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# NEW ZEALAND PLANTS AND GARDENS


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# NEW ZEALAND PLANTS AND GARDENS

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## STANDARD TREES

From time to time I have been the unhappy witness of the severe mutilation or entire removal of certain trees because of their encroachment on public footpaths. Some of these were growing in private gardens and others had been planted with a view to adding beauty to the public highway. These were mainly of the Prunus serrulata group, commonly called Japanese Flowering Cherries. Being of a spreading nature it was not long after being planted before the branches reached on to the footpath. The few that were of upright growth had never been pruned with the result they had grown right into the power lines and had to submit to severe lopping, which amounted to mutilation.

In many parts of Europe prunus and other flowering and ornamental trees are used for street planting and also in private gardens without being impediments to those using the footpath. By budding on to a selected stock and training a strong sapling into a straight stem to a height of 6 or 7 feet and then pinching out the terminal bud to encourage branching, a tree with ample head clearance can be developed. These are generally known as standard trees. They have clear stems up to 6 or 7 feet with spreading heads which are controlled by annual pruning as soon as the flowering season has passed.

When the production of a standard tree is being considered there are one or two important points that have to be taken into account. The main stem must rise from a point of union between the stock and scion somewhere about ground level. Top grafting is to be avoided as the point of union will ever be a weakness and there will be the liability of the top being blown off in very strong wind. While the tree is developing the main stem must be fastened securely to a straight support, either a stout stake or metal tubing, with adequate padding where the tree stem is fastened to the supporting stake. Until the stem has developed to a good girth, allow growth to sprout from it freely to maintain a good sap action which will help to swell the trunk instead of developing a heavy head on a stem too weak to bear it. These growths can be cut back level with the main trunk each autumn.

Apples, peaches, nectarines, plums, all lend themselves to being grown as standards under the same principles. In the small garden this type of tree saves space for vegetables, and plants can be grown up to within a few inches of the main stem.

One of the first objections to my contention will be that standard trees are more liable to wind damage than bush types. From my own observation of New Zealand conditions the risk of wind damage is about the same as that of the Midland plain of England, and there standard fruit and ornamental trees were grown by the thousand.

G. A. R. PHILLIPS,
Editor.

## ORCHID CULTURE IN NEW ZEALAND

*H. BLUMHARDT, N.D.H.(N.Z.),*
*Orchid Grower to Sir Frank Mappin Bart., Auckland.*

### PART 1.

From the middle of the last century, when orchids first found their way into the greenhouses of England, until the last 15 or 20 years, the very word ' orchid ' seemed to spread a feeling of awe, wonderment, and respect, for it was the general belief that orchids were only for the very wealthy, who were alone able to provide for them the special glasshouses and conditions they required. It is fortunate that in New Zealand orchids are within the reach of everyone who has the wish to grow them. How frequently are they seen today wherever pot plants are grown in glasshouses, and sometimes they are found thriving in the open where they seem to be enjoying the company of their lowly neighbours.

The illustration of the display by members of the N.Z. Orchid Society at one of the Auckland Spring Flower Shows indicates the variety and high standard of culture of orchids in this country.

As for their supposedly high price, plants may be purchased from overseas nurseries for only a few shillings, often a fraction of the prices paid for other good bulbs and plants. Of course, for those who wish to have the very best modern hybrids, it is possible to spend a considerable sum of money on a collection.

Having emphasised the fact that orchids may be grown by anyone, I shall first outline the general requirements for their culture, and then deal with the different genera in later articles.

A beginner in orchid growing must first decide which types he would like to grow. This choice is influenced to a large extent by the amount one intends to spend on glasshouse construction, heating, etc. Some genera may be grown in a cool house but for others warmth is essential.

#### The Glasshouse

Having decided on the types to grow, the question of providing the necessary conditions arises which, of course, is influenced to some extent by the local climate and the situation available. The growing of cool house subjects poses much less a problem to those in the warmer

districts such as Auckland than in the cooler southern districts. In the warmer districts many orchids may be grown without any glasshouse whatsoever, while others require mainly protection from heavy rain. For these types if a glasshouse is available or has to be built, it is of little consequence how unorthodox its design, whereas further south more care and thought should go into its construction. One should always endeavour to capture as much light and sunshine as possible and, of course, more care should be taken to ensure that it is weather tight. However, no matter whether it is built at the North Cape or the Bluff, the following features are essential:—

1. Adequate ventilation must be provided to allow for free circulation of air as orchids, like most plants, will not tolerate stagnant air conditions and will not give of their best if such conditions exist.
2. The glasshouse should be erected, wherever possible, in such a situation as to capture the early morning sunshine as this tends to lengthen the light hours per day, warms the house earlier and thus promotes more vigorous growth.
3. Sufficient head room between bench and roof should be provided to allow for the full development of the plants to be grown. Do not forget to take their flowering habits into consideration.
4. Provision for watering and damping down should be made. Where possible a water tank should be included whereby water may be stored at a temperature as near as possible to that at which the plants are growing. While the inclusion of double or moisture benches is advisable where artificial heating is employed to facilitate the maintaining of a fairly high humidity through damping down, it is not essential, provided that the floors and walks are not laid in concrete. I consider that soil floors and sawdust or wooden slat walks, damped down as often as required, give the best results.
5. Where necessary sufficient heating pipes or cables should be installed to maintain the required temperatures under adverse conditions. Sudden low extreme temperatures can cause much damage when insufficient heat is available.
6. The materials with which the glasshouse is to be built should be the best available as it is much cheaper over a period of years to build with permanent materials. I strongly recommend that the walls be constructed, at least to bench level, of brick or concrete blocks.
7. One last and very important point is that the glasshouse should be built as large as circumstances will allow, thus providing room for future additions to the collection.

The photograph shows orchids growing in one of Sir Frank Mappin's orchid houses.

## Shading

Most orchids require a certain amount of shade, particularly during the growing season, to prevent burning of the tender young growths. Some require more than others, the amount of shading depending to

some extent on the conditions under which they grow in their natural habitat. When growth is completed it is usually an advantage to have as much light as possible to ensure thorough ripening. This ripening and hardening of growths is particularly necessary to promote resistance to disease and protection against irregularities of temperature.

There are several methods of shading, the best of which is by roller blinds fitted to the outside of the house. It is necessary to fix runners of light timber along the length of the house, some 6in. to 9in. above the glass. The blinds, preferably made of timber lathes, are fastened to these runners at one end, top and bottom, so that they may be rolled lengthwise along the house. While this is undoubtedly the best method of shading, as the blinds may be rolled off or on as the weather dictates, it is not always convenient as someone has to be present to adjust the blinds.

A very common method of light reduction, and perhaps the only one which can be employed where orchids are only a hobby, is to apply a permanent shade to the glass. The best material I have found for this purpose is one of the washable water paints. It can be easily applied in spring, either with a brush or sprayed on, and additional applications made as demanded by the increasing intensity of light in summer. It is easily removed in the autumn as the light intensity decreases and the need arises for the ripening of growths.

## Temperatures

The following table gives the average daily temperatures in degrees Fahrenheit at which to aim for each section.

| Month | Cattleya Section | | Coolhouse Section | |
|---|---|---|---|---|
| | Day | Night | Day | Night |
| January | 75 | 65 | 70 | 60 |
| February | 75 | 65 | 70 | 60 |
| March | 70 | 65 | 65 | 55 |
| April | 65 | 60 | 60 | 55 |
| May | 60 | 55 | 55 | 50 |
| June | 60 | 55 | 55 | 50 |
| July | 60 | 55 | 50 | 45 |
| August | 60 | 55 | 55 | 50 |
| September | 60 | 55 | 55 | 50 |
| October | 65 | 60 | 60 | 50 |
| November | 65 | 60 | 60 | 55 |
| December | 70 | 65 | 65 | 55 |

While these temperatures are recommended as the ideal, a few degrees one way or the other can be tolerated, but on no account should there be large irregularities.

## Ventilating

Orchids, like most other plants, must be given fresh air whenever conditions permit, even if it is only for an hour or two a day. During

dull weather, however, the admission of air must be carefully regulated. The points to remember are:—

1. Open ventilators on the leeward side of the house on windy days.
2. Avoid draughts as these are injurious to healthy growth, causing excessive transpiration, resulting in weak, crippled, and abnormally hardened growths.
3. Use only bottom ventilators on windy days. By so doing the humidity and temperature are not varied to any great extent.
4. Ventilate in conjunction with the use of blinds and damping down of floors and stagings, on hot days, as the more air admitted, the drier the atmosphere becomes, a condition far from congenial for healthy growth.

## Damping and Syringing

By damping is meant the moistening of the floors and benches, while syringing refers to the spraying of the plants with a fine, mist like spray of pure water. The former practice is mainly to increase the humidity, while the latter helps to reduce transpiration and also assists in the control of some insect pests such as Red Spider and Thrips.

While it is not possible to set any hard and fast rules for these practices, I have compiled a few simple ones for general guidance.

1. After damping or syringing allow time for the plants to dry before nightfall as excessive humidity at night is not desirable, particularly with plants in flower. Damp night conditions cause spotting of the flowers. Any water lodging inside new growths or sheathings is liable to cause these parts to decay.
2. The best time to damp down or syringe is when the house temperature is rising in the mornings as both practices tend to lower the temperature.
3. Do not damp or syringe on cold dull days.
4. Keep the floors and moisture benches damp around heating pipes, etc., while they are in use, to avoid dry atmospheric conditions.
5. Particular care must be exercised when syringing some forms, such as cattleyas, odontoglossums and cypripediums, particularly while they are throwing up flower stems. Never syringe these to such an extent that water runs on the foliage.
6. Never syringe plicate leaved forms such as lycastes until growths are almost completed.
7. Newly potted plants benefit greatly from light overhead syringing. When established in their new pots water may be given more freely to the roots.
8. High humidity is unfavourable to red spider so damping and syringing should be used to help control this pest.
9. The greater the air circulation created by ventilating the more frequent is the need for damping and syringing.

10. High humidity and cool conditions are favourable for the growth and development of some fungus diseases.

### Resting

Most orchids require a definite resting period to allow for the ripening of growths and consequent freedom of flowering, and for the preparation of the plant for good strong growths during the next growing season.

This period of rest usually occurs when the season's growth is completed, and may vary from a few weeks to a few months according to the individual nature of the species.

Deciduous forms require a longer period of rest than those with persistent foliage. During resting there should be a reduction in the quantity and frequency of watering, usually accompanied by lower temperatures and greater light intensity. This causes a more thorough ripening of growth. The result of not providing the required rest is often very evident, I find, with some plants such as cattleyas, which make two or three growths a year, none of which have sufficient vigour to flower, or dendrobiums which will not flower at all. *(This article will be continued in the next issue of this Journal.)*

## THE OUTDOOR LIVING-ROOM

*DOUGLAS ELLIOTT (New Plymouth).*

Why have a garden if you are not going to make full use of it? Although not a restricted import, a building site is often hard to come by and high in price, and yet many a home owner squanders much of this valuable asset. He puts a lot of time, energy, and money into its upkeep and then finds that his neighbours or the passers-by get us much out of it as he does; and they get it free of charge. Yet this piece of New Zealand that he is so proud to call his own can, if wisely planned, provide him with increased enjoyment and a place where he can spend more of his time in the health-giving fresh-air and sunshine.

The answer as to how this is to be done is: by making an outdoor living-room. A small area may not allow space for more than a table and a few chairs; a larger area can include as well a tenniquoit court, a barbecue, swings, a sea-saw, and a sand-pit for the children. The essentials, fairly easy to get in the average garden, more difficult on steep hillsides, are (1) a piece of reasonably level ground, (2) shelter, and (3) privacy. You can never use chairs and tables on a steep slope and only rarely on unsheltered ground. The need for privacy is more personal; some of you may prefer to sit in view of the street so that you can watch the passing parade or you may even like the passing parade to watch you. But I think most of us would rather relax away from the public view.

If you have a sloping garden you may be able to carve out or build up a small level area and hold up the resultant banks with rockery or

stone walls, either method producing an attractive garden feature. Shelter is obtained by the use of plants, fences, walls, or trellises. Plants, either as hedges or shrub borders, take up the most space but if space is not scarce they are the ideal form of shelter, especially shrub borders with their variety of colour, shape, and texture. In limited space a fence or wall is the most practical. A trellis gives little shelter without a covering of plants but the roots can be confined to a very small area. A trellis is often a good solution to the problem of what to use as a cover to an ugly wall or fence. Fixed on the fence or a few inches away from it and painted in light colours it will form a complete camouflage even before the creepers take over. If you decide to use a shrub border for shelter, plant mainly tall shrubs. If you have a wide border with two or three lines of dwarf shrubs in front you'll find they don't give adequate protection from wind. Naturally you will plant thickly so that the growth soon makes a solid mass. This not only gives shelter but reduces work because there will be no room for weeds.

Annuals and perennials will brighten up the outdoor living-room but if there are children in the family and the area is to be used for games the small plants are in danger of being smashed and will be a source of annoyance to the kiddies and anxiety to the parents. Better keep the small plants for some other part of the garden. Most shrubs are pretty tough and a broken twig or two will not be fatal.

So much for shelter from wind. How about shelter from sun? For although the area should get as much sun as possible so that it can be used even on fine winter days, you will probably want some shade during the height of summer. Garden or beach umbrellas will give good shade and have the advantage of being easily moved to just where you want them but they have the disadvantage of not being in action all the year round: you have to put them up and pull them down. So if you have space you should also plant a shade tree, perferably one that loses its leaves in the winter so that the grass underneath will be healthy.

Now we come to privacy. On flat sections this will usually follow as a natural result from the provision of sheltering walls or hedges but on the sloping section it is not so easy to dodge the prying eye. One or two carefully-placed trees should partly solve the problem; even if they don't screen the whole area they will at least make it possible for you to find a few secluded spots. There is another aspect to privacy. By making an efficient screen to keep people from looking in you can at the same time improve things for your own looking out. In other words, the trees and shrubs will block out unsightly objects such as untidy hen-houses, incinerators, sheds, or industrial buildings. It is much more pleasant to sit in a garden where you get the illusion of being miles away from other habitations. Fortunately the achievement of this is aided by the present style of architecture: one-floor, low-stud, flat roof. If the need for privacy is urgent and cannot wait upon the growth of plants, trellis can be used effectively even if only temporarily.

Then too there is the modern louver type of fence that gives privacy from one direction while allowing you to look out through it in the other direction.

So much for the ' walls ' of our outdoor living-room. The usual ' flooring ' will be lawn but there's a lot to be said for having at least part of the area covered with a hard quick-drying surface that can be used soon after rain and also in the winter. Such a surface of paving, brick, or concrete will probably be the only one suitable for a very small outdoor living-room that gets constant use. It is also ideal for the area where garden furniture is used. It's a bit embarrassing for a visitor to find the legs of his chair slowly sinking deeper and deeper into the lawn built on soft light soil! Stepping-stones are both decorative and practical in linking up such units as the table and the barbecue fireplace. Set just at the level of the grass, they will not catch on the blades of the mower.

No garden is complete without a place to sit but the outdoor living-room is especially in need of furniture; for without it the room will be as useless as an unfurnished indoor room. Patio furniture is colourful and comfortable but is usually unsuitable for leaving outdoors permanently. However, if storage space is handy so that it can be run out in a few moments it is a very useful addition to what I would call real garden furniture — sturdy all-weather tables and chairs that will stay outside, rain or shine, so that you can use them in odd moments snatched from the clutches of the daily routine. They should be well painted as protection against weather as well as to keep them tidy. Gay colours fit in well with the modern garden but beware of painting the table white: it reflects sunlight in a blinding glare. Rustic furniture is seldom as comfortable as that made from sawn timber — and dressed if you dislike splinters!, nor does it fit in with its surroundings near the house any more than it would fit in indoors. Tenniquoits is an excellent game for the garden because it requires no elaborate equipment and no special dimensions to the area in which it may be played. The standard size of the doubles court is 40ft. by 18ft., of the singles 40ft. by 12ft. There should be a ' dead ' area 3 feet wide on each side of the 4ft. 8in. high net. But the length and width are not at all arbitrary and you will get a tremendous lot of fun out of a court even half the standard size.

## CACTI FOR NEW ZEALAND GARDENS

*JOAN JENNESS (Paekakariki).*

At the present time there is a wave of enthusiasm for the cultivation of cacti and succulents in the home. Numerous books have been written and many societies formed in different parts of the world to help those who wish to take up this fascinating hobby.

Cacti are included in the group of plants known as succulents which are characterised by fleshy stems or leaves, either or both being filled with fluid. Let us remember that all succulents are not cacti, cacti being

a comparatively small group of the succulent family. Both thrive under the same conditions and treatment as they originate from the same parts of the globe. We are fortunate that, in many parts of New Zealand, the climate during winter is so mild that not only are we able to grow cacti in inheated greenhouses or cold frames, but we are also able to create 'desert' gardens in the open. Such gardens, whether they be large or small, have a distinctive charm all their own, and provided that there is the requisite soil, location and the ambition to try, a truly Mexican effect can be obtained.

The great family of succulent plants is divided into two groups viz. cacti, which come from the western deserts of the world and the other succulents which, with a few exceptions, come from the eastern deserts. Let us consider the true cacti. Their natural home is the American Continent, especially Mexico, Texas, Arizona, Peru and the Argentine. Varying considerably in size and shape, some are very small while a few may grow to 60 feet in their natural surroundings; others are more barrel shaped and spherical. In fact there are hundreds of cacti grouped in tribes and sub-tribes closely allied and yet all different. Cacti produce few leaves, their main characteristic being the aerole, like a miniature pincushion of tiny spurs or glochids, from which the main spines rise. The aerole is found only in cacti and in no other plant. Contrary to general belief, most cacti will flower regularly if given the correct treatment, although many of the rarer types do not produce flowers until they are quite large specimens.

If you have a dry, sloping bank or terrace that is sandy or stony, where many plants would struggle to survive, that is the ideal spot to plant a cactus garden, provided it has full sun and is not surrounded by overhanging trees. Always remember that you are trying to reproduce the natural conditions and requirements of these unusual plants and, with care and forethought to gain the correct soil content and general lay-out, they should thrive. Many misguided people will take a cactus plant, place it in pure sand in full sun, without troubling to either nourish or water it, and expect it to grow and flourish. They forget that these unique plants are growing things, contain 90% of water, and can obtain moisture only by means of their roots.

True, the desert soil may appear to be very dry, but not far beneath the surface there is moisture. Neither is desert soil devoid of plant building material. Fine decomposed leafmould is abundant and, as soon as the rains come, it is transformed into plant food. There is also a rich lime content present which proves very beneficial for all white haired or white spined species of cacti.

To prepare a site for cultivating cacti there are several essentials that must be observed. Firstly, underline your intended area with stones, broken brick or old mortar to ensure good drainage unless it is a well drained slope. About 50% of your soil should consist of good garden loam to supply firm rooting, 25% should consist of organic matter, either leaf mould or very well decayed animal manure, while the

remaining 25% should consist of sharp sand or gravel, making a porous mixture permeable by water and air. Minor but very beneficial ingredients are potash, ground charcoal and a little lime forked into the soil. If you can surface your garden with clay or rotten rock and have some large boulders to place among your plants the finished effect will be both pleasing and natural.

Let us now consider the planting. In this article I will write of cacti only, but in a further article I will deal with the addition of other succulents to your garden. Tall columnar cereus and giant opuntias form a good background but, of course, these can only be procured, as a rule, in small plants or single pads. Opuntia or Prickly Pear pods, strike easily in spring or summer. Good ones to procure are *O. ficus-indica,* with a large oval pad, bright yellow flowers and vivid orange edible fruit. The fruit look very attractive and can be used for jam and preserves; in appearance they resemble a Chinese gooseberry. Another beautiful opuntia is *O. leucotrica.* This plant requires lime, has a golden flower but the fruit is not edible. *O. tomentosa* and *O. lindhameri* are both hardy, outdoor plants with orange flowers, *O. lindhameri* having a tendency to prostrate growth. There are many opuntias, both large and small, to choose from for your planting but the *O. microdasys* types are rather delicate and the beauty of the plants might be spoiled by rain and storms.

Tall cereus give a truly desert look and often branch at the height of about 8 feet. Flowers are large and cream white with a delicate perfume, opening at sundown. Many bloom for one night only, closing at sunrise, but trichocereus have a clustering tendency and the white flowers remain open for 24 to 36 hours. *Cereus alacriportanus, C. peruvianus, C. marginatus* and *C. jamacaru* are all tall and fast growing plants. *Trichocereus schickendantzi, T. macrogonus* and *T. spachianus* are all good.

Let us now consider smaller growing types of cacti for the foreground. *Echinocactus grusoni,* commonly called 'golden barrel,' is a favourite for all collections. It is slow growing with very attractive spine formation turning golden yellow as it ages. Any of the echinopsis are useful viz. *E. multiplex, E. eyriesi* or *E. valida,* with large, trumpet shaped flowers in pink or cream. They clump easily and are quick growing. Rebutias and lobivias have bright scarlet flowers. *R. minuscula, R. fiebrigi, L. corbula* and *L. pentlandi* and many others are fairly easy to procure.

Mammilarias, as a rule, are more suitable for growing under cover than in the open garden as their fine spine formation can easily be spoilt. A few white-haired species such as *Cleistocactus strausi* and *C. hylocantha* can be added, provided your garden is frost free; their flowers are scarlet and tubular. Of course, many rare cacti are quite unsuitable for the garden and it is therefore advisable, where possible, to visit established cacti gardens to find out what can safely be grown in your particular district.

# THE GENUS GLADIOLUS

*F. R. LONG, A.H., R.H.S. (South Africa).*

The writer when dealing with a specific group of plants or a particular genus, likes to give to his readers at the outset some idea of the range of his subject. Now the genus Gladiolus is chiefly confined to South Africa but there are a few species found in Central Europe, the Mediterranean region and West Africa, such as *G. communis* and *G. segetum* in S. Europe. As far back as 1896 when Volume VI. of ' Flora Capensis ' was published, Professor J. G. Baker listed some 102 species and natural hybrids found in South Africa. Without exception, all these are delightful wild flowers, some quite dwarf, such as *G. tristis, G. blandus* and *G. venustus*, others taller such as the 4 foot *G. oppositiflorus* of the Transkei (Eastern Cape) and the 3 foot *G. psittacinus* or the Parrot Gladious, also known as the Rhodesian Gladiolus, and its variety *cooperi*. Many are scented, some only so in the evening; all are colourful.

Most of our readers are familiar with the garden hybrids, those modern varieties of the hybridist, rather heavy topped, spectacular, large bloomed but scentless named sorts that appear in their hundreds individually all named in the nurserymen's catalogues. These are grown in their millions for the cut flower trade; they take some 90 days from the planting of the corm to cutting for the market. They are very beautiful, but ponderous, and their origin can be traced back to such well known men of the last century as Lemoine of Nancy (France) and Max Leichtlin. *Gandavensis, brenchleyensis* and *childsi* are the familiar trade names at the beginning of the century when the writer was serving his pupilage. *Gandavensis* was the result of *G. psittacinus* × *cardinalis; childsi* - *G. saundersi* × *gandavensis*: Then at a later period *G. colvillei* raised from seed of *tristis* var. *concolor* fertilised with the pollen of *cardinalis* was introduced. *Colvillei* var. *alba* was very popular at one time, known as ' The Bride.' These are very graceful and altogether lighter and daintier than the foregoing hybrids.

Then again the Tropical African species *G. primulinus* was introduced and used by the hybridists. The results were a class of graceful, long stemmed, not so densely packed flowers on the stem, and altogether lovely types. To have seen *G. primulinus* growing on the rocky face of the gigantic Victoria Falls on the boundary between Southern and Northern Rhodesia is a sight never to be forgotten. It's lovely bright yellow spikes appearing in the spray mist was seen by the writer and he wondered how a " Glad " could grow under such moist conditions. But with the fall of the water in the Zambesi River after the heavy rains, the mist disappears and the rocky face in places becomes hot, baking the corm for the annual ripening.

If only hybrids of *G. primulinus* could include the delightful scent of *tristis, venustus* and/or *adoratus* what a garden flower would be created!

Has not the time arrived when we should pay more attention to scent in the gladious? Should we not break away from those heavy spiked modern varieties and instead breed lighter and daintier varieties? Here, in this field, is surely a chance for the New Zealand enthusiastic hybridist! Why not? Let us consider a few species that might be used as parents. Out of the hundred or so known species, the following might be used in an endeavour to introduce scent: *G. tristis* (sad) has a lovely strong scent in the evenings but is scentless in the daytime. It is not a showy but rather a dainty species found on the local golf course in Port Elizabeth. Then why not *G. arcuatus* and *G. carinatus,* two small species with mauve flowers, scented, spring flowering? Then there is *G. odoratus* with its hyacinth-like scent day and night. This one flowers in autumn before the leaves appear. Others for scent are *venustus, grandis, maculatus* (known as " Brownie " and " Afrikander "), *recurvus* (pale blue to mauve). Surely this is a wonderland only waiting for the keen hybridist to explore. It is possible to picture that showy red and yellow species, *G. psittacinus,* autumn flowering, with a strong scent. It is so easy to grow and to increase the stock. Back in 1932 the writer was given a few corms by a friend who had been collecting along the Natal coast (It's spotted variety *Cooperi* had been in the collection some years but this is nowhere as showy). By the end of 1934 a sufficient stock had been propagated to plant up the narrow borders forming a huge cross in the Mayor's Garden outside the City Hall in Port Elizabeth. The writer then went overseas in time for the Chelsea Show, 1935. As he was gazing with rapture on his first sight of Russell Lupins, a beautiful banked up display, with no thoughts of South Africa in his mind, a lady's voice at his side burst out without any preliminary greeting, " Oh! Mr. Long, what is that beautiful scarlet and yellow flower you have planted in the Mayor's garden, people have never seen it before? " — (Mayor's garden? Beautiful flowers? Oh! Yes. Port Elizabeth 6,000 miles away ! ! ! ). So I replied, " That must be my Rhodesian or Parrot Gladious in bloom, madame." A few years after this, this species became quite a common sight in gardens. As regards the variety *cooperi,* the writer found this in sandy soil outside Durban when he was working on the airport there. This is a fine variety but not so conspicuous or handsome as its species.

What of the garden value of all the species so far named? They are dainty, graceful and attractive but not to be compared in size to the modern heavy and ponderous named varieties. All can be raised from seed and seed may be obtained from the National Botanic Gardens. Kirstenbosch, Newlands, Cape Town or from the Caledon Wild Flower Garden, C/o The Municipality of Caledon, C.P. The latter garden has a very fine variety of the brilliant *G. cardinalis.*

All species must have a light sandy or gravelly soil, well drained. The situation should be open and sunny. All the smaller species make fine rockery subjects and if the corms are planted and tucked under

stones at a depth of from 4 to 6 inches, will thrive undisturbed for many years.

The writer had a clump of *G. psittacinus* var. *cooperi* on a path edge under the rough stone curbing. This thrived and flowered year after year without special attention.

A good idea is to sow the seed in deep trays or boxes in good sandy loam over copious drainage. After germination, allow the grass like leaves to remain undisturbed for the whole of the first season. Only after the leaves have turned yellow and dried off must the small corms be disturbed, in fact the tray or box can be stored away in a dry and frost proof shed just as it has been planted and grown. In the following spring, the corms can be sifted out and planted either in nursery rows or *in situ* in the rockery. If interplanted with freesias, sparaxis, babianas and other Cape bulbs they will make a very interesting display. A collection of some of the species named so far, will make a very interesting hobby. If used for hybridisation, then an exciting future is assured.

A species that must be made more of is that blue coloured campanulate flowered *G. spathaceus* or the Caledon Blue Bell. This is a definite departure from the usual run. The flowers hang, bell like, very gracefully. Another but more rare is *G. bolusi* with pink-mauve flowers, marked with yellow and crimson with the same or similar habit. *G. spathaceus* is confined to the southern divisions of the Western Cape and is found in grass veldt and, as it will be gathered from its geographical position, must have rain in winter and spring, followed by dry summer and autumn.

A delightful but little known species that does not figure in the published lists, is *G. meridionalis,* a tall (2 ft.) pink flowered species, (sometimes of a lemon shade), with scent. This was found recently in a vacant building plot, not 100ft. from a main street in the heart of the city of Port Elizabeth, in laterite soil on sloping ground. Other local species are *G. tristis* with slender stalks bearing three yellow flowers; *G. undulatus* found in the sand dunes on the coast, rather stocky and pink flowered; *G. grandis,* Large Brown Afrikander, with strong evening scent; *G. maculatus* or Brownie; *G. edulis,* very common in this area (E. Cape) has pale grey rather flimsy but scented flowers.

All these are small subjects but delightful for the rockery and pot culture.

The larger and more showy species are:—

*G. psittacinus*—Rhodesian or Parrot Gladiolus. Reddish orange. 4ft.

*G. cardinalis,* or Waterfall Gladiolus—found alongside streams and likes some shade, crimson (W. Cape), 2ft.

*G. saundersi*—2½ft. found in the north, namely Basutoland, Natal and Transvaal, vermilion.

*G. macowanianus*—found in moist ground in spring, drying out later in the year, pink, 1½ft.

*G. oppositiflorus*—from the Transkei (E. Cape), runs up to 4ft. in height. White striped mauve.

*G. salmoneus*—deep salmon, 20 flowers to a spike, (also E. Cape).

It will be gathered that the range of the genus is very considerable, some are dwarf, less than 1ft., while others are 4ft. Some are from the winter rainfall areas, others from the summer. The former should have no late waterings when once the leaves have yellowed, otherwise the corms may rot. All are increased by seed and from the cormlets found round the base of the main corm. These should always be rubbed off before planting and grown by themselves in sandy trenches. Many are scented but not all. Colour ranges from crimson, red, pink, salmon, yellow, white, blue, mauve and purple. Some have a few flowers at the tip of dainty stems, whilst others have dense spikes of twenty flowers. It is indeed a fascinating genus with unlimited possibilities.

In regard to pests and diseases, the very small black mite will damage the leaf, taking away all the chlorophyl with disastrous results, control with D.D.T. spray every fortnight. When storing corms dust liberally with D.D.T. powder and store in a closed box as the mite hibernates in the jacket of the corm and will be killed off by the treatment. Rust is also liable to attack the leaf, spray with a copper or Bordeaux mixture.

(Following Mr. Long's reference to the possibilities of cross-breeding gladiolus species, readers may be interested to know that Mr. T. T. Barnard, of Wareham, England, successfully crossed the two species *tristis* and *bicolor*. The result was a charming, scented hybrid which he named ' Chrystabel.' The stem is slender bearing five or six slightly hooded funnel shaped flowers, each nearly 2 inches across with a basic colour of primrose yellow, the three upper segments being veined heavily with purple. It received an Award of Merit on April 17th., 1951.—Editor).

## AUSTRALIAN PLANTS OF NOTE

*DOUGLAS FIELD (Adelaide).*

*(Mr. Douglas Field, whose name appears on p. 278 of the March issue of this Journal as having passed the Intermediate N.D.H., is at present in Australia collecting herbarium specimens. He has undertaken to write articles on plants of interest he comes across in the course of his travels.)*

Australian plants are very popular in New Zealand, but only a limited number of these have reached our gardens in comparison with the vast choice of select natives of that country. This is not surprising when it is considered, that even in Australia, many of their best plants are not used in their gardens, due to a number of reasons, not the least being that so many of them require specialised conditions and cultivation. This is especially true of the spectacular wild flowers of Western Australia, the home of the verticordias and leschenaultias. There are,

however, many plants of horticultural merit, and less particular in their requirements, which are not seen in cultivation.

In the North Island, and warmer areas of the South Island, we have a large number of Australian natives in gardens, but in the cooler districts they become excluded, because it is assumed that they will not survive the more severe conditions. While this is true of many plants, there is still a number of comparatively unknown select trees and shrubs of Australia which are hardy enough to stand some of our colder weather. To illustrate this point, a very good winter flowering shrub from Western and South Australia, *Templetonia retusa,* is being successfully grown in the Botanic Gardens, Christchurch and has survived frosts of up to 12 degrees.

The acacias form the largest genus of the Australian flora with more than 800 species, most of which are Australian. While some of the best are already in cultivation in New Zealand, there is always room for more, especially the smaller species and one of the best of these is undoubtedly *A. myrtifolia.* This attractive shrub, which is native to South Australia, and Victoria, grows in low rainfall areas withstanding severe conditions of heat and cold. It eventually attains a height of about 10 feet, but is usually less than this. Racemes of globose yellow flowers cover the whole plant in early spring, and it is an ideal flowering shrub for the smaller New Zealand garden. It requires a light well drained soil, and of course, will grow well in alkaline conditions. Like many Australian shrubs, it will tolerate, and even appreciate, a considerably higher rainfall than it would receive in its native state, but it must have good drainage.

The genus hakea, is a member of *proteaceae,* and as such, it is often considered to be tender in most of the cooler New Zealand areas, but many can stand hard frosts. *Hakea laurina* perhaps the most striking of the genus, is also fairly hardy. It does not resemble the spiny *H. tenuifolia* (syn. *H. acicularis*) which has naturalised itself in parts of Auckland, and become a noxious weed there, but is a handsome shrub, 10 ft. or more, and occasionally, with very old specimens, reaching a height of 30 ft. Flowering at a time when there is little about (late April-May) *H. laurina* makes a handsome garden plant with its conspicuous red flowers which are are packed into a dense globose heads about 2 inches across, in the leaf axils. The long, pale yellow styles protrude beyond the petals, to give a unique pin cushion effect. The foliage too is attractive, the leaves being lanceolate — oblong about 6in. long with three conspicuous veins. Hakeas thrive in dry conditions, but where there is good drainage, they will stand a lot more watering. It is of note, that this particular species is growing at the Villa Taranto in Italy, and has stood frosts of up to 12 degrees.

*Chamaelaucium uncinatum* is a shrub not often seen in New Zealand, but is very popular in Australia, where it is known as the Geraldton Wax Flower. It belongs to *myrtaceae* and is closely related to the genus *leptospermum,* but is district with its pendulous habit, and waxy

flowers. While not as hardy as the former plants, it will tolerate a few degrees of frost but does not like wet, humid, conditions. To grow this shrub, it is essential to have good, open, well drained soil. The Geraldton Wax Flower is an extremely variable shrub as far as the flowers are concerned, and from seed, there is a colour range from pale mauve, to deep rose pink. The large sprays of flowers cover the plant in September and October, and cut, they last for long periods indoors. With a little protection, it could possibly be grown as far south as Banks Peninsular, and on the drier eastern coastal districts of further north.

The correas are well known in New Zealand as hardy plants, and the most popular here must be *C. rubra,* with its varieties and numerous colour forms which seem to be badly confused in this country. *C. minor* however, is not very often seen, and is quite distinct from the others. As the name suggests, it is a small shrub of up to 1 foot in height, but will become quite broad until it is about 3 feet across. It flowers profusely in April and May, and its bright orange bells can become one of the features of the garden at this time of the year. I need hardly mention its cultural requirements, for this shrub, like all correas, is easily grown in most gardens, but prefers a slightly acid soil.

## NEW ZEALAND SUB-ALPINE PLANTS

*S. CHALLENGER (Christchurch).*

*(Published by courtesy of the Alpine Garden Society, England.)*

Arthur's Pass provides one of the few major routes across the New Zealand Southern Alps, and enables the West Coast and the Canterbury plains to be linked by road and rail. To the botanist, the change in plant life which occurs during the transit of the route from the lower levels of the Canterbury plains, up the Waimakariri River, and on to the top of the Pass at 3,020 ft. is of fascinating interest, and I recently had the pleasure of making this journey with Professor L. W. McCaskill on a botany field trip with horticultural students of Canterbury Agricultural College.

The Canterbury plains gradually but imperceptibly rise towards the foothills of the alps until, at Springfield, they are 1,200 ft. above sea level. It is here that the outlying ranges of the alps are first entered and where the tar-sealed road from Christchurch ends. From Springfield on, the journey was on metalled and unsealed road, which is a test to driver and vehicle alike. New Zealanders seem immune to any possible hardships on this score however, and my suggestion that the road was a bit uneven provided amusement for many miles. The route follows roughly the course of the Waimakariri River, one of the major rivers of Canterbury. These rivers, which with glaciers, in the course of millions of years eroded the alps and laid down their erosion materials as the Canterbury plains, are very characteristic of New Zealand

scenery, without fixed river beds and varying immensely in flow. In dry periods they are small trickles of water, meandering in huge beds of shingle, but when collecting heavy rains they are raging torrents, sweeping boulders, trees and frequently bridges and roads along with them. The damage to roads in hill country by surface erosion and river " washouts " is almost impossible to control, and one very sound reason for the use of metalled roads in preference to those which are tar sealed. The ' fertile Canterbury plains ' are a fixed idea to most people, but their fertility does vary considerably owing to river bed movements which occurred during the deposition of the plains, similar to the movements occurring now. Fine alluvial soil may contrast with deep shingle beds, only hundreds of yards apart.

Our first halt was near the foot of Porter's Pass, where the route crosses the Torlesse Range. Mt. Torlesse is famous for the huge vegetable sheep *Raoulia eximia* which are found on its higher levels, but unfortunately we were unable to visit them on this occasion. The chief object of our halt was to see *Hoheria lyalli,* the hoary leaved Ribbonwood. *H. lyalli* is restricted to the drier regions on the eastern side, whilst the glabrous leaved *H. glabrata* grows in the moist conditions at the top of the Pass, the ranges of the two plants being discontinuous. The hairy covering of the leaves is thus related to the humidity of the locality but the juvenile leaves of *H. lyalli* are nevertheless free of hairs. The scrub of Matagouri *Discaria toumatou* is also well adapted to the dry conditions, for the leaves are greatly reduced in size and number and the branches reduced to very hard and tough spines, up to 1½in. long. The ground cover is a dwarf turf containing a mixture of many plants including *Acaena buchanani,* and the small *Geranium sessiliflorum,* quite a good rock garden plant and in cultivation in Christchurch. The tussock grasses, a very characteristic feature of New Zealand hill vegetation, are represented by the low tussock species *Poa caespitosa* and *Festuca novae-zelandiae.* At first glance they are very similar with their raised tufts of foliage but they may be quickly distinguished by the foliage, which is soft and flattened in *P. caespitosa* but hard and needle-like in *F. novae-zelandiae.* Around the tussock bases occurred the small white flowered *Viola cunninghami,* and *Celmisia spectabilis* with buff coloured tomentum on the leaves was quite common, although not in flower at the time of our late spring visit. *Bulbinella hookeri* was just showing flower buds in the base of its foliage which develop into golden-yellow spikes about 6 inches tall. Like *C. spectabilis,* this plant increases under burning, often carried out as a land clearing procedure. In original unburnt tussock grass, *B. hookeri* is quite rare, but where damp shady conditions occur and regular burning is practised, then almost pure *B. hookeri* stands are produced. The swollen roots are buried 4in. to 6in. deep in the shingly soil and thus undamaged in burning over.

Porter's Pass, 3,100 ft., was quite a severe climb for our truck but it must have been much worse for the horse-drawn transport which used the even steeper, and now abandoned, coach road through the

Pass. Looking back from the top the road looked very insecure, running across a steeply banked face, appearing to be nothing but a consolidated shingle slide. The screes here showed a most interesting sequence, from constantly moving and uncolonised parts to gradual colonisation and consequent stabilisation. The first colonisers include several *epilobium* species, including *crassum, pycnostachyum* and *melanocaulon, Rumex acetosella* and a viola species, which all tolerate burial and produce long underground runners able to penetrate the shingle crevices. *Epilobium melanocaulon,* with black stems, also occurs under very similar conditions of growth as an early river bed coloniser, but it seems highly suited to scree life, since growth occurs as the screes start to move when released from the grip of frost.

Plants with long tap roots are found where the surface movement of the scree has been slowed down. *Geranium sessiliflorum, Muehlenbeckia axillaris, Carmichaelia munroi, Notothlaspi rosulatum, Craspedia uniflora, Stellaria roughi* and *Lobelia roughi* are all typical, although not all are restricted to these areas. *Notothlaspi rosulatum* is a most desirable plant in leaf or in flower. Leaves are arranged in concentric rosettes, each layer overlapping the previous one like roof slates, and the whole rosette being arched so that only the outer edges touch the ground. The common name of " Penwiper plant " is well deserved. Flowers have an orange-like fragrance and occur on a short stubby spike, emerging from the centre of the rosette. Incidentally, the colour of foliage is very close to that of the grey scree itself and although we were searching deliberately for plants, the first we found only just escaped untimely destruction under the boots of one of the party. *Stellaria roughi* and *Lobelia roughi* were both named after the New Zealand shepherd who discovered them, and are typical of the screes, capable of withstanding very trying conditions of alternate heat and cold, drought and moisture. *L. roughi* is difficult in culvitation, however, and seems to require a daily north-west shower to make it happy, such as it receives in nature. The small fleshy leaves with toothed edges are usually partly buried in scree. The woolly leaved *Craspedia uniflora* was in flower, with yellow rayless heads, and also *Muehlenbeckia axillaris,* straggling loosely over the scree surface, and bearing small, creamy white flowers. *M. axillaris* is also a river-bed coloniser. On a stabilised island on the scree grew *Discaria toumatou* and scrambling through it was a fine little plant of *Clematis colensoi* in full flower. The small green flowers are only about an inch across but are very sweetly scented.

The tussock area around the screes contained *Carmichaelia monroi* with its peculiar flattened stems, almost eaten to soil level by sheep, *Dracophyllum,* the grass-tree belonging to the *Epacridaceae, Pimelia prostrata,* which has recently received an Award of Merit from the Royal Horticultural Society and, which showed its attractive white flowers to perfection, and odd plants of *Danthonia flavescens,* the snow tussock grass, characteristic of higher regions.

The Waimakariri River flows to the north of the Torlesse Range and it was quite a number of miles before we saw it again. Meanwhile

we lost height quite rapidly, coming into the basin of the Broken River, a tributary on the south side of the Waimakariri. One of the interesting features of this area is a large outcrop of limestone, with worn and smoothed surfaces, utterly different from the steep hillside from which we had come. The flora of this region is very rich and has been worked extensively by such men as Thomas Kirk, T. F. Cheeseman, both authors of New Zealand Floras, and Dr. Leonard Cockayne. Quite a number of rarities such as *Gunnera densiflora, Myosotis decora, Helichrysum pauciflorum, Lepidium sisymbriodes,* and *Cardamine bilobata* occur here, and although unable to visit them on this occasion I hope to be able to pay an extensive visit in the future. One endemic plant we did make acquaintance with, however, was *Ranunculus paucifolius,* which only occurs in an area of limestone scree about seven acres in extent. In the wild condition only a few leaves are produced, and the specific name of *paucifolius* refers to this fact. It is found, however, that when protected from sheep grazing, 20 leaves or more may be produced and since grazing and trampling with subsequent erosion were threatening the species with extinction, a movement was started by Mr. W. Brockie (previously in charge of Christchurch Parks rock garden, and now at the Otari Native Plant Reserve in Wellington) and Professor L. W. McCaskill to have the area fenced. The government provided the fencing material and the work was completed with the aid of Canterbury Agricultural College students, so that the plant has been preserved for future generations. *Ranunculus paucifolius* is a most attractive little plant and, although not cultivated widely, is grown in both the Otari Plant Reserve and the Christchurch Botanic Gardens. The creeping rootstock produces rounded, ashy purple, fleshy leaves, having laciniated edges and in the spring, about mid-November a single golden-yellow flower, about 1½in. across, is produced from each rosette.

We were soon to encounter Southern Beech forest for the first time, composed of a practically pure stand of *Nothofagus cliffortioides,* and covering the valley walls to sub-alpine levels. The visit was a good one for seeing beech in flower, and although the flowers are small, so many loaded the trees that from a distance a reddish tint was most apparent. The tree trunks were covered with a black material in thick layers — a sooty mould, being nourished upon secretions of a scale insect sucking the beech sap. Long white tails protruded through the sooty covering with drops of honey-dew gathering at their tips. Collected on the finger tip they were sweet to taste, and ants were also busy up and down the trunk garnering the harvest.

When a river first commences its process of erosion from the hills, the debris of stones and shingle which it collects accumulates as a conical mound at the junction of the hill and plain — junctions which are very acute in the New Zealand landscape, where hills rise abruptly. These mounds (known as river 'fans') eventually spread, encroaching on the level land until they reach quite large dimensions. Ribbonwood Creek (1900 ft.) possessed a beautiful example over three miles across, and about 400-500ft. high, which must have contained millions of tons of

rock debris. The creek had eroded its own fan in the centre, so that we were able to see not only the flora of a fan but also the process of riverbed colonisation.

Raoulia species are amongst the earliest colonisers besides *Epilobium melanocaulon* and muehlenbeckia which have been mentioned on the screes. Raoulias are very well adapted for riverbed colonisation since they tolerate extremes of temperature and wind, and if covered by high water, trap silt to produce primary soil. The silt impregnated mats of raoulia then become invaded with grasses, other plants, and finally scrub, by which time the raoulia will have died out. Several species occur but *Raoulia tenuicaulis* was found under slightly less stable conditions than *RR. australis, haasti* or *lutescens*. The small flowers were just being produced and the mats, when brushed with the hand, gave up masses of the typically feathery composite seeds. *Raoulia tenuicaulis* and *lutescens* are silvery, but *R. haasti* is green and turns an attractive brown throughout the autumn and winter.

The river terraces were populated with sub-shrubs, such as the peculiar *Helichrysum depressum,* looking completely dead, and with herbaceous plants. These included *Veronica bidwilli,* only 4in. to 5in. high and one of the best species, later having flowers of white or lavender blue, *Acaena nova-zelandiae* and *Blechnum alpinum,* an attractive but invasive little fern growing on the shady side of rocks.

The river terrace scrub was as effective as any barbed wire fence, with *Discaria toumatou, Corokia cotoneaster,* and *Aristotelia fruticosa,* all interlaced with each other, but in other places *Hebe traversi* and *Cassinia fulvida* were not quite so unpleasant. In rock crevices grew *Helichrysum selago,* very resistant to drought, and with typically reduced foliage. When the whipcorded stems were pulled apart the interior appeared packed with cotton wool, so dense were the hairs. The largest plant seen was about 4ft. high.

On the fan itself were many plants typical of the river terraces where tussock grassland has been able to develop. *Leucopogon fraseri* was particularly attractive with its dwarf prostrate habit, and small creamy white flowers festooning the branches. This plant belongs to the *Epacridaceae,* which in New Zealand largely replaces the *Ericaceae.* The fierce aciphylla were common, including *colensoi* and *squarrosa* (glaucous grey in colour), whilst *Vittadinia australis* looked for all the world like a long-stemmed English daisy. *Coprosma repens,* which later bears purple berries, and *Cyathodes colensoi,* apparently difficult to transplant, were dwarf shrubs and other plants included *Viola cunninghami, Gentiana bellidifolia* — seen as a resting bud only — and the little white Forget-me-not, *Myosotis decora.* The flowers are very small and the leaves brownish and hairy.

The township of Arthur's Pass is situated at 2,420 ft. about $2\frac{3}{4}$ miles below the summit of the Pass (3,020 ft.). It was once the nerve centre for the drilling of the 5-mile long rail tunnel into the Otira Gorge, but now supports a permanent population of only 75, chiefly maintenance

workers on the railway. Popular as a holiday resort, there are numbers of wooden bungalows which belong to clubs or are privately owned. Ski grounds are nearby and Mt. Rolleston (7,453 ft.) and numerous other peaks offer climbing. Down the valley flows the Bealey River, a tributary of the Waimakariri River, fed by numerous streams which spout and foam from the hills. The most spectacular is the Devil's Punch-Bowl Falls which drop a clean 418 ft. before landing as a fine lashing mist, saturating the ground for hundreds of yards around.

We went first to the summit of the Pass where stands a memorial to Arthur Dudley Dobson, who discovered this route to the West Coast in 1864. The vegetation is sub-alpine in character, and the scrub tall and difficult of penetration. *Olearia ilicifolia,* holly leaved and with attractive scaling bark, *O. arborescens,* and their hybrid *O. macrodonta* were widespread but interspersed with *Hebe laevis, Senecio eleagnifolius* and the conifers *Phyllocladus alpinus* and *Libocedrus bidwilli.* Phyllocladus, the celery-pine, has delightful foliage and was just showing small, immature red cones at the branch tips. Occasional plants of *Dracophyllum traversi,* round-headed and brownish leaved, with conical red flower buds, raised themselves above the lower scrub. The red and green snow tussock grasses, danthonia species, and *Dracophyllum longiflorum* formed an interesting contrast in appearance. In open, moister areas, patches of *Ourisia macrophylla* were in full bloom, their white flowers tiered on stems which bowed under the weight.

*Ourisia macrocarpa,* with smaller and hoary leaves, was not in flower, but a few mats of *O. caespitosa* produced short, 1 or 2 flowered stems over the tiny leaves, in places which were sufficiently soggy. The thick, tough leaves of *Celmisia coriacea* contrasted with the long narrow leaves of *C. armstrongi,* both occurring in similar sites in short turf, but not yet in flower. The plant supreme, however, was *Ranunculus lyalli* with its glorious white blossoms just beginning to open. The peltate leaves, usually half filled with water from the regular rain, were numerous, even where unaccompanied by flowers, showing the quantities of seedling plants that were present. The road was plentifully bordered with *R. lyalli* years ago, but the constant collection of blooms by coaching passengers so prevented seeding that the population became seriously depleted. Today, the collection of any plant or flowers is prohibited within the bounds of the Arthur's Pass National Park, and *R. lyalli* is once more becoming abundant.

Straggling over the surface in a small bog, grew the minute leaved *Dacrydium laxifolium,* which is reputed to be the smallest conifer in the world. Certainly the plants we saw were only 2in. to 3in. high and no more than 10in. across. *Drosera binata,* with narrow forked leaves, and a species of coprosma with large orange berries grew nearby.

Between the summit and the township occurs wet beech forest, more open and containing many more species than the beech forest we visited earlier in the trip. We walked down through the forest to the Bealey River, amongst trees heavily hung with moss and lichen, and rocks and

fallen stumps covered with filmy ferns. It gave a weird, almost submarine impression. *Astelia nervosa* grew by the path, its long, grassy, variegated leaves badly attacked by a leaf mining insect, which zigzagged from margin to midrib along the entire length. *Dacrydium biforme* (Pink pine) showed remarkable juvenile and adult foliage differences. Juvenile leaves were broad and widespread like those of the yew, but the adult stage could be hardly distinguished from the whipcord hebes. The naming botanist knew both forms and drew attention to them in the specific name but the describer of *Nothopanax simplex,* which we found nearby, was obviously not so well acquainted. Only the adult leaf is simple, those of the juvenile being 3 or 5 lobed. The erect *Coprosma foetidissima* quickly drew attention to itself as we brushed by, the bruised leaves giving off a foul odour, but the allied *C. acerosa* on the open river bank was prostrate, its wiry stems later being covered with fine blue berries. *Anisotome pilifera,* a compact, aromatic umbellifer just coming into flower, *Cotula coronopifolia,* with yellow rayless flowers, and *Leucogenes grandiceps* were found by the river. The latter, however, with its lovely silvery mat, was wedged into a rock cleft, not growing on the flat as were the other two.

Our journey was almost at an end. We walked back to the truck in the township, still gazing at plants on the road verges. *Helichrysum bellidioides* was everywhere, covered with white daisy everlastings. We were wet and we were hungry, but the cheerfulness and banter, coupled with innumerable questions about the plants we had seen, showed that not one would have missed the experience of the last three days.

## OLD WORLD ROSES IN AN AUCKLAND GARDEN

*NANCY STEEN (Auckland).*

### Rosa Centifolia and Centifolia Muscosa.

For over three hundred years, from the beginning of the sixteenth century, when the earliest rose-red forms of *Rosa centifolia* were produced, to the middle of the nineteenth century, when such perfect types as "La Noblesse" and "Tour de Malakoff" appeared, Dutch and, later, French breeders worked carefully and patiently to perfect this new type of rose. Two of the earliest varieties were listed by Gerard in his Herbal (1596) when he made references to the sixteen roses that he grew in his garden. These were the Great Red Rose, or Rose of Provence, and the Great Holland Rose, so these specimens must have arrived in England sometime during the sixteenth century.

Bunyard, who wrote that delightful book "Old Garden Roses," refers to *Rosa centifolia* as being of ancient lineage, the rose of the Greeks and the Romans. It was thought to have been lost for centuries to reappear again in Holland; but this theory has been disproved recently. The late Dr. C. C. Hurst, working at the Cambridge Botanic Gardens, unfortunately died before he had completed his study of the origins of the Genus *Rosa;* but he lived long enough to determine the fact that *Rosa*

*centifolia* was a plant of complex origin, *R. rubra, R. phoenicia, R. moschata* and *R. canina* being the four wild species that had been crossed and re-crossed by painstaking enthusiasts until they achieved success. Generations of selected seedlings produced, in time, a full and fragrant rose that differed greatly from anything that had been cultivated previously. It was so lovely that all the great artists of those days included it in their flower studies, particularly the form known as the " Rose des Peintres." Before Dr. Hurst's discovery concerning its origin, *Rosa centifolia* was thought to have been the double rose depicted in ancient paintings; but it is now considered that forms of the "Autumn Damask," a full rose of at least sixty petals, were the roses drawn by these early artists.

The first centifolias, being completely double, set very little, if any, seed, so the only source of new varieties was by bud mutation, ' mutation ' being a change that creates a new type, in contrast to a sport, which only produces a colour change, as in the case of the *gallica* " Rosa Mundi," a pink and crimson striped sport from the rosy crimson *gallica officinalis*. Then, to the joy of the hybridisers, a semi-double form appeared, which became known as *centifolia provincialis*. This was the red rose that, much later, was to be found growing happily in Lincoln's Inn Fields. It set seed freely and, from then on, new varieties appeared each year, till, in 1825, one French nurseryman was listing over a hundred different centifolias. Today, only twenty-two of these roses are available commercially, though many more, probably, may be discovered still, growing in old gardens on the Continent and in the countries of the Commonwealth. It is possible, even, that early arrivals in this country brought out with them little known centifolias that survive still today, though their names have been forgotten. Such has proved to be the case in North America where roses of the type have been discovered in old gardens and cemeteries.

*Rosa centifolia* became extremely popular in France where it was grown extensively round Provence and Avignon. In these districts it was given the names " Rose of Provence " and " Rose d'Avignon," or the " Troubadour's Rose," whilst in other parts it was known as the " Rose of a Hundred Leaves," " Rose des Peintres," and the " Cabbage Rose," making in all an impressive array of names.

The true *centifolia* or " Cabbage Rose," which is seldom seen in this country, is not so coarse in petal texture as some of the full-bodied hybrid perpetuals which are frequently referred to as " Cabbage Roses." It is refined and elegant in comparison with the colossal blooms of some of the latter varieties, though these have a sumptuous beauty of their own. The " Rose of Provence " has tall arching stems which bend over gracefully with the weight of the flower heads, and it looks particularly well when planted on a raised bank as it is then possible to look up into the heart of the beautiful flowers. There is a great depth of colour in the centre of these blooms as the small inner petals are screened from the sun by the large outer ones. This is most noticeable in " La Noblesse."

*Gallica* stems are clothed with bristles and a few small thorns, Damask stems have larger curved prickles, while *centifolia* stems are armed with short and long straight thorns, a useful guide when trying to establish the identity of these plants, particularly of the purer types. While *gallica* leaves are smallish, dull green and coarse, and the Damask leaves are large, round and of a softer green, *centifolia* leaves are very large, rough and coarsely serrated, even puckered and crinkled in some cases. They have a distinctive thornless petiole which hangs down from the stem giving this rose a lax look. The buds vary considerably, depending on whether they favour one side of the family or another. Those which have a preponderance of *Rosa rubra* in their make-up, for example, "Rose des Peintres," have short fat buds with only a slightly longer calyx than in the *gallica* roses; but there are others, such as " Blanche Fleur," which are so heavily foliated in the sepals that the flower appears to be surrounded by a collar of leaves. This is an inheritance from the *alba* family. In colour, the buds are often red just before they open, even in the white varieties, while the fully open flowers range from white through shades of pink to rosy-red. None have any hint of yellow in their composition.

Like many other old roses, these centifolias flower only in the summer; but their foliage is handsome for the greater part of the year and colours well in the autumn and early winter, bronze tones predominating as the leaves age. It is advisable to train the taller varieties up a wall or through shrubs which will give them some support, or else they can be arched over and pegged down. This method has proved very successful with the flexible " Tour de Malakoff," as it then throws out flowering shoots along the whole length of the stem. The stems of " La Noblesse " are stiffer and do not respond as well to this treatment, so it is better left to its own devices, and this also applies to the dwarfer varieties.

" Rose des Peintres " forms a tall open-growing, fragrant shrub with coarse, doubly serrated leaves of a grey-green colour and large globular flowers of what is known as " *centifolia* " pink, a clear colour with no hint of yellow in its make-up. Of the five calyx lobes, three are slightly foliated and two are not, the sepals extending a little beyond the petals, but not nearly so far as in types such as " Blanche Fleur." The large flowered clematis, " Comtesse de Bouchard," " Barbara Dibley," " Sir Garnet Wolseley," and " Mrs. Hope," and the Wax Flower, *Hoya carnosa,* make an interesting back-cloth when grown up a wall behind such summer-flowering old-fashioned roses, and add colour to the border early and late in the season. It is possible to grow medium sized hydrangeas in between the roses to flower in the autumn, " Heinrich Seidel" and " Parsial " being two useful varieties for this purpose.

" La Noblesse " is one of the beauties of the race, the flowers being very globular and of an exquisite shade of pink and deep rose. It does not come into bloom until many of the others have finished flowering which is greatly in its favour. Around its feet ramps the double pink Burnet rose with flowers of similar colouring and lovely ferny foliage. Pink dianthus edge the bed, and, further back, spring colour is assured

*Display by members of the New Zealand Orchid Society at one of the Auckland Spring Flower Shows* (See page 282)

(Sparrow Industrial Pictures Ltd.)

*Cattleyas under glass* (see page 285)

*Chamaelaucium uncinatum (Geraldton Wax Flower)*
(see page 295)

*Cereus Jamacaru*
(See page 290)

*Opuntia ficus-indica with O. cholla in foreground and Nyctocereus serpentinus on right* (see page 290)

*A corner of the author's outdoor living room during the Summer and Autumn.* (See page 286)

(Douglas Elliott)

by planting pink and rose coloured freesias and the pink form of *Gladiolus colvilli*. Groups of some of the better pink forms of *Lilium speciosum* show up well in the autumn against the grey stone wall of the back of the bed. There is another *centifolia* called " Petite de Hollande " which rather resembles " La Noblesse " in the form and colour of its flowers, except that it is smaller in every way, and has paler leaves with deeply and beautifully serrated edges. Constance Spry uses this rose and a smaller one still called " De Meaux," for miniature flower arrangements. " De Meaux," " Spong," and " Parirflora," all dwarf types, are some of the oldest of the centifolias, but are not grown here.

Only two white centifolias are listed today. The one growing here is " Blanche Fleur." This has large flowers, which reflex into a ball, and red tinted buds. The bush has dull, rather coarse, dark green leaves, which do not hang down as limply as they do in some centifolias; but it is the buds of this plant that are exciting. Three of the calyx-lobes are heavily foliated along the edges and the large, leafy sepals extend well beyond the corolla. Judging from pictures, these buds, which have a ferny appearance, must closely resemble those of *centifolia prolifera* from which " Chapeau de Napoleon " is thought to have acquired its amazing sepals. The original white form " Unique Blanche " originated as a sport from a pink *centifolia* in the latter part of the eighteenth century.

" Fantin Latour," though an exquisite rose and one that grows into a large and very free flowering shrub, is not a typical *centifolia* in either form or colour. It must have more Damask in its parentage than some of the others as the flowers, of a uniform soft pink, are flattish, with a small cluster of incurving central petals that enclose a greenish eye. It is not till the flowers fade and age, that the petals reflex back. This shrub is a marvellous sight in full flower and can be planted in a border with other medium sized shrubs such as *Rondeletia amoena,* and *Kolkwitzia amabilis*. This rose was named after a famous French painter of flowers, and Sacheverell Sitwell and James Russell in their book " Old Garden Roses " list it and " La Noblesse " as two of the most glorious of the centifolias. It was also mentioned in the September, 1957 number of the Royal Horticultural Society's Journal when Sir Frederick Stern wrote of it in glowing terms as a very worth while shrub.

*Centifolia variegata* or, to give it its common name, " Village Maid," (it has five other names as well) is of French origin having been bred near Angers some time prior to 1845. This thorny vigorous rose is to be found growing wild, as well as in old gardens, in various parts of New Zealand, having been introduced here by early settlers. It has full globular flowers of blush pink, with stripes of lilac pink, though these are rather variable, sometimes shading through to a deep rose. In Auckland, it favours the paler colouring; but in the heart of the North Island, where it is to be found by the roadside, the colouring is richer. This rose flowers profusely, even under the shade of tall shrubs, and does not seem to mind fending for itself under these conditions, though all of these roses do better if well fed and cared for. There are several

flowers to each cluster, and, as these open slowly, and one by one, there is bloom on the bush over a fairly long period. A carpeting of primroses, primulas, and dwarf Forget-me-nots in pink, white and blue helps to shade the roots through the hot Auckland summers.

Monsieur Dupont, who was in charge of the gardens at Malmaison in the days of the Empress Josephine, was particularly interested in the foliage of roses and he bred one or two remarkable varieties of centifolias, with quite astonishing foliage. These were the Lettuce-leaved Rose, and the Celery-leaved Rose. The former is still available today; but the latter, with deeply cut and serrated leaves has not survived the passage of time. *Centifolia bullata,* the Lettuce-leaved Rose, has extra large puckered and crinkled leaves which are bronze-green when young, while the flowers are of typical, *centifolia* pink. Redoute's fine painting of *centifolia bullata* gives a splendid idea of this beautiful rose. The foliage colours well in the autumn and the fragrance is rich and fruity and all one expects of a very old rose. This unusual and interesting rose has been in cultivation for over one hundred and fifty years.

" Robert le Diable," one of the smaller growing centifolias, is not unlike the gallicas in leaf, the leaves being smaller, darker and held more stiffly than in some of the other centifolias. The buds of this rose are exquisite as the outer petals curl outwards leaving the central petals in bud form. The colour is a slatey-purple richly veined with crimson and scarlet, and, as the flower ages, the outer petals fade to a soft dove grey, making an unusual, but most attractive, colour combination. With rich cerise and purple toned fuchsias behind and silvery foliage in front, this plant adds great character to a border.

Another rose of similar colouring, though the flower is much larger, and the petals much thinner than those of " Robert Le Diable," is " Tour de Malakoff." This is one of the tallest of the centifolias, and can do with some support for its arching branches unless it is pegged down here and there. The colour of the blooms is rather remarkable — a rosy magenta heavily veined with blue-purple, and, as it fades, it resembles that of some of the richly hued gallicas. This rose was bred in France just a hundred years ago and has the elusive colouring of some of the old French silks. The bronze-green toning of the autumn foliage looks well in association with that fine ti-tree " Red Damask," which flowers for such a long period. Two low growing winter flowering shrubs planted nearby are *Ruellia macrantha,* with rosy magenta trumpet shaped flowers and the purple flowered Heliotrope, the carpeters used being *Omphalodes verna* and *Orchis purpurea.* These all help the general colour effect of blue and rosy purple.

The same tonings are to be found in " The Bishop," a rose with smaller, flatter flowers and no definite striping of the petals as in "Tour de Malakoff." This rose has smoother foliage than most of the centifolias and " The Bishop " resembles it by having leaves of the same texture. These old roses, if neglected, can be quite rejuvenated if some old branches are cut right out from the base. This forces fresh new growth especially if the plants are well manured, mulched and watered afterwards.

Before coming to the Moss rose, there is a very, lovely form of *centifolia* called *cristata* to be mentioned; this is a rose that can be purchased in New Zealand. It is generally called " Chapeau de Napoleon," as its heavily fringed calyx somewhat resembles a cockade or a three cornered hat. The rose pink flower looks enchanting as it nestles into this ferny green collar. The scent is that of the true old roses. *Centifolia cristata* was found, in 1820, growing wild on a ruined tower in Switzerland and is thought to have been a chance seedling from *prolifera,* an old *centifolia* which grew in that district and was noted for its long fringed sepals. " Blanche Fleur " is another rose with similar characteristics.

A sensation was caused in Holland, about 1720, when a completely new and lovely bud mutation occurred on a plant of *Rosa centifolia.* Heavy green mossing was noticed on the calyx and stem of one rose, and this so added to the beauty of the flower, that breeders were very quickly alive to the great possibilities of such an attractive addition to their rose lists. Plants quickly found their way to England and to France and were hailed with delight everywhere.

Whereas in *cristata* it is mainly the calyx that is heavily fringed and mossed, in the true Moss rose, the sepals, receptacle, stem and even the leaves on some varieties are covered with masses of enlarged, aromatic glands which give that delightfully soft and old-world look to the flower spray. The opening bud is one of the loveliest sights in the rose world. Pierre-Joseph Redoute's painting of *centifolia muscosa* is a sheer delight, and artists everywhere have immortalised this entrancing flower. All the blooms on the earliest moss roses resembled the fully double parent centifolias; but later, a semi-double specimen appeared, and this was crossed with the gallicas to add richer colouring to some of the hybrids. Up to 1890, many new varieties were raised yearly and the nurserymen of those days all had long lists in their catalogues. Steps were taken to produce more perpetual flowering mosses by crossing them with a mossy Autumn Damask called " Blanc Mousseux." This was a white sport from the famous pink " Quatre Saisons " Damask, and some glorious roses resulted from this union. The mossing on the Damask rose is, strangely enough, not soft to the touch, but hard and firm. The latest colour break is yellow; and this was introduced into the mosses by Pedro Dot of Spain who crossed a white moss with the Hybrid Perpetual " Frau Karl Druschki " and a yellow pernetiana; but, as yet, these newer types are not very free flowering and there is still nothing to equal, for sheer appeal, some of the old rose pink varities set in their collars of soft green. There are dwarf mosses, such as " Little Gem," which grows to only 2 feet, and also some amazingly tall and strong growing kinds. One of these is the richly coloured " William Lobb " which will reach 8 feet in a remarkably short time. They require pruning, a rich soil, ample moisture and regular spraying as their soft mossiness has a terrific attraction for aphids and thrip When the flower clusters are large, some of the buds fail to open properly. These are inclined to fall off, particularly if the ground gets too dry and growth is checked in any way.

" Chapeau de Napoleon," " Baron Wassener," Red Moss, White Bath, " Blanche Moreau," *lanei* and " Zenobia " are all listed in this country and still others, such as the Common Pink Moss, are to be found in old gardens, suckering freely and coming up in odd and unexpected corners.

The common Moss, a pink sport from *Rosa centifolia,* though over two hundred years old, is still one of the most beautiful. In leaf, flower and colour, it resembles closely the true *centifolia* form which it sported. The globular pink flowers have a button eye and reflex as they age. There are no prickles along the back of the petiole stalk, a *centifolia* characteristic, and the scent is rich and fruity. The most heavily mossed of all these roses, one which is not grown here, is *centifolia muscosa japonica;* but the flowers are not as good in this variety, though the buds are superlative, and Constance Spry makes use of them when arranging a bowl of less mossy roses, to accentuate the soft green effect.

" William Lobb " or the Old Velvet Moss is an extremely tall variety that will clothe a wall or a pillar in a very short time or, if space allows, it can be pegged over and allowed to form a spreading shrub. This vigorous rose is to be found in many old New Zealand gardens and its arching sprays, which often boast as many as fifteen mossy buds, make an arresting sight when the rather large flowers begin to open. The colour at first is a rich crimson purple shot with a deep blue, but, by the second day, a much more subtle toning appears as the flowers turn a slately lilac, with a soft magenta reverse. *Schizostylis* " Viscount Byng," with flowers of a clear satiny pink, can be planted in proximity to this tall shrub to ensure some colour, as well as useful flowers for the house, during the autumn and winter months.

" Salet," one of the Autumn Damask hybrids, produces its exquisite pink flowers off and on all the season and is a decided acquisition on this account. The leaves are paler and rounder than in the typical moss rose, and show a strong Damask influence, and the flowers, also, have the narrow petals and muddled centres of this branch of the family. The fact that there are so few perpetual flowering moss roses available today makes " Salet " an extremely valuable shrub.

" Nuits de Young " makes a small, upright shrub with stems lightly clothed in a reddish brown moss which blends well with richly hued flowers. The smallish blooms, of rich plum purple and burgundy tonings, are useful in flower arrangements and mix in well with such roses as " Cardinal de Richelieu " and " Hippolyte." A useful dwarf bearded iris for planting in front of " Nuits de Young," is " The Gem," an almost non-stop bloomer; and there are several iris species that would fit in well here, such as *tectorum, graminea* or *douglasiana.*

" General Kleber" though a hundred years old, has only recently been introduced into England from Germany. It has flatter, fewer petals than most of the mosses, while the colour resembles that exquisite pink of "Alba Celestial." Not being fully double, this rose produces hips in the autumn, and it bids fair to become as well loved in the

future as it was in the past. Several mid-nineteenth century books on the rose mention it in very glowing terms.

A distinguished French Moss rose is "Marechal Davoust." The enlarged glands on the calyx and stem of this shrub are not green, but a rich red-brown, while the cupped flowers are a rich cyclamen pink with a green button eye. As they age, they become flushed with purple and lilac and have an exotic look, surrounded as they are with such unusual coloured mossing. This rose owes its rich appearance to its *gallica* ancestors, and it combines with these roses well in floral work.

A century ago, moss roses were sold as standards; but, as the majority only flower at one period in the year, it would be a pity to treat them in this manner today. For one thing, it is not simple and natural and for another, they really do better in many cases on their own roots and with other plants grown in association with them. Pruned well, richly fed, with the new growth arched and pegged over and sprayed and watered regularly, moss roses can be a source of great pleasure and interest in the less formal parts of the garden. The most difficult with which to achieve success are the white ones, "Blanche Moreau" and "White Bath," as their buds are often inclined to brown and fall off before maturity, in spite of frequent spraying. Certainly watering regularly to prevent a check in growth during a dry period does help and it is interesting to read that these roses do very badly in the hot, dry parts of India, and extremely well in the cooler hill country where plenty of rain falls.

In England, forty varieties of moss roses are sold commercially today, most very old, and some quite new; but what of the hundreds of others that have been produced since 1720? A few of these may be growing in old gardens in New Zealand, Australia, Canada and the United States of America and may some day come to light again to enrich our gardens. In the meantime, let us treasure those we have to remind us, in these days of rush and bustle and atom bombs, of the gracious and pleasant days of the past.

## THE TWO FORSTERS.

*A. W. ANDERSON, A.H., R.I.H.(N.Z.), (Timaru).*

When he came to record the account of his second voyage round the world Captain Cook explained that, "it being thought of public utility that some persons skilled in natural history should be engaged to accompany me in the voyage, the Parliament granted an ample sum for the purpose, and Mr. John Reinhold Forster, with his son, were pitched upon for this employment." The term "pitched upon" does not sound very flattering to the naturalists but it does give a very good idea of what actually happened.

A second voyage became necessary soon after the end of the first one in the summer of 1771 when it became obvious that the geographers would not accept Cook's evidence that he had sailed over the site of the great southern continent, which they thought essential to balance the

great land-mass of the northern hemisphere. The " Endeavour," which had done her job so faithfully in the first voyage was no longer available, so two ships, the " Resolution " and the "Adventure," built in the same yard, were fitted up for the purpose.

Young Mr. Banks, with all his usual energy and enthusiasm, was keen to take part in the second voyage and the Government gladly handed over the scientific side of the project to him. He arranged for Dr. Solander and Dr. Lind to accompany him and engaged "Zoffany the painter, three draughtsmen, two secretaries, and nine servants acquainted with the modes of preserving animals and plants," and spent some £5000 in his preparations.

All the details of what happened remain obscure but it appears that he obtained some authority to alter the " Resolution " so as to provide adequate accommodation for his retinue, and to have gone on with the work without consulting the Captain. When Cook went down to Deptford to see how things were, he was horrified to find his ship " so crank, she would not bear her proper sail to be set." She had been chosen because, like the " Endeavour," she " was of a size, which in case of necessity may be safely and conveniently laid on shore for repair to any accidental damage . . . It was upon these considerations that the " Endeavour " was chosen for the voyage.

Cook insisted that all this heavy over-burden be removed and the ship returned to her original condition. The autocratic Mr. Banks was most indignant and pointed out to the Admiralty that bigger ships had recently been beached most successfully and hinted that there were other commanders every bit as capable of making the voyage as Captain Cook. His outcries and indignation were of no avail. He merely succeeded in putting their backs up and was told that in the opinion of the Admiralty the expedition was a nautical venture, they had every confidence in Captain Cook, and scientists were no more than troublesome accessories whose convenience could not be considered at the expense of more important considerations. This was too much for Joseph Banks to stomach and he withdrew within a fortnight of the date of sailing.

## Forster is Appointed

The Government now found itself without any scientific representation on the voyage and, on the advice of Mr. Banks, offered the position to Johann Reinhold Forster. He jumped at it, as well he might, and became the first naturalist appointed by the British Government to take part in a voyage of discovery. The naturalist had very little time to look round, but had he done so he would have found many able men willing to accompany him. He chose his son Georg, a youth of 18, as his botanical draughtsman and the two were engaged for an inclusive fee of £4,000.

There is no doubt about it, this was a wonderful bit of luck for the Forsters. They had a curious history. Of British extraction, the family had been living in Germany where the father had been pastor in a small village near Danzig. In 1766 he had been appointed to an

academic post at a college near Warrington, in England, but did not reign long. His hectoring manner and violent rages were too much for the college authorities and he was compelled to resign, so for the past two years or so had been ekeing out a precarious existence in London, doing translation work. His translation of Bougainville's voyages had just been published and was the talk of the town and that is how it came about that the Forsters were " pitched upon " to undertake the scientific work of the voyage, on very short notice.

A small ship is no place for a bad tempered man and Forster, senior, with his over-bearing ways and quarrelsome nature had succeeded in making himself heartily disliked on board the " Resolution " before the shores of England faded into the distance. No doubt the young officers set out to tease him, and he complained bitterly that they always seemed to hinder rather than help him in any scientific undertakings. He quarrelled with everyone, except the Captain, and during his many disputes was fond of declaring that he would tell the King when they got home, and would have his opponent hounded out of the Service. Such expressions became a by-word on the ship and long before they reached New Zealand the common sailors were using them in their own quarrels.

## The Return

When telling the story of Dr. Andreas Sparrman, who did most of the botanical work of the voyage, I shall consider some of the plants found in New Zealand but in the meantime intend to go on with the story of the Forsters.

The work done during Cook's second voyage is of special interest in the story of plant hunting in this country because the Forsters were the first to tell the world anything about our plants. Scientists the world over were waiting anxiously for the results of the first voyage and preperations were well on the way. Dr. Solander had drawn up his masterly descriptions and 700 plates had been engraved on copper, but for some reason they never reached the printing press.

Throughout the voyage Forster, senior, had been quite sure that he would have the honour of writing the official version of the voyage and, whatever his ability as a botanist, he was well qualified for the task. He said he had a verbal promise, given before sailing, that the job would be his. Perhaps Captain Cook, in reporting on Forster's conduct had suggested that such a man was unlikely to give an unbiassed account of events. Forster, however, blamed Lord Sandwich, First Lord of the Admiralty, and had some tale of his lordship's mistress, Miss Ray, having taken a set at him because he declined to give her some birds he had brought home.

Whatever the cause, the end of the voyage was marred by an unpleasanant incident. Forster, finding that he was not to write the official history of the voyage, speedily set to work and "A Voyage Round the World in His Majesty's Sloop Resolution " appeared six weeks before Captain Cook's official history, with Georg Forster's name on the title

page. Later commentators have noted that no acknowledgment was made of any assistance derived from Cook's Journal which, in accordance with the Admiralty's agreement had been placed at Forster's disposal while writing the scientific history of the voyage, but that was hardly to be expected under the circumstances.

The preface did contain some explanation however. Young Georg had not been asked to sign the agreement at the beginning of the voyage and as he said, " I was bound by no agreement whatever, and that to which my father had signed did not make him answerable for my actions nor in the most distant manner preclude him from giving me assistance. Therefore in every important circumstance I had leave to consult his journals, and have been enabled to draw up my narrative with the most scrupulous attention to truth " ! ! ! Needless to say such chicanery was not well received and before very long the Forsters found it expedient to return to Germany.

## Their Published Works

During the years that followed the Forsters published several works dealing with New Zealand plants. First and most important was their " Characteres Genera Plantarum " which appeared within 12 months. The botanical work had been done by Sparrman, Georg Forster had been responsible for the drawings and Forster, senior, had supervised the whole work. At the time this work met with some ridicule because of the minute scale on which the drawings were made in rleation to the size of the page. Included in this volume are 31 New Zealand genera. Cheeseman, whose " Manual of the New Zealand Flora " of 1925 is still the standard work on our plants, has little to say in favour of the Forsters' book. " The descriptions are short and meagre, and the illustrations so badly executed as to be practically useless."

Ten years later Georg Forster published " Florulae Insularum Australinum Prodromus " in which 170 species are referred to as coming from New Zealand, but this too is dismissed with scant comment by modern botanists, " the descriptions " being short and unsatisfactory, and usually quite insufficient for the proper identification of the species."

That same year, in 1786, Georg Forster published a pamphlet whose long title is sometimes shortened to " Plantis Esculentis," which was his thesis for his M.D. degree. This contains full descriptions and a good deal of information, of one kind or another, on 54 plants used as food in the South Seas.

This list contains 14 New Zealand plants and several that had been brought to these islands by the Maoris, the Kumera, the Yam, and two forms of the Taro. The native plants include *Solanum aviculare, Coriaria sarmentosa, Pteris esculenta, Cyathaea medullaris,* and others used by the Maoris together with the Manuka and the Rimu which Cook used when brewing his beer at Dusky sound, and the Wild Celery, *Apium prostratum,* and Scurvy Grass, *Lepidium oleraceum,* which were used by Cook in the broth he made as a prevention for scurvy. It is

in this work that the Mangrove is described as *Avicennis resinifera* with the statement, originally recorded by Crozet, that this plant produced a gum eaten by the Natives. The mistake is thought to have arisen through drifted pieces of Kauri gum having been seen caught among the roots of the mangrove on some beach. In the old days the Maoris used this gum as a kind of chewing gum.

Enough has been told of the Forsters to show that if they lacked the ability of Dr. Solander their lack of success in the botanical field would have been considerably less had they been better able to get on with people. But that is hardly surprising. One can hardly expect first class scientists to be prepared to leave on an absence of four years at a fortnight's notice.

## DR. A. P. SAUNDERS' PAEONY HYBRIDS

*SYLVIA SAUNDERS (U.S.A.)*

### (1) Tree Paeonies.

Twenty-nine years ago, last June (1957) there flashed across the heavens of the gardening world a new star. A tree paeony, of a new race, and of the purest light bright yellow. Its name was "Argosy."

Dr. A. P. Saunders, the originator of this now famous plant, was to find himself, before he was done, the somewhat astonished father of several hundred new hybrids, close relatives of "Argosy," and all with flowers on the same side of the spectrum: from palest sunset yellow, through gold, orange, tea-rose, to crimson and deep maroon.

It would require a book to tell of Dr. Saunders' work on paeony hybrids, covering roughly the thirty years from 1915 to 1945. But this is no book; it is two short articles. We have space only for a swift air-flight, with three brief stop-overs to examine in detail the most fruitful lines of work and their results. Sometimes through the use of rare and particularly hard-to-find species, sometimes through applying a new hunch to an old line of thought, Dr. Saunders produced hundreds of new hybrids. Some of these, as might have been foreseen, were better than others; a number have been introduced to the public and are now established and popular garden plants. Our first stop is with that great group, the so-called *lutea* hybrids, of which "Argosy" is the eldest child.

*P. lutea* hybrids are tree paeonies, or rather tree paeony hybrids. No herbaceous blood is in them, and I do not need to remind this audience that thus far no one has successfully crossed herbaceous on to tree, or tree on to herbaceous paeonies. Tree paeonies have woody stems that remain above ground all winter; herbaceous stems are green and softer and die down in autumn; there are other botanical differences. But deeper than these lies some fundamental dis-relationship which thus far has prevented the two families from being intercrossed. They remain separated by a deep, unbridgable gap.

No, the *lutea* hybrids are strictly within the tree paeony family. One parent we know well: the great ancient race of splendid flamboyant Japanese tree paeonies. The white " Gessekai," the pink " Tamafuyo," and the black " Ubatama " are garden favourites. Actually, it was the Chinese who first took a great plant from its native forest into their gardens, many centuries ago, to tame and civilise it: a tall wild shrub with spreading branches, bearing aloft the white or mauve-pink flowers with large black flares. Generation upon generation of patient Chinese gardeners laboured on generations upon generations of tree paeonies, saving and growing seed from the finer kinds, casting out the inferior ones, " developing the plant," as we say. This is one method by which new garden plants are derived from wild ones. The other method is by hybridising: crossing one species with another. We have no reason to believe that any other species was used than this one variety of wild tree paeony, call it *P. moutan* or *P. suffruticosa,* as you wish.

With the advent of Buddhism to Japan in 600 to 800 A.D. came a host of Chinese trees, plants and shrubs, among them the tree paeony. The Japanese continued its development for another thousand years and in about 1890 introduced it to the Western world. When we beheld these breathlessly beautiful flowers, almost all single, or airy semi-double, we forgot the charms of the more heavy-headed fluffy doubles that for a hundred years we had welcomed from China; to this day the Japanese kinds remain our favourites. But we should pause from time to time and recall that it is to the Chinese that we owe the greater debt.

So much for one parent of the *lutea* hybrids. The other parent is a curious and little-known plant. Rather spindly shrubs, with ferny foliage and little cup-like blooms 2 or 3 inches wide, nodding downward among the leaves, and in shades of bright yellow, tawny orange or mahogany crimson, these plants seem at first guess, closer to a sort of yellow Japanese anemone than to the tree paeonies we love. And their history is equally curious and little-known. In 1883, which of course horticulturally speaking is our own day, the Abbe Delavay, a French missionary-botanist, plant collecting in Yunnan in southwest China (not far from the Burma Hump of later fame), came upon a plant which he had never seen before and which he surmised must be a paeony. Several years later he sent seed of it to Paris to the Jardin des Plantes. Here it was duly planted, grew up, and in the paeony's own leisurly way, several years later came into bloom. And lo and behold! it was indeed a paeony, but what a paeony! For its flowers were of the brightest possible buttercup yellow; they named it *Paeonia lutea.*

When the great Lemoine saw it — the same Victor Lemoine to whom we owe so many of our finest garden plants — there occurred to him the idea that if he were to cross it with the tree paeonies, an interesting hybrid strain might result. This he forthwith did, and in 1909, twenty-six years after the finding of the first *P. lutea* in China, the first *lutea* hybrid made its spectacular debut, under the somewhat sym-

bolic name " L' Esperance." Lemoine, working with his son Emile and with M. Louis Henri, have introduced some thirteen varieties in all. Almost all are a bright golden yellow, some with reddish or rosy tones. " Souvenir de Professeur Maxime Cornu " is one of the most famous; " Eldorado," introduced in 1949, the most recent.

The ancestry of Lemoine's tree paeonies was directly Chinese, not Japanese; as we have said, mostly heavy-double flowers. With this inheritance on one side and the naturally nodding habit of *P. lutea* on the other, it follows as the night the day that the hybrid children would hang their heads. And so they do, but not in shame, for this is a very splendid race of plants indeed, and a triumphant hybrid achievement. Both the colour range and the flowering season of the tree paeony family have been greatly extended: *lutea* hybrids bloom in June, a week or more after the Japanese are over.

Dr. Saunders had had tree paeonies in his garden from almost the time he first settled on to a permanent piece of land at Hamilton College, in Clinton, in 1900. By about 1915 he also had *P. lutea* established. His records tell of his early attempts to cross *lutea* with all the paeonies he had, tree and herbaceous. The failures alone would fill a book. Years later, he asked Dr. A. B. Stout of Day Lily fame how long you must " go on making the same cross that continues to yield you nothing, until you have proved that the cross is futile? " " Until your patience is exhausted," came the reply.

A chemist by profession, Dr. Saunders brought to his work the heart of the true scientist: always uppermost in his mind was the consciousness that his was but one more step in the long walk of plant hybridising. His records make the most delightful reading even for the layman. Yet they are meticulously complete and detailed for the scientist. They seem to presuppose that some future hybridiser, in another era and in another garden, may wish to reduplicate an exact given cross; or he may wish to pick up where Dr. Saunders had left off, thus saving himself (and science) a substantial portion of life-time, for a paeony takes some seven years to mature from seed, i.e. to mature enough so that we may tell whether or not it is truly a hybrid; whether it will be single or double; whether it is likely to prove a good garden plant; mature enough to set seed.

But if he failed to unite *P. lutea* with the herbaceous paeonies, other crosses proved more than compensating, and there began in about 1920 an unbroken stretch of twenty-five years in which every spring saw its new and hitherto unknown hybrids coming into bloom in the garden. Some of the herbaceous hybrids we will talk about in the next issue of this Journal. Just now the *lutea* hybrids concern us.

A word about this cross: when pollen from a bloom of *P. lutea* is placed on the stigma of a tree paeony, no hybrid seed is produced, although the tree paeony is itself a good seed-setter. As we say, this cross " takes in only one direction ": when tree paeony pollen is placed on the stigma of *P. lutea*. *P. lutea* sets seed well of itself; the seeds are as big as chick-peas, shiny black, easy to see and to handle; they

germinate well and grow fast. From which you may argue that *lutea* should be a good "mother." And so it is. The cross, Dr. Saunders used to say, "takes with fair ease." That is, you may get a dozen or so young plants from a hundred or so crosses.

One more word about the species *P. lutea*. This plant is not an only child in its family. After its discovery in 1883, other wild plants of the same general character continued to be dug out of remote parts of China. First came a deep mahogany maroon which they named, for the Abbe himself, *Paeonia delavayi*. Other yellows, other reds, and even a white, were found; the names *P. trollioides, P. potanini,* and *P. forresti* are as familiar to experts as they are unnecessary to the rest of us. Many of the plants appear to be closely related, for they intercross with the greatest of ease, whether in our gardens or in their own wild habitats, and thus have given rise to the many intermediate shades of tawny orange, brownish crimsons, etc.

The male parent of the new hybrids, the tree paeonies in Dr. Saunders' garden, were the Japanese varieties; in other words, generally single, with a few delicate semi-doubles. The female parent was always either yellow *lutea* or one of its various closely allied forms such as the crimson *delavayi*. The hybrid children are almost all single, with a few semi-doubles; only one or two out of several hundred are heavy double. Most fortunately for us, *lutea* is a spendthrift with her gold: by far the greater number of the hybrids are yellow, clear or blended; pale yellow, bright lemon colour, harvest gold, tea-rose.

In form and habit the Lemoine and Saunders hybrids are every one large, luxuriantly handsome shrubs. Their elegant foliage, the great size and fine texture of their blooms are far closer to their tree paeony parent than to the lanky *lutea* group with its little hanging blossoms. All in all it fairly makes one's hair stand on end to think what a narrow escape we may have had with these hybrids. For to quote Isadora Duncan to Bernard Shaw, they do indeed have "my beauty and your brains." Had they had instead *lutea's* spindly habit and the small form of her blooms, they had died unsung, strangled at birth by their disappointed originators.

As it is, Dr. Saunders judged some seventy of his own hybrids worthy of naming and introducing. They fall roughly into six colour groups of about 12 each. To mention one or two in each group: "Roman Gold" and "Silver Sails" among the single yellows; "Age of Gold" and "Golden Hind" in the double yellows; "Countess" and "Harvest" among the tea-rose; "Conquest' and "Chinese Dragon" in the strawberry tones; "Black Douglas," "Corsair" and "Thunderbolt" from the dark crimsons; and in the final group of mauves and blended colours for which the term "nacre" seems most appropriate, perhaps "Mystery" and "Princess" are outstanding.

What is the *lutea* hybrid of the future? Mr. William Gratwick, of Pavilion, New York, became deeply interested in exploring all supposed blind alleys and dead ends. The hybrids suffer, or rather we suffer, from their extreme sterility. For our harvest of some ten seeds

each fall, from more than a hundred mature plants, is too close to absolute sterility for comfort. Mr. Gratwick has under his special care the four or five second-generation plants that do exist. An accomplished singer, sculptor, librettist and raiser of Dorset sheep, here is a man of infinite gifts, who may succeed where others have not. We all live in hopes that the ability to set seed, which in the paeony usually disappears in the first hybrid generation only to return (often with redoubled force) in the second, may still put in an appearance. Thus far, the second generation remains as sterile as the first.

Mr. Gratwick also persists, against all warnings, in making the cross in the " wrong " direction: for years he has put pollen every May and June from *lutea* flowers on to tree paeony flowers. He now has six young plants which appear to be true crosses. Exciting indeed will be the day when these come into bloom.

In closing, I must tell a long story in reader's digest form. Twenty years ago a new form of *lutea* was found in China by the two English plant hunters, Messrs. Ludlow and Sherriff. This is not very similar to the previously known *lutea* forms, nor is it very far from them either. You may class it among them or separately, as you choose. *P. ludlowi,* in its brilliant yellow flowers and rather fern-like leaves, resembles *lutea.* But *ludlowi* is taller, the flowers handsomer and more open than *lutea,* and are held well up in the air. It blooms with the tree paeonies. I do not know that it has yet bloomed in America, though many of us are growing it, in high hopes. They love it in England. If it ever gets going here it may become in time the parent of a yet more splendid race of hybrids. Perhaps.

## DWARF FRUIT TREES FOR WELLINGTON.

Recently Mr. K. C. Hockey, N.D.H.(N.Z.), F.R.N.Z.I.H., head of the Horticulture Department at Massey College, Palmerston North, came to Wellington at the Invitation of the Wellington District Council of the Royal New Zealand Institute of Horticulture and the Wellington Horticultural Society to address an enthusiastic audience of over 100 people on the subject of Dwarf Fruit Trees. Mr. J. C. Stirling was in the chair.

Mr. Hockey commenced with a solemn warning that unless people were prepared to look after their fruit trees they should not hasten to procure them. The biggest single factor in the growing of fruit is disease control by regular spraying and if people were not prepared to do this, the trees became a public menace. For those with an ambition for home production, the growing of dwarf fruit trees gives much satisfaction and work.

All fruit trees should be vegetatively propagated, because seedlings do not usually inherit all the qualities of the parent fruit and are unreliable in growth and fruit characteristics. Both the stock, the rooting part, and the scion, + the top framework of the tree can influence

its character. Soil type will influence the vigour, and disease and waterlogging can dwarf a tree even on a vigorous rootstock.

A somewhat dwarfing effect can be produced on pears by using the quince rootstock. Stone fruits generally cannot be dwarfed by existing methods of propagation although it is known that some reputedly dwarf trees have been offered to the public. The *Poncirus trifoliata* rootstock has a slight dwarfing effect upon citrus trees and in warm sheltered positions the Meyer lemon and New Zealand Grapefruit should grow reasonably well in Wellington, on this rootstock.

It is with dwarf apple trees that Mr. Hockey has had a wide experience over the past 10-12 years and he considers they have a very definite place in the home garden and possibilities for commercial production. Apples can be successfully dwarfed by grafting them on to the rootstock named East Malling IX and large plantings are being made in England where they succeed under most conditions. One orchard of 600 acres has been planted with apples spaced 3ft. apart in rows 6ft. apart.

By using dwarf apple trees a greater variety can be planted to spread the span of picking over several months. The recommended varieties in order of maturity were Cox's Orange, Kidd's Orange Red, Jonathan, Red Delicious, Golden Delicious and Granny Smith. The variety Sturmer was not sufficiently vigorous to be recommended as a dwarf tree.

The dwarf trees are more easily looked after especially where spraying is concerned. As the trees rarely grow taller than six feet it is easier to keep the foliage protected with spray materials throughout the season. This is a major factor.

A further advantage is that the trees lend themselves to training, two of the most useful shapes being the oblique cordon and the bush pyramid. It is a pity that most nurserymen persist in supplying dwarf trees which have commenced to form an open centre. Mr. Hockey advised selecting the best growth and removing the others.

By the use of slides Mr. Hockey explained the methods of pruning and training the tree and also indicated the correct position for the graft union—at least 6in. above ground level. Because of the brittle nature of the union, solid staking is essential.

After re-emphasising the necessity for thorough disease control, Mr. Hockey answered several questions from the audience, and recommended that specimens of pests and diseases be taken to the department of Agriculture for identification and advice on control. The questioning continued during the serving of supper.

A vote of thanks proposed by Mr. W. K. Dallas was heartily endorsed.

# NOTES FROM THE CHRISTCHURCH BOTANIC GARDENS

*L. J. METCALF (Assistant Curator, Christchurch Botanical Gardens).*

The past two months (February and March) have been slightly warmer and drier than usual which has somewhat compensated for the lack of warmth earlier in the season, but growth has been too late to be of much use. And gardeners being like farmers, never satisfied with the weather, March turned out to be too dry and a period of absolute drought was recorded by the observatory.

Most people do not realise what a great range of plants may be grown here in Christchurch, in spite of our relatively cold winters, so that from time to time I propose to mention plants which are neglected because they are generally supposed to be frost tender or difficult in other ways. For example proteas are usually regarded as being too tender for most parts of Christchurch and only to be found in the favoured gardens of Cashmere Hills. However, growing under the group of *Pinus pinaster,* known as the Pine Mound, is a very healthy bush of the giant *Protea cynaroides* which has endured a number of winters and never shown the least sign of being frosted. Already it is a bush about 4 feet high and this year produced three of its large pink flowers. It is in an exceptionally dry situation where it never gets any artificial watering and has proved to be a good drought resisting shrub.

Growing just a few feet away from *Protea cynaroides* is another good flowering shrub which deserves to be more widely grown than it is. This is *Lantana sellowiana*, the trailing Lantana. The plant in the Botanic Gardens is the only one that I know of in Christchurch, yet it would thrive in many gardens. It is a slender plant with somewhat trailing branches and small ovate leaves. The rosy-lilac flowers are produced in small heads and the whole plant has the appearance of a Heliotrope. It is a native of South America and is said to flower as freely in winter as in summer. However, with us it usually finishes flowering about May.

*Grevillea robusta,* the Silky Oak from Queensland, is surprisingly hardy and is easily grown in a well drained soil. In the young stages it is liable to be frosted at the tips, but once it gets to about 8 or 10 feet in height hardiness seems to increase and only when growth is late or prolonged do the young tips become frosted. Whether or not it will flower with us we have yet to find out but even if it does not it will still make a handsome foliage plant.

The beautiful blue flowered *Tweedia caerulea* is another plant which may be grown here with but little protection and through the summer will produce a succession of pale blue flowers.

Growing in one of the sunny borders behind the Bog Garden is *Datura meteloides* a small species which comes from Texas and Mexico, and although it gets frosted to ground level each winter it comes up

afresh in the spring. It is a rather glaucous plant with us growing about 3 feet high and during the summer it produces a succession of white funnel shaped flowers about 6 inches long. The edge of the corolla is suffused with violet and the flowers are very fragrant.

In the tropic house at present a large specimen of Banana, *Musa paradisiaca* subsp. *sapientum* is in fruit and very close to the ripening stage. While the production of fruit by a Banana in this house is in itself not unusual it is worth noting that the present bunch is quite possibly the best we have ever grown. In a period of little over two years this particular plant has grown an offshoot to a height of about 18 feet and produced an enormous bunch of fruit containing about 200 bananas and weighing approximately 80 - 90 lbs. So great is the weight of the fruit that the plant had to be supported to prevent it being dragged to the ground. Already an offshoot from the base of the plant is about 6 feet high, while a second 2 feet high and a third just in the bud stage await the removal of the fruiting stem so that they may take its place. Such phenomenal growth has only occurred since the installation of a new heating system with the subsequent maintenance of a more equable winter temperature, and the liberal application of sheep manure around the plant.

One outstanding plant in the tropical collection, of which more should be seen, is *Kohleria amabile*, a Gesneriad from Columbia. It is an erect growing perennial 18 inches to 2 feet high, hairy all over, and with leaves 2 to 4 inches long, ovate, acute, and usually a purplish colour especially on the veins. The flowers are also hairy, pendant and are dark rose dotted with purple and paler inside the tube.

The flowers are produced in endless succession over a period of several months and this combined with the ease of culture makes it one of the best glasshouse plants. After flowering, the plants are cut back and partially dried off for a few weeks before starting into growth again. It is easily propagated by cuttings or by the shoots which are produced from the creeping rhizomes. —APRIL, 1958.

## NEW ZEALAND EXHIBIT AT THE CHELSEA FLOWER SHOW.

A good many years ago Mr. V. C. Davies, O.B.E., the presiding genius of Messrs. Duncan and Davies Ltd., New Plymouth, received a request from a leading London newspaper to send an exhibit to the Royal Horticultural Society's Spring show at the Chelsea Hospital Gardens, London. The exhibit materialised in a consignment of New Zealand and Australian flowers being sent by air.

A further consignment has been sent since but the most comprehensive exhibit of New Zealand flora was despatched under the supervision of Mr. V. C. Davies in time to be staged at the Chelsea show held in May this year. About forty species were represented and, because of

the season being autumn when there are not many native plants in flower, foliage was a major feature. *Pittosporum tenuifolium purpureum* has already been well received in the warmer climates of England and the exhibit in question should do much to foster interest in our flora.

The specimens chosen were stood in clear water for an hour before being packed. Care was taken to let the foliage become perfectly dry and damp moss was packed around the bases of the stems. Each specimen was then packed in a plastic bag. The consignment travelled in thin wooden and strong cardboard containers. The necessary inspection preceded packing so that the health certificate could accompany them.

The consignment was sent by air from New Plymouth to Auckland and then taken over by the B.O.A.C. These were carried to London free of charge and they arrived in perfectly fresh condition.

## BOOK REVIEWS

U.C. TYPE SOIL MIXES FOR CONTAINER-GROWN PLANTS, by O. A. Matkin and Philip A. Chandler (Agricultural Publications, California).

This book, published at the comparatively low price of $1.00, should prove of inestimable value to the grower of plants in pots and containers. By a method of easy reference, formulas are given showing a great variety of composts to cover the requirements of a great variety of plants. Although some of these may be difficult to obtain, the ingredients are, in the main, obtainable in New Zealand.

CURTIS'S BOTANICAL MAGAZINE, Vol. CLXXII, Part 1, edited by W. B. Turrill, O.B.E., D.Sc., V.M.H., F.L.S. (Royal Horticultural Society, London).

This most famous of all botanical magazines continues in publication with undiminished interest, and in every half-yearly issue there appear hand coloured plates of various species. In the issue for April last, these range from the familiar *Choisya ternata* (Mexican Mock Orange) and *Lychnis* x *haageana* to less familiar ones like *Saussurea bodinieri* with its purple thistle-like heads that would be the envy of florists for their arrangements. Australian flora is well represented by two charming plates of *Acacia alata* and the mauve *Hibiscus huegeli* as well as *Callistemon brachyandrus,* a most exotic and colourful looking plant with spikes of red flowers with sulphur anthers. Other plants figured comprise *Asclepias speciosa, Ceratopetalum gummiferum, Coelogyne dayana, Polemonium foliosissimum, Rosselia* x *lemoinei.*

OLD GARDEN ROSES, part II, by Wilfrid Blunt and James Russell, with 8 reproductions from paintings by Charles Raymond (George Rainbird, London).

This successor to the sumptuous first volume of this series, that is to comprise six in all, maintains the standard of format initiated at the beginning. It deals with roses of the *gallica* group and Mr. Russell contributes an excellent chapter on these with very accurate descriptions of most of the varieties still in cultivation. The same accuracy does not, unhappily, apply to two of Mr. Rainbird's paintings. 'Cardinal de Richelieu' has not that gorgeous velvet purple tone finished with the bloom of a ripe grape and 'Charles de Mills' lacks that subtle deeper blackish purple toning that lends such character to the living flower. To a minor degree the same criticism applies to 'Belle de Crecy,' but the remaining five paintings are as superb as those of the first volume. Mr. Blunt's chapter on 'The Rose in Literature' will hold a wide and varied appeal for the bibliophile. Altogether, subject to the few blemishes mentioned, a book to grace the library of the conoisseur.

## THIRTY-SIXTH ANNUAL MEETING AND DOMINION CONFERENCE OF DELEGATES

The Dominion Council has accepted the invitation of the South Canterbury District Council to hold the 36th Annual Dominion Conference in Timaru next year which is the Centennial Year for South Canterbury. The 36th Conference will therefore be held in Timaru, on THURSDAY, 12th FEBRUARY, 1959, commencing at 9.30 a.m.

The 1959 Banks Lecture will be delivered at that Conference by Mr. A. W. Anderson, A.H.R.I.H.(N.Z.), of Timaru.

Members and others intending to be present at this Conference are advised to make early hotel reservations.

Further details will be published in a later issue of the Journal.

## DISTRICT COUNCIL NOTES

*South Taranaki District Council Anniversary Week-end Trip.*

We left home in lovely weather arriving in Hamilton at the Lake about 4 p.m. when Waikato members met and welcomed us, serving afternoon tea at the lake-side. After a brief look around we drove through the park and continued on our journey arriving at Te Aroha in time for tea. For many miles along our route we viewed the damage done by the recent floods. Certainly a heartbreak for so many homemakers and farmers.

The evening was spent meeting new friends. Mr. Crompton presided at the gathering where films and slides of local interest and other New Zealand scenes were viewed. One slide, coloured, showed a plant, in bloom, in Mr. Crompton's garden, grown from a seed planted by his mother. Next day we viewed the plant, not in flower, in a sunny sheltered corner where this rare and recently discovered *Xeronema callistermon* was doing well. Until discovered in 1924, growing in abundance on the interior cliffs of Hen Island, 15 miles south of Whangarei Heads, the xeronema, ranked as a monotypic genus (fam., *liliaceae) Xeronema moori* was the only one, it being limited to the mountains of Caledonia.

*X. callistermon* is a handsome plant with the rigidly set, closely crowded, swordlike leaves of the tussocks projecting several feet from the base. The leaves apparently tough, dark green and erect, are, however, easily damaged. In their natural habitat, on exposed rocky faces, not seacliffs or in the forest, the plants could easily have been mistaken for flax. These xeronema have mycorrhiza-rich surface roots which freely traverse the light humus built up by decaying leaf bases and collapsed portions of the blades. Thriving on a variety of soils and being tolerant of sun and shade, this plant has earned a place in our frost free gardens. The flower, a coral red brush, is at the end of a sturdy scape. The raceme can be up to 38 cm. long, 6 cm. wide. There

may be 200 constricted capsules directed upwards to form a gently curved and horizontal brush, characteristic of this genus, being very long and set on bent pedicels 2.5 cm. high.

In Mr. Crompton's garden we viewed orchids, fruit trees and shrubs. One new to most of us was the charmingly fragrant clerodendron with slender tubular white corolla set in a purple calyx (*verbinaceae,* native Africa and Malaya). At the home of Mr. M. D. Hanson we saw some beautiful trees, Persimmon, Red Oak, Kowhai and a fig, *Ficus carica.* This specimen, 36 years old, although having been cut down to the ground once, and recently pruned well back, covered quite an area and was laden with fruit. As much as 400-500 lbs. of fruit have been taken from it in a season. Annuals, roses and grapes trained to cover a verandah and form a summer house, all showed the result of knowledgable care.

A visit to the New Zealand Dairy Company factory at Waitoa with its pleasant surroundings, lawns, rockery, perennial borders and bowling green was of interest to our farming members. In the afternoon a drive through Paeroa, and a visit to the Bridal Falls, took us to the home of Mr. and Mrs. T. J. Gordon, Pukekauri Road, Waihi. An exquisite home and garden, recently developed, featuring a stream, hillside, gully, ponds and a lake. Waterlilies flourish in the dam. A waterfall supplies water to a begonia house and to a small pond where flourishes *Nymphaea gigantea,* a blue waterlily 6-7in. across—native of Australia. There is a larger pond full of *Nymphaea stellata,* another blue species of native India.

The lawns on the hill above in front of the home were bordered with perennials and studded with neatly kept beds of scarlet salvias; miniature cactus, dahlias, etc.

Following afternoon tea and appreciative thanks we drove back through Waihi reaching home next day via Matamata and Cambridge.

Mrs. J. H. ANDERSON, F.R.N.Z.I.H.

*Institute of Horticulture Holds Circuit Meeting at Mangatoki.*

Some 80 members of the South Taranaki District Council of the Royal New Zealand Institute of Horticulture enjoyed a circuit meeting at Mangatoki last night when floral decorations by Mesdames Palmer and Clarke (Mahoe) were a feature appreciated by members who represented the whole coast from Opunake to Patea. A bright fire in a large open fireplace was welcome on the first really cold night of the season.

Wall and mantel containers were filled with arrangements made up of the last of the season's dahlias with trails of foliage and the furred seedheads of clematis. Typically autumn harvest arrangements contained leaves, fruits and berries and one gigantic decoration on the end wall of the long supper room was a masterpiece of the art in metallic toned

hydrangeas, the spiked foliage of broom and treated fronds of the common bracken fern.

Mr. S. Anchor (New Plymouth) spoke on the construction of water gardens and the culture of suitable plants. Mr. Keith Downes (New Plymouth) dealt with the breeding and culture of gerberas. Mr. Rod Syme (Hawera) covered the culture and pruning of edible berries and specimens of flowering trees and shrubs from their gardens were discussed by Mrs. J. A. Stevenson (Pihama) and Mrs. J. H. Anderson (Mangatoki).

Thanks to all responsible for the very pleasant evening were expressed by the president, Mr. John Houston (Hawera). A sales table did brisk business, and supper was provided by local ladies.

—Hawera Star, 24/4/58.

*Horticultural Circuit Meeting for Enthusiasts at Patea.*

Garden enthusiasts in the Patea-Waverley area served by the South Taranaki district council of the Royal New Zealand Institute of Horticulture made up an appreciative audience in the Presbyterian Hall at Patea last night for another of the circuit meetings sponsored by the council. Executive members, Mrs. E. Woods and Mr. E. Fairweather, were responsible for local arrangements, including a welcome fire in the hall on such a wet night, floral arrangements which made a spectacular stage setting and supper.

The president, Mr. John Houston (Hawera) spoke of the particular functions of the institute in horticulture and at a later stage in the proceedings introduced as an interlude a talk on ancient implements of Maoridom in the field of agriculture, using as illustrations three highly prized artifacts recovered near Hawera from swamp hiding places early in the march of European settlement.

Mr. R. W. Barry, of Hawera, displayed flowering, foliage and berrying plants as examples of garden material suitable for windswept coastal gardens. Mr. J. Livingstone screened a collection of colour transparencies of flower and other subjects, and a talk on chrysanthemum culture was given by Messrs. R. Chamberlain and B. Billington, both of Hawera, supported by some of the latter grower's specimen blooms representative of almost all sections of the plant.

A sales table, generously assisted by Mr. Barry, did brisk business.

—Hawera Star, 13/5/58.

*Work of South Taranaki Horticultural Council in the Past Year.*

The work of the South Taranaki district council, Royal New Zealand Institute of Horticulture, in the promotion of circuit meetings throughout its area and excursions to other districts is reviewed in the 10th annual report of the president, Mr. John Houston, to be presented to members at the Carlton in Hawera tomorrow night.

Membership had continued to be satisfactory and finances were healthy, the council having continued its policy of free admission to all meetings and of members bringing their friends.

Circuit meetings were held at Manaia, Opunake, Mangatoki and Patea, all being well attended by representatives of the whole coast, from beyond Opunake to Patea. In addition to talks on rhododendrons, water lilies, gerberas, edible berries, chrysanthemums and shrubs, there have been demonstrations of floral and decorative arts. Films and slides in colour had been shown and features of these meetings had been the floral arrangements, sales table and discussions of specimens of horticultural interest. A three-day trip was made to Te Aroha when 51 members made visits to some outstanding gardens in the district. The party was entertained at the lakeside, Hamilton, by the Waikato district council. On the homeward journey a visit was made to Karapiro dam and to an amusing freak garden in Cambridge. The 460-mile trip was most pleasant.

—Hawera Star, 2/6/58.

*Horticultural Council Honours Retiring President, Mr. Houston.*

After 10 years president of the South Taranaki District Council, Royal New Zealand Institute of Horticulture, Mr. John Houston, of Hawera, retired at the annual meeting held at the Carlton in Hawera last night, in view of the increasing duties of his office as Dominion president.

On the motion of Mr. R. Syme (Hawera), the meeting of some 90 members in a district scattered from south of Patea to Rahotu, and northwards as far as Eltham, placed on record its appreciation of his services and elected him the district council's first patron.

Mr. T. H. Reader (Hawera), secretary of the district council for as many years as Mr. Houston had been president, referred to the close co-operation of the two and of the growth of the district council from its inception to a position it had held for a time of greatest numerical strength among all the councils in New Zealand. The South Taranaki council had functioned harmoniously, and in appreciation of Mr. Houston's excellent leadership and the assistance always so readily given by Mrs. Houston, he asked their acceptance of a travelling case and rug.

Mr. Percy Thomson (Stratford), who chaired the inaugural meeting of the South Taranaki District Council in 1946, took the chair again for the unanimous election of Mr. Houston as patron, after which the following other officers were elected.—President, Mrs. J. H. Anderson (Mangatoki); vice-presidents, Mrs. E. I. Lovell (Hawera), Mrs. J. A. Stevenson (Pihama) and Mr. Rod Syme (Hawera); secretary, Mr. T. H. Reader; treasurer, Mr. W. Byrt; auditor, Mr. T. K. Cambie; council members, Messrs. R. W. Barry and R. D. Chamberlain (Hawera), Mrs. S. J. Hickey (Opunake), Mr. E. Fairweather and Mrs.

Watt (Patea), Mesdames K. Palmer and S. G. Morgan (Mangatoki) and Mesdames N. Yarrow and W. G. Hosie (Manaia).

The North Taranaki District Council was represented by Mr. V. C. Davies and Mr. Grant Maxwell and the Pukeiti Rhododendron Trust by Mr. Russell Matthews.

Guest speaker from Tirau, in the Waikato, was Colonel T. Durrant on the genus camellia, of which there were over 83 separate species and only a few, under the classifications of japonica, reticulata and sasanqua, were cultivated as garden plants. Colonel Durrant had specialised in camellias for only the past eight years, yet he had developed a world-wide connection in the collection of many rare and as yet little known forms destined in a few years to oust the lesser and all too frequently improperly named varieties at present appearing in nursery catalogues.

He described how trading sea captains had introduced the camellia to England from China, believing it to be the tea plant, *Camellia sinensis*. Flowered as stove plants the japonicas attracted a lot of attention, until early in the 19th century the reticulatas were introduced and some 20 to 30 years later the beautiful wild species were discovered. Then as late as 1948 some 18 new varieties were brought to light in Yunnan province and taken to America, forming a wonderful group from which many good things had come already to this country.

Colonel Durrant said the camellia in America commanded about the same interest as horse racing in New Zealand—there were hundreds of clubs and some clubs exclusively for men to which women were not admitted. Enthusiasts in the Waikato had started a camellia society that had attracted such a widespread membership it was likely to expand into national status.

After showing a remarkably fine collection of natural colour transparencies, Colonel Durrant was thanked on behalf of the meeting by Mr. Syme.

At supper Mrs. Anderson, the incoming president, presented the 10th birthday cake, the candles on which were lit by Mr. Houston and fanned out by Mrs. Houston.

—Hawera Star, 4/6/58.

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## OBJECTS OF THE INSTITUTE

The objects of the Institute are as follows:—

1. To encourage, foster and improve every branch of horticulture.
2. To exercise all the powers and functions of a horticultural nomenclature and certificating board, including the making of decisions and reports in regard to the nomenclature of plants, and to issue, in the name of the Institute, certificates, medals or diplomas for novelties of merit or new varieties.
3. To assist and promote horticultural education in every way possible.
4. To promote legislation having for its objects the advancement or protection of horticulture.
5. To assist research work in connection with any or all branches of horticulture.
6. To endow or assist any chair, lectureship, or horticultural teaching in New Zealand, in colleges, universities or other educational institutions the Institute may decide upon.
7. To promote the interchange of horticultural knowledge and to co-operate with Governments, scientific or other societies or bodies, or persons in any part of the world who may be working along any or all of the lines covered by the objects of the Institute.
8. To undertake or assist in the introduction and acclimatisation of any fruit tree, flowering tree or plant, forest tree, seeds or other form of plant life which, in the opinion of the Institute, should be introduced.

9. To establish, assist or endow libraries, and to obtain by purchase, exchange, or otherwise, books, papers and other publications relating to any or all of the matters covered by the objects of the Institute.
10. To arrange for the carrying out of work of "bud selection," the testing of new varieties of trees, plants, vegetables and any and all things necessary to the better understanding of tree and plant life and the maintenance or improvement of the standard of such.
11. To arrange for the selection and breeding of any or all classes of trees and plants for testing, and for the supply of certificated propagating material to nurserymen and others on such terms as may be arranged.
12. To carry out, arrange for or assist any object or objects which, in the opinion of the Dominion Council or of the Executive, come within the scope of horticulture, in its widest scope (not excepting forestry or agriculture).

## DISTRICT COUNCIL SECRETARIES

AUCKLAND: Mr. T. G. Short, 2 Judges Bay Rd., Parnell, Auckland.

CANTERBURY: Mr. G. Henderson, 330 Linwood Avenue, Linwood, Christchurch.

MANAWATU: Mr. M. R. Koehler, 314 Fitzherbert Avenue, Palmerston North.

NELSON: Mr. Dennis H. Leigh, F.R.I.H.(N.Z.), Reserves Department Nelson.

NORTH TARANAKI: Mr. B. A. Norman, F.R.I.H.(N.Z.), 71 Wallace Place, New Plymouth.

NORTHERN WAIROA: Mrs. J. L. Russell, Waihue R.D., Dargaville.

OAMARU: Mr. G. H. Knowles, 62a Ure Street, Oamaru.

OTAGO: Mr. R. W. Balch, F.R.I.H.(N.Z.), C/o Botanic Gardens, Dunedin.

SOUTH CANTERBURY: Mr. A. W. Anderson, N.D.H.(N.Z.), P.O. Box 153, Timaru.

SOUTHLAND: Mr. G. A. R. Petrie, F.R.I.H.(N.Z.), 122 Janet Street, Invercargill.

SOUTH TARANAKI: Mr. T. H. Reader, F.R.I.H.(N.Z.), 103 South Road, Hawera.

WAIKATO: Mr. J. R. Turnbull, P.O. Box 4048, Hamilton East.

WANGANUI: Mr. M. R. Boothby, N.D.H.(N.Z.), F.R.I.H.(N.Z.), Superintendent of Reserves, City Council, Wanganui.

WELLINGTON: Mr. K. J. Lemmon, P.O. Box 450, Wellington.

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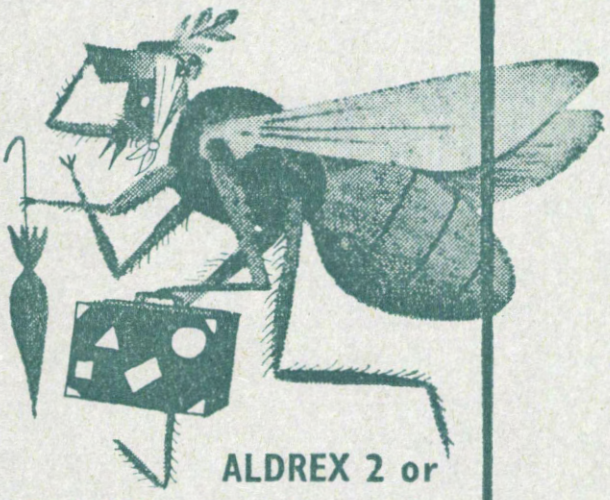

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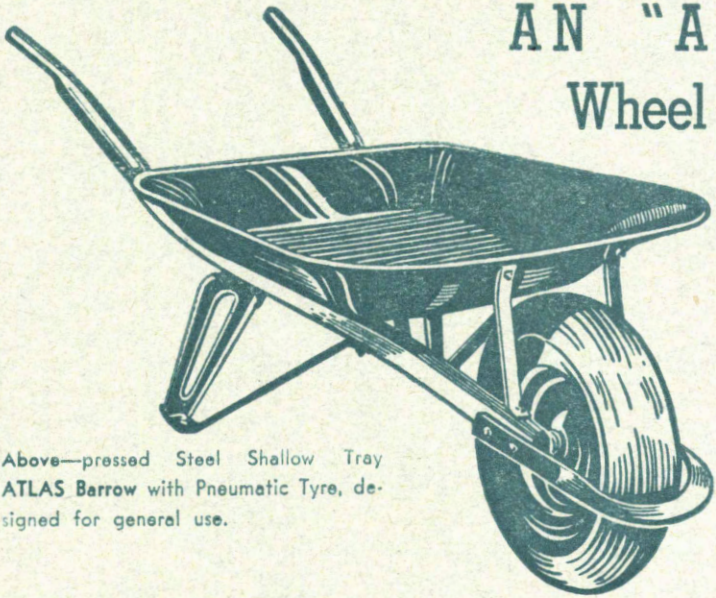

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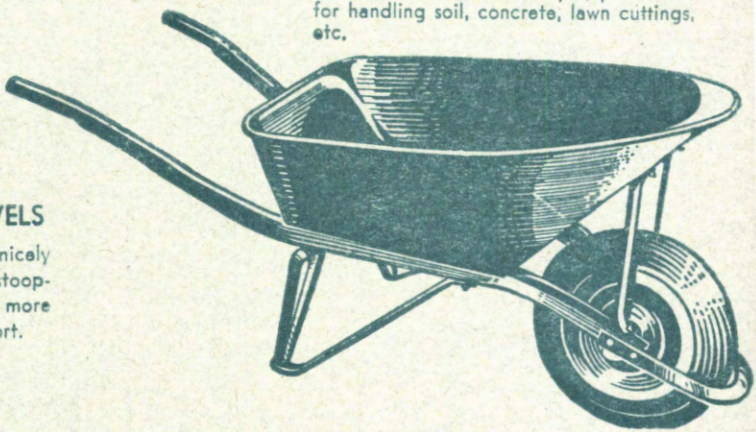

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