

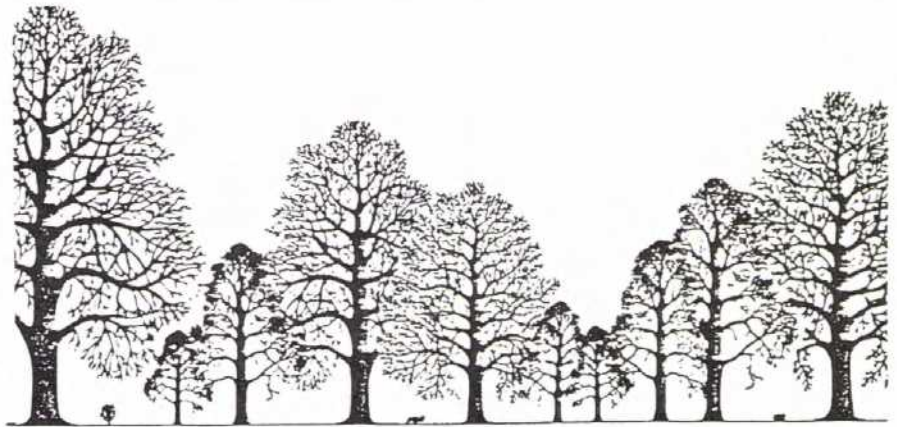
Newsletter



1994
No. 4
December

Royal New Zealand Institute of Horticulture (Inc.)

Tragedy



of the trees which can kill us

In the past twelve months many blackouts resulted from trees and tree branches hitting power lines in New Zealand.

Trees are a beautiful and necessary part of our gardens and the environment. But if the trees on your property are within two metres of power lines, it is your responsibility to have them pruned. If you don't, you are risking the power supply to your own home, and maybe even the whole neighbourhood.

Many who are aware of this responsibility choose to take the matter into their own hands but lopping your own trees can be dangerous to you, and bad for your beautiful trees.

When thinking about pruning trees that are near power lines it is important to remember that wood can conduct electricity. This means that any part of

the tree touching the lines, including branches that are being cut, can cause electrocution. This can happen to anyone doing the pruning, or even climbing or touching the tree.

To ensure your safety, it is advisable to use a professional tree contractor - a member of the N.Z. Arboricultural Association.

Lopping your own trees is a short-term solution that is bad for their health. It results in a structure which looks ugly, is vulnerable to decay, becomes increasingly dangerous, is more expensive to maintain and will regrow quickly towards the power lines you are trying to avoid. And a tree that is lopped severely or at the wrong time of the year may never recover and even die.

When you lop a tree this often leads to epicormic watershoots growing. This

growth, which is faster than normal growth, will require repeated pruning to keep it under control. The watershoots only grow from the tissue where a branch has been lopped. They are weakly attached and prone to falling off or being blown off. This tendency for falling off increases markedly as the watershoot increases in size and weight.

Epicormic water shoots are extremely vigorous and fast growing. They often grow as tall and broad as the original canopy before it was lopped. The result is a tree that has become even more dangerous because, not only has it grown to its original height and spread, but more importantly the new branches are not well attached.

So, rather than lopping your tree, discuss natural target pruning with a professional tree contractor.



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Smugglers Pose Threat

The following item appeared in *Rural News* December 5 1994

NZ's horticultural exports are at risk from smugglers of overseas plants, cuttings and seeds, says MAF Quality Management's Quarantine Service. More than 13,600 plants and seed packets have been taken from New Zealanders coming home from holidays or business trips in the past 12 months.

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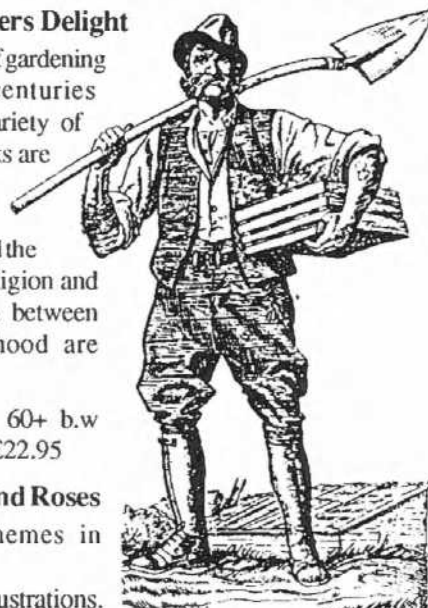
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Martin Hoyles is the author of numerous books on history and politics including *The Story of Gardening* and *The Politics of Childhood*.

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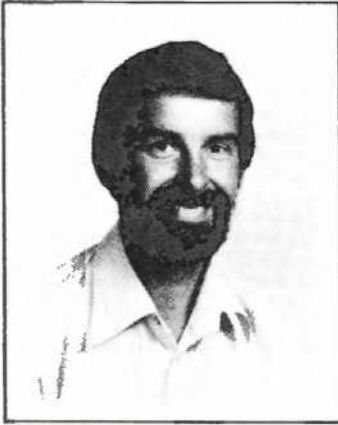
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TASMAN BAY ROSES



Gardening with Annuals

by Roy Edwards,

Lecturer, Plant Science Department, Lincoln University, and RNZIH Examiner

Introduction

Annual plants for gardens are typically used for a quick seasonal display of colour. There is a wide range of plants to choose from and most will grow well in free draining soils in a slightly acid soil with a pH of around 6. In Christchurch they are usually planted in the early to mid autumn period for a spring display and for a summer display they are planted about mid November

Life cycles

Annuals are not always what they seem. For the botanically minded they may be true annuals which grow from seed, flower and set seed within a season or within one calendar year. (Some common examples include marigolds, China aster and cornflower.) They may however also be biennial or perennial in nature. Biennials typically are grown from seed in spring, produce a vegetative growth over the summer, flower the following spring, set seed and die, thus completing their life cycle. (Examples include Sweet William and Canterbury Bells.) Perennials grown as annuals live for two years or more, are typically herbaceous and may flower and set seed in their first year. (Common examples include bedding begonias, dusty millers and polyanthus.) Occasionally woody perennials such as shrubs and trees may also be utilized in formal annual bedding displays. Frequently summer flowering annual display beds comprise all manner of plants except true annuals in the botanical sense (eg. A formal display in Botanic Gardens consisted of standard fuchsias - shrubs, bedding geraniums - perennials, edged with begonias and sweet alyssum - both perennials).

Spring display

Spring displays in temperate parts of the world usually involve plants such as wallflower, polyanthus, viola, pansy, forget-me-not, bellis, antirrhinums, poppies and stock. 'Bulbs' such as tulips, daffodils, hyacinths, anemones and ranunculus may also be planted formally. Where a summer display is to follow in the same area of ground bulbs may have to be removed prematurely and discarded or replanted, or put into a cool shed to die down. Stock, Iceland poppy and plants like Sweet William may continue flowering for a long period and as such are better not used where a summer display follows the spring display.

Summer display

Summer displays allow a far greater choice of plant material, many summer flowering annuals being half hardy perennials which die down once frosts begin. The choice within many groups of commonly grown annuals such as petunia is quite staggering and limited only by what is available either as seed or from a nursery. What is important is the cultivar name as far as making the correct selection goes. Different cultivars can be selected to obtain plants of a particular height or degree of compactness, they may indicate single or double flowers, single or mixed colours, plants with fragrant flowers or any number of a host of different characters. If you are after tall summer flowering annuals - cleome, sunflower, delphinium larkspur and hollyhock are possibilities. For medium heights summer cypress have interesting foliage; scarlet sage, African marigolds and rudbeckia produce hot reds, oranges and yellows; cosmos stock and petunia

produce cooler colours usually. Bells of Ireland are interesting in this mid height range if you want attractive green "flowers" (is really the sepals that are showy - the petals are small and white). For the lower growing border or edging plants - sweet alyssum is mainly white (pink or purple), viscaria and ageratum produce a good range of blues and mauves. Busy lizzie (*Impatiens walleriana*) is a low growing plant which through breeding and selection has been dramatically improved to include a wide range of vibrant colours capable of being grown well in sun or shade.

Using annuals

The use of annuals in the past has often been in a formal sense, sometimes to the detriment of good garden design in other ways. Annuals in their broadest sense however are plants that once planted and suited to a garden site, naturalize and may never need to be replanted in that site again. Because of their life cycle annuals naturally reproduce themselves by seed. Easy to grow examples which readily seed include; love-lies-bleeding, French and African marigolds (both actually native of Mexico), pot marigolds or calendula, sweet alyssum, forget-me-nots and pansies.

If you like the colour annuals give to a garden, but not the effort involved in formal displays try leaving these plants to their own devices. Then at this time of the year, instead of digging everything out and replanting, simply remove the obvious weeds, but selectively leave those "annuals" which have reseeded from the previous year, sit back and enjoy watching them grow.

Chelsea Cultivars

Some Exhibits

The Gardeners' Mecca

Chelsea Flower Show is the first major spectator sport of the season. It may be the grandest gathering of blooms anywhere, but the most interesting specimens are ambulatory. Their foliage is distinctive, their ground cover spectacular, and each is a hardy annual. Bowed over the begonias are weathered women from the shires who do proper spade work and open their gardens annually for charity; well-kept women from the squares (Eaton, Chelsea) who have never seen a pair of shears; Americans who think gardening will make them English; garden designers who think gardening will make them money; and stalwart ex-military men who despise the very idea of garden "design" as pansy. Then there are those just there to be seen and admired like the prize-winning exhibits. Expensively scented, vigorous climbers and the result of careful propagation, they think hybrid tea is something accompanied by scones and cream.



The Colonel

The pride of Cheltenham and the Guards, the Colonel knows his onions - and his hybrid teas, his hollyhocks and his *Hosta sieboldiana* - such splendid ground cover, smothering those pesky weeds. His immaculate garden is a tribute to his on-going war against slugs, snails, green fly, caterpillars, white fly, black fly and mildew, and his mission at Chelsea is to discover what new horticultural napalm is on the market for killing such things. A staunch RHS member (he grows from seeds supplied by Wisley), he arrives prompt at 8.00 am on Tuesday to devote the morning to the show before lunching at his club. It never fails to move him. All he sees confirms that the Empire still blooms in cottage gardens across the land, that gardening is a national virtue. Where would rhododendrons be if colonels had not brought them back from India?



The Dowager

Plants stand to attention when they see her coming so as not to be rootled at by her sticks, a cunning device for interfering. In fact, she has an indomitable physique honed in the bracing conditions of her country house. The low-flying bosom is the result of years bent over recalcitrant borders. The dowager is a closet duchess, complete with diamonds, sensible shoes and a weather eye for her sisters in coats of arms, often to be found manning stalls of Lutyens-style garden furniture made on their estates. A member of the RHS since time immemorial, the dowager despises modern roses, garden designers and Americans. She attends the Flower Show on Tuesday or Wednesday (RHS members only) when she is more likely to meet tweedy souls with similar prejudices.

The Loves

They're the backbone of British gardening. They belong to freesia societies, enter begonias in the WI competition, boost hanging baskets with Miracle-Gro and edge everything with alyssum. They love a "display" and to achieve maximum effect plant yellow with pink and orange. Chelsea is their nirvana, far beyond the dreams of their local garden centre. Mrs. Love is entranced by the water garden and determines to buy a Cupid peeing into a shell; Mr. Love wants to caress every new gadget and fertiliser. They come on the Friday when the plants are for sale, and in the evening stagger away with as much as they can humanly carry.



The Exotic Bloom

Miss Ivanita has heard somewhere that sunflowers were something fabulously expensive that you hung on a wall. Thus she thinks her dress is rather witty and, believe it or not, shopped long and hard for it because she likes to be correctly dressed for the occasion.

Her manicure indicates that bedding out is not the sort of bedding she does. She has a date with this month's fiance, a playboy of indeterminate nationality, at Monday's gala evening because he is in London for the season. Their combined interest in gardening could be grown on a face flannel, but one loves to see one's friends kiss, kiss in the heady atmosphere redolent with the warring scents of roses and Madame Rochas which assail her suspiciously perfect nose.

She makes extravagant gestures with the left hand in order to display her engagement ring, a rock so large you could grow alpinas on it. Afterwards, having been seen by as many people as possible, they will dine at La Tante Claire.



The Cad

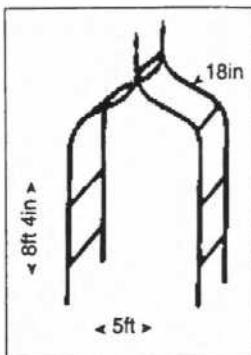
The spectre at the feast, he doesn't know a daisy from a delphinium, but runs a successful gardening business using a combination of Old Etonian swagger and jobbing Australians to service the gardens of non-gardeners from Chelsea to Clapham. He is the proselytiser of the terracotta pot, knowing that the pink geraniums (bought cheap at Covent Garden) will have to be replaced annually, an excuse to give Mrs. Non-Gardener's patch a good going over at £15 an hour.

His solitary prowling around the flower show is more for the purpose of picking up girls than gardening hints, and to facilitate this he wears a raffish leer and hair foaming over his collar like lobelia. His blazer buttons are of a regiment to which he never belonged and his tartan trousers inspired by a menswear chain, not a clan. The cravat - a sign of dubious taste and intentions - is part of his uniform as the new milkman/gamekeeper of the moneyed classes. The Cad

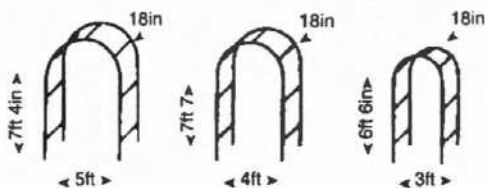
is a social ground elder, vigorously creeping over those who think their gardens should be as chintzy as their drawing rooms.



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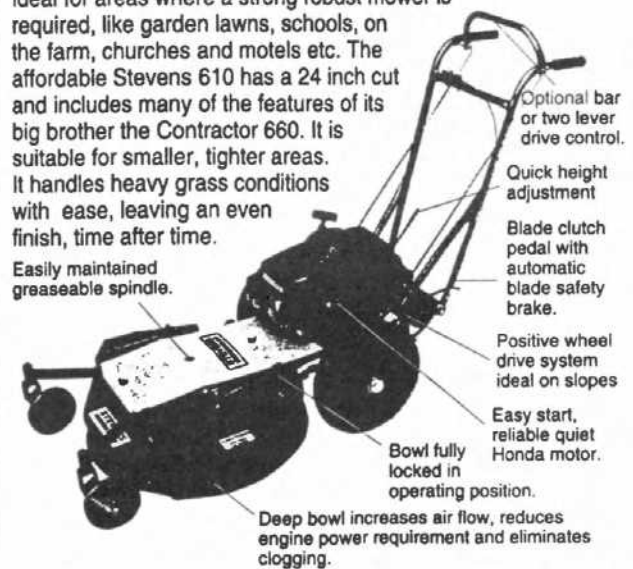


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Summer Care of Rhododendrons

Spring is the time when we tend to turn our attention and energies to our rhododendrons.

Come Christmas they have taken a back seat in the garden and are often ignored. This is unfortunate as much of what is done in the summer will be reflected in the following year's display.

We look at rhododendron foliage twelve months of the year so it is most important that it looks its best at all times. Leaves moth-eaten, silvered, yellow, blotched or just plain starved do nothing for the garden effect or the plant's wellbeing. Despite comments by overseas experts, rhododendrons in New Zealand are not plagued by major problems and those we may have are easily controlled - if gardeners only did something about it. We plant roses and expect to have to spray them throughout the growing season to keep them clean and healthy. Rhododendrons are perceived to be low maintenance plants and so they are, but 'low' becomes 'no' in many cases. Assuming that the correct cultural requirements have been met with in the winter, let us look at the summer programme.

Dead Heading

The removal of the spent flower heads straight after flowering should be a priority and certainly this should be done before Christmas (late flowering subjects excepted). This ensures all the plant's energies go into growth and the setting of flower buds for next season. Whilst some rhododendrons seem to thrive despite total neglect, reduced performance, biennial flowering or poor health can result from not carrying out a dead heading programme.

Feeding

Feeding goes hand-in-hand with good health and the season of maximum

growth is a critical time. Traditionally it has been suggested that a good 'dollop' of acid fertilizer in spring is all that is needed. We now know that rhododendrons prefer and respond to a number of small applications over the whole of the growing season. Ideally this should begin about the time the flower buds begin to swell and should be repeated every six to eight weeks. This makes for 4 or 5 light feeds during the season. It is important that the ground is moist for this and that rain or irrigation is applied within 24 hours to prevent root-burning and enable the plant to absorb the minerals.

Mulching

Rhododendron roots are close to the soil surface so are prone to drying out quickly in hot, dry weather. This often shows up later as burnt edges around the leaf margins. To prevent this a mulch or organic material in early summer, before the dry weather begins, should be applied. Many things can be used, as long as they break down to a viable compost which allows the roots to breathe and does not contain high levels of calcium. Shredded bark, peat, pea straw, sawdust/manure mixes, garden compost are all examples of suitable material. I have even seen large stones loosely placed over a root ball to have the same cooling effect. They do not rot down too easily!

Pest and Disease Control

There are not too many major pests and disease problems with rhododendrons and a few well timed treatments will usually keep plants clean and healthy.

Thrips

Thrips are the most common and obvious pest, particularly in the warmer areas of the country. Warm, dry conditions suit them, so they are a problem in summer and autumn. They cause the leaves to turn silvery-grey by their action of sucking the sap out

of the leaf. These tiny black insects can usually be seen under the leaf, often close to the midrib. They are easily controlled by sprays of Maldison or Carbaryl, preferably with summer oil mixed with them. In fact summer oil on its own will discourage them. The trick is to start spraying early, i.e. straight after flowering and soak the foliage, particularly underneath. Repeat this every month through the summer right through to April if the weather is warm. The same treatment will also affect white fly infestations on evergreen azaleas and lacebugs where they are a problem.

Cultural conditions play a part and avoiding dry shade in the garden by opening up tree canopies and regular misting of the foliage will discourage thrips and perhaps remove the need to spray with chemicals complete.

Systemic sprays such as Orthene or Shield are absorbed by the plant, poisoning the pests as they feed. These last longer but are more toxic to apply.

Caterpillars

Caterpillars also cause problems, usually chewing lumps out of the soft new growth as it emerges or even worse, flower buds. Leaf roller is probably the worst and difficult to kill when inside a rolled up leaf. Squeezing them works well if you only see a few, otherwise a spray of Carbaryl will be effective of Shield for systemic effect. Repeat this as required through summer.

Grass Grub

Grass grub beetles and other weevils can notch the outside edges of the leaves making them unsightly. They live in the leaf litter under the plant most of the time and are not easy to get rid of except in the larval stage. Diazinon prills or Lorsban watered into the root ball will give some measure of control.

Summer Care of Rhododendrons
continued

Borer

Rhododendrons can get shoot borer, particularly in bush sites and cicadas will lay their eggs in branches. Usually the damage is done when you see a branch wilting or snapped off and pruning the affected area away is all you can do. These are not major problem.

There are three diseases to watch for, all of which are not common but could be if not controlled.

Phytophthora

This root-rot is usually caused by poor drainage and as the young roots rot they stop providing the leaves with liquid, so the foliage collapses. By this stage it is probably too late to save the plant and it should be burnt. Some chemicals such as Alliette will help control the disease but improving drainage and soil aeration is the real

answer.

Rust

Rust disease has been around a long time but only affects some rhododendrons. The *R. cinnabarinum* types such as 'Lady Chamberlain' and 'Trewithen Orange' or *R. edgeworthii* hybrids 'Floral Dance', 'Suave' and 'Countess of Sefton' are most susceptible. The telltale clusters of orange spores will be clearly seen under the foliage, which will be showing yellowish or brown spotting above. A severe attack will see all the foliage fall off and a plant can die from lack of energy over a period. Sprays for Rose rust, such as Bravo, can be used or if a few plants are affected get rid of them and plant others.

Mildew

This is a newcomer to New Zealand and as such needs a careful watch to keep it under control. It is difficult to detect in its early stages as it usually shows as dull red circles on the leaf. It gradually spreads and it is only in its later stage that a typical grey mildew-

effect is seen. It is also specific to certain rhododendrons and once again varietal selection may be one way of keeping it at bay. A few leaves can be picked off and burnt but a bad infestation can cause total defoliation. I saw plants like this in shady, damp gardens in British Columbia and Scotland.

Good hygiene is always important. This means picking up and burning any foliage that falls to the ground. Allow plenty of air movement and as much light as possible to your plants. If you need to spray, start in early summer with a rose or fruit tree spray formulated against mildew.

For further reading on all of these matters *Growing Rhododendrons - A Gardeners Guide*, published by Pukeiti and available from Pukeiti Rhododendron Trust, Carrington Road, RD4, New Plymouth, has all the answers. (cost \$12.00)

Graham Smith
From Pukeiti, A Garden for all Seasons, Volume 44 No.3,



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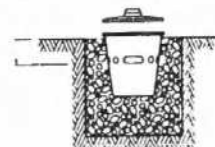
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Gardens to Visit

A Special Feature in Association with
N Z's Open Garden Scheme

Jolendale Park

Jolendale is a private recreational research parkland situated on Bridge Hill, immediately south of Alexandra on State Highway 8.

The property was first established in 1961 with aims of obtaining a better understanding of the limitations imposed by climate on the successful establishment of a wide variety of trees and shrubs in this semi-arid district. The planting has aimed at maintaining important views and highlighting the landscape of rock outcrops. Access has also been opened up to enable a public walkway to be linked with the town.

This experimental area experiences an average annual rainfall of 335mm and a period from early spring to late autumn when evaporation greatly exceeds rainfall. Numerous heavy frosts are experienced with those in late spring being a critical limiting factor in plant establishment. The altitude of the site ranges from 200 to 240m; the area is exposed and well drained with a thin veneer of soil (brown-grey earths). On the site there are approximately twenty indigenous species together with exotic plants such as thyme, horehound, teasel, mullein and eschscholtzia, naturalized, and contributing much to this adapted landscape.

The majority of plantings were carried out from 1961-3 with over 1000 trees and shrubs representing 109 species of some 52 genera. The main groups evaluated are the conifers, eucalypts, and deciduous trees such as oak, birch, poplar and willow.

In addition, a home garden style rockery is situated in front of the residence in a 12m deep gully portraying impressive plantings of junipers and other shrubs.

Jolyon and Enny Manning are the owners and perpetrators of this imaginative scheme with its immense regional impact, and their actions must be commended.

**At the recent A.G.M. of the Waikato Branch,
the following officers were elected :**

President Annie Fullerton (07) 8236796
Secretary Agnes Betschart
Treasurer Peta Pepperell
Committee: Peter Cave, Shirley Finlayson, Bill Fraser,
Dorothy Higgins, Yvonne Singleton and Eric Walton.

The first meeting in 1995 will be held on Thursday 23 February in the Chartwell Square Room, Horticultural Complex, Hamilton Gardens.

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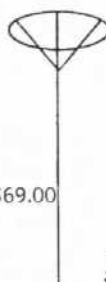
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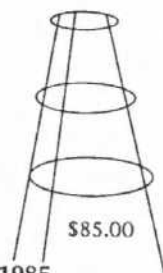
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Tucked away amongst the highlands of New Caledonia are dozens of plants awaiting collection and cultivation. Already a few have attracted the attentions of horticulturists and are now commonly seen. *Blechnum gibbum* and *Dizygotheca elegantissima*, two of our common indoor conservatory plants, hail from New Caledonia. But there are dozens of other potential candidates, too.

During a recent botany trip to New Caledonia John Dawson and I travelled throughout the country and collected seed from over 24 species, belonging to the families Casuarinaceae, Myrtaceae and Proteaceae. On our return we distributed seed to Victoria University, Wellington Botanic Garden, Percy's Gardens, Lower Hutt, and to the Auckland Regional Botanic Gardens..

Many species have germinated, and are now growing well. Our aim is to grow the plants both indoors and out (in frost free localities) so that their potential as garden and indoor plants can be assessed. We a planning another trip and hope to collect more seed and so further extend the present collection.

For further information contact : Rob Lucas,
The Open Polytechnic of NZ, PB 31914, LOWER HUTT

Sir Victor Davies & DD Baker Awards

Applications are invited for the above Awards :

The Sir Victor Davies Award is awarded annually to a person under the age of 30 years who has demonstrated an outstanding plant knowledge in NZ. The award is in honour of the late Sir Victor Davies and is designed to encourage young people to increase their knowledge of plants and plant culture.

The DD Baker Memorial Award recognises the bequest of Miss Baker to the RNZIH and is intended to assist with funding for a broad range of research or study which will contribute to the advancement and benefit of horticulture in NZ. The award is to help members undertake research, study or special projects.

Applications for both awards close on 28 February.

In the case of the DD Baker Award applications must be on the standard form which can be obtained from RNZIH, P.O. Box 12 Lincoln University. Phone (03) 325 3860



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International Dendrology Society Symposium: The Conservation Status of Temperate Trees

Over 50 delegates gathered in Bonn at the end of September to discuss the plight of the world's temperate forests and the plant species they contain. Marion Mackay from the Department of Plant Science at Massey University and Mike Oates, Curator of the Botanic Gardens of Wellington attended the conference and presented papers (see the abstracts below).

The speakers gave a good overview of the problems worldwide and the large number of species under threat. With conifers alone, more than 50% of the 600 known species are rare or local endemics. The threats are remarkably similar worldwide. Removal of forests for timber and often conversion to agriculture, pollution and environmental degradation, especially in Europe, and noxious plants and animals, something we know plenty about in New Zealand.

What makes the plight of these forests so important to us as horticulturists is that many of the trees and shrubs we use in gardens come from these areas. Did you know for instance that *Dracaena draco* the new designer plant for New Zealand gardens is rare in its native Madeira or that *Eucryphia glutinosa* is rare in Chile?

The conference resolved to do something about the global problem and on the last day established a Species Survival Commission group on temperate broadleaved trees. This is under the auspices of IUCN, the World Conservation Union and will have members from many countries including New Zealand.

Below are selected abstracts from the symposium.

The conservation status of the woody vegetation of New Zealand

Mike Oates

Wellington and Otari Botanical Gardens, Wellington City Council, Box 2199, Wellington
Department of Conservation, Private Bag 68908, Auckland

When the Maori arrived in New Zealand over one thousand years ago, 85% of the land was covered by native forest. The impact of humans and introduced plants and animals since that time has had a devastating effect on the quantity and quality of the native forest. Today only 23% of New Zealand is covered by native forest, much of this in upland areas. Lowland forests have been totally destroyed in regions such as Wairarapa and Canterbury. 83 trees and shrubs are listed as threatened in the 1994 Threatened Species list, representing 4% of the total vascular flora.

This paper will describe the threats to New Zealand's woody vegetation and the current status of threatened woody plants. Case studies will be presented on the following: The genus *Metrosideros*, including *M. excelsa*, *M. bartlettii* and *M. robusta*, and *Pennantia baylisiana*.

10 taxa are recommended for deletion from the Threatened Temperate Tree List (Lear in IDS Yearbook, 1990) and a further 25 are suggested for inclusion in a revised version of the list.

A management model for plant collections in arboreta and other landscapes

Marion Mackay

Department of Plant Science, Massey University, Private Bag 11222, Palmerston North

To achieve long-term conservation goals we must be able to perpetuate successfully those individual plants and populations that are being managed in *ex situ* circumstances. This paper is

the result of a study on the long-term management of an important plant collection in an arboretum, and proposes a model for management. The model uses principles from landscape management, ecology and environmental planning and applies these to the arboretum situation. The model could be applied to other arboreta, botanic gardens or landscapes which contain important plants that must be conserved.

Updating the Threatened Temperate Tree List

Michael Lear

The Old Hunting Lodge, Boar Street, Mere, Wiltshire BA12 6DD, U.K.

Revision of the Threatened Temperate Tree List represents a continuation of the joint IDS-WCMC (World Conservation Monitoring Centre) project started by IDS in 1983. The purpose is to publicize the plight of certain tree species in temperate regions; to promote their conservation in the wild; and to guide the *ex situ* conservation programmes of botanic gardens and private collections. The first list, published in 1990, contained 435 threatened temperate taxa (plus all threatened *Acacia* and *Eucalyptus*). In its draft form the new list extends to c.630 taxa which are believed to be to some degree threatened with extinction. The new information has mainly come from the U.S.A., Mexico and China. There have also been qualitative changes in the conservation status of several species since the last edition. This paper reviews the methodologies employed in the compilation of the list and the parameters set on the data held by WCMC



Horticulture Stronger at Lincoln Through Integration

Lincoln University has issued an assurance of strengthened horticulture courses following the recent integration of teaching and research staff.

The university has fielded some public concern about the effect of the integration but Professor of Horticulture, Richard Rowe, says the response is surprising given the university's intention to create a stronger horticulture resource.

"The integration of teaching and research staff will strengthen Lincoln's diploma and degree courses because of the increased opportunities for collaboration between teaching and research staff", Professor Rowe said.

Lincoln's horticultural management staff have joined the Department of Farm and Horticultural Management and most other horticultural staff have joined the Plant Science Department.

Horticultural qualifications at Lincoln include Bachelor of Horticultural Science, Bachelor of Commerce (Horticulture), Diploma of Horticultural Management, Diploma in Parks and Garden Technology and the postgraduate Diploma in Horticultural Science.

"We are confident the integration of our horticulture resources will better meet the needs of students and the horticultural industry," Professor Rowe said.

"It is a logical move given the extent to which horticultural work and plant science overlap. We will be looking ahead to more opportunities for research which will develop closer links with agronomists, plant physiologists, geneticists and

molecular biologists."

Lincoln will continue to offer specialisations in Wine Science and Biological Husbandry through the Diploma in Horticultural Science programmes.

"Horticultural staff at Lincoln have led the way in New Zealand in both these fields and as a result the university has a high and well deserved reputation for expertise."

The head of the Plant Science Department, George Hill, said the integration made obvious sense considering the recent addition of forestry and plant pathology to the department.

"As well as the scope it gives us for collaborative research, the integration will possibly improve our chances of securing funding from FRST."

The head of the Farm and Horticulture Management Department, Professor Tony Bywater, agrees with the logic behind the integration.

"It makes sense for staff in horticultural management and in farm management to be in the same

department. We are interested in the same issues and being together will allow greater interaction, and will strengthen both groups."

Professor Rowe said the dis-establishment of the Department of Horticulture as a separate entity had been interpreted by some as a down-sizing of horticultural courses, but this was not the case.

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Plant Profiles



Acer macrophyllum Pursch.

The Big leaf maple is a relatively common tree in New Zealand, being known in 15 collections. This species comes from western North America, ranging from Alaska to California. Due to the effects of the ice age on plant distribution, this species is more closely related to European species than to the North American maples.

Acer macrophyllum grows on stream banks and moist canyons. It is a moisture demanding species. It grows from sea level to 1000m altitude in the northern part of its range, and to 2000m asl. in California. It may form pure stands but is more commonly found in association with Douglas fir, Western hemlock, Vine maple, redwoods, willow and live oak.

According to the North American literature the timber of *Acer macrophyllum* is of commercial importance. The wood is hard but not very strong and is used for veneer, musical instruments, panelling and furniture. Indians made canoe paddles from the wood, and maple sugar can be obtained from the sap.

According to Elias, growth is rapid for the first 40-50 years and then slows as the tree approaches a maximum of about 275 years. Another source suggests a shorter life at only 150-200 years. These trees have a wide and shallow root system. Seed

production is often heavy, especially in open grown trees. The expected height of this species is 20-30m. We have measured two specimens, both in the North Island and both about 9m tall. Neither could be described as in excellent condition, this plus the height suggests that those particular sites do not suit the species very well. Perhaps cooler or moister sites, and South Island places might be better for this species.

Acer sterculiaceum Wall.

Acer sterculiaceum is an interesting species as it is rare in New Zealand, and there is very little literature information available. There are two specimens in this country, both originating from Hilliers in Britain. This maple is from west Himalaya, from Cashmere through to Nepal at 2300-3000m asl.. Some suggest that *A. villosum* is a synonym for this species, however other sources disagree and say that *A. villosum* is a separate species. We also have *A. pseudoplatanus* var. *tomentosa* recorded as a synonym.

We have not been able to find any specific data about its natural habitat, but we do have a general description of the forest type that it comes from.. *Acer sterculiaceum* is from a mixed forest on north facing damp slopes. The dominant tree is *Quercus dilatata*, with *Quercus semecarpifolia* and *Q. incana* also present. Conifers include *Tsuga dumosa* and *Abies pindrow*. *Acer sterculiaceum* is part of the understory, along with other *Acer*, *Sorbus* and *Cornus*. This forest type occurs in narrow strips on flat terraces and along streams.

The only reference to height suggests that this species will grow to 25m. We have two field records, both trees at about 9m tall. One tree is in a very suppressed position and is not in good condition. The other tree is younger, in better condition and still growing suggesting that it will produce a reasonable specimen. The second site is moister and at higher altitude which perhaps suits the species better.

Data Source: Tree database, Department of Plant Science, Massey University.

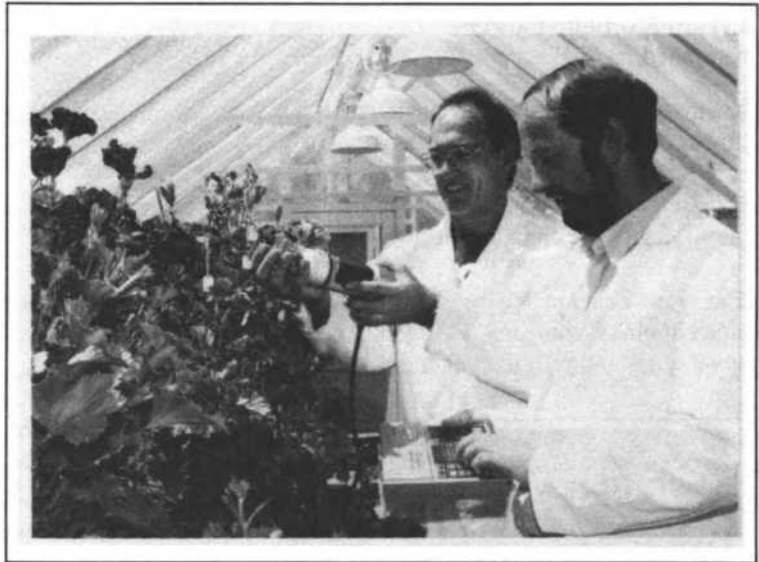
Illustration Source: Silhouette of herbarium sample, Massey University.

Errata from Newsletter No. 3 - Plant Profiles

Acer saccharum ssp. *leucoderme* is incorrect. It should have read *Acer saccharinum* ssp. *leucoderme*.



Creating Unique Flowers with High-Technology



By Iona Boase, Crop & Food Research Journalist

Traditional plant breeding has produced a wonderful range of flower colours, yet a blue rose and the blood red chrysanthemum remain elusive. However, this may not be for long.

A group of New Zealand scientists is leading the world in its study of the genetic and chemical processes that determine pigments in ornamental plants. The combined expertise of molecular biologists, biochemists, chemists and transformation scientists from Crop & Food Research and Industrial Research Limited has produced colour change in petunia, lisianthus and pelargonium flowers. They have developed the strategies and recently proved they can change flower colour. (Just four other science groups in the world have successfully altered flower colour).

The New Zealand-based scientists also have the expertise to create novel patterns, alter leaf colour, change flower form, produce dwarf ornamental plants and alter the timing of flowering in plants.

Dr. Brian Jordan, who leads the Crop & Food Research's Levin-based, Plant Pigments Group, said genetic engineering of ornamental plants complemented the work of traditional flower breeders.

"By slightly adjusting a plant's genetic make-up we have the potential to

quickly and accurately make what would otherwise be a difficult, and sometimes impossible step forward in plant breeding. The major advantage of this technology is that specific modifications can be made", he said.

The collaboration between Crop and Food Research with Industrial Research Limited dates back to before the establishment of the Crown Research Institutes in 1992. Scientists had formed a joint organisation - The New Zealand Flavonoid Research Group. The collaboration has been retained and the group now includes the 12 science staff in Crop & Food Research's Plant Pigments Group and 4 in Industrial Research's Plant Chemistry Group. The flavonoid name reflects the chemical processes responsible for much of the yellow, orange, pink, red, purple and blue colours in plants.

Understanding the chemical pathways and the gene activity that controls their many steps is critical to developing strategies to genetically engineer a plant for a desired characteristic.

Industrial Research plant chemist, Dr. Ken Markham, leads a group which specialises in flavonoid chemistry. It is the only specialist centre in flavonoid chemistry in Australasia. His group is also developing expertise in the other major flower pigment group carotenoids. These are often impor-

tant in yellow and orange flowers.

"Our studies usually involve initially, the determination of the chemical basis of colour in existing cultivars. We then set up an artificial situation in the lab with the plant material that we want to modify and change the component types, ratio and pH etc. The changes combine to, hopefully, produce another colour in the test tube. If we can change the colour in a test tube then we can work with the molecular biologists to develop a strategy for altering flower colour."

There are surprising aspects of the chemical research. "If you look at a blue flower and extract the pigment you would expect to get a blue pigment, however you generally get red, yellow and colourless pigments, but not blue," Dr. Markham said.

Crop and Food Research's molecular biologists identify the genes in the plant that controls the critical points in the chemical pathway. They then isolate the gene or genes that will provide the desired outcome.

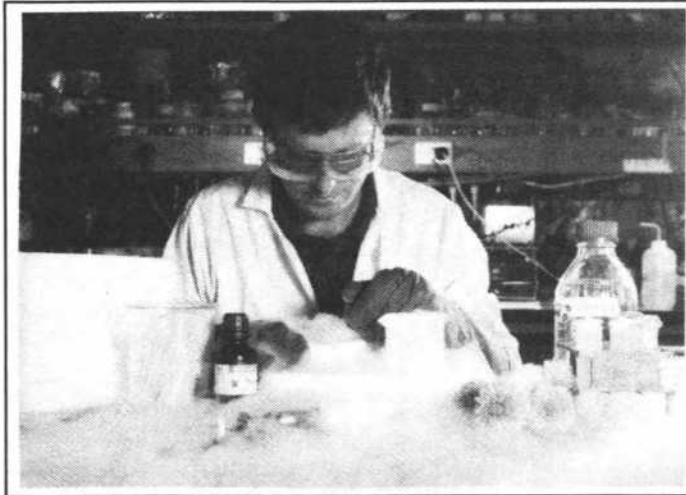
This isolation is extremely complex as there are a large number of different genes within plant chromosomes. The challenge is to isolate the particular gene that is required. The gene must then be carefully characterised and genetically engineered so that transformation scientists can transfer them

Creating Unique Flowers
continued....

into new plant material. The plant material is then 'regenerated', or grown, so the flower colour changes can be seen.

"The science of altering flower pigments takes time but once we have developed the strategies we can get a desired result within a growing season," he said.

The New Zealand Flavonoid Research Group has a contract with the plant biotechnology company, Florigene Australia Ltd, to research the introduction of novel blues and reds to cyclamen and limonium flowers. The Group will use its



strategies and the Australian company's genes to produce the first new plants by 1996.

The potential of this plant chemistry and genetic engineering offer exciting opportunities to New Zealand's

floriculture industry and it is to industry members that the scientists are looking for direction. They want to know what New Zealand's growers, exporters and marketers want for future markets.

Please contact, Dr. Brian Jordan, Crop & Food Research, Private Bag 4005, Levin, Ph (06) 368 7059, Fax (06) 368 3578 or Iona Boase, Crop & Food Research, Private Bag 4005, Levin, Ph (06) 368 7059, Fax (06) 368 3578

Blooming Good Time at Ellerslie

Gardening columnist Ivo Davey spent three days at the Ellerslie Flower Show. Here are his impressions.

How to describe the indescribable? How to recall details of a horticultural experience? Memories of the Ellerslie Flower Show tend to recur more sharply in isolated details but blur in an attempt to revive more than the senses could take in and analyse at the time.

Every visitor will come away with different recollections, but all agree that the show was an outstanding success for the first effort despite several glitches that were annoying at the time.

Probably too much has been made of the waiting in queues, which was the main complaint, and of the traffic jams on the first public day.

Queues in marquees tried to go in both directions through lack of stewarding to streamline them.

People **would** try to talk to busy attendants at the exhibits and hold the queues up. Maybe it was human nature,

but most of the queue problems were self-inflicted by the queuers. Next year more stewards to keep people moving along quietly should fix this.

Once problems became apparent the management moved quickly to correct them. Overnight, ready for the second public day, more seating, more toilets, better access to food and ice cream tents appeared, and tractor trailers scoured the grounds for seating for the visitors.

The difference was tremendous. After the first public day visitors brought food and thermos flasks and picnicked on the grass, watching the queues, and, for a time, reducing pressure on them. That was one huge positive that the Chelsea show does not have.

Half the problem was that almost every visitor wanted to see every exhibit on a one-day visit which, as Euclid said in 300 BC, "is ridiculous". Let me repeat loud and clear, this show is definitely a two-day show at least. If one tries to rush it in one day the impressions are not strong enough to meld and only certain memories stand out strongly.

From The Northern Advocate, 26 November 1994

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Wildflower Sanctuary at Waikumete, Auckland

The Waitakere City Council has asked Ewen Cameron (Auckland Institute and Museum) and Alan Esler (formerly DSIR botanist in Auckland) to advise on the establishment of the Waikumete Wildflower Sanctuary within the Waikumete Memorial Park. The Memorial Park is probably better known as the Waikumete Cemetery, in the western suburbs of Auckland. During spring there used to be a spectacular succession of flowering plants, mainly South African bulbs, covering much of the area of the old cemetery, but in recent years changes in management have resulted in poor growth and flowering. A number of groups, including the Auckland Branch of the Institute, the Auckland Botanical Society and the West Auckland Branch of the Royal Forest and Bird Protection Society, have encouraged the Council to set up a wildflower sanctuary within the cemetery to promote the growth and flowering of naturalised garden plants. Ewen Cameron and Alan Esler look forward to cooperating with the City Council staff and local organisations in formulating workable management practices.

An initial area of one hectare near the old chapel has been designated. Three basic management principles will be followed: manipulate the mowing so that bulbs are able to build up their carbohydrate reserves after flowering; control the wild watsonia (bulbil watsonia), a relatively unattractive species which is very invasive; not interfere with the soil fertility. The uniqueness of Waikumete is largely due to its very acid, nutrient-deficient gumland soil. Most of the wildflowers are better adapted to these conditions than any potential competitors, particularly pasture species, clovers and lotus. Some woody plants will have to be removed - these cause considerable damage to the masonry work. There is the possibility of extending the sanctuary boundaries later or transplanting some of the bulbs to include other species and colour variants.

I visited Waikumete in early December with Alan Esler and Bill Sykes, well-known for his work on cultivated plants. At that time the most noticeable plants were an attractive lavender *Ixia* and large patches of a *Romulea* which is apparently spreading quite vigorously. Already, the display of flowers is much better than over the last decade. Once the best management procedures have been established, Auckland will again have one of the finest displays of naturalised garden flowers in the country. *Ross Ferguson*

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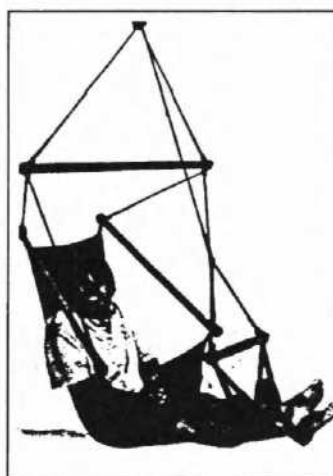
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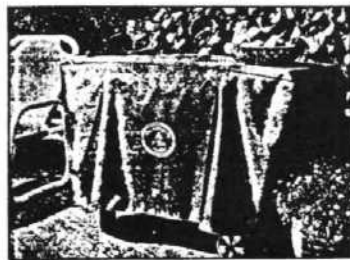
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International Plant Propagators' Society Student Award 1994

Christopher John Field Scott of Lower Hutt is the recipient of the 1994 International Plant Propagators' Society Student Award.

The Award is to encourage young propagators towards a career in plant propagation, and is in the form of a book award.

BARBEQUE COVERS



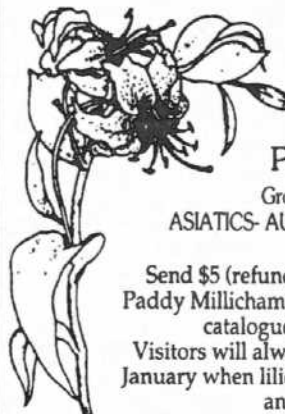
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1994
No. 4
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