterbury Museum, nor has anyone else corroborated their former presence. It is also probable that no botanist ever examined the dense forests between Little Akaroa and Le Bons Bay as these were destroyed by milling and by extensive fires at a very early date.

Before proceeding further, mention may be made of several features that distinguished the plant cover of Banks Peninsula.—

(1) The presence of plants not found elsewhere (local endemics).
(2) The dominance of podocarp forests with totara as the dominant timber tree.
(3) It is the type locality for many indigenous species.
(4) It marks the southern limit for many indigenous species.
(5) It marks the northern limit for several indigenous species.
(6) Numerous Canterbury species are restricted to Banks Peninsula.

PLANTS FIRST OBSERVED AND DESCRIBED FROM BANKS PENINSULA

More than three dozen trees, shrubs, lianes, herbs, and ferns were first discovered on Banks Peninsula mainly by Raoul (1840-1842). His new discoveries were:—

(*a*) *TREES*:—Narrow-leafed lacebark (*Hoheria angustifolia*); broadleaf (*Griselinia littoralis*); pokaka (*Elaeocarpus hookerianus*); milk tree (*Paratrophis microphylla*); and the mountain ake-ake (*Olearia avicenniaefolia*).

(*b*) *SHRUBS*:—Karamu (*Coprosma robusta*); korokio (Corokia *cotoneaster*); niniao (*Helichrysum glomeratum*); rohutu (*Lophomyrtus obcordata*); matagowii (*Discaria ...toumatou*): horopito (*Pseudowintera coloraia*); the rare matipo (*Pittosporum obcordatum*); and two dwarf speedwells (*Hebe raoulii* and *H. lavaudiana*).

(*c*) *LIANES*:—The fragrant, yellow-flowering *Clematis* (*Clematis foetida*); the pink jasmine (*Parsonia capsularis* var. *rosea*); and the climbing groundsel (*Senecio sciadophilus*).

(*d*) *HERBS*:—The Akaroa Aster (*Celmisia mackaui*); the field groundsel (*Senecio lagopus*); the star-lily (*Arthropodium candidum*); the creeping *Gunnera monvica*;... a fireweed (*Erechtites scaberula*); a plantain (*Plantago raoulii*); a silver-weed (*Potentilla anserinoides*); the scabweed (*Raoulia australis*); pondweed (*Potamogeton ochreatus*): the forest ricegrass (*Microlaena avenacea*); the snow-grass (*Danthonia rigida*), and two hook-sedges (*Uncinia rupestris* and *U. leptostachya*).

(*e*) *FERNS*:—A maidenhair fern (*Adiantum fulvum*), and a slender spleenwort (*Asplenium hookerianum*).

(Note: A scandent anise (*Angelica rosaefolia*) recorded by Raoul from Akaroa was more probably collected by him at the Bay of Islands.)

Among other species collected by Raoul and believed new by him, though previously collected and named by others, were the hinau (*Elaeocarpus dentatus*); the tarata (*Pittosporum eugenioides*); the pas-

sion flower (*Tetrapathaea tetrandra*); the broad-leafed jasmine (*Parsonia heterophylla*); the pototara (*Cyathodes fraseri*); the glossy-leafed shrub daisy (*Olearia arborescens*); and the common hedge plant (*Olearia paniculata*) better known as *O. forsteri.*

Herbaceous plants in this category included *Nertera dichondraefolia* and *Microseries scapigera,* and the ferns *Blechnum fluviatile* and *B. penna-marina.*

The following species were first detected on Banks Peninsula but by botanists other than Raoul — the Port Hills groundsel (*Senecio saxifragoides*); *Raoulia subsericea; Cotula haastii*; the red matipo or mapau (*Myrsine australis*); the narrow-leafed koromiko (*Hebe strictissima*); and var. *lytteltonensis* of the forget-me-not (*Myosotis australis*).

PLANTS ENDEMIC TO BANKS PENINSULA

During the thousands of years Bank Peninsula was isolated from the mainland by close on 40 miles of ocean, several species unknown elsewhere developed as well as local varieties and forms of more widely dispersed species. One such endemic species was the Akaroa aster (*Celmisia mackaui*) which formerly ranged from sea-level to the subalpine zone between Akaroa Heads and Mt. Sinclair and possibly as far as Mt. Herbert. Another, restricted to subalpine rocks was the attractive little speedwell (*Hebe lavaudiana*). *Hebe strictissima,* formerly deemed a variety of *H. leiophylla* is an erect shrub resembling a narrow-leafed koromiko found at all levels but mainly in montane areas. A fourth endemic species is the Port Hills groundsell (*Senecio saxifragoides*) which is confined to rock faces at or above 800ft. altitude on the Port Hills facing Lyttelton Harbour. The tiny, matforming *Cotula haastii,* though once reported from the Canterbury Plains, is more probably confined to Banks Peninsula.

The sole *Dracophyllum* on the Peninsula was named *D. peninsulare* by Dr. Oliver, who regarded it as endemic, but Dr. Allan merges it into the wider concept of *D. acerosum.* The mountain primula (*Ourisia macrophylla*) has an endemic variety (var. *lactea*) on Banks Peninsula. Similarly the forget-me-not *Myosotis australis* was deemed by Laing sufficiently distinct to warrant varietal rank as var. *Lytteltonesis,* but Allan does not recognise the varietal rank. Long isolation has allowed the development of endemic forms in the case of the rock lovage (*Anisotome enysii*), the anise (*Angelica montana*), the creeping *Gunnera monoica,* and the dainty little speedwell (*Parahebe lyallii*).

NORTHERN PLANTS AT MOST SOUTHERLY STATION ON BANKS PENINSULA

More than 20 indigenous plants found on and north of Banks Peninsula are unknown further south. Such include the following trees and shrubs:—The puka (*Griselinia lucida*), the karaka (*Corynocarpus laevigata*), a kowhai (*Sophora tetraptera*), the titoki (*Alectryon excelsum*), the nikau palm (*Rhopalostylis sapida*), the pigeon

berry (*Hedycarya arborea*), the ake-ake (*Dodoanaea aiscosa*), broad-leafed cabbage-tree (*Cordyline indivisa*), Kawa-kawa (*Macropiper excelsum*), the mingi-mingi (*Cyathodes fasciculata*), and shrub mahoe (*Melicytus micranthus*) var. *microphylla*.

Climbers in this category were the passion-flower (*Tetrapathaea tetrandra*) and *Clematis* (*C. forsteri*), and herbaceous plants included the orchid (*Spiranthes australis*), the sedge (*Mariscus ustulatus*), and the sand-binding grass (*Zoysia pungens*). *Rhagodia triandra* probably belongs to this group and the following ferns—*Cyathea cunninghamii, Pteris tremula, Athyrium australe, Adiantum fulvum*, and *Anarthropteris lanceolata*.

BANKS PENINSULA CONSTITUTED A DISTINCT BOTANICAL AREA

The presence of so many endemic species, varieties, and forms, and of so many plants unknown elsewhere in Canterbury led Dr. Cockayne to constitute Banks Peninsula a distinct sub-district of his Eastern Botanical District. Further, we do not find elsewhere in the South Island podocarp forests of comparable size and structure. In actual fact the flora of Banks Peninsula is more closely allied to that of Marlborough than to the rest of Canterbury. The coastal fern (*Plechnum-durum*) and the peach-scented daisy tree (*Olearia fragantissima*) here reached their most northerly stations.

SUBALPINE PLANTS OF BANKS PENINSULA

A century ago there existed on Banks Peninsula 60 or more species which were rarely or never seen below the upper forest margin. Such as still persisted were enumerated by Wall and Laing, for many previously recorded by Armstrong were nowhere to be seen. Such included the shrubs *Hebe cupressoides, H. vernicosa, Gaultheria rupestris, Melicytus lanceolatus*, and the stinkwood (*Coprosma foetidissima*) and the following herbaceous plants — *Celmisia coriacea, C. spectabilis, C. lyallii, Anisotome pilifera, Cotula pyrethrifolia, Epilobium crassum, E. purpuratum, Carex stellulata, C. pyrenaica*, not one of which is preserved in Armstrong's herbarium from Peninsula sources, nor has the presence of any of them been confirmed by any other investigator. The stinkwood and narrow-leafed mahoe could well have been present, but the others on various grounds may be rejected.

The only tree restricted to subalpine stations was the pahautea or cedar (*Libocedrus bidwillii*), and the following shrubs — the mountain wineberry (*Aristotelia fruticosa*), the heath (*Dracophyllum acerosum*), snowberry (*Gaultheria antipoda*), *Coprosma parviflora, Hebe lavaudiana, Olearia ilicifolia, O. cymbifolia*, and the horopito (*Pseudowintera colorata*). Other shrubs commonest in this zone included the korokio (*Corokia cotoneaster*), the glossy-leafed *Olearia arborescens*, and the weeping matipo (*Myrsine divaricata*).

On damp, shady, subalpine rock faces the following showy herbs were to be seen, viz. the snow-groundsel (*Senecio lyallii*), the mountain everlasting (*Helichrysum bellidioides*), the Akaroa Aster (*Celmisia mackaui*) and the dainty *Parahebe lyallii*. As shown by Prof. Wall, Lyttelton Harbour formed a dividing line for *Senecio lagopus* found only to the east and *Senecio saxifragoides* only on subalpine rocks of the Port Hills. Conspicuous herbs in the tussock grasslands were the mountain primula (*Ourisia macrophylla* var. *lactea*), the diminutive eyebright (*Euphrasia zelandia*), and the endemic *Forstera tenella*, and by the sides of stream courses the floriferous willowherb known as *Epilobium macropus*. Subalpine sedges included the reddish hook-sedge (*Uncinia rubra*) and the diminutive *Carex breviculmis*.

Of the numerous native grasses the largest were the two snow grasses (*Danthonia rigida* and *D. cunninghamii*), neither very common. The spaniard (*Aciphylla colensoi*) was almost restricted to subalpine habitats.

THE FORESTS

One of the early settlers on Banks Peninsula, Mr S. F. Farr, referring to the forests at Robinsons Bay near Akaroa, stated that they comprised mainly white and black pines, totara, manuka, kowhai, and konini, most trees being of large size. H. C. Jacobson, in his *Tales of Banks Peninsula*, mentions the presence in the Duvauchelles Bay forest of konini, tutu, and ribbonwood, and timbered forests where supple-jacks were thick; while Sir Julius von Haast notes that the forests comprised high, straight trees growing closely together, interwoven with numerous lianes, their stems covered with mosses and ferns, and with a dense undergrowth of shrubs and tree-ferns. Travers, on the other hand remarks on the paucity of filmy ferns, a remark probably not applicable to the dense forests between Little Akaloa and Damons Bay.

(*1*) *THE TREES*

Everywhere on the flats and on the lower slopes the dominant timber trees were the white pine and the matai or black pine. The hillside forests to about 1500ft. altitude were predominantly totara gradually passing above that to *Podocarpus hallii* and cedar; associated smaller trees at all levels including konini, broad-leaf, ivy tree (*Neopanax aboreum*), and yellow-wood (*Coprosma linariifolia*).

Beech forest existed on the eastern slopes of the Akaroa Hills and possibly represented a surviving remnant of an antecedent forest. The species present were red beech (*Nothofagus fusca*), black beech (*N. solandri*), and mountain beech (*N. chiffortioides*), with numerous hybrids. Near Purau and on the slopes above Little River small stands of rimu (*Dacrydium cupressinum*) occurred, and a few trees of miro (*Podocarpus ferrugineus*) occurred at Port Levy and elsewhere. Large trees little used as timber or not at all, included the hinau, the pokaka, two ribbonwoods (*Plagianthus betulinus* and *Hoheria angustifolia*), the

milk tree (*Paratrophis microphylla*), the titoki (*Alectryon excelsum*), and the kowhai (*Sophora microphylla*). A small forest remnant in Price's Valley still contains most of these trees as well as pigeonwood, kanuka, and ngaio (*Myoporum laetum*). Maximum density of forest and maximum size of trees existed on the northern and eastern coasts.

From 1840 to 1860 all timber was pit sawn but in the latter year the first power sawmill was erected at Robinson's Bay, soon to be followed by others at Duvauchelles and at Little Akaloa, and subsequently by many more. A small fleet of vessels was constantly engaged in transporting the timber to Lyttleton and other ports. Thacker's mill at Okains Bay averaged 70,000 feet of sawn timber every week, and that at Robinson's Bay a million feet annually. The Duvauchelles Bay forests supplied in all some 20 million feet of timber, mainly totara.

So rapidly and so thoroughly were these primeval forests exploited and subsequently fired that by the close of the century less than 1000 acres of forest remained on Banks Peninsula of the original 134,000 acres.

In all, some 40 species of trees were present, the largest being the podocarps, and the smaller such as may be found in most subtropical rain-forest, viz. fuchsia, mahoe, tarata, matipo, putaweta, mapau, ivy-tree, patete, broadleaf, mapau, kaikomako, etc. Several stands of tall kanuka (*Leptospermum ericoides*) occurred; those in Kaituna Valley being commonly of massive proportions. The karaka was purely coastal and local, and *Olearia avicenniaefolia* more often a shrub than a tree, grow in both coastal and montane habitats. The savage lancewood (*Pseudopanax ferox*) was sparingly present though *P. crassifolium* was much more common. The patete (*Schaefflera digitata*) was quite abundant especially margining forest streams.

(2) *THE SHRUBS*

Over 80 species of indigenous shrubs have been recorded from Banks Peninsula, 14 of which were mainly or wholly subalpine. The genus *Coprosma* was represented by at least a dozen species, nine of which were recently noted by me in Prices Valley, including the deciduous *C. virescens* in larger numbers than seen by me elsewhere in New Zealand. Of the less common shrubs still persisting in Price's Valley we may note the kawa-kawa or pepper (*Macropiper excelsum*), the shrubby *Neopanax anomalum*, the shrubby mahoe (*Melicytus micranthus*), and the native *Verbena* (*Teucridium parvifolium*) once common and widespread, now rare. *Pittosporum obcordatum*, observed by both Raoul and Potts, is now apparently extinct in its three known New Zealand habitats, though two specimens are preserved in Christchurch Botanic Gardens. It closely resembled the common weeping matipo (*Myrsine divaricata*). The creeping matipo (*M. nummularе*), probably now extinct on the Peninsula, was observed by Armstrong who has preserved specimens from three areas on the Port Hills.

The commonest of several native brooms was *Carmichaelia virgata,* still abundant as a rather rigid shrub on open hillsides, but with long, flexuous branches when present in forested areas. The prostrate broom on Budlings Flat is *C. appressa,* and a dwarf, very rigid species on Mt. Herbert is *C. corrugata. Corokia cotoneaster,* first detected on Banks Peninsula, is commonest above the bushline, but occurs in quantity at sea-level near Church Bay at the head of Lyttelton Harbour. This is an attractive shrub with white under sides to the leaves, and yellow stellate flowers followed by orange or red drupes. The poataniwhi (*Melicope simplex*) and the horopita (*Pseudowintera colorata*) are still abundant, as are three xerophytes viz. dwarf kowhai (*Sophora prostrata*), the rigid, spinous *Hymenanthera crassifolia,* and the matagouri (*Discaria toumatou*) at the head of Lyttelton Harbour. The three epacrids once commonly present in manuka heath, namely *Cyathodes fastigiata, C. juniperina* and *C. fraseri* are becoming increasingly uncommon. The six last named shrubs do not strictly belong to the forest, but for convenience these and other shrub-land species have been included. The tree nettle (*Urtica ferox*) is still abundant on forest margins, and *Neomyrtus pedunculata* may still be seen in Kaituna Valley.

(3) *LIANES*

Climbing plants and scramblers were numerous both in species and as individual plants. The supplejack (*Rhipogonum scandens*), once abundant, still persists but is nearing local extinction. It and the various species of *Rubus* once formed a severe hindrance to progress through much of the forest especially in marginal areas. With the exception of *R. parvus,* all indigenous species were present, one or two often forming massive lianes. Even the passion flower possessed a main stem sometimes over two inches in diameter. The climbing rata (*Metrosideros diffusa*) may still be observed both on trees and on rocks, but two other scandent species listed by Armstrong (*M. colensoi* and *M. perforata*) and preserved in his herbarium are no longer to be found. The genus *Clematis* had five local species — *C. paniculata, C. foetida, C. forsteri, C. afoliata,* and *C. marata.* The New Zealand climbing jasmines (*Parsonsia heterophylla, P. capsularis* var. *rosea*) — were and still are abundant in many forms.

Muehlenbeckia and *Calystegia* each had two scandent members. The climing anise (*Angelica geniculata*) was formerly quite common but the rose-leafed anise (*A. rosaefolia*) recorded by Raoul was more probably collected by him at the Bay of Islands and not at Akaroa. Though the climbing groundsel (*Senecio sciadophilus*) was at one time more abundant on Banks Peninsula than elsewhere in New Zealand, it is now rarely seen, though recently observed by me at the head of Kennedy's Valley near the look-out where 40 years previously Wall reported it as extinct.

(4) *EPIPHYTES AND PARASITES*

Apart from numerous epiphytic ferns, bryophytes, and lichens the only perching plant certainly known from Banks Peninsula forests was

the sweet scented *Earina* (*E. suaveolens*), an orchid even more common today on subalpine rocks than on forest trees. However, it would seem highly probable that the narrow-leafed *Earina mucronata* and *Dendrobium cunninghamii* were present also. Armstrong also lists the tree flax (*Collospermum hastatum*) a massive perching lily resembling the nest of some gigantic bird when seen high up on a forest tree. Though this occurs still south of Kaikoura its former presence on Banks Peninsula lacks confirmation. The puka (*Griselinia lucida*) doubtless began life here as elsewhere as an epiphyte.

The only parasitic flowering plants on Banks Peninsula were four mistletoes, though J. F. Armstrong mentions also the scarlet mistletoe (*Elytranthe tetrapetala*) possibly in error. *Tupeia antarctica* was common enough especially on the Maori may (*Carpodetus serratus*) but much more abundant was *Loranthus micranthus* which was more catholic in its choice of hosts, parasitising exotic as well as indigenous trees and shrubs.

The other two mistletoes were *Korthalsella salicormoides,* restricted to the genus *Leptospermum* and mainly on Banks Peninsula to *L. ericoides,* and *K. lindsayi* which in this area grew mainly on *Melicope simplex, Myrsine divaricata,* kowhai, and various coprosmas. The former species was once abundant in Kaituna Valley, but elsewhere both seemed to have been particularly common.

(5) *HERBACEOUS AND SUFFRUTICOSE PLANTS*

Of close on 500 plants which occupied Banks Peninsula in pre-settlement days much the greater number were suffruticose or herbaceous, inclusive of 40 indigenous grasses, 36 sedges, and 14 orchids and at least three dozen herbaceous daisies. The largest and most conspicuous of the grasses were the toi-toi (*Arundoconspicua*) and the two snow-grasses (*Danthonia cunninghamii and D. rigida*). The holy-grass (*Hierochloe redolens*) was abundant both on coastal banks and on subalpine rocks, and the rice-grass (*Microlaena avenacea*) was both common and the largest of forest-frequenting grasses. Most conspicuous of the sedges though neither was abundant were *Mariscus ustulatus* and *Carex seota* popularly known as the maori-head. Raoul also recorded *Carex trifida,* a robust, coastal sedge abundant on the Auckland and Campbell Islands, with only a single known occurrence north of Banks Peninsula, Banks and Solander having observed it at the entrance to Queen Charlotte Sound. J. F. Armstrong also collected it near Akaroa.

The most noteworthy of a score of umbelliferous herbs were two spear-grass or Spaniards (*Aciphylla colensoi* and *A. subflabellata*) which grew on Mt. Herbert. The latter species was formerly abundant also on the grassy slopes of the Port Hills. Local races of the native anise (*Anisotome aromatica*) and of the rock lovage (*A. enysii*) occupied subalpine rock habitats. The nettle family had four representatives, two (*Urtica ferox* and *U. incisa*) with stinging hairs, and

two without, namely the tiny *Australina pusilla* and the pellitory (*Parietaria debilis*). Of the lilies mention may be made of the slender star-lily (*Arthropodium candidum*), the blue-berry (*Dianella intermedia*), *Iphigenia novae-zelandiae,* and the Maori onion (*Chrysobactron hookeri*) each somewhat uncommon. Among the numerous coastal herbs were the New Zealand spinach (*Tetragonia tetragonoides*) and its congener *T. trigyna; Rhagodia triandra* and half a dozen other members of the fathen family; a broad-leafed form of the native iris (*Libertia ixioides*); the shore *Lobelia* (*L. anceps*), the sea-spurge (*Euphorbia glauca*); and the suffruticose bulli-bulli (*Solanum laciniatum*).

Mention has already been made of some of the more conspicuous subalpine herbs, a majority of which have little more than botanical interest. A minute plant, smallest of the speedwells was once observed by Thos. Kirk on the dry mud margining Lake Forsyth. This was *Parahebe canescens,* a creeping plant with leaves often no larger than a pin-head, yet conspicuous enough when its single sky-blue floret is borne in late summer. Another plant, smallest of the daffodil family, formerly abundant on the Cashmere Hills, was *Hypoxis pusilla.* This too is quite an inconspicuous member of tussock grassland when not in flower but, in early autumn its yellow flowers are quite conspicuous in spite of their small size and short linear leaves.

(6) *FERNS AND LYCOPODS*

Laing enumerates 83 ferns and lpcopods as former inhabitants of Banks Peninsula but the actual number was probably nearer 100. 'It seems clear', wrote Dr. Holloway (*Frans. N.Z. Institute,* Vol. 55, p.67) 'that the forests of Banks Peninsula possessed a filmy-fern flora which was very rich in species, but which was probably largely confined to the gullies'; yet Laing rejected all Armstrong's list of filmy ferns except nine as improbable. On the other hand Dr. Holloway says all listed by Armstrong could well have been present. Tree-ferns were abundant and comprised five species of *Cyathea* and two of *Dicksonia.* The most prevalent of the forest ferns were ten species of hard ferns (*Blechnum*), and eight spleenworts (*Asplenium*) with their numerous hybrids.

Besides two maidenhair ferns (*Adiantum fulvum* and *A. diaphanum*) four related ferns of the same fern family were specially noteworthy as, unlike most other ferns, they were to be found only in the driest, windiest, and sunniest stations usually on dry clay soils. These were *Cheilanthes sieberi, C. distans, Anogramma leptophylla,* and *Pellaea rotundifolia.* The umbrella fern (*Gleichenia cunninghamii*) though present was nowhere abundant, an observation equally applicable to the crepe fern (*Todea hymenophylloides*). Locally common at one time were the parsley fern (*Botrychium australe*) and the adder's tongue fern (*Ophioglossum coriaceum*), both of ancient lineage, but only the latter can be found today.

Five species of *Lycopodium* were present, and according to Armstrong the diminutive *Phylloglossum drummondii* but this record is of very doubtful validity. However, *Tmesipteristanensis* was certainly present though not abundant.

(7) *BRYOPHYTES, LICHENS, AND FUNGI*

Though Raoul, Kirk, Travers, Armstrong, Beckett, and Brown all collected mosses on Banks Peninsula, their combined efforts produced only a total of 70 species, to which the speaker and others have added another 70, and I would hazard a guess that the original moss flora was probably nearer 200 species. The hepatic flora is almost unknown, and both the lichens and the fungi remain unexplored fields. The fungal flora will never be known other than a tiny number. Raoul records only the basket fungus (*Clathrus cibarius*) and the scarlet *Secotium* (*S. erythrocephalum*). Armstrong collected a few *Stictae* (lichens) on the Peninsula, but the collection by me near Purau in December last of 30 species in one small area is proof that a considerable number still await the students of these plants. Those collected included species of *Sticta, Parmelia, Lecanora, Lecidia, Nephroma, Stereocaulon, Cladonia, Pyrenula,* and other genera.

CONCLUSION

The ferns and flowering plants listed by Laing and Wall for Banks Peninsula total 480 species of which 134 are now known by names other than those listed by Laing. The names used in this lecture are those of Allan's *Flora of New Zealand* vol. 1, for the ferns and dicotyledons, and for the monocotyledons Laing's momenclature is retained. Which of Armstrong's 150 additional records are valid will probably now never be known; for it is clear that in this list were plants confined to the Auckland and Campbell Islands, to Macquarie Islands, and to the Auckland Province respectively. Three others are not known in the South Island, and three have not been noted south of Nelson and the Marlborough Sounds. There are good reasons for rejecting as highly improbable many other species, all of which is a matter much to be regretted. There are, however, some grounds for believing that some or all of the following could well have been present a century ago — the coastal *Hebe elliptica,* the climbing rata (*Metrosideros perforata*), the subalpine (*Neopanax simplex*) the slender-stemmed *Olearia virgata,* the narrow-leafed mahoe (*Melicytus lanceolata*), the montane *Myrsine nummularia,* possibly the stinkwood (*Coprosma foetidissima*), and various ferns not seen by Laing.

European settlers have introduced vast and rapid changes in the vegetation cover of Banks Peninsula. The forests have vanished and in their place grasslands, mainly of exotic grasses and clovers, now support large flocks of sheep and herds of cattle. Such forest remnants as remain are mostly devoid of the larger timber trees. The indigenous grasslands have been invaded by exotic weeds and doubtless

some of the original species have succumbed to grazing and repeated firing. All this notwithstanding, in the forest remnants that persist, in the hillside shrubberies, in the tussock grasslands, on coastal banks and tidal flats, and on subalpine rock faces, there may still be seen a goodly percentage of the indigenous plants that peopled the Peninsula for centuries prior to the days of settlement which began 120 years ago.

Banks and Solander in 1769 collected some 360 species of New Zealand plants, many of which were later found to exist on Banks Peninsula, but neither Banks nor Solander ever set foot on Banks Peninsula and it remained for Raoul and later botanists to locate almost 40 previously unknown indigens in this area. Only three local species bear the honoured name of Sir Joseph Banks — an orchid (*Pterostylis banksii*), a fern (*Blechnum banksii*), and a hook-sedge (*Uncinia riparia* var. *banksii*) — but the peninsula itself will ever remain the finest monument in this country to the father of New Zealand botany.

The lecture was illustrated by coloured slides and numerous mounted specimens of the flowering plants, ferns, mosses, and lichens.

OCHNA SERRULATA

DOUGLAS ELLIOTT (New Plymouth).

Ochna serrulata, which is sometimes listed as *Ochna multiflora,* is a choice evergreen shrub from Natal. The leaves are hard and rough to the touch and are finely serrated. The yellow flowers, somewhat like those of *Hypericum,* are pretty but not outstanding and are too fragile and short-lived to be of any special value.

The plant's main attraction is its seeds which turn from green to black and protrude from a red strawberry-like growth which is surrounded by fleshy red bracts. The red parts remain after the seeds have fallen. The shrub grows about 5 ft. high.

Ochna is tender and does well only in warm parts of the country.

NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

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

In the December issue of the Journal it was mentioned how remarkably constant the yearly rainfall of Christchurch remains — and 1962 was no exception. It was the fifth consecutive year with rainfall below average, and the eighth consecutive year with temperatures above average. 1962 also has the distinction of being the warmest year ever recorded in Christchurch.

Both December and January were warm, dry months with rainfall below average, and February so far promises to be just the same. On January 7th, a recorded maximum temperature of 97.3°F. was re-

gistered. This is only 4 degrees below New Zealand's highest recorded maximum. With the generally warm and dry conditions watering has again been a problem, which has only been solved by once again keeping the hoses going 24 hours a day.

During the summer months one of the most popular features in the Gardens is the Rose Garden. Its situation in the centre of the Gardens is ideal, for most people gravitate towards this area, and each year thousands of visitors pass through the Rose Garden. Throughout the season many people come with their note books, and it has become obvious that a number of the older roses are still greatly preferred by the public to some which are only notable because they are the newest.

Each year several beds are replanted with newer varieties, and this maintains an admirable balance between old and new. The policy is to discard those varieties which have become debilitated, or which are no longer regarded as good roses. Regarding the latter, personal opinions may differ, but so far there has been general unanimity. A number of the beds have been donated by nurserymen, the local rose society and other interested persons.

Before going on to mention some of the roses it is necessary to explain that, although they may conflict with those of local rosarians, the views expressed here are based on personal observation of the roses in the Botanic Gardens and of the public's preferences.

Of the new varieties which have been planted in recent years there is no doubt that 'Fritz Thiedeman' and 'Super Star' have attracted the most attention. Both of these roses have flowers of a glowing orange-vermillion, and in colour there is little to choose between them. However, from the point of view of display 'Super Star' is definitely the better. They are both good growers and appear to be very disease resistant. In the same colour range, 'Spartan' has proved quite disappointing while 'Independence', in spite of criticism levelled against it, does very well in the Botanic Gardens. It has proved particularly disease resistant, flowers well during the heat of the summer and, although the flowers burn, they do not do so as badly as some other reds, such as 'Karl Herbst'.

'Kommodore' is the only crimson received and, although it is a good grower and a rich colour, the flowers are inclined to hang their heads slightly. One which promises to make an outstanding bed is 'Korona', which has bright orange-scarlet flowers, while 'Saraband' is a very bright and attractive single.

Among the yellows 'Allgold' and 'Gold Jewel' are good, but too similar to warrant growing both. Both are floribundas and produce good heads of bloom over deep green foliage. Of the two 'Gold Jewel' appears to be somewhat later flowering.

'Perfecta' has always been a great disappointment, and over the past two seasons it has become more obvious than ever that this is a

cool climate rose, good blooms only being obtained in the cool spring and autumn weather. During the heat of the summer the petals burn badly around the edges and the flowers have a horrible appearance. The variety 'Rose Gaujard' is very much superior, the flowers being not so affected by the heat. Also 'Rose Gaujard' does not have the stiff upright habit of growth of 'Perfecta' and it is much to be preferred on this account. Another rose which is a little disappointing is 'Silver Lining'. It is a pale silvery-pink with a paler reverse and is very attractive in the bud, but the more developed flowers are rather insipid.

Another variety which has an attractive bud is 'Vagabond' which is a beautiful soft apricot. However, the open flowers have a very poor shape. 'Sweet Repose' is another variety which grows and flowers well, but it burns badly and appears to be more suited to a cool climate.

Roses with flowers of a smoke colour may be to some people's taste, but for most they must be listed among the unusual rather than the beautiful. One such is 'Lavender Princess' which it must be said is perhaps the least attractive rose in the Rose Garden.

Some of the other varieties planted over the past few years which are worthy of note are, 'Queen Elizabeth', 'First Love', 'Opera', 'Mojave', and 'Virgo'. Of the older varieties mention must be made of 'McGredy's Yellow', 'Edith Cavell', 'The Doctor', 'Peace', 'Sutter's Gold', and 'Ena Harkness'.

Although the site of the present Rose Garden was enriched with 2000 yards of good soil when it was constructed, the under-lying shingle sub-stratum necessitates frequent watering. The difficulty of keeping the Rose Garden watered during the latter part of the summer, combined with the weather conditions which usually prevail does help to increase the incidence of mildew and rust. It is interesting to note the resistance and susceptibilities of various varieties to these diseases. The most susceptible variety and the first to show mildew every year is 'Violinista Costa'. 'Mrs Wemyss Quinn' is another which contracts mildew early in the season and badly so. During the latter part of the season rust sometimes becomes generally prevalent but there are some varieties which exhibit a noticeable resistance to it. Varieties like 'Kommodore', 'Gold Jewel', 'McGredy's Yellow' and 'Independence' have proved to be noticeably resistant to both mildew and rust.

NOTES FROM THE DUNEDIN BOTANIC GARDEN.

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

An important function of Botanic Gardens in New Zealand is to display as many good garden plants as possible growing in appropriate settings in order that the garden-minded public may note their worth and character, and so be able to obtain ideas for the planning of their own gardens, from the examples seen there. Although each district

should make special features of plants which do particularly well in that locality, there are certain plants of countrywide appeal that it is essential to provide in all areas. The rose is, in its many forms, a firm favourite from the extreme south of New Zealand to the far north, and is probably the most important of these.

There are two distinct methods of displaying roses in public gardens. One way is to grow plants of every variety obtainable, so that the merits of one may be compared with another. Habit, scent, colour, vigour, type, are all matters to be taken into account when choosing roses for general or particular purposes. Owing to the many hundreds of named varieties available, and the limitations of space for planting, and labour for maintenance, this usually means that one or two only of each variety can be grown. As well as requiring a mass of easily read labels — which do not lend attraction to a display, no matter how carefully done — it is also not always possible to discern the real worth of any particular variety by just growing one or two specimens of it. The other, and more worthwhile, way is to choose dependable, proven varieties only, for that particular district, and plant them in beds or groups of about a dozen or more of each sort. It is desirable to plant the best of new varieties on the market from year to year. This means that, unless extensions to the rose garden can be continually made, older ones must be discarded to make room for them. If possible, it is of added interest to retain some of the old-time favourites where health and vigour warrant it.

For those Botanic Gardens, whose primary purpose is to provide floral spectacles, the latter method described is much to be preferred, for a more pleasing landscape effect can be made by the use of bold groupings of a particular colour and habit than by the trial ground effect which can be given by the use of single named specimens. It is interesting with certain varieties to note the range of colour that a bed of the one variety by itself can give with the overall effect of opening flower buds, half open flowers, fully open and fading blooms. 'Angele Pernet', 'Faust', 'Sutter's Gold', are good examples of this.

In the Dunedin Botanic Gardens, where this second method has been used for many years, over 150 varieties are now grown. Apart from climbing and pillar roses, which are trained on stone pillars, in groups of four of the one variety, no less than 9 in a small bed are planted, while the more usual number is 18 to 24 of each variety. Again, instead of the formal rose garden of geometrical design, so often seen in public gardens, the display is completely informal. The beds are either oval, circular or rectangular, of varying sizes, set out in sweeping lawns with an occasional large specimen tree. For the most part the lawns are bordered with gravel drives, which are lined with pairs of rock-faced Oamaru stone pillars, against which the climbers are planted. The only associated plants used are *Chionodoxa luciliae* as a ground cover for smaller beds, with all beds and borders edged with pansies and violas of appropriate colours. In order to add to the general informality, an overall undulating effect is given by

planting some beds with strong growing upright varieties and others with more bushy, less vigorous, growers. By careful pruning, this effect can be accentuated. Varieties such as 'Queen Elizabeth', 'Texas Centennial', 'Capistrano', 'Sutter's Gold', and 'Peace' make excellent beds, and attain 6 ft in height when in full bloom. Others with the more spreading habit of 'McGredy's Triumph', 'Beaute', 'Ena Harkness', 'Caprice', 'Silver Lining', and 'Marcel Gret', form fine beds with rounded outlines. *Floribunda* varieties can be used in a similar fashion.

Although frequent applications of farmyard manure and general fertilisers have been given in the past, it has been the policy in recent years to completely re-soil to a depth of 1½ to 2ft where beds or borders are to be replanted. This has the dual effect of giving the new varieties soil in which roses have not previously been grown, and also eradicates any troublesome weeds such as onion-weed and *Oxalis*. Alterations in size, shape and location are made at the same time and the turf edges re-formed. This work is done in autumn, when dry conditions make the heavy task of excavating and re-filling as easy as possible. Very often the beds being treated are some distance from where trucks or tractors and trailers can be taken, and necessitate the use of wheel-barrows. As soon as the fresh soil has become consolidated the new plants are put in, the earlier in the season the better for good growth in the spring.

In Dunedin's climate, where the main crop of flower is in November, periods of rainy weather can often be experienced. When this occurs many, and sometimes all of the blooms of the heavy cabbage-flowered varieties can be spoilt in the opening bud stage.

Consequently, when choosing new varieties, roses of this type are often passed over in preference to the more semi-double, lighter-petalled kind. Some varieties of bush roses which have been added to the Rose Garden during the last year or two, are now giving excellent displays, are 'Super Star', 'Hawaii', 'Belle Blonde', 'Audie Murphy', 'Pink Favourite', 'Perfecta', 'Merry Widow', 'Message' and 'Silver Lining'. Amongst the floribundas 'Allotria', 'Korona', 'Dickson's Flame' and 'Faust' are outstanding.

Beds to be replaced this coming winter were decided on during the main flowering period in November, while the new varieties to be planted were selected and ordered a little later. This insures that preparation of the site, and planting, will proceed smoothly at the appropriate time.

NOTES FROM PUKEKURA PARK.

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

Pukekura Park is known, not as a park with sweeping lawns, formal flower beds and trimmed hedges, but rather as a park of natural beauty. The curving pathways are fringed with graceful tree ferns while the ridge tops are clothed with majestic trees. Within the park many fine trees, both coniferous and evergreen, can be seen. The skyline

is dominated by pines, *Pinus insignis* and other species, *P. torreyana, P. pinaster* and *P. nigra* var. *calabrica.* Also predominant upon the skyline are other majestic trees including Norfolk Island Pine *(Araucaria excelsa),* Giant Red Wood *(Sequoiadendron gigantea),* Californian Red Wood *(Sequoia sempervirens)* and Rimu *(Dacrydium cupressinum).*

The development of this Park was commenced in 1875 when the area consisted of gullies clad in fern, tutu and furze. Today it is a much valued public asset of which New Plymouth has every reason to be proud.

As you approach Pukekura Park's main entrance you are confronted by two massive pylons framing the red iron gates. The vertical lines of these pylons are really striking and make a lasting memorium to Charles Score Sanders, whose bequest to the park enabled the gates to be built.

The sports ground was originally a swamp area, and today has a first class cricket wicket and athletic track. Three sides of the sports field are bounded by natural grass terraces.

Mrs Leah Graham, who died in 1951, left money for the creation of permanent amenities, and so we have today a ladies' and men's sports pavilion and a spacious supper room.

To commemorate the visit of Queen Elizabeth II, in 1954 a fountain was installed upon the lower lake. The fountain has a series of sequences, and has coloured lights which illuminate it at nights. It is unique in that the fountain bowl is situated at water level thus giving reflections in the water and added beauty.

The Children's Playing Area lies in the north west corner of the park, in a sunny sheltered spot. Equipment includes swings, jungle gyms, a roundabout and a paddling pool. At the top of a pedestal associated with the paddling pool is a steel sculpture composition of 'Cats' by local arist, Don Driver.

The main lake is a popular area in the summer, because there is a fleet of ten boats for hire. Many people and children come to this lake to feed the ducks resident there. Adjacent to the lake is the Tea Kiosk, which was a gift of Mr and Mrs C. H. Burgess to mark the Golden Jubilee of their marriage. A well known view of Mt. Egmont is commanded from the brick terrace of the kiosk.

Pukekura Park has a very invaluable amenity in its fernery and conservatory. There are four display houses, each of which are linked to the other by fern clad tunnels. Two houses are devoted entirely to ferns whose collections are very extensive. The other two houses display many plants of the diverse greenhouse collection. The houses are open to the public every working day of the year, every weekend day of the summer season, and at least one weekend day of the winter season.

Amenities are the basis of a park, useful and appreciated by the public and Pukekura Park has just these.

SOME REMINISCENCES

W. A. GRACE (Christchurch).

Recently I had the pleasure of receiving the loan of a copy of the September, 1961 issue of the Journal of the Royal New Zealand Institute of Horticulture. To my delight I found the history of one of our leading botanists, William Colenso. I was delighted to read of his record in the field of botany, especially in his rambles and climbs in that area, where so much of his work took place, and where so many of his discoveries of new plants are recorded, the Ruahine Ranges, for I have covered quite a lot of that country, and saw so much of what I have no doubt he saw. But my interest then (1890) onward was not in plant life. I loved it all, but knew only the Maori names of many of the trees. I never went back home without a collection of our native ferns, but, knowing nothing of their needs, always succeeded in killing them. Later in life, things turned out differently, and I learned to know them by name and their needs, and succeeded in establishing many ferneries, my favourite hobby.

I have been over much of Colenso's territory, but my special interest was pig hunting, and though that was the case, I took note of much of our plant life, remembering many of our native trees by their Maori names. Especially do I remember the magnificent rimus *(Dacrydium)* and totaras *(Podocarpus)* with trunks running up to 60 or 70 feet to the first limb and with a diameter up to 4 or 5 feet. Then there were the titoki *(Alectryon)*, tawa *(Beilschmiedia)*, rata *(Metrosideros)*, puketoa *(Laurelia)*, miro *(Podocarpus)* and maire *(Olea)* and the tree ferns *Cyathea medullaris, Cyathea dealbata,* Maori names mamaku and ponga, and the dicksonias wiki-ponga and weki; botanical names *fibrosa,* and *squarrosa.* No doubt, too, I saw some of those beautiful areas covered in flowering plants. I also noted the buttercups *(Ranunculus)* and daisies *(Celmisia)*, the *Hebe,* and *Hoheria,* and many whose names I was ignorant of at the time. Although many years have passed away since then, I still have vivid recollections of what I saw there. At this time my home was in Palmerston North, and my route to the Ruahine Ranges was via the bed of the Pohangina river, which I had to cross 45 times.

In the year 1900, I moved to Christchurch, and since those days I have been learning much about our plant life. While associated with the Otira tunnel works as foreman, from 1907 to 1911, I spent many weekends in the company of the late Harry Travers, the well-known botanist, exploring the mountains surrounding Arthur's Pass, Mt. Rolleston, and Otira searching for, and collecting plants. One can scarcely be so engaged, with a man so blessed with knowledge, without acquiring some of that knowledge, and I have covered a large part of New Zealand from the Bay of Islands to Stewart Island, including several trips to our glorious lakes, Manapouri and Te Anau, exploring the

country east of Manapouri beyond the beehive and towards Dusky Sound. It was here I was joined by two Australian tourists who were hungering for information about our trees, and plants and ferns. It gave me much pleasure to pass on to them such knowledge as I had acquired up to that date, and they were very grateful for such help, as their here I went to Lake Te Anau, which is also very picturesque, but my stay in New Zealand was very brief, probably another month. From mind was keen on the walk to Milford Sound, via Clinton Canyon, McKinnon's Pass, and Arthur Valley. The walk, including the return trip covered a distance of 68 miles, and I was fortunate in being blessed with glorious weather, and being advised by the tourist department to travel light. I certainly took their advice, and took nothing but what I stood up in, which was as little as possible. What a track that was, but today it is less than half the distance, as the return is by 'bus via Horner tunnel and Eglinton Valley. The walk can be shortened by five miles by taking the launch over Lake Ada, but as a scenic marvel it would be hard to beat. First a stay at Glade House for the night, and an early start on a leisurely walk up that awe-inspiring canyon down which the Clinton river flows with its crystal clear stream, where trout can be seen to depth of 40 feet, and the mountains with their snow-capped peaks towering to a height of nearly two miles, and so close that a stone flung from either hand would strike the toe of these mountains. One is often startled by the roar of avalanches from these dizzy heights, but one rarely sees anything but dust arising at the mountain tops. The climb from the canyon to the top of the pass is by a well graded zig-zag path, and what a magnificent sight awaits the traveller when he reaches the top. The pass (McKinnon) is not very wide and is comparatively flat, and covered with alpine flowering plants. I gathered over 60 varieties. On the left is the towering mass of Mt. Hart, and on the right that commanding peak, Mt. Balloon, the next peak. Following Mt. Hart is Mt. Daniel, and between these two snow-capped peaks one gets the first glimpse of the Sutherland falls, 1904 feet in height and the next peak is Mt. Pillans, then Mt. Edgar and then we come to the Arther Valley. Leaving McKinnon's Pass, the path leads down the shoulder of Mt. Balloon, then follows the Pembroke glacier seen in all its glory from the pass, and soon we reach Quentin huts from which a path about 1½ miles long brings us to the foot of this great fall. Here we meet several other parties, some heading in the same direction as myself, to Milford, others returning to Te Anau. I went on to Milford, and in the walk past Lake Ada, passed two very beautiful falls. The Mackay falls particularly picturesque, dancing down over huge moss-covered rocks, catching here and there gleams of sunshine, where it found openings in the trees from hundreds of feet above. When it reached the level of the path, it became bell rock cascade, taking its name from the huge rock which had fallen from somewhere well above. On its underside was a huge hollow, which had been worn out by the action of the falling water and the swirling of rock when it formed the base of some part of Mackay falls. The hollow is large

enough to allow several people to stand upright in it, and it suggests, the idea of the inside of a huge bell. About three miles further on 'The Giant's Gate' fall, another gem with a straight drop into a large deep pool. A couple of miles further on is glorious Milford Sound. Passing the ancient head of the Sound on the way, in Deep Water basin, the pick of all the Milford views, Dan Sutherland gave me the opportunity of photographing it by mooring two circuits round the basin in his launch, which he gave to very few. One day he was sitting on his verandah telling his dogs why. It was very apparent that he did not like the way some of the overseas aristocrats ignored him, and would sit talking to each other about things that nature supplied, and making all sorts of wild guesses as to how it was, or where it led to, but would never deign to ask Dan Sutherland, the only person who could throw any light on things, for he had lived there for years. So he just told his dogs to listen to the fools, in loud enough voice for his visitors to hear; so they got no extra consideration from Dan, and left without seeing Deep Water Basin, amongst other things.

From here I decided to make for Southland where I met Southland's botanist, Mr. Fred Lokan, whose interesting herbarium took hours to look over. Next day I had the pleasure of a drive to one of Mr. Lokan's favourite bits of forest for, like me, he had a very soft spot for our ferns and this patch of bush was paved with beautiful specimens of the filmy ferns. On another drive we came to a spot known as Sandy Point, where there exists a very nice area of native bush. I relate this because I made a striking discovery in finding a small valley full of one of our commonest *Blechnum* ferns, one that usually grows from 2 feet to 3 feet tall on a stem about 3 inches in diameter and 6 inches long. This fern has the name of *Blechnum decomposita.* In this valley, it assumed the proportions of a tall fern, its stem being on an average 6 feet long by 7 to 8 inches in diameter, with a lead of fronds, large and in keeping with its huge trunk. I had never seen this fern, with such dimensions, recorded by anyone else. Another wonderful sight which I saw in Southland, was the great display of New Zealand's mistletoe *Elytranthe tetrapetala.* There were literally dozens, possibly hundreds, of beech trees roughly 40 or 50 feet high *(Nothofagus solandri)* with the biggest portion of their heads occupied by the mistletoe. What a glorious display they made with their huge crimson heads from 10 to 12 feet each way. These trees seem to have been preserved by removing bush by other means than burning, for these *Nothofagus* showed no signs of damage.

A day at Stewart Island showed me the great prevalence of our tree fern *Dicksonia squarrosa* which is plentiful enough to supply the settlers with thousands of stakes for their fences and plenty, too, for paving their paths. Other ferns that I saw in plenty were *Blechnum duria* and *Asplenium obtusatum,* especially on Alva Island, but I must mention, too, the prevalence of the *Hoheria, Gaya lyallii* where I saw some beautiful specimens, covered in its dainty but large white flowers.

Now the time has come for me to return to my home in Christchurch. Possibly readers will wonder why I have said so little about trees. The

principal reason is because I am living in an area where the forest has disappeared and so have most of the ferns, for only where there are remnants of our native bush, or an outcrop of rocks, especially wet ones do we find much of fern life. True there are some which do not revel in damp and dark places, but instead in full sunshine, with their roots in tiny crevices in the rocks. But in this area which was well worked by Colenso there is little to interest the botanist today. Some years ago there were two choice little annual ferns growing about Banks Peninsula, known as the *Gymnogramme;* there were two varieties, *rutaefolia* and *lepstophylla.* The latter was plentiful round Lyttelton harbour, the former all over Bank's Peninsula, but it is years since one was found there. I have searched, as have many others. They are supposed to have been cleaned out by sheep, but I believe if one could find a suitable spot that sheep could not reach, a search at the right time of the year would reveal it.

ANNUAL REPORT OF THE DOMINION COUNCIL FOR THE YEAR ENDED 30th SEPTEMBER, 1962.

Ladies and Gentlemen,

The Dominion Council has much pleasure in presenting the Annual Report for the year ended 30th September, 1962, which is the 40th 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.

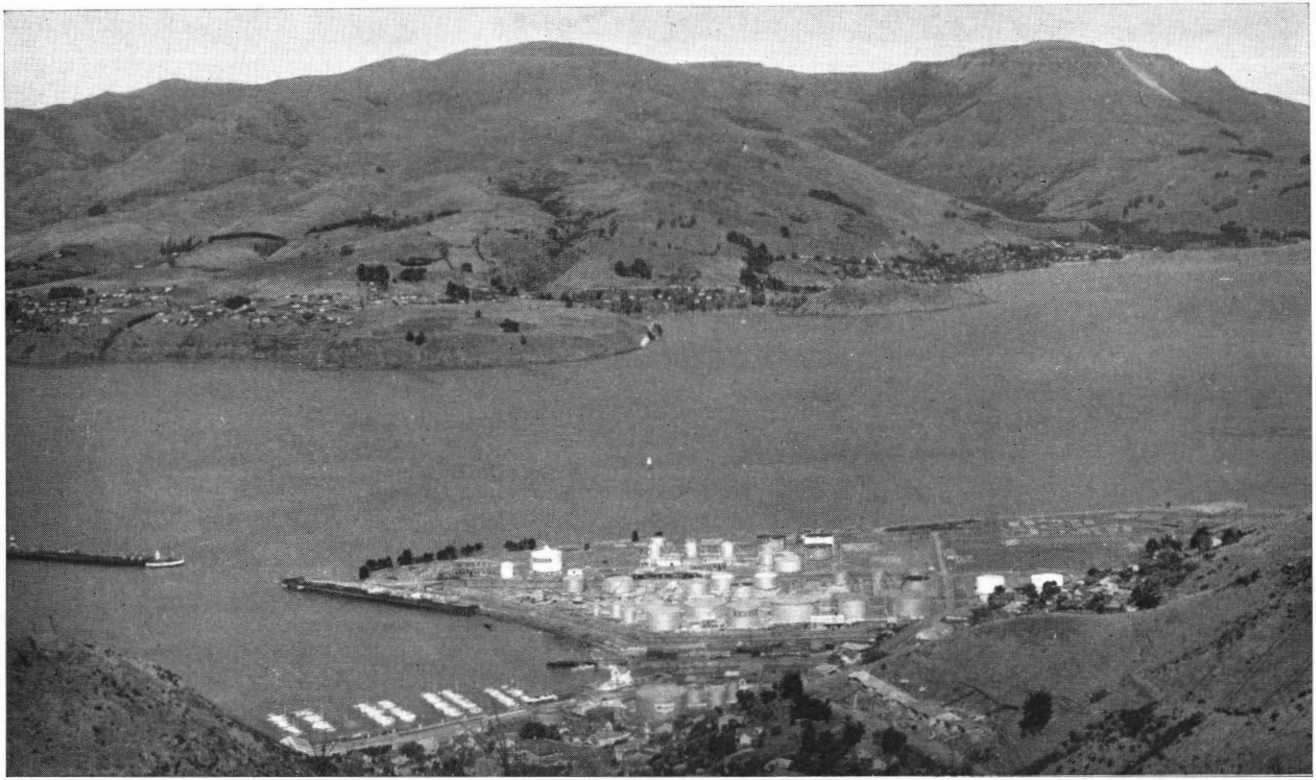
1. **Meetings:**
   (a) **Annual Conference, 1962:** The 39th Annual General meeting and Conference of Delegates was held in Palmerston North on 14th February, 1962. The local district council extended very cordial hospitality to those attending. The Conference was officially opened by His Worship the Mayor of Palmerston North, in the unavoidable absence of the Honourable Minister of Agriculture. It proved to be a very successful Conference with wide representation and much discussion on important matters.
   (b) **Dominion Council:** The Dominion Council met on four occasions during the year and the average attendance at those meetings was 17. Greater attendances at these meetings would be very welcome and District Councils are urged to endeavour to be better represented.
   (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 death of the Immediate Past Dominion President, Mr. John Houston, O.B.E., LL.B., A.H.R.I.H. (N.Z.), and Mr. W. K. Dallas, N.D.H., A.H.R.I.H. (N.Z.), who were both members of the Dominion Council at the time of their decease. Both had rendered outstanding service to the Institute for several years. Reference also is made of the passing of the late Mr. G. W. Wright,

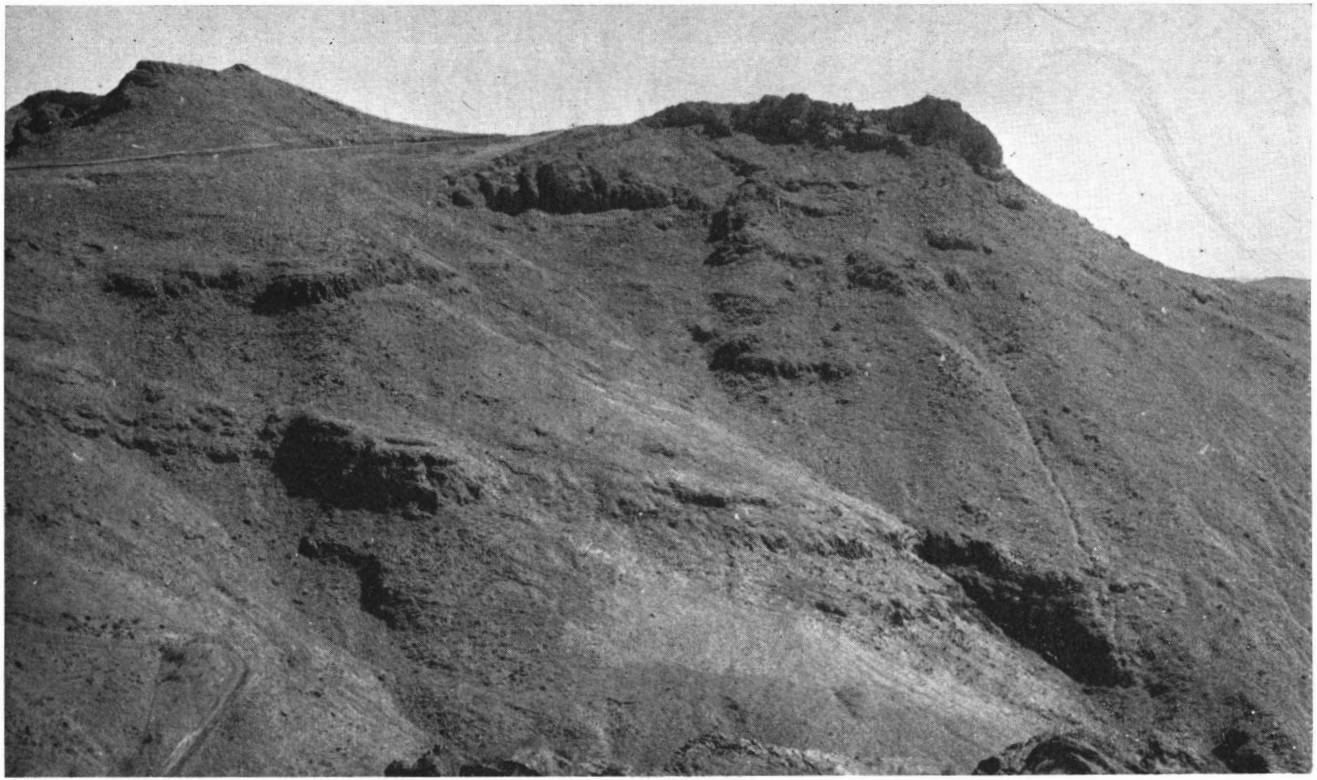
Senecio saxifragoides on Castle Rock, showing typical habit for this species, which is endemic to the Port Hills of Banks' Peninsula. (See page 53).
(Photo: Metcalfe).

Hebe lavaudiana, which is endemic to Banks' Peninsula, is a typical chasmophyte and is found over most of the Peninsula from about 800 feet upwards. (See page 51).
(Photo: Metcalfe).



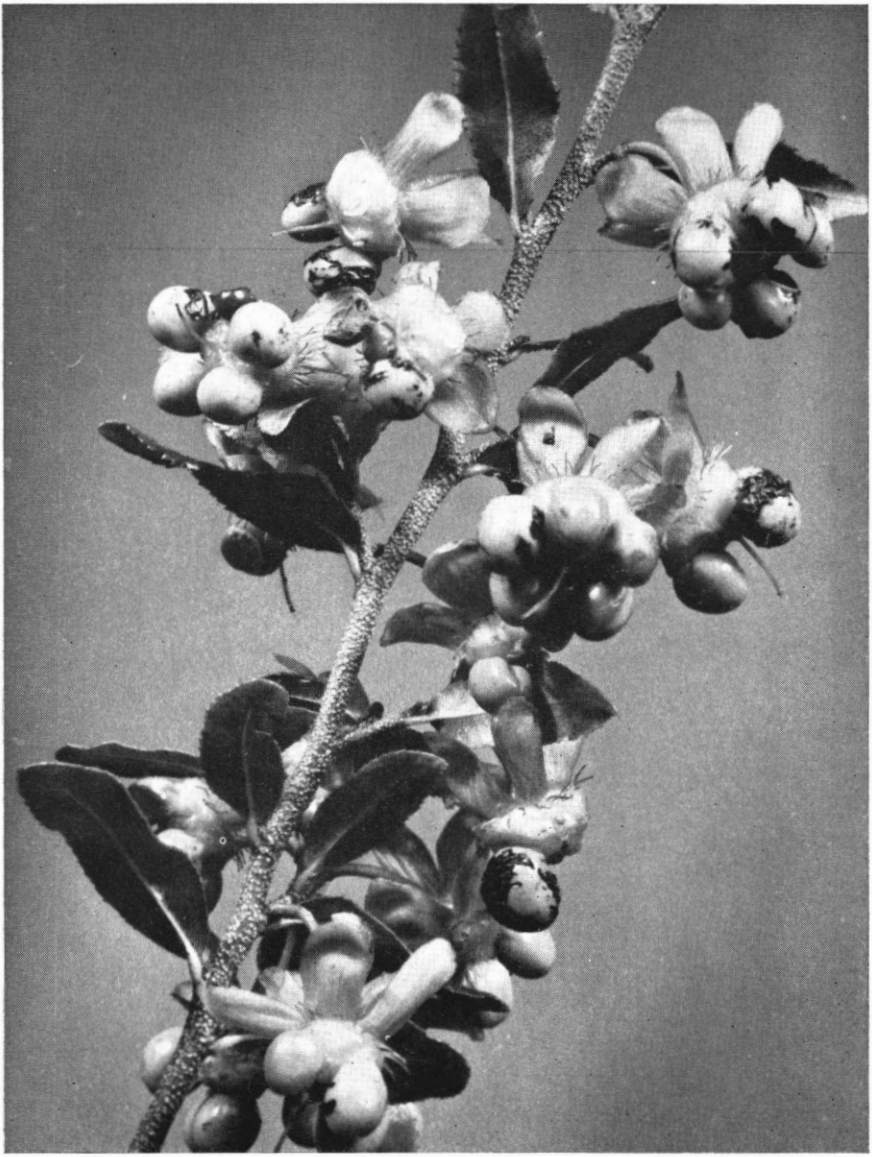
Typical Banks' Peninsula topography, looking across Lyttelton Harbour to Mount Herbert Peak (3014 feet) centre, and Mount Herbert (2805 feet) on right. (See page 48).

(Photo: Metcalfe).



Castle Rock on right, with the Tors on the left, are a feature of the Port Hills. Such localities provide an ideal home for the rock and sub-alpine element of the Banks' Peninsula flora. (See page 48).

(Photo: Metcalfe).



Ochna serrulata in fruit. (See page 59).

(Photo: Douglas Elliott).

A.H.R.I.H. (N.Z.), Mr. F. Penn, A.H.R.I.H. (N.Z.), Dr. G. H. Cunningham, A.H.R.I.H. (N.Z.), and Mr. Percy Thomson, A.H.R.I.H. (N.Z.). Mr. Thomson had regularly attended Annual Conferences. These, and others whose names are not mentioned, will long be remembered for their service to horticulture and to the Institute

3. **Membership:**

The total membership stands at 990 including 33 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. The steady and continuing growth in membership at Taupo is most encouraging, and our congratulations are extended to the local District Council there.

4. **Finance:**

(a) **Annual Accounts:** While the Annual Accounts reveal a satisfactory excess of income over exepnditure, the financial position of the Institute needs 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.

(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. The financial assistance received from the Internal Affairs Department for the Journal is gratefully acknowledged.

5. **Publications:**

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

The solicitation of subscriptions from public libraries for our Journal met with only fair response. An index to Volume III has been issued during the year.

District Council activities have been well reported.

Publication of the addresses given at the Tenth New Zealand Science Congress is being considered.

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.

6. **Historic and Noteworthy Trees:**

The delay in publishing the official list of historic and noteworthy trees is regretted. The task of checking the lists and verifying the existence of the trees is not a small one and can only be completed with the continued help of all district councils. Every endeavour is being made to complete the checking at the earliest possible date

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.' The late Mr. W. K. Dallas had served on the Loder

Cup Committee as the Institute's nominee for a number of years. The vacancy caused by his death has been filled by Mr. R. Syme, A.H.R.I.H. (N.Z.), of Hawera. The 1962 Award has been made to Mr. Bernard Teague, of Wairoa, 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.).
Seedsman'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 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, in the conduct of the Oral and Practical examinations there again this year.

10. **Plant Raisers' Award:**

Whereas this Annual Award is now open for entry (closing date 30th June), no nominations were received during the year.

11. **Award of Garden Excellence:**

The comments of District Councils generally favoured the introduction of such an award, and the matter was referred back to the Auckland District Council for further consideration

12. **Nomenclature:**

The Nomenclature Committee comprises Mr. J. P. Salinger (Convenor), Messrs. P. C. Gardner, J. F. Living, L. J. Metclafe, A. L. Poole, and W. Sykes.

The past year has been one of steady continued activity, with the establishment of collections of *Leptospermum* and *Hebe* in Christchurch. Progress in the matter of registration of these two genera must necessarily be slow as registration is dependent on the study of all existing plant material.

The Committee would welcome the receipt of plants and further information concerning these genera, as their registration is a prime duty of the Institute and the publication of reliable check lists is eagerly awaited both here and overseas. Correspondence has continued with overseas authorities on these and other genera, and in fact the Nomenclature Committee has both national and international contacts and obligations.

Assistance has been given to the Editor of *New Zealand Plants and Gardens* and articles by members of the Committee have been published in this Journal.

The Committee is pleased to see that the names of native plants as published in Allan's *Flora of New Zealand* are now being accepted

and used by experienced horticulturists. As study and research extends the knowledge of plants, it behoves all to make use of and apply this knowledge in the correct naming and identification of plants.

The Dominion Council expresses its appreciation of the work of this 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.

13. **Fellowship:**

The Dominion Council has been pleased to confer the distinction of 'Fellow' F.R.I.H. (N.Z.)) on 13 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 six nominations from District Councils. Four (the maximum number in any one year) of these 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. P. J. Cox, F.R.I.H. (N.Z.), Wanganui,
Mr. C. R. Reader, N.D.H. (N.Z.), F.R.I.H. (N.Z.), Auckland,
Mr. T. Y. Turner, F.R.I.H. (N.Z.), Dunedin,
Mr. J. H. Glazebrook, B.Sc. (Hort.), N.D.H. (N.Z.), F.R.I.H. (N.Z.), England (formerly of Christchurch).

The distinction of Associate of Honour is conferred only on persons who have rendered distinguished service to horticulture. The maximum number of Associates of Honour at any one time sanctioned by the Constitution of the Institute, is 40.

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.

The progress achieved by the recently-formed Taupo District Council is most praiseworthy. District Council Executives are urged to seize every opportunity to increase membership. This need cannot be over emphasised

16.. **University Chair of Horticulture:**

Some progress has been made since the previous Dominion Conference. The Chairman of the University Grants Committee has shown interest and has stated that, if the Chair were established during the current quinquennium (ending in 1965), the University Grants Committee would allocate the necessary funds required for its continuation thereafter. Initial enquiries have been made overseas on certain aspects of the Chair and regarding prospective appointees for the professorship. Enquiries are being made amongst interested organisations in New Zealand with regard to raising an initial capital sum with which to launch the Chair at the earliest possible date during this current quinquennium.

17. **Remits placed before the 1962 Dominion Conference:**

(a) (from Canterbury District Council re the use of botanical names). The Nomenclature sub-committee, to whom the remit was referred

fully endorsed the remit and fully approved *Flora of New Zealand, Part 1* (by Dr. H. H. Allan) as the authority and standard reference for such names.

(b) (from North Taranaki District Council, re preservation of trees in sub-divisions of land and properties).
This remit was communicated to the Municipals Association and the Master Builders Federation.
The Dominion Council is indebted to one of its members, Mr J. G. Short, for the considerable research put into the matter of Town and Country Planning legislation in the United Kingdom and New Zealand. His report is being circulated.

(c) (from Auckland District Council re the holding of Oral and Practical Examinations after the written examinations).
Referred to the Examining Board. Decision was deferred pending a fuller consideration of the administrative issues involved.

(d) (from Auckland District Council re the holding of Oral and Practical examinations alternatively in the North and South Islands).
The Examining Board had duly considered this remit and reported back to the Dominion Council —

> 'That the Board does not know of any alternative centre in New Zealand where they can rely on the weather conditions and the excellence of facilities required for the satisfactory uniform conduct of the Oral and Practical examinations as are available in Christchurch, and, taking into account all the considerations involved, the Board cannot recommend any change in the present scheme for the holding of all Oral and Practical examinations in Christchurch.'

Arising out of discussions by the Dominion Council it was revealed that the Horticulture Division's development of their Levin Research Station might, in a few years' time, provide a suitable alternative to Christchurch for the Oral and Practical examinations. These possibilities were to be investigated on a suitable occasion.

(e) (from Auckland District Council re positive action over litter in pubic places).
The Dominion Council made direct approaches to Oil Companies, Local Bodies, Departments of Health, Internal Affairs, Electricity Works, and Tourist and Publicity, the National Roads Board, the Municipals' Association, for the institution and adoption of measures to combat the casting of litter in public places. The response was encouraging. Many local bodies have become active in local campaigns. The Department of Health included the subject in its health education programme. One Oil Company has issued plastic litter bags to motorists from time to time.
District Councils have been urged to join in local campaigns, and to encourage their local body authorities to take up the question. The emphasis seems to be on 'educating,' rather than 'prosecuting,' the public on the casting of litter.

18. **Opossum Menace:**
A copy of the proceedings of the previous Conference, with particulars reference to the discussion on the opossum menace, was sent to the Minister of Forests, who is reply gave a lengthy statement on the steps being taken by the Government. A copy of this statement was dispatched to all district councils and members of the Dominion Council

19. **Tenth New Zealand Science Congress:**
Another milestone was achieved by horticulture at the Tenth New Zealand Science Congress, when as a result of representation by the Dominion Council, Horticulture was given a full section, instead of only a part-section as at previous Congresses. Under the able chair-

manship of Mr. K. C. Hockey, F.R.I.H. (N.Z.), of Palmerston North, with most efficient preparation by the Convenor, Mr. S. Challenger, F.R.I.H. (N.Z.), of Lincoln, the Section was very successful, although not largely attended.

Consideration is being given to the publication of the horticultural papers presented and the chairman's address given at the Congress. It is now felt that Horticulture must sustain a full section at all such future Congresses.

20. **Nature Conservation Council:**

The Dominion Council was well represented at a meeting convened by the Forest and Bird Protection Society to consider the Nature Conservation Bill that had been presented to the House of Representatives. A Council has now been appointed by the Government, under the provisions of the Bill, and comprises men well fitted to advise the Government on matters pertaining to Nature Conservation. The Dominion Council has sought from the new Council the courtesy of being kept informed on important matters that will come before the Council, with a view to having an opportuntiy of expressing our opinions thereon.

21. **International Horticultural Congress.**

New Zealand was well represented at the 16th International Horticultural Congress, held in Brussels in 1962, bv Mr. John H. Glazebrook, of England, formerly a member of the Dominion Council.

The proposal put to our Government for the holding of the 18th International Congress in New Zealand in 1970 was not approved by the Cabinet. It is hoped that the Government may be persuaded on some future occasion to sponsor this Congress in New Zealand.

22. **National Parks Boards:**

The Dominion Council has been pleased to put forward nominations for the Tongariro and Egmont National Parks Boards. The Dominion Council purposes to retain this active participation in the election of these Boards. It is most gratifying to know that eminently qualified persons are willing to be nominated for election to serve on these important public bodies.

23. **Examination Fees:**

The fees payable by candidates for examinations have remained unchanged for a very long period. The Dominion Council has found it necessary to revise these, with effect from 1st January, 1963, to help meet increasing costs. The new scale is set out in the Examining Board's Report.

24. **Future Research in New Zealand:**

The Report of the Royal Commission on New Zealand State Services has been read with interest, particularly as far as it touches upon horticulture. A special meeting, under the convenorship of Mr. K. C. Hockey, of Massey College, was planned to be held in December, 1962, to which the national organisations concerned with various aspects of horticuture were invited. The results of this meeting will be reported back to the Dominion Council in due course for appropriate action.

25. **Judging Rules:**

The revision of the original book published by the Institute some years ago on Judging Rules has been in hand for quite some time. The delay has been unfortunate but it is hoped to have this revision completed within the very near future. The Wellington District Council has produced a booklet covering Floral Art Judging Points and Definitions which has helped considerably in meeting a need in the field of Floral Art.

26. **Careers in Horticulture:**
An article on careers in horticulture was included in a special 'Careers' Supplement of the 'Evening Post' (Wellington daily newspaper). The possibilities of publishing a booklet in this regard are being examined into by the Dominion Council.

27. **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, 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 Dominion Secretary, Mr. Lemmon, for the conscientious manner in which he has carried out his duties.

28. **Conclusion:**
Having now completed my first year as Dominion President I wish to include in this Report my personal expression of thanks to members of the Dominion Council, who have so loyally assisted me in carrying out the functions of Dominion President. I lay no claims to being a proficient horticulturist, but one thing is obvious to me and that is that all true horticulturists are characterised by the common factors of cordiality and unity of purpose. These characteristics have been very apparent in the administration of the affairs of the Institute throughout the year, and have brought much pleasure to me in the performance of my official duties. I pay tribute to the leadership given by former Dominion Presidents and particularly to that by the immediate past President, the late Mr. John Houston, whose outstanding qualities will long be remembered.
Horticulture is distinctly a 'growing' activity. It will always continue to be an absorbing interest and pleasurable pastime to us as individual home-gardeners and citizens of a country that is singularly blessed with climatic conditions so conducive to the growing of an unlimited range of plants. But horticulture is reaching higher levels of importance annually as an industry contributing to the economic welfare of our Dominion. There is an intensely practical aspect of horticulture and our country is indeed fortunate in having so many experienced and qualified practical horticulturists contributing to the growth and development of horticulture in our Dominion. Horticulture has also a highly scientific aspect wherein the scientists of our Dominion are able to make a major contribution to the successful and permanent establishment of this growing industry. But this scientific approach must be on the basis that horticulture has its own field of study and research and should not be confused with agriculture. Harmony and balance between these practical and scientific aspects of horticulture are essential to mature growth. In these days of rapid scientific development this Institute will always be concerned to see that such balance and harmony is maintained in the overall interests of horticulture as an industry and as a pastime.

On behalf of the Dominion Council,

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

REPORT ON PROCEEDINGS OF THE FORTIETH ANNUAL MEETING AND CONFERENCE OF DELEGATES HELD IN CHRISTCHURCH ON WEDNESDAY, 20TH FEBRUARY, 1963, COMMENCING AT 9.00 A.M.

Mr J. F. Living, F.R.I.H. (N.Z.), Dominion President, presided over the Conference, which was very well attended and widely representative of the District Councils, affiliated organisations, and the Institute of Park Administration.

Apologies for non-attendance were read to the meeting and sustained.

Messages of good wishes were received from the Prime Minister (Rt. Hon. K. J. Holyoake C.H.), Rt. Hon. Walter Nash C.H., Mr D. N. R. Webb, (Director General of Agriculture), Hon. W. S. Goosman.

Welcome to delegates and visitors was extended by the Dominion President, particularly to Mr P. J. Skellerup, President of the N.Z. Institute of Park Administration, Mr T. D. Lennie, A.H.R.I.H. (N.Z.), and Mr A. H. Shrubshall, A.H.R.I.H. (N.Z.), a foundation member of the Institute.

IN MEMORIAM:

The Dominion President made fitting reference to the passing of several eminent members, since the last Annual Dominion Conference, and in particular paid tribute to the following Associates of Honour:

John Houston, O.B.E., Ll.B., Immediate Past Dominion President, (Hawera); W. K. Dallas, N.D.H. (N.Z.), Former Dominion President (Wellington); L. F. Sired (Wellington); Percy Thomson (Stratford); Dr. G. H. Cunningham (Auckland); F. Penn (Auckland); G. W. Wright (Auckland). Messrs Houston, Dallas and Sired were members of the Dominion Council at the times of their deaths. As a mark of respect, all present stood for a moment in silence.

DOMINION PRESIDENT'S ADDRESS:

In a brief address the Dominion President, Mr J. F. Living, F.R.I.H. (N.Z.), expressed his very sincere thanks to the members of the Dominion Council for their support and help throughout the past year — his first in office. It had been a happy year for him. Although not a skilled horticulturist he could see the increasing importance of horticulture to the economy of our Dominion. The scientific and practical approaches to horticulture must be balanced and in harmony. The Institute is striving to see a Chair of Horticulture established at one if not both of the Agricultural University Colleges. The Constitution of the Dominion Council gives wide and balanced judgement to the affairs of the Institute whose opinion is respected in high places. Membership needs to be increased and the future of the Institute supported by a strong and active membership roll.

OFFICIAL OPENING:

In welcoming the Mayor of Christchurch, Mr G. Manning, C.M.G., M.A., Dip.Soc.Sci., the Mayoress, and the Hon. B. E. Tallboys, Minister of Agriculture, the Dominion President stated how much the Delegates were enjoying their visit to Christchurch and paid tribute to the very high standard of beautification in the public and private gardens throughout the city. The Hon. B. E. Talboys was especially welcomed as the Vice-Patron of the Institute to whom Mr Living expressed sincere regret that, at very short notice, he had been prevented from attending the 1962 Conference.

Mr Manning also extended a cordial civic welcome to the Minister and delegates, especially on the occasion of the Centennial celebrations of the founding of the Christchurch Botanic Gardens. He expressed the hope that all citizens of our Dominion might concern themselves with the development of culture in our country, in which horticulture had a part.

Addressing the Conference the Minister eulogised the floral arrangements and decorations associated with the recent visit of Her Majesty Queen

Elizabeth II, and considered that everywhere she had visited these decorations had been an outstanding feature enjoyed by thousands of our citizens. He paid tribute to the pioneers of our land who amidst the rigors of primitive conditions and struggle to subsist, found the time and enthusiasm to plant and tend gardens and trees, many of which adorn our countryside even today. There is stil much scope for the greater national beautification and the Institute can play an important part in breaking down prejudice against expenditure on public beautification. He was happy to be associated with the Institute as its Vice-Patron. He referred to the establishment of many new organisations in the horticultural industry in New Zealand — the breadth of the field had impressed him. The Government's Horticultural Research Station at Levin had recently been extended by the addition of 36 acres. He congratulated the Institute on its work which helps to make life more enjoyable while also contributing to the economy of the country. It gave him much pleasure to declare the Conference 'open'. Mr M. C. Gudex, M.B.E., suitably thanked the Mayor and the Hon. Mr Tallboys for their kind references to the Institute, stating that his own personal association with the Christchurch Botanic Gardens dated back to 1906.

ANNUAL REPORT AND STATEMENT OF ACCOUNTS:

The Annual Report and Statement of Accounts having been previously circulated, it was agreed that they be taken as read. In moving the adoption of the Annual Report and Statement of Accounts, Mr J. F. Living again stressed the need for a stronger membership and appealed to present District Councils to go out after new members, and to foster the inauguration of new district councils whenever possible. The West Coast of the South Island, Gisborne and Hawke's Bay were likely centres for new district councils. He appealed to all District Councils to co-operate fully with the Dominion Council in checking and revising the list of Historic and Noteworthy Trees to facilitate the early publication of this official list.

The motion for the adoption of the Report and Accounts was seconded by Mr H. C. Wallace (Hamilton).

Mr K. C. Hockey (Palmerston North) reported briefly on the meeting held in Palmerston North, under his Chairmanship, to discuss the recommendations of the Royal Commission on N.Z. State Services as far as they affected Horticultural Research. The meeting had passed the following resolutions:—

(1) 'That this meeting prefers that the status quo in matters affecting organisatiion and control of research be preserved.'

(2) 'That if advisory committees are established to assist the National Research Council, then one of these should be a horticultural committee.'

These resolutions would be considered by the Dominion Council at its next meeting. A Parliamentary Bill had since been placed before the House but deferred until the 1963 Session.

Mr J. P. Salinger (Wellington) stated that it was the intention of Dominion Council to publish a complete revision of the book on judging rules, included in which would be the booklet recently issued by the Wellington District Council on floral art judging and definitions.

Mr D. Combridge (Christchurch) referred to a recent radio broadcast programme on careers in which prominence was given to careers in horticulture emphasising the Trade Certificate examination but making no reference to the Institute's examination. Mr Combridge moved the following motion:—'That the Dominion Council seek opportunity to present either through T.V. or the YA Service of the Broadcasting Corporation a session that presents the superior advantages of the National Diploma in Horticul-

ture in fitting young men and women for the honourable profession of horticulture'. The motion was seconded and carried; it was agreed to refer it to the Examining Board for their consideration and appropriate action.

Sir Robert Macalister (Wellington) spoke of efforts in earlier years to re-organise the membership by the creation of 'Fellowship' membership. He observed that during the past year only 13 new Fellows had been elected. He exhorted the District Councils to take up this matter and see that full advantage was taken of the opportunities to nominate situable persons for 'Fellowship', with a view to strengthening the membership of the Institute. Touching upon membership, Mr C. A. Tetchner, drew attention to the existence of strong horticultural societies in many places which served the horticultural interests of the people very well, and, because of this, it was not easy to persuade those same folk to join the Institute as well. Sir Robert Macalister replied that those prominent in such horticultural societies should be sought out and honoured with a 'Fellowship' of the Institute.

Mr R. Syme (Hawera), reported that Mr A. E. Esler of Palmerston North, nominated by the Institute, had been elected to the Tongariro National Park Board, and expressed his satisfaction at seeing eminent horticulturists being elected to these National Park Boards. Other nominations were pending. Mr R. Syme also referred to the shocking examples of litter being thrown at football matches. Mr C. R. Reader (Auckland) thought the Institute should go further in its efforts to campaign against the throwing of litter in public places. He referred to the disgraceful examples during the recent visit of Her Majesty the Queen. The Dominion President quoted a letter (dated 20th December 1962) from the Interal Affairs Department in which it was stated that the possibility of conducting an anti-litter campaign on a national basis is at present being examined.

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Mr V. C. Davies (New Pymouth) spoke very strongly about the ravages of opossums in the native forest of the West Coast of the South Island. The ratas are quickly dying out and land slides starting where the trees had died. The extermination of opossums was an urgent national requirement.

Sir Robert Macalister (Wellington) briefly outlined the nature of his enquiries, while overseas in 1962, into the requirements of a Chair of Horticulture for New Zealand; he had spoken with Professor J. P. Hudson and Dr. Taylor (Chairman of the Royal Horticultural Society Examining Board). He also reported on his discussions with the Chairman of the University Grants Committee in New Zealand. Sir Robert urged the Institute to press on with this and endeavour to raise funds sufficient to get it established. Once established, the Chair would be sustained by the University Grants Committee, (that is, from 1965 onwards). An approach is being made to various organisations to make worthwhile contributions to a fund, and he hoped the Institute also would be able to contribute something. The Dominion President referred to the Annual Financial Statements which had revealed a reasonably satisfactory position. The motion being put to the meeting was carried, and the Annual Report and Statement of Accounts thereby adopted.

EXAMINING BOARD REPORT:

On behalf of the Board, in the absence of the Chairman, Professor H. D. Gordon, Mr J. A. McPherson presented the Annual Report for adoption. Mr H. G. Gilpin considered the standard of work by the candidates for the 1962 Oral and Practical examinations to be better than in recent years. The Report was duly adopted.

PUBLICATIONS COMMITTEE:

Mr A. M. W. Greig (Wellington), Chairman of the Publications Committee presented the Report and formally moved that it be received; seconded by Mr G. A. R. Phillips (Paraparaumu), and duly carried. In their Report the Committee regretted that District Councils, in geenral, did not respond fully to requests for assistance made by the Committee and he Dominion Council, the supplying and checking of lists of historic and noteworthy trees, the soliciting of advertisements, bringing the Journal to the notice of Public Libraries, the supplying of regular reports on local activities for publicaiton, were cited. The Institute, which acted as a Parliament of Horticulture, was only as strong as the united efforts of all members; its strength should not depend on the unselfish effort of a few devoted and interested individuals. A flow of good articles from authors was helping to maintain a high standard and quality for the Journal, which compared very favourably with similar overseas publications. The Committee paid tribute to the editor, Mr G. A. R. Phillips, for the time, thought and excellent editorship given by him to the Journal. Mr Phillips stated that the Journal was not now dependent upon overseas contributions, but was well served by New Zealand authors.

REMITS

(1) **From Wanganui District Council:** That consideration be given to a change of policy whereby members are not obliged to take the publication *New Zealand Plants and Gardens*. **Comment:** 'The opinion has been expressed by a number of home-garden members that this publication is too technical and such a publication is not desired by them and that the funds of the Institute could be better conserved by adjusting the rate of subscription where the Journal is not required; that the bulk of the membership was from home gardeners who are required to contribute to a technical journal at the expense of local amenities and a shortage of money to popularise horticulture in their district; others favoured an annual publication which

would keep the Institute in touch with overseas organisations and pass on major technical and general information to our members.'

Introducing the remit, Mr W. R. Boothby (Wanganui) drew attention that in some national organisations members enjoyed an option in taking their publicatoins.

The considered opinion of the Dominion Council was read to the meeting by the Dominion President, as follows:

(1) That *New Zealand Plants and Gardens* is not too technical, in fact no more technical than the Journal of the Royal Horticultural Society.

(2) That homegardeners are adequately catered for by other daily, weekly and monthly publications and the radio.

(3) That the Institute would save very little money in reducing the numbers printed; the main cost being in setting up the type.

(4) That the Institute previously was associated with the *New Zealand Gardener* and on ceasing this association there was no loss of membership.

(5) That New Zealand requires a publication in which to publish articles of the type and quality of those in *New Zealand Plants and Gardens.*

(6) That the Institute itself requires a publication in keeping with the standard of the Institute: and that *New Zealand Plants and Gardens* adequately fulfils this function.

For these reasons therefore the Dominion Council does not support this remit.

Several delegates spoke to the remit and the following points were made:

(1) A reduction in subscriptions should not be considered.

(2) Discretionary powers of subscribing given to our members would probably prejudice the Government Grant now being received for the Journal.

(3) The Institute is not a horticultural society and should be regarded as a national body representing the interests of such societies.

(4) Members should be concerned to put something into the Institute rather than taking from it, to give the option would be a retrograde step.

(5) The more popular type of publication, such as of the monthly publications, was a good 'bait' for catching new members.

(6) The journal compares favourably with the R.H.S. Journal but the ordinary home-gardening member had little offered to him through our Journal. Strong horticultural societies with a good objective before them tended to syphon off all the local interest and support. The Institute should have an objective before it for soliciting support.

(7) Often the advantages of membership were questioned.

(8) Consideration should be given to reviving the association of former years with a popular monthly publication.

Upon being put to the meeting the Remit was lost.

(2) **From Wellington District Council:** 'That District Councils nominate individuals in their areas who have been notably active in horticultural work, but who are not subscribing members, to some form of honorary membership or fellowship of the Institute.'

Introducing the Remit, Mr J. G. Short (Wellington) said that Fellowship tied to membership has its place but there were many horticulturists worthy of recognition for services rendered to horticulture not members of the Institute and before their services could be so recognised by the

Institute such persons must become members. Arising out of the discussion it was considered that such a remit, if carried, would contravene any drive for membership. Mr J. A. McPherson (Auckland) felt the Institute should consider granting Overseas Associateships of Honour and asked that the Dominion Council bring this matter forward for discussion at a suitable opportunity.— Upon being put to the meeting the Remit was lost.

(3) **From North Taranaki District Council:** 'That consideration be given to instituting a 'Family Subscription'. **Comment** To encourage membership of the whole family, with only one Journal supplied per family. **Resolved** that the Remit be referred to the Dominion Council and Publications Committee for further consideration. The hope was expressed that subscriptions would not be reduced by the introduction of such a scheme.

(4) **From Whangarei District Council:** 'That in view of the Aims and Objects of this Institute (i.e. the Royal New Zealand Institute of Horticulture) the work of which is restricted through financial limitations an application be made by the Dominion Council for financial assistance from the funds of the Golden Kiwi Lottery'. Introduced by Mrs McDonald (Whangarei). **Resolved** that the Remit be referred to the Finance Committee of the Dominion Council, for further consideration.

(5) **From Auckland District Council:** (a) 'That in view of the apparent lack of effective control and extermination of opossums in the vicinity of Auckland, the Dominion Council keep a close watch on the steps being taken to exterminate this menace'. (b) 'That this (i.e. Auckland) District Council views with grave concern the disadvantages placed on the North Island students sitting the Oral and Practical examinations and recommends that consideration be given to the holding of these examinations in the North Island in alternative years'.

Consideration of (a) **Resolved** that the wording of the remit be amended to read as follows: 'That in view of the apparent lack of effective control and extermination of opossums, the Dominion Council initiate active steps to be taken to exterminate this menace'. It was considered that this menace was becoming a disaster and that pressure must be put on those responsible for the control and eradication. Townsfolk too must be stirred into action because this menace is now entering into home gardens. Upon being put to the meeting the remit was carried.

Consideration of (b): In presenting this remit Mr C. R. Reader (Auckland) said there were more students in the North Island than in South and it would be fairer to students for the examinations to alternate between the two Islands. Mr H. G. Gilpin (Christchurch) emphasised the need for all examinations to be held in one centre. Whether it was in the North or in the South did not matter so long as facilities and conditions were fully suitable. He considered it to be extremely valuable to the students to travel. While in Christchurch they benefited considerably from visits to Loncoln College and other horticultural establishments to broaden their knowledge and experience. **Resolved** that the Remit be referred to the Examining Board for further consideration when the Auckland members of the Board can fully and fairly present the Auckland District Council's case.

(6) **Redrafted from Remits submitted by Wellington, Auckland and North Taranaki District Councils:** (a) 'That the Institute use every endeavour to encourage beautification by the adoption of planned planting of selected trees, shrubs, plants and hedges (particularly using New Zealand native plants) in streets, highways, road frontages, farm-lands, sub-divisions, tourist resorts, places of scenic attraction and

the like, by Local and Public Authorities, Government Departments, property-owners, and citizens geenrally'. (b) 'That the Institute urge and encourage the employment of landscape architects by Government Departments and Local Bodies in all major public works projects, sub-divisions, and roading schemes; and that sufficient funds be allocated for the successful design, completion and subsequent maintenance of all such landscape work.

Introducing this remit Mr J. G. Short (Wellington) pointed out that the Regional Town Planning Authorites were the people most concerned with this subject and that they should be named also in the Remit. Mr G. Martin, Director of the Saritoga Horticultural Foundation, California, U.S.A., was present at the Conference and formally introduced by Mr V. C. Davies. Mr Martin, a landscape architect, spoke briefly on the work of the Foundation in 'Street Tree Evaluation', whereby species were raised, tested and then supplied to Town Authorities throughout the State for street planting. These Authorities, in turn, submitted a report on the trees after a period of 5 years. Mr H. Redgrove (Auckland) said in many instances the areas set aside for public domains were in positions of little value for planting of trees for beautification. There was, generally, a lack of forethought in providing space for tree planting in subdivisions and shopping areas. Miss R. A. Campion (Wellington) stated that County Councils experienced difficulty in obtaining horticulturally trained staff. Mr. B. A. Norman (New Plymouth) spoke of beautification inside highway boundaries where steep sidings often encouraged the growth of weeds and the accumulation of rubbish. District Councils would readily advise local bodies and property owners. The Remit could well be conveyed to the Executive of the Farmers Federation. The Institute of Park Administration should be invited to join our Institute in approaches to the Government. Upon being put to the meeting the Remit was adopted.

ASSOCIATES OF HONOUR:

On the unanimous recommendation of the Dominion Council the nominations of the following four 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. P. J. Cox, F.R.I.H. (N.Z.) of Wanganui; J. H. Glazebrook, B.Sc. (Hort), N.D.H., F.R.I.H. (N.Z.), formerly of Christchurch, now in England; C. R. Reader, F.R.I.H. (N.Z.), N.D.H. (N.Z.), of Auckland. T. Y. Turner, F.R.I.H. (N.Z.), of Dunedin.

Resolved that the citations in support of these nominations be not read, seeing that they will be published in the Journal.

Resolved unanimously that the distinction of Associate of Honour be conferred upon these four nominees.

VENUE OF 1964 CONFERENCE:

It was announced by Mr P. J. Skellerup, President of the New Zealand Institute of Park Administration, that their Conference would be held in Dunedin in 1964.

On behalf of the Otago District Council, Mr C. A. Tetchner extended an invitation to the Institute to hold its 1964 Conference also in Dunedin. The invitation was well received and Otago District Council thanked accordingly.

1965 DOMINION CONFERENCE:

As 1965 would be marked by Centennial celebrations in Hamilton, the Waikato District Council extended an invitation for the holding of the 1965 Dominion Conference there.

A.M.L. RUMBLE BEQUEST:

Mr V. C. Davies presented a report on the state of the funds comprising this bequest which was held in trust for the benefit of the Institute in Stratford.

AWARD OF GARDEN EXCELLENCE:

On behalf of the sub-committee comprising Dr. H. M. Mouat and himself, Mr J. A. Hunter, of Auckland, submitted a written report on the progress being made with this proposed scheme of award which was read to the meeting.

Reference was made to a similar scheme operating in Australia which could be examined.

The report was received, and referred to the Dominion Council.

NAME OF OFFICIAL JOURNAL:

Mr T. D. Lennie, of Christchurch, wondered whether the name of the Institute's Journal *New Zealand Plants and Gardens* was fully appropriate. Himself an Associate of Honour, he thought that when a member was elected an Associate of Honour of the Institute, (A.H.R.I.H. (N.Z.)) he should drop the use of any other distinguishing letters.

Resolved that these two matters be referred to the Dominion Council.

CLOSING:

The Conference was brought to a happy close by the Dominion President expressing the sincere thanks of delegates to the Canterbury District Council for the warmth of their hospitality.

A vote of thanks to the Dominion President for the performance of his duties so ably as chairman was passed at the conclusion of the morning session.

ASSOCIATES OF HONOUR.

Citation in support of the Nomination of
MR. P. J. COX, F.R.I.H. (N.Z.),
Nominated by the Wanganui Ditsrict Council.

Mr. P. J. Cox has been closely connected with horticulture in New Zealand for over 40 years. In company with the late Mrs. E. Gower, he convened the inaugural meeting to form the District Council, of which he was a foundation member. Except for two years (1952-53), Mr. Cox has been president of the Wanganui District Council. In 1952 he was made a life member in recognition of his services. He has been a Dominion Vice-President during his term of office as President of the district council which has become the fourth largest in membership.

Mr. Cox has served for a number of years on the executive of the New Zealand Horticultural Trades Association and was Dominion President of that organisation for two years He has also contributed gardening articles to the Press for about 20 years.

In 1928 Mr. Cox founded the Children's Garden Circle and for the ensuing 15 years was organising secretary. He has remained active in this movement since its inception, having been president for a number of years. With the assistance of a willing band of helpers, Mr. Cox has instructed over 3000 children in the elementary stages of horticulture, thereby instilling into their minds a love of plants and gardening. Many of these children have developed into keen exhibitors and have taken horticulture as a career.

Mr. Cox was partner in a retail horticultural establishment in Wanganui for 10 years. Since his retirement Mr Cox has built up a fine collection of indoor plants, and he has interested himself in the making of miniature gardens and pumice work.

Among his numerous activities Mr. Cox established the Wanganui Floral Art Group; has been a member of the Wanganui Horticultural Society for 40 years; has been a keen exhibitor particularly of narcissi, carnations and chrysanthemums; has acted as a competent judge at shows and was accorded the distinction of honorary vice-president of the Society for many years. The Wanganui Education Board has called upon Mr. Cox to judge and advise in children's garden plot competitions. He has been a member of the Wanganui Chrysanthemum Society for many years and has recently been appointed a national judge.

Citation in support of the Nomination of
MR. J. H. GLAZEBROOK, B.Sc. (Hort.), N.D.H. (N.Z.), F.R.I.H. (N.Z.),
Nominated by the Canterbury District Council.

Mr John Henry Glazebrook obtained his early horticultural training in England. At Reading University he obtained the degree of B.Sc. (Horticulture) in 1945, and the N.D.H. in 1948. His practical experience was gained at the Hertfordshire Horticultural Institute, where he later returned as a lecturer, and at F. A. Secrett Ltd., Walton-on-Thames.

At Canterbury Agricultural College (now re-designated Lincoln College, University of Canterbury) Mr Glazebrook became successively Assistant Lecturer, Lecturer, and Senior Lecturer in charge of the Horticultural Department. The last post made him directly responsible for student training — 3- and 4-year degree students, 2-year diploma students and short course students; the maintenance and development of the College grounds and sports areas; the management of commercial vegetable garden, orchard, tomato glasshouses, tree and shrub nursery, which were all used for student training; and for research and extra-mural activities. Mr Glazebrook's enthusiasm in developing these facilities resulted in an increase in the number of students over the years.

His activities greatly exceeded his duties. He was an ever-willing lecturer, judge and adviser, acting as Secretary and Chairman of the Lincoln Community Centre; he broadcast as the Gardening Expert for Station 3YA for 4 years, and was an ever-willing lecturer to horticultural organisations. His activities with the R.N.Z.I.H. comprised membership of the Dominion Council for a number of years, a member of the Examination Board and Chairman of the Canterbury District Council, where, at his suggestion, the series of 'One Day Conferences' were initiated. Mr Glazebrook was also a member of the Canterbury Horticultural Society's Management Committee from 1954, and acted as judge and lecturer for this Society. He was also a member of the N.Z. Vegetable Research and Advisory Committee.

During his stay in New Zealand Mr Glazebrook made an impact which far exceeded the confines of his post, and he made a lasting contribution to horticulture in this country.

Citation in support of the Nomination of
MR. C. R. READER, N.D.H. (N.Z.), F.R.I.H. (N.Z.),
Nominated by the Auckland District Council.

Mr C. R. Reader has been interested in horticulture since, as the youngest pupil at his school, he was given the privilege of planting a flowering cherry to commemorate the Jubilee of Queen Victoria. His father was a registered nurseryman and Mr Reader was closely associated with growing plants and exhibiting. He was also engaged in the foundation of the National Sweet

Pea Society of New Zealand. In 1919 Mr Reader entered commercial horticulture and established a nursery business, specialising in roses, bedding plants, citrus and other fruits. He was secretary to the Auckland Commercial Gardeners' Society Ltd., for 14 years. During the last war he served on the Government appointed Vegetable Marketing Advisory Council.

Among his activities Mr Reader has been associated with the organisation of shows in Auckland district for over 30 years; was a founder of the New Zealand Orchid Society, of which he was President for 2 years; has been lecturer, supervisor and examiner in the recent judging classes in Auckland. Mr Reader joined the R.N.Z.I.H. in 1927 and gained the N.D.H. in 1930. He has been associated with the Auckland District Council sinced 1932, serving as Chairman of the Executive and later as President for two years, and has remained a member of the Executive since. He was also the District Council's auditor.

Mr Reader has, for 17 years, represented the R.N.Z.I.H. on Kirk's Bush Scenic Board; on the Great South Road Beautifying Society Inc., of which he is Deputy Chairman; with the Auckland Public Relations Officer in organising the Auckland Garden Competitions, which did much to improve gardens of the metropolitan area. He was also instrumental in introducing the aims and objects of the R.N.Z.I.H. to South Taranaki, the Waikato and Whangarei, which led to the formation of District Councils in those areas. Mr Reader's services as lecturer and judge are in constant demand throughout Auckland Province.

Citation in support of the Nomination of
MR. T. Y. TURNER, F.R.I.H. (N.Z.),
Nominated by the Otago District Council.

Mr T. Y. Turner has been a member of the Royal New Zealand Institute of Horticulture for over 25 years, a Fellow for 14 years, Chairman of the Otago District Council for several terms, and has been a delegate to Annual Conference on a number of occasions. During the depression and 1939-1945 War years he, with one or two other members, was largely instrumental in keeping the Otago District Council functioning. He has also been Secretary and then Chairman of the Dunedin Horticultural Trades Association for many years.

During over 50 years as a professional horticulturist, Mr Turner has been recognised as an expert in the culture of tomatoes, pot plants, cut flowers and bedding plants. He was one of the first in New Zealand to introduce new strains of tomatoes, and new methods of cultivating them. In particular, he was probably the first to steam sterilise the soil. He is recognised as a practical authority on pests and diseases of the tomato.

As an executive member of the Otago Automobile Association, Mr Turner has been a keen leader in establishing new plantings of wayside ornamental trees and shrubs on main highways in Otago as well as preserving established plantings, trees of historic interest and memorial trees in particular. He has also taken an active part in roadside beautification schemes carried out by the Dunedin Amenities Society.

THE CANTERBURY FLORAL EXHIBITION

By M. C. GUDEX

In the small space available, it is impossible to do justice to the Canterbury Horticultural Society's Summer Exhibition held on February 20, 21 and 22 in conjunction with the Centennial of the Christchurch Botanic Gardens, but a visitor's impressions of it may be of some interest to our readers.

First of all, there was equal scope for flowers, vegetables, herbs, fruit and plants in general, staged by over sixty groups and firms. The next feature was the different treatment of the same materials seen in many exhibits. After all, that should not surprise us when we recall the different ways of treating the same subject in music, or painting, or sculpture. Again, men, women and children had their displays; and here mention must be made of the good collections and descriptive work of the schools. A fourth feature was the wonderful co-operation and goodwill, proved by the large and effective displays by Dunedin, Oamaru, Waimate, Timaru, Ashburton, Malvern, Lyttelton, Kaiapoi and other places. It seemed that they had adopted the motto of the Three Musketeers, 'All for one and one for all'.

Adelaide, too, lived up to its reputation as a garden city by sending over a remarkable collection of Australian shrubs. Hands across the Tasman, indeed!

One of the first exhibits to attract notice was a conservatory enclosing a great many cacti and succulents in splendid condition. Opposite it was an interesting display of native plants set up by the National Parks and the Canterbury Native Flora Society. This included many bog plants from Arthur's Pass in a natural setting, a series of native trees that pass through a juvenile stage to a very different adult form, a group of conifers and other plants in tubs, including the rather unusual *Pseudopanax lineare,* and maps of various National Parks.

Native plants were used very effectively for garden decoration by the Christchurch Botanic Gardens in their rock garden and pond and by the D.S.I.R. of Lincoln. The latter showed a large number of native grasses ranging from the noble *Danthonia raoulii* var., *flavescens* and *Danthonia cunninghamii* to the more lowly species of *Festuca* and *Poa.* All flesh is grass, indeed, but not all grass is the same.

Dahlias deserve special mention because of their general excellence displayed in many exhibits. The National Dahlia Society should be very proud of its share in this great floral enterprise. *Gladioli,* flowering shrubs, begonias and early chrysanthemums were also shown beautifully in many parts of the exhibition, and great credit is due to the growers who were able to stage such flowers during a hot summer. The daintiest blooms, straight from Fairyland, were the miniature roses in Mr W. R. Bestman's exhibit. Some were displayed in a fascinating glass case, others in a series of diminutive vases. The grumblers who said 'you can't eat flowers' were surely delighted — as everybody else was — by the handsome and comprehensive display of fruit and vegetables staged by the Canterbury Hospital Board. The slogan of the N.Z. Organic Compost Society was: Healthy soil: healthy food: healthy people. A splendid display of fruit and vegetables was set up by the Canterbury Tomato, Stone Fruit and Vegetable Growers' Association, on the lines followed at the great shows of Britain and Europe.

Roses had their place in the Canterbury Rose Society's open air garden, and in the beds planted by the Roseneath Nurseries. Bushes, standards and climbers made a fine display. Other large and interesting features were staged by the Canterbury Alpine Society, Canterbury Agricultural College, New Zealand Forest Service and the Department of Agriculture. A striking display was that of the Commercial Flower Growers' Association, with great masses of carnations, gerberas, gladioli, asters, lilies, statice and early-flowering chrysanthemums.

But what of the decorative displays? They were to be seen almost everywhere, set up by various groups of the W.D.F.F., beautifying societies, garden clubs, carnation and other specialist societies, and horticultural societies in general.

There were also the many competitive classes of floral work, which were so interesting that there was a continuous queue of people waiting to enter the huge marquee.

The crowning exhibit was the courtyard (of about the year 1900) planned and executed by the N.Z. Lily Society. The gardeners of that happy time revealed a remarkable sense of anticipation, being able to show the lilies that came 'forty years on'. Flowering plants, shrubs, a tall holly tree, garden furniture, planted urns, a fountain and a pool, with no semblance of overcrowding, made this court a picture that will live long in the memory.

Well done, Canterbury!

CONFERENCE HIGHLIGHTS

The annual Conference of the Institute is an event to which all members look forward, and hope to be able to attend. The practice of having the venues well spread apart throughout the Dominion gives everyone the opportunity of attending when it is held in a centre within easy travelling distance. There is nothing a horticulturist likes better than to mix with others of his persuasion and talk 'shop'. The social side of the 1963 Conference at Christchurch was enjoyable throughout.

The New Zealand Institute of Parks Administration held its Annual Conference in the same week and many of the arrangements made were for the benefit of those attending both conferences. Many of the R.N.Z.I.H. delegates reached Christchurch in time to visit the Summit Reserves on Tuesday afternoon. Under the able guidance of Mr H. G. Gilpin two 'buses containing visitors were taken over a wide area at considerable altitudes, where they could enjoy a bird's eye view of Canterbury. This proved both enjoyable and instructive, and one could not help but be impressed with the work that has been accomplished and the programme ahead.

On Tuesday evening members were privileged to attend a film evening where Mr John Watling, President of the Canterbury Horticultural Society, gave a display of slides of horticultural interest. Mr

Watling enjoys considerable fame as a photographer and he showed some superb slides depicting some wonderful gardens of Canterbury, many close-ups of various plants and some impressive examples of street planting.

The Conference, officially opened by the Hon. B. E. Tallboys, on Wednesday, following a warm welcome from the Mayor of Christchurch, Mr G. Manning, proceeded smoothly under the genial chairmanship of the President, Mr J. F. Living. The proceedings are fully reported elsewhere but it was a great pleasure to meet Mr T. D. Lennie and Mr J. H. Shrubshall, both stalwarts of New Zealand horticulture and bearing their years remarkably well.

The afternoon was spent at the magnificent floral exhibition at Hagley Park, reported elsewhere, and members were given the opportunity of meeting socially at a very enjoyable cocktail party held at the tea kiosk at the Botanic Gardens. The Banks Lecture, delivered by Mr W. Martin, B.Sc. occupied the evening of the first day of the Conference.

On Thursday morning art of a different form to that of horticulture was enjoyed at the Art Gallery and Museum, where paintings of artists of international fame were to be seen. There were some fine examples of R. A. Goldie's Maori portraiture. In the Museum there was much detail to enjoy and interest was centred on a fine collection of Maori artifacts. Following refreshments the President, Mr J. F. Living expressed the visitors' appreciation of the courtesy of their guide in conducting the party and giving a most interesting commentary on the artists and their work.

The visit to the botanic gardens on Thursday afternoon was all too brief, and one felt that a whole year was needed to see these gardens at all seasons to savour fully of their magnificence. To attempt to write of the gardens in these notes would be unwise, the subject being so vast, but one cannot resist commenting on the statuesque beauty of the many magnificent and gigantic specimens of noble trees. These provide a wonderful example of the wisdom of exercising reserve in initial planting to allow the full development of these forest giants. Any thinning out that may have been necessary over the century that has elapsed since the Gardens were first founded must have been carried out with great discretion, and it has in no way impaired the beauty of the scene.

Friday was the day of departure for many who had attended the Conference. After a visit to the reserves, which fully justified Christchurch's fame as 'The Garden City', and the farewell afternoon tea at Cowles Stadium, a memorable event in the history of the Institute ended. But the memory of the noble dignity of the trees in the Botanic Gardens will linger for many a year.

DISTRICT COUNCIL REPORTS

WHANGAREI

OCTOBER

ANNUAL GENERAL MEETING.

This was held on Monday, October 22nd, but as it fell on Labour Day and was also a very wet night, attendance was small.

The Chairman's report showed a successful year, with an increase in membership and a good attendance at meetings. This was due, no doubt, to the diversity of programmes as well as to the specially well qualified speakers, whom we had been fortunate to obtain. Whangarei was well represented by several delegates to the Annual Dominion Conference in Palmerston North. The Anti-Litter Campaign initiated by the Whangarei District Council is growing in strength, and in Wellington a special year-long effort is in progress. Other centres have shown interest and given publicity in their papers. Our own locality would be improved by attention to this matter.

NOVEMBER

The annual combined meeting of the Whangarei District Council of the Royal N.Z. Institute of Horticulture was held in the Gardening Club Hall, in conjunction with the Whangarei Ladies' Gardening Club.

Mr. J. A. Hunter, A.H.R.I.H. (N.Z.), of the D.S.I.R., Auckland, gave us an extremely interesting and helpful address on our soils, the text of which he kindly supplied.

Soil can be regarded from different viewpoints. The quarryman considers it as an expensive nuisance which must be removed so as to get access to the rock beneath. However, I regard soil as among nature's greatest marvels, composed of elaborate and complex particles and inhabited by inconceivably small organisms living lives of which we can form only the haziest conception.

A true gardener, speaks not of soils, but his soil, recognising thereby that soils have personalities which differ materially, physically and structurally.

In evaluating soils, *texture* is of first importance as it influences the presence and movement of water and air in the soil, and the ease with which plant roots can penetrate. Texture is that inherent "something" which cannot be permanently changed in a gardener's lifetime and is determined according to the proportion of coarse and fine sand, salt and clay present in the soil's composition. The clay particles, because of their extremely small size are the greatest potential source of plant nutrients and possessing some of the characteristics of salts can take part in base exchange which both preserves and makes available plant food in the soil, although in volcanic soils this may cause soluble phosphates to be unavailable.

To complete the soil organic matter is necessary, for complex though the mineral compounds are, they lack the nitrogenous compounds essential for plant growth. Organic matter supplies the food and energy required by the highly complex soil population found in every fertile soil. Under favourable conditions the number of organisms increases with an increase in organic matter but there is no great gain in having more organic material than what constitutes 5 per cent. of the total soil mass.

Unlike texture which is inherent in soils, soil structure or the formation of crumbs is a measure of the skill of the good gardener. The crumbs are not solid throughout but are composed of numerous invisible crevices of vital importance to the micro-organisms of the soil, for it is there they live their lives and draw their air, water and much of their food. About 90 per cent. of the invisible soil population are different forms of bacteria, the remainder are fungi, actinomycetes (organisms which have affinities with both bacteria and fungi) algae, protozoa, and eelworms (both beneficial and harmful). The

prodigious work done by these organisms is the decomposition of crude organic residues, and assistance in the removal from the soil of substances which would be harmful if allowed to accumulate.

When varying amounts, between 20-60 per cent. of a soil is composed of clay particles that soil is termed a clay soil and has the following characteristics:

(1) Small pore space inhibits movement of both air and water.
(2) Plants growing in them suffer from waterlogged conditions in winter and drought in summer.
(3) Soil cracks and forms hard clods when dry.
(4) Crumb structure readily deteriorates with misuse.

Liming, with the application of matured organic material, associated with drainage and strict adherence to a policy of not working or treading on these soils when wet is essential.

Gardens on light sandy soil give excellent returns in spring but performance tends to drop as summer advances.

For successful culture the problem is to improve moisture holding capacity and supply adequate humus. Green manuring is excellent because of the good aeration.

Peat soils where the amount of organic material is too high, and pumice soils where pore space is too large are generally not desirable for gardens and often have fertility problems associated with them However with proper treatment good gardens can be made on such sites.

The requirements for seed germination, and the making of seedbeds in the different classes of soil was discussed, it being agreed that the formation of the correct type of seedbed to suit a particular soil is the hallmark of the good gardener.

With use, unless soils are very carefully cultivated, fertility tends to be reduced, and it is here that good management is required. The application of organic material supplemented by judicious use of fertilizers, with crop rotation; type and timing of cultivations, and weed, pest and disease control, all play their part in keeping a soil fertile. The composition of plants was discussed and the source and relative importance of the essential elements considered. Nitrogen, phosphorus, potassium, calcium, magnesium and sulphur are required in relatively large amounts and their inclusion should be attended to in any logical manurial programme. In a correct system of soil management, the minor elements are best left to look after themselves. In this respect many weeds are good sources of minor elements when they are returned to the soil direct or through the compost heap.

The slides which followed, emphasised the various forms of life found in the soil and the important part they play in soil fertility.

Visitors to United Kingdom

An enquiry has been received asking how members visiting Great Britain and Europe can be informed of matters of horticultural interest. The Royal Horticultural Society at Vincent Square, Westminster, London, S.W.1, has stated they are always pleased to welcome overseas visitors to the Shows held there throughout the year and to answer enquiries about places of importance to horticulturists, in Britain and in Europe.

If members become Fellows of the Royal Horticultural Society they receive individual tickets for all meetings, Wisley Gardens, and Shows of the Royal Horticultural Society, including the Great Spring Show, Chelsea, and other privileges. (£2/2/- a year).

Royal New Zealand Institute of Horticulture (Inc.)

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NEW ZEALAND PLANTS AND GARDENS

Volume IV 1960-1962

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