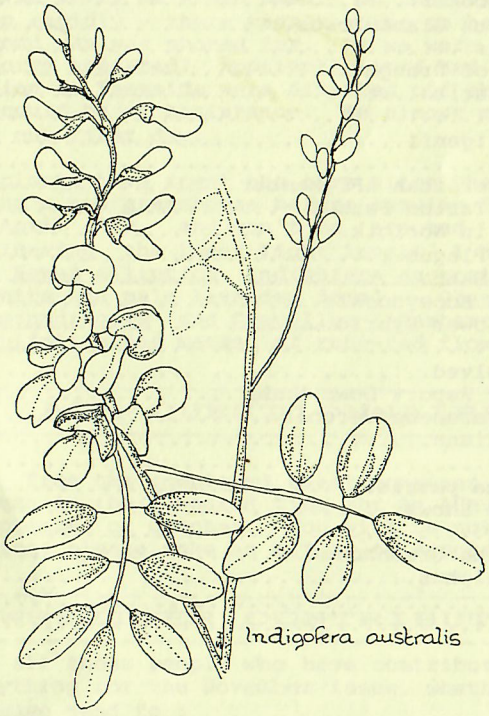
AUSTRALASIAN PLANT SOCIETY NEWSLETTER



ISSUE 10 APRIL 1993

AUSTRALASIAN PLANT SOCIETY

Newsletter No. 10

April 1993

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EDITORIAL

April 11th, and we have now been in our new home, in Knayton, for two weeks, although we have actually had ownership since March 19th. Work on the property, such as having a new fitted kitchen and electric points installed in most rooms, meant that we couldn't live here for the first 10 days. Instead we stayed at my husband's parents' house ten miles away, visiting Knayton everyday to do what we could.

Knayton is a village, mostly constructed of Yorkshire stone, 23 miles south of Middlesbrough, with no amenities except a public house and a telephone kiosk. What attracted us here, was the view from the back garden across open fields to the hills less than a mile away. There is the constant baaing of sheep and cooing of collared doves.

I began preparing for the move a year ago, when we first put our house on the market. Several plants were dug up and containerised including seven five-year-old eucalypts, a Bursaria spinosa, Pittosporum tenuifolium, some hebes as well as some other choice plants. All my greenhouse plants were already growing in pots or tubs. A week before the moving date, the removal contractor called to give us an estimate and decide what size lorry we would need. On the day of the move, the lorry filled up rapidly - there wasn't going to be room for all the plants. A second van was phoned for. As we were unloading at Knayton, another lorry appeared! Apparently word had got round, and any vehicles returning to Teesside were diverted off the A19 into Knayton, to see if they could be of assistance. We almost managed to clog the village road on our first day.

The greenhouse plants have spent the time since the move in the house. Despite ordering a new greenhouse before leaving Teesside, it didn't arrive until April 7th, and won't be erected until the weekend 17/18th. Considering the lower light levels, I have been rewarded with flowers on Hovea elliptica, Indigofera australis, Olearia phlogopappa [both white and pale lavender form], Olearia scilloniensis, Prostanthera rotundifolia and Grevillea 'Canberra Gem'. Outside, Pittosporum tenuifolium has masses of ruby-red flowers.

AGM QUESTIONNAIRE

It would seem, from the completed questionnaires returned to Jeff Irons, that autumn is the favoured time for an AGM. We are currently considering September or October. You will be notified of the exact date in due course; please make an effort to support us by attending.

NEWSLETTER CONTRIBUTIONS

Many thanks to all those people who have contributed to this issue. If you have anything for the November issue, whether a large article or snippet - please send to :

Sue Hyams, 'Applegarth', Southend, Knayton, Thirsk, N. Yorks, YO7 4AS.

MILLIGAN – WHO WAS HE?

In your April 1993 Newsletter, you'll find several mentions of the name 'milliganii' or 'Milliganía'. So, who was Milligan?

Joseph Milligan was born in Scotland in 1807. In 1829 he was awarded the Diploma of the Royal College of Surgeons, Edinburgh. At 23 years of age, in June 1830, Milligan was appointed Surgeon to Van Dieman's Land Company at Surrey Hills [south of the present Burnie, on the N.W. coast]. Later he was appointed Surgeon-Superintendent and Veterinary Surgeon for Emu Bay and inland areas. He arrived in Van Dieman's Land in February 1831, to spend 30 years in the colony. His interest in natural history began soon after his arrival. This interest was stimulated, two years later, by a visit to Surrey Hills from Backhouse, who put Milligan in touch with Ronald C. Gunn of Launceston. Gunn persuaded him to collect specimens for forwarding to W.J. Hooker in England. This was a time of no roads, and no camping equipment so collecting meant travelling on foot or horseback. Gunn mentions walking from Woolnorth to Forth, [along the N.W. of the colony] with eight rivers to ford [a distance of approximately 150km/90miles], in less than a month.

In February 1842 Milligan left the V.D.L. Co. and, after a brief stay in Launceston, he joined Lady Franklin's overland expedition from Hobart to Macquarie Harbour, as the medical attendant and naturalist. Specimens collected were sent to Gunn, who was unable to join the expedition because of a broken leg. In September 1842, he was appointed Inspector of Convict Discipline and a member of the board for distributing convicts.

In March 1843 he married the daughter of W.E. Lawrence, but she died in childbirth while on Flinders Island, where he was Superintendent and Medical Officer for the aborigines. He held this post between December 1843 and 1855, except for the period between April 1846 and May 1847 when he was stationed at Macquarie Harbour as a visiting Magistrate and M.O. of the penal settlement. This is probably the period in which he did much of the collecting.

He was Secretary of the Royal Society of Van Dieman's Land from 1848-60. It was during this period that he was carrying out gold and coal surveys for the Fingal Gold Exploration Co. and the Douglas River Coal Mining Co.

He was elected a Fellow of the Linnaean Society in 1850.

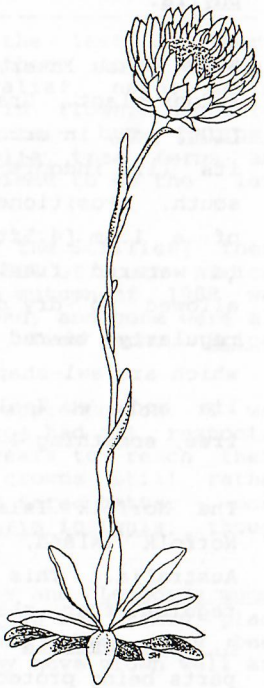
In April 1860 he retired [aged 53 years] with a pension and returned to England with his son, where he acted as Commissioner for Tasmania at the second Great Exhibition. Dr. Hooker described Milligan as 'one of the most indefatigable and able of the Tasmanian botanists'.

He died in 1884 aged 77 years, but his name lives on; eg: Dracophyllum milliganii, Eucryphia milliganii, Helichrysum milliganii, Leucopogon milliganii, Milligania densiflora, Milligania johnstonii, Milligania lindoniana, Milligania stylosa, Pimelea milliganii, Richea milliganii.

HELICHRYSUM MILLIGANII

Brian Halliwell

The genus Helichrysum has 32 species in Tasmania which include perennials and shrubs which extend from sea level to mountain moorlands above 1500m [5000ft]. I found H. milliganii at 1260m [4000] on the summit plateau of Cradle Mountain towards the north of the island. It was growing in peaty residues amongst broken rocks. Mats of growth were cushion-like made up of crowded rosettes, each about 20mm [0.75"] in diameter. When these elongated to produce flowering stems there were basal bright green glabrous pointed lanceolate leaves upto 25mm [1"] in length. Along an unbranched flower stem which could rise to 12cm [4.5"] which was covered in white wool were narrow leafy bracts also woolly but rather brownish. Solitary pointed globose flower buds either old gold, dull pink or crimson opened to produce a cup-shaped flower with white papery petals around a central boss of brownish florets.



In this country it could be grown on a rock or peat garden or in favourable areas, in a mixed border. It has not proved to be the easiest of plants in south-eastern England although it is easier in the cooler north or in Scotland where summers are cooler and there is ample atmospheric humidity. A gritty organic soil suits it best which though well drained should not be allowed to dry out. Propagation by seed has not proved to be easy. Many antipodean mountain composites produce fertile seed sparingly and even good seed has short viability, especially when stored in unsuitable conditions. Jeff Irons wonders whether plants may be self-fertile. Sow seed as fresh as possible. Whilst cold is not essential for germination it does seem to stimulate it. Prick out seedlings or pot singly into a compost of equal parts : lime-free soil, peat and coarse sand or fine grit. From mature plants it may be possible to detach a rosette and treat as a cutting.

NAME CHANGES?

Some APS members have the excellent book 'Kosciusko Alpine Flora.' In it some Craspedias are referred to by letters. They are on pps 375 and 376, and the accompanying illustrations are numbered 336 to 343. The species have now been given names. They are:

sp A. Craspedia alba
B. Craspedia not known to APS yet
C. Craspedia maxgrayi
D. Craspedia costiniana
E. Craspedia lamicola
F. Craspedia aurantia

Craspedia globosa is now known as Pycnosorus globosus

NORFOLK ISLAND PINE

by Sue Hyams

In 1987, my husband spent a week walking in the Lake District, his base being a bed and breakfast boarding house in Ambleside, not far from Hayes Garden Centre. On arriving home he presented me with a 30cm [12"] tall specimen of the Norfolk Island pine Araucaria heterophylla.

Five years later, and almost one metre [3.3ft] tall, it makes a good indoor plant. Gradually repotted over the years, it is now in a 20cm [10"] pot, in ericaceous compost and it steadily grows. It has spent its life indoors, in a room with two windows, one facing north, one south. Positioned about 150cm [5ft] from one window, in the company of a 1.4m [4.5ft] tall Grevillea robusta, it seems quite happy. It is watered freely in spring and summer, less in winter, but never allowed to dry out. Its shape is described as broadly conic with regularly tiered whorls. The branches have slender, tapering needles which are awl-shaped and bright green; soft to the touch. In Australia and New Zealand it is gaining favour as a re-usable Christmas tree, something I may consider in future.

The Norfolk Island Pine, Araucaria heterophylla, grows densely on Norfolk Island, but is also native to coastal areas of north-east Australia. This tree is sometimes called the Star Pine from the regular star shapes formed by its horizontal layers of branchlets. A. heterophylla is normally a completely salt-resistant tree, all parts being protected by a waxy coating.

NORFOLK ISLAND

Norfolk Island, on latitude 29°S, is a remnant of a long extinct volcano. It is fringed by cliffs and has a plateau-like surface rising gradually to a point only 350m [1150ft] above sea level. Little of the original vegetation remains as it was largely removed early last century as a result of a penal settlement being established and the subsequent settling of the island by the descendants of the 'Bounty' mutineers from Pitcairn in 1856. It has been prevented from re-establishing since that time by fires and grazing of stock.

The climate is suitable for forest and records of early explorers show that the island was originally covered with dense forest. The most notable species of the flora is the Norfolk Island Pine. This has survived rather better than some of the other species and is still a distinctive feature of the landscape.

TRESCO ABBEY GARDENS

ISLES OF SCILLY

by Tony Entwistle

I have visited these gardens at intervals over the last 25 years. There are more Antipodean plants grown outside there than anywhere else in Europe. Nowhere else - except in Australia!, never having been to South Africa, have I seen huge proteas in flower outdoors. For many years my visits revealed the same delights - huge Metrosideros trees the size of oaks, Eucalyptus ficifolia, tree ferns and banksias - a large B. coccinea and what was claimed to be the largest B. integrifolia in the world.

However disaster struck in January 1988 when [for the Scillies] there was a week of severe frosts and deep snow. Some 80% of South African and Australian plants perished. My visit in the autumn of 1988 was heart-breaking. The Metrosideros all appeared dead, and gone were all the Banksias, Acacias, Leptospermums, Dryandras,, Tree Ferns, Ericas etc - only the hardier Eucalypts had survived.

So my last visit in the autumn of 1992 was with apprehension. I was very heartened with the recovery. The Metrosideros had all reshooted from lower down the trunks, but will take many years to reach their former glory. The palms were alive though the crowns still rather pathetic. As expected the New Zealand plants had fared better - most hebes had survived, as had Corynocarpus and Olearia insignis, though Knightia and Agathis had gone.

An extensive replanting of Proteas, Leucodendrons and Leucospermums, Acacias, Banksias, Hakeas and South African Ericas has taken place under the lead of the Head Gardener, Mr. Nelmans. Many have been seed-raised at Tresco though Kew has helped. They have grown well and some of the Proteas are now flowering.

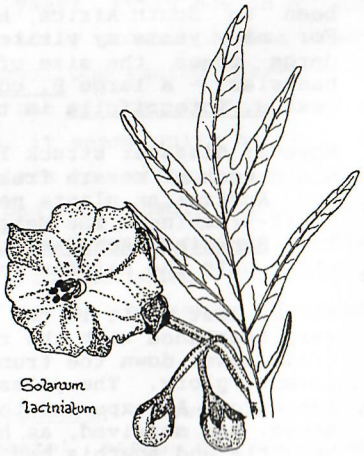
Yet another problem at Tresco has been severe gales over the last five years, which have blown down most of the shelterbelt of Pines on the Atlantic side of the hill. This has exposed the southern end of the garden and blown down many of the inhabitants. This shelterbelt, planted by Augustus Smith dates from the last century, so it is not perhaps surprising. Many of the pines still left erect are dead or very geriatric. Temporary wooden screens have been erected in several parts of the garden and an extensive replanting of Pinus muricata, radiata and thunbergii has been started. It is interesting that in the cleared areas of the pinewoods an extensive ground cover has developed of Erica caniculata, Helichrysum petiolaris and Solanum laciniatum, the latter very colourful with its masses of orange 'egg' fruits.

POROPORO

Poroporo is the Maori name given to both Solanum laciniatum and Solanum aviculare. Both plants also possess the common name of Kangaroo Apple, and can be found in both New Zealand and parts of Australia. Both plants flower, in the UK, from mid-summer through to autumn.

SOLANUM LACINIATUM is an erect shrub upto 3m [10ft] high with purplish stems. The leaves are variable in shape, from lanceolate with a few coarse lobes near the base to narrow-lanceolate, up to 38cm [15"] long with lobes to 13cm [5"] long and 3cm [1.2"] wide. The flowers arranged on stalks in loose clusters of up to 10 blooms, are blue to violet, broadly cup-shaped, 3-5cm [1.2-2.0"] across with 5 shallowly notched lobes and 5 prominent yellow stamens. The resulting fruits are orange-yellow ovoid berries 15-20mm [0.6-0.8"] across.

SOLANUM AVICULARE is an erect shrub growing upto 4m [approx 13ft] in height, with purplish-green angular stems. The leaves are alternate, variable, pinnate or entire, deep green, lanceolate to elliptic, 8-25cm [3.1-10.00"] long and 1-12cm [0.4-4.7"] wide. The flowers are blue or violet, [usually paler than laciniatum], broadly cup-shaped, 25-40mm [1.00-1.58"] across with 5 papery lobes and 5 yellow stamens, arranged in loose axillary clusters on long stalks. The fruits are orange red ovoid berries 10-15mm [0.4-0.6"] in diameter.



During Cook's first voyage to New Zealand in 1769-70, Mr Joseph Banks, Dr Solander and their assistants collected seeds of poroporo, as well as those of other plants. The seeds reached England in July 1771. Shortly afterwards Princess Augusta died and George III joined her estate to his own at Kew, inviting Banks to direct the two gardens 'in a scientific manner'. Consequently, most of the collected seeds were grown at Kew.

In 1789, 'Hortus Kewensis or a Catalogue of the Plants Cultivated in the Royal Botanic Garden at Kew' was published in 3 volumes with William Aiton, Head Gardener to the King, as the author. Two of the plants listed were Solanum laciniatum and S. aviculare.

In the past thirty years it has been discovered that both Kangaroo Apples contain the steroidal alkaloid solasonine, which can be hydrolysed to the aglycone solasodine. Solasodine has a structure similar to that of diosgenin which is obtained from the Mexican Yam [Dioscorea mexicana], and which is one of the major source materials for the commercial production of steroids used in the pharmaceutical industry, amongst other uses, as the principal component of the contraceptive pill.

Apart from their use as raw material for the steroidal hormone industry, the glycosidic steroidal alkaloids may be useful in their own right. All of these alkaloids tested so far show antibiotic activity against certain fungi and bacteria. It is known that in the early days, the Maoris used all parts of the plants for the treatment of scabies as well as a healing salve. They also used the ripe berries to make jam.

In clinical trials, the algycone solasodine has been found to effect improvement in stomach and liver functions with minimal side effects and to show cortisone-like activity in humans. Solasodine has also been shown to possess cardiac and anti-flammatory effects in mice and to show some effects on the vascular permeability as well as on the central nervous system.

The early work on the use of Solanum species as a source of raw material for steroidal production began in Hungary in the early 1960s. Since then other countries producing solasodine include the former USSR, Romania and China. In New Zealand, cropping trials also began in the early 1960s. In 1978 a full plant was commissioned and the growing of Solanum laciniatum and S. aviculare expanded. Unfortunately the company ceased production in 1981, due to the difficulty of reproducing a satisfactory and economic yield of alkaloid and an undercutting of the market by China.

* * * * *

MOAS AND NEW ZEALAND PLANTS

The plants of New Zealand have a peculiar growth habit. In other parts of the world, divarication [branching at a wide angle] is a rare adaptive response to herbivore grazing. In New Zealand it occurs in ten per cent of all woody plants - that is, in 54 species, belonging to 20 genera and 17 families, apparently evolving repeatedly.

Characteristics of divaricating plants include difficult-to-break interlacing branches, tough stems, and the placement of more leaves towards the interior or with fewer and smaller leaves on the accessible exterior.

Divarication has proved to be of some deterrent value against the herbivorous mammals introduced by Europeans during the past two centuries. But before this time, New Zealand had no native herbivorous mammals.

How and why divaricate plants have become such a conspicuous feature of the New Zealand flora has produced many theories, including the one about moas. The moa theory, like other theories, has found favour with some but disbelief with others.

Ian Aktinson and Michael Greenwood, from New Zealand's Department of Scientific and Industrial Research in Lower Hutt, propose that the divaricating shrub habit is probably unique to New Zealand and results from an environmental factor that was also unique to New Zealand, namely the moas.

Before the arrival of the Maoris 1,000 years ago, there were about 11 species of moas common throughout New Zealand. These herbivorous flightless birds, weighing from 20 to 200 kilograms and with heavy horny bills, were capable of devouring a seedling in one bite. Deterrents to browsing such as spines found in plants from other parts of the world may have been less effective against moas. Atkinson and Greenwood believe that divarication developed as a direct result of browsing pressure from moas.

To support their theory, they refer to the fossil record. Moas appear to have been concentrated in the lowlands where fertile alluvial soils are most widespread. They were not found on off-shore islands, were less common in the alpine zone and could not have climbed cliffs or trees. The distribution of divaricating plants matches well. And it is significant that several species that divaricate on the mainland do not do so on off-shore islands. Further support for the theory comes from the fact that there are nine plant species that display divarication as juveniles but lose the peculiar growth habit when their height exceeds three metres. The fact that the height of the largest moas was not far short of three metres is, according to the researchers, no coincidence.

NOTE: Recently, 3 hikers in New Zealand claimed to have sighted and photographed a moa.

* * * * *

INDIGOFERA AUSTRALIS

by Sue Hyams

Indigofera is a very large genus found in the warmer parts of the world. Its name is derived from the dark blue dye indigo, which is obtained from the leaves of two of the species. There are approximately 30 Australian species.

Indigofera australis, the native indigo, is widespread in all states in open forests, on sandy heaths and on hillsides in areas of light or moderate rainfall.

It is a fast growing, upright, open shrub to 2m x 2m [6.5 x 6.5ft], with attractive feathery blue-green foliage. The leaves are alternate, pinnately divided into 5-21 oval to oblong leaflets 5-35mm [0.2-1.4"] long and 2-15mm [0.1-0.6"] wide.

In Australia, flowering is in winter and spring, but my two plants bloom in late spring and summer. The flowers, themselves, are pink to lilac, pea-shaped, 6-10mm [0.25-0.4"] long with a standard 6-9mm [0.25-0.35"] long, arranged in axillary racemes about 5-8cm [2-3"] long. On a warm day it is possible to smell their delicate perfume.

The plant will grow in most well-drained soils. It may be left unpruned to form a slender open shrub, or be trimmed from an early stage to become a more compact, balanced shrub. Propagation is from scarified seed or cuttings. My plants are produced from seed sown in January 1991. In July of the same year, they were transplanted into 45cm x 45cm [18"x18"] plastic containers, in ericaceous compost, along with other Australian plants which they use as support. In May 1992 the first flowers were produced in abundance.

PREHISTORY OF NEW ZEALAND Part Two

by Sue Hyams

Part Two in the prehistory of New Zealand describes the changes during the first part of the Tertiary Period, the Palaeogene. The Tertiary Period is characterised by the dominance of mammals in the Animal Kingdom and of Flowering Plants in the Plant Kingdom.

The TERTIARY PERIOD from 66.4 to 1.6 million years ago, is divided into the PALAEOGENE and the NEOGENE, as shown below.

PALAEOGENE from 66.4 to 57.8 mya.
Split into the PALAEOCENE from 66.4 to 57.8 mya.
EOCENE from 57.8 to 36.6 mya.
OLIGOCENE from 36.6 to 23.7 mya.
NEOGENE from 23.7 to 1.6 mya.
Split into MIOCENE from 23.7 to 5.3 mya.
PLIOCENE from 5.3 to 1.6 mya.

The opening of the Tasman Sea with the generation of new seafloor, between 80 and 60 million years ago, resulted in the Lord Howe Rise and the land to its east moving away progressively from the rest of Gondwana. While the Ancestral New Zealand landmass was moving away, erosion of the land and encroachment of the sea continued relentlessly. By the beginning of the Tertiary, at 65 mya, the area of the land had been reduced and was only a little larger than present day New Zealand. The eastern margins of North Island and South Island were flooded and volcanoes were active to the east of the mid region. The land was by now all low-lying and swamps were a feature of the landscape. By about 60 mya the movement was complete and the distance between Australia and New Zealand has been constant ever since, with approximately 2000km of Tasman Sea separating the two lands. The tilting of the eastern margin of Australia and the formation of the Great Divide resulted from the tectonic events involved in the opening of the Tasman Sea. New Zealand was a lowland plain, steadily eroding and being invaded by the sea until the latter part of the Tertiary when its re-emergence as rising land occurred.

Because the distance which separated Ancestral New Zealand from Antarctica increased progressively from 80 mya, the biota which it took with it was a purely Cretaceous assemblage of plants and animals. It was too distant from other lands to receive any younger ones. From this Gondwanan ancestral stock there was to be evolution-in-isolation throughout the Cainozoic Era [last 66.4 million years], and over time many species became extinct due to the environmental stresses which tectonics and climatic deterioration towards an ice age imposed on the biota.

The pollen record of the Late Cretaceous in New Zealand contains an impressive number of families of flowering plants, especially when compared with Australia where Ilex, Nothofagus and Proteaceae-type are the only ones recorded. In New Zealand Proteaceae, Fagaceae [Nothofagus] Epacridaceae, Chloranthaceae, Haloragaceae [Gunnera], Lorantha-ceae, Liliaceae, Caryophyllaceae, Winteraceae, Scrophulariaceae and Ephedra are the major pollens identified. The vegetation was rich in ferns and tree-ferns including the modern genera Blechnum, Cyathea,

Dicksonia, Gleichenia, Hymenophyllum and Pteris [bracken]. Conifers were abundant, and Podocarpus, Dacrydium, Microcachrys, Araucaria, Agathis and Phyllocladus grew in the forests.
Throughout most of the Paleaogene the land was further eroded and the sea encroached on its margins, reducing it to a scatter of islands. But late in the Oligocene Epoch the trend towards submergence of the land was reversed, and the land started to re-emerge. During the Miocene and the Pliocene active tectonism saw mountains rising and the establishment of North Island and South Island in their modern form [more about that in Part Three].

PALAEOCENE EPOCH 66.4-57.8 million years ago

The Palaeocene Epoch was warm with warm seas. The Pollen Record indicates a rich and diverse flora. Podocarp Conifers and the southern beech Nothofagus fusca were abundant. The family Myrtaceae was represented by Metrosideros [modern Rata] and Leptospermum. Casuarinaceae, Proteaceae and Lauraceae are prominent and many others are represented. Mauritia and other palms were abundant.

EOCENE EPOCH 57.8-36.6 million years ago

The Eocene Epoch saw a slight change in the composition of the vegetation, with the proportions of some of the major components altering. The Beeches had become dominant, supplanting the Conifers. At first Nothofagus fusca was the most dominant species, then Nothofagus brassii took over and remained the major component. Phyllocladus, the Celery-top Pine, and Cupania [Sapindaceae], Euphorbiaceae and Hoheria [Malvaceae] were present. Elytranthe [a Mistletoe] became abundant as its host trees, the Beeches, gained dominance. The Proteaceae are represented by pollen of Banksia and Hakea type, and a number of other genera, possibly including Knightia which is one of only two genera of the family which survive in New Zealand's modern flora.

In the Late Eocene, the flax Phormium [Agavaceae] appears with Freycinetia, the only genus of the Pandanaceae which today occurs in New Zealand. Astelia [Liliaceae], Quintinia [Saxifragaceae] and the Rhopalostylis Palms make their first appearance. Other taxa in the Eocene Pollen Record which are shared with the Australian flora of the same age are : Ilex [Aquifoliaceae], Sapotaceae, Bombacaceae [Baobab family], Cruciferae, Araliaceae, Epacridaceae, Meliaceae and Papilionaceae.

There was little diversity in the vegetation types over New Zealand during the Eocene, as would be expected when the landscapes were all plains and swamps and the climate uniformly warm-temperate. The cooling episode at the Eocene-Oligocene boundary may have caused the extinction of some of the 'tropical' and 'subtropical' elements, including a number of the Proteaceae types.

OLIGOCENE EPOCH 36.6-23.7 million years ago

The Oligocene Epoch saw the continuation of the eroding away of the land and gradual submergence which had started in the Late Cretaceous,

until the area of land remaining above sea level was only less than a third of the area of modern New Zealand. Despite this, its amazing how much of the flora managed to survive. In the forests Nothofagus brassii dominated. Casuarinaceae was often abundant. Myrtaceae, palms, Podocarp Conifers and Nothofagus fusca were other prominent components of the vegetation.

A fossil flora from Southland, South Island and another from the west coast of North Island have rather different assemblages of plants. The Southland flora is rich in Nothofagus brassii and ferns, with Nothofagus menziesii and a Podocarp Conifer Microcachrys being common. Also present are Weimannia [Cunoniaceae] which is the 'Kamahi' of modern forests, Pseudowintera [Winteraceae] Ranunculaceae, Umbelliferae, and others. In contrast to the diverse flora of Southland, the North Island flora was 80 percent dominanted by the Beech Nothofagus brassii and there are few associated species.

The Beech-dominated floras of the Oligocene had a blend of other plants whose present-day distribution is interesting. Among these are the proteaceae genera Isopogon and Embothrium now absent from New Zealand but present in Australia, the Ephedraceae now absent from both New Zealand and Australia, and the Bombacaceae now absent from New Zealand while some [Baobabs] still exist in a very limited area in northern Western Australia. Restionaceae, Sparganiaceae [Burr Rushes] and Typhaceae were marsh plants of the Oligocene and persist to this day. The 'Mapou' or Myrsine [Myrsinaceae], Astelia [Liliaceae], Coprosma [Rubiaceae], Laurelia [Lauraceae] and Fuchsia [Onagraceae] are all still part of modern New Zealand's flora.

Near the end of the Oligocene Epoch the submerging trend was reversed, and a phase of emergence began.

* * * * *

GYMEA LILY

Recently we had a query from a member who had been fortunate in visiting Kew when the Gymea Lily, Doryanthes excelsa, was in flower. The member wanted to know whether the genus had any species with flower spikes less tall than the 5.5m [18ft] ones of D. excelsa. The request had to be answered with a negative. The only other Doryanthes is just as tall, and has even longer leaves.

Although it has roots which pull it down into the ground, Doryanthes can be grown in very large pots. The principal disadvantage is that growers have to be patient. Australian growers have recorded plants which flowered as little as seven years after seed germination. They have also recorded plants unflowered after 28 years. Marianne North painted a specimen at Kew, and noted that the flower spike took 6 months to develop. This is not an unusual time; wild plants take just as long. Although native to the Sydney region, D. excelsa will grow outdoors in the neighbourhood of Melbourne. Winter maxima there are around 15°C.

MILLIGANIA

Milligania is a genus of 5 species in the Asteliaceae. All are endemic to Tasmania. Unfortunately Vol. 4B [Monocots] of the Student's Flora of Tasmania is still unpublished, so the only accounts of Milligania are those in the Endemic Flora of Tasmania. Brief descriptions were given in Australian Plants for June 1992.

The species encountered most frequently in cultivation is M. densiflora Hook f. It is a large species, up to 46cm [18"] high. Like the other species it is an evergreen perennial which grows from a very short, branched rhizome. The short stem is surmounted by the sheathing bases of leaves and the remains of decaying leaves. These leaves are up to 30cm [12"] long and 7cm [2.5"] wide. They have a pronounced keel at the proximal end, which tapers to the tip. Sometimes the leaves are almost glabrous, with silky hairs on the margins only, and crisped hairs on the mid-rib. Scapes are always densely hairy. There are plenty of spring flowering plants for the woodland and peat gardens. Milligania blooms in early summer, displaying its panicle of white or cream flowers. Each bloom is cup shaped at the base, spreading out to 6 lobes. The ovary is placed inconspicuously in the base of the perianth. This is a distinction from M. stylosa. Sometimes the lobes change to pink or crimson as the flowers age.

The habitat is wet sub-alpine moors and wet cracks and ledges on mountain tops. In cultivation the species grows well in light shade in a woodland garden, in the more open parts of a peat garden, or among rocks in moist acid soil.

Propagation is from seed sown on an acid, open, moisture retentive compost. Seedlings should not be transplanted till their second or third year. Mosses and liverworts are a problem at the seedling stage. If the seed is sown on moist sieved sphagnum, the problem is minimised. Algofen is useful for controlling liverwort and also seems to help with damping off fungus, which is the other main seedling problem.

Milligania stylosa [F. Muell. ex Hook.] F. Muell. ex Denth. is very similar to densiflora and when not in flower is difficult to distinguish from it. Though similar in length, the leaves are narrower and taper to a long point. Young leaves have appressed hairs on the lower surfaces, giving them a silvery appearance similar to that of M. lindoniana. When in bloom M. stylosa is unmistakable. It has conspicuous light-green ovaries which stand out prominently as the perianth lobes bend out and away from it. The style is long only in comparison with those of related species. It is about as long as the ovary. There do not appear to be any recorded colour forms.

The occurrence is in wet sub-alpine moors, where it forms large colonies. Cultivation requirements are the same as those for M. densiflora.

M. lindoniana is rare in the wild, where it grows partly under water on Mount Anne, and also on Mount Field. Though it can reach 38cm [15"], 12-20cm [5-8"] is more common. The flower stems are pink, as are the perianth lobes, which spread out to reveal the dark crimson ovary. Ken Beckett has grown this species and lost it after about 3 years. Jeff Irons lost his through botrytis, when he tried to mollycoddle his seedlings over winter in a cold frame.

M. johnstonii is very rare in the wild, and seed is unlikely to be obtainable. It has been grown [in Tasmania] as a pot plant in moist gravel. M. longifolia is another rare species which is unlikely to become available.

GLOSSARY

SCAPE : a peduncle arising from near ground level, often solitary and either leafless or with a few bracts or scale leaves.

APPRESSED : closely and flatly pressed against a surface.

NOTE : for overseas members. ALGOFEN is a proprietary mix of phenols and cresols. In appropriate dilution it kills mosses and liverworts but does not harm plants or seedlings.

THE NEW ZEALAND FLAXES

In 1769-70, during Captain James Cook's first visit to New Zealand, Mr Joseph Banks listed about fifteen useful plants in his journal.

> ....But of all the Plants we have seen among these People, that which is the most excellent in its kind, & really excels most if not all that are put to the same uses in other Countries, is the plant which serves them instead of hemp & flax...

Banks had no name at this time for New Zealand flax; he described the split leaves used to make nets and the snow-white fibres used to make fine clothes, and concluded that the plant would be a great acquisition to England where it might thrive with little trouble.

Following Cook's first voyage, botanists gave the plant the name Phormium tenax, the generic name being from the Greek word for basket, a reference to its Maori use, and tenax meaning tough. On colonising New Zealand, the Maoris discovered the native flax and exploited it. Baskets and matting were made from the leaf blades, while the fibres, extracted from the leaf centre and dried, made strong ropes, fishing nets and clothing. European settlers also realised the potential of phormium and fibre production became an industry. By 1830, flax fibre was being shipped to Britain. This continued for well over 100 years. Yellow leaf disease combined with the introduction of synthetic fibres, caused the decline of the industry. The Maoris also used the buoyant leaf stalks for flotation, and the orange gum from the leaf base as an antiseptic and to stop bleeding. Birds pollinate the fleshy, rich red or orange flowers, attracted by the abundant, sweet nectar.

The New Zealand flaxes belong to the genus Phormium, which consists of two species found throughout New Zealand, but one also occurs in Norfolk Island.

All Phormiaceae are herbaceous. Their tough, fibrous leaves stand erect in two ranks, forming flat fans connected at the base by short, thick stems. Phormium family leaves show a unique feature: the lower part folds together like a book with the inner surfaces fused. The leaf opens above into a flat blade and below into a sheath surrounding the younger leaves.

The life of each fan of leaves ends when it produces an inflorescence from its centre. Black, glossy, usually flattened seeds are characteristic. In some members these disperse from dry capsules, in others they are within fleshy berries.

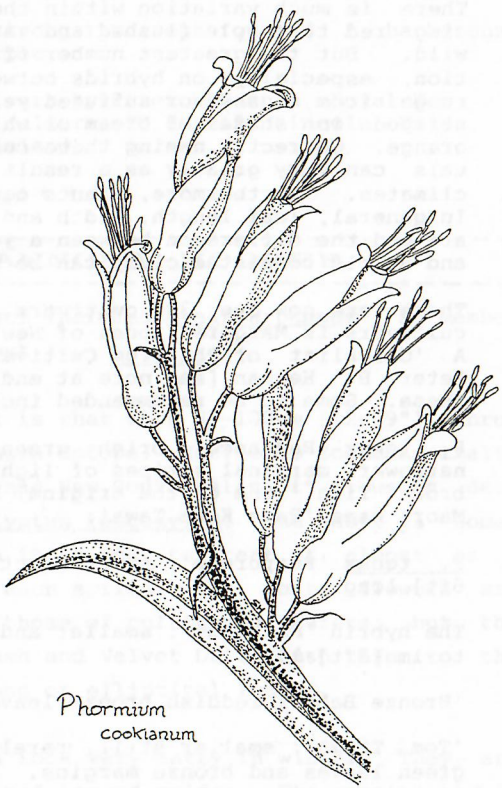
CULTIVATION AND PROPAGATION

The New Zealand flaxes are easy to grow and will thrive in almost any soil as long as they receive good winter light and shelter from freezing winds. Temperatures below -10°C may damage growth and can even kill young plants. In New Zealand, Phormium tenax can often be found in swampy areas. Maybe its worth trying as a waterside plant, despite the fact that most British gardening books recommend moist but well-drained soil. It seems to be a very adaptable plant, thriving in the

garden as well as enjoying patio-container culture. If grown in a pot, they must be put under cover in winter, especially in colder areas, as a frozen root system is generally fatal.

Both species can be easily raised from seed which should ideally be sown under glass in spring. For the first two years, it is best to keep the young plants in pots, giving them winter protection. Large clumps can also be divided in spring. The best way to do this, is to dig down beside the clump to severe some of the outer leaf fans with good roots. Shortening the leaves by half, will help these offsets to establish more easily. They may require a cane and tie in windy sites to keep the plant stable until new roots form. It can take a full year for divisions and offsets to settle down and start growing satisfactorily.

Although phormiums will flower in the British Isles, it tends to be erratic. Plants need to be thoroughly established before flowering spikes emerge; this can often take six or seven years.



PHORMIUM TENAX
Also known as the common New Zealand flax has generally erect, stiff, incredibly leathery leaves often greyish on the under surfaces and with a marginal orange line. Mature plants produce 2.4-5m [8-15ft] tall stiff panicles of six-petalled, tubular, dull red flowers 2.5-5cm [1-2"] long which are full of nectar and are bird-pollinated. They are followed by erect seed pods rather like small straight bananas in outline but triangular in cross section. The closely packed flattened seeds are jet black and silky. It is found throughout New Zealand and in Norfolk Island in a variety of habitats, but especially in swamps and occasionally flooded areas in the lowlands.

PHORMIUM COOKIANUM [SYN. P. COLENSOI]
This flax is also widespread in its homeland but in drier, often shadier habitats, from coastal cliffs to mountain slopes. It has less stiff greener leaves that usually arch outwards and basically greenish flowers often shaded with orange or yellow. The slimmer, longer seed pods, which are twisted half a turn from base to apex and hang down are particularly distinctive.

There are two subspecies : P.c.ssp.cookianum, the southern mountain form, and ssp. hookeri, the northern lowland form.

Both P. tenax and cookianum vary greatly in overall size and other lesser characters.

There is much variation within the species, both occasionally producing red to purple flushed and variegated shoots or seedlings in the wild. But the greatest number of variations have arisen in cultivation, especially on hybrids between the two species. Leaf colours range from flushed or suffused yellow to deep red-purple or variably striped in shades of cream or white to pink, red, yellow and near orange. Correctly naming these cultivars is a challenge, as individuals can vary greatly as a result of differing soils, situations and climates. Furthermore, plants can change significantly as they age. In general, leaf length, width and colouring get smaller or deteriorate and the difference between a young plant of one to a few leaf fans and an old congested clump can be very marked.

There are now over 380 cultivars. The foremost breeder of Phormium cultivars is Margaret Jones of New Zealand Flax Hybridisers, Tauranga. A 'Checklist of Phormium Cultivars' has recently been completed by Peter B. Heenan [see note at end]. 'The Plant Finder' lists 25 of these. Some to be recommended include:

P. tenax 'Radiance': bright green leaves having a broad central and narrower marginal stripes of light yellow and edged with a reddish-brown line. One of the original Maori cultivars, known since 1870; Maori name 'Pare Kore Tawa'.

P. tenax 'Purpureum': stiff erect, bronze-purple leaves 1.2-1.8m [4-6ft] long.

The hybrid 'Burgundy': smaller and darker with deep red-purple leaves to 1m [3ft] long.

'Bronze Baby': reddish bronze leaves upto 60cm [2ft] long.

'Tom Thumb': smaller still, rarely above 40cm [16"] tall, with erect green leaves and bronze margins.

P. tenax 'Variegatum': known since 1878. It is one of the largest variegated sorts with leaves 1.8-2.1m [6-7ft] long, variably striped with creamy yellow.

P. tenax 'Yellow Wave': has arching foliage; upper leaf surfaces yellow with green lines and the lower surfaces green.

P. cookianum ssp. hookeri 'Cream Delight': is remarkably similar.

'Rainbow': has broad bronzy green leaves with narrow salmon-pink stripes near the margins. It is a cookianum x tenax hybrid.

'Maori Chief': not unlike 'Rainbow'; has redder submarginal stripes.

'Smiling Morn': another cookianum x tenax hybrid. Young leaves entirely pink or striped bronze to purple then changing to green via shades

of purple. Walter B. Brockie received the Plant Raisers Award for 'Smiling Morn' in 1968.

'Sundowner': erect plant with bronzy green leaves variously striped cream and pink.

'Sundance': has a similar but stronger variegation and a background leaf colour nearer to bronze-purple.

Checklist of Phormium Cultivars by Peter B Heenan, Royal New Zealand Institute of Horticulture, PO Box 12, Lincoln University, Canterbury, New Zealand.

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OLEARIA PANNOSA HOOKER

Michael Wickenden's 1993 catalogue includes Olearia pannosa. A member asked what we could tell him about it.

Perhaps the most important fact is that this 30-100cm [12-39"] shrub is unlikely to be hardy in northern Europe. Native to South Australia and adjacent parts of Victoria and New South Wales, it grows in deep mallee sands, often under Eucalyptus leucoxylon. The habit is somewhat open, and in cultivation it is best to treat it almost as a perennial, cutting back hard each spring. The white flowers are described as being as big as those of cultivated asters; but the common names of Silver Daisy Bush and Velvet Daisy Bush refer to the large [4-10cm/1.5-4"] broad oblong or elliptical leaves.

Both wild and cultivated plants look very tatty in winter. They are attacked then [in Australia] by red-legged spider. The species should be suitable for Mediterranean gardens. If any member wants seed, we will try to obtain some.

SNIPPET

Gary Dunlop [Ballyrogan Nurseries] tells us that he has identified two forms of Anopterus glandulosus in Northern Ireland. One has leaves which are darker and coarser than the other. The former plant has a more open habit.

Ed. Anopterus glandulosus is a frustrating species. Bought plants usually flower well, then fail to make vegetative growth and die after 1 to 3 years. So far APS members have been unable to germinate seed.

INDOOR ANTIPODEANS

By Dr. Graham Sumner

My approach to growing Australasian plants has always been to experiment...and hope! This also means of course that I am sometimes bitterly disappointed. After about six years growing Antipodean plants, though, three particular species have proved exceptionally adaptable and not at all fazed by an indoor existence, even all year round.

SYZYGIUM AUSTRALE. As a robust plant which tolerates quite low light levels it takes a lot of beating. Indeed at times it seems to hate direct sunlight if it has been brought up indoors. The only drawback is its rapid rate of growth, though this is slowed by poor light levels. I germinated many about five years ago and most are happy in other people's living rooms. Three of the six I have left are now too large to bring in from the garden, where the fortunate ones have spent the past summer. Since they are frost tender I am praying for a mild winter, though I did plant one experimentally outside three years ago. It is cut down every year by frost but makes new growth to about 50cm [20"] each summer. Most of mine have flowered, but the best 'blooms' occur on those put outside or in the conservatory, and many are currently producing fruit, thereby maintaining the family line. I have one grown from a home-grown fruit.

AGONIS FLEXUOSA, the Western Australian Honey Myrtle. This plant adopts a somewhat wayward, weeping habit, but its leaves are a beautiful shape and colour, and when crushed or brushed against exude a gum-like scent. It too seems to tolerate a wide range of light conditions, even throughout the year, though it benefits from life outdoors in the shade during the summer. I have one in my lounge, where I burn an open coal/wood fire [home-grown from Eucalypts which have grown too large!] and which becomes extremely hot on some winter evenings. It is thriving.

PITTOSPORUM UNDULATUM. This again seems tolerant of quite low light levels, though not as much as the previous two. When grown in the conservatory incredibly sweet smelling flowers appear in spring, and when put outside 'to grass' in the summer it may flower in the autumn. The leaves are very attractive and the plant is very attractive in form as well. It is meant to be frost tender, but I have one which has endured temperatures of -2°C without much damage : it is in a large tub outside and is only brought in if I feel strong enough and if the weather is likely to be very cold.

In all three cases a change of position or movement outside is obviously beneficial, though not absolutely essential. An occasional turn through 180 degrees may be necessary to keep a symmetrical form.

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SNIPPET

In the November 1992 Newsletter, Jeff Irons reported Graham Hutchin's comment that he ascribed the extensive winter damage in his nursery to a dry autumn. Dr. Hugh McAllister, Deputy Director of Ness Gardens has told us that late summer and early autumn droughts prevent woody plants from laying down thick cuticles on their buds and twigs. This renders them susceptible to winter desiccation and subsequent dieback.

THREE ELUSIVE OLEARIAS

O. semidentata, O. chathamica, O. 'Henry Travers'

by Tim Longville

In common no doubt with other members of the society I have plants which I've acquired at various times and from various sources under all three of these names. All have handsome glossy green foliage, stylishly showy flowers in soft tones of lilac and purple, and make very effective garden shrubs. The Plant Finder under O. semidentata now says, "See O. 'Henry Travers'" but it continues to list O. chathamica. It seems likely, though, that the plants currently on offer in commerce under any of the three names are all in fact O. 'Henry Travers.' This is a long-running tale of confusion.

So long-running and so confused that's it's not easy to find a simple starting point. Right from the beginning there is more than one strand. The two main strands can be labelled: Captain Arthur Dorrien-Smith and Henry Travers. In 1908 Henry Travers, a retired lawyer of Irish origin living in New Zealand and attempting to make a living by exporting live plants collected in the west, sent living examples of plants believed to be O. semidentata to the Botanic Gardens at Glasnevin. In 1910 Captain Dorrien- Smith, the owner of Tresco Gardens in the Scillies, brought back from an expedition to New Zealand young plants, also supposed to be O. semidentata, and introduced them to Tresco. [Dorrien-Smith's plant is illustrated in Curtis's Botanical Magazine for April 1914 and an account of his expedition appeared in the Kew Bulletin for 1910.] According to Charles Nelson [An Irish Florilegium, Part 2], although Dorrien-Smith gathered and dried specimens of the true O. semidentata, the plants that he brought back - and also the plants which Travers sent to Glasnevin - were all in fact not true O. semidentata, but examples of a naturally occurring hybrid, probably between O. semidentata and O. chathamica [Kirk, Flora of New Zealand, Vol 1, agrees that there is "good field evidence" for that hybrid group]. Nelson goes on to say that the available evidence [though it is, to use his own word, "scanty"] suggests that the true O. semidentata has never, in fact, been cultivated in Britain or Ireland and all plants so called should really be named O. 'Henry Travers' [acknowledging Travers' 1908 priority over Dorrien-Smith's 1910].

O. chathamica has never been as commonly found as a name in the trade in this country or in Ireland. I don't know who first claimed to have introduced it to cultivation in this country nor do I know if there were subsequent independent introductions or whether all of the [relatively few] plants around which claim to be O. chathamica derive from one collection. The real question, though, is: are they in fact

O. chathamica? To steal Charles Nelson's phrase again - and this time with even more justification -, from "the scanty evidence", it seems more than probable that they're not: but are in fact our old friend O. 'Henry Travers' under yet another alias.

I paraphrase the relevant entries from Flora of New Zealand, Vol. 1, and from An Irish Florilegium, Part 2.

O. semidentata. Chatham Island endemic, a shrub up to 1m [39"] high with slender branchlets covered with white floccose hairs. The leaves are 3.5cm x 6-9mm [1.4" x 0.25-0.35"]. They're narrowly lance shaped with very short stalks. The upper half of the mature leaf has widely spaced teeth. Mature leaves do not have hairs on their upper surfaces but the under surfaces have a white tomentum of hairs which are pressed close to but do not touch the surfaces. The slender flower stalks are also tomentose and are 5.8cm [2.3"] long with lanceolate bracts. The flower heads are 2.5-3.5cm [1.0 - 1.4"] in diameter. The involucral bracts are hairy towards their tips and on their margins. [Nelson says the phyllaries are "almost glabrous"]. They are pointed and up to 1cm [0.4"] long. The ray florets are purple, the disk florets are violet-purple. The seeds are linear and covered with soft downy hairs about 3mm [0.1"] long. It is a plant of peaty ground and bogs. There is also a var. albi-flora. Dorrien-Smith [Kew Bulletin, 1910] said, "I discovered several bushes of an entirely white form...[Mr. Cox] also found a lovely pink variety."

O. chathamica. Chatham Island endemic, a shrub to 2m [6.5ft], its branchlets, leaf under-surfaces and flower stalks clad in a soft white tomentum. The leaves are 2.5-8cm x 1.5-4cm [1.0-3.1 x 0.6-1.6"]. They are lance-shaped to elliptic, or oblong to obovate, pointed with a short broad stalk, leathery, closely toothed, with blunt teeth. The flower stalks are 5cm [2.0"] or more long. The flower heads are 3.5-4.5cm [1.4-1.7"] in diameter. Their outer involucral bracts are densely clad with a cobwebby tomentum on the back. The ray florets are white to purplish and the disk florets are purplish. The seeds are linear though slightly curved, sometimes covered with soft down, sometimes almost hairless, and are 4-5mm [0.15-0.19"] long. It occurs either in dry ground or in somewhat boggy areas.

O. 'Henry Travers'. A broad rounded shrub up to 3m [10ft] in the wild, to 4m [13ft] or more in cultivation. The leaves are lanceolate, tapering to a pointed apex and without an obvious stalk. They are up to 14cm [5.5"] long and not more than 4cm [1.5"] broad. The upper surface is dark glossy green, the under-surface densely coated with silvery-white hairs. The leaf margins are bluntly toothed and slightly inrolled. The flower heads, held on a long stalk, are up to 7cm

[2.75"] in diameter. The ray florets are pale lilac, the disc florets rich purple.

In gardening terms these [almost literal] splittings of hairs seem to reduce themselves to the fact that O. 'Henry Travers' has all of a hybrid's vigour, making a bigger shrub with bigger leaves and bigger flowers than either of its [putative] parents. [The differences between it and O. semidentata in all these respects are particularly marked.] So it may be that in missing the real O. semidentata and probably the real O. chathamica we are not [in gardening terms] missing all that much. [I'm told that at Malahide they're growing on young plants - they haven't flowered yet - which they think may be genuine O. chathamica.] I'd still like to see the two species. I'd like to see Dorrien-Smith's white and pink flowered forms of O. semidentata, too. Does any other member have further information on any aspect of this saga? Does any member think they have in fact got genuine plants of either of the two species? Does anyone think they have one of Dorrien-Smith's variations of O. semidentata? Does anyone know the history of the [supposed] introduction of [the supposed] O. chathamica? I'm told that O. 'Henry Travers' exists in various leaf forms, too: does anyone know more about that? How variable are the leaves? What form or forms does the variation take? Does the variation exist in other parts of the shrub as well as in its leaves? If nothing else, this "tanglewood tale" gives the more-or-less innocent ordinary gardener some insight [sympathetic or infuriated or appalled, according to taste] in to the strange world of the botanical taxonomist.

The glossy dark leaves and the soft lilac and purple flowers continue, of course, to give pleasure and to earn their garden place, whatever their name or names may be or become.

Ed: 'Henry Travers' does not demand moist soil, and will not require additional water, even when grown only a foot away from a privet hedge.

* * * * *

PROPAGATION NOTES

BORONIA MEGASTIGMA

Pour hot/boiling water over seed. Leave for 12-24 hours. Sow in an open lime free mix at 20-30°C. Transplant to sand:soil when 1cm [0.4"] high. Do not allow to dry out.

ANIGOZANTHOS

Soak seed in water at 55-60°C for 2 hours. Sow in an open lime-free mix. Transplant very early on to a sandy mix; 3 parts sand to 1 part soil is suitable. Use a fungicide on the seedlings. Slow release fertiliser desirable.

DRACOPHYLLUM MILLIGANII

by Brian Halliwell

Dracophyllum is an Australasian genus of about 30 species of which two occur in Tasmania : D. minimum, a cushion and D. milliganii, an evergreen shrub with upright stems. D. milliganii has unbranched stems which I read can reach 4m [13ft]. The only plants that I have seen on Mount Read in the north west of Tasmania at 1200m [4000ft] were less than one metre [39"] high. From an expanded leaf base which clasps the stem there is a narrow leathery recurving blade some 50cm [approx 18"] in length which tapers to a point; often the undersurface is reddish. In upper axils are produced substantial panicles which can exceed 20cm [8"] in length made up of clusters of urn-shaped flowers most usually white but sometimes tinged with pink; fruits are dry capsules.



In a garden this is a plant for a peat border or in light shade of trees. It grows better in high areas of rainfall where the atmosphere, especially in summer, is cool and moist; the lime-free, gritty organic soil must be well drained but water retentive. As with many Epacrids, seed is difficult to germinate. I do wonder if this and all species of Dracophyllum are dioecious? Seed seems to have short viability and benefits from moist storage rather than dry. Sow seed as fresh as possible in a compost of equal parts of : moorland peat, lime-free soil and coarse sand. Plunge the pot outside and if there is to be germination, this will occur as temperatures rise after winter. If successful with germination, leave seedlings for a year before potting separately in early spring before they start into growth; use the same compost as for seed sowing. Take care, because like all other Epacrids the roots are very fine. I have found cuttings of all species of Dracophyllum difficult to root. My occasional successes have been using cuttings of new growth rising direct from the rootstock in late summer. Dracophyllum milliganii has been raised from seed in Britain, and has been exhibited at AGS Shows where it won prizes.

BILLARDIERA SPP

by Tim Longville

The only billardiera commonly available in commerce is B. longiflora, grown largely for its fruit. Over the last couple of years I've been growing a single plant [from R.H.S. seed] of B. erubescens. I discovered [long after I'd decided to have a go at growing it, of course, as is usually the case] that this was unlikely to be hardy in the UK

and was anything but suited to my mild, damp, West Coast climate on the Solway Estuary, since it comes only from a small section of Western Australia where it grows on sandy soils. Nevertheless, it had to take its chances outside this year, since it had simply outgrown the greenhouse. I left it in its 30cm [12"] pot [more by luck than judgement filled with a particularly gritty mix] which I sank in the soil of a raised bed at the foot of a sheltered south-by-east intersection of high walls. Not only has it [mid February] survived with absolutely no sign of distress or damage a winter which has included both a week or ten days around Christmas of consistent frost and a January of continuous salt-laden gales, it also continued to grow until the Christmas frosts came [its now about 3m [10ft] tall, twining happily through a Solanum jasminoides album] and, as a bizarre bonus, it flowered for the first time - through November and December! 'Erubescens' accurately describes the tubular flowers, about 2.5cm [1"] long, of a delicate, muted, soft, yellowish-brownish red. The whole plant has a modest but stylish charm and is certainly well worth growing if, as my experience suggests, it proves to be hardier outside than its place of origin would indicate. My plant hasn't produced berries [hardly surprising given its idiosyncratic notion of an appropriate flowering time] and I don't know what they're like, though I gather that this species is essentially grown for its flowers rather than its fruit.

I wondered if other members had experience either of B. erubescens or of any other of the billardiera spp and what they thought either of their hardiness or of their garden worthiness? My first experience of the genus certainly makes me think it might be worth exploring.

Ed. There are about 25 different species of Billardiera. The two most common in Britain are longiflora and scandens, but the showiest is ringens. They flower at various times, from winter, through summer, to all the year. All exhibit seed dormancy and there is no satisfactory method of overcoming it. Leaching is successful with some species, and germination can occur after 6 to 12 months. If Billardiera longifolia seed is sown while fresh immediate germination occurs. The germination inhibitor seems to be formed during storage.

Western Australia's Mediterranean climate dates back only about 5 million years. Any Australian plants flower in spring or summer, and have a late summer growth spurt. In that, Billardiera are not unusual.

PLANT LIST OF M. COURTOIS

A Corsican APS Member

The following lists contain many of the plants which M. Courtois, a Corsican member grows. With the French language being his native tongue, M. Courtois finds that he cannot write easily in English. Do we have a member who is fluent in French and would be willing to act as go between and correspondent? If so, please contact Jeff Irons.

SPECIES GROWING IN THE OPEN GROUND
[No problems in normal winters]

Acacia dealbata
Acacia retinodes
Alyogyne huegelii
Callistemon brachyandrus
Callistemon citrinus
Callistemon paludosus
Callistemon pinifolius
Callistemon violaceus
Cassia floribunda
Cordyline...species to determine
Eucalyptus calmadulensis
Eucalyptus globulus
Eucalyptus gunnii
Eucalyptus niphophila
Grevillea robusta
Grevillea rosmarinifolia
Indigofera australis
Lagunaria patersonii
Leptospermum...species to determine
Melia azedarach
Myoporum...species to determine
Pandorea jasminoides
Pavonia hastata
Pittosporum tobira
Hebe...several species
Parahebe

SPECIES SOWN IN SPRING 1992
Plants of 10-40cm [4-16"]

Callistemon pachyphyllus
Callistemon polandii [broad-leaved form]
Callistemon 'Running River'
Callistemon salignus [white]
Calothamnus villosus
Kunzea capitata
Melaleuca armillaris
Melaleuca decussata
Melaleuca diosmafolia
Melaleuca ericifolia nana
Melaleuca hypericifolia
Melaleuca incana
Melaleuca fulgens ssp. fulgens
Melaleuca laterita
Melaleuca leucaendra
Melaleuca linariifolia
Melaleuca linariifolia 'Snowstorm'
Melaleuca nervosa
Melaleuca nesophila
Melaleuca nodosa
Melaleuca pentagona
Melaleuca quinquenervia
Melaleuca squamea
Melaleuca squarrosa
Melaleuca stypholoides
Melaleuca tamariscina spp. pallescens
Melaleuca thymoides
Melaleuca violacea
Melaleuca viridiflora
Leptospermum mixed

EUCALYPTUS TRIAL TATTON PARK

Tony Entwistle

In 1988 two plants each of the following species were obtained from Celyn Vale Nurseries, Corwen, North Wales: Eucalyptus archeri, aggregata, coccifera, debeuzvillei, dalrympleana, gunnii, glaucescens, nicholii, niphophila, pauciflora and subcrenulata. They were planted in an open exposed bed, one of each species being allowed to grow naturally and the other pollarded each spring.

Tatton is a fairly cold garden, being on the Pennine side of the Cheshire plain. None of the winters since 1988 have been particularly severe.

Results to date

Death: E. archeri.
Cut back in winter: E. nicholii and glaucescens, neither very severely.
Winter browning of foliage: a little on all species except E. debeuzvillei, niphophila, gunnii and pauciflora but very bad each winter on E. nicholii which looks very unsightly.
Previous experience with Eucalypts: The following species have died at Tatton in earlier winters : E. glaucescens, nicholii, rubida, cypellocarpa and delegatensis. The only Eucalypt to have survived since planting in the early 60s is E. perriniana. It has been cut to the ground a few times in severe winters and is deliberately pollarded every 3-4 years. It regrows with enormous vigour, reaching 3m+ [10+ft] in a season, flowering in the third year.

SNIPPET

Stephen Read, of Reads Nursery, Norfolk, who are specialist growers of conservatory plants, wall shrubs and climbers, unusual fruit, as well as being the National Collection Holders of Citrus, Figs and Greenhouse Grapes, have submitted the following information.

> 'Regarding hardiness, our results are mainly unscientific accidents eg. Correa mannii, Dodonaea viscosa purpurea have both survived a winter outside, in a pot, totally neglected. Hardenbergia violacea 'Happy Wanderer' survives cold greenhouse down to 24°F [-4.5°C], no problem. Cordyline survived the last three years in the ground in my garden at home, a very windy spot as well. Albizia regrows from bare [outside]. Billardiera longifolia survives on a warm wall or cold greenhouse. Sollya heterophylla - I have seen this sold as hardy, but it doesn't seem to like us!
>
> I'm putting a selection into our cold greenhouse for the remainder of this winter. It usually manages to freeze the pots in there so we shall see what happens. We usually get some nasty, biting, east/north winds here in the winter which can decimate even the hardiest of English plants sometimes, let alone any from healthier climes.'

We look forward to hearing more reports on hardiness etc.

If any APS member would like a copy of Reads Nursery's catalogue, Stephen will send you one F.O.C. Just drop him a line : Reads Nursery, Hales Hall, Loddon, Norfolk, NR14 6QW.

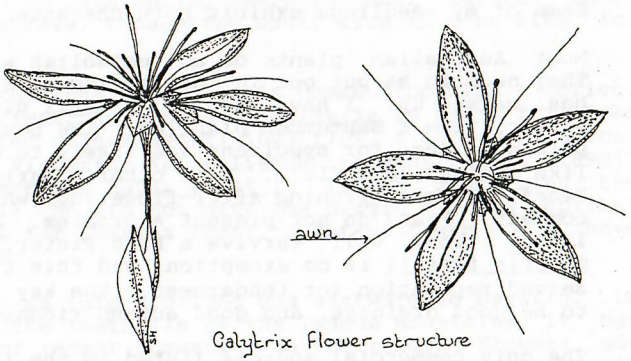
SNIPPET

Forecasters say Australia is facing its worst locust plague in 14 years and crop damage could run into hundreds of millions of dollars. Dr. Graeme Hamilton of the Australian Plague Commission said outbreaks in S. Australia, NSW, Victoria and Queensland were due to record winter and spring rains. He said this year's weather pattern was similar to the one which preceded the 1979 outbreak, which was Australia's worst.

FIRST W.A. STARFLOWER HYBRID

In January 1992, Chris Wilkinson, a keen naturalist, noticed while walking through the banksia woodland at Southern River, one of Perth's southern suburbs, a curious population of starflower [Calytrix species] unlike any he had seen before. It seemed to have characteristics of both Calytrix flavescens and C. fraseri, which both occur in the area. Chris contacted CALM [Department of Conservation and Land Management], where the Herbarium botanist Ray Cranfield carefully examined the starflower and was also puzzled by it.

This new collection seemed to fall between the two species and combine the petal colours to produce a beautiful apricot hue.



However, starflower hybrids had never been recorded in WA.

To confirm Chris and Ray's findings, the specimen and photographs were sent to Lyn Craven at the Australian National Herbarium in Canberra. Mr Craven, Australia's foremost starflower expert, verified that it was indeed the hybrid they had suspected and the first recorded evidence of starflower hybridisation in WA. In fact, it is only the fourth example in Australia.

The habit and flower colour of this new discovery could be of horticultural potential and Kings Park Botanical Gardens have expressed an interest in propagating it. Calytrix, a genus of 76 species with 53 occurring in WA, is concentrated in the south west of the state. Several species are already being cultivated, including both parents of the hybrid.

CALYTRIX FLAVESCENS Summer Starflower

An erect shrub, found in Western Australia on a variety of habitats, usually less than 50cm [20"] high with 3-angled leaves up to 9mm [0.35"] long. A pair of free bracteoles up to 8mm [0.30"] long occurs at the base of each flower. The flower has a floral tube up to 1.5cm [0.6"] long, 5 yellow sepals up to 1.5cm [0.6"] long [including awns], 5 petals up to 9mm [0.35"] long and numerous stamens which are slightly longer than the petals. The brightly coloured yellow flowers are scented, 11-20mm [0.4-0.8"] across, often in clusters. In Australia, flowering is from November to January.

CALYTRIX FRASERI Pink Summer Calytrix

This species is commonly grown in southern Australia. An erect shrub to 1.5m [5ft] high with 3-angled leaves up to 5mm [0.2"] long. There are two free bracteoles up to 5mm [0.2"] long at the base of each flower. The flower, 12-28mm [0.5-1.1"] across, has a floral tube up to 1.8cm [0.7"] long, 5 pink to green sepals up to 2.4cm [approx 1"] long [including awns], 5 pink or purplish-pink petals up to 1.2cm [0.5"] long and numerous pink stamens. The yellow centre becomes ochreous with age. Flowering is from December to March.

CALYTRIX TETRAGONA Common Fringe Myrtle

Our 1993 seedlist contains seeds of this starflower. This starflower takes the form of a small shrub and is the most widespread species occurring across southern Australia, from Western Australia to South Australia and Victoria, down to Tasmania and north to the Springsure district in Queensland. In Australia it has been reliably grown in a wide range of soils. The flowers may be a pink tinged white to an attractive deep pink, 7-15mm [0.3-0.6"] across. The stamens have white filaments and red anthers.

PROPAGATION AND CULTIVATION OF CALYTRIX

The starflowers are one of the most attractive wildflowers found in Western Australia. Their small flowers often cover the entire plant, hiding the foliage. Most flowers are two tone, with the petals being a different or lighter colour than the throat of the flower and filaments usually being bright yellow. The flowering season is generally the spring.

Calytrix are not widely grown except for a few species such as Calytrix angulata, C. fraseri and C. tetragona. They are notorious for keeling over, especially when grown in the open ground; the reasons for this are not fully understood.

Requirements for success include a sheltered position such as growing amongst other small shrubs, but with some air movement as the plants are susceptible to fungal attack, no root disturbance, and good drainage. Many species can be successfully grown in containers in both soil and soilless potting mixes with low rates of general slow fertiliser.

Propagation from seed can be a real challenge. Many species appear to produce few viable seed and when good seed is available it may be difficult to germinate. However it occasionally germinates like mustard and cress. Fresh seed appears to give better germination than older seed. Seedlings are prone to damping off disease, therefore drench with a suitable fungicide.

Purchased seed may need the calyx and awns removing. Push the seed into the sowing mix point first. The top of the seed should be level with the soil. Water from below.

Propagation from cuttings, particularly by soft wood cuttings usually 4cm [1.5"] long, seems more successful than by seed. Placed around the edge of a pot in a mix of 2/3rd washed river sand/perlite and 1/3rd peat, or your own preferred well drained aerated mix. Placing the cuttings in a cold frame or in open shade with low humidity gives good results.

There is comprehensive coverage of starflowers in 'Australian Plants' June 1990, Vol 15, No 123.

URTICA FEROX

The most dangerous of New Zealand's native plants is probably ongaonga [Urtica ferox], the giant stinging nettle. Its stinging hairs have been known to kill a man, horses and dogs. The extract of just five hairs can kill a guinea pig. Acetylcholine, histamine and 5-hydroxytryptamine have been shown to be present in the hairs, but in no greater quantity than in the hairs of the less dangerous common European nettle [Urtica urens]. Acetylcholine exerts a powerful stimulation of the parasympathetic nerve system; it is also a cardiac depressant and an effective vasodilator. The toxin of Urtica ferox is water soluble, but all attempts to purify the compound have resulted in partial destruction of the toxin. However, it has been separated into two distinct poisonous fractions, one of which has local-anaesthetic activity. The chief toxin has been named 'triffydin', possibly after the mobile plants of John Wyndham's well-known science fiction novel 'The Day of the Triffids.' The plant also contains silica in an organic form.

PIGMENT PUZZLE SOLVED

The genus Commelina provides some of the most arresting blue flowers that can be found anywhere. Scientists have known that a magnesium pigment is responsible for their colour since the late 1950s. A paper published last year [Nature 1992, 358,315] described its structure. The colouring matter is unusual not only because it contains magnesium, but also because it is shaped like a flower.

The genus name is unusual too. It is after the Dutch botanist Commelin [1629-92] and his nephew Caspar [1667-1731]. Linnaeus wrote 'Commelina has flowers with three petals, two of which are showy, while the third is not conspicuous, from the two botanists Commelin, for the third died before accomplishing anything in botany'.

Australia has seven species of Commelina. All require warm greenhouse treatment in Britain. Commelina undulata is found in rainforests, so should adapt well to low light conditions. Being low, it would make a good basket plant, or trailer.

SNIPPET

1992 was the coldest year since 1945 in New Zealand with a national average temperature of 11.7 deg according to the National Institute for Water and Atmospheric Research.

The conditions were caused by the El Nino weather pattern, volcanic ash in the atmosphere from the Mt Pinatubo eruption, on the Phillipines, in June 1991 and more southeasterly winds than usual.

1992 was exceptionally cloudy with record low sunshine in Northland, Auckland, Manwatu, Wellington, Nelson and Marlborough. Southland was the only part of New Zealand to receive more sunshine than usual.

In Australia, droughts caused by the El Nino effect have devastated farms and cost hundreds of millions of dollars in losses. Added to this damage is that caused by hailstorms. At the end of November, windows were broken by hailstones the size of cricket balls with winds up to 75km/h [120mph] pounding the communities on the lower side of the Blue Mountains. The Insurance Council of Australia says hail-storms over the Christmas - New Year period caused over $39m worth of damage to crops across southern Australia. And it says the total estimate of insured and uninsured losses of broadacre crops such as wheat, barley and field peas, could be as much as $65m.

* * * * *

NAME CHANGES IN PARAHEBE/VERONICA

A recent paper in Telopea, "A revision of the Australian species of Parahebe and Derwentia [Scrophulariaceae] by Barbara G Briggs and F Ehrendorfer has resulted in nine of the ten Australian species being removed from the genus.

In the introduction to the paper it is stated that "Parahebe [Oliver 1944] is predated by Derwentia [Rafinesque 1836], which was never taken into general use. Parahebe has been proposed for conservation against Derwentia [Garnock-Jones et al. 1990] so that a broad concept of Parahebe can, if appropriate, be retained without nomenclatural change. Such conservation does not prevent the adoption of Derwentia for a group of species that excludes the New Zealand P. catarractae [G. Forster] W. Oliver, type of Parahebe."

The authors have re-introduced Derwentia for all except two of the Australian species of Parahebe and Veronica. The only Parahebe re-maining in Australia is P. lithophila. The Tasmanian Veronica formosa is considered to be close to Chionhebe. As a temporary measure it is referred to simply as 'Formosa'.

Consequently the three species which are known to be grown in Britain become: Derwentia derwentiana ssp. derwentiana
Derwentia perfoliata
'Formosa'

Phil Garnock-Jones is reviewing some New Zealand species. Name changes can be expected in New Zealand and New Guinea.

* * * * *

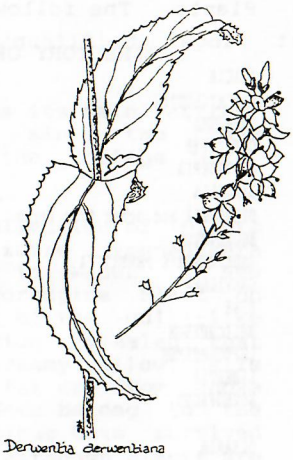
DERWENTIA DERWENTIANA

by Jeff Irons

The first time I saw this plant was during an APS meeting at Kew. There was a clump outside the Australian House. It was mid June and the 60cm [2ft] high stems had pale blue terminal racemes on them. The label declared the plant to be Veronica derwentiana. Inspection showed that the racemes were at each of the uppermost nodes, the

floriferous part being about 25mm [1"] long, sometimes more. A couple of years later some seed came my way, under the name Parahebe derwentiana.

The species was first called Veronica derwentia. That was by Andrews, writing in the Botanical Repository, in 1808. A few months later the Errata to the index corrected the name to derwentiana. It was described as coming from Botany Bay, on the banks of the Derwent. Van Diemens Land had been settled since 1804, but evidently Botany Bay was being used to refer to the whole of south-eastern Australia. In 1968, B. Briggs and F. Ehrendorfer changed the name to Parahebe derwentiana. In September 1992 the same authors changed it again, this time to Derwentia derwentiana.



The species has 5 subspecies, and the one that I grow is the commonest, ssp derwentiana. It is found in Tasmania, Victoria, eastern New South Wales, a small part of South Australia, and south east Queensland. It occurs on acid soils derived from granite, on unleached basaltic soils and on shale. It is never in very dry situations.

The most obvious point of difference between Derwentia and Parahebe is the leaves. Those of Parahebe are crenate [scalloped], whereas those of Derwentia are sharply toothed. The latter has numerous flowers on short stalks, the corolla tube has hairs in it, and the chromosome number is different [n=20 or 19]. The longest lived stems in Derwentia are those of D. velutina, and they last only four years. The stems of D. derwentiana are softly woody, and they grow for only one season. Usually they persist for a second season before dropping and withering. Flowering is mainly in June and July, but does go on into August.

Cultivation is simple. Spring sown seed should be repotted on early and planted out when quite small. If kept in a pot, the container should be large, for seedlings do not grow on well in small pots. The siting of the Kew plant indicates that moist soil is not essential, but plants will fare much better in soil which does not dry out too much. I have never given additional water, but it may be required in some places, and on some soils. My own clump gets sun from mid afternoon onwards, during the six summer months. Seedlings will flower in their second year, and old clumps can be divided. My plants have not experienced minima below -8°C, but the soil around them has been frozen to a depth of several inches.

Though not in the first rank, this plant is better than many other blue flowered 'herbaceous' plants, and it is very useful in the garden because it fills in one of those awkward gaps, and remains green over winter.

N.C.C.P.G.

The Council of the National Council for the Conservation of Plants and Gardens has decided that the theme for 1993 will be Australasian Plants. The following information may therefore be useful to members.

DIRECTORY OF NCCPG NATIONAL COLLECTIONS OF AUSTRALASIANS

ACACIA	Tresco Abbey Gardens, Isles of Scilly
BRACHYGLOTTIS	see Olearia
COPROSMA	G. Hutchins, County Park Nurseries, Hornchurch, Essex. [M]
CORDYLINE	see Phormium
CORTADERIA	J.A.Maddox, Stockwood Country Park, Farley Hill, Luton
DIANELLA	H.Read, Vicars Mead, Hayes Lane, E.Budleigh, Devon. * 0395 442641
DICKSONIA and other tree ferns	Glasgow Botanic Garden
EUCALYPTUS	Dr. Law, High Trees, Ramsey Wood, Gatehouse of Fleet. * 055 74489
GAULTHERIA & PERNETTYA	J. Lorraine, Greencombe Garden Trust, Porlock, Somerset. * 0643 862363
GREVILLEA	S. Clemo, Pine Lodge Gardens, Cuddra, St. Austell. * 0726 73500.
HEBE	Hedgerow Nursery, 234 Braithwaite Edge Road, Keighley, W. Yorks
HELICHRYSUM	R.Stuckey, 38 Phillipps Avenue, Exmouth. [M] * 0395 273636
LEPTOSPERMUM	P.Chadwick, Cadland House, Fawley, Southampton. * 0703 891543
LIBERTIA	H.Read, Vicars Mead, Hayes Lane, East Budleigh, Devon. * 0395 442641
NOTHOFAGUS	1. RBG [Kew], Wakehurst Place, Ardingly, Sussex
	2. Tavistock Woodland Estate, Gunnislake, Cornwall. * 0822 832131
OLEARIA	1. Malahide Castle, Co.Dublin, Eire
	2. Inverewe Castle, Poolewe, Ross
PARAHEBE	see Coprosma
PHORMIUM	Somerset College of Agriculture and Horticulture, Cannington, Bridgewater
PITTOSPORUM	Bicton College of Agriculture, East Budleigh, Devon

* = by appointment [telephone number given].
others open weekdays at least April-October [some with entrance fee].
[M] = Australasian Plant Society member.

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SNIPPET

In the December 1992 Alpine Garden Society Bulletin, it is reported that an Award of Merit was presented to Mrs. C.M. Coller of Norwich for a specimen of Coprosma petriei Cheesm. 'Lyn'. This is a mat-forming New Zealand shrublet with dense tiny dark green leaves producing pale blue to purple-red berries. Occasionally creamy-white fruited forms are reported and such a one was discovered by Graham Hutchins near Lake Lyndon, Canterbury, South Island, in 1977 and distributed under the above name.

The award plant was grown in a 23cm [9"] clay pot in well drained acidic rooting medium. It is kept in a cold greenhouse during the winter and outside in full sun in summer. A male plant of an allied genotype is kept beside it and pollen is transferred by wind.

Coprosma petriei 'Lyn' is thought to be the seed parent of the award winning 'Blue Pearls' and 'Indigo Lustre'.

Ed: We have been given seed of 'Indigo Lustre' from Cecilia Coller.

REVIEW OF 1991-92 SHOWS

Some Antipodean plants were selected for mention in the March 1993 review of the 1991-92 shows.

At Southport, Arisotome aromatica received a qualified report from Clare Brightman. She wrote:

> 'The New Zealander Arisotome aromatica has its main attraction in the fern-like purplish foliage, since the cream heads of umbellifer flowers nestling in the foliage were, frankly, insignificant.'
>
> 'At Cleveland an excellent and varied collection of plants native to Australasia included the bizarre Hymenanthera alpina [Ed. this is now Melicytus]. It is known in New Zealand, for obvious reasons, as the Porcupine Plant on account of the stiff sloping arrangement of the quill-like branches but only the closest examination revealed that these carried on their undersides tiny creamy yellow bells just a millimetre or two in diameter - a far cry from those of any conceivable violet, although it does belong to the same family. Specimens up to a metre across have survived unprotected in the north of the country, although plants are sometimes reluctant to flower. The owner of the exhibit seems to have mastered the problem however, for the plant was seen again later in the season studded with snowy white berries, so much more eye catching than the flowers from which they form.'

Ranunculus anemoneus was mentioned thus 'a chimney pot housing a cluster of plants with three multi-petalled, dazzling white blooms supported by as many unopened buds was still appropriately entered in the class for a rock plant "new or rare in cultivation".'

HOVEA ELLIPTICA By Sue Hyams

The Hovea genus is an Australian genus of about 14 species of small to medium shrubs, occurring in all States. Often found in forests, they make a lovely sight when in bloom with their bright blue or purple pea-shaped flowers.

Hovea elliptica, sometimes referred to as Hovea celsii, the Tree Hovea, originates from Western Australia, where it forms a slender, open shrub of the karri and jarrah forests, reaching 3m [10ft] in height.

Kept in a cool greenhouse, my specimen grows in a 20cm [8"] pot of ericaceous compost. Seed sown in a pot of vermiculite and peat, in January 1991, was germinated in an electric propagator. Two years later, I am rewarded with the first blooms - racemes of a beautiful violet-blue and white; individual flowers 12-15mm [0.5-0.6"] across. The elliptical to lanceolate leaves measuring upto 8cm [3.1"] long and upto 4cm [1.5"] across, are arranged on rust-coloured stems which are hairy.

GROWING GUMS IN THE GREENHOUSE

The eucalypts have shown themselves to be able to survive and prosper in a diverse range of habitats, from the cool, wet coastal rainforests to the parched heat of central Australia.

One of the most adaptable is the Snow Gum Eucalyptus pauciflora. It has the largest altitudinal range [from near sea-level to the top of the tree-line in the Australian Alps] and one of the largest latitudinal ranges [from Queensland to Tasmania] of any eucalypt.

Ecological studies by a team at the Research School of Biological Sciences at the Australian National University have shown recently that the Snow Gum has the potential to extend its altitude range even further. In the right conditions, Snow Gums can germinate from seed and grow to reproductive maturity up to 200m [650ft] above the present tree-line in the Snowy Mountains.

If global warming occurs, as predicted by the Greenhouse theory, Snow Gums could advance considerably in altitude as viable seeds find their way upslope.

At the lower end of the Snow Gums present range in the highlands, transplanted seedlings have grown successfully downslope from their current limits. The reason they don't naturally occur at lower altitudes is that there is competition from other eucalypts.

In the sub-alpine forests of the Brindabella Range near Canberra, Snow Gums are typically replaced downslope by Broad-leaved Peppermint Gums E. dives at about 1240m [4068ft] above sea level. Peppermint Gums seem unable to advance higher due to environmental factors. But if global warming occurs, the climatic barrier that now inhibits the Peppermint Gum's advance into Snow Gum territory may be lifted, allowing it to climb higher upslope as well.

SNIPPET

If you had wanted to purchase a plant of Leptospermum scoparium in the late 18th century, you would have had to look for the name Philadelphus. This is the name that Mr Joseph Banks and Dr Solander, accompanying James Cook on his first voyage to New Zealand, gave the plant.

Sometime between 1776 and 1779, Robert Anderson, of Edinburgh offered for sale Leptospermum scoparium listed in his catalogue as Philadelphus aromaticus. It would have cost you 7s 6d.

HELP

We need more members to contribute articles or snippets of information for future newsletters. Information on how your plants fared the winter, fared the drought etc; your success or failure with a certain species; a visit to an interesting garden or recommendation for a nursery. Infact anything related to Australasian plants.

SEND TO SUE HYAMS - ADDRESS OPPOSITE

CONTACTS

Honorary Secretary

Jeff Irons
'Stonecourt'
74 Brimstage Road
Heswall
Wirral
L60 1XQ

Telephone 051 342 1703

Treasurer

Dr. A. J. Entwistle
'Ophrys'
113 Station Road
Delamere
Cheshire
CW8 2HZ

Telephone 0606 882306

Newsletter Editor
and Producer

Sue Hyams
'Applegarth'
Southend
Knayton
Thirsk
North Yorkshire
YO7 4AS

Telephone 0845 537407

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