

The History, Cultivation and Propagation of *Lapageria rosea* Ruiz & Pavon, and *Philesia magellanica* J. F. Gmel

W. D. Williams
73 Pohutu Street, Whakatane

INTRODUCTION

My first meeting with *Lapageria rosea* and *L. rosea* var *alba* was at the Chandler Bros. Nursery at the base of the Dandenong Ranges, in Melbourne 1973, where trained over a trellised arch both grew. I was to resume my acquaintance when moving to work in Dunedin, I found they grew in profusion in the Rhododendron Dell of the Dunedin Botanic Gardens (1 white, 1 pink and a number of reds).

Here I was to meet *Philesia magellanica* purely by accident on a then overgrown embankment. Here my re-acquaintance, and chance meeting, grew to a passion then nigh on an obsession. Since leaving Dunedin this has diminished little.

Lapageria rosea Ruiz & Pavon (Philesiaceae)

HISTORY

This is a monotypic (single species) genus, *Lapageria rosea*, (with a white form, *L. rosea* var *alba* Gay). Named by Ruiz & Pavon in honour of Empress Josephine of France, first wife of Napoleon Bonaparte¹. Her maiden name being Marie Josephe Rose Tascher de La Pagerie. She was an ardent botanist known for her contribution to botany in her gardens at Malmaison.

American, Richard Wheelwright is credited with presenting a plant of *L. rosea* to Kew in 1847, obtained from Concepcion, Chile. Vietch's collector William Lobb sent a plant to his employers in the same year. *L. rosea* var *alba* was introduced later in 1860 (named *L. rosea* 'Albiflora' by Hooker) by Richard Pearce¹.

As for their introduction to New Zealand I have found no records though they abounded in New Zealand gardens in the last century¹⁰. Tannock¹¹ in his book also recommends it. The oldest plants I worked with were planted in the 1950's.

In Britain and America *lapageria* was viewed primarily as a cool to temperate house plant. In warmer and maritime areas given to experimenting with outdoor planting, it was planted particularly against walls, a form of gardening raised to an art in Britain.

Ruiz and Pavon first described *Lapageria rosea* in Flora Peruviana when it was included in the order Philesiaceae by Dr Lindley². Burbidge³ in 1873 put it in the family Philesiaceae. Then for the next 100 years or more, different authorities had it see-saw back and forth between this family and Liliaceae, Morley⁴, Bean¹, and Grey-Wilson³, place it in the monocotyledon family Philesiaceae, (distantly related to the large and widespread Lily family) to which also belong *Luzuriaga* and *Philesia*. The family is confined to the southern hemisphere¹, and includes none other than our own *Luzuriaga parviflora*, found throughout New Zealand⁶.

Lapageria rosea R & P is commonly known as the Chilean Bell flower or Chilean wax flower (known in Chile most commonly as the Copihue, Coopeehue said quickly — it also has five other common names⁷). It is also that country's national flower, the full meaning of which we don't really understand in New Zealand as we don't have a national flower. Mention to a Chilean that you

have one growing and then enjoy the following experience, which introduced me to a whole new understanding of the term national flower. You are told tales of where they grew at home and when they had seen some in the wild. A Chilean friend who did some translation for me described in infinite detail the red and white plants growing at each end of the veranda of the family house in large tubs, a manner in which many people in the cities cultivate this prize.

NATIVE DISTRIBUTION

Lapageria rosea occurs tangled in tops of trees and thickets, in humid areas near the coast, as well as in the high mountains of the Andes from Valparaiso to Osorno⁷. It occurs both in Chile and Argentina though mostly in Chile. It is very common in the south, in the areas of Concepcion and Temuco.

L. rosea var *alba*, *Copihue blanco*, is very rare in the wild, never-the-less it can be found in the province of Cautin⁷. Although *L. rosea* does not like fierce sun, it is a warmth loving species, and in the wild does not extend farther south in Chile than latitude 41 S¹.

BOTANICAL DESCRIPTION

Lapageria rosea an evergreen climber (referred to by the Chileans as a creeping shrub⁷) reaches an average height of 3 to 5m, though in Dunedin I have seen specimens rivalling this, both in trees and on walls.

The plant rises from a type of budded crown which sends out underground stolen-like stems which emerge many feet away. This is sustained by a substantial fleshy root stock. Soft light green new shoots are thrown up in spring like water shoots, growing with great speed twining and scrambling up the older stems. Care in training these should be taken as I have found they break particularly easily. These become woody and very hard, resistant yet flexible, and darker in colour⁷.

The leaves vary in shape, the larger ones heart-shaped and five nerved. The smaller ones ovate and three nerved. Always pointed 4-11cm long. Venation is parallel, leaves are leathery dark green and lighter beneath, newer leaves and stems are lighter green. When not in flower, these still qualify it for a place in the garden.

The true glory of the plant as Grey-Wilson⁵ puts it, are the flowers. They are pendulant and are arranged either singly, in pairs or threes together, produced on seemingly barren unthrifty growths of old wood, ends of shoots, or in terminal leaf axils forming richly laden sculptural swags. Each flower is 7-10cm long and 4-6cm wide in a waxen bell shape. Main flowering is from mid to late summer to mid autumn.

There is no mistaking its floral arrangement, being a close relative of the Lily. Six fleshy segments, three larger inner ones overlapped by three outer, all free, a rich crimson in colour, often with pink to white spots, covering 6, 5cm long stamens tipped with up to 5mm yellow anthers. Attached to the main stem by a 1-1.5cm stalk covered with small bracts.

The fruit, a smooth oval berry, varies in length but is up to 5cm

long. They are dark green though often lighter green to white on the side hidden from the sun, particularly when reaching maturity. These take nine months to a year to ripen and can be very difficult to spot, so worthwhile tagging if you wish to collect them. Inside are numerous seeds surrounded by a white fleshy pulp. In Chile fruit is often eaten. I found it a pleasant sweet taste somewhat like water-melon flesh, where the pink meets the white. I have a nurseryman friend in Tauranga, one of whose clients avidly devours all the berries much to his chagrin.

Other uses of the plant besides being a garden plant, a florist's delight and a food, are using the stems for basket weaving, and the root in traditional herbal medicine for the treatment of venereal disease, gout and arthritis.

L. rosea var *alba* has exactly the same characteristic as the type. Except that it is pure to off white in colour, and used more in floral arrangements and gardening.

CULTIVATION

Documentation on lapagerias is often scarce and comes mostly from the northern hemisphere, so it was exciting to see articles on N.Z. experiences recently^{10 12}.

The success or failure of any plant in cultivation is the ability to

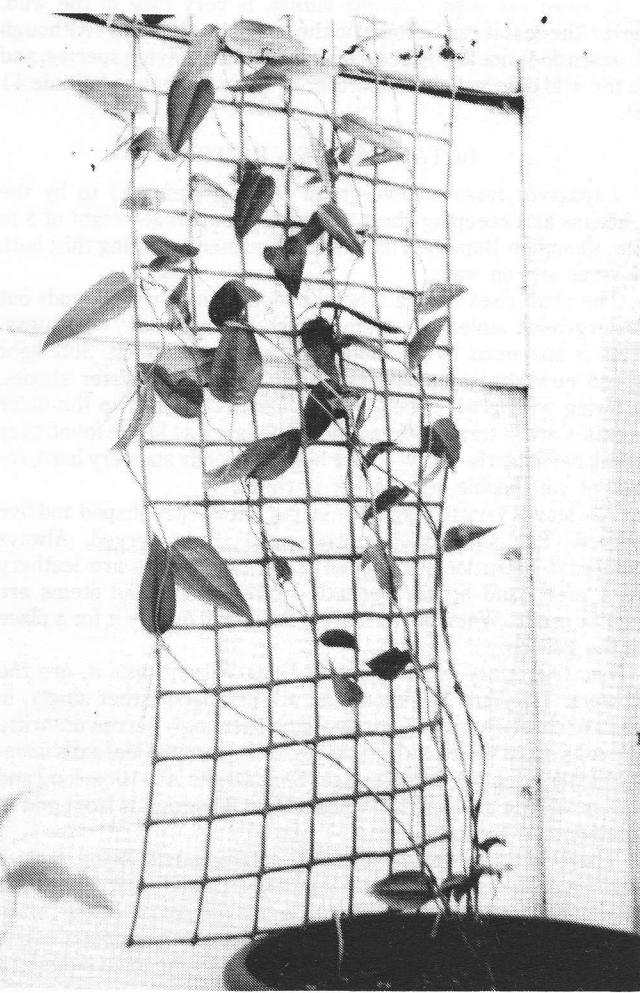


Fig 1. *Lapageria rosea* growing in a shade house in Whakatane, August 1987.

which the cultivator understands the plant's habitat, and can replicate it.

This is evident when one views specimens growing in the Upper Gardens Rhododendron Dell, of the Dunedin Botanic Gardens — I doubt if there are better specimens to be seen in the country. Planted at the base of *Plagianthus betulinus*, *Sophora microphylla*, *Clethra arborea*, a prunus species and assorted rhododendrons. Initially led into the trees by twining they have long become self sustaining, by virtue of this habit. Humus rich, acidic soil conditions, well aerated evenly moist soil, naturally well mulched with leaf litter, and their bases never exposed to direct sunlight, most for that matter are not exposed to direct sunlight at all, but with medium to high diffused light levels affected by a high protective canopy, they have an environment well protected from the most severe conditions. An environment which replicates if not rivals its natural one.

Those that do get direct light, one in particular which happens to receive a lot in summer, shows slight yellowing of older stems and foliage not found on the others, yet it still flowers profusely.

Though often classed tender, light to medium frosts, and snow appear not to deter its growth. Frost damage has been recorded in Christchurch and Britain ranging from slight tip burn to defoliation, and in the extreme cold, death. Let this not deter one as they do display a hardiness beyond initial expectations.

In Dunedin the largest specimen, reaches nearly 6m tall and if a column a metre thick, by 2.5 metres in circumference sounds incredible, it is!

In this environment plants set seed freely, though I have hand assisted pollination, also. They appear to naturally layer easily, and also pop up from long stoloniferous type growths 1-2m away from the base. These growths in time may root, though not always, and many an unsuspecting visitor has pulled on one to find to their dismay there is nothing to plant out, so don't be tempted.

This method of cultivation is in a sense self-sustaining and needs little intervention past establishment. This style of gardening was greatly utilized by Gertrude Jekyll and Edna Walling. Unfortunately not all of us have such a large canvas to work with.

Elsewhere outdoors

A wall, trellis, or pergola, which offers plenty of summer warmth and is shady, (or partial shade, particularly from the hottest part of the day), as it does not like fierce sunshine. An acid soil with plenty of summer moisture as these plants must not suffer from water stress. Mulch base yearly, as mentioned, well rotted compost, cow manure or old pine needles being ideal. There is some implication that it has an aversion to galvanizing⁹ so a plastic coated mesh⁸ should be used if training on a wall.

Planting in spring, it needs a cool moist but well drained root run. A well prepared hole (up to .5m wide and .5m deep should ensure establishment), incorporating compost, old cow manure, fibrous peat, decayed leaf mould, or shredded pine needles, into the base, and back fill. Plant carefully, as often major root disturbance seems to make them sulk. Plant firmly, water with weak liquid feed (Phostrogen) and mulch. Scatter some snail/slug pellets about, as these ubiquitous molluscs seem to have the notion that lapagerias are the best thing since sliced bread. I kid you not. I repotted some seedlings and forgot to bait them. It cost me nearly four months' growth, overnight.

Water thoroughly when needed. A weekly feed of dilute fertilizer during the growing season will be most beneficial. As well, give a base dressing of fertilizer in spring¹⁰. A proprietary

Fig 2

rhododenro do.

Finally w choose a sit tage.

Within str

I have n propagating cool to tem such in the not be so houses in t thriving on

Plant int fer a free ro ment for u with an ac British pub 1 part sand replace pea all acid lov

Minimum ommended inge or dan enjoy. High Shade well added in sp lute genera their grow

Of couse at the end it's good e



Fig 2. Red and white *Lapagerias* flowering in a Whakatane garden. Beacon Printing and Publishing Co. Ltd.

rhododendron or rose fertiliser, or a slow release fertiliser will do.

Finally while keeping in mind cultural factors, never forget to choose a site which shows off the flowers to their greatest advantage.

Within structures

I have not grown lapagerias under cover other than when propagating or nursing layers and seedlings. Yet it lends itself to cool to temperate house cultivation and was indeed introduced as such in the northern hemisphere. I see no reason that this should not be so here whether under glass in the South or in shade houses in the North, indeed I have seen a specimen in Auckland thriving on a pole of a shade house.

Plant into a specially prepared bed, high in humus as they prefer a free root run (although Chittenden¹³ suggests some confinement for underground stems). Large tubs will need to be filled with an acidic media, moisture retentive though free draining. British publications generally suggest a 3 part peat, 1 part loam, 1 part sand, mix. I believe finely shredded pine needle could well replace peat, a commodity freely available in New Zealand, which all acid loving plants I have seen respond well in.

Minimum winter temperature 8-10°C under glass is recommended. Water liberally in summer and reduce in winter, syringe or damp down plants daily to keep up humidity, which they enjoy. High humidity also reduces red spider mite populations. Shade well, and admit plenty of air. Some fresh media should be added in spring, along with a mulch. Liquid feed weekly with dilute general purpose fertiliser. Growing in structures will extend their growth and flowering period.

Of course if you can't grow them in a structure put them in a tub at the end of the veranda. If it's good enough for Chileans, then it's good enough for us.

PRUNING

Most pruning I have practised quite frankly is when I have broken pieces off trying to train them, when picking flowers, or when removing seed, although I have taken out some weak and dead growth from time to time, a point which Phillips⁸ suggests to enhance flowering. Cave⁹ suggests removal of flowered shoots unless needed for plant extension, (which I don't agree with), and the pinching of strong stems as their leaves begin to broaden, thus promoting garlands of flowers, with many flowered clusters of up to twelve flowers together. This could be worth further investigation.

CONCLUSION

Anyone who can provide these conditions is mad not to grow as many lapagerias as there is room for, as this is one of the greater glories of our garden. As conformable to the cottage plot as to the lord's demesne where ever the right conditions exist. Phillips⁸.

COLOURS AND CULTIVARS

L. rosea (red) and *L. rosea* var *alba* (white) are cultivated here while a variety of intermediate hues are to be seen, dark clear reds to clear whites, spotted reds, some of the older ones possibly being of 'Warnham' or 'Nash Court' parentage.

Buying not in flower then can often be a surprise or a disappointment so I would suggest to prepare oneself.

In Britain besides the red and white types I found several named cultivars mentioned:

1. 'Alba', pure white and very chaste.¹⁴
2. 'Ilseman', large flowered, more vigorous, brighter and more freely flowering.¹³
3. 'Nash Court', soft pink, slightly marbled flowers, 1st Class Cert, RHS, 1884.¹



Fig. 3. *Lapageria rosea* growing over a trellis in a Whakatane garden, August 1987.

4. 'Rubra', red.¹⁴
5. 'Splendens', rich rose.¹⁴
6. 'Superba', rich brilliant crimson.¹⁴
7. 'Warnham Court', rosy red, mottled with greyish white, 1st Class Cert, RHS, 1897.²

Of all cultivars most recent literature only seems to suggest that 'Nash Court' is still available commercially¹⁵. One of the plants in Dunedin could be either of the 'Court' cultivars but that is merely supposition.

In parting, imagine Dr Wilfred Fox, when travelling in Chile in 1932, found a form of lapageria whose flowers were striped lengthways with crimson¹, not introduced into cultivation.

PESTS AND DISEASES

As mentioned snails and slugs find these plants particularly tasty, so bait well. I prefer Methiocarb baits (Mesuro). Greenfly are very partial to lapagerias, particularly young growths, control

with Pirimiphos-methyl plus permethrin (Attack), Acephate (Orthene), or Maldison (Malathion). Whitefly, Mealy bug, thrips, scale, red spidermite, and sometimes leaf roller can be a problem. Chemicals already listed should work. Don't forget to alternate your spray programme due to resistances. Susceptibility to mite can be minimised by damping down plants or syringing, outside or under glass. This pest is often indicative of a dry atmosphere, something which lapagerias detest — remember habitat — remember humid.

The only fungus I have seen on lapagerias was botrytis on seedlings, to a certain extent a cultural problem easily controlled with Iprodione (Rovral).

(Remember, warmth, a cool moist rootrun though not water logged, humid atmosphere, they expect shade and detest fierce sun. Snails and greenfly love them, water them well in summer, mulch them well. They are relatively hardy. What are you waiting for?).

PROPAGATION

Nothing is so painful than to see a section in a book on lapagerias, finishing, 'Propagated by layering, cuttings and seed'¹⁵. Cuttings! I could rip Liberty Hyde Bailey's head off. Where did he get that information? Oh yes, only one thing more painful, a garden columnist in a daily paper saying the same.

Seed

The red seems to self-pollinate and set seed unassisted during warm conditions though amount of fruit set, and size (which I take to be indicative of effective fertilization) was greatly improved by assistance from myself using pollen taken from same flowers and others, collected in an envelope.

Artificial pollination and timing

Collection of anthers proved the easiest method, collecting only those anthers on which the pollen was noticeably beginning to shed from, easily. I took this as a sign of readiness. I waited also, for a period when there would be warm settled weather, for a number of days. The reason being, I believe, that pollen tube germination and fertilization is assisted in such conditions.

Pollination in the cold, seemed to reflect this theory with often less fruit set, and those which did set, were of an inferior size and atypical shape.

Stigma Receptivity

I also noticed that the optimum time for pollination seemed to coincide with stigma receptivity. This I took to be when the stigma appeared to swell slightly and a clear sticky secretion appeared. This appeared to be reflected subsequently also by fruit sets, as stigmas pollinated not exhibiting this, exhibited a corresponding lack of fruit set, or incomplete fertilization.

Methods

In applying pollen I used a small paint brush (camel hair), but prior to dabbing the pollen on, where possible, I warmed the flower and stigma, by holding the flower in my hand and exhaling into it, and more importantly onto the stigma, for 30 seconds to a minute. Then I applied the pollen. When the stigma was well covered, I repeated the warming. This I dubbed 'The Hot Breath Technique'. This, I might add was done rather self-consciously in a public area in the Dunedin Botanic Gardens, for a number of years and on only one occasion was I observed by a member of the public, which made me feel rather sheepish. In warmer districts this may not be needed.

Rather than tagging every flower, I tagged some inconspicuously on strategic parts of the plant and noted approximate lo-

cation of c
know plan
them and
appear. T

Fruit Ha

Fruit w
mature, s
the fruit t

Fruit pro

Fruit w
moving sk
used clay
on volume
the mix.

Seed w

and tampo
quarry du
bench at

used wash

germinati

complete

Sowing w

a number

way avera

ratic germ

months,

approxima

and shrunk

and had a

Recentl

recommen

to five tim

ately, five

The pin

and with

The myth

The wh

mouth, an

different p

of another

its own pe

anthers w

pool. Isola

public loca

great inse

size of frui

would nee

indisputab

A comp

with anoth

plant had

he has had

under glas

plants, but

suggest re

a red/whit

borne out

Progeny

conjecture

Whakatane

well.

cation of other flowers in relation to the one tagged. As we all know plants in a public garden need more than a by-law to protect them and often I was to watch fruit approach maturity to then disappear. This also happened with layers.

Fruit Harvest

Fruit was harvested, after taking up to nine months or more to mature, size and colour, being indicative of ripeness. Generally the fruit begins to lighten as it ripens.

Fruit processing and Seed sowing

Fruit was immediately opened in a fine sieve and washed, removing skin and pulp, seed was then sown in a J. I. seed mix. I used clay pans, plastic trays and seed boxes to sow in, depending on volume and container availability. Terrazole was included in the mix.

Seed was covered by 1-2 times its own thickness with media and tamped flat, then covered with a single layer of washed quarry dust. Watered in with a fine rose and placed on a heated bench at 20°C, and covered with glass. On another occasion I used washed river sand to cover. Seed was kept very moist till germination, then watered as required. Germination was usually complete in 12 weeks, beginning four to five weeks after sowing. Sowing was undertaken in 1981, '82, '83, '84, within some years a number of sowings were made. Germination percentages in this way averaged 90%. In 1982 I also sowed some in a cold frame, erratic germination took place over a long period, four to seven months, and a lot of the seed rotted. Germination was approximately 20%. I also found an old fruit which had shrivelled and shrunk considerably — I sowed this seed on the heated bench and had a very poor germination, 5%.

Recently I found a Thompson and Morgan catalogue²², which recommended, to soak seed for three days, changing water three to five times per day. (They offered red and white seeds separately, five in a packet.)

The pink seemed to self-pollinate intermittently unassisted, and with 'Hot Breath Technique', readily.

The myth of the White?

The white form leaves me still somewhat confused. Word of mouth, and Aldworth¹⁰, state they need to cross-pollinate, from a different plant. This I was not able to do due to the unavailability of another white. I was seemingly about to effect pollination with its own pollen using the dreaded 'technique'. Emasculation of anthers was practised and pollen was taken from the resulting pool. Isolation of flowers after pollination was not done due to public location — most reds were some distance away, and no great insect activity was observed. The incidence of fruiting and size of fruit seemed to reflect some type of success. Further work would need to be undertaken in this area, to isolate white stigmas indisputably, with a control under the recognised method.

A comparison would be needed, to compare the white used, with another, to compare purity. A visitor felt that this particular plant had a slight pinkish tinge on some flowers. Burbidge³, says he has had whites produced when pollinated by artificial means under glass, but does not speak of pollen donors and mother plants, but does speak of reds, whites and pinks, which seems to suggest red/white cross. As the plant I used may be a result from a red/white cross — this may have an ability to be self-fertile as is borne out of by the pink.

Progeny have as yet not flowered. This will resolve some of the conjecture, as I have some seedlings which I brought with me to Whakatane and I live in hope, particularly as they did not travel well.

Handling seedlings

Seedlings were potted up after the second leaves appeared, into tubes, peat pots or Pb.75's, with as little root damage as possible. Using an Ericaceous mix, used for rhododendrons, they grew well but seemed to sulk after potting or bagging up. This I felt was due to root disturbance as peat pots got the least root damage on bagging and recommenced growth quicker. As seed was coming up and growing into winter, where glasshouse space allowed, I tried to keep them at no less than 15-20° C. Plants in this environment grew on well. When space did not allow, shade house and cold frames were used with rather shattering effects. High losses almost immediately, cessation of growth and late to move in spring - summer. Seedlings in Whakatane have shown movement in unheated tunnels in mid August, so warmth and shelter are very much a critical factor with seedlings.

Cuttage

At times very scientific and other times very unscientific. What a headache.

Media Containers and mist?

I tried different media and proportions, shredded pine needle (which is incredibly good for rooting evergreen and deciduous azaleas as well as rhododendrons) with sand, 4 to 1, down to 1 to 1, and in the reverse proportions. On a heated bed 15°C, 20°C, 25°C, and unheated. With mist and without. In pots, plastic, terracotta and hygiene trays. Under plastic tents, on heat. In a cold frame with a plastic tent and without, and the same with peat.

Methods

I took random cuttings from plants (red and white), cut with a knife early in the morning, put into moist paper then into a plastic bag. Dipped in captan/benomyl solution, then slightly dried and hormone dipped (.1%, .5%, .8% IBA), and without hormone.

I made square and slanted basal-cuts, nodal and internodal, old wood, previous year's and current wood cuttings. With and without leaf area reductions, usually 2-3 node cuttings, tips being pinched, though to no avail. Leaf bud cuttings also seemed to die just as readily, spring, summer, winter and autumn. No particular method gave any real indication of rooting other than some previous year's wood by a variety of methods seemed to last longer than others and in some cases stems seemed to etiolate, but gave no indication of rooting as when layering. A friend managed to have a leaf bud cutting throw a root from the node itself. Same as when layering, though the shoot did not emerge and the cutting died.

During these times I took consolation in, and was inspired by a well known Dunedin plantsman's (Mr Chas. McLaughlan) description of as a young man, seeing a box of cuttings, healthy as ever with the roots emerging from the bottom in a tangled mass. His honesty and integrity need no vouching, yet he has no recollection of how this was attained. On leaving Dunedin and the close proximity to good stock, I have pondered this greatly and have come to some conclusions.

I was trapped as we all are often, seeing what I wanted to see. Having such profuse stock, I have never used mother plants cultivated under glass, nor thought of the need to have, as they grew so well outside. Later I was to find that McMillan-Browse¹⁶ suggests this, though little else, cuttings wise. I also never used young plants and here again lies another avenue of investigation — juvenility.

Burbidge³, I was again later to find, confirmed one thing back in 1876: Cuttings of lapageria do not form plants readily. They root in about nine months, but it is essential that ripened growth only

be selected. Insert them in boxes of sand/earth in a warm glasshouse temperature. He then goes on to say plant out and train near the glass, thus I was thrilled to have this confirmation at least. They do root from cuttings, and that the mother stock was under glass.

Layering

This, often the plant did naturally, when stems which trailed down, were covered by mulch. I replicated this in spring and autumn. Internodes nicked facilitated a greater number of nodes rooting, roots arose from what seemed the base of elongated buds; or from each side of a bud, at the node just above an old leaf scar. Plants were lifted when rooted and bagged. Don't be too anxious in lifting, and separating at internodes as I did this a couple of times when roots were well developed, but shoots were not, and it proved premature as I placed these in peat pots on a heated bench only later to find that they died, without any further root development or shoot movement.

Being the traditional method of propagation and the only method of cultivar promulation, there is quite a lot of literature from the Northern hemisphere on this, with stock plants growing under glass, either in pots, or preferably specially prepared beds which confine the root stock^{13 16}. Use strong second wood coiled around pot, box or bed.

Nick the internodes and peg down firmly, in either spring or autumn, then be patient as this process is notoriously slow. When ready sever mother plant and place singly in small pots of light peaty soil¹⁴.

Meristem Culture

In Chile there has been much work done in this area particularly on the whites, which as mentioned are very rare.

In New Zealand I know of one group of people who are very close to setting roots, so no doubt in the not too distant future, the resulting stock will be available. This propagation method will not only make this magnificent plant more available, but remove the chance colour factor associated with seed production. Hopefully many of the cultivars of the past can be successfully relocated and propagated.

Long may it reign, in many a garden with classical charm and mystique — its waxen bells constantly laying down the gauntlet of:

"Now you can grow me! Propagate me if you can!"

Philesia magellanica J. F. Gmel (*Philesiaceae*) (*syn P. buxifolia* Lam ex Poir)

INTRODUCTION

Philesia, as with *lapageria*, to which it is a close relative, had a checkered career family-wise. It is now referred to as belonging in the family *Philesiaceae*^{1 3 4 7 18}, as is *Lapageria* and *Luzuriaga*. This plant is confined to the Southern Hemisphere — the greatest body of work relating to it, again emanates from the Northern Hemisphere, though is small.

HISTORY

Philesia magellanica, also a monotypic genus, was discovered during de Bouganville's world voyage 1767-69⁴ by the French naturalist Philibert Commerson, where it was first found along the Straits of Magellan. He was assisted in his explorations by his mistress, Jeanne Baret, who was disguised as a manservant, and the young Prince of Nassau-Siegen.



Fig. 4. Flower of *Philesia magellanica*, a solitary pendant nodding bell.

The generic name *Philesia*, chosen by Commerson though published by de Jussieu, comes from the Greek verb *Philein*, to love¹, from the beauty of the flower¹³. However, I often wonder what it may have been called if Jeanne hadn't been accompanying him.

Although being found between 1767-69, it was introduced to Europe in 1847 by Messers Vietchs' collector William Lobb¹. (He also helped to introduce *lapageria* back to his European employers). It was successfully exhibited at the Chiswick Flower Show in 1853 by Messers Vietch ('4 & 3'). It won the R.H.S. Award of Merit in 1937. In Chile its most common name is *Coicopihue*⁷, though eight others are listed.

NATIVE DISTRIBUTION

Philesia is found exclusively in Chile, from Valdivia, south. Occurring from parallel 40 to the Magellan Straits, and is particularly abundant from Chile southward. In these areas, it is found growing either in forests where rainfall and humidity are high sometimes in boggy soils, or on mossy rocks. Professor Baylis (Pers-com) recalled seeing it at a reasonable altitude in mossy hollows, and Hills²¹, lists it in his book of alpinism as a semi-prostrate Alpine. It is widespread and obviously adaptable. Usually it grows as a suckering shrub, but it has been known to

reach considerable height in the wild growing up the trunks of trees, clinging on by adventitious roots.

BOTANICAL DESCRIPTION

An evergreen suckering shrub, forming thickets¹. In the wild it reaches 3-4 metres⁷ in height. (Under cultivation all records refer to it being only a third of this^{1 13 17 15}. The plant I worked with conformed to this — none the less its ability to sucker and form an established clump seemed unimpeded, to say the least). It has very hard cylindrical stalks producing branchlets alternately, and is glabrous.

Leaves occur on short stalks alternately, and are oblong, very stiff and hard, dark green above, glaucous white beneath, although 4-4.5 cm in the wild⁷ — again, under cultivation, seem to only reach 2.5 to 3.5cm by 5-8mm wide, though they appear narrower due to reflexed margins. Beneath is a prominent midrib, and on the edge of the leaves are marginal nerves⁷.

Flowers are 5-6.5 cm in length, opaque crimson in colour covered by a slight whitish bloom. The pendulous nodding, solitary flowers are borne terminally, and are very showy. Although some may appear before Christmas (spasmodically from November on), the main flowering period is from mid-summer (mid January) to mid to late autumn (April - May). the flower is comprised of six free petals⁷ (sometimes referred to as 3 petals and 3 sepals¹, others opt out and call them segments, I prefer Hoffman⁷ who is writing from Chile), which are quite fleshy. The three inner are oblanceolate, pointed, not expanding, and thus give a tubular form to the flower. The 3 outer petals are one half to a third as long as the inner ones, and appressed to them — all are free. Six stamens, filaments fused half way down into a tube, bare basifixed anthers, and yellow-gold pollen. As with the *lapageria* the large style has a trilobular stigma.

Fruit is a single celled roundish berry, (as opposed to *lapagerias*' being 3 celled) which is yellow⁷ to red¹, when ripe, and 1-1.5cm long, containing numerous seeds⁷.

CULTIVATION

As with all plants think of its habitat.

Outdoors

The plant I had the opportunity of working with was growing in a woodland setting. No really direct sunlight; growing on a damp well mulched bank, some clay was present but this deterred it not. Here the clump had spread up and along, forming a thicket, easily 2 metres, by 1 metre tall, and still spreading with stoloniferous runners. It was indeed happy. Again lime free acid soils, always moist, high in humus, and well mulched, with a humid atmosphere. Not knowing when it was planted, I would guess the 1950's. This is the only mature plant I know of. In itself this is a tragedy, given the plant's beauty.

As with *Lapageria*, its new light coloured foliage offers a beautiful contrast to the old darker leaves. One can see why Hillier refers to it as, 'one of the choicest, most remarkable and beautiful dwarf . . . evergreen shrubs'¹⁹. Adorned with nodding bell-like jewels, contrasting with its foliage. When I first discovered this plant, not in flower, I thought it was a rare form of bamboo, so exotic it is. In the environment in which it was growing, it thrived, though it only reached 1-1.25 metres in height and some years it did not flower (too Happy? — it looked it) in other years it was sparse. Oh how I yearned for it to be adorned, like Cantua.

For outdoor cultivation then, aim to replicate this sort of environment. Plant and treat as *Lapageria* culturally — a sheltered

spot with acid, humus rich soil, well mulched (types listed in *lapageria* section), humid atmosphere, always moist, and high light but no direct sunlight. Potted cuttings respond to liquid feed. Bean¹ says, 'contrary to what is said *Philesia* is hardy in all but the coldest parts of the country'. So it should pose no great problem to grow in New Zealand. In Dunedin it received no direct frost in winter, but it sure got cold. It can be slow to establish, as it does not seem to approve of root disturbance like its cousin, so be careful when planting. I have not seen it climbing up trees though would love to, and a large clump in Britain has been recorded as being 1.4 metres high by 4m across — imagine it?

Structures

In hotter parts of the country I have no doubt it would thrive in shade/bush house conditions, planted in the ground or tubs and kept always moist. This I hope to prove in Whakatane.

As alluded to earlier when quoting Bean, in Britain, it was often thought not to be hardy, thus was grown more often in cool-temperature glasshouses, either in a specially prepared bed high in peat, or in tubs and pots. One can still find it in some recent publications on indoor plants (The Dictionary of Indoor Plants in Colour, by Hay and Syngé to name one). In Sanders Encyclopaedia of Gardening, revised in 1946²⁰, it is listed as being half hardy, and recommends it be grown in pots or against a wall in a cold or cool greenhouse (or outside in warmer parts in sheltered nooks or against walls). A compost of equal parts loam, peat and sand, in other words an acid mix, moisture retentive though not water-logged. He recommends planting or potting in Spring, watering freely, in Summer to mid Autumn, then moderately till summer again, syringing daily from Spring to Autumn, applying weak, weekly liquid feed during summer.

PRUNING

Sanders suggests post flowering, but I feel it is unnecessary.

PESTS AND DISEASES

Snails and slugs appear to be major pest, particularly on new shoots, with at times some scale.

Only evidence of fungal damage has been in conjunction with, too wet a media, when roots rotted. A captan, benlate drench in conjunction with, withholding water till they were less wet, seemed to halt this.

PROPAGATION

Texts which listed means of propagation, mentioned, cuttings, division and layering.

Seed

I have not had the pleasure of sowing any, due to fruit dropping prior to maturity, both with assisted and unassisted pollination. I know of only one lot of seed which was collected in Chile, and returned to New Zealand for sowing by Professor Baylis. In this instance there were no resultant seedlings.

Cuttage

Burbidge in 1876³, lists cuttings as a method of propagation, as do numerous other authors. Suggested methods included; young wood in heat³, softwood tip cuttings dipped in soft wood hormone in a peat medium placed in a shaded frame²¹, soft wood under bell jars²⁰, and cuttings of ripened wood¹⁸.

My results with soft wood cuttings can best be described as poor, and this partially can be put down to not getting the best attention over the summer period in the nursery, though some response was attained.

Semi-hard wood to hard wood cuttings were a different matter. Random removal of cutting material from the plant, with a variety of media (as with *Lapageria*), indicated that tip cuttings were the most effective area of the plant to attempt cuttings from. Further investigation revealed that in April, May and June 6-7.5cm cuttings (tip) with a square cut beneath the node, left with 33% (approx.) of foliage intact, dipped in Seradix No.2, stuck in 1 part peat (sieved) and 1 part sand (coarse river), would after 3 months at 21-24°C, under mist, produce approximately a 70% strike, of those left, re-sticking can give another 5-10% and the rest are losses. Cuttings were removed in early mornings, placed in plastic bags and processed as quickly as possible after a Benlate/Captan bath.

With the 70% of cuttings that struck there was a wide variation in root development. Roots emerged from an unusual point each side of, or just below the bud in the node itself. It was also unusual to see the bottom node produce roots, it was normally 2nd, 3rd, or 4th node up, and the fleshy roots came out and maintained a horizontal plane, hence it was best to tube up or bag before they became too large.

Cuttings were put into 5cm tubes or PB .75's in an acid mix (as mentioned previously), weaned from mist to bottom heat, then to warm glasshouse, then to a shut cold frame, mid spring to early summer, then into shade house conditions. Often young plants were slow though they responded to liquid feed, and in the second year started to throw up new shoots from the base. They were able to be planted out in the 3rd year.

Layering

The plant I worked with layered quite naturally, and this could be enhanced no doubt as Hills²¹ suggests, with an addition of sand beneath. There appeared no need for nicking the internode, though no doubt this would assist with a greater number of plants being produced. Leave for 18-20 months before shifting when starting from a February layer.

Division

Best done just prior to new growth, from side of the bush with a sharp spade, but ensure part being removed has developed roots. As these plants also send up numerous shoots which often do not possess their own roots, I would not recommend trying this on a young plant. The mother plant is left in the ground, do not attempt trying to divide as one does with forks, on herbaceous perennials.

CONCLUSION

This all but unknown plant in New Zealand is well worth seeking out, as indeed Hillier's description, just does it justice.

X *Philageria veitchii* (Philesiaceae)

This is a resultant cross of, *Lapageria rosea* and *Philesia magellanica*, which was raised by Messers Veitch¹, who one remembers had been instrumental via their collector Lobb in helping to introduce both parents to Britain. In 1872 it flowered and was described by a Dr Masters in a Gardeners' Chronicle of the same year. Both Burbidge³ in 1876, and Bean¹ mention this unusual shrub, and Burbidge in fact quotes the entire piece by Dr Masters.

Essentially it is a scrambling shrub¹³, possessing characteristics from both parents¹³. *Lapageria rosea* being the seed bearer¹, of the cross.

With knowledge of this, and both plants growing near at hand I could not resist attempting hybridisation.

I attempted the reverse cross, using *Lapageria rosea* var *alba* pollen, 1983 and 1984 — using the 'Hot Breath Technique', in conjunction with appropriate stigma receptivity, taking pollen from appropriately collected anther pools, as mentioned earlier under *lapagerias*. The flowers were emasculated, anther wise, and stigmas were devoid of pollen under a magnifying glass, prior to application.

Philesia magellanica was pollinated on May 9th and 18th, 1983. By May 31st, and June 7th 1983, flowers dropped to reveal developing fruit. Their growth was monitored as they lengthened and swelled. I lost one in August and the second disappeared. (I might add, I despaired) in mid September 1983. I tried again on April 3rd 1984 and the resultant fruit was found to be gone in the 2nd week of October. The plant was remote from pollen donors, and there were no other flowers on *Philesia* hence chances of contamination, I believe were very slim, so I felt I had accomplished part of the goal though no great sense of achievement was attained.

Using *Philesia* as a pollen donor and *Lapageria rosea* var *alba* as prospective seed bearer I managed to get a 'take' fruit-wise on April 3, 1984 — two berries. These were developing when I left for Whakatane at the end of that year. The resultant fruit were sent to me in late January 1985. To my dismay, the greenish white fruits, smaller than usual were devoid of seed completely.

If the future should have it, that I have the opportunity to attempt this cross again, I would endeavour to try it under glass, or in an environment in which I had far greater control. None-the-less I would not hesitate, as the challenge in itself was an inspiration.

In conclusion, these three not so distant relatives of New Zealand flora, both geographically and botanically, will remain for me, forever, a fascination.

This article is based on a project submitted by Wayne Williams as part of the requirement for the NDH in Amenity Horticulture.

BIBLIOGRAPHY

- ¹Bean W. J. 1973, Trees & Shrubs Hardy in the British Isle. Eighth Edition pub - John Murray London. pg: 516 - 517.
- ²Prockter N. 1981, Article in Greenhouse, Vol's No.6 pub - Haymarket Publishing Middlesex pg: 31 - 33.
- ³Burbidge F. W. 1876, Cultivated Plants, Their Propagation and Improvement pub - William Blackwood and Sons London - Edinburgh pg: 442 - 443.
- ⁴Moreley B. D. 1970, Wild Flowers of the World, pub - Peerage Books London W.1 pg: 169 - 192.
- ⁵Grey-Wilson C. 1983, Gardening on Walls, pub - Collins London pg: 104 - 105.
- ⁶Salmon J. T. (no date), Field Guide to the Alpine Plants of New Zealand, pub - AH & AW Reed pg: 194 - 195.
- ⁷Hoofman, A. J. 1982, Flora Silvestra De Chile, Zona Austral, pub - EL Mercurio Santiago de Chile pg: 246 - 247. Special thanks to Carmen Johnson for translation.
- ⁸Lucas Phillips C. E. 1967, Climbing Plants for Walls and Gardens, pub - Heinemann London pgs: 7, 8, 97, 98, 161.
- ⁹Cave B. 1983, Gardening Column pub - Otago Daily Times May 83.
- ¹⁰Aldworth A. 1986, Return of the Rare White Chilean Wax Flower pub - New Zealand Gardener April 86 - pg: 2.
- ¹¹Tannock D. (no date), Manual of Gardening in New Zealand, pub - Whitcombe & Tombs Dunedin pg: 166.

Macrusen
RNZIH 3
Chittenden
11 pub -
MacSelf A
Collingrid
Bailey L. H
pg: 411,
McMillan B
ing Plants
Hay & Syn
Michael J

Special th
of ways:
Alison Ev
Colin McL
Mick Ree
All the oth
R. Dept), pa
Carmen J
Karen Ma
Don Lewe
Grant Por
ment).

near at hand I
rosea var alba
Technique', in
taking pollen
mentioned earlier
anther wise,
ing glass, prior
9th and 18th,
pped to reveal
ey lengthened
isappeared. (I
tried again on
be gone in the
pollen donors,
ce chances of
I had accom-
ievement was
rosea var alba
fruit-wise on
ng when I left
nt fruit were
the greenish
ompletely.
rtunity to at-
der glass, or
l. None-the-
was an inspi-
of New Zea-
I remain for
me Williams
orticulture.
Isle. Eighth
- Haymarket
tion and Im-
dinburgh pg:
erage Books
ndon pg: 104
ew Zealand,
al, pub - EL
s to Carmen
rdens, pub -
es May 83.
lower pub -
land, pub -

¹²Marcussen K. H. 1985, Lapageria can be very Spectacular, pub - Journal RNZIH 35 Autumn 85 pg: 8, 9, 10.
¹³Chittenden F. J. 1977, Dictionary of Gardening (R.H.S.) Synge P.M. Vol 11 pub - Oxford University Press Oxford pg: 1126 - 27, pg: 1547.
¹⁴MacSelf A. J. rev, ed 1946, The Amateurs Greenhouse, pub - Collingridge London pg: 175 - 176.
¹⁵Bailey L. H. rev, ed 1941, Hortus Second, pub - MacMillan New York pg: 411, pg: 556.
¹⁶McMillan Browse P.D.A. 1981, The Commercial Production of Climbing Plants, pub - Grower Books London pg: 70 - 71.
¹⁷Hay & Synge 1969, The Dictionary of Garden Plants in Colour, pub - Michael Joseph Ltd London pg: 519.

¹⁸Staff L. H. Bailey Hortorium 1976, Hortus 3, Cornell University pub - MacMillan Co. New York pg: 865.
¹⁹Hilliers 1981, Hilliers Manual of Trees and Shrubs, pub - David & Charles London pg: 217.
²⁰Sanders T. W. 1946, Encyclopaedia of Gardening, pub - Collingridge Ltd Covent Garden London pg: 235, 236, 328.
²¹Hills L. D. 1959, The Propagation of Alpines pub - Faber & Faber London.
²²Thompson & Morgan 66, 84 Seed Catalogues, pub - Thompson & Morgan England - Ipswich.

ACKNOWLEDGEMENTS

Special thanks must go to many people who helped in a variety of ways:
Alison Evans (botanist).
Colin McKenzie (Nursery Foreman).
Mick Reece (Curator).
All the other staff of the Dunedin Botanic Gardens (D.C.C. P. & R. Dept), particularly in the Prop Section.
Carmen Johnson.
Karen Marshall.
Don Lewell and Phillip Banks.
Grant Porteous (Parks Superintendent, W.D.C. Parks Department).

Barry Chalmers (D.P.S.).
Tig McCaig.
Duncan Hannay (Nursery Foreman W.D.C.).
Christine and John Nichol.
Chas McLaughlan.
Professor Baylis.
Whakatane District Council.
Annie, Talieh and Oliver as a family for support, understanding, tolerance, patience, encouragement and love.
Annie.
And Flora Herself,
If I have missed anyone else, thank you and forgive me.