

New Zealand Garden Journal

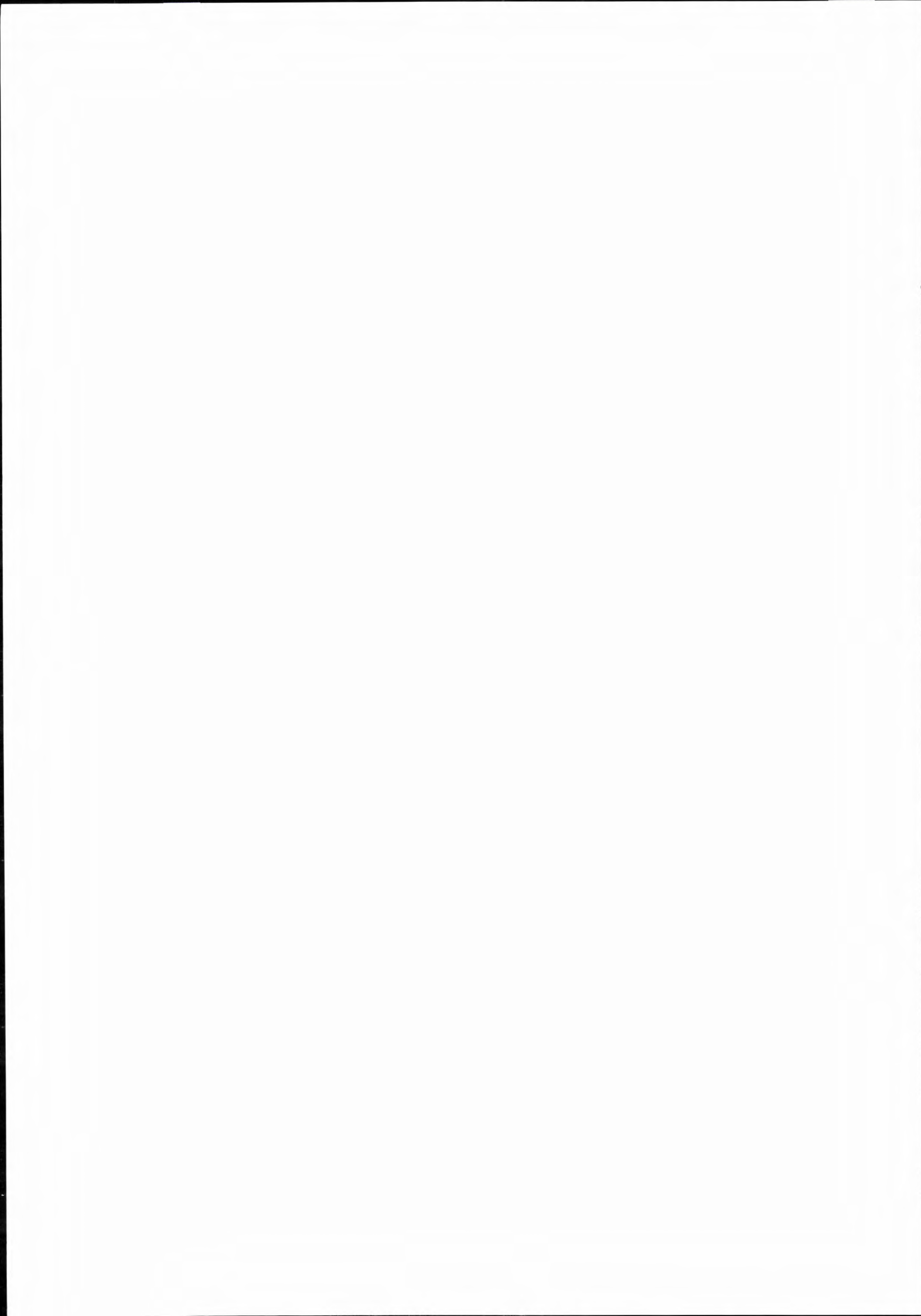
Journal of the Royal New Zealand Institute of Horticulture (Inc)



Brachyglottis huntii

A Plantsman's Notebook • The Genus *Cypella*
Pennantia baylisiana - Our rarest Tree • Joys of Horticultural Book Collecting
The Gisborne Botanic Gardens • Sundials: Part Two - 'Definitions and Basic Types'

Volume two, number one, March 1997





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NEW ZEALAND GARDEN JOURNAL

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Cover Picture : *Brachyglottis huntii*
Photo : Neil Price

A large shrub in cultivation, rarely growing above 5 metres. Found in deep peaty soils in the Chatham islands, this species is grown for its large panicles of yellow flowers that cover the plant in summer. It grows best in a sunny situation in well drained soil, and is hardy throughout the country. The plant can be long lived in cultivation although specimens can collapse and die suddenly due to infection by root rot fungi such as *Phytophthora*.

Plant and

Plant and Garden News

Rare Tree Rediscovered in Australia

A relative of our native hinau (*Elaeocarpus dentatus*) has been rediscovered in northern New South Wales. The tree, currently without a scientific name is *Elaeocarpus* sp. 'A Minyon', a large forest tree up to 30 metres with white flowers produced in long racemes. The tree was assumed extinct, only being known from a 60 year old type specimen until it was found again in 1993. Since then more than 500 plants have been found, half of them seedlings. The plant is still listed as endangered and in some places is under threat from logging.

Biocontrol for Botrytis?

Work continues on biological control of diseases with the trialing of a product called Greycold, which is effective against *Botrytis*. It contains a fungus, a yeast and a bacterium and acts in 3 ways: by producing antibiotics to suppress spore germination and growth, by competing for colonisation sites, and by parasitising the *Botrytis* mycelia and sclerotia. From Trichoderma News, Spring 1996.

Medicinal Herbs for Export

Echinacea has been used as a herbal remedy for many years. It was used by the North American Indians and is widely recognised as an immunostimulant to prevent winter flu and colds. It is currently the number one selling herbal medicine in the USA.

Trials with several species of Echinacea are taking place in New Zealand by Crop and Food to assess its viability as a crop with export potential. Work includes its growth in different parts of New Zealand, cultural techniques including weed control, and development of chemical tests to check the quality of the product. In 1997 up to 150 tonnes of tops and 20 tonnes of root material is expected to be exported. Most will go to the USA with some to Germany.

This is one crop being assessed under the new crops programme being coordinated by Dr Jim Douglas at Crop and Food.

Name Changes for Native Plants

There have been several name changes of native plants that are of interest to gardeners. Here are a few:

- *Mazus arenarius*, a new species segregated from *Mazus radicans*, and distinguished by its smaller flowers and other morphological features.
- A new species name *Phyllocladus toatoa*, for the small tree from northern New Zealand formerly known as *Phyllocladus glaucus*.
- *Hebe bishopiana*, an endemic species of the Waitakere Ranges has now been formally accepted.
- A new addition to the New Zealand flora is the Australian plant *Wilsonia backhousei*, following a recently discovered population in Tasman Bay
- Finally one name that perhaps holds the record for changing twice before anyone realised. *Lophomyrtus bullata*, was changed to *Lophomyrtus aotearana* by EC Nelson in a paper published in the NZ Journal of Botany 33 (1995). It was immediately changed back in NZ Journal of Botany 34 (1996) by PJ Garnock Jones. We look forward to the sequel!!

New Growing Media from Human Waste

The production of compost from human waste moved a step closer with the signing of an agreement in Wellington recently between the Wellington City Council and the Living Earth Joint Venture. Living Earth is New Zealand's largest commercial organic waste producer and already composts much of Auckland's green waste into a range of products including mulches, growing media and topsoil.

The Wellington operation will convert about 90 tonnes of sewage sludge into garden compost. The sludge will be transported from the sewage treatment station at Moa Point to the southern landfill for mixing with green waste. The compost will be produced in 18 days using special equipment to speed up the natural composting process.

Up to Date Weather Information

If you want the very latest weather information in printed form you should try a service from MetService called METFAX. This service sends the latest weather maps, satellite pictures and forecasts within 10 minutes of dialing. All information is regularly updated and specific information is available for horticulture.

Garden News

Plant and Garden News

The service currently costs \$4.80 plus GST for the first minute and 88 cents plus GST per minute thereafter. The number is 0900 77 999.

Documenting the World's Trees

An ambitious project to document the conservation status of tree species worldwide is under way. The project, co-ordinated by the World Conservation Monitoring Centre in Cambridge, England and funded by the government of the Netherlands is collating information on tree species under threat, their distribution, threats, ecology, habitat, and uses. Initial work has concentrated on identifying sources of information worldwide, especially national and regional databases. The work will culminate in late 1997 with the production of a world list of threatened trees available on the internet as well as in hard copy. For more information please contact Sara Oldfield, WCMC, 219 Huntingdon Road, Cambridge CB3 0DL, UK.

Research into New Zealand Native Plants

The December issue of the New Zealand Botanical Society Newsletter documents the 6 year Landcare Research programme to increase knowledge and understanding of the diversity of New Zealand's flora. The programme includes the following work of interest to horticulturists:

- Production of a grass flora to complete the Flora of New Zealand series begun in 1961 with the publication of volume 1. Due late 1998.
- Identification and publicity of naturalised plants and production of a quarterly newsletter
- Revision of the taxonomy of *Gentiana*, *Astelia*, and the native brooms (*Carmichaelia*, *Chordospartium*, *Corallospartium*, and *Notospartium*.)

A long term aim is to produce an Excursion Flora of New Zealand's plants containing all vascular plants growing wild in New Zealand. This would not be a technical flora and would permit ready identification of plants by non-experts.

Visit by Chris Brickell

China is home to many of our best garden plants and a recent visit by Chris Brickell made us aware that marvellous new plants are still becoming available.

Chris Brickell, CBE, VMH, was Director-General of the Royal Horticultural Society for eight years and is currently Chairman of the International Commission for the Nomenclature of Cultivated Plants. He has a comprehensive knowledge of garden plants from his time as manager of the RHS Garden at Wisley, and he has written extensively on ornamental plants. Possibly the best known of his books are the Readers Digest Encyclopaedia of Plants and Flowers and the RHS A-Z Encyclopedia of Garden Plants.

Mr Brickell made a short trip to New Zealand in February to attend the Board and Council meetings of the International Society for Horticultural Science. He and his wife took the opportunity of also seeing something of the native vegetation and parks and gardens in New Zealand. They visited the South Island, Auckland, Rotorua and the East Coast. This was their first visit to New Zealand and Mr Brickell was most impressed by native plants and the extraordinary growth made by exotics. Many of the plants he did know responded quite differently to New Zealand climatic conditions and the colours were more intense.

Mr. Brickell gave two public lectures during his stay. A capacity audience in Auckland heard of his experiences in Yunnan and admired slides of many interesting plants being introduced into cultivation. Our only regret was that so many of them would be unsuitable for the humid Auckland conditions. In Rotorua, he described recent botanical trips to countries adjoining China and outlined some of the difficulties involved in introducing plants into cultivation. Mr. Brickell emphasised that their expeditions were in cooperation with the local botanists and horticulturists. We look forward to seeing some of his plants in our nurseries.

The Institute of Horticulture's 75th Anniversary

In an article entitled "Horticulture and Homes" written by A.H. Shrubshall which appeared in the first issue of the Forestry Magazine of New Zealand, January 1922 he stated "There is a unique opportunity in New Zealand for the establishment of an Institute of Horticulture for the purpose of promoting Horticulture in all its branches."

At the Dominion Conference of the New Zealand Association of Nurserymen on January 25, 1922 the Christchurch nurseryman, Robert Nairn formally moved a Taranaki remit "that the Conference urge the setting up of a Dominion School of Horticulture." Horticultural education had been a serious topic of discussion for many years. At this conference Mr Shrubshall moved a successful motion "that the matter of a Dominion Institute of Horticulture be referred to the Executive with power to act." The Executive comprised representatives of fruitgrowers, nurserymen and the Government. At this time the Director of Horticulture, Mr J.A. Campbell was chairing the first Annual Conference of the New Zealand Bud Selection Committee, a fledgling group under the auspices of the NZ Association of Nurserymen. This committee was seeking a better name because various horticultural matters such as nomenclature, horticultural education, research and plant breeding and the promotion of horticultural knowledge were matters requiring further investigation. A new name, the Pomological Board was proposed but a motion put by Mr. J. Longton and seconded by Mr Shrubshall that this name be struck out and that the name "The New Zealand Institute of Horticulture" be inserted, was carried unanimously. Thus the Institute with its first objective 'to encourage, foster and improve every branch of horticulture, ornamental and useful' was born on January 25th 1922.

Over the formative years the Institute devoted much of its time and energy to the development of horticultural training particularly for those engaged full time in the industry whether this was in the commercial nursery, fruit and vegetable growing or ornamental horticulture as in city parks or botanic gardens. An examining committee was set up as early as 1925 and initially a formula for the granting of diplomas without examinations was agreed upon. The legislation for the Institute to hold examinations and grant diplomas

followed in April 1927 after the Prime Minister, the Hon. J.G. Coates had stated that the necessary authority would be given in association with the Department of Agriculture. In October "The New Zealand Institute of Horticulture Act, 1927" was passed. The first diploma by examination was awarded in 1928.

Because of the work being undertaken by the Institute to promote horticulture generally the Executive in 1926 authorised the President, Mr. F.J. Nathan to :

"Humbly petition His Majesty, the King, through His Excellency the Governor General and the Department of Internal Affairs to the end that His Majesty may be pleased to grant the Institute a Royal Charter authorising it to adopt the name of the Royal Institute of Horticulture, New Zealand."

The objective was to gain status and to gain increased financial support, both from Government and non-government sources. It wasn't until 1938 when the new president, Mr. F. S. Pope, renewed the request to the Governor General that the title of Royal was granted and this was gazetted in 1939.

In the late 1920's and early 1930's the Institute was very active in pressing for legislation leading to the protection of native bush. Areas of particular concern were bush areas in the Waioeka Gorge, the Waipoua Forest and in the Waikaremoana area. It was Dr. Leonard Cockayne who, in 1926, proposed that the annual public lecture which was being held by the Institute at that time be known as the Banks Lecture in honour of the world renowned botanist, Sir Joseph Banks.

The promotion of Arbor Day, legislation to control noxious weeds, city beautification with trees, shrubs and flowers, agitation to prevent exotic plants being introduced into National Parks and the need for local authorities to provide adequate gardens, parks and recreation areas

were all matters which the Institute was deeply concerned with during the 1940's and 1950's.

While horticultural training and examination for persons working in all fields of horticulture played a major role of the Institute's activities through the 1960's to the early 1990's this great responsibility has been now taken over by the New Zealand Qualifications Authority. The necessary down-sizing of the Institute's office activities has followed but many very important issues concerning horticulture remain on the Institute's agenda.

At the present time the Institute is promoting a nation-wide scheme for the registration and protection of the Notable Trees of New Zealand. Over 2000 trees are now recorded within 320 registrations and this record is contained in the RNZIH Notable Tree Register which is lodged in the Lincoln University Library.

A new objective of the Institute is to promote the understanding, appreciation and conservation of plants. To this end our Vice Patron has funded in perpetuity the Peter Skellerup Conservation Scholarship which is open to persons who are involved in research, publication, propagation, protection and or study within or outside New Zealand where the study will assist in the conservation of New Zealand's indigenous and exotic plants.

As an august body, the Institute awards annually Fellowships and Associates of Honour to persons who have made notable contributions to horticulture. It also recognises persons who have raised a meritorious plant or plants in New Zealand. The Sir Victor Davies Award assists young persons who demonstrate outstanding knowledge and ability in the culture of plants.

These are but a few of the activities which are the national responsibility of the Institute.

J O Taylor - President

A Plantsman's Notebook

by Derrick Rooney

Gardening is about plants, and the ability to select attractive plants and place them in harmonious groupings of colour, texture, and shapes.

There is more. Gardening is also about light.

By light I do not mean the sunlight needed to stimulate the photosynthesis for plants to grow. I mean the exploitation of light sources to highlight particular qualities of plants. Gardeners worry about providing their plants with adequate drainage, adequate water, adequate fertiliser, adequate shelter from wind. A few worry about potential flower-colour clashes (I don't). An imaginative few match colours and textures.

Hardly anyone gives enough thought to placing plants in relation to the light that falls on them. Look at paintings by the great artist-gardener, Monet, and see how he exploits light to transform quite ordinary flowers and objects into the extraordinary. Look at photographs of Monet's garden in the south of France and see how he carried over this gift to create a three-dimensional celebration of light.

Think about this before you plant another tree or shrub. Are its leaves variegated? Then it may need front lighting. Is its foliage green, drab, and featureless (like an out-of-flower weigela)? Try side lighting to create an illusion of interest by creating texture with shadows. Are its leaves large, with prominent veins? Try back lighting to highlight the textures of the leaves. That's enough philosophising. This column should be pragmatic, not theoretical. What prompted it was nothing more profound than a general cleanup and removal job to provide access for machinery. In the process I "rediscovered" a small, rare tree, the variegated form of the grey willow.

It was tucked away on top of a ditch behind a shadehouse that had to be demolished to admit the machinery, and I had almost forgotten about it (note the "almost"). While the shadehouse was standing the willow was visible only from the road, and few if any passers by would have noticed its variegated leaves because from that aspect it is backlit all day, except in the very early morning. To see its foliage properly you have to stand in front of it with the sun behind you.

Now that I have absorbed this reminder, I may make a feature of the willow, whose leaves are splashed and stippled with creamy white. I probably will not rebuild the shadehouse,

at least not in the same place. Plants that are literally bursting out of their bags need the space. One is a camellia, almost a wild form, named 'Drupacea', which has smallish single flowers and unusually large fruit, used in Japan as a source of oil. There are wild hydrangeas from China, and cultivated hydrangeas including *H. aspera* 'Robusta' with bold hairy leaves, and the very tall *H. xanthoneura* that can grow to four metres.

A charming small tree, an early-flowering cherry named 'Okame', was already in place until the digger arrived. Years ago I put it inside the shadehouse to keep the birds away while its fruit ripened. I never removed it, and eventually it rooted through the bottom of the bag, pushed out through the roof, and flowered happily early every spring. The digger, alas, pushed it out of the ground. Happily, one of its seedlings, kept in a planter bag, flowered last spring for the first time, revealing light pink flowers just like those of its parent. It now lives with several other less common flowering cherries planted nearby in the last six years. Most of them are now about four metres tall and lovely to look at in spring, when they flower successively.

They include a cutting-grown plant of 'Awanui' (a New Zealand-raised seedling of *Prunus yedoensis*), and the rare *P. cyclamina*, alas not a very deeply-coloured form but something of a triumph because I nursed it back to health and a good shape after picking it up at a fire sale when it was down to its last two leaves. Bold yellow-brown bark is the main feature of the Manchurian cherry, *P. maackii*. Its flowers are small and inconspicuous and do not open until the tree is in full leaf. *P. x hillieri* 'Spire' is a mass of pale pink, single flowers in spring and has a narrow, upright growth form that makes it ideal for garden use. This clone was raised by the well-known English nursery, Hilliers, from a cross between the Fuji cherry, *P. incisa*, and another Japanese species, *P. sargentii*, which is notable for its autumn colour.

P. incisa is also a parent of 'Okame', which despite its name is an English plant. Captain Collingwood Ingram, often called "Cherry" Ingram because of his extraordinary knowledge of these plants, raised it in his Kentish garden from a cross with the Taiwan cherry, *P. campanulata*.

I cannot grow the latter because winter frosts in my garden cut it back so severely that it never flowers. I do have *P. incisa*,

though. A bushy thing with masses of light, twiggy growth, it has taken off after struggling for years and is now a healthy two metres tall. Its flowers are blush white and in spring there are few more charming things in the garden. I notice that it has set numerous fruit this year. I can no longer move it into the shadehouse to keep the birds away, but if any of its tiny black cherries survive the blackbirds, thrushes, and starlings that infest my garden I will look forward to another round of seedlings in a year or so.

A botanist friend worried mildly when *Jasminum polyanthum* was left out of the latest Auckland-oriented list of prohibited plants, but I felt a twinge of envy the other day when I saw this super-fragrant climber racing over a wall in a city garden. It is too tender for cold-climate gardens like mine.

There are alternatives. The hardy *Jasminum officinale*, introduced to western European gardens in the 16th century from west Asia, is fragrant and white-flowered, but its flowers are smaller, not as prolific, and much later. It does not get under way until midsummer, when there are, I think, better things with which to fill wall space. There is a cultivated form called either 'Affine' or 'Grandiflorum' which is said to have bigger flowers, tinged pink on the outside, but I have not seen it.

In a previous garden I grew the pink-flowered *J. x stephanense*, raised in France before 1920 from a cross between *J. officinale* and a Chinese species, *J. beesianum*. This is interesting not just for its fragrant pink flowers but also because it is the only known hybrid jasmine in cultivation. A vigorous climber, it begins flowering before Christmas and continues through January. The pink theme carries through from the flowers to the young shoots, which are often variegated with splashes of cream and pink.

J. beesianum is known to hybridise with *J. officinale* in the wild also, in western China where their habitats cross. It has deep pink flowers, and is sometimes called the red jasmine. A thicket-forming shrub or low climber with twining stems, it is a demure little thing for several years, until it gets its sea-legs. Then it takes off like a bunch of Hollywood extras in a Roman slave-ship with Charlton Heston at the helm. The flowers probably smell better than a slave-ship, however. The best place for it is under trees, where it can run about and be happy without strangling less vigorous shrubs. It is tolerant of dry shade.

Most gardeners know the jasmine family only as climbing plants. Actually, most jasmines are shrubs with yellow flowers.

A good one, probably the only one likely to be seen in nurseries, is *J. humile* var. *revolutum*. This shrub with long, lax branches never really gets going in my garden, maybe because it dislikes dry summers, or maybe because of winter frosts which always knock it about. Apparently it is hardy in the Northern Hemisphere, where the winters are much colder, but there may be better ripening conditions in autumn there. Our stop-start winters set the sap racing prematurely in many plants from continental climates.

J. humile var. *revolutum* is a half-evergreen scandent shrub, which means it has floppy branches and can be treated as a climber if, for example, there is a handy low fence to tie it against. It is not, however, a true climber because its non twining stems have no mechanism that enables them to cling. Like other shrubby jasmines, *J. humile* var. *revolutum* has clusters of yellow flowers at the tips of its branches. It is not difficult to recognise, thanks to its floppy stems and bold, dark green leaves divided into three leaflets. Probably a garden cultivar, it was introduced to Britain from China in 1814, but took a century and half to reach the top rank of garden shrubs. It received an Award of Merit from the RHS in 1976 (*J. officinale* took even longer from 1548 to 1973). Another shrubby jasmine, called, I think, *J. humile* var. *wallichianum*, thrives in my garden in open shade behind a fence, producing tiny sprays of small, bright yellow flowers for a long time in summer. In full sun its flowering is more prolific, but finished faster. A bushy, rounded shrub, eventually growing to about shoulder height, this seems hardy and holds most of its leaves through winter. Like most jasmines, it strikes readily from late-summer cuttings. Apart from the bushy habit, a distinguishing feature that sets this apart from other forms of *J. humile* is the foliage. Its leaves are divided into between seven and 11 leaflets, with the topmost leaflet drawn into a long point.

Most of these jasmines, and particularly the climbing species, take up plenty of room eventually, but owners of handkerchief-sized gardens need not feel left out. *Jasminum parkeri* is a rock-garden sized shrub, perfectly hardy, that rarely grows more than 30cm tall. It is evergreen, more or less. Throughout summer it carries successive sprays of small, bright yellow flowers.

There is a hardy jasmine for winter flowers, also. The deciduous *J. nudiflorum* was introduced to cultivation from western China in 1844 and is one of those shrubs that ought to be indispensable in all gardens but are unaccountably uncommon. In either sun or shade, it flowers throughout winter on its bare stems. The stems grow up to two metres long but are very floppy, and need support. You can use it as a low climber to cover a stump or fence. Where they touch the ground the stems self-layer. Propagating it is as easy as cutting off a rooted stem and twitching it out of the ground with a trowel or handfork.

I have a problem with cats. It isn't a neighbour's cats, but our own. They found a comfortable spot to dig beside a particularly pretty sedge that used to be a path-side focal point, and afterwards they like to lie on the sedge in the sun. Now the poor sedge has had just about enough.

The obvious solution is to get rid of the cats, but I'm not going to do that because on balance, cats are useful in the garden as well as being good footwarmers on cold winter nights, when they like to curl up in bed. They take a few small birds, sparrows and the like, as wages for keeping the sheds free, or almost free, from rats and mice but I don't mind that and probably the sparrows don't mind either. They evolved with cats as predators and their breeding strategy is designed to accommodate a level of predation.

The sedge could go elsewhere, I suppose, and be replaced by something uncomfortable like a gorse bush or a prickly pear, but the cats would find it again and I would just have replaced one thorny problem with another.

Mere thorniness is not, in itself, a deterrent to cats. Some fiercely armed plants act like magnets when cats are handy. I used to try to grow a little alpine shrub called, if I remember rightly, *Teucrium subspinosum*. It should have become a tight, spiny dome only a few centimetres high and smothered in summer, if it was growing properly, with little greyish-lavender flowers. The "spines" were just bare branch tips that tapered almost to needle-points, but they made the whole plant uncomfortable to handle. That didn't bother our tabby cat. *Teucrium* is fairly closely related to the catmints and there must have been something in its smell that appealed to her, because she punished and finally killed the plant by lying on it, rubbing herself on it, chewing it, and finally smothering it under accumulated cat fur. I could have saved the plant by shutting it away in a tunnel house, but that would have been an admission of defeat. Honourable surrender was easier.

There may be a message here. Diversionary tactics may be needed, perhaps a strategic planting of a sunny spot with catmint on which the cats can roll, get as drunk as they like, and generally enjoy life to the full. The sparrows, the mice, and the sedge would all get recovery time. Come winter, though, the catmint would go dormant and the cats would go back to the sedge. Animals in the garden are a perennial problem, for which there are no easy answers and plenty of desperate measures.

Remember the fashion a few years ago of dotting lawns with

plastic soft-drink bottles half-filled with water? They still appear here and there. The owners believe that if they spread these things across the lawn, dogs stay away. Someone (maybe with a highly developed sense of humour) said so on a talk-back radio show. If you believe what you hear on talk-back radio, perhaps you would believe anything. It did concentrate the problem wonderfully, by giving dogs something to aim at.

Plastic bottles may be the wackiest response to the animal problem but they are not the weirdest. One of the correspondents in a recent international gardening forum put mousetraps in her slippers to stop her puppies from chewing them. It worked, so she surrounded her garden with mousetraps to keep foreign cats out and her own cats in. "The railroad ties which edge my flower-beds are covered with mousetraps," she wrote, "and my dog is no longer interested in my artichokes." Or anything else, I suspect.

Another gardener, perhaps with shares in a spice company, scatters cayenne pepper right around her boundary and along the fence rails where cats walk. "The cute little devils get it on their feet, and when they carefully clean themselves, their tongue gets a little taste of the pepper, and Yahoo!"

In its spare time, cayenne pepper trebles as a fertiliser; a bird repellent, and an insecticide. It's good in a cheese pie, too.

I think that's enough about animals, but before I go I offer, completely free and with no terms or conditions, my absolutely reliable solution to the problem of keeping stray dogs out of the garden.

Shut the gate.

RNZIH Awards and Honours

The RNZIH runs a comprehensive system of awards and honours for both members and non members. There are also two major scholarships awarded annually, each for several thousand dollars. For detailed information on these please write to the RNZIH for a copy of the Awards and Honours booklet. The cost is \$5. The awards are briefly as follows :

Associate of Honour (AHRH)

Awarded to persons who have given distinguished service to horticulture in New Zealand. Only 60 people can hold the award at any one time.

Fellow (FRH)

Awarded to members who have made a significant contribution to horticulture and the Institute.

Sir Victor Davies Award

Awarded annually to a young person who has demonstrated an outstanding plant knowledge. The recipient receives a certificate plus monetary prize.

Plant Raisers' Award

Awarded to an individual or organisation who has raised in New Zealand a cultivar(s) of outstanding merit.

Ronald Flook Award

Awarded by the New Zealand Arboricultural Association to a person who has contributed to the advancement of arboriculture in New Zealand.

D.D. Baker Memorial Award

This award is designed to assist members undertake research or study which will contribute to the advancement and benefit of horticulture in New Zealand. The award in 1996 will be approximately \$3000.

Peter Skellerup Plant Conservation Scholarship

A scholarship granted for research, field work, publication, propagation and/or cultivation of plants and any other activity likely to promote and assist the conservation of New Zealand's indigenous and exotic plant genetic resources. The award in 1997 will be approximately \$5000.

NOTE THAT APPLICATIONS FOR ALL AWARDS CLOSE ON 31 MARCH

The Genus *Cypella*

by *Eric Walton*



Cypella osteniana

A number of South and Central American bulbs belonging to the Iris family (Iridaceae) are easily grown in New Zealand. Some of the more interesting species belong to the genus *Cypella*, which contains between 20 to 30 species, depending on taxonomic treatment. There is debate among taxonomists on the boundaries of many South American genera of the Iridaceae family. In cases of taxonomic debate, it is a matter of shades of grey, and in this case, it comes down to the importance placed on details of flower and inflorescence morphology. For the purposes of this article, a broad view is taken and the genera *Phalocallis* and *Larentia* are treated as *Cypella*, and *Hesperoxiphion* is included for completeness. Members of these genera have bulbous rootstocks, pleated leaves and flowers with three spreading outer tepals (the large 'petals') and three folded inner tepals. The name *Cypella* comes from the Greek for 'cup', referring to the shape of the flowers.

The most commonly grown *Cypella* in New Zealand is *C. herbertii*. It is the most widespread species in nature, being indigenous to Brazil, Paraguay, Uruguay and Argentina. The leaves are approximately 20 cm long, but when in flower the plant grows to about 45 to 60 cm high. The outer tepals are a rusty orange colour with a dark brown stripe down the middle of each. The inner tepals are similar in colour to the outer tepals, but with a white stripe down the centre and brown flecks joining the orange and white bands. The flowers only last one day, but a well-grown clump will produce several hundred flowers over the summer and is quite showy in its own way. This species was named after Dean William Herbert, the renowned bulb taxonomist in Britain in the early 1800s. Photographs of *C. herbertii* can be found in Hugh Redgrove's book 'A New Zealand Handbook of Bulbs and Perennials', Jack Hobb's and Terry Hatch's book 'Bulbs for New Zealand Gardeners and Collectors' and R.E. Harrison's book 'Know Your Garden Flowers - Bulbs and Perennials'. There is a

subspecies of this plant grown in New Zealand, namely *C. herbertii* ssp. *brevicristata*, a much smaller plant, growing to perhaps half the height of the species. The other major difference is that the flowers are canary-yellow and do not have the brown stripe down the centre of the outer tepal. Some think this plant should be considered a species in its own right rather than a subspecies of *C. herbertii*.

There are a number of other species grown with flowers quite similar in form to *C. herbertii*, including *C. armosa*, *C. fucata* and *C. osteniana*. In my garden, these species grow to a height similar to *C. herbertii* ssp. *brevicristata*, but are not quite as robust and vigorous. The flowers of *C. armosa* are pale lemon-yellow and are distinct in that the outer tepals hang nearly vertically. *C. armosa* gets its specific name from the rather long style-arms (extensions to the style). This species is indigenous to Argentina. *C. fucata* is very similar in colour to *C. herbertii*, but a slightly deeper shade of orange. It also has long style-arms and in that respect is not dissimilar to *C. armosa*. *Fucata* means 'painted' and I assume this refers to the faint dark lines on the outer tepals as I cannot imagine what else it could be! This species is indigenous to Brazil and north-eastern Uruguay. *C. osteniana* has very beautiful white flowers with a buff or pale-brown shading. In addition, the inner tepals are also marked with black and yellow, making it one of the most beautiful species I grow. *Osteniana* presumably comes from the Greek for bone and therefore relates to the general colour of the flowers. *C. osteniana* is indigenous to Uruguay. *C. armosa*, *C. fucata* and *C. osteniana* all have limited distributions in the wild and are all threatened by human activity, but I understand *C. fucata* holds the honour of being the nearest to extinction. I have another species in my collection given to me as *C. laxa*, a species from Brazil. The flowers are yellow, a shade about half way between those of



Cypella houthalii ssp. *opalina*

C. herbertii ssp. *brevicristata* and *C. armosa*, with a few spots at the base of each tepal. For me *C. laxa* grows about the same size as *C. armosa*.

These species are easily grown in well draining soil or in pots in full sun. They are semi-evergreen, never going fully dormant and never losing all their leaves in winter. In my Hamilton garden, these species are frost hardy, whether in pots or in the ground. In fact, I suspect the plants require a certain amount of cold during winter to flower well the following spring and summer.

A slightly different species is *C. houthalii* ssp. *opalina*. It is a dwarf plant, growing to about 10 cm in height. The creamy-white flowers are about the same size as other species and therefore relatively large for the size of the plant. The outer tepals have an opalescent lustre on them and this is reflected in the subspecific name. The culture of this plant is similar to the other species, except I suspect this plant requires a little more warmth during winter to do well and it performs better for me with a little protection. It is indigenous to Argentina.

Quite different again is *C. aquatilis*. As the specific name suggests this plant grows in very wet conditions on the sides of streams. It is indigenous to Brazil. The flowers are a somewhat burnished golden yellow colour. The flowers are larger than the previously mentioned species and have proportionally larger 'cups'. This species is also unusual in that after flowering the inflorescence stems produce bulbils in most axils when happy. This, in addition to normal bulb increase, is a

useful way to propagate this plant, as my plants have never set seed. I always grow this plant in a container, not having a suitably moist spot in my garden. The container should be moderately large, as this species is rather vigorous and can multiply rapidly. The container should be stood in a deep saucer (say, up to half the depth of the container) which should be continually filled with water. Under these conditions, the plant flowers over several weeks in early summer and looks quite spectacular.

The second 'section' of the genus is represented by *C. coelestris*, the second most commonly grown *Cypella* in this country. This plant has gone through several legitimate name changes, but is often distributed under erroneous names. If you are a follower of the taxonomic splitters, the plant should be known as *Phalocallis coelestris*. This plant was,

until relatively recently, known as *C. plumbea*, but is often distributed in New Zealand as *Herbertia platensis*, a name of no standing. *Herbertia* is a taxonomically valid genus of plants related to *Cypella*. One of the main differences is that the inner tepals of *Herbertia* are reduced to small tongue-shaped structures that curl under themselves. Another name that crops up from time to time is *Alophia* (which is often confused with the true *Herbertia*), but *Alophia* is a different genus again, characterised in part by the fiddle shaped anthers. *C. coelestris* grows taller than *C. herbertii*, to about 75 to 100 cm and the leaves are coarser. The outer tepals are pale-blue (*coelestris* means sky-blue) and the inner tepals are pale-yellow and white. At the bases of both the inner and outer tepals there is rusty-red banding. A photograph of this plant can be found in Hugh Redgrove's book (as per above) as *Alophia platensis*! The plant flowers in mid-summer and



Cypella aquatilis



Hesperoxiphion peruvianum

readily sets seed, so much so that it is popping up all over the place in my garden - in a nice way, not as a weed! A point to note - the seed of *C. coelestris* are a lot larger than most other *Cypella* species I grow, being up to 3 to 4 mm in length and having a sort of membranous covering. The bulbs are also curiously different being a bright rusty-red colour.

The third 'group', (I'm not sure of their taxonomic positions, but they're probably aligned with *C. herbertii*) are *C. rosei* and *C. mexicana*. The former has pale blue flowers the latter dark blue flowers, and both are sometimes put in the genus *Larentia*. These tropical species come from low elevations in Mexico that are seasonally wet. It is almost certain that they'll have to be grown in greenhouses in New Zealand to perform well.

The fourth 'group' of the genus are the species that are sometimes split off as the genus *Hesperoxiphion*. Taxonomically, the most obvious difference is that these species have a single, hairy band on each inner tepal. *Hesperoxiphion peruvianum* (*Cypella peruviana*) is a very beautiful and desirable plant and, as the specific name implies, is indigenous to Peru. I have two forms, one with yellow flowers collected from near Puno, on the shores of Lake Titicaca, and the other with orange-yellow flowers collected near Cuzco. Each bulb produces an abundance of flowers in late summer. To me, the orange-yellow flowered form is better, having flowers approximately 10 cm in diameter in well-grown specimens and a very strong, almost overpowering scent similar to *Freesia*. Unfortunately, that is only on hearsay - I cannot smell it! Many visitors to my garden are given the 'sniff' test to see if they can smell *H. peruvianum*. Curiously, people who cannot smell it, can smell *Tigridia van Houttei* - a plant with fetid, musty smelling flowers similar to *Lilium pyrenaicum* - but not both! Sadly, I can only smell the *Tigridia*! *H. peruvianum* readily sets seed, but also offsets rapidly. I

used to grow my bulbs of this species in black plastic pots, so that the soil warms more rapidly and the bulbs come into growth sooner in the spring, ensuring that a high number of flowers are produced before the first frosts. Recently I grew them in the ground with great success. Be aware however, that what I believe to be pheasants find the bulbs very tasty and will devour a clump in very short order! *H. peruvianum* loses its leaves and is fully dormant in winter. Being from the high Andes (1500 - 3500 m), it is quite hardy in the Waikato.

There are four more species in the genus *Hesperoxiphion*; the royal blue flowered *H. herrerae* (*C. herrerae*) from Peru, the white flowered *H. huilense* (*C. huilense*) and *H. niveum* (*C. nivea*) from Peru and Colombia, respectively, and the yellow flowered *H. pardale* (*C. pardale*) from Peru. I have recently germinated seed of *H. herrerae* and am waiting, with anticipation, for *H. huilense* and *H. niveum* to bloom.

Generally, all species of *Cypella* respond well to regular applications of fertiliser. The better the plant is grown the more flowers are produced. If the plants are kept well watered, flowering will continue into the summer for *C. armosa*, *C. fucata*, *C. herbertii* and *C. osteniana*. Sometimes if a watering is missed the plants will temporarily stop flowering, but will resume when watered again if the break is not too long. Don't allow the bulbs to dry out when being transplanted. Time out of the ground should be minimised, because many species are never fully dormant. Also, the bulbs do not have very thick skins to protect them from desiccation.

If only a few bulbs are required, the easiest way to propagate *Cypella* is by division. For most species this is best done in autumn, prior to the flush of growth that comes with the autumnal rains. This allows the bulbs to reestablish well prior to the main flowering period in the spring. In very cold

districts it may be better to wait until spring. The exceptions to this are *C. hauthalii* ssp. *opalina* and *H. peruvianum* because of their slightly different growth cycles. The former should be divided in late summer and the latter should be divided in spring.

Alternatively, or to produce large numbers of bulbs, the plants are easily propagated from seed. In my experience, the seed should be sown as soon as ripe in a very freely draining, gritty potting mix. The seed may take some time to germinate, particularly if old and if I have received seed of something new, I keep the pot for two to three years before throwing it away. Recently, I started 'chitting' the seed with great results. Germination is much quicker and more even. What I do is carefully (and barely!) nick the seed with a sharp scalpel (or razor blade) at the rounded end of the seed. In *Cypella*, the pointed end is where the root

and shoot will emerge and the rounded end is the other side. Nicking the pointed end is likely to damage or perhaps remove the root and shoot primordia. It is probably worthwhile trying this technique with other Iridaceae with hard seed coats.

The biggest problem of growing rare and unusual bulbs is obtaining the material in the first place! The second problem is then trying to work out what the ideal growing conditions are, based on what can be rather cryptic notes from a collector or friend! However, the successes achieved and friendships made make it all worthwhile. The genus *Cypella* is a good genera with which to start as many of the species are not difficult to grow. If you do not know someone personally who grows these plants, I suggest you join the International Bulb Society or either the British or American Alpine Garden Society and take advantage of their free seed distributions.



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The only remaining tree in the wild

Pennantia baylisiana

Our rarest tree - its discovery and propagation

by Professor GTS Baylis

T F Cheeseman was an early Director of the Auckland Museum. He was also the first botanical explorer of the Three Kings Islands. On his visits in 1887 and 1889 he had only a few hours ashore, yet he found six new plants. A more thorough search was clearly warranted but it was not until 1945 that the Museum arranged for a scientific party to camp on the main island. I was the botanist.

By this time wild goats had eaten the place out. Part was closely browsed grass but most was kanuka forest or scrub. Cheeseman's novelties survived in small numbers beyond browse range. It was easy to see that the grassland offered nothing new, but the kanuka canopy was broken here and there by other textures and shades of green. I located these places by climbing trees at every vantage point and reached them deviously via bluffs and screes since except in the main valley they were, even for goats a bit inaccessible.

In these clumps such things as puriri, mahoe and mangeo persisted and I soon found the liane *Tecomanthe speciosa* and the rangiora with a corky trunk like a cabbage tree - *Brachyglottis arborescens*. The last little grove that I investigated lay near the highest point of the island down a scree of boulders about 200m above the sea. I was drawn to it by what looked like a karaka. I was soon gazing upon it in disbelief since a third find seemed too much to expect. But this was no karaka - its leaves were larger and recurved strongly in the sun, its bunches of small green flowers sprang from the bare branches below the

leaves and there were no big berries - indeed none at all.

Dr W R B Oliver, our last true biologist equally authoritative about animals or plants was anxious to identify my finds and I sent them to him. Lacking time and experience I feared I might blunder by getting a family wrong. This danger proved real indeed, for Oliver himself put the pseudo-karaka in the Anacardiaceae, which is close to the karaka family, whereas had I been able to send fruits he would have realized that the resemblance to karaka is misleading, the proper family being Icacinaceae to which *Pennantia* belongs.

It was a European botanist working with herbarium sheets who realised that the Three Kings specimens were *Pennantia*: indeed concluded that the tree was just a stray *P. endlicheri* from Norfolk Island. But herbarium sheets don't tell all - thicker leaves recurving curiously in the sun, stouter stems and flowers on leafless branches rather than at the ends of twigs so distinguish the Three Kings tree, that the two have little resemblance. So when our Flora is next revised either the definition of *Pennantia* will be broadened to accommodate cauliflory (flowers arising on old wood) or Oliver's genus *Plectomirtha* will reappear as a member of the Icacinaceae. The former seems the wiser course as *P. baylisiana* does occasionally flower at a branch tip. Moreover the objective of taxonomy is to synthesise and there is no synthesis when a species has a genus to itself.



Foliage and inflorescence now composed of aborting fruitlets

Propagating this lone and sterile tree not in the best of health because of insect damage, seemed urgent. There was a detachable shoot at its base which took root in a damp sheltered place in my Dunedin garden and is now very like its parent with four slender trunks. But its canopy trimmed by occasional frost rather than repeated salty gales is taller (7m).

While I was unsure that this shoot had really rooted I was worried by failure both at the Plant Diseases Division at Mt Albert and at Duncan and Davies, New Plymouth to strike

cuttings from the crown. I asked George Smith the chief propagator at New Plymouth what I might do to provide better cuttings. "Cut the tree down" he said, and while I shuddered at the thought he explained that he was confident about rooting shoots from the stump. But would there be any? Well, the tree had four trunks so I dared to sever one. A year later the shoots were there, the Naval launch on which I was a guest gave them a quick passage to New Plymouth which happened to be its next port and Mr Smith soon placed the survival of "*Plectomirtha*" beyond doubt.

Cultivation of *Pennantia baylisiana*

It is now 50 years since the tree was discovered and it is still not common in cultivation. This is because the species is dioecious, the sole remaining tree being female. Whilst some self pollination does occur nearly all the fruit produced are sterile. In cultivation the species readily cross pollinates with the kaikomako, *Pennantia corymbosa* producing hybrids with intermediate features. One selection from this cross has been named *Pennantia* 'Otari Debut'.

Propagation is from hardwood cuttings taken in autumn. Rooting can take up to 10 months and young plants will often collapse and die in the first twelve months.

Plants are easy to grow provided they are given protection from frost, and can tolerate shade, growing well under the canopy of larger trees. Trees tend to produce multiple stems and can grow to more than 5 metres high. The main ornamental value of the tree is its large glossy foliage looking as Professor Baylis said, like large karaka leaves.

Mature trees in cultivation can be seen in Otari Native Botanic Garden, Auckland University Grounds, and at HortResearch, Mount Albert, Auckland.

The Joys of Horticultural Book Collecting

by *Charlie Challenger*



Fig.1 Exhibit of "Gardening Books through the Ages" by Charlie Challenger, given a Silver Medal award by the Canterbury Horticultural Society, April 1971.

I bought my first gardening book in 1937, when I was 15 years old. It is still on my book shelves, and still consulted at intervals. I've always been just as interested in books on gardens and their plants as in the gardens and plants themselves. As far as I'm concerned they're complementary to each other - each is as necessary as the other. Gathering my collection of about 3000 horticultural books has, in fact, paralleled my development as a horticulturist, and certainly has provided a source of deep interest and fascination for 60 years. Not just haphazard collecting, but a serious attempt to amass a collection which demonstrates changes in horticultural knowledge, garden tastes, and book production techniques. In addition, books provide additional inter-

ests, alternative and supplementary to their actual contents. For example - how significant was the book in the evolution of horticultural knowledge?; what was the status of the author - was s/he a hack writer or a leader with new ideas?; and what succession of people had owned the book you hold in your hand and what was their significance?

The key to book collecting is to know your subject, through reading catalogues and bibliographies, books about horticultural books, and checking bibliographic details, such as the number of pages or plates a book should contain, or its date of publication - is your copy the first edition or a reissue?. The process of learning is often slow - it is rather

like the plantsperson gathering his/her knowledge of the wide range of species in cultivation, by looking at their botanical characters, propagating them, looking them up in garden dictionaries and monographs, and making selections for various garden purposes. Without detailed knowledge you cannot call yourself a plantsperson, any more than you can hope to judge the significance of a book in your hand. Even the sort of publication which can get thrown out as an unconsidered trifle when you move house, can have a significance which makes it much more desirable than first appearance indicates. An example may be of interest.

Many years ago I bought a small private library in Auckland. One of the items it contained was the September 1928 catalogue of an exhibition held by the Royal Horticultural Society in London, in conjunction with a conference on garden planning. It was a rather tedious listing of exhibitors and the items they showed; hardly worth house room. But the library had been bought from the widow of Stanley V. Hart, who had been the first Secretary of the English Institute of Landscape Architects. Hart came to New Zealand in the mid-1930's to work for the Auckland City Council. Since I knew that the conference was the one at which first steps towards the initiation of the I.L.A. occurred I began to look with greater interest. Suddenly I noticed that many names - 41 in all - were ticked in pencil.

Correspondence with the I.L.A. revealed that the Institute was actually formed at the May 1929 Chelsea Flower Show, and "according to our records about 40 people attended". It thus appeared highly likely that Hart had used the catalogue as a check list to organise the Chelsea meeting. You could almost see him striding round the exhibition, saying "Will you come to a meeting at Chelsea to form an association of garden designers?", and then ticking them off when he'd done so. Anyway, the Institute of Landscape Architects now has that catalogue in its library. It would appear to be the only record of people invited to the I.L.A.'s formal initiation.

The book collector calls the history of ownership of a book its "provenance". Provenance and what it reveals as my story has just shown - can often be as interesting as the book itself. One significant set from my shelves illustrates several other aspects of a book's fascination. I bought this set locally, from a Christchurch dealer in second-hand books - six volumes from the 10 volume series of the Transactions of the Horticultural Society of London, precursor to the present-day Royal Horticultural Society. It is a famous work, for the complete set contains 175 beautiful hand-coloured plates, works of art in their own right. In fact, Fletcher's "History of the R.H.S." (1969) tells us that the first seven volumes, issued by 1830, cost the Horticultural Society GBP 25,250 to produce, and were largely responsible for the Society's debt of GBP 20,293 at that time.

But their provenance was equally as fascinating as the books were beautiful. They were superbly bound - obviously for presentation - and each volume of the set contained a presentation sheet from the Horticultural Society to Edward Sabine 'as an acknowledgement of the services rendered by him to the Society in 1822... on a voyage to West Africa, South

America, the West Indies and New York in which he had under his direction Mr George Don, a botanical collector employed by the Society". This was one of the early plant collecting expeditions which the Horticultural Society - and the R.H.S. later - has organised and paid for. The books were obviously prized by Sabine, for they stayed in his library until he died in 1883; his library was sold at auction by Sotheby's on March 10, 1884 and these particular books were bought by Henry Sotheran, bookseller, London - the auction catalogues still exist!. (Booksellers lists and auction catalogues are valuable reference tools in research of this nature). The volumes were finally purchased from Sotheran by New Zealander Gilbert Anderson, who had been sent to London as General Manager of the NZ Refrigerating Company in 1891. When he returned to permanently settle in England in 1906, Anderson gave them to John Joyce, one of Christchurch's pioneer landscape gardeners, and it was from his family's estate that they were purchased by the Christchurch dealer. I had never heard of Joyce before, and it was when searching out information about him - Anderson had been one of his clients - that I started to uncover the history of landscapes and gardeners in Canterbury, on which I have written several times in the Annual Journal of the R.N.Z.I.H. Investigating their provenance was the key which turned valuable books into a set which had personal historical significance as well.

My library has been gathered from a variety of sources - private purchases, auction sales, dealers in second hand books, and even more unusual sources, such as rubbish tips! The trick is to become known amongst those who are likely to be a source. Tell people what your interests are. Then booksellers will remember you when a choice item comes to hand, and people will remind their neighbours of your name when clearance of an estate has to be carried out. Years ago I used to advertise regularly in the "New Zealand Gardener" as an active buyer of old gardening books, but to do this, good knowledge is vital. You have to be as capable of putting a fair price on a book as of telling a willing seller that regrettably, Grandpa's books have merit only as family mementoes.

The book collecting fraternity is a global one, and as your knowledge increases sources and fellow collectors are discovered all round the world. I receive catalogues from book dealers in England, America, Canada, Holland and Australia, as well as New Zealand, of course. Frequently, through interest in a common theme, orders for books start to include chatty addenda, which slowly turns into friendship. Two of the major horticultural book dealers in Britain and the U.S.A. are personal friends, that my wife and I have had the pleasure of entertaining in our home.

The excitement of book collecting is as much in the chase as the capture. The first mail I read is always the book catalogues - what are they offering that I'm seeking, and is their price a reasonable one?. Compiling lists of "desiderata" - even mental ones - is an on-going activity for all book collectors. Then - can you get an order away in time to have a chance of obtaining your desired item? When you are ordering from an overseas catalogue - even if sent airmail - it requires prompt action to beat the locals. My success rate over the years has been about 40%, so you can never be sure until the books actually arrive.

One of the most exciting purchases I ever made was a classic of early landscape gardening. I had had Volumes 1 and 2 of Stephen Switzer's "Ichnographia Rustica" (1718) for many years. "Rural Pictures", as the latinised title translates, describes the principles of garden design as they were applied in England, just at the end of the French "formal design" period. I had never seen any other copies of Vols I & 2, and had given up all hope of ever obtaining Vol. 3, needed to complete the set. Daniel Lloyd's catalogue which offered it - the first time I'd ever seen it offered - was beauty to my eyes, and the phone call I made in response (and those were the days when international phone calls were rarely made, outside dire emergency) was one of the most rapid I ever made. Daniel Lloyd's pleasure to know it would complete an incomplete set was just as sincere as my own at obtaining the final volume.

One of the "Grand old Men" of Canterbury horticulture was Jack Humm, who ran the Christchurch nursery of Nairn's for many years. I got to know him as a result of writing a biographical sketch for the pages of the 'New Zealand Gardener' in 1960. We then discovered our mutual interest in horticultural books. After his death his son contacted me to ask if I would be interested in buying his library, and George Malcolm - another book-collecting colleague - and I bought it between us. My share included the oldest book now on my library shelves - Gervasse Markham's "The English Husbandman" (1613). Although Markham was a hack writer, and more than a bit of a rogue, his text is of interest in describing quite a range of horticultural activities - preparation of soil, planting trees and sowing seeds, as well as providing garden layouts and his "ideal house". Jack Humm had told me, all those years ago, that the book had cost him sixpence.

He had seen it when out with his-wife-to-be; she had become bored with the attractions of the bookseller's window, and he had had to go back to buy it after their courtship had concluded for the day!

Several months after George and I bought Jack Humm's library, Ken, his son, rang to say there were a few more bits and pieces in the garage that I could have if I cleared it out. Most was of little consequence, but there was a collection of text pages and coloured plates of rhododendrons, wrapped in faded pages of newspaper. I knew it was something good, but the excitement was intense as I slowly sorted the totally dismembered "book", and discovered that not only was it the famous "Rhododendrons of the Sikkim-Himalaya" by Dr J.D. Hooker (1849-51), but that it was absolutely complete, not a single page missing. It was well worth the \$150 it cost me for rebinding and restoration in England. That is the sort of excitement that happens only once in a lifetime, but is never forgotten. "Lotto" offers nothing by comparison!

The best library I ever bought has already had connections with the R.N.Z.I.H., for it used to belong to George Phillips, who was the Editor of "New Zealand Plants and Gardens", Vols 2 - 7 pt 3, from 1956 to 1967. "New Zealand Plants and Gardens" was a precursor of this present journal and ran from 1955 till 1977. Phillips obviously loved his books, because there were numerous articles about them during his editorial

years. Phillips must have brought his books with him when he came to New Zealand in the early 1950's, for his library contained some quite beautiful colour plate books of the early 1800's, the type of thing I have never seen elsewhere, and certainly not met in New Zealand book shops. Phillips was Manager of Hewitt's Nursery at Stratford on Avon - his bookplate incorporated the swans of the Avon. A clump of *Thalictrum dipterocarpum* "Hewitt's Double", which he introduced, holds his memory alive, flowering every year in my garden.

One collects horticultural books for their intrinsic interest - their illustrations, their bindings, the technique of their production, and of course, the information they contain. Fundamentally, book production has not changed since the Gutenberg Bible in 1456. Text is compiled in "pages of movable type", and then several pages of type - usually 2,4, or 8, according to the page size - are printed together on a single sheet of paper. The sheet is then printed on the reverse with another set of "pages"; when folded and cut, this gives one of the "sections" of which a book is composed. The differences which the book collector looks for often lie in the aberrations in this process; old books frequently contain sections with different numbers of pages at the beginning or end, and title pages and illustrations are often "extras", not truly part of the body of a book. Therefore, to check for the completeness of any book published before the 1800's requires detailed knowledge, and reference to one of the standard bibliographies is essential. Just one example: Rea's "Flora, Ceres and Pomona", one of the earliest flower books (1665), has TWO title pages - one engraved, and the other, printed from type in red and black; the engraved title page is often missing, which can make a great deal of difference to the financial value.

Today, we take coloured illustrations throughout the text of a book completely for granted. But the progress to this end has been slow and tedious. The initial illustrations in books were woodcuts, in which the illustration was cut on wood; the portion cut away became the white part of the illustration, and the portion left at full height, which therefore carried the ink when it went through the press, became the black line. One of the most famous English flower books illustrated with woodcuts is "Paradisi in Sole, Paradisus Terrestris" (1629) - "A garden of all sorts of pleasant flowers" (and fruit and vegetables). The title page shows a symbolic garden, with lilies, tulips, cyclamen, carnation, autumn crocus, grapes, cactus and many other plants. Perhaps the most interesting plant shown is cotton, then newly discovered and obviously not known to the author in the flesh, for it is illustrated as a sheep on a stalk! The name of the engraver - "Switzer", above a depiction of a wood engraver's knife, can be just made out in the bottom right hand corner.

The title page of William Lawson's "A New Garden and Orchard" (1638, but first published in 1618), (Fig 2), contains a quite graphic woodcut of activities in an orchard - planting trees and cuttings, and inserting grafts in an enormous rootstock. This book was published by the author, but the only copy I have ever seen was contained in the copy of Gervasse

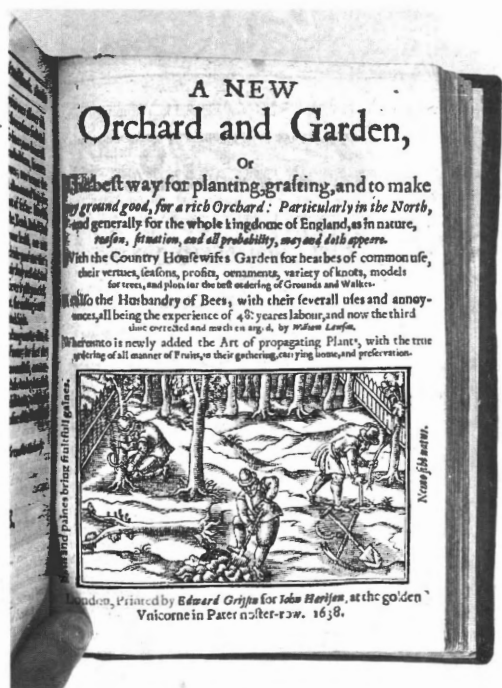


Fig 2. Title page from "A New Orchard and Garden" (1638)

Markham's "English Husbandman" I got from Jack Humm. Markham had filched the whole text to include in his own book, re-issuing it with an early edition of his own work, and adding insult to injury by using the original author's title page! Author's rights was an unknown quantity in the 1600's! Incidentally, the various editions and re-issues of Markham's works are a bibliographical nightmare that no one has yet satisfactorily solved.

Engraving on metal allowed much more precise methods of illustration - lines could be far more accurate and detailed, and by the early 1700's it had replaced woodcuts as the main illustration method. However, unlike woodcuts, which could be printed together with the letterpress - both carried the ink on the surface, at the full height of the letter or the woodcut - engravings carried the ink in the grooves of the engraving. Paper for printing from engravings had to be slightly dampened to allow the paper to be forced into the grooves under the pressure of the press, to pick up the ink. Consequently, engravings are very rarely part of the body of the text, but were normally printed separately, and then inserted into folds in the appropriate sections. One of the earliest examples of this I possess is the Rev. John Laurence's "The Gentleman's Recreation" (1716, but my copy 3rd Edn, 1723). The frontispiece, (Fig 3), one of four engraved plates it contains, shows a typical English layout at the end of the French formal period. The Rev. Laurence was one of a group of garden-conscious literary clergymen. Most wrote garden texts for their own amusement, but one, the Rev. William Hanbury, wrote a quite voluminous "Complete Body of Planting and Gardening", which he sold for the benefit of the poor in his parish. It was published in sixpenny weekly parts between 1769 and 1771, and finally

published in two-volume book form in 1773. Its size, at 43cm x 27cm, precludes a casual cursory glance - you have to want to get it off the shelf! The frontispiece (Fig 4), is an allegorical illustration, characteristic of this period, and usually demanding a knowledge of the classics for appreciation. It shows Cybele in the centre, holding a basket of flowers and fruit in her



Fig. 3. Garden layout of the 1720's from Laurence's "Gentleman's Recreation"

lap, with Zephyrus on the left. On her right a gardener leans on a spade, and in the foreground are cherubs with a roller and a watering can. Cybele was the "Mother of the Gods", and Zephyrus the "Breeze of Springtime".

A much more down-to-earth garden scene provides the frontispiece for Mawe and Abercrombie's "Every man his own gardener". Two gardeners are at work digging and hoeing, whilst the background is a market garden scene of glasshouses and frames, and various plants in pots. This

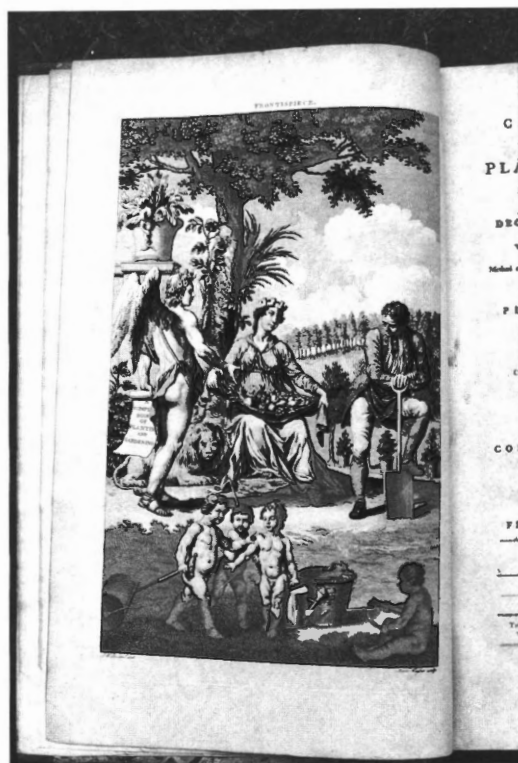


Fig. 4. A Garden Allegory - frontispiece from Hanbury's "Complete Body of Planting and Gardening"

book is one of the earliest garden calendars, first published in 1767, and still in print in 1848, when the 25th edition was issued. Abercrombie was the real author, but he was apparently a somewhat diffident man for, despite all the text being gathered from his own observations, the first edition was published under the name of "Thomas Mawe, Gardener to the Duke of Leeds", a service for which Abercrombie paid Mawe 20 guineas. It was not until the 8th edition that Abercrombie's name occurred on the title page, and the 11th, in 1787, that he actually claimed sole authorship. A run of the various editions of this book is a quite valuable resource for tracing the varying patterns in horticultural technique over 80 years. So far I have gathered together 15 of the 25 editions, but the price seems to rise with every new one I acquire!

Earlier I mentioned the colour plates in the Transactions of the Horticultural Society of London. These, too, are examples of engraved illustrations, but the engravings were done very lightly, and in outline form only, with the intention of hand colouring. This technique became a very popular one in the "golden" era of colour plate books from c.1785 until about the 1850's. The quality of the colour plate depended upon the skill of the colourists - for frequently several people would be employed producing an edition of a single plate. Occasionally the "master" plates, which were copied by the colourists, come up for sale, and it is fascinating to see the test colours applied to the edge of the master to judge accuracy before application to the plate being coloured.

A more recent form of illustration - lithography, which depends upon the fact that grease and water don't mix - is still widely used in the printing trade today. Many modern books have their whole text printed by lithographic methods. The drawing is made with a grease pencil on a water-absorbent stone. Pencil is quick to use in the hands of a skilled artist, and a delicacy of line can be produced that gives a life-like quality. The famous botanical artist Walter Fitch produced almost 10,000 lithographs in his life time, including the plates for such

famous works as Elwes's "Lilies" Hooker's "Rhododendrons of the Sikkim-Himalaya", J.D. Hooker's "Botany of the Antarctic Voyage", and Warner's "Select Orchidaceous Plants", as well as thousands of illustrations for the "Botanical Magazine" during a period of over 40 years. The plates were hand-coloured using the lithographic outlines, in just the same way as engraved plates. This method, regrettably, will never be used again; the quality is superb, but the price can no longer be afforded.

Occasionally illustrations of plants are produced in unusual ways. Shirley Hibberd's book on Ivy (1872) was illustrated from wood blocks. A different block is used for each colour, and the printing, if carried out with exact register, produces a very realistic image. One of the classic New Zealand publications - Mrs Featon's "Art Album of New Zealand Flora" (1889) - used a method called chromo-lithography, a hybrid between lithography and Hibberd's use of wood blocks. The colours were printed singly, using a lithographic method and oily inks, and so long as the register from each colour was exact, the results were good. Unfortunately the inks used have often retained their oily character over the years and copies of the book are sometimes found in which the protective tissue over the plate is stuck to the plate, completely ruining its beauty.

Today we always buy our books with the covers on - cased, as it is technically termed. Book casing was developed in the mid to late 1800's to make the book a more generally saleable product. Prior to that you bought books either in sheets - folded, as they came from the printer or, for a brief period, with covers of light card - and then got them bound to suit your particular fancy. One of the reasons for careful attention in old books to checking full complements of plates and sections, and the presence of prelims and completing sections, is the possibility of incomplete supply by the printer, or loss by the binder. Today, custom binding is expensive, with only a limited number of really competent practitioners; as a trade it requires a long apprenticeship under skilled masters.

Fig 5 shows a small range from my shelves in "full gilt" - the spines show the raised bands where binding cords hold the sections together, and the panels between the bands are decorated in gilt. This was a common method of beautifying a book. The book second from the right was actually bound in Christchurch in 1883 by Wilkin and Co., as a prize for the Canterbury A & P Society. The book on the left is not "full bound", but is "three quarter bound", with leather used on the spine and the corners of the covers only. It was simply a means of economising in the costs involved.

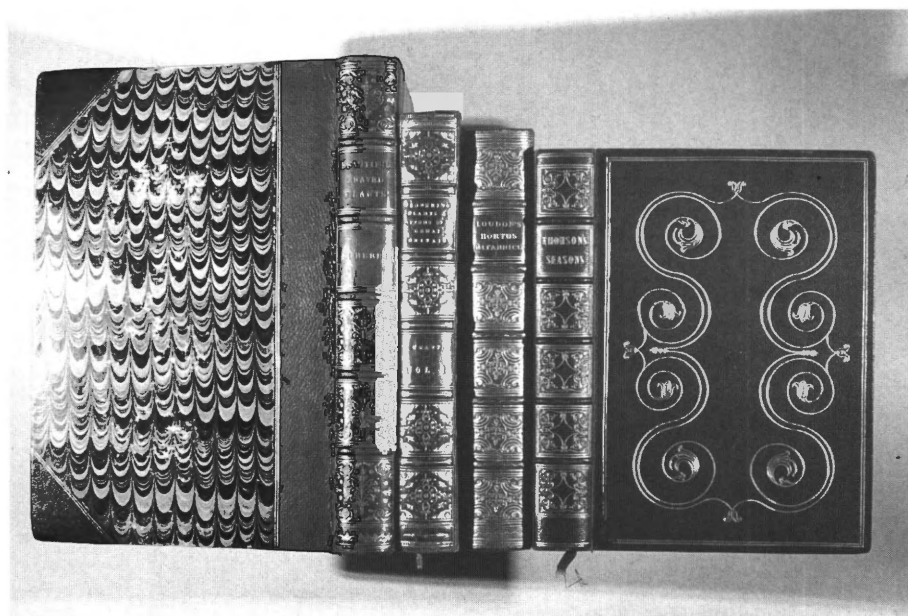


Fig 5. Various forms of "Full gilt" binding

Cloth binding became the normal method when case binding was introduced, but in the Victorian era “blocking” was fairly common as a means of decorating cloth. Fig 6 shows the covers of Hibberd’s “Ivy” (1872), where quite beautiful blocking in black and gold has been applied to the green cloth.

A particularly rare form of decoration is known as “Fore-edge painting”, when a painting was applied to the page edges. Normally it was only done to books where the painting was symbolically appropriate to the content of the book. The method of application was to fan the leaves, carry out the painting, and

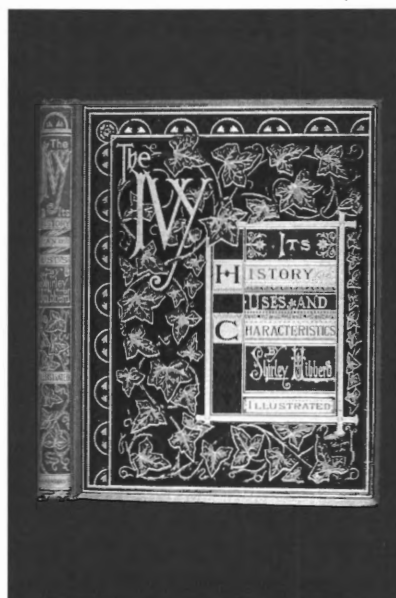


Fig. 6. Cloth Binding, blocked in black and gold (Hibberd's 'Ivy', [1872])

when fully dry apply gold-leaf to the leaf edges. Then, when the book is closed the gold-leaf is seen but the painting disappears. It only reappears when the pages are fanned once more.

Whole books have been written on the pleasures and interests of book collecting; it has a fascination that never palls. Sixty years on I am still collecting books, although the supply is getting ever smaller and, to my regret, I cannot afford those that would really supplement my collection! Little did I realise, when buying that first book in 1937, what a long and interesting trail I was commencing.



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Notable Trees Scheme

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The Gisborne Botanic Gardens

by Melanie Kinsey

The latest addition to Victoria's impressive list of over 30 regional botanic gardens, was opened in Gisborne by the Director of the Royal Botanic Gardens Melbourne, Dr Philip Moors, on the 9th of November 1996. These gardens are unique in Victoria and indeed in Australia as most of the 4 hectare site is to be devoted to the New Zealand flora. What plant material isn't from New Zealand, will be from Australia, South Africa and South America in order to illustrate the ancient Gondwanan links between these countries.

The New Zealand theme was chosen partly because of the sister city relationship Gisborne has with Gisborne, New Zealand which has prospered since the late 1970's. This was reflected by the large contingent of Kiwis from Gisborne who came to be part of the opening and also to witness the dedication of "Tanemahuta" a 4 metre high sculpture of the lord of the Forest by Derek Lardelli of the Gisborne Polytechnic. Tanemahuta was jointly provided by the Gisborne District Council and the Macedon Ranges Shire Council, with the Friends of Gisborne Botanic Gardens providing for the freight across the Tasman.

The day of the opening started well before first light, with the blessing of Tanemahuta attended by the 'tangata whenua' many locals and a busload from the Maori community in Melbourne. Invited guests were treated to a Hangi for lunch and then the opening took place at 2p.m. Over 400 people watched Dr Moors officially open the gardens followed by Mr Yan Flint, the New Zealand Consul General, who planted a totara in honour of the occasion. Afternoon tea was then served while a Maori cultural group entertained the guests.



Tanemahuta at the Gisborne Botanic Gardens. From L to R: Mr. Yan Flint, NZ Consul-General, Melbourne Elder Toko Te Kani Gisborne NZ, Ms. Karen Johannsen - Chair Gisborne NZ Sister City Committee Mr. Derek Lardelli - creator of Tanemahuta, Dr. Philip Moors - Director, Royal Botanic Gardens Melbourne

The gardens development commenced in 1990 with stock being propagated in the council's nursery due to the poor representation of New Zealand flora in the nursery trade. Cutting material has come from several different botanic gardens, old 'hill station' gardens on Mt. Macedon and a donation of plants from Gisborne that came through quarantine. Seed has been donated from several botanic gardens in New Zealand including Wellington, Dunedin and Timaru and this has been an invaluable contribution.

The Friends of Gisborne Botanic Gardens (formed in 1995) have taken over the propagation of plants and are also involved with planting and future management of the gardens. A recent donation has meant that the installation of stage 1 of the irrigation system for the gardens can commence, but further sponsorship for future projects is being sought. Anyone interested in joining the Friends or obtaining further information about the gardens, should write to the Friends of Gisborne Botanic Gardens Inc. at P.O. Box 564, Gisborne, Australia 3437.

Sundials

Part 2 : Definitions and Basic Types

By
John Ward
and
Margaret Folkard

During a given day the sun appears to move across the sky from East to West, causing continual changes in both the length and position of the shadow cast by any solid object. The seasonal change in the sun's height above the horizon causes further changes in the shadow's position.

From the earliest times mankind has used the movement of shadows produced by the apparent movement of the sun for the reckoning of time and for the determination of important days such as religious festivals and when to plant

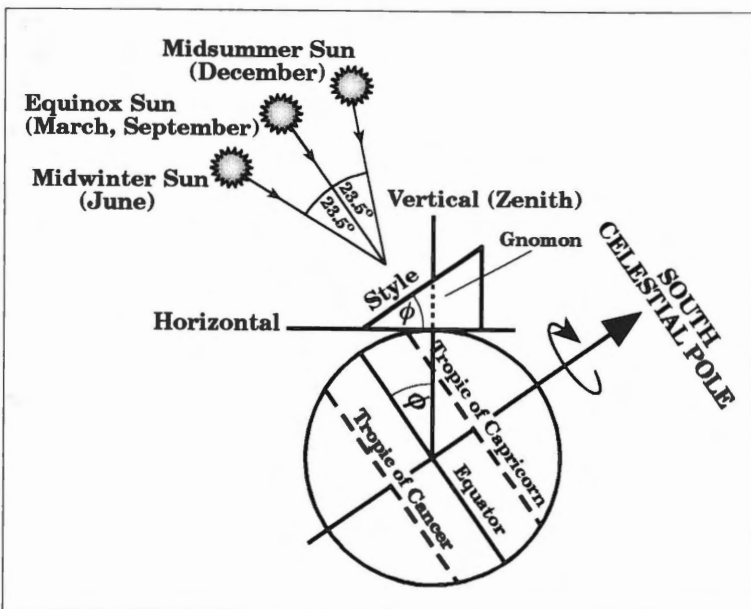


Fig. 2. Variation with the seasons of the position of the sun at solar noon, viewed from latitude 35° South, with the flat horizon as the reference point. In this diagram, $\phi = 35^{\circ}$

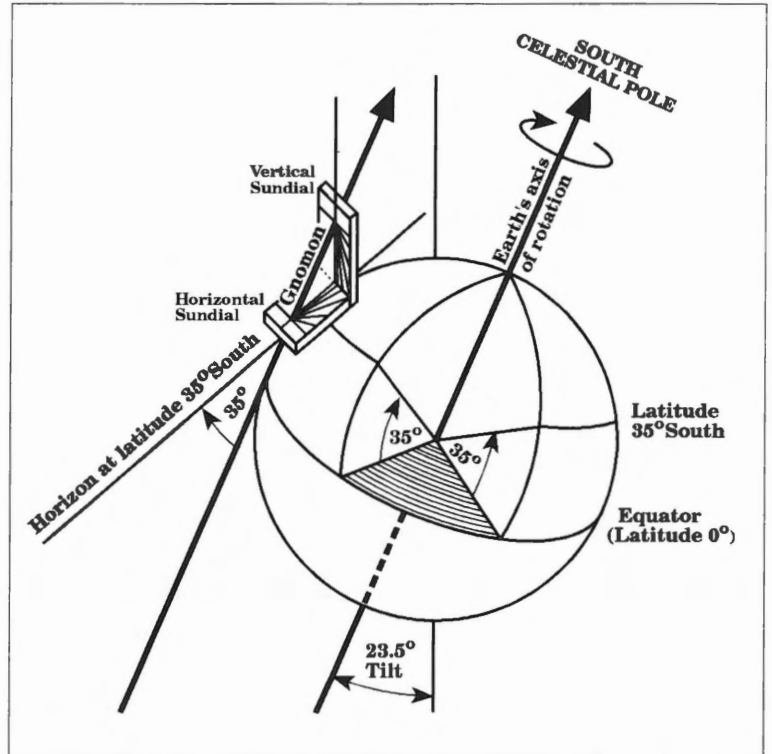


Fig. 1. Sundial location on the surface of the earth at latitude 35° south

crops for the following season. Any device which uses either the direction of the shadow cast by the sun, or (much less commonly) the length of this shadow, to divide the period between sunrise and sunset into units of time is known as a **SUNDIAL**.

For the majority of sundials, the gnomon (the part which casts the time-telling shadow, pronounced **NO**-mon with the accent on **NO**) is placed so that the upper surface is parallel to the axis of rotation of the earth. In the Southern Hemisphere this means that the gnomon should be aligned along a true North-South line and be inclined to the horizontal at an angle which is equal to the latitude, with the highest point of the gnomon nearest the South Pole. Figure 1 gives a detailed picture for a latitude of 35° South (which corresponds to the location of Adelaide or Canberra).

The word gnomon is Greek for 'pointer' or 'indicator', and also 'one who knows'. Style refers to the top surface or edge of the gnomon, the part which points directly towards the Celestial Poles. The Celestial Poles are imaginary points in the sky, directly above the North and South Poles.

We see a shadow only when it falls onto a receiv-

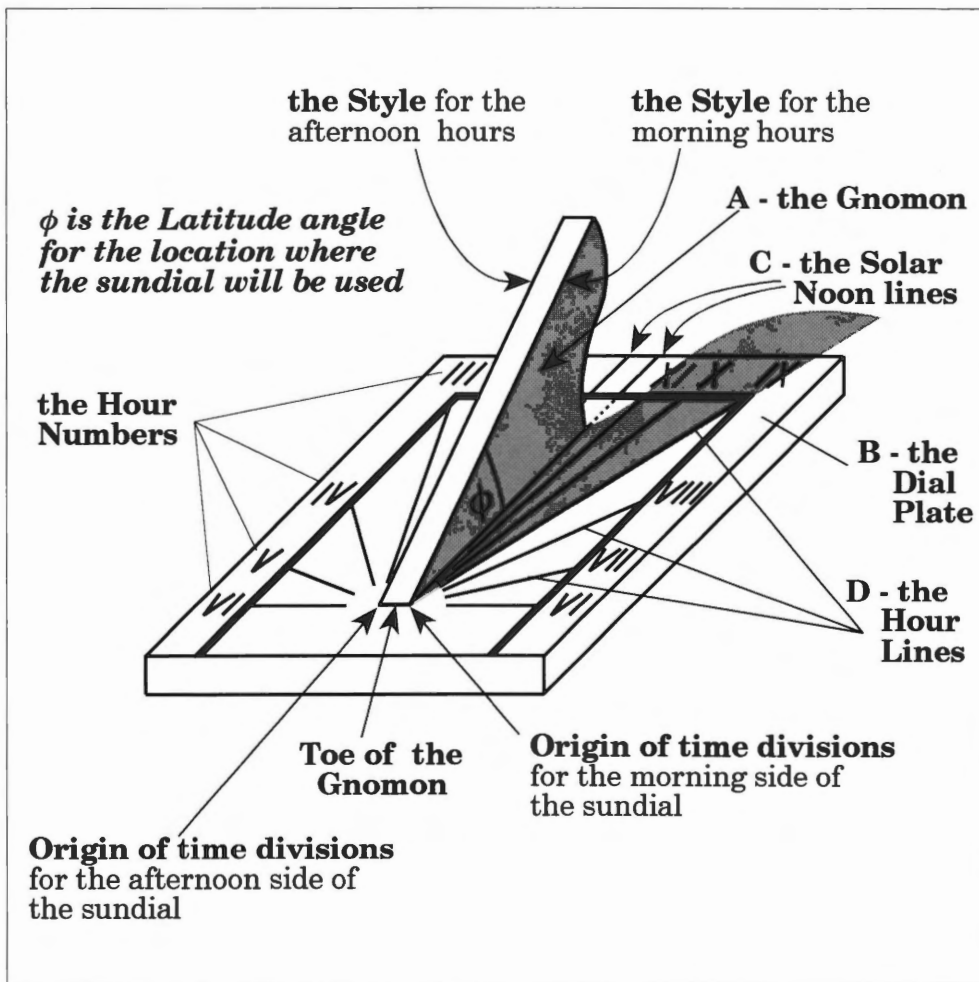


Fig. 3. Parts of a sundial. In this example, the outer edge of the gnomon shadow tells us that the solar time is 9 o'clock in the morning. Notice that the shadow starts from the base of the gnomon, and has the same shape as the gnomon, but it is distorted due to its projection onto a different surface.

ing surface, and clearly the slope and direction of the receiving surface will affect the direction of the shadow. The most common fixed types of sundial tell the time by measuring the direction (or azimuth) of the sun's shadow using divisions marked on a dial plate set at some known angle. As the sun moves across the sky then the shadow of the gnomon moves across the scale around the dial plate.

The traditional view of the earth in space shown in Figure 1 is altered in figure 2 to show the variation in the sun's position throughout the year as we see it with the flat horizon as our reference plane.

The various sundial types are usually classified according to the orientation of the dial plate upon which the hours are marked. The positions of these lines are found using formulae derived from spherical trigonometry. The dial plate can be horizontal or vertical or somewhere in between (known as reclining or polar in the special case where the angle of recline is equal to the latitude angle). The dial plate can also take the form of a circular ring (armillary sphere sundial) or part of a ring (equatorial sundial) whose plane is perpendicular to the gnomon.

To help you understand how a sundial functions, Figure 3

shows the main parts of a conventional horizontal sundial.

Horizontal Sundials

Horizontal sundials with a gnomon inclined at the latitude angle came into general use in the 13th century and many variations were rapidly developed. Many volumes had been written on the theory of the various devices by the time mechanical clocks made their appearance in the mid-14th century. In fact, the early clocks were so inaccurate and unreliable that they had to continually be reset using the time readings provided by sundials located nearby. Horizontal sundials are popular because they tell the time throughout the entire day whenever the sun is shining, while some other types can be used only during restricted hours of the day or limited seasons of the year.

(a) The Style or Gnomon

This is the part that casts the shadow. Its upper surface must be parallel to the earth's axis of rotation. The western side of the upper surface forms the style which casts the time-telling shadow during the morning hours, while the eastern side of the upper surface forms the style which casts the time-telling shadow during the afternoon hours.

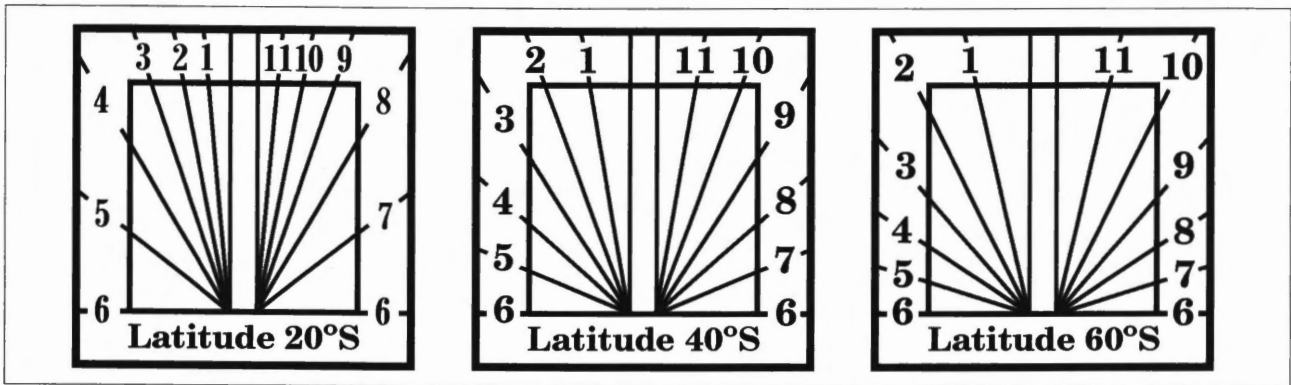


Fig. 4. Hour lines for a horizontal sundial at a range of southern latitudes

(b) The Dial Plate or Dial face

This is the face onto which the shadow of the gnomon is projected by the Sun's rays. A set of lines and numbers positioned on this plate allow solar time to be determined. For a horizontal sundial, this part must be precisely horizontal.

(c) The Solar Noon or Lines

When the sun is directly overhead (this defines SOLAR NOON for our location), the shadow of the gnomon will fall exactly between these lines. Note that if the gnomon was very thin, the two Noon lines would coincide and become one line. However, the gnomon must have some thickness for durability and therefore the distance between the Noon Lines will be the same as the thickness of the gnomon. You may find that Solar Noon does not coincide with Clock Noon in your time zone.

(d) The Hour Lines

When the shadow of the gnomon edge, or style, falls on one of these lines, then that line tells the solar time. For a horizontal sundial, one side of the gnomon edge (the morning style) casts the shadow which tells the time for the morning hours, and the other edge of the gnomon (the afternoon style) casts the time-telling shadow for the afternoon hours. You may add half hour lines or quarter-hour lines or even small divisions of a few minutes, according to your requirements, and within the limitations of the Dial Plate size.

Sundial makers sometimes even claim they can tell the time to within a few seconds!! For example, in the 18th century the Indian Astronomer Maharaja Sawai Jai Singh 2 felt that European instrument makers with their small brass instruments were making inaccurate measurements. He believed

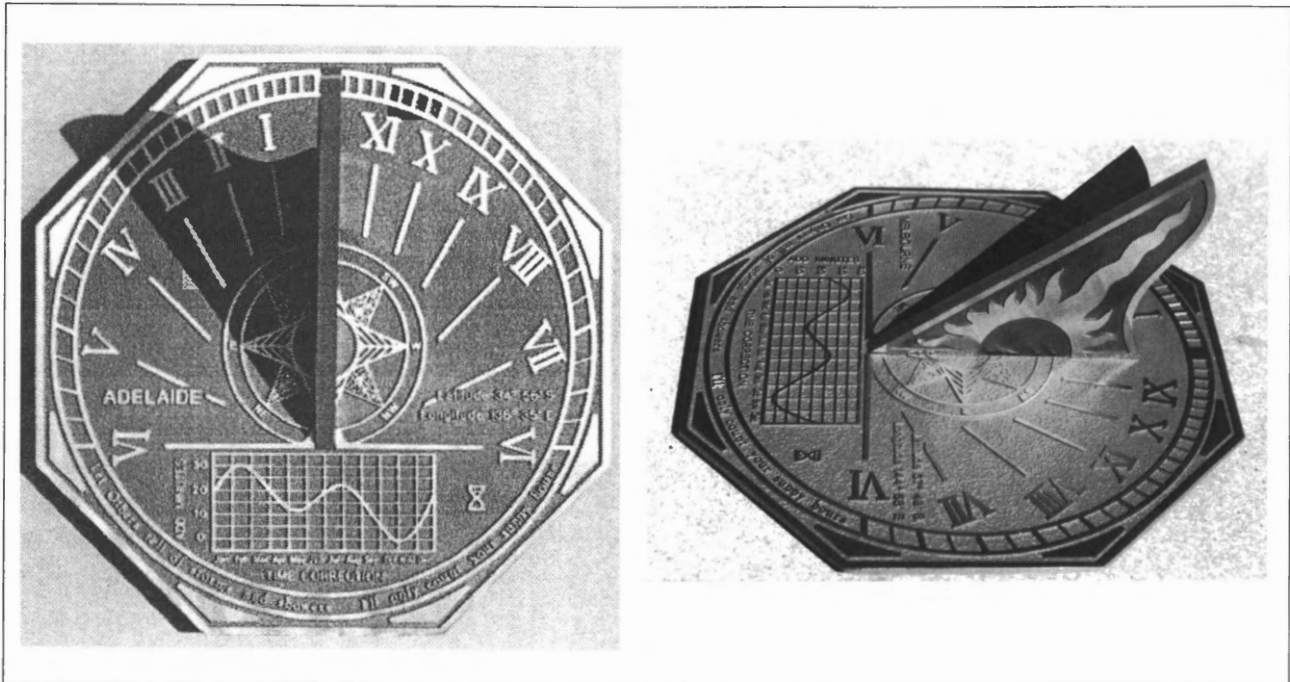


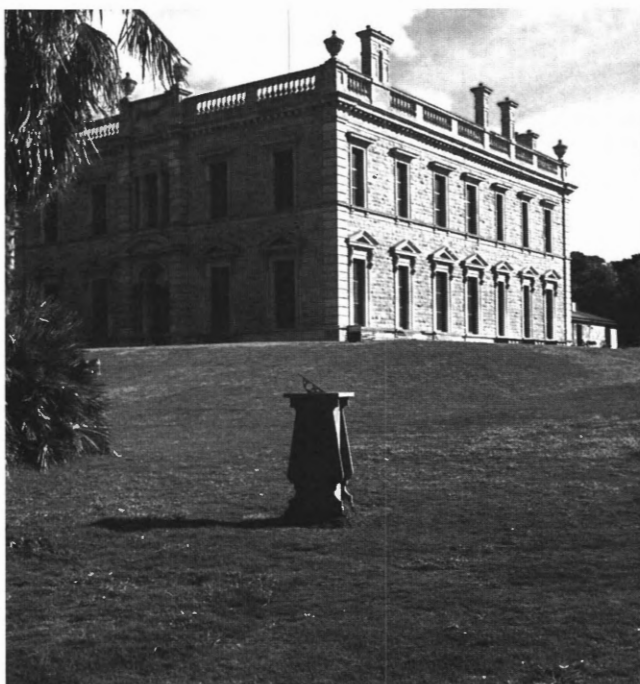
Fig. 5. Horizontal sundial designed for Adelaide, South Australia. The latitude of your location defines the angular positions of the hour lines and the angle of the gnomon. Your longitude and time Zone determine the numbers on the Time correction graph. (Note that every location on Earth has the same shaped time correction graph throughout the year; but the correction numbers are different, depending on how far away you are from the Standard Time Meridian of your time zone.)



Fig. 6. The Simmons memorial sundial erected in Central park at Stawell, Victoria in 1931. The authors consider this to be one of the better horizontal sundials in Australia.

that larger instruments would be more accurate, so he constructed a series of observatories containing enormous masonry instruments used for solar and stellar investigations at 5 locations in India. Some of the sundials were large enough to have time divisions corresponding to increments of just 2 seconds. However, caution should be used when trying to use such small time divisions with a sundial - the 0.5° divergence angle of the Sun's rays caused by the finite size of the Sun

means that the boundary between lightest and darkest areas of shadow is ill defined and impossible to read to this level of precision. In addition, virtually all sundials are constructed for the average conditions over the four year, leap year cycle. The variations in the Equation of Time for a given date within this four year cycle are usually quite small, but can sometimes amount to as much as 20 seconds, so claims of sundial time telling accuracies of a few seconds are quite unrealistic.



Figures 7 & 8. Slate sundial at Martindale Hall, near Mintaro, South Australia

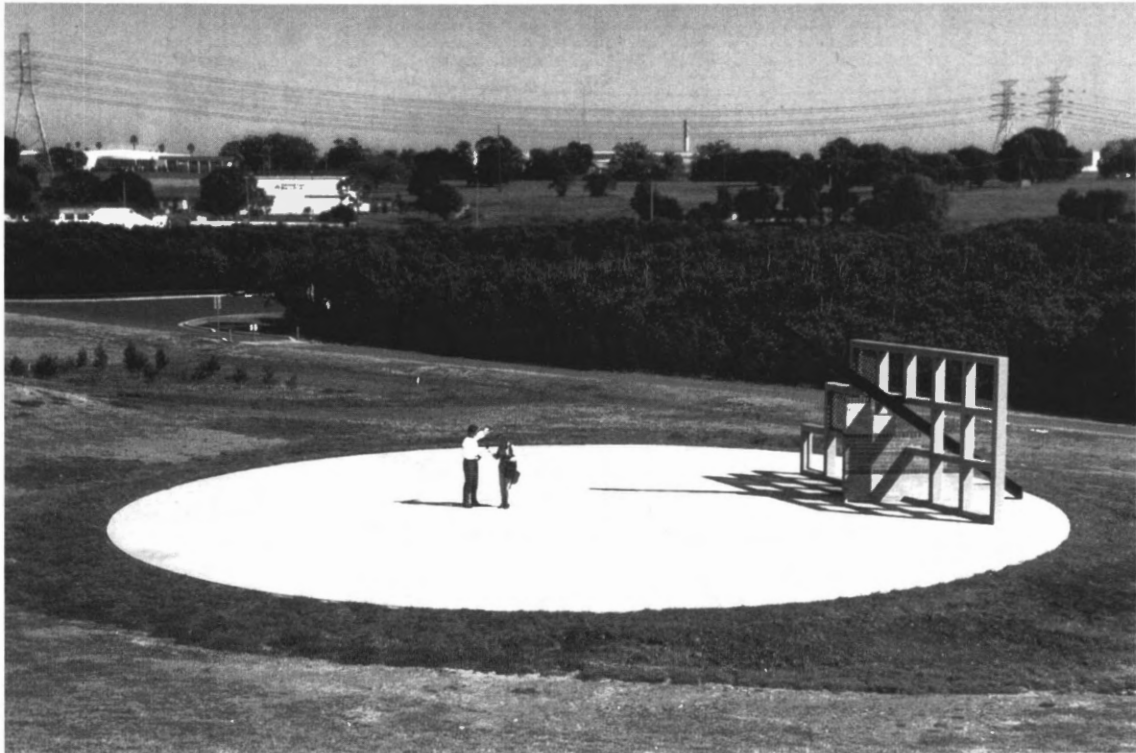


Fig. 9. Horizontal sundial in Bicentennial Park, Homebush, NSW

The Solar Noon line is the base line of the gnomon, and is accurately aligned along a true North-South line. The morning and afternoon hour lines on a horizontal sundial are positioned symmetrically about the Solar Noon line. This means that 11 am and 1 pm are the same angular distance from the gnomon toe, similarly 9 am and 3 pm are located equidistant from the gnomon toe.

The hour lines for a correctly designed horizontal sundial radiate from the two edges of the gnomon toe and the angular divisions are not equally spaced around the dial plate. The angle between 6 am and 7 am is larger than the angle between 11 am and 12 noon, and the relative distance depends on your latitude. In fact, for latitudes close to the equator, the hour lines between 6 am and 7 am, and between 5 pm and 6 pm occupy most of the dial plate area, while the hour lines between 8 am and 4 pm are crowded so close together that it is difficult to read the sundial hour divisions accurately for a large part of the day. A simple horizontal sundial is therefore not suitable for use within about 15° of the equator, but it can be used everywhere else on earth right up to the poles. At the equator, the angle of the gnomon would be 0°. Alternative types of sundial must be used near the equator. Horizontal sundials are often placed on beautiful and ornate pedestals. One splendid example is the bronze sundial and its fine grained carved sandstone pedestal near the football oval at Stawell, Victoria shown in Figure 6.

Fine-grained slate from Mintaro (South Australia) has long been used for making the world famous Brady snooker and billiard tables. For more than a century, Mintaro slate has also been used to create horizontal sundials for many local gardens

and parks. The early dials were hand carved by monumental masons, but more recently we have used sand-blasting techniques to produce deep lines and markings on slate and other stone surfaces.

Some years ago, we were invited to make a replica of the original slate sundial which had been stolen from outside Martindale Hall near Mintaro, a National Trust property used in the making of the film 'Picnic at Hanging Rock'. No-one could provide us with photographs giving details of the original dialface design, so we embarked on a quite fascinating research project to unearth the design. The replica sundial on its original slate pedestal is shown in Figure 7.

A large sundial in Sydney which will be seen at close quarters by many people is located in the Bicentennial Park at homebush, set up to commemorate the 200th anniversary of British settlement in Australia. The top end of the 8 m long, square cross-section steel gnomon of this sundial is used as a nodus point to indicate the date, with solstice and equinox date lines marked out on the terrazzo horizontal dialplate which is 30 metres across. This sundial is on the site of one of the sportsfields to be used during the Sydney 2000 Olympic Games.

Book News and Reviews

Supported by Touchwood Books, specialist horticultural booksellers of Hawkes Bay

A PLANTSMAN IN NEPAL

by **Roy Lancaster**
Revised edition, **Antique Collectors Club 1995**

In 1971 a group of botanists and horticulturists spent 3 months in eastern Nepal collecting seed and specimens of ornamental and economic plants both wild and cultivated. This revised edition chronicles their travels and contains a new chapter, new information and revised nomenclature.

SUNDIALS AUSTRALIA

By **Margaret Folkard and John Ward**
2nd edition, **Sundials Australia 1996**
Price **A\$23**

This edition has been enlarged and improved and includes everything you ever wanted to know about sundials. It includes historical development of sundials, how to calculate the hour divisions for making your own and the range of different types available.

The authors are both physicists who design, build and install sundials all over Australia and the world. Several of their sundials can be seen in New Zealand including an armillary sphere in the Wellington Botanic Garden.

NATIVE AUSTRALIAN PLANTS. HORTICULTURE AND USES

by **Krystyna Johnson and Margaret Burchett**
University of NSW Press, 1996
Price **A\$69.95**

This is the first book to be produced on the commercial cultivation of Australian plants. It looks at different aspects of horticulture such as selection, breeding, cultivation, and pest control through to post harvest techniques and marketing.

DISCOVERING THE FOLKLORE OF PLANTS

by **Margaret Baker**
Shire Publications 1996

Cabbage stalks were once used by Scottish girls to foretell

their future husbands; in Lincolnshire the girls used handfuls of barley. This book contains dozens of such beliefs. From Achillea to Zinnia, author Margaret Baker has collected cures, magic and portents from around the world.

VIREYAS FOR NEW ZEALAND GARDENS

by **John Kenyon and Jacqueline Walker**
Godwit Press 1997
Price **\$29.95**

Vireyas are becoming very popular as garden plants because of the wide range of flower colour and their habit of flowering for several months of the year. This guide includes information on their discovery and history, cultural requirements, propagation, and ideas for using them in the garden. It also contains a descriptive list of hybrids and species in cultivation. Includes 80 colour photographs.

A FIELD GUIDE TO THE NATIVE EDIBLE PLANTS OF NEW ZEALAND

by **Andrew Crowe**
Revised edition, **Godwit Press 1997**
Price **\$39.95**

Many natives have been a source of food since pre European times. In this book over 160 native plant from trees to seaweeds are covered with information on their utilisation, in particular by Maori, where they can be found and when. It also includes a section on poisonous native plants or those likely to be confused with other plants described in the book.

STEM, A Standard Tree Evaluation Method

By **Ron Flook,**
Published by **Ron Flook, September 1996,**
Price **\$75** available from the author at **539 Rocks Road,**
Nelson

Reviewed by **Bruce Treeby, Tutor in Farm Forestry, The Open Polytechnic of New Zealand, Lower Hutt**

As Tony Jackman wrote in the preface, we have difficulty when it comes to accounting for all the values and benefits that we attribute to trees, and the benefits that accrue from their presence in our lives. Those of us who have been involved in

trying to protect trees, welcome the contribution that Ron Flook has made with this publication. As Tony says the inclusion of the arboricultural and visual components of his system which ultimately lead to a notable tree register at local and national levels of importance, are a considerable advance over earlier methods. Those of you who have used the Helliwell System will be aware that the multiplications involved can often mean that single factors can skew the final unit score. In STEM each components score can be traced in a quantitative way.

In STEM the evaluation criteria is separated into four major sections

- Condition
- Amenity
- Notability
- Value

In the full tree evaluation score sheet, points for the components that make up the condition, amenity and notability are added to give a tree evaluation points total. That is a relatively straight forward procedure. The next step is the tree valuation, and this is more complex. In the example given in STEM, the wholesale cost of a 5 year old tree ready for planting out is taken as the basic unit of value. The evaluation points of the tree that is being valued, is multiplied by the basic unit value to give the present value of the tree. To this is also added the initial costs of planting and maintenance over the years and GST. Ron Flook takes the wholesale cost as the conservative value and suggests that with retail margins of up to 100% that the possible final value could in fact be double. The retail margin value is open for local negotiation.

The decision as to what the basic unit of value is will be made at a local or regional level. Dunedin City Council uses the figure of \$177 as the wholesale cost of a 5 year old tree ready for planting.

So what have been the responses to STEM? Standards New Zealand has asked Ron to put NZ STEM forward as an "Industrial Draft". I asked Frank Buddingh' a consulting arborist who runs International Tree Managers Limited what he thought of STEM. He is enthusiastic about it and said for him it was a "workable document" that had already proved it's value in protecting trees in the Dunedin area. In one instance the local power supplier was set to run an underground power supply two metres away from a row of *Fagus sylvatica*. Using STEM, the conservative value of the individual trees was determined and the power company was advised that they would be liable for any deaths. The power supply was rerouted. Frank has used STEM in court cases and says that it has application in the new district plans. The Dunedin City Council uses STEM to assign value to the tree assets that are in the cities parks and streets.

Nelson City Council has used STEM (draft 5) to develop their list of Notable and Historic Trees for scheduling on the District Plan 1995/6, and this is shown in Appendix 1. Wellington City Council are trialing it to determine what trees should go onto a Notable Trees Register. There were questions

raised over how trees in broken topography score low in visibility and the age scale between 40 and 80 years was too large a gap. The NZ Arboricultural Association has approved it's use, Waikato Polytechnic are now using it in the arboriculture course, and there has been Australian interest.

Ron set out to produce a method that is easy to understand, easy to use in the field and gives conservative results. I think he has been successful with all three objectives. Over the past four years, he has consulted widely with a series of drafts and this is number 6. STEM is already being applied with success by local authorities and arborists throughout New Zealand. Throughout, there are definitions, a glossary of arboricultural terms and references that assist clarity and those who want to do more study on the subject. Throughout the publication there are examples of application, step by step. There are 23 photographs of trees examples with their tree evaluation score.

I will conclude this review with some of my local experience. When I saw the cover photograph of the ringbarked *Quercus robur* and the same tree being cared for by an arborist, I immediately thought how useful STEM would have been to those of us who were unsuccessful in saving two 60 year old Norfolk pines in Rimu Street, in Eastbourne, Wellington. These trees along with three others on the other side of the street were part of the "seaside" character of Eastbourne. This was back in the 1980's prior to our merger with Hutt City. The council at the time wanted to redevelop the street and lower the camber. There were all sorts of arguments about drains and instability. There was a strong public debate, and in the end two of the trees were ringbarked to finalise the issue! I used STEM to put a value on the trees based on the three trees that were given a reprieve. On wholesale value using the Dunedin example, the trees had an individual value of over \$46 000 each and it could be \$60 000 or more. Such values may well have compelled the councillors of the day to act differently. The other three trees are still living and the camber was removed.

With regard to repair of damage, there is a Norfolk pine of similar age in Days Bay that some years ago suffered damage to the base of the tree from a car driving into it. No remedial action was done to the tree. The large bare area with no protective bark has been attacked by wood boring insects and today the stability of the tree is in doubt. If STEM had been in use at the time of the damage, it is likely that more care would have been taken of an asset that through neglect has become a liability.

In conclusion, I am sure that people who are responsible for the management and protection of trees will find this publication very useful. In using STEM you will be able to give feed back to Ron Flook on your experiences and assist with the further fine tuning of the method for version 7. We are fortunate that we have people like Ron who are prepared to dedicate so much time to this project. In 1995, Ron was awarded an Associate of Honour of the Royal New Zealand Institute of Horticulture, and is an executive member of the RNZIH - portfolio 'Trees'. As to the price of \$75, I appreciate that there is a desire to recoup printing costs, but I feel a lower price would have ensured wider general use by the general public.

WISTERIAS - A COMPREHENSIVE GUIDE

by Peter Valder
Published by Florilegium

Reviewed by Gordon Collier, Titoki Point, Taihape

Anyone who likes a beautiful book as a companion will be well satisfied with Peter Valder's complete guide to the genus *Wisteria*. Everything about this book appeals; from the design, the illustrations to the exquisite photographs. But this slim volume will be far more to those readers who wish to learn about this aristocratic climber or to those who wish to make a serious study of the genus.

Wisteria is a northern hemisphere family but paradoxically this, the first and only authoritative publication on it was written and published in Australia. It would be presumptuous to find fault. Peter Valder is to be congratulated on a superlative work. Trained as a pathologist and mycologist, the author has also lectured in botany and horticulture. It is his interest in the latter that has brought him to public notice in his own country and in New Zealand where his lectures have been delivered with scholarly attention to detail. Peter Valder has applied this same approach to his book.

Identification is always one of the most puzzling aspects of the gardeners' craft. In the opening chapters a key is provided to the identification of that most confusing plant, the wisteria. The technically minded will seize on a new identification technique described.

On the pronunciation of botanical plant names there is some timely advice:

'No one.....really knows how the Romans pronounced latin.....as long as whoever you are talking to knows what you mean, then all is well'

The reader is introduced to species scarcely known in this country. *Wisteria frutescens* and *W. macrostachya* a late bloomer from the southern USA, and to the so called summer flowering wisterias, the related *milletia* family three of which are native to Australia. But it is the chapters on the Chinese and Japanese wisteria, the species most familiar to the gardener that will captivate. The historical information is fascinating. There are notes on cultivation and a comprehensive and helpful description of the many cultivars.

Stunning photographs illustrate the text throughout. Particularly evocative are the pictures of the many ways in which the Chinese and Japanese grow this versatile vine; over structures in the garden, as a standard, or as a dwarf - called *penjing* in China and *bonsai* in Japan.

Peter Valder considers the Japanese wisteria requires more care in training but to be the most beautiful. On the basis of earlier Japanese botanical useage, Dr Valder abandons the species *W. venusta* (named by Rheder and Wilson at the Arnold Arboretum in 1916) for the earlier used *W. brachybotrys*

(Seibold 1835). This decision is taxonomically correct and Trevor Davies, New Zealand's specialist, is of the same mind. This species holds out the promise of violet, pink, and mauve-pink cultivars waiting to be introduced. *W. brachybotrys* 'Showa Beni' illustrated on page 118 is said to be the most dramatic and a good clear pink.

There is a further chapter on training and pruning which is most useful. Diseases and pests, propagation, and breeding are also detailed.

Peter Valder writes from a deep love and exhaustive knowledge of his subject. A glance through the preface reveals just how extensive his research has been. I was recently privileged to visit the former garden of his family at Mount Wilson, NSW when the wisteria were in full bloom. I cannot recall seeing anything more magical.

Buy this book. It is a classic.



R.N.Z.I.H. Publications



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Available from: The Royal New Zealand Institute of Horticulture, P.O. Box 12, Lincoln University, Canterbury.

