RHODODENDRONS 1977
with
MAGNOLIAS and CAMELLIAS

The Royal Horticultural Society
London

Acknowledgements

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RHS
Rhododendron, Camellia
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RHODODENDRONS 1977

with

Magnolias and Camellias

THE ROYAL HORTICULTURAL SOCIETY
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MAJOR E. W. M. MAGOR, CMG, OBE

Editor:

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FOREWORD

The past year has been noteworthy for the increased activity of the Rhododendron Group. Besides a very successfully-run tour of Sussex gardens this spring (see pp. 85-8), there have been talks at Shows, and a quarterly newsletter is circulated to members. For the first time there was a co-operative exhibit of rhododendrons at the June R.H.S. Show at Vincent Square, which was awarded a Gold Medal: it showed a wide variety of flowers relatively late in the season. Finally, the Year Book is circulated to all members. For those who have not yet joined the Group, details of membership can be obtained from the secretary (see below).

The Year Book's contents this year have a totally international flavour, with articles from all over the world! Accounts of the various shows are included; and here may I bring to the attention of potential competitors the various classes for beginners. Details of the Show's schedules can be obtained from the Secretary of the R.H.S. at Vincent Square. Finally may I draw attention to the publication of the Additions to the International Rhododendron Register at the end (pp. 109); the only way of keeping up to date with newly registered names.

In conclusion thanks must be given to all those members of the group who by their enthusiasm and hard work brought all these varied activities to their successful conclusion.

SIR GILES LODER

The Secretary of the Rhododendron and Camellia Group is Mr J. Waugh Owens, Jubilee Lodge, Yarpole, Nr. Leominster, Herefordshire, from whom all information about the Group may be obtained.

The Rhododendron Species at Borde Hill

R. N. S. CLARKE

The rhododendron collection of Borde Hill contains a great number of rhododendron species. Out of the 650 or so species and sub-species listed in the *R.H.S. Handbook*, at least 430 can be seen at Borde Hill, while there are, for example, approximately some 80 specimens of *R. arboreum*, 60 or so of *R. decorum*, about 30 specimens of *R. arizelum* and 30 specimens of *R. hylaeum* itself present.

There are also at Borde Hill many old garden hybrids and a fair number of later hybrids, which give our visitors from March to June an even wider range of colours and much nostalgic pleasure. I must however, in the main, keep to the subject matter – in itself immense.

My grandfather came to Borde Hill in 1893 and was soon beginning to support the expeditions of plant collectors in the east. First came *R. barbatum* and *R. falconeri* collected by Hooker, and then material from Wilson's expeditions. There are at least fourteen rhododendrons under Wilson numbers surviving here, ranging from *R. houlstonii* W. 648A (1900-1902 expedition) up to *R. morii* W. 10955 (1919 expedition), and there are certainly further examples, whose labels have not been found. There are ten surviving species from Farrer's 1919 expedition, but sadly *R. oreodoxa*, geographical form *reginaldii* Farrer 63, from his 1914-1915 expedition, died recently after cuttings taken repeatedly had failed in our mist system.

We have at Borde Hill many species collected by George Forrest, ranging from his 1910 expedition (i.e. *R. irroratum* F. 5851) to his 1930-1931 expedition (i.e. *R. beesianum* F. 30892). In fact there are still about 150 plants at Borde Hill with surviving Forrest numbers.

The most comprehensive collection of species derives from the Kingdon Ward expeditions. The earliest KW number found is KW 406 *R. melinanthum* from his 1913 expedition. The relative specimen is part of a bed with a number of Trichocladum series with other numbers. It is difficult accurately to ascertain the differences in the series by the large variation of flower colour. A spray from the best plant won the Roza Stevenson Cup in 1975. The latest or highest numbered survivor is a single good bush plant of *R. fulgens* KW 11587 (1935) near the house, but it is now in such a poor way that we have sent pieces this year to Windsor for grafting.

At one time there was in the garden a representative of nearly all the Kingdon Ward numbers of plants collected on his 1924, 1925 and 1926 expeditions. It was indeed this huge intake that induced my grandfather in the early 1920's to construct out of the North Park itself a new area immediately across from the front of the house. It faces north, and its soils are appreciably lighter than the surrounding clays of the main garden, though a retired estate pensioner tells me that at the time of its formation a large amount of sand and gravel from afar was worked into it. The garden's southern boundary is a deep ha ha wall obviously older than this garden itself. While some of the plants here are too old, others are only now coming to their best.

Fig. 1
Rhododendron phaeochrysum
'Greenmantle'

From 1923 onwards Borde Hill also received seed from Rock's expeditions. Rock was an American – a gifted linguist, whose selections show a remarkable observance of the rare, the unusual and the attractive. The earliest number we can find is R. 59033 = *R. sanguineum* sub-species *roseotinctum* and the latest R. 13692 = *rufum* = actually *R. weldianum* (1925-26 expedition).

There is also a small number of Ludlow and Sherriff plants at Borde Hill – most interesting perhaps being *R. grande* L. & S. 1208 (1936), but any Ludlow, Sherriff and Taylor plant – such as *R. pendulum* L.S. & T. 6660 (1938) – is of recent acquisition.

In the outlying Gores Wood, there are quite a few rhododendrons with Hu numbers from seed of Professor Hu's 1937 expedition (collector Mr Yu), but several labels have been lost or misplaced here.

In the main garden are a few plants from seed of Spring Smyth's 1961-1962 expedition, particularly *R. grande* TSS 37 (cream) which flowered in 1976, perhaps the first to do so in the U.K. It is quite distinct from the earlier plant that used to be called *R. argenteum*. This all shows that from 1938 Borde Hill supported no further expeditions directly, and after the war there comes a sorry gap in our intake.

It was World War II also that ended my grandfather's zest for expanding his collections outside the main garden areas of 19.23 acres into wider regions of woods, shaws and new roadside plantations, sometimes to the despair of his farm bailiff. These outer areas, most of which include both hybrid and species rhododendrons, now cover a further 40 or 50 acres, which with three gardeners now instead of fifteen in 1938, and a much reduced estate staff, set a maintenance problem. Lacking central cohesion and widely separated, they do not provide the best layout for public access, so that only a very few visitors see all the rhododendron areas.

Over such a wide prospectus, the confusion and loss of labels and the limitations of information left us have made the task of listing the Borde Hill species a formidable one. From a list of discarded labels, we know that such rarities as *R. collettianum*, *R. davidii*, *R. ramosissimum*, *R. nivale*, *R. shweliense*, *R. trichomiscum* and *R. glaucopeplum* were once present, just as we know after three years of questing and analysis that they are probably gone.

At this point I would like to put on record some of the species remaining by dividing them into categories, always with a strong regard to series, and something too of later or modern additions, which together make a grand total of over 2,000 separate plants.

We have a particular strength and depth in the large-leafed series. Whilst visible in most areas, they predominate in the Azalea Ring and the outlying complex of Gores Wood, an area which has good shelter belts, good soil with excellent drainage, and a higher moisture yield than the main Garden itself.

There are two absentees in the Falconeri series. We have at least one example of *R. decipiens* and a number of *R. galactinum* (Wilson 4254) revealing the variability of this species for example, by the comparison between a tree-like form with a bush-like variant that literally persists with heavily-spotted flowers even before April.

There are about thirty *R. arizelum* such as 21862, Forrest 21866, 25627, etc., Farrer 863 and Rock 59544 var. *rubicosum* that range from white through cream to yellow, to pink or rose-pink, to a form approaching red in Gores Wood, where incidentally there is a fine group of seven *R. coriaceum* F. 25872 and F. 25622 of commendable size and height.

There is one very good coloured *R. eximium* – a grand example of this great foliage species and outstanding *R. basilicum* – one under F. 24225, another which originated from Wisley, and a third in a deep pit in the Tolls Wood (also F. 24225), all pale yellow in flower.

Perhaps an *R. falconeri* F. 25639 (22 feet high) in the Azalea Ring is the pick of the series. Its big trusses of yellow flowers in early May last most of the month, and while the flower centres are almost blotchless at the base and the trusses don't travel too well, it is a lovely sight at its best. There are also good *R. falconeri* in Gores Wood, some of them self-sown. *R. rex* and *R. fictolacteum* at Borde Hill are both represented – the best being a group of three *R. fictolacteum* Rock 59565 (large white flowers).

We like to distinguish and list separately the species *fulvum* and *fulvoides* here, there being 19 and 14 of them respectively – although they have been officially merged under *fulvum*. I used to have a bias for *R. fulvum* with its smooth and bright brown suedish indumentum, which only appears under three numbers F. 20020 in our Long Dell, F. 18310 in the Nursery – the best being a very tall group of eight in Gores Wood under F. 24314. *R. fulvoides* appears under eight different numbers and I have now altered my views somewhat after witnessing a plant of F. 25958 flower magnificently in 1976 which was much admired at an R.H.S. Show. We do also possess *R. uvarifolium* under three numbers KW 7122, R. 59623 and Hu 14952.

Turning to the Grande series, I doubt whether there is a better rhododendron species than *R. mollyanum*, which flourishes here in three areas and I rate KW 6261, which is in Gores Wood, of such appeal that it will continue to gain key prizes at shows even against hybrids. I am not able to relate it to the Benmore F.C.C. form, which I have not yet seen. Ours has purplish pink in its trusses, which are usually over by May – the leaves being tidy, firm and magnificent.

The best *R. macabeanum* is from KW 7724 seed. A spasmodic flowerer, it was last smothered in huge yellow trusses in 1974. Its leaves are more symmetrical and more clearly defined than some others I have seen.

Most beloved by us is a particularly delectable *R. sidereum* F. 24563 with yellow flowers in the North Park Garden – usually only out by the second week in May. We also have *R. praestans* F. 14209, whilst as a long-term investment I am looking to a newcomer *R. protistum* F. 24775 to do well.

One of the joys of visiting Gores Wood is a chance to see the nine *R. sinogrande* in the lower half of the wood, several of which have leaves of prodigious size like giant elephant ears. I wonder where better *R. sinogrande* can be found in the south of England? The others at Borde Hill such as one in the Azalea Ring, labelled Farrer 959 have not made the same fine progress, probably due to their locations rather than their inherent qualities.

Another favourite of mine is *R. mallotum* from Farrer 815, which received an A.M. in 1933. This is an infinitely superior plant to *R. mallotum* (*aemulorum*) F. 25067.

There are some fine species of the Fortunei series, particularly a number of *R. sutchuenense* said to have originated from Dame Alice Godman's garden at South Lodge – she was a sister-in-law of my grandfather. Also arched over a path in the Azalea Ring we find *R. sutchuenense* var. *geraldii* and by the north-west white gate excellent *R. praevernum*. They flower before *R. sutchuenense* but persist with it into March and are immediately recognised by a distinct wine-red basal blotch of the flowers.

The best *R. calophytum* at Borde Hill is Wilson's 4279 in Warren Wood below the North Park Garden. Warren Wood is predominantly a hybrid zone, at its best in late May/June but should be visited anyway for its shrub collection alone.

Completing certain notes on the Fortunei series – we have about sixty different *R. decorum* ranging from pink to white, including KW 4487, F. 5869, Wilson 1209, and four different Hu numbered plants – the best Caerhays forms and seedlings marked W.C.S. which we think is Smith of Newry. Also literally in order of appearance of flower come – *R. houlstonii* Wilson 648A, *R. discolor* best Borde Hill forms (white), *R. diaprepes* and one *R. serotinum* flowering late July/August. A plant of *R. hemsleyanum* has come to us from Glendoick – a Chinese species re-introduced from the U.S.A. which will obviously need a great deal of room.

Borde Hill is full of the Irroratum series, some plants of which still remain unidentified, though surprisingly we have not found true *R. laxiflorum* or *R. tanastylum* – only labels. There is one main garden area, The Spits, which is literally a "standing" of this series. We find *R. araiophyllum* under Forrest numbers, *R. lukiangense* and its subspecies, *R. hardingii*, *R. ramsdenianum* KW 6284 (fourteen plants of it) and a variable host of *R. anthosphaerum*, *R. eritimum* and its subspecies *heptamerum*. In 1976 in Gores Wood we discovered *R. eritimum* sub-species *persicinum* marked Q in the *Handbook* which appears in every way true to type.

There are 35 specimens of the variable species *R. irroratum* at Borde Hill, indeed it has been confused here with *R. agastum* and *R. laxiflorum;* but the best bush is a hybrid known "en famille" as "Spotted Dick", which has a great deal of *irroratum* in it and perhaps *hardingii*.

The species of the sub-series Parishii flower later and in my view form the better section overall of the series. We have excellent *R. facetum* F. 24592, good *R. eriogynum* under F. 13508 and good *R. venator*

KW 6285 – all with gloriously fleshy flowers of vivid reds whilst *R. kyawii* flowers later in July, the form at Borde Hill being F. 24542 *prophantum*, rose scarlet.

My grandfather appreciated the extensive Thomsonii series and we have been left almost a complete collection of it, so I can mention a few of the choicest and the rarest species, e.g. *R. campylocarpum*, *R. caloxanthum* Farrer 937, *R. myiagrum* F. 21821, *R. panteumorphum* more akin in appearance to *R. selense* than *R. telopeum* (with its bright butter yellow flowers), *R. cerasinum* in many choice forms, *R. dasycladum*, *R. erythrocalyx* (also under *beimäense*), *R. eurysiphon* F. 21694 aff., *R. selense* var. *probum* R. 59445 (seemingly very rare in cultivation) and *R. selense* var. *pagophilum* both pure white, *R. setiferum* KW 7190, good *R. wardii* and *R. litiense*, *R. electeum* var. *bellatulum* F. 21770, *R. hookeri*, *R. stewartianum* F. 25615, *R. thomsonii* var. *candelabrum* and the lovely *R. jucundum* F. 21741. Possibly we also have the rarest and most uncertain member, *R. vestitum* F. 21877.

From the Taliense series we can show the visitor true *R. taliense*, *R. bureavioides* (13 feet high), *R. clementinae* (a fine foliage plant but slow to flower), *R. recurvoides* KW 7184, *R. inopinum*, *R. wiltonii* under Wilson 1871, *R. rufum* Rock 13601, *R. weldianum* under Rock numbers and *R. russotinctum*.

Remarkable has been the survival rate and success of *R. vellereum* KW 5656, now named 'Lost Horizon' which gained an A.M. in 1976 and three prizes at the R.H.S. shows, being best seen as several sprays in a vase, and another A.M. was awarded to *R. adenophorum* Rock 59636 – clonal name 'Kirsty' after my beloved step-granddaughter.

In turning for a moment to the Lacteum series – there is *R. dryophyllum*, *R. traillianum*, *R. lacteum* dwarf form, whilst our *R. wightii* have now reached a formidable height (but what a one-sided brute to show!). However, the best of this series is *R. phaeochrysum* – cream white campanulate flowers with a faint almost uncanny speck of cherry red on the upper lobes, certainly R. 59229; this received an Award of Merit on March 29, 1977 (Fig. 1).

Perhaps it was in his choice of the best species of the Lapponicum series that my grandfather showed his knowledge at its best, though the original collection has been denuded since by time and, I fear, inattention.

Even in the Heather Garden the "ericas" have stolen the upperhand, and certain replacements in the walks nearby are not of the best authenticity. Reliable new additions are now being obtained and the old stalwarts are reproducing well. Good are *R. chryseum* KW 4023 (*muliense*), *R. cuneatum* F. 22203 and *R. flavidum album* (the bigger boys of the series – the original latter plant being 7 feet high), – *R. diacritum* F. 21289, aff. – *R. russatum* (*cantabile*) HS and *R. paludosum* KW 5777.

The same sort of disappearances can be noticed in regard to the dwarf Anthopogon series though *R. cephalanthum* has survived in three forms – straight white, var. *crebreflorum* KW 6967 pink and KW 6914 deep pink form – also *R. kongboense* KW 5700 (which roots well in a mist system) and *R. primulaeflorum* (the white form).

We have also been bequeathed a fine collection of the wide and complicated Triflorum series, certain species of which seem to overlap in the available charts – for example:

R. augustinii – many forms at Borde Hill ranging from pale lavender to light blues and darkest purple forms – others marked Reuthe or Gill. The head gardener approves most var. *chasmanthum* F. 20064 (whitish lilac-rose). There are three plants of the early flowering var. *rubrum* F. 25914.

R. hanceanum var. *nanum* (yellow flowers) – *R. bauhiniiflorum* KW 7731 – another yellow flowerer, *R. triflorum* var. *mahogani* – *R. concinnum* var. *pseudoyanthinum*, excellent *R. davidsonianum* pink form (J. C. Williams,) *R. longistylum* Wilson 4726 (seemingly rare), *R. oreotrephes* F. 5873 (*exquisetum*), *R. tatsienense* F. 21270 (under *stereophyllum*), *R. zaleucum* A.M. form from F. 25609, and *R. bodinieri*, which has "reappeared like" within 10 yards of a dead stump so marked – at least it is nearest to this species.

R. yunnanense. There is a fair range – the best being a white form with a prominent red rash. This species is also present under F. 5889 *chartophyllum* and F. 24618 *suberosum*.

A sad weakness encompasses some of the Maddenii series. It is not known what happened to the wonderful *R. sinonuttallii* and other treasures of the tender Megacalyx sub-series, except that they survived the last war but then disappeared.

We are at least now hoping to reconstruct the whole series, whose species are so interesting in their degree of hardiness. For instance *R. valentinianum* F. 27715 survives outside at Borde Hill in sheltered positions and incidently roots quite easily from cuttings.

We have however a fine representation of the hardier Maddenii subseries – *R. crassum* under five different Forrest numbers; *R. brachysiphon*, *R. manipurense* and *R. polyandrum* under KW numbers.

I must restrict my observations on the Azalea series to a word about the older plants. Many need regeneration, and others like *R. albrechtii*,

which exceeds 10 feet in Gores Wood, require severe pruning back. I particularly like: *R. amagianum* – late flowering with fig-like leaves, *R. kaempferi, R. indicum* form *balsaminaeflorum* – double pink, *R. simsii, R. tosaense* a very fine form and *yedoense* var. *poukhanense.*

There are a few series at Borde Hill that still need closer examination to find out what survives. The Neriiflorum series is well represented but the forms of *R. chaetomallum* and the whole Sanguineum sub-series must be individually determined.

The following survivors are definitely with us: *R. chamaethomsonii* (KW 5845 and 5838); *R. beanianum* KW 6805; *R. chaetomallum* var. *xanthanthum* F. 21912; *R. coelicum* F. 25647; *R. neriiflorum* sub-species *phoenicodum* Farrer 877 (a very rare plant); *R. aperantum,* dark red flowers F. 27002; *R. dichroanthum* sub-species *septentrionale* F. 25577, yellow flowers; *R. sanguineum* sub-species *haemaleum* Rock 59498.

We have hardly begun to examine one by one the forms of *R. arboreum* which exist in quantity in most of the outlying areas such as Warren Wood and the Tolls – some of which will doubtless prove to be hybrids. The choicest "blood red" form of *R. arboreum* hardly tolerates our local Wealden climate – the rather inferior form, var. *kermesinum* does better. Likewise our plants of *R. delavayi* (red) are rather unprogressive although *R. delavayi* KW 3948, with pinker flowers, thrives on the bank outside my study window.

There is sufficient *R. arboreum* forma *roseum* and forma *roseum crispum,* and much of the good hybrid 'Sir Charles Lemon' (another shy flowerer) but the extent of sub-species *cinnamomeum* and true forma *album* is not yet fully known.

There are seventeen plants of *R. lanigerum* or *R. lanigerum* (*silvaticum*) KW 6258, the former showing colour and leaf variety especially a most unusual form in the North Park with larger more rugulose leaves.

The forgotten *R. arboreum* var. *"limbatum"* (a hybrid) is still with us, thanks to being moved to a better site. Alan Hardy identified var. *morsheadianum* in Gores Wood – thought to be from Bailey's collection No. 4.

The Arboreum sub-series Argyrophyllum is well in evidence, with *R. floribundum,* Borde Hill form, being quite outstanding, the same applies to *R. insigne* on the South Lawn and a large *R. ririei* in Gores Wood.

We have had very little competitive success with exhibits from our fairly extensive range of the Barbatum series, mainly I think because this series is particularly well covered in most rhododendron gardens. The *R. barbatum* at Borde Hill is exceptionally good, but also appreciated by birds and insects when in flower. *R. habrotrichum* F. 9048 is at its best a magnificent plant, and *R. morii* Wilson 10955 needs rejuvenation to improve.

There is a nice selection of *R. maculiferum* about, *R. hirtipes* under KW 6223 and 5659 numbers (again another species loathe to flower – but with unusual foliage), *R. vesiculiferum* KW 6856 – a successful performer in our mist system – and three excellent *R. strigillosum.* After repeated failures, Jack Vass found a *R. diphrocalyx* in a pan of other successful rootings and has proudly potted it – perhaps the Lord gave him a bonus one night.

I have not been able to mention all the main series of rhododendrons covered by the Borde Hill collection, so I will deal with a few series with some brief comments:

Fig. 2
Rhododendron metternichii 'Ho Emma'

The Edgeworthii series needs to be in the lee of a wall but two numbers have survived, KW 6793 and KW 6807 as *bullatum*, also good *R. edgeworthii* itself.

The Saluenense series and Trichocladum series are well represented in many places.

R. campanulatum is with us in many locations such as the Knaphill variety – var. *album* – var. *campbelli*, etc.

The Cinnabarinum series is also well represented in all its usual forms, but also here is *cinnabarinum* var. *aestivale*.

The Ponticum series also has some good members among which are *R. metternichii* A.M. 1976, clonal name 'Ho Emma' (Fig. 2).

The large-flowered form of *R. desquamatum* F. 26482 is quite outstanding and some other members of the Heliolepis series though less spectacular are not everyday plants.

R. pubescens KW 3953 is the most interesting species of the Scabrifolium series at Borde Hill – the next best perhaps being *R. racemosum* 'Rock Rose' (R. 59577). From the Uniflorum series *R. imperator* KW 6884 seems hard to grow and hard to come by, whilst *R. uniflorum* KW 5876 co-operates well in reproduction.

Of the Boothii series with us, I mention *R. megeratum* (one of the best), *R. auritum* KW 6278 (does extremely well), *R. leucaspis* KW 7171 upright and KW 6273 prostrate, and a particularly interesting and hardy form of *R. sulfureum* under the number F. 13512, which grows outdoors. All these species reproduce well by cuttings.

The Glaucophyllum series is well represented – my choice being the apple-blossom pink *R. charitopes* F. 25570.

When my grandfather died in 1948 and my father came to Borde Hill, there was a lull in the rhododendron field, for my father was firstly a tree man and his wonderful life was devoted primarily to people rather than plants.

Walter Fleming – my grandfather's famous head gardener, was long since deceased, a huge rather reserved man who wrote labels in codes that Room 40 or MI5 might have solved but would have found difficult.

When I came to Borde Hill in 1970, I knew nothing about rhododendrons and was lucky to find Mr Jack Vass already in residence as head gardener. (Mr Vass was awarded the A. J. Waley Medal for work with rhododendrons in 1976.)

Alan Hardy was often seen scouting the areas, and cousin Desmond Clarke expounding his wisdoms – both were helpful to me and generous towards the collection itself. These were all allies that infused in me a new interest – a contagious interest that was passed on to Vass – so that we began to construct the evidence of what remained and what was gone and what was needed. It was, I found, a friendly garden with fine views and hidden reclusions and recesses but it yields up its secrets only slowly.

If I have shared some of the revelations with you in this thesis, then we are all the more together in the comprehension of what must be preserved before it is too late.

Each of us is in a position for a given time – perhaps longer than each rhododendron, perhaps for a shorter lifetime. But the importance of life is in its continuation and projection, not in its span alone.

Rhododendrons in Dunedin

An Account from the South Island of New Zealand

RALPH MARKBY

(Dunedin, N.Z.)

Visitors from the northern hemisphere are often surprised to find that New Zealand is not part of the Australian continent, so I shall start by saying we inhabit three islands in the South Pacific (North, South and Stewart Islands) some 1250 miles south-east of Australia. The North and South Islands of New Zealand span roughly 1000 miles between their extremities and encompass a marvellous (but sometimes wearisome) range of climatic conditions, from sub-tropical to cool temperate. Between, there is a great variety of micro-climates, and this in turn promotes an equally wide range of plant life, both indigenous and exotic.

When our alpine plants are moved from their mountain environment to coastal gardens many do not prosper, whereas if sent to Scotland they do remarkably well. The same restriction applies to some of our finest native trees and shrubs, and this partly accounts for a lower percentage of native plants in New Zealand gardens than one might expect. In fact, in the city of Dunedin where I live, it is true to say that we grow plants from nearly every other temperate area rather better than we grow the more desirable of our own alpines and ornamental trees.

New Zealand was colonised during the middle period of the last century, the early settlers coming mainly from England and Scotland. They brought with them some of the flora they knew at home as well as a traditional garden knowledge. They set a style and influence too

which has carried through to the present day, particularly in the province of Canterbury, where "English" gardens abound. Much attention therefore has been paid to plants from the northern hemisphere – sometimes to the exclusion of good New Zealand species. In recent times, New Zealanders have been surprised by the high regard in which some New Zealand plants are held elsewhere in the world and have at last taken a second look at what is growing right under their noses.

The city of Dunedin is on the east coast of the South Island at a latitude of nearly 46° south. It has a population of 110,000, an industrial base dating from the days of gold dredge manufacturing and ship building, and a strong university influence – the University of Otago being the centre of medical and dental teaching in New Zealand. The climate is peculiar to the city, which is ringed by hills up to 2,000 feet altitude. Beyond these hills, the climate changes immediately. The average annual rainfall varies between 32 and 38 inches depending on the locality, and the weather is generally free of extremes, both winter and summer. Rhododendrons, along with a great variety of other useful and ornamental plants, were introduced to Dunedin between 1870 and 1880 by William Martin, a Scottish settler who started a nursery on the outskirts of Dunedin at "Fairfield". In a catalogue issued about 1880, he offered *R. falconeri, aucklandii* (now *griffithianum*), *arboreum* (red), *campanulatum, ciliatum, dalhousiae, edgeworthii, gibsonii* (now *formosum*), *glaucum* (now *glaucophyllum*), *jenkinsii* (now *maddenii*), *thomsonii, veitchianum* and the Malesian rhododendron, *javanicum.* He also offered hybrids such as 'Countess of Haddington', 'Princess Alice' and 'Marquis of Lothian', the last-named being of his own raising, from crossing *R. griffithianum* with *R. thomsonii.* It is reported to be the reverse parentage of 'Cornish Cross'. This offering seems to be quite

remarkable as it was being made not so very many years after some of the species had been first discovered in Sikkim by Sir Joseph Hooker.

The next significant introductions appear to have been made by the late Edgar Stead of "Ilam", Christchurch, in the province of Canterbury. In the late 1920's, he received a very large collection of good species and hybrids from famous British gardens, the plants being sent to New Zealand in Wardian cases and mostly arriving in good condition. I suspect, although there is no evidence to prove the point, that many of the good species from Stead's garden at "Ilam" found their way to Dunedin through a friendship between the Stead family and the Barlings of Dunedin. The late Philip Barling lived at "Glenfalloch", a 30 acre property in a sheltered west-facing valley some 8 miles down the Otago Harbour from Dunedin. Growing conditions here are absolutely ideal for rhododendrons and "Glenfalloch" was to become well known throughout New Zealand – not only for its rhododendrons but also for its collection of interesting trees and shrubs.

At the same time as the "Glenfalloch" garden was being established in the 1920's, David Tannock, Superintendent of the Dunedin Botanic Gardens, was making the first serious planting of rhododendrons in the city – a donation from Kew Gardens. Nearly all of the first planting survives; the scented 'Kewense', 'Mrs Thistleton Dyer', a large *falconeri* and a fine stand of *arboreums*. It was now generally realised that rhododendrons were easy to grow in Dunedin and that the species regarded as tender in Britain were not so here. When Mr Tannock retired after 36 years as Superintendent, his place at the Botanic Gardens was taken by Mr Maurice Skipworth who proved to be a real enthusiast in this field. He fostered an active propagation programme and greatly extended the range of species and hybrids. Emphasis was given to growing particular series such as Triflorum, Maddenii, Lapponicum, etc., which were very well represented. A successful hybridising programme was carried on during Mr Skipworth's term of office, and this produced a number of good plants. These are now in commercial production; they are widely grown and the Dunedin Rhododendron Group has recently taken steps to have them properly named and registered along with other "local" rhododendrons.

Perhaps I could digress briefly to describe some of these plants. R. 'Maurice Skipworth' is from *bullatum* × *burmanicum* – a good sized bloom frilled white with yellow centre and heavily scented. R. 'Robert Balch' (*elliottii* × *zeylanicum*) has very fine glossy foliage after *zeylanicum* and red trusses superior to either parent. To be registered in 1977 are R. 'Lovelock' and R. 'Spicil'. The former, a chance seedling of *R. chrysodoron*, has attractive foliage and habit, and quite large clear pale yellow flowers which are long lasting. Most important is its flowering season which extends over two months, starting in July. 'Spicil' is a cross of *R. spiciferum* with 'Cilpinense'. It is a compact dwarf plant with small neat foliage, red stems and starry pink flowers in September. It is hardy with us and is one of the best dwarf hybrids we have seen.

Registration is not contemplated for *R. griersonianum* × 'Margaret Dunn' which unfortunately has a leggy habit but the colour is outstanding, a brilliant *griersonianum* red. A better result was obtained by crossing *R. griersonianum* with 'Medusa'. This has produced a low growing, more compact plant with the same good colour and a beautiful red calyx which is very prominent. This plant is worthy of registration.

In the late 1940's, the N.Z. Rhododendron Association was formed

and was henceforth responsible for the introduction of many new rhododendrons to the membership throughout New Zealand. One or two specialist nurseries also added their quota of new sorts. Bennett & Sons, a local Dunedin nursery, have almost completed 100 years in the trade, and they were responsible for growing and distributing rhododendrons at a time when few others were interested. It is only in recent years that Bennett's nursery has "gone over" to cutting-grown rhododendrons, all their previous work of propagation being by way of a very successful type of graft. The method by which this side graft was made at the base of the stock resulted in greater areas of contact between the cambium layers than is normally the case and I was intrigued to read of a Belgian propagator describing this method only a few years ago as a recent development. Suckering of Bennett's grafted rhododendrons was unknown and the stock used was 'Cunningham's White'.

To return to the N.Z. Rhododendron Association, it has done good work in getting a lot of fine rhododendrons into cultivation in this country and although, as a representative organisation, it has had its weaknesses, it has made a major contribution. More recently, it has undergone some administrative difficulties and the work of plant introduction and propagation has been temporarily slowed down.

In 1970, the Dunedin Rhododendron Group was formed and it has been very active in importing self-pollinated seed and scions of the rarer species. These are propagated, grown on and eventually offered to members. We are fortunate in Dunedin in having commercial nurserymen who are particularly interested in rhododendrons and who are prepared to go to a lot of trouble to ensure successful propagation and distribution of new or difficult plants. This enthusiasm has brought with it real progress in nursery propagation and growing techniques. Although varying of course from year to year, production of rooted cuttings and seedlings in Dunedin is around 50,000 plants annually.

Membership of the Dunedin Rhododendron Group has been confined to the southern half of the South Island, which keeps it within a radius of about 170 miles of Dunedin. We are thus able to visit members' gardens without travelling excessive distances. A number of our best gardens are situated in inland areas, often taking advantage of some favourable circumstance created by localised conditions. One fine garden in South Canterbury is situated close to Mount Peel, which attracts rain-producing cloud formations and so modifies the normally dry climate to the advantage of local gardeners. Another, only a few miles away, is attached to a farm close to the foothills of the Southern Alps; this garden must surely be one of the finest in New Zealand at present. It encompasses an extraordinarily wide range of shrubs, alpines and bulbs, set off by fine shelter and ornamental trees. A recent late summer visit showed us rhododendrons in perfect health, foliage colour and habit. The climate, together with first-class drainage, seems to induce a wonderfully compact habit of growth as well as magnificent foliage. But of course it is finally the consummate skill and experience of the gardener that produces results of this sort, especially when contending with late snowfalls and severe frosts. There are other cases too where great skill and effort are applied to overcome the vagaries of climate. In Canterbury particularly, hot dry north-west winds, unexpected snowfalls, and late frosts are hazards the gardener has to face and yet I have seen many wonderful plants growing there.

Another notable inland garden is at Wendonside in Southland. This was seen by Mr Jack Drake on a visit to New Zealand three or four years ago, when he described the rock garden as being "as good as he had seen anywhere", and yet, like his own in Scotland, it suffers periodic onslaughts of snow and frost of a most daunting nature. It may be seen then that the inland areas, being closer to the mountains, are subject to greater extremes of weather than those on the coast. In Dunedin, we do not have the weather extremes of our country friends but due to altitude, we do have significant climatic variations within the city. For example, at the highest altitude (1200 feet), we have a very fine woodland garden of several acres, well sheltered by block plantings of *Larix*, *Pseudotsuga*, etc., where the rhododendrons flower three to four weeks later than in warmer gardens at lower levels. Generally speaking, our best urban gardens are to be found on the east-facing slopes above the city. There are a number in this area, which contain not only an interesting variety of rhododendrons, but also extensive collections of alpines, bulbs and associated plants. Two gardens defy this definition by thriving in a sea coast environment – "Glenfalloch", on the Otago Harbour and a privately owned woodland garden at Blueskin Bay, 15 miles up the coast from Dunedin. They are both well sheltered from sea breezes and are quite unaffected by their proximity to salt water.

Perhaps the most absorbing activity of our local Group is the continuing search for species which we lack and better forms of those we have. To provide a permanent home for them, the Group acquired the lease of 4 acres of very suitable land with the idea of growing a wide selection of species and better class hybrids and thus demonstrating the interest and variety to be found among rhododendrons. Tannock Glen, as this property has been called, is only 2½ miles from the centre of Dunedin and this is a great convenience to those who maintain it. Some 200 ornamental and shelter trees were planted during the first three years to augment the existing trees and native bush. A growing-on nursery in a sheltered glade was put into use right at the start and already there is quite a stock of larger rhododendrons ready to plant out. Grass-mowing and weed control are the two major battles that have to be fought each year but with part-time labour, this is now coped with quite well. We're hopeful that, given another five years of development, Tannock Glen should be a woodland garden worth visiting.

Rhododendrons are grown in a great many Dunedin gardens and one commonly seen is 'Fragrantissimum', grown as much for its delicious scent as for its large trumpets. It is hardy here and grows in most situations. Enthusiasts are able to indulge themselves with an enticing variety of good species. Hybrids offer a more restricted choice as there has not been quite the same amount of importation. The Triflorum series is well thought of with many examples of *R. augustinii, davidsonianum, yunnanense, lutescens, oreotrephes*, etc., being grown. Two excellent local forms of *augustinii* are much sought after. These have been given clonal names, 'Medlicott' and 'Glenfalloch', which are to be submitted to Wisley for registration in 1977 along with propagating material.

Rhododendrons of the Maddenii series are among the most popular here, with all the good garden species being well represented. Again, a number of good forms have become popular. A buff form of *R. johnstoneanum* is very beautiful, as is a frilled *veitchianum* with an olive-green blotch and delicious nutmeg scent. *R. nuttallii* and *lindleyi*, and

their numerous local hybrids with 'Victorianum' and *dalhousiae* are well established, and recently two very good forms of *cubittii* have been introduced from England. *R. burmanicum* is frequently seen and I grow *fletcheranum*, which endears itself for its compact habit, purity of colour and bronzy winter foliage. An excellent pink form of *formosum* is now sold in the retail plant shops, and it is certainly one of the most desirable Maddeniis here. *R. ciliicalyx* is available in a variety of forms, but one I particularly like has very large open white flowers with each lobe deeply stained pink, fading with age. *R. valentinianum* has not been in cultivation here for some time. Several forms of *maddenii* are grown, the most popular being one known locally as 'Virginale' which has very large scented blooms appearing in October. The foliage is leathery. An even better pink form with magnificent shiny foliage blooms in December.

Some of us grow a form of *R. dalhousiae* which has very beautiful, rich lime-yellow trumpets. *R. megacalyx* with its reflexed petals is the odd man out but its delicious scent is something to remember. I have grown *rhabdotum* for some years and watch for its very late cream trumpets to appear in January or February with the distinctive carmine stripe on the back of each lobe.

I am rather fond of some members of the Boothii series and this year have had a pleasant surprise in finding my two plants of *megeratum* setting buds for the first time. *Rhododendron leucaspis, auritum, tephropeplum* and *xanthostephanum* are in cultivation here but so far we have not been able to obtain *boothii, chrysodoron, mishmiense* or *sulfureum.*

The series Anthopogon, Campylogynum, Dauricum, Glaucophyllum, Lepidotum, Moupinense, Ponticum, Saluenense, Scabrifolium and Uniflorum all contain small growing species which are favoured in Dunedin.

Small city and suburban gardens have had the natural effect of popularising smaller rhododendrons to the detriment of the larger plants, and we have to rely on the few larger public or private gardens to show us these. The large-leaved species are quite well represented, and one or two specimens that come to mind include *R. giganteum* at "Glenfalloch" which has been flowering for about 10 years and is a good rosy pink. *R. macabeanum* in the Dunedin Botanic Gardens first flowered about four years ago and is a fine yellow with excellent foliage and habit. *R. falconeri* is seen occasionally but the flowering seems to be on a triennial basis; *fictolacteum* flowers periodically but commends itself mainly for its foliage. Good specimens of *grande* are not uncommon while the Dunedin Botanic Gardens have a very nice form of *sidereum*.

We have three plants of *R. sinogrande* at Tannock Glen but as yet, have to content ourselves with the annual display of new foliage – an indescribable purple-bronze which is a marvellous sight around December. Also in the nursery at Tannock Glen we have young plants of *coryphaeum, grande, macabeanum* and *praestans* along with some of the Falconeri series – *arizelum, basilicum, hodgsonii* and *rex*. With this foundation, we hope eventually to have a good display of the large rhododendrons, which most of us are unable to grow in our own gardens through lack of space.

The reader may well have had his fill of species by now so I shall just mention a few hybrids of interest. One of which has been registered this year is 'Dalkeith', a rhododendron very close to *uniflorum*. It has a superior habit to the species, very compact and densely branched to form a hummocky bush up to three feet in height. It smothers itself with mauve pink flowers and has proved to be vigorous and hardy.

Another dwarf plant which commends itself is a hybrid of *russatum*. This is a very free flowering rhododendron with distinctive rosy pink flowers akin to *russatum* but rather better foliage and denser habit.

'September Snow' is a locally produced hybrid of *leucaspis* × *bullatum* which has captured the best qualities of both plants. Pure white semi-open flowers, larger than *leucaspis* and with better substance, are set off with brown anthers, strong scent and fine foliage, densely covered with hairs.

A larger growing yellow-flowered hybrid of unknown origin has intrigued local gardeners for years. It is a shrubby rhododendron up to six feet in height with characteristics which suggest a parentage similar to 'Mariloo'. It is an exceedingly fine yellow and has been in limited cultivation in Dunedin for many years. The existing few plants originated from one at "Glenfalloch" and we guess it may be a hybrid from "Ilam". Unfortunately it can only be propagated by grafts.

Most of the other hybrids grown are of British origin, apart from some of the "Ilam" rhododendrons. American hybrids have not been in great demand, as most are bred for a degree of hardiness unnecessary in our climate, with colours not always to local taste which is conservative.

'Trewithen Orange' is the best and most deservedly popular orange flowered hybrid we have seen, although some care is needed in placing this startling colour in the garden. 'Moth' (*megeratum* × *mishmiense*) is another sought after hybrid recently introduced. Its bronzy yellow flowers are most striking. For the most part, the best of the older hybrids are favoured. Reds such as 'Mayday', 'Exbury', 'Ibex', 'Elizabeth' and 'Elisabeth Hobbie' are widespread while 'Carmen', 'Little Bert' and

other *repens* crosses fill the dwarf role. 'Chrysomanicum', 'Parisienne', 'Eldorado', 'Saffron Queen', etc., are popular yellows and occasionally one sees 'Ilam Canary', an aristocratic plant of the highest quality. Crosses from *R. williamsianum* provide many of the pinks and we have a particularly fine pink form of *yakushimanum* which may possibly be a hybrid. Most of the whites and creams in our gardens are provided by the species so that there is a limited demand for hybrids in these colours. There is keen interest in the delightful dwarf hybrids produced by Mr Peter Cox. 'Chikor', 'Curlew' and 'Ptarmigan' are keenly sought, and 'Pipit' would be even more so but it is not yet available here.

Climatically speaking, we may be well endowed, but when it comes to soil conditions, there are severe handicaps to overcome. We have a heavy black soil which does not allow good drainage and inhibits aeration of the roots. We use large quantities of organic humus to improve this and generally rely on pine mould (semi-rotted *Pinus radiata* needles) or more commonly, coarse *Pinus radiata* sawdust. The latter, if applied as a heavy annual mulch, creates a very good friable loam and provided the initial nitrogen losses are counteracted, the plants love it. A sparing application of dried blood on the surface provides nitrogen and various trace elements to the longer term benefit of the plant.

Landscaping our small gardens is the most demanding job of all as we tend to overplant. In years past, I have spent the autumn months simply examining the garden, or "brooding" as my wife describes it, until suddenly, in April or May, I put all my carefully worked out plans into effect and shift plants around in a whirlwind of activity. The amount of shifting and re-siting of rhododendrons that takes place in the first ten years of building a small garden is quite prodigious and it requires a strong back and a lot of patience. When the gardener succeeds in this task, the result makes it all worth while. I can think of several gardens in Dunedin where the area is really very small but the careful placing of rhododendrons, shrubs, trees, bulbs and alpines has been skilfully done to create an enticing picture, filled with interest. I often find it requires more time to see all the treasures in one of these small city gardens than it does to romp around a much larger country area where the planting is more casual.

In concluding this account, I must mention one handicap which we all work under here. That is the lack of contact with gardeners from the northern hemisphere, which leaves us pretty much on our own resources. For many years, I have found the *Rhododendron & Camellia Year Books* of great interest and help and of course, there are a number of first-class books of reference. It is the ambition of most serious gardeners here to visit British gardens and many in fact do this. It is rather a one-way traffic though, and I think that we New Zealanders know more about British gardens than the British know about ours. Americans from the west coast of the United States visit fairly regularly and there is a growing interest here in going to this part of America to see their wonderful alpine plants and conifer forests. It is a pleasant and enjoyable experience to meet gardeners from overseas, and any adventurous souls who might consider visiting the Antipodes are always assured of a warm welcome.

The Discovery of the Malaysian Rhododendrons*

DAVID G. LEACH

We tend to take our planet for granted. Complacently, we assume that the unknown parts of it were explored long ago, that the adventure and excitement and romance of penetrating faraway lands vanished with the hobble skirt and turkey trot.

But one of the strangest stories in the annals of plant exploration was unfolded 16 years ago with the abrupt publication by Dr Herman Sleumer, a Dutch botanist, of descriptions of 96 new species of rhododendrons.

When all the discoveries of the previous three decades were brought together in orderly array, taxonomists were disconcerted to learn that the size of the genus was increased by half in one stroke, to about 900 species. Hobbyists were startled to hear that the newcomers were everblooming and that they came in "high octane" scarlets and yellows as well as in psychedelic combinations of orange and pink. The flowers of some were mammoth, with trumpets an incredible eight inches across. Oddest of all, more were epiphytic, growing high on forest tree limbs with mosses and orchids, rather than rooting solidly in the ground.

With the great wonder at such marvels came much speculation about their origins. How was it possible in mid-century for any wilderness on earth to yield so many new rhododendrons never before seen by man?

The story goes back to 1823 when Dr William Jack "of the late East India Company's service" discovered in Sumatra a rhododendron with small cerise-crimson flowers and bizarre appearance, later called *R. malayanum*. (At the time, the only known Asiatic rhododendron was the blood-red flowered tree from India, *R. arboreum*, forerunner of multitudes of popular garden hybrids.) Jack's discovery was followed before 1845 by *R. jasminiflorum*, with exotic white flowers stained deep pink in the centre, sent from Malacca to James Veitch & Sons' Nursery at Exeter by their collector, Thomas Lobb. (Soon thereafter came the even more flamboyant *R. javanicum* from Java, with electrifying orange flowers spotted red, and purple anthers.) *R. jasminiflorum* bloomed for the first time in 1849 and was proudly exhibited by Lobb's employer at the Royal Horticultural Society's first show of the year 1850. It was so unlike any rhododendron known, a reporter implied it was not a rhododendron at all.

It was the next year, 1851, when Hugh Low, a government official at Labuan Island, made a remarkable climb to 13,500 feet on a mountain in nearby Borneo in the course of which he discovered a rhododendron which he called *R. brookeanum*. It was named for his dear friend, the celebrated Rajah of Sarawak, Sir James Brooke. The flowers, beautiful orange-pink with an ivory centre, were a sensational find.

Low's journey to climb Mount Kina Balu was a dramatic one. As he rounded a bend in his little boat on the Tauran River, he was suddenly

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confronted with a fleet of war canoes in full regalia, led by a notorious pirate with the comic-opera title, Sultan of Layer-Layer, who later in the year was to behead the British adventurer, Robert Burns. But the encounter was one of welcome; Low's reputation for love of the country and affection for its natives had preceded him.

After the final agonizing climb to the summit of the mountain, numbed with cold in the rarefied air, he made a gesture of the sort which built the Empire. Encountering a cliff near the top, with an awesome drop to the valley below, he lay down to peer over the edge and there toasted Her Majesty with a bottle of Madeira. He placed the empty bottle in a gulley, where it was found seven years later by a friend on a second ascent.

Low's coppery yellow *Rhododendron brookeanum* bloomed in England in 1855, a novelty of such interest that "attracted great attention" when it was exhibited at a Royal Horticultural Society show. "*R. lobbii*" (now *R. longiflorum*), bright glossy crimson, came in from Borneo in 1870. Fifteen years later "*R. teysmanni*" (now *R. javanicum* var. *teysmanni*), from Sumatra and Penang, was given an award by the Society for its deep golden-yellow flowers when it was first shown. *R. multicolor* aptly described the variety of hues to be found in the flowers of the species which arrived shortly afterwards in England. The Society awarded it a First Class Certificate in 1883.

A frenzy of hybridizing was in progress with the tropical rhododendrons of the Malay Archipelago in the greenhouses of the Veitch firm which had sponsored the equatorial explorations. From the seven species sent back to England by their collectors in the preceding 30 years several hundred new hybrids were produced for the glasshouses of the gentry. The first and most famous was 'Princess Royal', a glowing pink which astounded its breeder because it came from a white crossed with a yellow species. He was even more bemused when the white *R. jasminiflorum*, crossed with the strong pink 'Princess Royal', produced the snowy 'Princess Alexandra'.

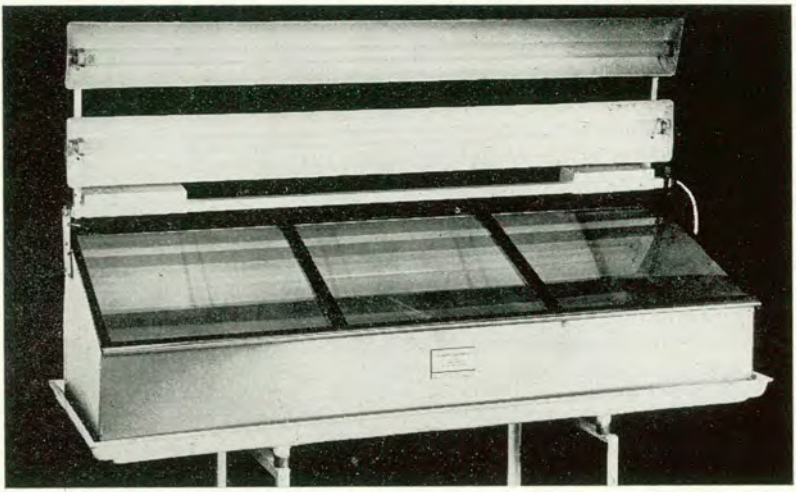
Privileged amateurs were also attempting crosses among the newcomers. J. H. Mangles, well known as a plantsman and for the prolixity of his contributions to gardening publications, in describing an exasperating failure, repeated the admonition of a friend: there are "certain atmospheric moments for the union of vegetable species," he wrote. "Never try such things when an east wind is blowing." The advice surely ranks as history's most singular explanation for the failure of crosses to produce seeds.

By 1893 Veitch's catalogue listed scores of hybrid cultivars; four years later the year-round flowering of the Veitch hybrids was demonstrated by exhibiting a tray of cut blooms at every fortnightly meeting of the Royal Horticultural Society throughout 1897.

But it all came to a sudden end. For at the height of the popularity of the Malaysians, there sprang into the horticultural world a second burst of hybridizing that rivalled and quickly overwhelmed the Malaysian fancy. Hundreds of new species of rhododendrons were suddenly pouring in from that vast continent to the north, mainland Asia.

Reports of rhododendrons found by French Catholic missionaries on the mountain slopes of western China and the Himalaya were circulating in Britain, so Veitch sent out E. H. "Chinese" Wilson to investigate further. After all, these mainland rhododendrons could be expected to survive outdoors; the Malaysians were then believed to require hot-

The Dewpoint Cabinet



THE DEWPOINT CABINET was described in the R.H.S. Journal of June 1973. A patented system is used to create ideal conditions for propagation and growth. It needs a little electricity and a space 5 ft 6 ins by 2 feet where the temperature does not fluctuate too much, maybe the garage but certainly not in the greenhouse. The tedium of spraying and ventilating can be forgotten, it is only necessary to replace the water used once a fortnight.

Warm water warms the rooting medium. A stream of air is bubbled through the warm water and released into the cabinet. As it cools it becomes over-saturated and so prevents cuttings drying out. Lighting is by fluorescent lamps. Most of the metal is stainless steel.

Results with rhododendrons are remarkable. The seedling illustrated (of Rh. auriculatum) shows three 'years' of growth but it is only nine months old. The percentage 'strike' is so good that one horticultural college puts cuttings into peat pots to avoid root disturbance. Under natural conditions rhododendrons are probably not in active growth for many hours in any day. In the cabinet they probably do not grow any faster per hour but they grow several times as many hours every day, including winter.

The cabinet holds 8 standard seed trays. The maximum height is 15 inches.

This photo shows a 9 month old Rhododendron seedling raised in the cabinet.

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house conditions. Within two years Wilson sent back to his delighted employers 40 new, hardy, mainland species.

In one decade of the 20th century's early years an astounding 312 novel rhododendrons suitable for garden use were discovered in the mountains of south-eastern Asia. The plant riches of the Orient came in to the sponsors of the expeditions in such floods that greenhouse benches filled with tiny rhododendrons grown from the explorers' seeds were shovelled out to make room for later arrivals thought to be even more promising.

But, the near-total eclipse of the tropical Malaysians came with the economic disruptions of the First World War. The vaulted conservatories, vast ranges of greenhouses, the labour and heat used for their cultivation became too luxurious for even the very rich.

The interval between the two world wars produced a strange chapter in that sometime science, botany. For the best part of a human generation, a third of the planet's rhododendrons were ignored as if they did not exist. The taxonomists hunched over their herbarium sheets of temperate mainland rhododendrons at Edinburgh and Harvard, in Paris and Berlin, New York and Stockholm. In all the world only Dr Herman Sleumer at the Rijksherbarium in Leiden continued a systematic study of the tropical Malaysians.

Between the wars the sporadic interest in plant exploration in the Malay Archipelago moved eastward to centre on New Guinea, which held in its hidden interior a forbidden Tibet of its own: the immense verdant valleys, home to half a million people not then known to exist. The island, twice the size of Japan, stretched eastward toward Borneo the distance from Scotland to Istanbul, a giant bloated tyrannosaurus on the map, with its head grazing the equator. At the time, it was popularly supposed that, with the exception of a patch or two of South American jungle, the earth was fully known and neatly mapped.

But it was not until 1933 that two brothers prospecting for gold penetrated the interior of Papua New Guinea and discovered that it was not a series of barren sawtooth mountains, but one of the most beautiful and fertile regions on earth. By the end of the 1930's the Archbold expeditions for the United States and other, more individual efforts had begun to open up the country. Richard Archbold was a pre-war pioneer in air supported surveys. Amateur mammalogist and heir to an American oil fortune, he ultimately mounted seven expeditions to New Guinea both before and after the war. In 1936 the capsizing of a single engine Fairchild Amphibian marooned his advance party for more than a month. The party had been heading for the Star Mountains, which, as a result of the mishap, were not explored botanically until nearly 40 years later in 1973.

The hardships for the explorers were savage. One of the best known, a man named Carr, died of blackwater fever in 1936; his collections have still not been completely studied. Chilling rain, mosquitoes, poisonous snakes, leeches, tropical ulcers and unbearable itchiness from various nettled plants plagued their struggle through the forests. Dengue, graphically known as breakbone fever, scrub typhus and malaria were constant threats. At the higher elevations the lichens and mosses on the ground often formed a continuous carpet, concealing pits and crevices which became dangerous traps.

There were other perils. Natives closed the mountain trails. The dreaded Kukukuku, great warriors and cannibals, lived with their own

Fig. 3 *Rhododendron aurigeranum* which has orange-yellow flowers

dead, whom they dried and kept. Down the long course of the Sepik River the people measured their prowess in human heads. In the highlands, a bereaved native who had lost a devoted spouse chopped off the end of a finger. And to add to the difficulties, about 700 different languages were spoken on New Guinea.

The outbreak of the Second World War not only brought an abrupt halt to the exploration of the New Guinea flora, it also marked the end of most of the Veitchian hybrids in the United Kingdom. Both heat and human energy went to much higher priorities than the cultivation of exotic and tender rhododendrons under glass. The aging stars of the fashionable turn-of-the-century flower shows, no longer popular, died out almost completely.

In the two decades following the Second World War nearly 300 airfields were built in New Guinea. The tremendous advantage of air travel in botanical exploration of the incredibly difficult New Guinea terrain is illustrated by the flight from Keglsugl airstrip at 9,250 feet on Mount Wilhelm, over the Bismarck Ranges to the coast. (The runway slopes so that aircraft can land uphill and take off downhill in the thin air.) One of the pioneering botanists in New Guinea, R. Schlecter, with frightful difficulties, fought his way for weeks from the coast along the same Bismarck ridges in 1902. But the flight takes only 35 minutes to the sea. As recently as 1948, Dutch botanist Kostermans took three and a half days from the coast to reach a lake at 6,000 feet in the Arfak Range of Irian Jaya (western New Guinea). In 1962 it was 12 minutes by helicopter to this lake region so rich in rhododendrons. Thus began a new era for the Malaysian rhododendron.

So, when 16 years ago Dr Sleumer startled the horticultural and botanical worlds with his descriptions of nearly a hundred new rhododendron species, and followed it with a sequel in 1966, he was chronicling

the discoveries of numerous explorers in the preceding 30 years, in addition to his own. Many were known only as dried specimens sent back to botanical gardens and arboreta just before and after World War II. Few had been introduced to cultivation. Then the first species from the upper mountains of New Guinea to bloom in cultivation, *R. beyerinckianum*, produced its dark, blood-red flowers in 1956 at the Royal Botanic Garden in Edinburgh, and the confirmation was at hand for an article about the singular New Guinea rhododendrons published by the Royal Horticultural Society in 1951. The author, C. R. Stonor, estimated that there were over a hundred species on the island. Twenty years later 163 species were known to occur there. So scantily have the mountains been explored that the total must be far higher.

The Stonor article, and the Malaysian rhododendron which flowered at Edinburgh, aroused wide interest. Few horticulturists realised that the newcomer was but an addition to a distinctive group, now called the Vireyas, which had been known for 130 years and had produced scores of hybrids in the great glass orangeries of the rich at the turn of the century. The long obscurity was at an end.

The Vireyas are marked botanically by seeds which have wings or tails at both ends, but ornamentally they are so different from our garden shrubs as to be scarcely recognizable as rhododendrons. They are vastly varied in leaf, stature, manner of growth and in flower. There are no blue admixtures to flaw the purity of the plangent oranges and yellows. The whites are immaculate. The pinks deepen to rose, then red, scarlet and deep crimson. Some have long, thin tubes dilating abruptly to corollas with reflexed petals. The leaves of *R. stenophyllum* resemble pine needles. Those of *R. leucogigas* are huge blades a foot long and five inches across; the sumptuous flowers are white, suffused pink, eight inches long and nearly as wide. They are the largest so far known of any rhododendron. *R. buxifolium*, found as high as 13,500 feet, has, as its name suggests, tiny, boxwood-like leaves about a half inch long and a third of an inch wide, with nodding little pink or dark red bells about an inch long. *R. ericoides*, from Borneo, looks for all the world like an overgrown heath with densely packed miniature bristles in spirals at the ends of the branches. Some of the Malaysians are long and lanky, vine-like stragglers with ropy roots; others are small trees; still others are prostrate little cushions anchored to mountain tops by thin hairs of roots. The variety in every conceivable respect is bewildering.

Even the methods of fertilization are exotic and diverse. Above 10,000 feet, where red flowered species predominate, and the mouths of the down-slanted flowers are facing toward convenient perches, nectar eating birds are the pollinators. At lower elevations, drier and more suitable for the flight of lepidopters, hawk-moths are attracted to the scented flowers with long, narrow, nearly horizontal corolla tubes. Dr Peter Stevens of the Arnold Arboretum, who has both studied and explored for the Vireya rhododendrons of New Guinea intensively, suggests that the brightly coloured red-, yellow- and orange-flowered rhododendrons attractive to butterflies, with nearly erect, spreading corolla lobes on which they can alight, are pollinated by them. Some species seem constructed to self-pollinate. I have grown one, *R. dielsianum*, in which the stamens form an arc directly above the style, so that the pollen is spilled from the anther pores directly upon the receptive stigma below. Other species are described as having a style which

Fig. 4 *Rhododendron zoelleri,* with flowers of yellow, orange, salmon, or red

elongates as the anthers mature so that the stigma is pushed through a curtain of dripping pollen.

The New Guinea explorers struggled through five more or less distinct zones in their search for new species. Up to 3,000 feet the lowland wilderness starts with mangrove swamp, rain forest, savannas and grassland. Rhododendrons occur at sea-level but they are rare. The florid *R. zoelleri,* with large orange and red flowers resembling Dutch amaryllis, grows as a 25-foot tree near the seaside. The always-terrestrial *R. christianae* with small yellow to dark red flowers on a 15-foot shrub, starts to appear in the rain forest zone at 1,500 feet.

From 3,000 to 5,000 feet there are many rhododendrons and other heaths in grassland cleared by native burning, especially on slopes and cliffs, and in the mountain forests dominated by oaks (*Lithocarpus*), pines (*Araucaria*) and chinquapins (*Castanopsis*). At 5,000 feet the mountains are almost constantly shrouded in mist. This is the level of the cloud base, where begins the ceaseless drip and pervasive wetness leading to the mossy forest. The drenching produces there a weird world of vegetation gone wild. Nearly every surface is felted with foliation. Underfoot a thick mat of mosses and liverworts forms a luxurious green carpet. The rocks are cloaked in green herbage. Bizarre, foot-long tendrils of moss crowd out from the tree trunks. Upward, the limbs are hanging gardens of flowering epiphytes: myriad orchids, together with rhododendrons, bilberry (*Vaccinium*) and other Ericaceae. Filmy translucent ferns form feather necklaces on the branches, and lichens dangle languidly from the twigs. The teeming, jungled growth absorbs all noise. The mist drifts by silently in the eerie stillness of a sound-proof room. Here the medley of rhododendrons have migrated upward from the ground toward the light, to crown the treetops with jewels of ruby-red,

topaz-yellow and carnelian-orange. Their thickened roots on the branches below support their precarious perches in the aerial canopy.

At about 6,500 feet the top of the cloud layer thins out and the forest becomes more open, with enormous beech-like *Nothofagus* trees and stands of *Araucarias* much like giant editions of the Norfolk Island pines so familiar as house plants. Clearings abound with rhododendrons now able to survive as terrestrial dwellers, and the first of the strange Solenovireya rhododendrons are found. These are the least rhododendron-like of the genus, with spidery clusters of white flowers having long, thin tubes terminating in small starbursts of mini-petals. The appearance is that of a honeysuckle, or a nicotiana; the fragrance of these rhododendrons toward evening is equally captivating. They are rarely, if ever, epiphytic.

Another thousand feet upward on the mountains and the tree line is reached; in some parts of New Guinea this is also the elevation where the temperature drops below freezing overnight. Here begin the elfin woods, with grotesquely dwarfed trees, their roots on top of the ground, twisting like snakes through the matted moss underfoot. The gnarled and stunted growths are mantled with lichens. Where climbing bamboo grows it is so tough and tenacious that it is unpractical to attempt cutting a path through it. Such barriers have halted the exploration of some mountain tops on foot, as have the terrified native carriers who believe that the nightmare fantasia of the elfin wood is the lair of demons, goblins and monstrous evil spirits.

But to the botanical explorer the elfin wood is a magnet for the profusion of plants in it. Here rhododendrons can compete with the dwarfed conifers and scrubby tropical beeches and myrtles. The species from lower elevations join those which are found here for the first time in the mountain ascent, occasionally to form thickets. The humid chill and more open slopes provide ideal conditions for rhododendrons and other ericaceous plants.

The fifth and final zone, above 9,000 feet, is open alpine meadow on the slopes and ridge tops to the mountain summits. Only pygmy rhododendrons are found on grassy glades in the rarefied atmosphere. These low cushions of densely matted leaves, such as *R. saxifragoides*, send up long stems above the foliage, each with a single inch-long, downcurved blood red flower. At a little more than 13,000 feet, these are the ultimate alpine rhododendrons to be found. They are also the most difficult to grow in cultivation. A rule of thumb among connoisseurs is that the higher the elevation of origin and the smaller the leaves, the more cranky is the species in the greenhouse.

The zones of vegetation occur in the same sequence throughout New Guinea but with wide differences in the elevations. On some parts of the island the mossy forest may begin at 3,000 feet; elsewhere it may first appear at 8,000 feet.

About 60 different species and hybrids of the Malaysian rhododendrons have grown well outdoors in the United States, primarily in the San Francisco Bay area, in central Florida and in Hawaii. Although so many come from 10,000 to 12,000 feet where there are occasional frosts, the cold is of short duration. At the Strybing Arboretum in San Francisco, the collection survived 28°F. with only minor damage, but it was later all but decimated by 23°F., except for the high altitude sorts. The heaviest blooming there is in September and October, continuing on to March.

For most gardeners, the splendours of the Vireya rhododendrons must be enjoyed in the greenhouse. Whether outdoors or under glass, their growing medium must recognize their epiphytic tendency. There are almost as many methods as there are cultivators. Australians like to use tree fern logs, slitted to receive young plants with bare roots. In England, the Malaysians are often grown on hanging platforms with a bit of moss, exactly as are orchids. A retired explorer of Borneo uses a third each of oakleaf mould, peat-moss and chopped bracken fern. The Germplasm Resources Laboratory of the Agricultural Research Center in Beltsville, Maryland, prefers pure sphagnum moss. Hobbyists in Oregon like coarse fir bark. I use a modification of Cornell University's epiphytic mix: a third each of coarse vermiculite, coarse peat and fine grind fir bark, with five ounces of dolomitic limestone, three grams of fritted trace elements and three-quarters of a gram of iron sulphate to the bushel. So many different mixtures succeed that it would probably be simpler and just as feasible to buy one of the bark and perlite mixtures prepackaged for orchids. The principle to be observed is that the growing medium must be loose, well aerated and with very quick drainage. The plants flower best in containers which restrict their roots; they should not be overpotted.

In nature the Malaysian rhododendrons grow on soils of extraordinarily low fertility and high acidity. The epiphytes receive traces of nitrogen dissolved in rain during lightning storms. Although they do respond to fertilizing, in cultivation their tot should be doled out with a delicate hand.

A fallacy persists from the days of the Veitchian hybrids that these rhododendrons require hothouse treatment. They do not. A minimum night temperature of 45°F. suits them very well. In summer, a vacation outdoors with the pots plunged in a shady bed invigorates them as much as a holiday does for humans.

The Vireya rhododendrons have a great deal to recommend them for indoor cultivation. Many of them are so fragrant that they scent an entire hobby greenhouse. The flowers are renowned for their durability. It is common for them to remain in good condition for a month. Expert growers are careful not to self-pollinate the plants in bloom by jostling them, because the corollas then drop off much more quickly. They often cut off the stigmas of those that spontaneously self-pollinate because of the arrangement of the flower parts.

By pinching and cutting back, even the strongest growing of the Vireyas can be kept to about 30 inches. The largest in my greenhouse are in six-inch pots.

Under glass in the United States the Malaysians flower most profusely as short-day plants, from late fall to early spring, when their colour is most appreciated. They have no definite resting period; instead, they grow, bloom and grow once more to bloom again, more or less at random.

The manipulation of the blooming period makes a fascinating project for the amateur. In nature near the equator the days and nights are of about equal length. The difference between day and night temperature varies hardly at all all the year round. The only fluctuation throughout the seasons which appears to affect flowering is the amount of moisture and sunlight they receive. Most growers recommend keeping these tropical rhododendrons on the dry side, which of course promotes aeration of roots.

Vireya rhododendrons root easily from cuttings. The simplest method for hobbyists is to cut off a three-inch length of firm green terminal growth, nip out the terminal bud and make a one-inch slice wound on each side of the bottom of the stem. Dip the wounded stem in hormone powder, wrap it with a handful of damp sphagnum moss from which all free water has been squeezed, and hold it in place with a rubber band. Place the whole in a plastic bag, retaining as much air in it as possible, and twist the top to close the bag, securing it with another rubber band. After two months in a warm but not sunny spot the cutting will be luxuriantly rooted. Thereafter the terminal buds should be pinched after each flush of growth to insure the development of a many branched, well formed specimen.

Finally, from these multitudes of exotic and unfamiliar rhododendrons which should be chosen? My own selection for ease of cultivation and freedom of flowering, for the beginner: *macgregoriae* (light orange, salmon pink or pale yellow); *lochae* (rich red); *christianae* (brilliant orange); *laetum* (brassy yellow, big flowers); *aurigeranum* (orange-yellow, big flowers); 'Pink Delight' (pink).

A selection for the most spectacular flowers: *zoelleri* (yellow, orange, salmon or red); *leucogigas* (white); *hellwigii* (blood red); *lowii* (yellow, orange, salmon or cerise); *rhodoleucum* (tubes deep pink, corollas white); *brookeanum* (orange-pink, cream centre); *orbiculatum* (white or pale pink); *laetum* (brassy yellow); *aurigeranum* (orange-yellow); 'George Budger' (orange-yellow).

The newly discovered species of rhododendrons are in great demand and difficult to obtain. The American Rhododendron Society does operate a referral service at the following address: Mr Theodore Van Veen, Secretary-Treasurer, American Rhododendron Society, 4201 Southeast Franklin St., Portland, Oregon 97206.

Work in progress at Edinburgh on the Classification of the genus Rhododendron

DR JAMES CULLEN

(*Assistant Keeper, Royal Botanic Garden, Edinburgh*)

The following is the slightly abridged text of a talk given to members of the Rhododendron and Camellia Group at the R.H.S. New Hall on 14 June, 1977:

I would like to begin by saying how pleased I am to have this opportunity of telling you about the sort of work we are doing on rhododendrons at Edinburgh. I am particularly pleased, because I think that, though we start from the differing stances of gardeners and professional taxonomists, we have the same end in view. And that end is an accurate, workable and easily usable classification of the genus *Rhododendron* – a classification that is of use to the professional botanist for his work on taxonomy, ecology, physiology, phytogeography, etc., and to the gardener who has an interest in cultivating these plants.

In order to explain what we are doing, it is necessary to think about the various purposes for which classifications are made. As far as plants are concerned, there are basically three purposes:

(a) A reference system of accurate names, and an apparatus (keys, descriptions, illustrations, etc.) for finding out which name applies to which plant.

(b) A prediction system – i.e. an arrangement of the plants in groups on the basis of their properties in common, enabling us to infer that if plant X has a certain property, then there is a good chance that plant Y, placed in the same overall group as plant X, will have the same property.

(c) A reflection of evolutionary pathways – the so-called phylogenetic aspect of classification. This is an aspect which I do not intend to pursue further this evening.

Classification is a method of dealing with information; though the purposes which I have mentioned do not alter, the information does. New information comes to hand either in the form of new collections, or as new comparative data resulting from the application of previously unused techniques; and old information is re-interpreted. All comparative information is potentially of some value to the taxonomist. Hence, no classification can be static; the process of classification is one of constant re-assessment of information; and changes may be gradual or abrupt, depending on the type of information available.

This process can be clearly illustrated by the history of rhododendron classification, which was thoroughly documented by J. M. Cowan in the *R.H.S. Yearbook 1949*, and by Professor Philipson in the *Notes from the Royal Botanic Garden, Edinburgh* for 1973. The 4 species in 2

genera recognised by Linnaeus in 1753 were a very adequate classification on the basis of the very small amount of information available to him, even though we know now that many more species exist than he could deduce. Over the next 100 years the progress of classification was slow, with a small number of new species being added gradually. Hooker's publication of the results of his explorations in Sikkim, showing the richness of the Himalayas in *Rhododendron* species, caused an abrupt change; and the continuing exploration of the whole Sino-Himalayan area by David, Delavay, Forrest, Farrer, Kingdon Ward and Rock, lasting for almost the next 100 years, emphasised this change.

The main Rhododendron taxonomist of the period was Sir Isaac Bayley Balfour, Regius Keeper of the Royal Botanic Garden, Edinburgh, and Regius Professor of Botany in Edinburgh University, who found himself in the embarrassing position of having more information than he could conveniently handle. He had to produce an easy system for the accommodation of all the new information, and the method he chose was that of forming the "Series": groups of species similar to, and centred on, well-known species. This was a simple and easily used reference system; but nothing more. Bayley Balfour himself recognised that it was not adequate to answer all of the purposes of classification that I mentioned earlier: he intended to give it a thorough revision, but, of course, he died in 1919, before this could be done. His successors, Wright Smith, Hutchinson and Tagg were faced with the same problem, but, mainly, I think, due to pressures of other work, took no radical attitude to it. They maintained the Balfourian approach, which operated well enough, as the flow of new specimens from Forrest and Kingdon Ward and the others continued. During the thirties, however, the flood gradually reduced to a trickle. The Balfourian dam, created in response to a special situation, was available again for complete reconsideration, from its foundations upwards. No one, however, took up the challenge: the dam was patched, partially rebuilt, a few new bricks were put in it here and there, but the basic structure remained unaltered.

The first signs of a new look at the classification came in 1949, with the publication of Sleumer's system of the genus *Rhododendron*. He had worked on the Ericaceae of the world for many years, mainly on those groups related to Vaccinium. But, after the war, the newly formed Flora Malesiana Foundation had asked him to write the account of the family for *Flora Malesiana* – a Flora covering a huge area, from Malaya in the north-west to New Guinea in the east. One of the problems that Sleumer faced in this task was the fact that the biggest genus he had to deal with in the area was *Rhododendron*, with its massive development of species in New Guinea. When he looked at the existing classification of the genus, he found that it entirely left out these species, and was highly artificial for the species it did cover. He therefore set about producing a classification of the whole genus that met modern standards of accuracy and acceptability. Naturally, he concentrated most on those groups that were his major concern, dealing with the non-Malesian species mainly from the published literature. Even so, his classification was a great step forward. Though it has required much modification, it has formed the basis for, and given a stimulus to, much further work.

For some reason, Sleumer's work fell on deaf ears in Britain and America. It did, however, have an impact on the continent, stimulating

Seithe to a detailed study of hair types in the genus, and Hedegaard to a study of seed and seedling morphology; and in New Zealand, where the Philipsons took up work on a number of aspects (seedlings, nodal anatomy, etc.). In Britain, the patching and mending of the Balfourian system, by now completely fossilised and anachronistic, continued, though at a much reduced rate.

In 1970 the Scottish Office asked a Review Group of distinguished botanists and taxonomists to look at the work of the Royal Botanic Garden, Edinburgh and to recommend lines of work that should be followed. This group recommended, among many other things, that the garden should concentrate on monographic work in the Ericaceae, with particular emphasis on *Rhododendron*. The group recognised the need for this work to be done, and understood clearly that Edinburgh was the place to do it. The reasons for this are fairly obvious: Edinburgh's long tradition of *Rhododendron* work; its vast collection of herbarium specimens of the genus, made up of the whole of the Forrest and Leveille collections, together with fairly complete sets of Kingdon Ward, Rock, Ludlow & Sherriff, and others, and including many type specimens; and the large living collections of rhododendrons of known wild origin at Edinburgh and Benmore.

In 1972 I was appointed as Assistant Keeper, in charge of the whole Ericaceae project, and Dr D. F. Chamberlain was assigned to the genus *Rhododendron*. Between us, the genus was divided up, Dr Chamberlain taking the elepidote species, the lepidotes falling to me. Later discussions with Professor and Mrs Philipson have led to their taking responsibility for the groups formerly covered by the name "Azalea".

Our work on the genus has been in progress since 1973, and in describing to you our aims and methods, I want to revert to what I said at the beginning. Classification consists of the sensible arrangement of information; and the information may be new, needing to be incorporated with what is already known; or it may be well-known, but in need of re-interpretation. Both of these aspects have been covered in our work, and I would like to deal with them separately, drawing most of my examples from the lepidote groups, as I am most familiar with them.

1. Re-interpretation of Old Evidence

The basis of all classification has been the gross morphology, the structure, of the plants themselves. This has been studied and re-studied over the years, and still remains the fundamental kind of information available. Most of the specimens that the taxonomist uses for this purpose are herbarium specimens: only from these can he obtain sufficient information about the ranges of variation of the different characteristics he uses, and of the geographical distribution of both characteristics and taxonomic units. Living plants, though valuable in helping to understand complex structures and in providing materials for more up-to-date techniques, are far too few and scattered in origin for this kind of study to be done using them alone. And garden material of unknown or dubious origin is of very little relevance at all.

So, the taxonomist must return to the herbarium specimens for his basic data. Most of the evidence provided by these is not in dispute; but classification is a process of arranging information – and the methods and principles of this arrangement have altered and improved

through the years. The crucial aspect of arrangement is the definition given to the various categories forming the taxonomic hierarchy – genus, subgenus, section, species, subspecies, variety and so on. In particular the definition of the species is very important, and I would like to spend a little time explaining the principles on which we work.

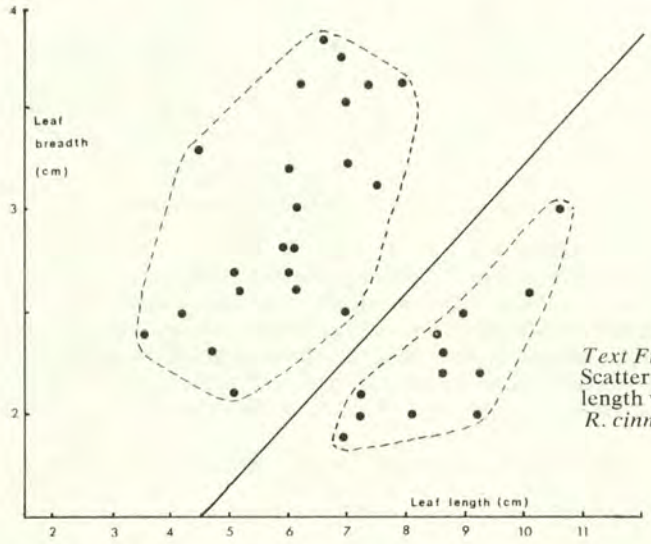
When faced with the flood of new material, Balfour took the view that it was necessary to describe as a new species almost any specimen that did not fit definitely into an already known species. This is a perfectly acceptable procedure when much new material is coming to hand; the hope is that when the flow stops, some reassessment and consolidation can be done. Again, Balfour's death prevented his doing it, but a certain amount was done by Hutchinson and Tagg, and continued by Cowan and Davidian. However, none of these later workers indicated how they arrived at their particular view of what a species was.

Scientists have argued about the definition of the species for the last 200 years; and no definition that can be agreed by everyone has been devised (some of the definitions proposed, particularly those based on breeding behaviour, would have an odd effect when applied to *Rhododendron* – strict application of the so-called "biological species concept", which states that any plants which are capable of interbreeding and producing fertile offspring, belong to the same species, would reduce *Rhododendron* to very few species). However, among most taxonomists a set of tacitly agreed guide-lines has been evolved; these were first clearly formulated by the Swedish botanist Du Rietz in the thirties, and have since influenced taxonomists all over the world, as may be seen by a comparison of the species concepts used in such varied works as Babcock's monograph of *Crepis*, Hedberg's monograph of Afro-alpine vascular plants, *Flora Malesiana*, *Flora Europaea*, *Flora of Turkey*, etc. These principles, which we have applied to *Rhododendron*, may be paraphrased as follows:

(a) within a species there is continuity of variation – i.e. characteristics may vary but there are no gaps in the continuity of the variation.
(b) closely related species are separated by correlated discontinuities in the variation of at least two independent characteristics.
(c) species usually have a continuous eco-geographical range; closely related species usually do not overlap eco-geographically – i.e. they either occur in similar habitats in different areas, or, if they occur in the same general area, they occur in different habitats.

I would like to illustrate these points with a few examples. One of the most telling is provided by the group formerly known as the Cinnabarinum Series, known to us as Rhododendron Subgenus Rhododendron Section Rhododendron Subsection Cinnabarina. In the available literature on the group (*The Species of Rhododendron*, the various *Handbooks*) four species are recognised: *cinnabarinum* (with several varieties), *concatenans*, *xanthocodon* and *keysii*. The group as a whole is easily recognised – it has characteristically shaped, rather fleshy corollas, and, more significantly, it is the only lepidote group to produce abundant nectar, which collects as five droplets in the base of the corolla. On this basis of definition, we must add to the four species already mentioned, another one, recently described in the Triflorum Series – *R. tamaense*, which, on all grounds, morphological, anatomical and chemical (this is a point I will return to) is part of the Cinnabarinum group rather than the Triflorum group.

So, we have a group consisting apparently of five species. When we analyse it according to the criteria mentioned above, we find that the situation is not so clear-cut. The analysis is done by comparing all the available material, by measuring and tabulating various features of the plants themselves, and by plotting graphs, histograms, scatter diagrams and maps. A few characters will illustrate what I mean. We can plot a scatter diagram of leaf length versus leaf breadth, covering the whole range of material available; the result is shown in Text Fig. 1. Here we see leaf length as the horizontal axis, breadth as the vertical; the position of the longest leaf on each specimen is marked by a dot. The specimens

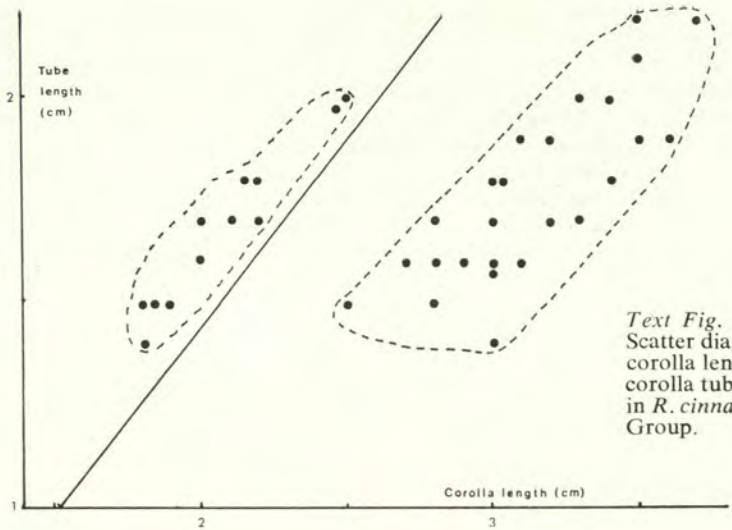


Text Fig. 1
Scatter diagram of leaf length v. breadth in *R. cinnabarinum* Group

fall into two groups, one on either side of the diagonal line, which is a constructed line at length = three times breadth. So all the plants to the left of the line have leaves less than three times longer than broad, all those to the right have leaves more than three times longer than broad. The two groups do not overlap at all. Thus, there is a discontinuity in the character of leaf length/breadth ratio. Note that there is no discontinuity in either length or breadth as such, but only in the ratio. On this basis, then, we can divide the whole into two groups.

Then we can make a similar diagram for the characters of total corolla length versus corolla tube length (Text Fig. 2). Here, again, the plants fall into two distinct groups, one on each side of the line joining the positions where the corolla length is $1\frac{1}{2}$ times the tube length. When we compare the groups found here with those in the previous example, we find that the group with the corolla tube long with respect to the total length is made up of the same plants as have leaves three or more times longer than broad. So, two independent characters, in which there is discontinuity in variation divide this whole group into the same two subgroups; i.e. there are correlated discontinuities in these two characters.

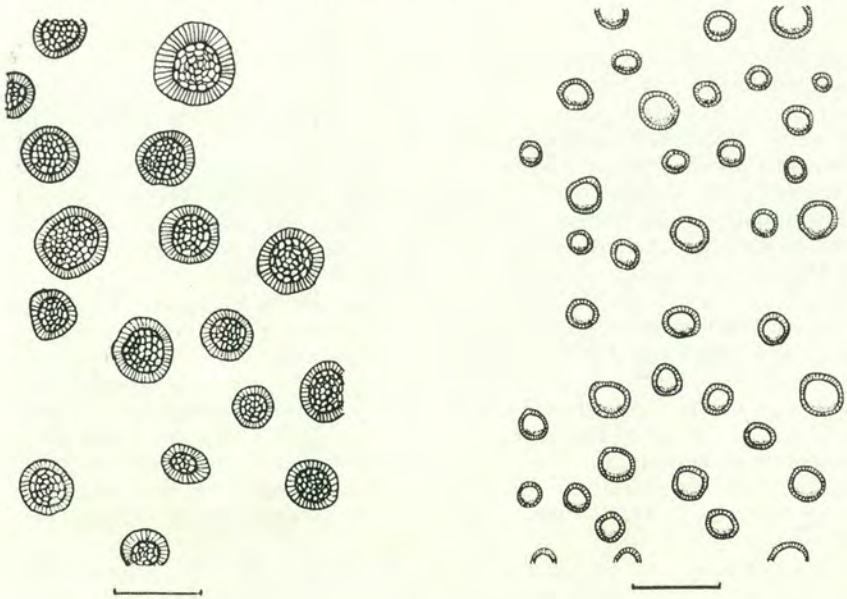
This process can be taken further. There are some characters which are of the "yes/no" type, and cannot be plotted on this type of diagram.



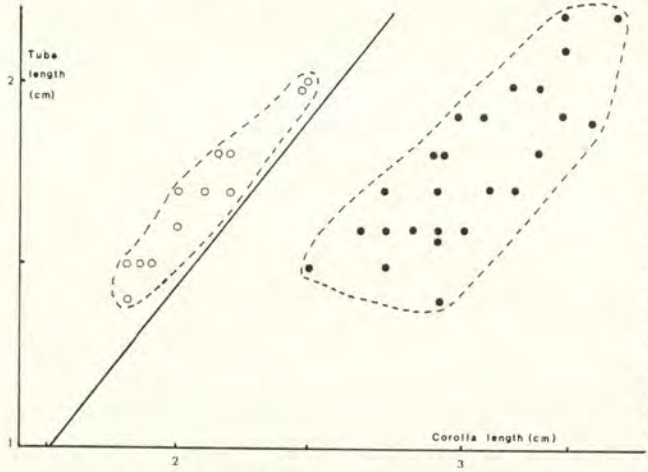
Text Fig. 2
Scatter diagram of corolla length v. corolla tube length in *R. cinnabarinum* Group.

A relevant example here refers to inflorescences: some plants of the group have lateral, axillary inflorescences, whereas others do not. Similarly, some have large, broad-rimmed leaf scales while others do not (Text Fig. 3). A quick survey of the material shows that all the plants that have lateral inflorescences have broad-rimmed leaf scales; i.e. there are correlated discontinuities in these two characters. We can combine these

Text Fig. 3 Scales of the *R. cinnabarinum* Group: left, large broad-rimmed scales. Right, small narrow-rimmed scales. The line below each set of scales is equivalent to 1 mm.



characters with the previous ones by marking, on the scatter diagrams, those with axillary inflorescences and broad-rimmed scales with circles, the other with dots. Text Fig. 4 shows this combined with the corolla



Text Fig. 4
Scatter diagram of corolla length v. corolla tube length in *R. cinnabarinum* Group. The circles are plants with axillary inflorescences, broad-rimmed leaf scales, etc: the dots are plants with terminal inflorescences, narrow rimmed leaf scales, etc.

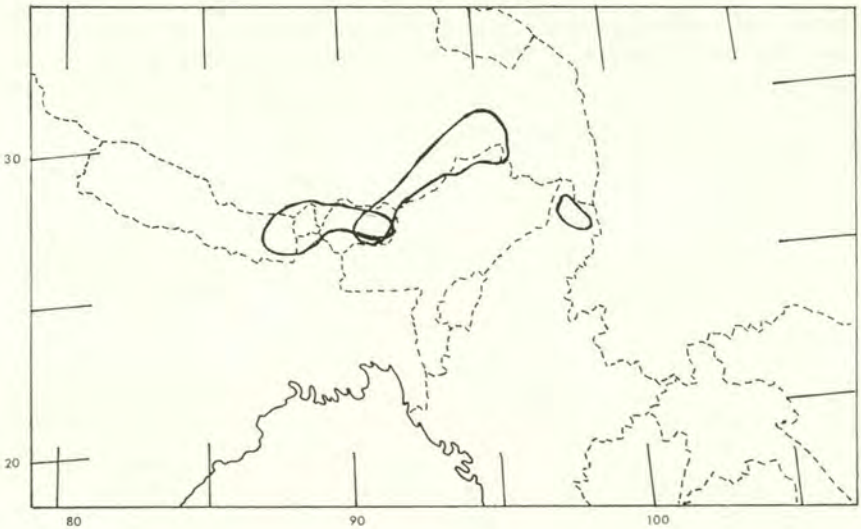
characters used in Text Fig. 2. It is clear that all these discontinuities are correlated, and that the two groups can be distinguished as follows:

(i) Inflorescences lateral; leaf scales broad-rimmed; leaves three or more times longer than broad; corolla tube long with respect to total corolla length;

(ii) Inflorescences terminal; leaf scales narrow-rimmed; leaves up to three times longer than broad; corolla tube shorter with respect to total corolla length.

Each of these subgroups can be analysed further, in the same manner, but using different characters. Analysis of the first group shows no character discontinuities whatever; variation in all characters is completely continuous. This all adds up to the fact that the first group of specimens represents a distinct species. It is the well-known *R. keysii*. When we compare the distributions of *R. keysii* and the rest, we find that they are broadly the same, extending across the Himalayas, from Nepal to Tibet. However, *keysii* and the rest are, as far as can be judged from the notes on herbarium labels, different ecologically, *keysii* being a forest plant, the rest being plants of open slopes and forest margins, never extending far into the forests. So *keysii* fulfills all the criteria mentioned earlier for recognition as a distinct species.

The rest of the group (i.e. *cinnabarinum* + *concatenans* + *xanthocodon* + *tamaense*) presents somewhat different problems. The group can be analysed by the same techniques; and it certainly shows plenty of variability. The most obvious is in corolla colour, which varies from red, through yellow, to purple. But equally significant variation occurs in corolla shape, leaf shape, degree of deciduousness, corolla scaliness and style indumentum. However, none of these characters show clear-cut correlated discontinuities, such as separate *keysii*. And flower colour is, in fact, revealed to be a most deceptive character, as a study of collector's field notes shows that various populations seen in the field exhibit mixtures of colours anyway. So flower colour cannot be used as an important taxonomic character.

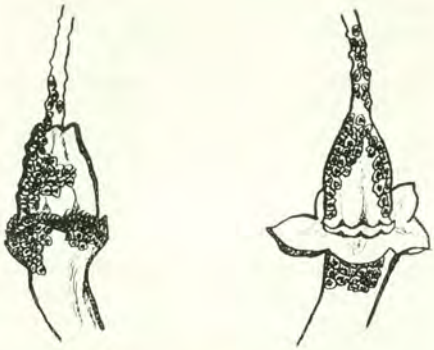


Text Fig. 5 Distribution of *R. cinnabarinum*

Instead of clear-cut correlations, the analysis reveals only trends or tendencies. These tendencies align themselves with geography in an interesting manner. For instance, *most* of the plants from the west of the range (Nepal, north India, Sikkim, west Bhutan) have evergreen leaves, generally 2.2 times or more longer than broad with cuneate bases, elepidote above, corollas mainly tubular and the base of the style glabrous; those from the east (Tibet) have evergreen or deciduous leaves less than 2.2 times longer than broad, with cordate or rounded bases, lepidote above, corollas tending to be campanulate, and the base of the style glabrous. In the middle of the range, in eastern Bhutan (Text Fig. 5), there is a complete mixture of the characters of the two ends.

In a case like this, we cannot distinguish species, as no correlated discontinuities occur. The variation is, however, correlated to some extent, both within itself, and with geography, and three overlapping units are discernible; these units are, however, nowhere entirely distinct, and two of them merge completely into each other in the middle of the geographical range. The third is geographically isolated, apparently, but continues the trends shown by the others. On this basis only one species can be recognised in the group, *R. cinnabarinum*, but it can be divided into subspecies, and I have recognised three subsp. *cinnabarinum* for the plants in the west, subsp. *xanthocodon* (an older name than *concatenans*) for the plants in the east, and subsp. *tamaense* for the isolated outlier. These three can only be distinguished using combinations of characters and a knowledge of the plants origins. Hence Subsect. Cinnabarina consists of two species, one divided into subspecies.

If we had found similar variation in morphology, but without the geographical basis, then the units of *R. cinnabarinum* would have been recognised as varieties.



Text Fig. 6
The ovary and style type in Subsection Maddenia.

I am sure you will wonder about the variation in flower colour, which is so important from the gardener's point of view. I have already mentioned that flower colour varies from plant to plant in some populations. In particular, the amount of purple coloration in basically yellow flowers is highly variable; some yellow flowers are yellow and remain so; some develop a purple flush as the flower ages; some have a purple flush in bud; some are altogether purple. Seed offspring from individual plants varies in the same way. The chemistry of these flower pigments, which has been investigated by Harborne, is very simple, with all the coloured compounds being very similar chemically; the step from yellow to purple is a short and easy one in chemical terms, the preponderance of one or other resulting in the visible colour of the flower. So, from the point of view of botanical taxonomy, flower colour is not an important character. If it is important in gardens then the rank "cultivar" is appropriate, and I would recommend its use, e.g. *R. cinnabarinum* subsp. *cinnabarinum* 'Blandfordiiflorum', *R. cinnabarinum* subsp. *xanthocodon* 'Concatenans'. I know that *Rhododendron* enthusiasts in America do not like this idea, but it is entirely in conformity with the International Code of Horticultural Nomenclature.

In describing this process, I have, of course, had to be extremely selective. The actual process of comparison of specimens, taking measurements and plotting diagrams and maps, can be very time-consuming. And important characteristics can be easily overlooked. For instance, in revising Subsect. Maddenia (Maddenii Series), I had great problems in separating many of the species. Eventually, after much searching and comparing, I found a totally neglected character that turned out to be very important. This is the nature of the top of the ovary and insertion of the style, Text Fig. 6. In most of the group the top of the ovary is impressed, and the style fits into the hollow in it (Fig. 6, left) – this is the normal situation in most rhododendrons, and, indeed, the Ericaceae as a whole. In one group of species, however, the ovary tapers into the style (Fig. 6, right). This character provides an important clue in the classification of the group, and it is also interesting that the tapering ovary is characteristic of the Malesian Rhododendrons of Sect. Vireya.

By using these methods Dr Chamberlain and I have been working through the various groups of the genus, defining the species. As this work has gone on, it has become clear that the groups (the series) are not always as homogeneous or as distinguishable from each other as

they might be, and that species have to be moved from one group to another. In this way, distinctive species in definable groups that can be relatively easily recognised and keyed, can be produced.

A considerable help from this point of view has been the new information that has become available as a result of the application of new techniques; and I would like to touch briefly on some of these, outlining the way in which they help us to produce a better classification.

2. New Evidence

A great deal of work has already been done on the chemical constituents of rhododendrons. In 1971 Harborne and Williams published an account of the phenolic constituents of some 200 species. And, from 1974, we have been studying the leaf wax constituents of as many species as possible. The basic chemical work has been carried out by Dr B. A. Knights of Glasgow University, and we owe him a great debt for the intensive work he has put in on our behalf. The method used involves gas liquid chromatography, the details of which I will not attempt to explain, as I am not a chemist. All that I need say is that some 60 different chemicals have been identified in the leaf waxes, and it is their distribution in the genus that is of taxonomic interest.

I have already mentioned that the leaf wax analysis showed *R. tamaense* to be more similar to *R. cinnabarinum* than it was to species of the Triflorum group; but I would like to quote a further example from the work of Dr Chamberlain. One of the groups he has analysed is the Barbatum series; he was very impressed by its variability and lack of homogeneity. Various ways of improving the classification were tried, but the final clinching detail was provided by chemical information. This suggested, on general grounds, that the three subseries recognised in the group were not particularly closely related; and further, that the division between Subseries Crinigerum and Glischrum was not soundly based. In particular, this last conclusion was reinforced by the occurrence of three compounds, closely related to each other chemically, and probably sesqui- or diterpene-alcohols. These occurred only in *R. crinigerum, R. glischrum, R. glischroides, R. rude* and *R. habrotrichum;* they were absent from *R. bainbridgeanum, exasperatum, hirtipes, diphrocalyx* and *spilotum.* Examination of other evidence indicates that the first six (i.e. those containing these compounds) form a natural identifiable and homogeneous group which Dr Chamberlain recognises as Subsect. Glischra. The other six do not form a homogeneous group; they vary among themselves, and can be accommodated elsewhere: *R. bainbridgeanum* and *hirtipes* in Subsect. Selensia, with which they are chemically very similar; *R. exasperatum* in Subsect. Barbata; and *R. diphrocalyx* and *spilotum* in other Subsections not yet fully revised. Though these transpositions are based on chemical evidence, the groups so formed are fully recognisable morphologically, and can be keyed out successfully.

Chemical work also indicates the distinctness of the Anthopogon Series, which we recognise as Section Pogonanthum. These plants are the only rhododendrons to contain branched-chain hydrocarbons in their leaf waxes; and they also contain aromatic compounds not found anywhere else in the genus. These chemical characters, combined with the more usual ones of scale type and corolla shape, render this group one of the most distinctive among the lepidotes. It is "more different"

from all the rest than they are among themselves; therefore it is necessary to recognise it at a higher taxonomic level. This is why it is treated as a Section, while most of the other series are treated as Subsections.

Various other up-to-date methods are in use, some of them repeating, in greater depth, work already done in the last thirty years. The leaf anatomy, studied by Hayes, Keenan and Cowan in the fifties, is being completely re-done. This is necessary because Hayes and his colleagues kept no voucher specimens of the plants they examined, so there is no possibility of checking back on the identities of most of the plants they used. The same, unfortunately, applied to Janaki-Amal's work on chromosome numbers. All of this work will have to be done again, with the proper scientific safeguards of voucher specimens.

A further field of study that has opened up recently is that of the detailed study of the scales and leaf surfaces. Two methods can be used. Firstly, photography of the scales, in accurate colour at magnifications of up to 100, is now a possibility, using a Wild stereo-binocular dissecting microscope with a fibre-optic lighting system that provides unilateral light in a very concentrated, narrow beam. Secondly, it is possible to take this study further by the use of the scanning electron microscope, which produces photographs of surfaces at magnifications of up to 30,000. I think the combination of the accurate colour of the light microscope slides, and the fine detail of the SEM pictures make possible the identification of every rhododendron from its leaves alone. And there is no doubt that careful comparison of all available species, using these means, will provide new and valuable taxonomic information which we can use for both the definition of species and the elucidation of their relationships.

All this work has been continuing for the last four years. And we are now in a position to begin publication of the results, in the form of revisions of the various groups. However, the first paper to be published will be a synopsis of the genus as we have so far revised it. This will appear in an early number of the *Notes from the Royal Botanic Garden, Edinburgh* and should be available early in 1978. Most of the publication will take the form of standard taxonomic revisions, citing correct names and synonyms, type specimens, and giving descriptions, distributions, lists of specimens examined, and maps. We are attempting to map every species we recognise: this is a formidable task, as most of the specimens are Chinese, and there are special problems in locating Chinese place names on up-to-date maps. However, we have been fortunate in gaining the assistance of Mr John Bartholomew of J. Bartholomew & Sons, the map makers who were responsible for the cartography of the recent *Times Atlas of China.* With his assistance we hope to be able to produce accurate maps.

Finally, we hope to be able to produce, in some years time, an index of wild-collected rhododendrons in cultivation. In order to do this we will need the help of all rhododendron growers. Such an index would be a most useful document, not only for growers, but for scientists and others interested in rhododendrons.

I am very pleased to have had this opportunity to talk to you tonight. I will be happy to try to answer any questions, though I am afraid I am not able to give you very much detail on the elepidote groups.

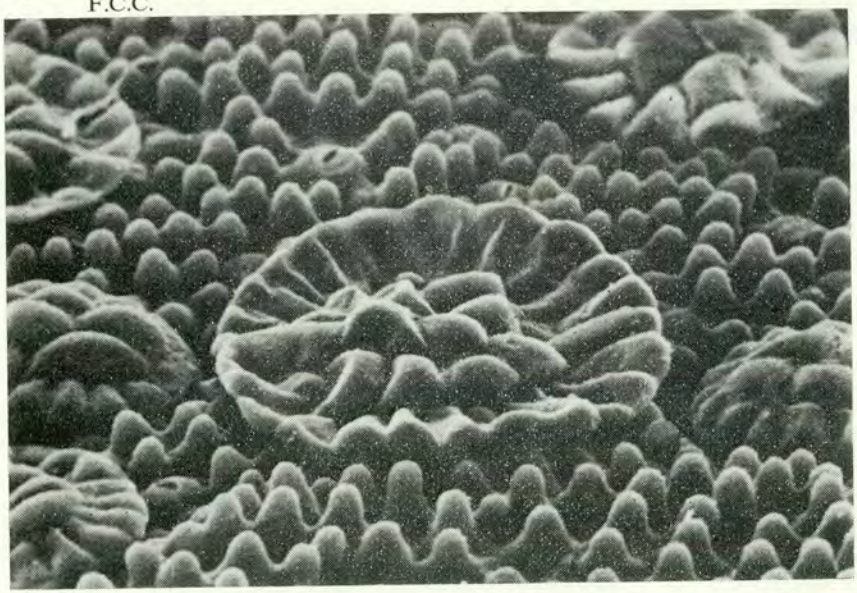
The Underside of Rhododendron Leaves seen by the Electron Microscope

GERALD MANLEY and PETER GARLICK

There is a fascination about the underside of a rhododendron leaf which makes the connoisseur unable to resist an occasional furtive peep. The upper surface of the leaf is mainly concerned with the basic problem of converting the sun's light into food – a sort of solar energy panel – but the underside is concerned with a number of more subtle adjustments of plant function which has led to the development of a variety of minute appendages of great visual beauty. The fox-red fur beneath the leaves of *bureavii*, the speckled azure wax under a leaf of *lepidostylum*, the deep pile of hazel felt under a young leaf of *yakushimanum* – these are the exquisite fine-points of rhododendron beauty, familiar to the erudite.

Seated at the controls of a scanning electron microscope (which uses a beam of electrons, rather than light, to form an image) the underside of a rhododendron leaf becomes the surface of a new and strange planet. One may skim, as if in a satellite, over the tangled hairs of an elepidote unable to see deeply enough into the darkening chasms to pick out the surface below, or coast slowly over the wonderfully beautiful surface of a scaly rhododendron, finely-sculptured scales sitting on an undulating terrain of waxy papillae like some new art-form (Fig. 5).

Fig. 5 Finely sculpted scales and undulating papillae of R. 'Lady Chamberlain' F.C.C.



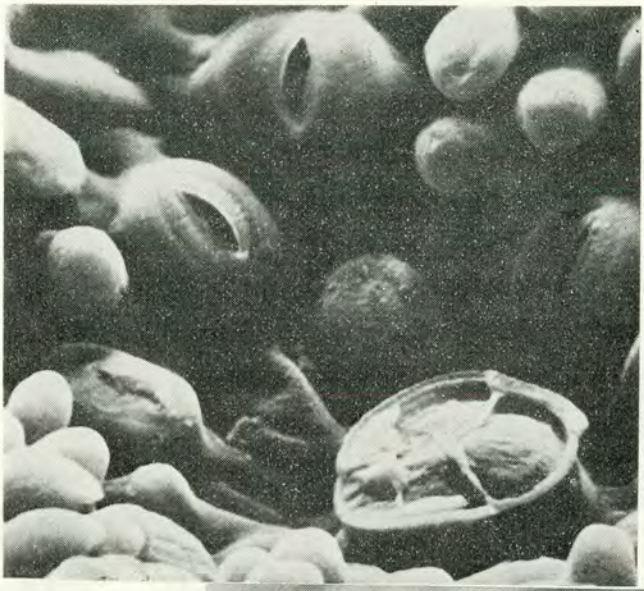


Fig. 6
A high powered view of the bottom of a pit showing the concentration of stomata in this region

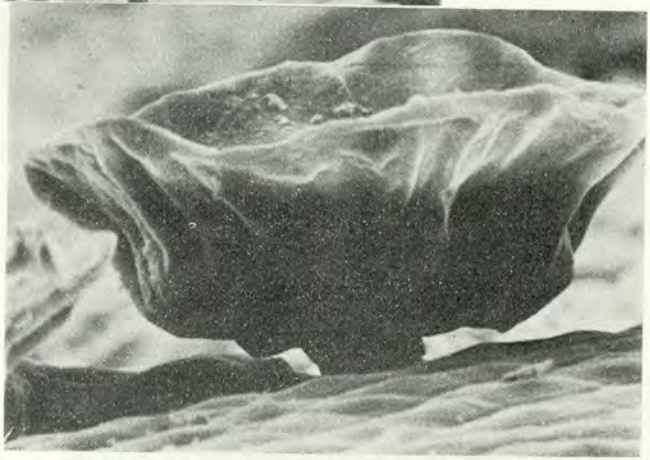


Fig. 7
Side views of a scale of R. 'Fragrantissimum', showing the stalk

John MacQueen Cowan carried out exhaustive studies of the rhododendron leaf in the 1940's, using the techniques of light microscopy then available, and his work culminated in the publication of *The Rhododendron Leaf* (1950) in which he used the collective term trichome for the various epidermal appendages of the leaf. The major types he described were (1) Papillae – short projections from the surface cells of the leaf which are often waxy and ensure that the underside of the leaf is not easily wetted; (2) Hairs, which he classified into various sorts according to their complexity. These often build up into a dense indumentum which helps to check the loss of water-vapour from the leaves, and (3) Scales, which again were classified into various types according to their shape and complexity.

The functions of these trichome types are complex. It is thought that the waxy papillae prevent the undersurface of the leaf from being wetted by water, thus allowing the transpiration of water vapour and other

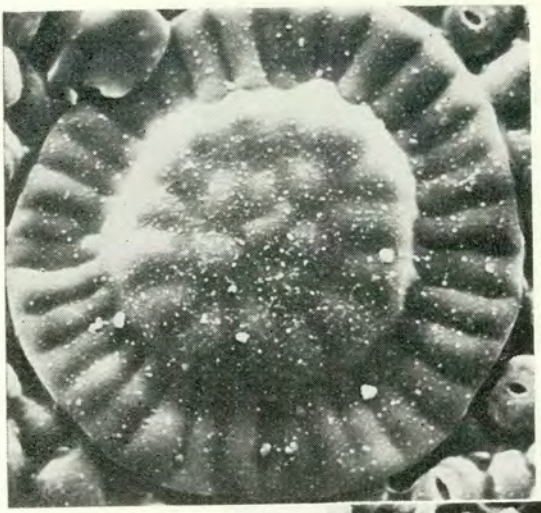


Fig. 8
Underside of a leaf of *R. davidsonianum* F.C.C. showing a scale with several stomata lying just at its rim

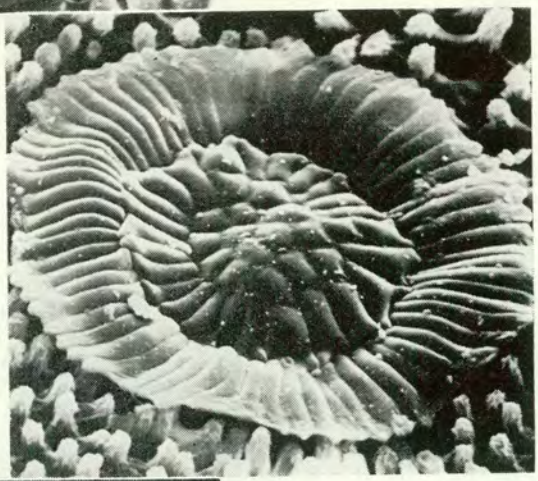


Fig. 9
Undulate scale of *R. scintillans* showing extreme development of rim and prominent, waxy papillae

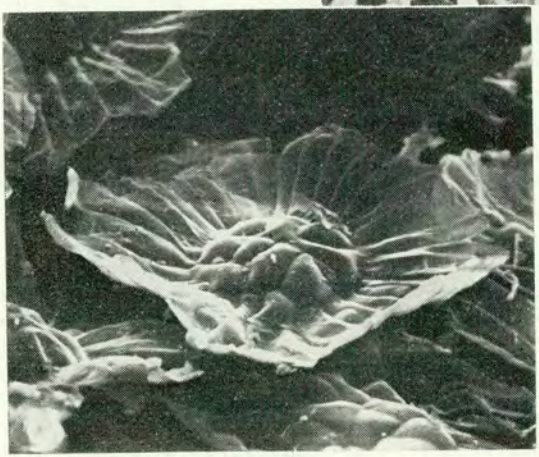


Fig. 10
Densely-packed lacerate scales on the underside of the leaf of *R. anthopogon*

gases to proceed through the small openings (stomata) on the underside of the leaf even in the wettest conditions. The dense indumentum on the underside of many rhododendron leaves helps to conserve moisture, creating a humid atmosphere over the undersurface of the leaf which prevents excessive loss of water vapour through the stomata in hot dry weather. Cowan noted a correlation between altitude and indumentum in rhododendrons, species from the higher elevations which have to withstand greater extremes of climate being, generally speaking, those with a denser indumentum. The scales are presumed to serve a similar function, protecting the leaf against excessive loss of water vapour. Scales may also secrete resin which, in some species, may dry in summer to form a protective, varnish-like layer beneath the leaf. Scales are also thought to be capable of absorbing water and nutrients, and of excreting water during unusually wet weather.

In order to explore further the role of scales in limiting water loss, we wanted to see what lay beneath them. We dissected off a number of scales from a leaf of 'Lady Chamberlain' F.C.C., and in the electron microscope the little pits that lay beneath the scales could easily be identified, with the broken stalk of the scale lying at the bottom. A closer examination of the bottom of the pits showed a high concentration of stomata in this region (Fig. 6), and clearly water loss from these would be greatly reduced with the scale sitting tightly over the pit. It is thought that the stalk of the scale expands in damp weather, so that the scale rises above the surface of the leaf, allowing the stomata to transpire water vapour, but in dry weather the stalk shrinks, clamping the scale down tightly over the pit and thus reducing the loss of water vapour. The stalk of a scale on the underside of a leaf of 'Fragrantissimum' can be clearly seen in Fig. 7.

Despite the concentration of stomata in the pits beneath the scales, one can find numerous stomata unprotected by scales. These are clearly shown in the electron micrograph of *R. davidsonianum* (Fig. 8), where several stomata can be seen just beyond the rim of the scale.

Perhaps the most beautiful development of scales is seen in the species from the higher altitudes, which is what one expects if they are developed as a protection against extremes of climate. The lovely undulate scales of *R. scintillans* show an extension of the rim to cover a larger area of the leaf (Fig. 9). In some species the rim of the scale is developed into a most attractive frill. In the Anthopogon Series, the striking lacerate scales (Fig. 10) are so densely packed that one hardly catches a glimpse of the stomata, which presumably lie snug beneath the scales, oblivious to the biting winds of the Himalayan climate above 10,000 ft.

The scanning electron microscope, which was developed in Britain, will undoubtedly contribute to our scientific understanding of the genus *Rhododendron*, but it is rather nice to find that it can also add another dimension to our appreciation of their beauty.

Rhododendrons from Stem Cuttings

K. LOACH*

Frederick Street wrote, "The longer I live the less I seem to know about propagating rhododendrons", and whilst he was referring to irregular results from grafting, it might just as readily have been said about propagation from cuttings. A whole range of interacting factors govern success in rooting stem cuttings, some outside the control of the propagator. In consequence, results vary even for the professional. Our aim must be to exert maximum possible control over the "manageable" factors, and as our knowledge and experience increase, so will the degree of control.

A wealth of unrecorded information on rhododendron propagation undoubtedly resides with experienced propagators, both amateur and professional. It is not always of an easily communicable nature, e.g. the "feel" of the stem when cuttings are best taken, but, at the risk of missing some of the quintessential features governing success, I shall lean more heavily on results verified by experiment. The amount of controlled experimentation in this field has been regrettably small and, in general, concerns the propagation of hardy hybrid rhododendrons rather than the species.

The principles of rooting rhododendron cuttings were outlined as early as 1929 by F. P. Knight (in an article reproduced in *Rhododendrons 1976*). At that time, cuttings were usually rooted in a cold frame, often under a bell-glass. Since then, four major advances have been introduced, viz. the use of intermittent mist systems, basal heat to encourage root initiation, rooting hormones and polythene film. This latter, simple but nevertheless significant, has provided an effective but inexpensive alternative to mist, appealing to both amateur and professional alike.

The advantages of propagation from cuttings rather than from grafts, layers or seed are well known but worth repeating. Vegetatively propagated plants reproduce the true characteristics of the parents whereas seedling progeny vary. Layering gives far fewer progeny from a mother plant than is obtainable from cuttings and is more expensive of time and labour. For grafting, production of a suitable rootstock takes up to three years from seed and it is also claimed that plants on their own roots are more vigorous and flower earlier. Certainly they are free from suckering, which can spoil grafted plants. Plants on their own roots are also said to be less susceptible to attack by the root-rotting fungus, *Phytophthora cinnamomi*.

Traditionally, rhododendrons fall into two groups as far as propagation is concerned and these are differentiated in terms of leaf size and plant vigour. The large-leafed rhododendrons, including the hardy hybrids, are most frequently propagated from cuttings taken in autumn, whilst the smaller-leafed species and hybrids (e.g. of the Lapponicum, Moupinense, Uniflorum and Thomsonii series, the *R. yakushimanum* and *R. ciliatum* hybrids) are more usually inserted in summer. Both groups can in fact be propagated at other times.

*Glasshouse Crops Research Institute, Littlehampton, W. Sussex.

The hardy hybrid cultivars differ greatly in their ease of rooting from cuttings. Some are consistently difficult (e.g. 'Britannia') so that many nurseries prefer to produce them by grafting. Other difficult cultivars (including 'Everestianum', 'Dr H. C. Dresselhuys', 'Purple Prince', 'Earl of Donoughmore', 'Hollandia') give inconsistent but seldom exceptional results. Yet others might be classified as "intermediate-to-good" rooters (e.g. 'Pink Pearl', 'Cynthia', 'Purple Splendour', 'Gomer Waterer') and some root very readily most of the time (e.g. 'Cunningham's White', 'Roseum Elegans', 'Betty Wormald', 'Lady Mitford', 'Mum'). Any listing in order of ease of rooting, will inevitably be a subject for dispute amongst experienced propagators because of the wide variation in performance of different cultivars both within and between seasons.

Perhaps the most important factor influencing success in rooting is the timing of taking cuttings. As little as two weeks difference in timing can have a considerable effect and James Wells reports an instance where cuttings of *R.* 'Ignatius Sargent' taken on August 16 gave 36% rooting while 74% of cuttings from the same plant on September 5 rooted. However it is easier to demonstrate the importance of timing than recognise with any certainty, just when the condition of the cutting is optimal. The experimental results are too inconsistent to be very helpful.

In commercial nurseries, stem cuttings of the hardy hybrids are most often taken in the months September to December, from the mature current season's growth. There is good evidence that in common with most other plants, softer material roots more readily than fully mature cuttings and perhaps organisational convenience plays a role in favouring the later propagation on nurseries. Earlier insertion is often helpful for difficult-to-root plants, and those cultivars which break bud early in spring (e.g. 'Lee's Dark Purple', 'Purpureum Elegans') and are advanced in shoot growth, can also profitably be taken at this time.

It is often held that within the autumn/winter period, cuttings taken late (December to February) root better than those taken earlier. At the Boskoop Experimental Station in Holland, cuttings from a range of hardy hybrids were taken at the beginning of October, November and December. Overall rooting percentages, averaged over four years, were 66%, 64% and 71% respectively, indicating only a minor difference, and this accords with results elsewhere. Two difficulties arise with cuttings taken later than December. First, the dormant buds have frequently been chilled by this time and tend to break in the propagation bench, giving soft growth prone to fungal attack and susceptible to drying out. Secondly, plants produced from cuttings taken in January to March, become established later than those from autumn cuttings and make less growth in the first season.

The inconclusive results from experiments designed to determine the optimal time for taking cuttings are perhaps not too surprising. Specification by calendar date is inadequate, if only because the weather varies from year to year and influences the developmental stage of the shoot. Moreover, not all the shoots on a stock plant begin or cease growth simultaneously and the propagation conditions in a glasshouse are also weather-dependent. Recognising these problems, American researchers have tried to predict the optimal time for taking cuttings using an index of the developmental stage of the material, i.e. the number of days from when the developing flower bud attained a specified size. Their results suggested that flower bud development competes with

the rooting process and their index did in fact help to identify irregular periods of rooting with certain developmental stages. Since most propagators in fact remove the flower buds from both cuttings and stock plants to achieve best results, the value of this developmental index is questionable.

If cuttings are to be taken from stock plants specially maintained for that purpose, then treatments designed to improve the yield and rooting of cuttings can be undertaken. Flower buds should be removed from plants just as they begin to swell. This encourages the production of several vegetative side-shoots and if the plant is likely to produce a second flush of growth (as most young plants will), then a second pinching of the new terminal bud will again multiply the cutting material. Cuttings with a low nitrogen content root best, so that any use of nitrogenous fertilizers should be tailed off well before cuttings are taken. Many rhododendron specialists keep their stock plants in shaded conditions, believing that this improves the rooting capacity of their cuttings. A controlled experiment in the U.S. showed that stock plants of *R.* 'Roseum Elegans' grown in deep shade (95% shade), did not flower, and produced cuttings which rooted better than those from open-grown plants. Growing stock plants under 50% and 75% shade did not improve the rooting of their cuttings and light shade (25%) was even detrimental. Most amateurs will wish to propagate rhododendrons from specimen bushes after they have flowered. In this case "dead-heading" is recommended and any late-season fertilizer applications again avoided.

As with most other plants, rhododendron cuttings from shoots of intermediate vigour root best, i.e. strong, thick shoots from the top of the bush should be rejected in favour of thinner side-shoots. Cuttings are best collected on dull days, or early in the morning, when they are under least water stress. They should be kept cool and moist, e.g. in a polythene bag in shade or in a refrigerator until inserted. Only the current year's growth should be included. Before insertion, cuttings should be trimmed to 7 to 10 cm, any remaining terminal flower buds and all except four leaves removed and the stem base wounded. Wounding has been shown to increase water uptake and tissue respiration at the cutting base, to promote meristematic activity. It consists of removing a slice of tissue 3 to 4 cm long from the base of the stem. Researchers at Boskoop Experimental Station compared deep and normal wounding, i.e. slicing into the wood versus removing a thin slice of bark only, in a range of hardy hybrids, over several years. In each year, deep wounding proved marginally better than shallow (averaging about a 5% increase in rooting). Finally, in large-leafed cultivars (e.g. 'Mrs Lindsay Smith', 'Exbury Naomi', 'Leonardslee Giles') the leaves are trimmed back by one third. The wounds soon heal and leaf turgidity is unaffected.

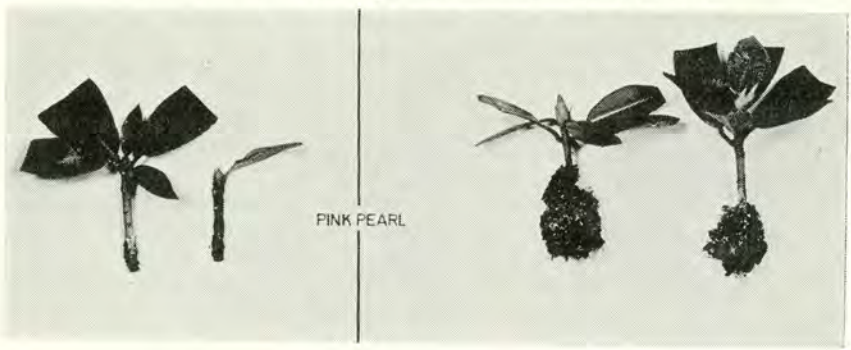
The next important consideration is the use of rooting hormones, which can greatly improve rooting. Indole butyric acid (IBA) is the most frequently used compound, applied in talc to the cutting base. The concentrations used vary widely. In the U.K. 0.8% IBA in talc is most common, but in the U.S. slightly higher concentrations tend to be used, e.g. 0.8-1% for "easy rooters" or early-season cuttings, 2% for difficult subjects. In Holland, use of much higher concentrations (4-8%) is common and it is difficult to resolve the relative merits of these different usages. In an American study, where concentrations from 0.1 to 2% IBA were used on easy and difficult cultivars, 0.5 or 1% proved best for the former and 1.5 or 2% for the latter. In Holland, 4% proved

better than 8% for rather soft cuttings taken in October but it is claimed that many difficult cultivars benefit from the higher concentration. It seems clear from these varied results that concentration is not too critical and a sensible procedure is to have available a lower concentration for soft and easy-rooting material and a higher concentration for hardwood or difficult material (say 1% and 2% or nearest available concentrations).

Synergistic combinations of IBA with other hormonal compounds have been recommended for difficult cultivars. The commonest additives are naphthyl-acetic acid (NAA) at 0.025 to 0.1% and 2, 4, 5-trichlorophenoxy alpha propionic acid (2, 4, 5-TP) at 0.1-0.25%. Also, boric acid (at 50 ppm) is claimed to improve rooting and there is good evidence that incorporation of fungicides into the hormone powder is beneficial both for disease prevention and possibly, through their additional hormonal action. Captan, thiram and benlate are most commonly used. Again there are widely divergent opinions as to the relative value of these different compounds and a discussion of their merits would be out of place here. For most amateur propagators the choice is restricted by the availability of suitable commercial preparations. (A recent list of these was given in *Gardener's Chronicle/HTJ*, October 1, 1976.) The prepared mixtures of IBA, NAA and a fungicide are too weak for most rhododendrons, but by combining several commercial products, a suitable mixture can be achieved. Suggestions based on a thorough survey of experimental results are given in Table 1. The hormone and fungicide powders should be weighed out, placed in a tightly sealed jar and shaken very thoroughly to assure good mixing. The most enterprising propagators may wish to purchase the pure hormones and talc from chemical supply houses to mix their own formulations, but the difficulty of mixing a very small amount of pure hormone with a large amount of talc to ensure an even distribution, is not easily overcome.

Alternative ways of treating cuttings with hormones include the "quick dip" method and the 24-hour soak. In the former, cuttings are dipped in an alcoholic solution of the hormone (e.g. 5,000 mg/l IBA in 50% methylated spirits) for 5 seconds and in the latter, they are soaked for up to a day in a weaker solution (e.g. 50 mg/l IBA). Both methods have their adherents but they have often been found less satisfactory than talc dusts.

Fig. 11 Rhododendron cuttings are susceptible to disease, and fungicidal treatments can greatly improve rooting. The two cuttings on the left were untreated, those on the right were treated with benomyl.



Because rhododendron cuttings take 2 to 4 months to root in the warm humid conditions of the propagation bench, they are susceptible to disease and the control measures adopted are important determinants of success. Cultivars differ in their susceptibilities and the degree of infection varies from year to year. Stock plants under the protected conditions of a glasshouse may yield "cleaner" cuttings than outdoor plants. A foliar spray of captan (3 g. 50% w.p./litre) applied to the stock plants three weeks before taking the cuttings is a sensible measure and after taking the cuttings, an initial dip in a similar solution is advisable. After allowing excess liquid to drain off, the basal 2.5 cm is dipped in the hormone/benomyl powder and inserted in the medium. Subsequently at 2 week intervals the cuttings and rooting medium should be watered with benomyl or captan at rates given in Table 1.

TABLE 1

1. *Cutting dip* Captan 3 g 50% w.p./litre (0.48 oz/gal).
2. *Hormone fungicide talc dust*

	Desired final concentrations (% active ingredient)		
	IBA	*Benomyl*	*NAA*
a) For easy rooting cultivars	1	2.5	—
b) For difficult cultivars	2	2.5	0.1

a) is achieved (approximately) by mixing 10 parts by weight of 1% IBA with 1 part of benomyl (50% w.p.).
b) is achieved by mixing 10 parts of 4% IBA with 1 part benomyl (50% w.p.) and 10 parts of 0.2% NAA.

3. *Drenches* Alternating applications every 2 weeks of:

a) Benomyl 0.3g of 50% w.p./litre (0.048 oz/gal).
b) Captan 1.5 g of 50% w.p./litre (0.24 oz/gal).

Peat is the basis for most rooting media for rhododendrons and sand, grit, perlite or styrofoam are commonly added. For propagation under mist a well-drained medium is essential and a mixture is generally preferred to pure peat. A rate of 50/50 peat/coarse sand is commonly used in the U.K. or 60/40 peat/perlite in the U.S. Under polythene, pure peat is satisfactory but a 50/50 peat/fine grit mixture is less easily waterlogged and serves equally well under mist.

The relative merits of propagation under mist and polythene are frequently discussed. For the amateur, polythene offers the advantages of simplicity and low cost. Because cuttings under polythene are not subjected to leaching as they are under mist, they tend to grow away better after rooting and do not suffer from the unsightly lime deposit that mist tends to leave on foliage. The major problem with polythene is evident in summer, when damaging air temperatures (up to 50°C) can occur beneath the sheeting unless it is adequately shaded. Mist on the other hand provides a useful cooling effect in summer so that damaging temperatures are avoided and the leaf-air vapour pressure gradient minimised, to keep the cuttings turgid. Direct measurements of cutting turgor, made at the Glasshouse Crops Research Institute, showed that cuttings under polythene were more turgid than under mist through much of the year, but the reverse occurred in summer.

Mist is therefore to be preferred for softwood cuttings in summer and polythene for hardwood cuttings, but properly managed, either system can give reasonable results most of the year. In winter an arch of polythene over the mist bench often helps cutting turgidity whilst for propagation under polythene, shade is essential above the propagation bench in summer.

The provision of bottom heat under trays of cuttings, provided by electric cables, is beneficial for rooting especially under mist. It is helpful though not absolutely essential under polythene. A 20°C. thermostat setting is suitable. We have found on occasions that a lower setting (15°C.) gives better results because rotting of the stem bases is reduced at the lower temperature. On the other hand, amongst unrotted cuttings, rooting was quicker and better at 25°C. that at either lower temperature. 20°C. presents a satisfactory and economical compromise.

At 2-week intervals when the fungicidal drench is applied (Table 1) any diseased cuttings or dropped leaves should be removed and the polythene reversed before replacement. When the cuttings are firmly rooted, careful weaning is essential before potting. This is achieved by switching off the base heat and progressively slashing the polythene over ten days or so, or by decreasing the misting frequency. The cuttings can then be potted into 10 cm pots using pure medium grade peat, and the terminal bud pinched out (if not already removed). Feeding should be started within two weeks, using initially a very weak solution of a proprietary liquid fertilizer. Early applications should contain not more than 10 mg/litre of nitrogen gradually increased in 2-weekly, and later weekly, applications. When new growth begins an application of sequestrene at recommended rates is often beneficial. Plants should be potted on as required and are best grown under shade until planting out in autumn or the following spring.

SMALL-LEAFED RHODODENDRONS

The basic elements of rhododendron propagation have already been described and only modifications for the small-leafed types need be detailed further. As previously noted, the small-leafed species and hybrids are traditionally propagated from softwood cuttings in summer but can in fact be taken through much of the year.

Stock plants placed under glass or polythene early in the year will produce spring cuttings that root readily. This is a particularly useful practice for the deciduous and semi-deciduous forms such as *R. mucronulatum*, *R.* × *praecox*, *R.* × *emasculum* and *R. yunnanense*. Rooted early in this way, the cuttings make appreciable growth before the first winter and survive better into the following year. Dr S. Waxman found that the survival of *R. mucronulatum* 'Cornell Pink' was related to the number of flower buds on the cuttings. Cuttings rooted readily whether or not they had flower buds, but those budded heavily did not survive well the following spring. Cuttings taken early, before many flower buds were initiated, had the highest rates of survival and even a week's difference could be critical, e.g. cuttings taken on 19 June had fewer than three flower buds and 84% survived in the following year, whereas cuttings taken on 26 June had initiated more than three buds and only 35% survived. As in the large-leafed hybrids, flower bud removal is a beneficial or even vital practice.

Other species of the Lapponicum, Neriiflorum and Thomsonii series can also be forced to produce early cuttings e.g. *R. impeditum*, *R. forrestii* and *R. williamsianum*.

Summer cuttings from outdoor stock plants taken when the wood is just beginning to harden off, root readily. For the very small-leafed evergreens, such as *R. fastigiatum*, *R. impeditum*, *R. scintillans* and the larger-leafed, more vigorous plants, e.g. *R.* × *emasculum* and *R. yunnanense*, this will normally be in late June or early July. Nodal cuttings

from 2 to 8 cm long (depending upon the length of the new growth), and with 3 or 4 leaves, will root readily in about a month and make further growth before winter. Wounding is not necessary but use of hormone powder (ca. 0.3% IBA) is helpful. For this summer propagation, mist often gives better results than polythene, though polythene can be quite satisfactory, providing care is taken to shade the cuttings heavily on the brightest days.

More mature cuttings taken in late August and September also root well but make little or no growth in the first year. A stronger hormone (up to 0.8% IBA) should be used.

At the Kinsealy Research Centre, the small-leafed rhododendrons are propagated from hardwood cuttings in February, using polythene on heated benches (20°C. setting). Basal or nodal cuttings, with flower buds removed (where practicable), are wounded and treated with 0.8% IBA powder. Rooting is 60-80% in 8-10 weeks and after hardening off, the rooted cuttings are grown in pure peat, in a frame for the first season.

LIGHTING AND RHODODENDRON PROPAGATION

Low intensity artificial lighting has been used by professional nurserymen at two stages in the production cycle:

a) in the propagation bench to improve rooting
b) to encourage cuttings into early and even growth, so as to maximise the size attained in the first year.

Only low light intensities are required, e.g. from 100W tungsten filament lamps set 2 metres apart and 1 metre above the bench, and the lamps are used simply to extend the natural daylength to 18 hours. There is sound evidence for some species and varieties that both practices are beneficial but they are of more interest to the professional grower than the amateur.

Two New Rhododendron Species*

H. H. DAVIDIAN

Rhododendron bergii Davidian, sp. nov.

Species *R. augustinii* Hemsl. affinis sed corolla rubra, habitu compacto, foliis supra nitentibus recedens.

Frutex compactus, 1.50-2.75 m. altus; ramuli moderate vel dense lepidoti, floccosi vel glabri, perulis deciduis. Folia sempervirentia; lamina coriacea, lanceolata, oblongo-lanceolata vel oblonga, 4-7.8 cm. longa, 1.6-3.3 cm. lata, apice acuta vel acuminata et mucronata, basi obtusa vel cuneata, supra atroviridis nitens lepidota vel elepidota glabra vel sparsim puberula, costa media puberula, infra pallide viridis, squamis inaequalibus mediocris vel magnis brunneis inter se 1-3 diametris distantibus praedita, glabra, costa media dense vel moderate pubescentia; petiolus 0.6-1.6 cm. longus, lepidotus, pubescens vel glaber, floccosus. Inflorescentia terminalis, vel terminalis et foliis summis 1-3 axillaris, umbellata 3-5 flora, bracteis persistentibus vel deciduis; rhachis 2-3 mm. longa, lepidota, glabra; pedicelli 0.7-2 cm. longi dense lepidoti, glabri. Calyx 5-lobatus vel annularis tantum, minutus 0.5-1 mm. longus, lobis rotundatis vel ovatis, extra dense lepidotis, glabris, margine ciliatis.

*Reprinted from *The American Rhododendron Society's Quarterly Bulletin*, Volume 30, No. 4.

Corolla late infundibuliformis zygomorpha, 2.7-3 cm. longa, 5-loba, rubra postice atro-rubro-maculata, extra lepidota, glabra vel tubo pubescens. Stamina 10 inaequalia longe exserta, 1.2-2.5 cm. longa; filamenta basim versus pubescentia. Ovarium oblongum vel conoideum, 2-3 mm. longum, 5-loculare, dense lepidotum, glabrum; stylus gracilis rectus, corollam aequans vel ei longior, elepidotus, glaber. Capsula oblonga, 0.7-1 cm. longa, 4 mm. lata, dense lepidota, calyce persistente.

N. W. Yunnan. Shui-lu Shan, west of Wei-Hse. Lat. 27 degrees 12′ N. Long. 99 degrees 12′ E. Rhod. Shrub of 5-6 ft. In fruit. In thickets and amongst scrub in side valleys on rocky slopes. Alt. 13,000 ft. Oct. 1924. George Forrest No. 25914 (Holotype in Herb. Hort. Bot. Edin. Details of the flower are taken from a cultivated plant).

This plant was at first described as *R. augustinii* var. *rubrum*, a native of Yunnan. It is so distinct in cultivation that it merits specific rank. The name "Rubra", in binary combination, has already been used in naming several hybrids. In order to avoid confusion, the Yunnan plant must receive a new name.

*R. bergii** was discovered by Forrest in October 1924 at Shui-lu-Shan, north-west Yunnan, growing in thickets and amongst scrub in side valleys on rocky slopes at an elevation of 13,000 feet.

The species is a member of the Augustinii Subseries, Triflorum Series. It is related to *R. augustinii*, from which it is readily distinguished by the red flowers, by the compact habit, and by the shining upper surface of the leaves. Moreover, in cultivation it flowers in March or early April, three or four weeks before *R. augustinii* has opened its flowers.

The plant has long been in cultivation under Forrest No. 25914 – Type number. It is hardy, free-flowering, and is worthy of being widely grown.

The species is named after Mr and Mrs Warren E. Berg, Kent, Washington, U.S.A., in recognition of their outstanding contributions to the cultivation of rhododendrons.

A compact shrub, 1.50-2.75 m. high; branchlets moderately or rather densely scaly, sparsely hairy with long hairs or glabrous, leaf-bud scales deciduous. Leaves evergreen, lanceolate, oblong-lanceolate or oblong, lamina coriaceous, 4-7.8 cm. long, 1.6-3.3 cm. broad, apex acute or acuminate, mucronate, base obtuse or tapered; upper surface dark green, shining, scaly or not scaly, glabrous or sparsely puberulous, midrib puberulous; under surface pale green, scaly, the scales unequal, medium-sized or large, brown, 1-3 times their own diameter apart, glabrous, midrib rather densely or moderately pubescent; petiole 0.6-1.6 cm. long, scaly, pubescent or not pubescent, hairy with long hairs. Inflorescence terminal, or terminal and axillary in the uppermost one to three leaves, umbellate, 3-5 flowered, flower-bud scales persistent or deciduous; rhachis 2-3 mm. long, scaly, glabrous; pedicel 0.7-2 cm. long, rather densely scaly, glabrous. Calyx 5-lobed or a mere rim, minute, 0.5-1 mm. long, lobes rounded or ovate, outside densely scaly, glabrous, margin ciliate. Corolla widely funnel-shaped, zygomorphic, 2.7-3 cm. long, 5-lobed, red, with deep red spots on the upper lobes, outside scaly, glabrous or pubescent on the tube. Stamens 10, unequal, long-exserted, 1.2-2.5 cm. long; filaments pubescent towards the base. Ovary oblong or conoid, 2-3 mm. long, 5-celled, densely scaly, glabrous; style slender,

*"Variety *bergii*" under *R. ciliatum* in *The Rhododendrons Of The World* page 146 by D. G. Leach, is a nomen nudum. It bears no relation to *R. bergii* above.

straight, as long as the corolla or longer, not scaly, glabrous. Capsule oblong, 0.7-1 cm. long, 4 mm. broad, densely scaly, glabrous, calyx persistent.

Rhododendron piercei Davidian, sp. nov.

Species *R. beaniano* Cowan affinis sed habitu compacto patente, 1.20-1.50 m. alto; ramulis et petiolis esetulosis, foliis infra indumento bistrato brunneo supra paulo rugulosis differt.

Frutex compactus patens, 1.20-1.50 m. altus; ramuli pilis fasciatis brunneis dense tomentosi, esetulosi, eglandulosi, sub inflorescentia 6-9 mm. diametro, perulis deciduis. Folia sempervirentia; lamina coriacea, oblonga, oblongo-ovalia vel oblongo-obovata, 6-11 cm. longa, 2.7-5.2 cm. lata, apice rotundata et mucronata, basi rotundata vel paulo cordulata, supra atroviridis paulo rugulosa nitens glabra, costa media sulcata dense vel moderate tomentosa, venis primariis 10-14 impressis, infra indumento brunneo bistrato continuo, costa media prominente glabra vel dense tomentosa, venis primariis elevatis vel occultis; petiolus 1-2 cm. longus, supra sulcatus, pilis fasciatis brunneis dense tomentosus, esetulosus, eglandulosus vel raro glandulosus. Inflorescentia racemoso-umbellata 6-8-flora, bracteis deciduis; rhachis 4-5 mm. longa, tomentosa eglandulosa; pedicelli 1.2-1.5 cm. longi, pilis fasciatis dense vel moderate tomentosi, eglandulosi. Calyx 5-lobatus, 3-6 mm. longus, kermesinus, lobis inaequalibus, oblongis, oblongo-ovalibus vel ovalibus, glabris eglandulosis. Corolla tubuloso-campanulata, 2.8-3.6 cm. longa, kermesina, carnosa, basi leviter 5-saccata; lobi 5, 1-1.3 cm. longi, 1-2 cm. lati, rotundati emarginati. Stamina 10 inaequalia, 2-3 cm. longa, corollae breviora; filamenta glabra. Gynoecium 3-3.4 cm. longum, corollam aequans vel ei longior; ovarium oblongum vel conoideum, 5 mm. longum, 6-loculare, dense tomentosum, tomento pallide brunneo, eglandulosum; stylus gracilis rectus, basi tomentosus eglandulosus. Capsula oblonga vel gracilis, 1.4-1.8 cm. longa, 4-5 mm. lata, curvata, pilis fasciatis pallide brunneis dense tomentosa, eglandulosa, calyce persistente.

Tibet. Dri La, Zayul, 1933. F. Kingdon-Ward No. 11040 (Holotype in Herb. Brit. Mus.). In herb. cult. R.B.G. Edin.

This plant has long been known under the name *R. beanianum* var. *compactum*, but further investigation of specimens and plants in cultivation shows that it merits specific status. The plant must receive a new name, because at an earlier date (1932) Hutchinson had applied the name "compactum" to a species in the Lapponicum Series (*R. compactum*).

R. piercei is a distinctive species belonging to the Haematodes Subseries, Neriiflorum Series. It is allied to *R. beanianum*, from which it differs markedly in that it is a compact spreading shrub, 1.20-1.50 m. high, the branchlets and petioles are not bristly, the indumentum on the under surface of the leaves is bistrate, brown, and the upper surface of the leaves is slightly rugulose.

The species was introduced into cultivation by Kingdon-Ward in 1933 under No. 11040. It is hardy, free-flowering, and is well worth a place in every collection of rhododendrons.

I have named this species after Mr and Mrs Lawrence J. Pierce, Seattle, Washington, U.S.A., as a tribute to their remarkable achievements in the cultivation of rhododendrons.

A compact, spreading shrub, 1.20-1.50 m. high; branchlets densely hairy with short, brown, branched hairs, not bristly, not bristly-glandular, those below the inflorescences 6-9 mm. in diameter, leaf-bud scales deciduous. Leaves evergreen, oblong, oblong-oval or oblong-obovate, lamina coriaceous, 6-11 cm. long, 2.7-5.2 cm. broad, apex rounded, mucronate, base rounded or slightly cordulate; upper surface dark green, slightly rugulose, shining, glabrous, midrib grooved, densely or moderately hairy in its entire length or in the lower one-third, eglandular, primary veins 10-14 on each side, deeply impressed; under surface covered with a thick, brown, bistrate, continuous indumentum of hairs, midrib prominent, somewhat glabrous or densely hairy, primary veins raised or concealed; petiole 1-2 cm. long, grooved above, densely hairy with short, brown, branched hairs, not bristly, not bristly-glandular or rarely sparsely bristly-glandular. Inflorescence a racemose umbel of 6-8 flowers, flower-bud scales deciduous; rhachis 4-5 mm. long, hairy, eglandular; pedicel 1.2-1.5 cm. long, densely or moderately hairy with branched hairs, eglandular. Calyx 5-lobed, 3-6 mm. long, crimson, lobes unequal, oblong, oblong-oval or oval, glabrous, eglandular. Corolla tubular-campanulate, 2.8-3.6 cm. long, crimson, fleshy, 5 nectar pouches at the base; lobes 5, 1-1.3 cm. long, 1-2 cm. broad, rounded, emarginate. Stamens 10, unequal, 2-3 cm. long, shorter than the corolla; filaments glabrous. Gynoecium 3-3.4 cm. long, as long as the corolla or longer; ovary oblong or conoid, 5 mm. long, 6-celled, densely tomentose with a fawn tomentum, eglandular; style long, slender, straight, hairy at the base, eglandular. Capsule oblong or somewhat slender, 1.4-1.8 cm. long, 4-5 mm. broad, curved, densely hairy with long, fawn, branched hairs, eglandular, calyx persistent.

Six Favourite Rhododendrons

A Symposium

In the Rhododendron and Camellia Group's Bulletin, no. 1, it was recorded that two Sussex members had suggested the following subject for a symposium:

"You are moving to a garden with ideal growing conditions for rhododendrons, but you only have room for six plants – species or hybrids. Which six would you choose, and why?"

Twelve contributions have been received, including a very interesting one from one of the members who suggested the symposium, and whom it had been intended to ask to present the results. Curiously, both the Secretary and the Treasurer of the Group were actually on the move last summer, as was one of the most distinguished gardeners among its members, but they have been too busy perhaps to tell us what plants they are taking with them; or, possibly, this only reflects lack of initiative on the part of the Assistant Editor.

Of the twelve contributions, two each come from Devon and Sussex, and one each from Australia, the U.S.A., the South Atlantic (from a sea captain with a garden in Dunbartonshire), Cheshire, Cornwall, Essex, Middlesex and Surrey.

The twelve contributors, among them, have named 27 hybrids and 30 species. Only one of them has an exclusive list, six rhododendrons,

which no other contributor has selected, and his were all good, reasonably hardy rhododendrons of excellent quality. Three have chosen all species, none has chosen all hybrids, though three have chosen five hybrids out of their six rhododendrons.

Of the 57 rhododendrons selected, only one hybrid, 'Elizabeth', was selected twice; *yakushimanum* is named five times; *lindleyi*, rather surprisingly perhaps, three times; and *auriculatum*, *bureavii*, *decorum*, *lepidostylum*, *luteum* and *pseudochrysanthum* twice each.

Fourteen rhododendrons have been selected which can normally be expected to grow at least to 20 feet, and eleven are usually regarded as rather tender (H 1-3), contributors evidently feeling that their new garden would have plenty of shelter and no height restrictions.

Owing however to limitations of space in this annual, only three of the entries can be reproduced here, and the others are being published, in instalments, in the bulletin.

Arthur Headlam (Australia)

The fact that the symposium suggests that (a) you are moving to a garden with ideal growing conditions and (b) you are limited to a choice of only six rhododendrons, makes the final choice even more difficult. But after considerable deliberation and much changing of the list, I have finally decided that for the conditions specified I would choose six species.

The time of writing coincided with the peak of the flowering season in the Dandenong Ranges some 25 miles from Melbourne, where almost ideal conditions prevail. Summer temperatures on few occasions exceed 90°F., rainfall is 50 to 60 inches per annum, a reticulated water supply is available to most gardens and winter temperatures are rarely severe enough to cause any appreciable damage. The magnificent array of plants flowering in October and November only made it more difficult to select the final six; however, the decision was finally made. It would just be the last straw to list the six in order of priority of choice so I have taken the easy way out and listed them in alphabetical order:

R. augustinii has been chosen for its wide appeal and its magnificent display of flowers in shades of lavender blue. Whilst it must be conceded that the word blue is very loosely used in horticulture to describe a great number of colours including the wide range of shades from pastel mauve to deep blue, this does not detract from *R. augustinii*'s charm, in fact, a search has revealed that there are at least a dozen forms ranging from silver blue, soft blue mauve, lavender centre with blue margins to deep blue mauve as well as var. *rubrum*. Colour may vary from season to season whilst warm weather accentuates the blue and cold weather the pink shades. It is a magnificent species which is an essential plant for every garden; nevertheless to me, an exasperating rhododendron, photographically, because many blue flowers as seen by the eye are reproduced differently on colour film when the underlying pink/mauve shades are accentuated.

R. falconeri is a handsome tree carrying large dark green leaves covered below with a dense rust-coloured indumentum. The young shoots are covered with a fawn-coloured tomentum, whilst the flowers, twenty or more to the truss, creamy white to pale yellow, are set off to advantage against the dark green foliage and when looking up at the flowers one may see the rust coloured indumentum. A final attraction is the reddish brown peeling bark – a particular tree of *R. falconeri* in the

Dandenongs is some eighteen feet in height and the magnificent spectacle when in flower ensures its place in the first six.

R. kyawii has been chosen for several reasons; for its bright green rather bullate leaves which make it a handsome foliage plant, for the large tubular campanulate bright scarlet flowers, sixteen to eighteen to the truss, which so brilliantly complement the bright green foliage, and finally, the fact that the plant in the National Rhododendron Garden is usually the last to flower, producing a midsummer display which signals the end of yet another flowering season.

R. lindleyi may often have a straggly habit of growth, but this is more than compensated for by the beauty of its elegant white or cream lily-like flowers, carried in trusses of usually four to six. It would be extremely difficult not to include it in one's final choice.

R. nuttallii is another essential. The large tubular yellow or white flushed yellow flowers are enhanced when viewed against the dark green bullate foliage. A group of *R. nuttallii* in the National Rhododendron Garden at Olinda has produced quite compact plants and the perfume of the flowers permeates the air in this section of the garden. Growing in ideal conditions it is assured of a place in any garden.

R. yakushimanum, by virtue of its alphabetical position, fills the last place in the symposium. It really needs no description as it is world-famous for its many outstanding qualities, its hardiness, compact mound-like shape, narrow recurved leaves with a brown heavy woolly indumentum below, and its free flowering habit.

The new growth alone with its grey tomentum, which gradually disappears as the foliage matures, would be sufficient to earn it a place in any garden, whilst the flowers in a compact truss, deep rose colour in bud and eventually fading to white are an added bonus.

There are a number of plants in the National Rhododendron Garden, and as many debates as there are plants as to which is the best form. Any one of them would be acceptable as the sixth and final plant in the garden under consideration, but given the opportunity I should certainly choose the F.C.C. form.

* * *

Patrick Synge (Sussex)

It is always difficult among so many good plants to restrict one's choice to six but I have chosen for this discussion three species and three hybrids. For the species I have chosen *R. macabeanum, R. lindleyi* and *R. lepidostylum.* I regard *R. macabeanum* as the best of the large-leafed species both for its combination of flower and foliage, and probably those two superb trees at Trewithen in Cornwall can still be generally regarded as the best, though several others run it close. The larger tree had reached about 20 feet tall and as much across when I saw it last spring. It was absolutely superb then, although a little later its effect was spoilt by a frost. It is a species which varies in depth of yellow colour of the flowers, but one can rarely choose a plant which has actually flowered since it does not do this before reaching about eight feet tall. Vegetatively propagated plants are rare and few have the skill to propagate it from cuttings. The leaves, about a foot long and six inches across, are in reasonable balance with the flowers, dark green and slightly rugulose above, silvery and shiny below like grey suede. The trusses are large and compact and the yellow of the corolla is well set off by the crimson of the stigma. It was collected by Kingdon Ward in Manipur in 1948.

My next is *R. lindleyi*, too tender outside for many growers but our terms of reference say "ideal conditions" so presumably anything may be included. Although not the largest in flower of the Maddenii series it is probably the finest in form, the nearest to a perfectly symmetrical funnel-shaped lily. The flowers are about four inches long, pure white and the corolla thick and waxy. The truss is loose but in a good one of four or five it is well filled out. The foliage, although not particularly distinguished, is good enough. Like many epiphytes of this series it can be rather lanky but can be cut back to a lower bud and it will sprout into a more compact plant. It is variable in form. The finest I ever saw was on the Island of Gigha off the west coast of Argyll, in Sir James Horlick's lovely garden. It was very floriferous and also compact in growth although perhaps not the largest form in flower. It was growing outside there, but as a cool greenhouse plant it does well in most areas. The forms associated with the names of Ludlow and Sherriff in the 1940's in Sikkim are also very good and a little hardier than those collected by Hooker in the last century.

My remaining species, *R. lepidostylum*, is chosen entirely for its foliage, a lovely glaucous silvery blue. It makes a compact, quite hardy bush on the rock garden in the Botanic Garden, Edinburgh, about eight feet across and five feet high. The small yellow flowers are rather insignificant and some even cut them off before it flowers. Its only fault is that the grey foliage tends to fade in brilliance of colour towards autumn but it comes again in the young leaves of spring.

My three hybrids are 'Penjerrick Cream', 'Loder's White' and 'Michael's Pride'. I know the first is not an original choice but it is still a very lovely plant and I do not feel it has been superseded. I prefer the cream form to the pink one but they are both lovely. The soft yellow fits well into any garden and also softens the stronger scarlets of some of the *griersonianum* hybrids. The foliage is quite good with the slightly rounded shape of *campylocarpum* var. *elatum* one of its parents. The flowering is abundant in the second half of May when it escapes most frosts. Last year when I saw one of the original bushes at Penjerrick where it was raised, I was reinforced in my admiration of it, and in the perfection of shape of its bell in a loose truss. Its other parent was *griffithianum* whence it derives much of its fine flower but it is a much better grower and not nearly as tender.

'Loder's White' is an old stalwart that hardly ever fails or gets frosted. The flower is a clear white and well-shaped in a moderately full and compact truss. Again an old hybrid, it has not been surpassed. Its Award of Garden Merit testifies to its qualities and I prefer it to the *loderi* forms for although the flowers are not quite so large they are less floppy and it gives no appearance of blousiness. The very pale violet-purple flush near the end of the corollas as it first opens enhances its value but quickly fades.

My last hybrid is 'Michael's Pride' derived from *R. dalhousiae* × *R. burmanicum*. Although tender in most areas, it is a good cool greenhouse plant, and in favoured gardens in Cornwall it will grow outside. Like most of the Maddenii series it has the lily-like waxy perfection of flower shape and like *dalhousiae* it has the soft greenish yellow flush which I find most seductive in its parent while a slightly deeper yellow colour is given by its other parent. It was raised at Caerhays by Charles Michael when he was head gardener there.

Geoffrey Gorer (Sussex)

If I could grow only six rhododendrons, my first consideration would be that they must be plants that I should enjoy looking at all the year round, and not merely during their relatively brief flowering season. I should pay at least as much attention to leaves and habit as I would to the blooms. This would exclude nearly all hybrids, for it is very uncommon for hybrids to have the foliage qualities of the more beautiful species. I should also like to have a long flowering season; I have chosen two early plants, and one very late one. I have perhaps too many whites, though they do not come out together; and I rather regret having no blues or plants of the Maddenii series, which are my special loves; but I do not think any of them come up to my standard of being attractive when out of flower.

In approximate order of flowering, my choice is:

R. barbatum. It is necessary to search for a good form of this very variable species; but the best have lovely large apple-green hairy leaves which contrast with the bright scarlet of the flowers. It makes a symmetrical bush or small tree; and the young growth is attractive.

'Sir Charles Lemon'. The handbooks describe this as a hybrid, so I suppose it must be; but it is very like the best forms of a white *R. arboreum*, but somewhat hardier. The leaves have a lovely tawny indumentum which contrasts tellingly with the white flowers, once the plant has grown tall enough to show off the underside of the leaves.

R. pseudochrysanthum. I think this is my favourite of all the hardy rhododendrons: the silver-powdered leaves, the scarlet growth buds, and the rose pink flowers are all exquisite; and its habit is perfect.

R. bureavii. Again, hunt for a good form. The indumentum of the leaves and young growth is breathtaking and the habit excellent. The white flowers, when they occur, are not exciting; but with such foliage, who needs flowers?

R. hemsleyanum. This is above all a foliage plant, very large auriculate pea-green leaves, beautifully held. The habit is symmetrical and fairly rigid. The white flowers are handsome enough.

R. auriculatum. The leaves are good enough, dark green; but this plant has three major attractions: its late flowering, the intoxicating perfume of its large white trusses, and the scarlet bracts around the new growths. It flourishes best in full sun; the substance of the petals is rather thin, and the flowers may scorch in hot sun; but it flowers much less freely in shade.

A Trip to North and South Carolina in 1976

FRANK KNIGHT

In the Bicentennial Year, celebrating the independence of the U.S.A., I had the great good fortune to be invited by Mr and Mrs J. D. Johnston to spend a few weeks with them in their lovely home in Asheville, North Carolina. This is the very attractive Blue Ridge Mountain country, and not far from the Smoky Mountains.

The main object was simply to enjoy a holiday with them and their friends, but as always the temptation to botanize was overpowering. Several days therefore were occupied in my favourite pursuit: to find out what grows wild in the district in which I am staying. When news of my visit got around, I was invited to give two talks, one to the South-Eastern Chapter of the American Rhododendron Society at Biltmore Forest Town Hall. This was on June 13, when I spoke on "The introduction into cultivation of Rhododendron species from the wild". I had spent many hours preparing this talk, and I showed about 100 slides, of which 15 were portraits of the main botanical collectors, starting with John Bartram 1699-1777 and ending with George Sherriff 1897-1967. John Bartram was the Royal Botanist to King George III in the colonial days.

I took particular care to include John Fraser, who introduced *Rhododendron catawbiense* to British gardens in 1809. It is thought that the specimen still growing in the Knaphill Nursery and another at Balbirnie near Markinch in Fife may be originals.

The collectors and their work were dealt with in chronological order; first I showed the portrait and then a representative lot of species which each had introduced. Many of the slides had been taken by John Johnston on his tours of British gardens, an account of which appears in *The Garden* for July 1977. Mr Johnston kindly projected the slides for me, using his own very efficient equipment.

The second talk was at Greenville, South Carolina, on June 17, where my audience consisted of members of the newly formed William Bartram Chapter of the American Rhododendron Society and the local Men's Garden Club. Here, I repeated the talk that I gave at the R.H.S. Rhododendron Show on May 4, 1976, entitled "Some Rhododendrons seen on my travels". Most of the slides that I used were taken in British gardens by John Johnston. As a result of this talk, a party numbering up to 30 made preliminary plans to visit the United Kingdom in the spring of 1977, but this had to be postponed because of the discouraging reports that I had received of the effect of the severe drought on rhododendrons.

But it was of my botanizing that I set out to write, and in this specialised publication I must control my broad enthusiasm for the two hundred different plants that I so carefully noted in the mountains, in favour of the few native rhododendrons and allied plants, with some digressions.

On June 10, with my hosts I visited a leading rhododendron nursery, that of the Richardsons at Mountain Home, North Carolina. I am hoping to get an account from Ted Richardson for a future article on his unique methods of cultivating hardy hybrids, but here to whet the appetite and excite the curiosity may I say that he propagates all his plants from cuttings; they are all grown in containers, and some 22,000 plants each year are transported on November 1 to spend the winter in Florida, and brought back to North Carolina on May 1. The journey takes twenty hours, and Ted keeps in touch by piloting his own personal plane. This transference results in more than one new growth per year.

On June 11, I spent a long day in the Pisgah National Park with Mr and Mrs Tom Shinn and Mr and Mrs Charles Moore. The Shinns' work in conserving rare American native plants would provide material for a long article. They have been very generous in sending me seeds

which I have distributed. Charles Moore is an enthusiastic member of the Bartram Trail Society, engaged in trying to follow the routes taken by the Bartrams on their botanical journeys. On this day, I noted fine specimens of *Magnolia fraseri* and self-sown seedlings, *Leucothoe fontanesiana* (of which I still think as *L. catesbaei*), *Rhododendron maximum* (not yet in flower), *Vaccinium stamineum, Kalmia latifolia, Pieris floribunda* and *Rhododendron calendulaceum.*

June 12 was spent with the Johnstons, following in part the route which André Michaux, the French botanist, travelled in 1794, and which is commemorated by a plaque. We got to Grandfather Mountain, 5837 feet, where I saw sheets of *Leiophyllum buxifolium* hugging large rocks. Here too were *Rhododendron catawbiense, Kalmia latifolia* and many trees of *Sorbus americana.*

June 15 was another exciting day with the Shinns and the Moores. We visited Roan Mountain (6267 feet) via Bakersville, where there was a commemorative plaque dated 1841 for the American botanist Asa Gray. I have several pages of notes on this day, but I will just mention that on the way to the mountain we called at the Asheville Botanic Garden, where *Lilium canadense* is cultivated to perfection. On Roan, there are several hundreds of acres of *Rhododendron catawbiense;* these were not in flower at this time, and I searched numerous bushes to try to collect seed for the Royal Botanic Garden at Edinburgh, but none remained of the 1975 crop. I would say that almost every plant, numbering hundreds, which I examined, was badly affected by rhododendron bug (or fly) (*Stephanitis rhododendri*). This was less apparent where the bushes grew in the shade of *Abies fraseri. Potentilla tridentata* formed a good deal of the ground cover between the rhododendrons, and there were many plants of *Lilium grayi,* but not in flower; it was too early. Near these were *Menziesia pilosa.*

June 16 was a day that I shall not forget; I was taken into the hills, and in particular to Curtis Creek, by Dr William S. Justice, a surgeon who spends most of his spare time with his very varied and efficient cameras, photographing the wild plants of North Carolina. He has contributed 400 coloured pictures for the book *Wild Flowers of North Carolina,* of which he is joint author with Dr Ritchie Bell, the Professor of Botany at the University of North Carolina. This was a real botanical field day, and I have sent to the Wisley Botanical Department a full list of the treasures that I noted. *Oxydendrum arboreum* was in flower; there were thickets of *Rhododendron maximum,* and specimens of *Hamamelis virginiana* up to 25 feet high; a number of *Magnolia fraseri* and *Rhododendron calendulaceum* and *R. catawbiense;* large trees of *Magnolia acuminata,* and bushes and small trees of *Acer spicatum* in flower; *Epigaea repens* and *Listera smallii* in bloom.

On June 18, after my talk in Greenville, I visited with my hosts, Dr and Mrs MacCarter, their woodlands of about 110 acres where numerous rhododendrons are being raised. The doctor has some very modern electrical equipment to help with his extensive propagating programme.

I learnt something new on June 19, in the nursery of Mr Forrest and the garden of Dr Fortescue at Hendersonville. The former, with his wife, taught me much about being self-supporting; theirs was a life to be envied, a controllable small rhododendron nursery, many beehives, a fine vegetable plot, peaches and grapes, and a wide variety of home-made wines. *Rhododendron bakeri* and *R. punctatum* (*carolinianum*) were in flower, strict plant hygiene was practised to keep away

Phytophthora, and a planned programme of foliar feeding was maintained for the rhododendrons, all of which were grown in containers.

Dr Fortescue's is a woodland garden, where much pleasure is derived from collecting unusual plants. Unfortunately, he was ill, and could not take us round himself. *Rhododendron bakeri*, up to 10 feet high, had pride of place, and there were natural hybrids collected in the wild between this species and *R. arborescens;* some of these had netted, variegated leaves. Torrential rain kept us indoors, but we returned two days later, and saw the dainty *Chimaphila maculata* in flower, and a specimen of *Rhododendron maximum* which had been collected in the wild, with some branches showing typical flowers and others with red flowers; the latter also revealed red coloured wood on cutting open a small twig. This plant is exciting the botanists, and I forecast that more will be heard and written about it. *Smilax auriculata* was a troublesome invader among the rhododendrons, but a welcome sight were masses of *Cypripedium reginae* which had finished flowering.

June 22 was spent in the Shinns' garden, a botanist's paradise: *Magnolia fraseri*, 40 feet, in fruit; *Elliottia racemosa* in flower (a very rare member of the Ericaceae); two species of *Lyonia; Leucothoe populifolia* and *Dionaea muscipula* (Venus's fly-trap) were among dozens of plants that I noted. The Johnstons took me to Mt. Pisgah (4758 feet) on June 23; we motored along the Blue Ridge Parkway and passed through nine tunnels which had been left in the excavation of a section of the 469 miles of beautiful scenic roadway. At 4000 feet there were many plants of *Rhododendron calendulaceum* with flowers of various colours, from pale yellowish orange to orange-red. I noted too *Betula lenta;* old stumps with live basal shoots of *Castanea dentata; Vaccinium erythrocarpum* and masses of *Galax aphylla* in flower. We finished the day at a gathering of keen horticulturists in the garden of Dr Yelton at Rutherfordtown, where there was a 40 feet specimen of *Magnolia macrophylla*, as well as a very attractive foliage rhododendron, the result of crossing *R. yakushimanum* with *R. bureavii*. An innovation was a rock garden with many rare plants.

Dr Justice gave up another long day on June 24 to show me a host of native plants in the mountains. I have four pages of names in my notebook, but I will just highlight *Platanus occidentalis, Sassafras albidum, Asplenium rhizophyllum* (the walking fern), *Liriodendron tulipifera, Gillenia trifoliata* (numerous, in flower), *Aquilegia canadensis, Aesculus octandra* (very tall), a field with thousands of *Chrysanthemum leucanthemum* (our own ox-eye daisy or gowan, an invader from Europe!), *Lilium superbum* (numerous) and *Castilleja coccinea* in flower. There were swift-flowing mountain streams with ferns everywhere.

June 25 was another special day for me, for the wish that I had expressed to the Johnstons and the Shinns, to visit the grave of John Lyon was granted. It was he who brought the first *Rhododendron calendulaceum* to England in 1806. John and Marion Johnston took me to the attractive 85 acres of Riverside Cemetery at Asheville. We enlisted the help of Superintendent Crayton, who showed us the third and last resting place of John Lyon, after whom the genus *Lyonia* is named. *Lyonia mariana* grew particularly well in Knaphill Nursery during the years that I worked there and, incidentally, so did *Epigaea repens*. We took with us some white chalk, and filled in the relevant lettering on the headstone for photographing. It is thought to be the

oldest engraved headstone in western North Carolina. The Shinns had planted *Chimaphila maculata* on the grave, and this was in flower, and nearby were attractive groups of *Quercus alba.*

John Lyon died in Asheville on September 14, 1814, aged 49 years, and he was buried first in an old burial ground near Market Street; his remains were later removed to the Presbyterian Churchyard in Church Street, and finally in 1885 to Riverside Cemetery. On June 28, the Johnstons took me back to Roan Mountain, and this time thousands of *Rhododendron catawbiense* were in full flower. Altogether, there are about 700 acres of them. We motored back through a violent thunderstorm, in fact while the drought was affecting gardens at home, there were 5½ inches of rain during my stay in North Carolina.

My trip was now nearly over, and I have just skimmed lightly through my notes; there were however two more garden visits to make, one to see that of Mrs Joy Taylor at Sugar Hollow in Asheville, where a very fine specimen of *Franklinia alatamaha* grows. Here, I also met Mr Peter Hanlon, who had retired as Chief Forester to the North Carolina State authorities. The other visit was to Mr and Mrs Ray Hust, where the native trees came up close to their home, and we sat admiring Blue Jays, Cardinals, Mourning Doves and Humming-Birds. There was a fine hedge of *Ilex opaca,* several good bushes of *Camellia japonica* cultivars, and wonderful specimens of *Cornus florida.*

I returned home on July 2, bringing with me the Johnstons' wonderful gift to the R.H.S. of about 500 coloured slides of rhododendrons.

Some details about this gift of rhododendron slides to the R.H.S. are given in an article in *The Garden* for July 1977.

Breeding Deciduous Azaleas

M. C. PRATT

In the original classification of Rhododendrons into some 40 series, the azaleas are all included in one series – series Azalea. This is subdivided into six sub-series, of which Canadense, Luteum and Schlippenbachii include all the deciduous species. In the classification published by Dr H. Sleumer in 1949 (*Rhododendron and Camellia Yearbook 1971,* p. 9), the genus is divided into 8 sub-genera, some of which are subdivided into "Sections" and "Sub-Sections". Sleumer's sub-genus Pentanthera includes the deciduous species of the Canadense and Luteum sub-series; and the sub-genus Tsutsutsi includes those in the Schlippenbachii sub-series.

Sub-series Canadense has four species, *Rhododendron albrechtii, canadense, pentaphyllum,* and *vaseyi.* I have never been able to do much with this group; *R. albrechtii* × *R. vaseyi* set seed, and seedlings were obtained but on two occasions they all died; whether a third attempt would be successful I do not know, but in any case I do not really see what one could hope to achieve. Other crosses within this group were not successful. I could imagine great possibilities if one of these species, say *vaseyi,* could be bred into the Luteum group, but in spite of many attempts, I have been unable to do this. I have even tried removing the style from the ovary of *R. vaseyi,* and grafting on the style of *R. luteum,* but no seed was produced. I have seen an azalea that was

claimed to be *R. vaseyi* × *R. occidentale*, but there was no evidence of the *vaseyi* parent, and I suspect that it was accidentally selfed, or apomixis may have occurred, as occasionally happens.

Sub-series Luteum contains eighteen species, and it is within this group that practically all deciduous azalea breeding has been going on for over 150 years. In earlier years, I have been chiefly interested in colour and scent. I have obtained good coloured seedlings by crossing and selecting among the Knaphill (Exbury) azaleas, which are undoubtedly the finest deciduous azaleas in existence today. One seedling with pure deep pink flowers was taken up by the Dutch nurseryman, W. de Jong & Sons at Boskoop, and named after my late wife, 'Elsie Pratt'. This seedling obtained a silver medal when exhibited in Boskoop in 1970, and a certificate after trial there in 1973. It is a very good grower; the flowers are a lovely colour but a little small. I have crossed this with the Exbury hybrid 'Cecile', hoping to obtain larger flowers, without too much loss in colour.

I have always admired so much the colour of the Knaphill azalea 'Harvest Moon'; unfortunately, this is such a poor grower that many nurserymen have given it up. I have crossed 'Harvest Moon' with a strong growing cream coloured *occidentale* hybrid; among the seedlings, I have one very strong growing plant with the colour of 'Harvest Moon'. Another seedling has the flower colour and the yellow-green leaf of 'Harvest Moon', and it is weaker growing due to the lack of chlorophyll in the leaves; I see no way of getting round this. Some of these yellow seedlings have fine autumn colour.

One of my loveliest scented azaleas was obtained by crossing *R. luteum* with *R. occidentale*. This hybrid has every character exactly intermediate between the two parents, including the scent! Some consider the scent of *R. luteum* overpowering and coarse and the scent of *R. occidentale* rather sickly; the hybrid in my opinion is a perfect blend but, unfortunately, it is sterile.

R. viscosum, the swamp azalea, has very scented flowers. Many years ago, I crossed *R. viscosum* with the Knaphill azalea, 'Flaming June'. The first generation (F_1) were all white flowered, strong growing with fine scent. The second generation (F_2), obtained by selfing, gave a variety of seedlings, and I selected one with large deep pink flowers with the full scent of *R. viscosum*. Cuttings of this have been given to the University of Liverpool Botanic Gardens at Ness in Cheshire for propagation. One of them, with deep crimson flowers of a shade that I have not seen among the Knaphill azaleas, is very distinct and seems worthy of propagation.

At the present time, I am engaged on a project to try to produce late flowering (June-July) azaleas, to extend the season. In order to do this, it is necessary to breed the late flowering species into Knaphill and other hybrids which are themselves late flowering. The species used are *R. arborescens, bakeri, prunifolium*, and *viscosum*. *R. bakeri* is variable: *R. bakeri* 'Kentucky Colonel', with deep red flowers, comes into bloom about the end of June; other forms have orange flowers and flower much later – well into July. This work is still in its early days. One deep red seedling which flowers in June-July proved fertile, and seedlings of the F_2 selfed are growing. An apricot orange coloured seedling flowers mid- to late July and is promising. The flowers on many of these are small so far, and some have the *arborescens* scent. I should like to say at this stage that the work on these late flowering azaleas

would not have been possible but for the generosity of Mr Dan E. Mayers, who gave me access to his collection, and allowed me to do the hybridising there. His Loth Lorien arboretum at Wadhurst contains a fine collection of deciduous azaleas, and it has been a great privilege to be able to work there.

The goal of good June-July flowering azaleas is still a long way off. Frederick Street has written that "it should be possible to produce a group of hybrids flowering as well in July and August as the best now do in May and June". This will require many years of work, and many more workers in the field.

The sub-series Schlippenbachii contains seven species. The only hybrid known to me was produced by Captain Collingwood Ingram in 1935, by crossing *R. reticulatum* and *R. weyrichii*, which gave rise to a hybrid with rather small pale purple flowers which he called 'Retrich', but he did not go on with this line.

R. schlippenbachii × *vaseyi* has been reported, but I have never seen or heard of the hybrid. Some years ago, I crossed (both ways) *R. reticulatum* with *R. amagianum*, a fine late red flowered species. I am grateful to Mr J. K. Hulme, the Director of the University of Liverpool Botanic Gardens, for allowing me to put *R. amagianum* in the warm greenhouse there to bring forward its flowers, so that it flowered at the same time as *R. reticulatum*. The F_1 hybrids were all very similar, with purple flowers in May. Two of the best forms are growing now in the University of Liverpool Botanic Gardens, and at Loth Lorien. Fortunately the F_1 hybrids are very fertile, and F_2 (selfed) hybrids are now starting to flower. Among these are some lovely shades, varying from pale to deep rose-pink; these shades of rose-pink (blue-pink) are not found among the *luteum* hybrids and so are very welcome. The late flowering property of the *amagianum* parent has made these flower in the first half of June, so that they escape our devastating spring frosts. Add to this the very distinct foliage, rounded leaves with conspicuous veining (reticulate), and I think we have here a worthwhile group. I tried other species crossed with these, but no seed was produced.

Such is a brief account of the breeding experiments that I have done and am doing. I have left out some in which the hybrids have not yet flowered, or the results are not up to much.

I sincerely hope that others will be encouraged to take part in this, as I feel that it is the only way that good results will be obtained. It is exciting work, but one must not be afraid of the bonfire. As someone put it so well, "One has three or four years glorious expectation (dreaming perhaps of A.M.'s and F.C.C.'s), and only twenty minutes disappointment at the end".

Obituaries

EUAN HILLHOUSE METHVEN COX — 1893-1977*

Euan Cox was one of the most knowledgeable and experienced horticulturists of the day who by his writings and example did much to promote the love of gardens and their content. He was born on 19 June, 1893 at Westward in the Carse of Gowrie. This is about three miles

* Reproduced by kind permission of the Editor of the Journal of the Scottish Rock Garden Club.

from Glendoick which later became his home and where he laid out and planted a notable garden in which he particularly indulged his deep interest in the genus *Rhododendron*. His early education was at Cargilfield and Rugby before going to Cambridge University where he graduated B.A. He joined the services during the First World War but was invalided out of the army and became for a time secretary to John Buchan – later Lord Tweedsmuir – who then held an appointment at the Foreign Office.

Cox's deep interest in plants really developed from his friendship with Reginald Farrer. They met at a tea party in a nursing home where Farrer was convalescing after an operation and then quickly decided to join forces and undertake a collecting expedition to Upper Burma. They used as their base Hpimaw and from March to mid-November 1919 they scoured the countryside for plants of garden merit. Cox had to return home in 1920 but the year spent with Farrer certainly fired the enthusiastic love of plants in Cox which led him to embark on a period of horticultural journalism, a phase which was to contribute significantly to the literature and in which his discerning judgement of plants and ready descriptive pen were given full scope.

For some years he was Gardening Editor of *Country Life*, but perhaps his most important contribution to horticultural literature was the founding and editing of *The New Flora and Silva*. In the first editorial in October 1928 he stated the object of the journal as one that would cater solely for the keen gardener who is ambitious, interested in particular groups of plants and wishing to enlarge his collection and above all for the gardener who desires to learn about the best plants and the best methods of cultivation. This journal appeared under his editorship for ten years and it attracted contributions from authorities on all groups of plants and indeed was used sometimes as a medium for describing new species. Other calls forced him to give up the editorship in 1938 when he handed over to Lady Beatrix Stanley but it became a war casualty in August 1946. Its demise left a gap in the range of horticultural periodicals which has never been adequately filled.

In 1926 Cox published *Farrer's Last Journey* – a factual account of their expedition in 1919 and in which Cox gives vivid descriptions of the country and the plants they encountered and in which he quotes liberally from Farrer's letters. In 1930 he published *The Plant Introductions of Reginald Farrer* which is a beautifully produced book and illustrated with water-colour drawings which Farrer had made in the field.

The Cox family had long been established in the jute spinning business in Dundee and in 1932 Euan returned north to take charge of the business while at the same time he continued with his journalistic efforts in London. The business was sold after the 1939/45 war and then Cox was able to devote himself entirely to his garden at Glendoick. The collection of rhododendrons there was started soon after he returned from Burma and indeed one or two plants from the Farrer expedition still survive. Cox frequently went for weekends to Exbury, Tower Court, Leonardslee and Caerhays, all notable rhododendron gardens and, as was the custom, plants were generously exchanged with these gardens. So Glendoick was greatly enriched from these sources as well as from the Royal Botanic Garden, Edinburgh.

Cox's interest in plant exploration in south-eastern Asia culminated in 1945 in the publication of his book *Plant Hunting in China* which is a comprehensive history of botanical exploration in China and the Tibetan

marches. For some years he contributed a regular weekly gardening column to "The Scotsman". In 1964 Euan Cox was awarded the Loder Rhododendron Cup by the R.H.S., and in 1970 a Veitch Gold Medal for his work as a plant collector, author and authority on rhododendrons and other trees and shrubs. Two plants bear his name which he had collected on his expedition with Farrer – *Berberis coxii* and *Juniperus coxii*, the coffin juniper.

In 1954 in partnership with his son, Peter, a nursery was started at Glendoick and Euan Cox carried on with much of the office work until the age of 80. In collaboration with his son three books were published – *Modern Rhododendrons, Modern Shrubs* and *Modern Trees.*

Euan Cox was of a modest, retiring disposition and only seemed completely at ease in his garden or when conversing about plants.

GEORGE TAYLOR

LEN BEER
An Appreciation

I first met Len Beer before a wonderfully scented shrub of *Viburnum* × *burkwoodii* in the drive of Hillier's home nursery at West Hill, Winchester. He had joined Hillier's just a year before me in 1961 after having spent two years at Dartington Hall. During the rest of that year we spent many weekends and summer evenings together, careering around the Hampshire countryside on Len's motorbike searching for wild plants.

Later that summer we drove to Len's home at Ivybridge in Devon, my first visit to that lovely county, and then moved on to Penzance where we boarded the famous s.s. *Scillonian* for St. Mary's in the Isles of Scilly.

The best part of that week we spent with John Smith, then head gardener at Tresco, and there received our first real taste of exotic plants thriving out of doors. The experience greatly excited us and I remember Len saying that he was determined to be a plant hunter one day.

Len left Hillier's after two years for the two-year student gardener's course at the University Botanic Garden, Cambridge, during which time his interest in plants in the wild, especially those of other countries, became a passion. On leaving Cambridge he travelled to Bangor to take charge of the gardens at the University of North Wales, a post he held for 11 years until 1976, when he accepted a similar position at the University of Durham.

During this period Len made several visits to the continent on plant hunting tours and led treks to study the floras of Crete and Turkey. He even managed a visit to Singapore where he gained first-hand experience of tropical flora, an experience widened in 1969 when he joined the Trans-African Hovercraft Expedition as a botanist.

The Himalaya, however, was his real goal and perseverance was eventually rewarded when in 1971 he led his first full-scale expedition to east Nepal.

I was lucky enough to accompany Len on this expedition and, if the experience was a dream come true for me, it was no less an adventure for him. Len had completed a tough three month reconnaissance before the main party arrived on the scene, and as we toiled our way through the border regions south of Tibet during the late autumn, I was continually amazed to think that he had already done this difficult route in the miserable monsoon period.

Although our brief was to collect seed of any ornamental plant we considered suitable for British gardens, we gained a special thrill from finding each new rhododendron. In all we found 24 species, of which we introduced 17 as seed (*R.H.S. Rhododendron and Camellia Year Book 1972*, pp. 24-32). A fair number of the other plants we recorded were new extensions to the range of the species, whilst several were new records for Nepal. We even found several species, including two saxifrages as yet unnamed, and in all probability new to science.

Len and I spent a great deal of time together during the expedition and my admiration for him grew each day. He was an easy and cheerful companion always ready to help others, even to the point of carrying a frightened Sherpa's load across a dangerous bamboo bridge. When days were cold, wet or weary, we shared our repertoires of stories and songs – singing on the march at the tops of our voices. Then, when days were fine and seed was pouring in, our joy and enthusiasm reached a similar pitch.

Yet, despite his love of companionship, Len demonstrated his ability to work and travel alone should the need arise, and in this he bore more than a passing resemblance to his boyhood idols, Ernest Wilson and George Forrest.

The 1971 expedition was a complete success and I was not surprised when in 1975 Len, accompanied by his wife Sheila, spent another 6 months in east Nepal collecting seed of horticultural and agricultural plants for western cultivation.

At 35 Len Beer seemed set to continue at Durham what he began at Bangor. Sadly this was not to be. In March 1977 he died after an operation.

Apart from having lost a dear friend and colleague, I feel that horticulture in general is poorer by the loss of one so young and so full of promise. He was a strong and generous character, and will be missed by his contemporaries in the plant hunting fraternity.

Since Len Beer's death two events have occurred to preserve his memory. At the Chelsea Show, a flowering plant of *Rhododendron glaucophyllum* B.L. & M. 315 was named in his memory by Mrs Kathleen Dryden. Secondly, in April, Tony Schilling, during his trek to the Annapurna Sanctuary in Nepal, organised the preparation and erection of a Tibetan prayer flag in memory of Len. The flag stands on a prominent ridge, the Deorali Pass on the southern flank of Annapurna South, surrounded by *Rhododendron* and *Abies* forest. One of the Sherpas who helped prepare the flag – Da Norbu – accompanied Len and me on the 1971 expedition.

C.R.L.

PROFESSOR E. G. WATERHOUSE

In the cold light of sober middle age, it is easy to question the validity of the intellectual and scholastic ability of the men and women around us. Where, we wonder, will we find our guides to the future, to encourage us to open and enlighten our minds and brains? It all seemed so fresh and easy when we were students, but there seem to be so few people left who can encourage us to keep it that way.

Professor E. G. Waterhouse, who died peacefully in his sleep at his home in Sydney on the 17 August, had no need to make an effort; any encounter with him was an adventure. A Professor of modern languages, his single-minded enthusiasm for the genus *Camellia* quickly established him as one of the world's authorities. Problems of nomenclature fascinated him and his extensive travels and researches quickly led to the publication of his two limited edition books, *Camellia Quest* and *Camellia Trial.* The inauguration of the International Camellia Society on the 1 April 1962, saw his appointment as its first President "until such time as there can be a regular election by members according to the Constitution", a simple statement, which was to challenge him to superhuman heights in 1974, in his 94th year.

Although I had worked with the I.C.S. Conferences from the beginning, it was not until late 1973 that our correspondence started. His first letter arrived out of the blue, a simple and straightforward request for advice. It is indeed staggering to re-read the deluge of letters which were to follow. Requests for information and advice – "I am in my 94th year. I would appreciate any thoughts or suggestions you have on these matters. I feel the Society has a great future if we can just get it right". The clarity and quantity of these letters has to be seen to be believed. It was little wonder that I was provoked into telling him to come to England and sort it out for himself! "We leave Sydney on March 26 and arrive in London 8 a.m. on 27 March. At the moment it seems like an exciting dream and rather fantastic that I, at my age, have decided to make the trip. I look forward to meeting you, Harold Hillier and David Trehane, but I must have periods of rest if I am to survive the interest and excitement of it all." Thus it was my privilege to meet E. G. W., at London

Airport in the middle of a blizzard. Poor Mary Armati, who had travelled with him, and I were more exhausted than he was as we drove him up to London amid a barrage of questions, to his club. I will never know how we made that journey. The Professor would not go to bed until we had driven round Buckingham Palace and Trafalgar Square. Over Easter he and Mary stayed with us in Dorset. Camellias, gardens, books, people – he had met and spoken with both Hitler and Mussolini – and especially music. Each evening after dinner, coffee, liqueurs and music. Beethoven's Ninth with the wonderful Schiller's 'Ode to Joy' translated on the spot from memory.

Age seemed completely irrelevant in the light of his enthusiasm to meet and talk to people. He left us to embark on a whistle stop tour of the West country, working his way back to London, winning friends and inspecting camellias all the way. A London reception and presentation culminating in his greatest thrill – a private audience with H.M. Queen Elizabeth the Queen Mother at Clarence House on his 95th birthday.

His last letter to me arrived a fortnight ago – as impish as ever. Relative performances of various camellias, Miss Godman's marvellous huge plant of *C.* 'Grand Sultan', moves to acquire his garden for the Australian National Trust "after I pop off. This gives me plenty to think about."

Deeply though I regret his death as a friend, I cannot recall him without hope, thinking how apt an epitaph we can draw from that immortal Schiller 'Ode to Joy' which he loved so much.

Your majic re-unites
What custom sternly separated;
All men shall be brothers
*There where your gentle wings tarry.**

* (literal translation by William S. Mann).

The Formation of a Camellia Garden at Olinda

ARTHUR W. HEADLAM

Following the establishment of the now well known E. G. Waterhouse Camellia Garden in Sydney, Australia, which was officially opened on August 18, 1969, and which has proved to be such an outstanding success, the Australian Camellia Research Society, Victoria Branch, thought it would be a commendable project to establish a camellia garden also in Melbourne. However, the main difficulty was to obtain a suitable location; several possible sites were investigated, but for various reasons were found to be unsuitable.

When the Government of Victoria granted the Australian Rhododendron Society an additional 50 acres of land to develop further the National Rhododendron Garden at Olinda, this was a considerable undertaking which would strain the resources of the Society, and so the Australian Camellia Society was invited to participate by developing part of the new area as a camellia garden.

After an inspection of the site, which commands magnificent views of the River Yarra Valley with the Warburton Ranges rising to 4,000 feet in the background, the offer was gladly accepted and the work of clearing the area of undergrowth, blackberries, scrub and bracken started.

The area was very rocky, some of the rocks so massive that they could be moved only with the assistance of a tractor and chains; while some, like an iceberg with only the tip showing, had to be left and will be used as features in the landscape. Before any planting could be done it was necessary to fence the area and install an irrigation system. A generous grant by the Government more than covered the cost of the materials for both the fence and the water system, and outside labour was engaged only when absolutely necessary, and the arduous work by members of both Societies continued.

Other Societies have joined the Australian Rhododendron Society in helping to develop the garden – the Australian Lilium Society holds its annual shows in the Hall, and lilies have been planted amongst the rhododendrons in the garden, thus extending the flowering season and creating added interest, whilst the Alpine Society (Victoria Branch) has contributed by adding many interesting plants to the rock gardens.

Despite the fact that the Dandenongs contain 150 square miles of National Parks and Forest Reserves, a strong protest was made by a conservationist group against the fencing of the 50 acres for the new development. However, the matter was finally resolved, but by this time it was too late for planting to begin in the autumn of 1976 as originally planned.

Work again resumed in the summer of 1977, and the lost ground was gradually regained. In the meantime a dense crop of bracken had sprung up after the initial clearing and this will again have to be cleared.

The Camellia Society has some 3,000 plants, *C. reticulata, reticulata* hybrids, *japonica, sasanqua* and various species, some in containers and some "heeled in" in various locations ready for "Operation Transplant" to start in the late autumn of 1977.

It is the intention of the Australian Rhododendron Society to create a species garden in part of the new area and plant the species in their Series and Subseries, with the large leaved species as far as possible in areas which will provide maximum protection against the elements. Many of the species have already been propagated and are being held by members ready for the coming autumn, the best time to plant rhododendrons.

In an endeavour to obviate the inevitable mistakes, the planting of the new area has been carefully considered and a full scale plan of the area has been prepared, showing roads and tracks, rockworks, locations of trees to be left for shelter and positioning of additional trees and shrubs for wind breaks and shelter, as well as delineating the areas for the camellia and species gardens.

The actual planting in April/May 1977 will only be a start; it may well, and is in fact expected to, take a number of years for the second and final phase of the National Rhododendron Garden at Olinda to be brought to fruition.

Camellias as Garden Plants - some new breeding lines

JAMES SMART

During 1976 the summer drought caused severe damage to rhododendrons in very many parts of the country, killing some, doing lasting damage to others, and causing at least a setback to most.

However the camellia as a genus appears not to have suffered at all, in fact they put on good growth and budded up very well, so that this year the flowering has been excellent. In fact I saw only one camellia plant anywhere suffering at all from the drought during the entire year, and that was a large *reticulata* wild form which very quickly revived after a couple of cans of water.

The reason for the better performance of the camellia in drought conditions is not immediately clear as both genera have a similar rather shallow root system. It appears possible that the more glossy foliage of the camellia may better be able to resist excessive transpiration. This view is supported by the fact that the one plant I saw suffering was a *reticulata* which has a comparatively dull leaf surface.

While I may be out of my depth in speculating as to the cause, the evident result is that the camellias thrived whilst the rhododendrons did not in these conditions. This led me to think again on the value of camellias as garden plants, quite apart from the size of the flower.

A tour of Australia and New Zealand during the summer followed by a visit to the United States in the spring led to a further consideration of the landscaping qualities of the plant. As there was no flower on the camellias in the Southern Hemisphere at that time, I was better able to appreciate some of the foliage plants which are now being developed. In the United States, there is possibly more concentration on the size and quality of the flower, in view of the many active societies with shows throughout the season, from October through to the end of March. On my recent visit there however, there seemed to be some move away from concentration on mere size, and there is a considerable interest in the miniatures and small flowered cultivars and there was even a class for the species in one of the shows I went to, where *C. rosaeflora* was the best exhibit and reached the top table for prizes.

In spite of this welcome tendency there is still, I think, more interest in Australia and New Zealand in the camellia as a garden plant than amongst the American Societies. There are shows in Australia and New Zealand, but these do not concentrate nearly so much on individual competition, and the emphasis from what I saw of it is much more on the camellia as a landscape or garden plant. This is our attitude in the United Kingdom as well, and I was therefore interested in some of the newer hybrids being produced.

Firstly there is a very good interspecific hybrid, a cross between *rosaeflora* and *tsaii*, called 'Baby Bear'. This was raised by Mr Neville Haydon in Auckland, New Zealand; it is a compact, low growing plant with flowers only slightly larger than those of *rosaeflora*. Being floriferous, and of good habit it is eminently suitable for the small garden or even as a rock garden shrub. It grows horizontally and so far

Fig. 12 A prostrate seedling of 'Donation'

has reached no great height (2 feet high by 2 feet wide after 11 years); the leaves are $1\frac{1}{2}$ inches long by $\frac{1}{2}$ inch wide and lie attractively on the plant; Neville Haydon has a programme to develop further plants of this type.

Mrs Betty Durrant of Rotarua, New Zealand, wife of Colonel Tom Durrant of *Camellia reticulata* Yunnan fame and a naturalist and skilled gardener, has registered two hybrids of *C. pitardii* which are notable for their small size, slow growth and compact habit, small leaves and prolific bloom. This feature of small leaves with flowers in proportion is a major advantage in view of the fact that most miniature blooms which have been developed of late years, although very beautiful, have the major disadvantage in my view, of being out of proportion with the leaves of the plant on which they are growing. They are lovely when picked, but seen on the bush do not appear to me to be quite right. The Durrant hybrids are known as 'Prudence' and 'Snippet'. 'Snippet' has a profusion of flowers which smother the bush and hang on for six weeks before going over; the flower is pale pink, of 'Donation' form, and in proportion with its leaves. As seen in flower in the United States, it was only two foot tall, and so is a valuable addition for the smaller garden.

From early results I think there is considerable scope still for hybridisation of many of the species with small flowers, so as to produce hybrids of this kind for garden ornament. Further work of this kind has been done by Mr Tom Savige of Albury, N.S.W., the Australian Vice-President of the International Camellia Society. He has been working particularly with *C. rosaeflora*, 'Tiny Princess', etc. and has produced 'Wirlinga Belle', a soft pink medium single flower with weeping habit and small bronze young foliage (it is *rosaeflora* × *williamsii*). 'Wirlinga Princess' is a further hybrid ('Tiny Princess' × *pitardii* var. *pitardii*) which is even more floriferous, with garlands of small irregular flowers, light pink with a deeper edge. With a similar habit is 'Cinnamon Cindy' from Dr W. Ackerman of the National

Fig. 13
Dwarf camellias developed in California – at 8 years old

Arboretum in Washington D.C. The parentage is *japonica* 'Kenjo Tai' × *lutchuensis*; the latter parent introduces scent into its progeny.

Camellia 'Hassaku' introduces dwarfing characteristics into its offspring and 'Fortune's Smile' from Jury in New Zealand is a *C. saluenensis* × 'Hassaku' cross with spreading growth and medium pink flowers. Another small flowered hybrid, though without the dwarf habit, is 'Cornish Spring' from Miss Carlyon of Tregrehan in Cornwall. This has attractive small pink flowers in profusion along the branches. It is 'Rosea Simplex' × *cuspidata* and is an excellent garden plant.

Seen in the United States was a very slow growing *sasanqua* with weeping habit, which should prove very useful for hanging baskets or for growing over a wall; this was being grown by Mr W. Goertz of San Marino, California and it is called 'Abbotts' Special'. Another *sasanqua* seen in Los Angeles was a sport of the small growing 'Yuletide' with a narrow border of yellow around the leaf margin; the variegation was very regular and did not appear to be due to virus.

Mr Dave Feathers in Lafayette, California, has a number of interspecific crosses producing dwarf plants. Particularly noticeable was a 'Donation' seedling with 'Donation' type flowers on an entirely recumbent and weeping bush (Fig. 12). He also has a pendulous pink seedling which is 'Buddha' × *fraterna*, several seedlings of *fraterna* and of *pitardii*, and a weeping plant with small pink flowers registered as 'Dave's Weeper'; this is *fraterna* × *japonica*. Another seedling of 'Donation' with formal double pink flowers only 3 feet high after 10 years, has been registered as 'Mini-Mint'.

Mr Ken Hallstone of Lafayette, California, has a very interesting collection of dwarf camellia plants which could well be used as a feature in a bed on their own in the garden. Some of these are chance seedlings and others are *pitardii* var. *pitardii* × *fraterna*. He has another dwarf series arising from an *oleifera* × 'Narumigata' cross and the reverse 'Narumigata' × *oleifera*; these have carried on their dwarf habit to several other crosses, particularly with 'Show Girl'. These plants were less than twelve inches tall after eight years (Fig. 13).

On my way home from New Zealand I spent two weeks in California as the guest of camellia people there, attended the lovely Descanso show held in the open amongst flowering camellia bushes, the American

Camellia Society annual convention and show at Modesto, California, and visited the marvellous gardens of Descanso and Huntington and a number of private gardens. Drought conditions had obtained throughout California for 12 months and more and the southern part of the state suffered particularly from hot drying winds in February and March. The temperatures in February were up to 90°F. and more for days on end. In the United Kingdom, we suffer from climatic conditions such as frost and cold winds during the flowering season and it was interesting to see similar disastrous results from precisely the reverse conditions. At the time of my visit in mid-March the blooms were frequently stunted and deformed and I saw blooms of 'Francie L' only two inches in diameter. The north part of the state suffered far less severely and practically all the prizes in both shows went to growers from these areas. It was interesting to note that a very high percentage of the flowers exhibited and also of those winning prizes were the same cultivars as I had seen on my last visit in 1968.

For those interested in newer introductions of merit I particularly noted 'Miss Tulare', 'Jean Pursel', 'Harold L. Paige', 'Dr Clifford Parks' and 'Lasca Beauty' amongst the *reticulata* hybrids; 'Bob Hope', 'Elegans Champagne', 'Nuccio's Ruby', 'Elsie Ruth Marshall', 'Silver Chalice', 'In the Pink', and 'Angels Wings' amongst the *japonicas*, and 'Black Tie' and 'Tammia' amongst the miniature *japonicas*.

This was a fascinating trip through areas where camellias have been seen at all stages, in flower and just in leaf, and thus has given me an opportunity to view the genus in all its phases objectively.

I have been received with great hospitality and kindness everywhere and if only a proportion of the scions and seeds that I have been given by kind hosts survive I shall have very great pleasure to come, and to remember them all by.

Porcelain Camellias

TERENCE K. LEWIS

To create camellias in porcelain is, to say the very least, a difficult undertaking. It is, indeed, a formidable task to recreate authentically any subject of nature, but flowers, by their very delicacy, prove one of the ultimate tests in ceramic skills.

At the Boehm Studio in Malvern the involved processes, required for the numerous stages of porcelain sculptures, are mostly intricate and time consuming.

Design is the first stage. Sketches are drawn from living plants, then Dr Smart, of Barnstaple, the camellia grower, is asked for his views. From the drawing of the camellia, a plastilina sculpture is created to show the three-dimensional form which may take three months to complete.

Then, highly skilled flower makers, fully conversant with the structure of each camellia, hand-make each stamen, petal, bud and leaf, patiently building up the sculpture. Starting with the first generation, each layer of petals is formed and allowed to dry overnight before adding the next group of petals. By the time the final petals and stamens are in position and whilst the study is in the process of drying it becomes extremely

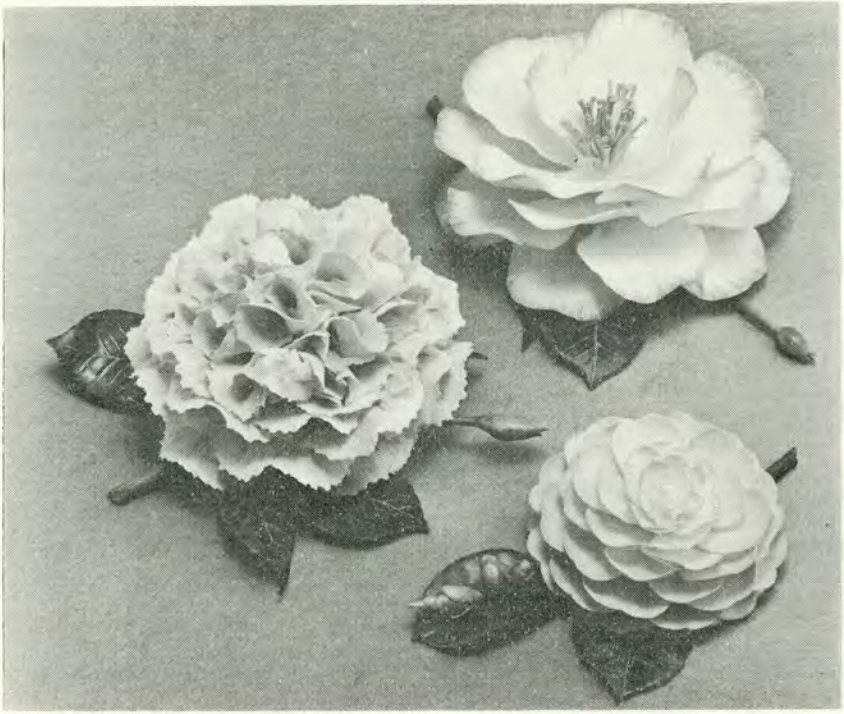


Fig. 14 Porcelain camellias: top, 'Betty Sheffield'; centre, 'Pat Nixon', below, 'Pink Perfection'

fragile, almost wafer thin, and the slightest vibration may cause damage. One flower maker can only produce between 5 or 6 large camellias a week.

After the study has been dried for several days, it is checked for flaws before entering the bisque kiln for its first firing. The model is fired for twenty-four hours at a temperature of 1220°C. and the kiln must cool down for a further twenty-four hours before it can be opened. Because of the moisture content in the clay there is a contraction in size by one-eighth during the bisque firing. At these high temperatures the camellia becomes almost molten-like so, an elaborate system of "propping" is necessary using aluminium oxide powder, together with ceramic fibre (which has the appearance of cotton wool) to stop the petals and leaves fusing together; also ensuring the sculpture does not lose its shape as it contracts. A form of sand blasting is used to clean the model after firing. Microscopic glass beads are used which gives a "polished" finish and makes an ideal surface for glazing and painting.

Again the sculpture is checked for quality or defects and if it is not perfect the piece is broken immediately. Quality control is considered one of the most crucial areas in the studio.

The camellia is now ready to be hand painted. Each 'Swan Lake' camellia needs around twelve hours decorating time, and may require three applications of paint, one fired on top of the other, to depict accurately nature's colouring.

Loading the kiln is a specialised skill since different colours mature at slightly varying temperatures. The kiln-man must make use of the

small variations in temperature within the kiln to ensure each colour is sufficiently fired. For example, blue demands a higher temperature than yellow, green or grey.

At the Studio seven varieties of camellia have been introduced in porcelain – 'Swan Lake', 'Debutante' with *Viburnum*, two 'Emmett Barnes II' (one 'Emmett Barnes' being a limited edition requiring more intricate work), 'Pat Nixon', 'Betty Sheffield' and 'Pink Perfection'. It reflects the amount of work involved in each study when you consider that the Boehm 'Swan Lake' camellia has 167 separate sections (27 petals, 5 leaves, 54 bud petals, 12 calyx, 63 stamens and 6 base pieces) which are all made, assembled and decorated by hand.

Boehm flowers are marketed throughout the world, so packaging is another department in which particular attention is focused, and to ensure, as far as possible, that each model arrives safely we take advantage of all the modern techniques of packaging to minimize the risks of breakage.

In the home a Boehm flower displayed in a glass showcase or as a table centre-piece can, with careful lighting, provide a permanent and dramatic effect that will never fade.

I hope this note may give the reader an insight into our world of porcelain. In many ways we share the same frustrations and pleasures as the horticulturist but in the end we are both seeking a common aim – perfection in our own spheres.

From Small Beginnings

BERNARDINE GALLAGHER

The soft lilt of the west of Ireland names amuses my family, but to me Coolyquin, Cashleive, Cloonkeen and Lissadell are home, for it was in the acid peat bogland of Ireland that I was born. To a small girl of five, Brother Virgilius's new flowers at the Franciscan monastery at Kiltullagh near my home, were very exciting as I ran ahead of my mother and the saintly friar. "Aren't they beautiful, child?" was his only utterance as I held up to him in my chubby hands all the flower heads of his carefully raised St Brigid's anemones flowering for the first time, to my mother's distress. Only in later years did I learn that he had been trained at Glasnevin, that famous garden of Sir Frederick Moore.

So much of my time seems to be spent with camellias that it is hard for my friends to accept that my first love has been, and always will be, rhododendrons. It is just the fact that camellias and magnolias seem to produce quicker results in my garden, that I do not feel so stingy about picking them for shows or friends. I envy gardeners who, by good fortune, have long established gardens filled with mature or semi-mature rhododendrons. However, luck is not always on one side, as my various moves around the country have given me a practical appreciation of the effect of climatic and soil conditions on my plants, which I find a great advantage. Quite a number of my favourite plants have moved with me, and we have grown to know each other very well. The most memorable period of my gardening was in Hertfordshire, convenient for visiting the

Savill Gardens each Sunday morning – the gardens usually empty and always very beautiful. Every plant carefully labelled, and always the best form; one was able to wander at peace and learn. R. 'Lady Chamberlain' and R. 'Lady Rosebery', were never better even in their own home at Exbury. I remember *R. macabeanum* in full flower, R. 'Cornish Cross' with the blushing rosy flowers; and R. 'Elizabeth' surrounded with polyanthus, flowering their hearts out. *Magnolia* × *veitchii* at the far gate, near the best plant of *Camellia* 'Salutation' I have ever seen.

Returning to my neutral clay, and cold Chiltern garden, I had to content myself with the plants that did do, most of the rhododendrons glowering at me in a state of suspended animation. My camellias under glass did very well, especially the *reticulatas*, which seem to prefer the drier conditions. All was not failure, various plants from Exbury favoured me. A *R. timeteum*, the Exbury A.M. 1932 form (now *oreotrephes*) always produced its lovely rosy-purple flowers, and the aromatic foliage of it and its neighbour *R. pseudoyanthinum*, the claret-coloured form, I remember with thankful pleasure.

Deciduous azaleas were more successful than their Japanese relations. A large bed of Exbury clones have moved with me, but since taking over my present garden, crosses between 'Basilisk', 'Berry Rose', 'Strawberry Ice', 'Hotspur Yellow' and 'Cecile' have given me great fun over the years, and are still coming into flower each year. The move to my present garden on perfect soil with ample shelter about ten years ago is too involved to describe here, but most of my plants came with me. Looking at them now I rather marvel at it. Needless to say, moving my plants was more important than the furniture. Oldfield is two acres and after the removal of 27 apple trees and their roots (the danger was honey fungus) the late Fred Wynniatt and Geoffrey Wakefield helped me with the bones of the original layout.

The first tree that we planted was *Magnolia* × *veitchii* 'Isca', together with a number of layers of *Magnolia* × *soulangiana* purchased from the late Miss Mildred Veitch – I must confess that 'Isca' has not been a great success; making superb growth, I allowed my son to prune it into a standard – at which the top promptly blew out in a summer gale, and left me with a very nice straight seven foot stake. Two years later, you would not know that this had ever happened, and it now confirms my belief that this magnolia is a very brittle bush. Charles Puddle tells me that plants at Bodnant have had their tops blown out several times over the years, so I feel that I am in the best of gardening company.

Harold Hillier, who has watched my efforts with kindness, let me have three clones of the Gresham Hybrids from California, and last year they were superb. Crosses between *M.* × *veitchii* and *M. liliiflora* on the one hand and *M.* × *soulangiana* 'Lennei Alba' on the other, they have had about 60 to 70 eight-inch flowers on each plant. They have grown so fast that I never got around to moving them, so that they are too close together, but it does give a wonderful means of comparing the three in flower. For sheer quality, 'Manchu Fan' is so pleasing; one or two of its globular flowers were so perfect that I was able to sit on a stool and gaze on them with wonder. 'Peppermint Stick' is very descriptive and 'Heaven Sent', one of the most popular with visitors to the garden, although not so large a flower. Mr Hillier finds 'Sayonara' better for him in the arboretum at Jermyns, and last year he gave me a plant to compare. It is quite amazing that Dr Todd Gresham could not even give the original seedling away to his local nurseryman. (See *Deciduous Mag-*

nolias of Californian Origin by D. Todd Gresham, *J. Roy. Hort. Soc.* 1964, Vol. 89, pp. 327-32.)

I feel that *Magnolia liliiflora* 'Nigra' is such a good plant, flowering over such a long period of spring and summer that the new crosses with *stellata* raised at the National Arboretum at Washington should be very good when they reach some size. At the moment, five of these, 'Ann', 'Betty', 'Randy', 'Ricki' and 'Susan' are just starting to flower. One at least has inherited the wonderful deep purple of its parent, but even the plants at Jermyns and at the Savill Gardens are too small yet to judge. I wonder too, how many gardeners ever dream of pausing to smell their flowers. *Magnolia sinensis* smells quite gorgeous in the evening, and it is so easy to grow.

Most of my rhododendrons are on their own roots. I know of nothing more annoying than to have to bend down to deal with a *ponticum* sucker when I see one. I always spot them when the more agile members of the household have vanished, and there is only my old gardener and myself about, and we are both growing older.

R. 'Daydream' is one of my favourites – Exbury at its best! What wonderful things George Forrest's *R. griersonianum* has given us, although I do not grow the species myself. Exbury's 'Matador' also, with its brilliant orange red hairy leaves. I am afraid that my group of four R. 'Winsome' will be rather put out: "Always in flower for Chelsea", Charles and Muriel Puddle told me when they gave them to me, but I doubt that they will adapt even for Her Majesty's Jubilee Year and an even earlier Chelsea. Exbury's 'Fabia' and 'Fabia Tangerine' are both excellent doers and a lovely colour. My 'Fabia Tangerine' unfortunately perished in the drought, but a friend has replaced it for me, when he moved to a garden on chalk. R. 'Kilimanjaro' flowered wonderfully for four or five years with huge trusses of redcurrant red flowers. Unfortunately, it was a grafted plant, and it collapsed and died. R. 'Janet' next door to it decided that this was a good opportunity to take off and, although it is growing at an alarming rate, I am still waiting to see it flower.

I have decided to make do with R. 'Edmund de Rothschild' ('Kilimanjaro', F.C.C. × 'Fusilier', F.C.C.) on its own roots, which has flowered well for the last two years. No rhododendron lover can be without R. 'Hawk Crest', though I dislike the growth habit of the plant and even more the appearance of the flower-buds before they open – just as if they were all going to fall off – but it blooms into the most perfect yellow. It is appropriate that the late Lionel de Rothschild's last cross should have produced such a lovely hybrid, called 'Prelude', which I have in a dry spot and have to watch carefully.

Another friend, Tom Spring Smyth, and his delightful wife gave me a present of a sister seedling of one of his finds, *R. dalhousiae* collected in Nepal, T.S.S. 32. I am longing to see it flower.

My bedside table is littered with gardening books urging me to space my plants for posterity – "So nice to see your garden while there is still some grass", an acquaintance caustically remarked after a visit to the garden. I have no time for that "posterity" nonsense; can I be forgiven, on the grounds of old age, when I find myself telling more and more of those silly people not to be so stupid, who ask to see the garden, and know absolutely nothing about plants.

Camellias in Jersey

VIOLET LORT-PHILLIPS

To write fully about all the many camellias in the Channel Islands would take up too much space for an article; to treat briefly with them does the wealth of trees and shrubs less than justice. Jersey, together with Guernsey and Sark, is a rich hunting ground for camelliaphiles.

It is thought that the start of camellia growing in the Channel Islands was in 1877, when Van Houtte of Belgium imported a consignment to the Charles Smith Nurseries in Guernsey. There have also been links with France, and one of the most floriferous of the old varieties, 'Marguerite Guichard' from Nantes, is well established here. There are also old invoices showing that camellias were imported from the Knap Hill nurseries.

It was at this time too that Mr Curtis, nephew of the editor of Curtis's *Botanical Magazine,* married the daughter of Dr Fothergill, after whom the genus *Fothergilla* was named. They settled in Rozel and made a tropical garden in one of the valleys, planting one of the earliest *Magnolia campbellii* to be introduced into Europe. It gives a wonderful display each year, starting to flower in late February to early March and a few wine coloured flowers remain as I write at the end of April. This tree is thought to have survived the great frosts of the 1880's which killed many of the other rare trees. Some of the finest rhododendrons from this valley were transported to Germany during the occupation. Rozel Manor, the house of Brigadier and Mrs Lempriere Robin, is in the next valley and has eleven different species of magnolia, many planted by the late Captain John Bolitho from stock given by the late Mrs Charles Williams of Trewidden. Here, too, are many camellias; the sports of Camellia 'Tricolor', with 'Lady Vansittart', 'Lady de Saumarez', and 'Lady Marion' frame the 13th century chapel and garden running down to the lake, to the right of which stands a magnificent *Taxodium distichum* and *Camellia reticulata* 'Captain Rawes'.

The Island has many fine old manor house gardens that are still maintained, albeit with difficulty today. Lord and Lady Jersey's garden at Radier Manor was designed and planted from 1947 onwards. There were three old camellias, 'Latifolia', 'Lavinia Maggi' and 'Donckelarii'. In 1954 an avenue of camellias was planted on a north-facing slope flanked by a double row of *Betula pendula,* to which have been added at the base camellias 'Inspiration', 'Citation', and 'Salutation' with a luxuriant 'Lady Clare'. They flourish despite having been eaten down by errant cows during their first years. They also disproved the theory that it is hard to grow anything under silver birch.

Perhaps one of the most interesting collections of camellias can be found at Samares Manor, the home of Mrs Obbard; the garden was created for the late Sir James Knott, her first husband, by a London garden designer in the 1930's. Here a swamp was drained and trees and shrubs were imported from all over the world. There are many fine trees, *Magnolia grandiflora* 'Goliath', *Liriodendron tulipifera,* several *Taxodium distichum* and a 200 year old ornamental plane. In this framework there are a hundred different *Camellia japonica* and other species. Camellia 'Donckelarii' is next to the white flowers of "Yobeki-dori"

(*Magnolia* "*alba*"), in an oblong bed with *C.* 'Fred Saunders' with fimbriated crimson flowers; they are at least 20 feet high on the lawn facing the Manor House, part of which dates from the 13th century. Near the *colombier* (pigeon tower) there is a more recent planting of camellias, including 'Barbara Hillier' with glowing pink trumpets. Beyond is the Lady Walk with many old favourites like 'Preston Rose'.

Lest it should be thought that camellias can only be found in the gardens of manor houses, I must reassure my readers that you will find camellias peeping over the walls of town gardens, in farmhouses and in the country, although they have not as yet been used for street planting as in Spain and Portugal.

The Howard Davis Park in St Helier was given to the States of Jersey by Mr and Mrs Davis, as a memorial to their son killed in the 1914-18 war. The gardens received their first consignment of trees and shrubs including camellias from Messrs Treseders of Truro in 1939. During the war and the occupation planting continued, a lesson in fortitude and faith in the outcome. The many who stroll across the lawns, listening to the band and admiring the flowers, have no idea how hungry and dispirited were the men who hauled granite by hand-cart from Le Dicq, some miles distant, to build the rockeries.

The Jersey Wildlife Preservation Trust gardens are at Les Augres Manor. Gerald Durrell reformed the Garden Committee in 1969, on which I have been actively concerned as Chairman until this year. With the planting of the newer varieties of camellia, we hope to have representatives of American, New Zealand and Australian camellias and of course the foundation of our collection is *Camellia japonica*, of which we were fortunate to find some fine established trees. The Swan Walk was planted in 1971 and is lightly shaded by pines (*Pinus radiata*) and has *Magnolia denudata* 'Purple Eye' and *M. loebneri* 'Merrill' with an underplanting of azalea. It already promises to become a feature. This leads to the top lake where a start has been made to landscaping. An old *Camellia reticulata* was successfully moved last year. Black-necked swans dip their graceful heads into the water reflecting this and another old formal camellia. This year we planted two *Magnolia* 'Brozzonii'. We find camellias tolerate and thrive in some of the display cages of the rare pheasants and touraco, though the former are not good gardeners. The Rothschild's mynah (white with blue eyes) on the other hand look wonderful when set off by *C.* 'Spencer's Pink'. By the manor courtyard, circa 1760, there are some old formal and semi-double *Camellia japonica*, which cannot as yet be named though flowers have been shown at the International Camellia show in Como, Italy, and to camellia specialists visiting the Island.

Our garden at La Colline is in many ways typical of the difficulties as well as the joys of gardening in this Island. We face south and on fine nights can see the lights from the lighthouses of St Malo and the Island of Chaussey. When Captain Lort-Phillips bought the property in 1957 it contained one or two good trees, a *Magnolia soulangiana*, some acacias and two or three *Camellia japonica*. The garden was carved out of the hill with steep slopes and terraces, and has been exploited to create small enclosures or secret gardens each with a theme, joined by the continuous planting of camellia and silver foliaged plants to give unity and balance.

The *Camellia rusticana* seeds and scions collected in Japan in 1962 have had a hard life. I had hoped that they would form a natural carpet

by self-layering as they do in Nügata Province in north Japan, but they were confused by our mild climate and suffered from the dryness of the *côtils*, (terraces). Our rainfall average is 30 inches (762mm), and the minimum last year was 14.925 inches (or 379.095mm). We have shallow soil and had to drill 150 feet to find water for a bore hole. That any survived their first years was a tribute to the toughness of the genus. Despite all these hazards we reckon to have camellia blooms from early October until late May. Some of course prefer the shelter of the lathe house: *C. rosaeflora* and *C. fraterna* with some of the Kunming *reticulatas* would suffer horribly from the salty dry winds that blow in January and February from the south. A *Camellia granthamiana* that was carefully nurtured in the lathe house refused to flower satisfactorily until transplanted to a south wall in full sun. I am hoping to be able to put *C. hongkongensis* beside her. We have started a small collection of scented camellias in an old greenhouse and hope, in conjunction with our American friends, to work on extending the flowering season later into May and June. The late Mr Adachi of Tokyo told me that he had a camellia that bloomed in August. If anyone has any news of this we should be grateful.

In conclusion it appears that the happy alliance of camellias and magnolias will continue to beautify the Island, and for those fortunate enough to have water or a high water table rhododendrons can be added, which grace sheltered and favoured gardens and valleys. With discriminate planting and care during their first years, camellias, rhododendrons and magnolias can be established and flourish as witnessed by the splendid stands of *Rhododendron arboreum* to be found on this favoured Island.

The Rhododendron and Camellia Group Sussex Tour

28-30 April, 1977

I. F. LA CROIX

Rhododendron enthusiasts have had a bad year; the drought last summer caused enough damage, and many of the surviving plants suffered from April frosts, so it should have been no surprise when the Sussex Tour opened at Nymans in teeming rain. It was strange to think that on last year's tour it was hot enough to sunbathe. In spite of the weather, about seventy people turned up, but by the end of the day only four remained, still being kindly conducted round by the indefatigable Mr Nice, the head gardener.

The camellias seemed much less affected by the weather than the rhododendrons and made a splendid show. We saw the original plant of 'Leonard Messel' (*C. reticulata* × *C.* × *williamsii* 'Mary Christian'), now about 15 feet high. There were a number of plants of this fine hybrid with its large, deep pink, semi-double flowers with a prominent boss of gold stamens, quite unaffected by frost. There were several specimens of 'Mary Christian'. I also noticed 'Citation', a silvery-pink *williamsii* hybrid, and a number of plants of a large, opulent, semi-double red *japonica* with gold stamens.

Of the rhododendrons, one of the most striking plants was the natural hybrid 'Anne Rosse', believed to be *sinogrande* × *macabeanum*, with leaves like *sinogrande* and huge trusses of creamy-yellow flowers. Another plant I liked very much was an unnamed *wardii* seedling, with most un-*wardii*-like leaves – narrow and pointed – and loose trusses of about four saucer-shaped white flowers with pink markings, beautifully presented on long pink stalks. Oddly enough, two of the most floriferous rhododendrons were the cream coloured 'Penjerrick' and *R. johnstoneanum*, neither noted for hardiness. A line of 'Bluebird' made a fine show, and there was a good specimen of 'Elsae' (*grande* × *hodgsonii*) with leaves 12 to 15 inches long with a brown indumentum and cream flowers. *R. albrechtii* was flowering with its leaves, and there was the most floriferous 'Yellowhammer' that I have seen. Other interesting species were *R. sidereum* (Grande series) with yellow flowers and a buff indumentum, labelled KW 6792, that is from the 1926 expedition to Burma and Assam; a group of *R. meddianum* var. *atrokermesinum* with attractive smooth bark and red flowers, and a handsome plant of *R. crinigerum* with bullate leaves with a buff indumentum and pink and white striped flowers.

There were several plants of *Magnolia* × *loebneri* in full flower; all the ones I saw were white. *M. campbellii* and *M. sargentiana* var. *robusta* were in bloom, as well as *M.* × *soulangiana* in a number of forms.

The one slight regret, apart from the weather, was that the plant stall at the entrance was not selling some of the many unusual plants that the garden has to offer. I am sure members would quickly have bought them up. We were most grateful to the Countess of Rosse and the National Trust for allowing our visit.

The following morning, Friday April 29, we gathered at Wakehurst Place, Kew's country extension, where we were met by the Assistant Curator, Mr Tony Schilling, who had just returned from Nepal. One might have thought that the weather had done its worst the day before, but here we had not only rain, but hail and thunder as well.

The rhododendrons here seemed to show fewer signs of the effects of drought and frost, possibly because of the marvellous tree shelter and high cover that obtains through most of the garden, but there was still rather less flower than one would normally expect at this time. Some, however, were flowering freely. There was a superb specimen of 'Sir Charles Lemon', with a tall, narrow habit, covered in white flowers. There was no wind, so we missed the lovely effect of the rich red indumentum showing and disappearing as the leaves move. A very good *R. fictolacteum* was in full bloom, with white flowers, and another less often seen species with a very good red-brown indumentum was *R. russotinctum* of the Taliense series. *R. barbatum* had finished flowering, but with its beautiful smooth bark, flowers are almost just a bonus. This character is inherited by its hybrid with *R. thomsonii*, 'Shilsonii' – an old hybrid from Cornwall and still a fine plant. 'Lord Swaythling', with large, pink, slightly frilly flowers was making a good show. This hybrid, which first received the A.M. in 1926, is mentioned in the Handbook as being H3, and is a *griffithianum* hybrid introduced by van Nes. It is only given one star, which seems somewhat surprising, considering that 'Britannia' gets four! We saw *R. sidereum* again, looking well, with a good amount of flower. There was a tall and slightly spindly specimen of *R. lacteum* with good yellow trusses and we saw what is supposed to

be one of the largest specimens of *R. yakushimanum* in cultivation, covered with flower-buds. Mr Schilling pointed out *R. lopsangianum*, like a miniature *thomsonii*, not in flower but with neat, attractive foliage, and also *R. lapponicum* – reputed to be very difficult in cultivation, but thriving here.

By lunchtime the weather had relented, and it was dry, if not actually sunny, when we assembled at South Lodge, near Horsham. The party was conducted round by Miss Godman herself and Mr Collins, the head gardener. The plants in some parts of the garden had suffered in last year's drought, particularly the large-leaved rhododendron species, but in other parts seemed little affected. Miss Godman told us that the rock garden was constructed some time after 1883 – it is hard to imagine that these massive lumps of rock must all have been manhandled into place without mechanical aids. Several plants of *R. williamsianum* were flowering well and seemed to have escaped the frosts earlier in the month, and beside a little pond was *R. canadense* in full bloom, its starry pink flowers with deeply divided corollas. This is not a plant one sees very often; it is supposed to like a moist situation. A very large *yakushimanum* must have rivalled for size the one we saw at Wakehurst. *R. fletcheranum* was just coming into flower; it is one of the hardiest of the Maddenii series, and was certainly looking very healthy. It is described as yellow in the Handbook, but this one was creamy white.

After the rock garden walk, we came into a wooded area carpeted with bluebells. Miss Godman pointed out a pink 'Luscombei' (not in flower) that she said was one of the original plants in the garden. There were several plants of the cross *R. irroratum* 'Loderi', all very free-flowering, some opening white from pink buds and others pink. Miss Godman produced a real puzzle with one hybrid, a tall plant with long, glossy leaves with long stalks, and large trusses of pink flowers with a red blotch. No one was prepared to suggest possible parents. Mr Collins told us that a very large plant of 'Cornish Cross' with lots of deep rose-red flowers and attractive leaves and bark had been taken as a layer in 1949 from the parent plant, which was still thriving nearby, although not quite as big as its offspring.

R. vernicosum, of the Fortunei series, was in flower – they were lavender on this plant. I noticed *R. fulvum*, and *R. zeylanicum* with fine, dark, glossy bullate leaves with a light fawn indumentum. Miss Godman pointed out a specimen of *R. grande*, unfortunately not in bloom, which she said had pink flowers.

A number of people remarked on a small tree with glossy, evergreen leaves like those on the flowering shoots of ivy, and greenish yellow flowers. This turned out to be *Trochodendron aralioides*, a plant I had not come across before. There were some very big *Magnolia* × *soulangianas*, and growing beside one of them, Mr Collins showed us *M. cordata* which has yellow flowers. These appear later and are rather hidden in the foliage. There was a sizeable *Sequoiadendron giganteum*, brought by Miss Godman's father from California.

Another specimen that drew a lot of comment was one of *Pieris japonica variegata*. I have only seen this as a very small shrub, and had assumed it was always dwarf in habit, but this was about 7 feet tall. Miss Godman told us that it did not flower. We returned to the house through the glasshouses. One contained some splendid camellias; the largest was one of 'Mathotiana' which Mr Collins said was over 100 years old. It was smothered in red flowers and showed no signs of

senility. There was a fine 'Adolphe Audusson' brought back from France 30 years ago; one of 'Imbricata Alba' and one of 'Flamingo', with which I was not familiar. It had very large, pale pink flowers and prominent gold stamens. 'Augusto Pinto' was attractive, with pink petals edged with white, and opposite it was 'Hermes', also pink but with a broader white edging. The whole house was perfumed by a plant of the rhododendron 'Princess Alice' growing in a tub. This is an old cross between *ciliatum* and *edgeworthii* which won a F.C.C. in 1862, with luxuriant white flowers and fine bullate foliage. On the wall of the house was an enormous 'Donckelarii' which we were told was already there when the house was rebuilt in 1883.

After the tour, Miss Godman most kindly provided us with a delicious tea. It made a very pleasant end to a most interesting day.

On Saturday morning, about 120 members gathered at Heaselands, by kind permission of Mr and Mrs Ernest Kleinwort, admiring the collection of birds as we went in. Mr T. Cowan, the head gardener, accompanied us around the garden. We passed large plants of two red hybrids, 'Queen of Hearts' (*meddianum* × 'Moser's Maroon') and 'Laura Aberconway' ('Barclayi' × *griersonianum*). The reds were further represented by 'Elizabeth'. This variety seems to have suffered from drought more than most of the medium sized species and hybrids. 'Unique' was flowering well, the pink buds just opening to creamy flowers. We saw a plant of 'Aurora' flowering freely, but with the bark split on every stem, presumably as a result of frost. Some large camellias were in full flower, including 'H. A. Downing' and 'Adolphe Audusson', both red. In a little gully leading from one level to another, there was a plant of 'Dormouse', a *williamsianum* hybrid very like its parent in flower, but much more open in growth.

R. 'Emasculum' was still in flower, which seems strange as it is usually much earlier. 'Blue Diamond' gave a good display, but *R. impeditum* was sparsely flowered. Again we saw several large *yakushimanum* – this species seems to be particularly drought- and heat-resistant. This emphasis on last summer's drought and high temperatures must seem faintly ludicrous to Australian readers who must have so much more to put up with every year, but neither plants nor gardeners in Britain are acclimatised to such conditions!

Back in the wood, 'China' was just coming out, and we admired 'Alix', a *barbatum* × *hookeri* hybrid with the beautiful bark one might expect from such a cross. Another hybrid with good bark was 'Daphne Millais', again a *griffithianum* hybrid introduced by van Nes. The foliage was also attractive and deep pink was showing in the bud. There was another hybrid that I should think few people have heard of – it was labelled *griersonianum* × *sinogrande*! The buds looked just like *griersonianum;* the leaves were similar but slightly larger and the habit was taller. 'Butterfly' was a pleasant plant with neat foliage and creamy flowers, not very freely produced, but perhaps that was the result of the weather.

In the afternoon, we gathered at Borde Hill, also near Haywards Heath and only about seven miles away. I will not describe the wealth of plants here as Robert Clarke has already given some details in his article on pp. 6-14.

The Rhododendron and Camellia Group Exhibit

14th June, 1977

Members of the Rhododendron and Camellia Group staged a colourful exhibit of midsummer rhododendrons and azaleas under the clock of the New Hall on 14 June, when they had a social evening, and a most interesting talk from Dr James Cullen, Assistant Keeper of the Edinburgh Royal Botanic Garden. This is reproduced on pages 33-43.

Mr J. D. Bond and Mr G. A. Hardy had organised the exhibit, to which a number of members of the Group contributed material, and others helped to stage. As this was the first exhibit which the Group had put up since it was re-organised, the award by the Council of a Gold Medal was greatly appreciated by all concerned.

The exhibit comprised well over 150 different rhododendrons and azaleas, mostly in flower, though some were staged for their foliage effect. There were tall sprays at the back to show the young growth of the large leafed species, *R. coryphaeum* and *R. hodgsonii*, and the very beautiful new foliage of *R. bureavii* and *R. insigne*, as well as large vases of the blue young foliage of *R. campanulatum* var. *aeruginosum* and of *R. cinnabarinum*.

The deciduous azaleas were very showy, and included *R. calendulaceum* 'Burning Light' (A.M.) and two other orange selections. Plants of *R. viscosum* and *R. viscosum* 'Erectum' were scenting the air; two selections of the *R. viscosum* × 'Rosella' hybrid were there as well as 'Viscosepala' (*molle* × *viscosum*), *R. occidentale* 'Gold River', and 'Ignea Nova' (Ghent) which received an A.M. that day, and the evergreen 'Naomi'.

There was an unusual small-leafed form of *R. ponticum* (believed to be 'Cheiranthifolium', but this was disputed); 'Multi-maculatum'; one of the earliest of the Waterer hybrids and now rarely seen, and also 'Frank Galsworthy', both *ponticum* hybrids, and many of the more popular hardy hybrids, such as 'Britannia', 'Doncaster', 'Earl of Donoughmore', 'Mrs R. S. Holford', 'Mrs C. S. Pearson', 'Purple Splendour' and 'Sappho'.

There was an exquisite spray of a late flowering form of *R. wardii; R. griersonianum* and many of its hybrids, including 'Dido' × *griersonianum* of Windsor, 'Arthuria', 'Azor', 'Damozel', 'Fabia', Fabia red form, and 'Fabia Roman Pottery', together with 'Tally Ho', and its other parent *R. eriogynum*. Other *eriogynum* hybrids represented were 'Romany Chal', and 'Grosclaude', and there were also 'Indiana' (*kyawi* × *scyphocalyx*) and 'Englemere' (A.M.), a double *elliottii* cross from Windsor. 'Jalisco' was there, with 'Jalisco Emblem' and 'Grilse'. Other hybrids in the exhibit included 'Impi', 'Norman Shaw' and 'Halcyon Pink'.

In the centre of the exhibit, the connoisseur pieces were represented by trusses of *rhabdotum* and *nuttallii* from Leonardslee, with scent provided by a vase of *crassum* from Cornwall.

W.M.

The Rhododendron Competition

March 15/16, 1977

The early Rhododendron Competition is always hazardous, and is so often spoilt by the spring frosts. This year, although it was a week later than in 1976, it was held before the worst of the spring frost damage, and it seemed that the early flowering rhododendrons were less affected by the 1976 drought than those that flower a month or two later. In consequence, the classes were better filled than usual, and the Sussex gardens in particular were able to produce exhibits in very good condition.

SPECIES CLASSES

There were five entries in class 1, four trusses of species, which was won by Mr Robert Stephenson Clarke of Borde Hill with *calophytum* W.4279; *mallotum* Farrer 815; *praestans* F.14209 and *sutchuenense*. Lamellen was second with *calophytum, coryphaeum, grande* and a good *mollyanum;* third was Mrs Potter of Wentworth.

There were four entries in class 2, a spray of a species, which was won with *sperabile* by Borde Hill, who were also third with a lovely spray of *praevernum* with rather small flowers and leaves; they also showed a spray of *oreodoxa*. Second was a spray of four trusses of

calophytum in very good condition, shown by the Hon. H. E. and Mrs Boscawen of The High Beeches.

In class 3, for a single truss of a species, there were nine entries, the winner being a fine *barbatum*, shown by Mrs Potter. Second was a *sutchuenense*, shown by Mr R. Strauss of Stonehurst, Ardingly; third a *lanigerum* from the Hydon Nurseries, and fourth *mollyanum* from Lamellen. Other notable entries were good trusses of *calophytum* and *praevernum* from The High Beeches.

There were no entries in class 4 for four cultivars of Arboreum, and only one in class 5 for any other species in the Arboreum series; this was won by *lanigerum*, shown by Mrs Potter. Class 6, Barbatum series, had three entries and was won by Mrs Potter with a *barbatum* with a rounded, mucronate leaf. Second was *strigillosum* from Borde Hill, and third another *barbatum* from the Hydon Nurseries. There were no entries in class 7 for the Falconeri series, but there were ten exhibits in class 8, Fortunei series; this was won by a *praevernum* from The High Beeches; second a *sutchuenense* shown by Major Hardy of Sandling Park. Other exhibits included *calophytum* W.1523, *erubescens*, and three quite different forms of *oreodoxa*.

Class 9 for the Grande series attracted three entries, and was won by *praestans* F.14209 from Borde Hill, from *mollyanum* and *grande* from Lamellen. In class 10 for the Neriiflorum series, there were three entries from Borde Hill and one from The High Beeches; first was *sperabile*, second *beanianum* (The High Beeches), third *mallotum* Farrer 815 and fourth *sanguineum*.

In class 11 for the Thomsonii series, there were two (unusual) exhibits, both from Borde Hill: a mauve *hylaeum* KW.6833, and *eclecteum* var. *bellatulum* F.21770. Class 12 for small flowered series, attracted seven entries, and was won by a large spray in good condition of *augustinii* var. *rubrum* from Borde Hill. Second was *spinuliferum* from the Hydon Nurseries, and third *lutescens*, shown by Mr Strauss. Other exhibits included two sprays of *dauricum*, one the white form, shown by Mrs Dryden of Sawbridgeworth in Hertfordshire. Class 13, the "catch-all" class, attracted two sprays and four trusses, and was won by *eritimum* ssp. *persicinum* from Borde Hill; second was a spray of *fulvum* and third *uvarifolium* from The High Beeches. Other exhibits included the unusual magenta-rose *lukiangense* ssp. *ceraceum*, a plant not grown for its beauty.

HYBRID CLASSES

Class 14 for trusses of four hybrids attracted only two entries, and was won by The High Beeches with *sutchuenense* × *calophytum* (Robin Hood); *strigillosum* × *barbatum* (Esperanza); 'Shilsonii' (*barbatum* × *thomsonii*); and 'Mrs Henry Shilson' (syn. 'Rosenoble', A.M.). The other exhibit consisted of 'Arbcalo', 'Arbad', *arboreum* × *lacteum* (Endeavour) and *irroratum* × 'Beauty of Tremough'.

Class 15, for a spray of any hybrid, attracted five entries, and was won by a nice 'Shilsonii' from The High Beeches, in good condition with good foliage. Leonardslee were second and third with respectively 'Golden Oriole' and 'Seagull', both lovely exhibits. Borde Hill showed 'Mansellii' (*falconeri* × *grande*, 1875) and the Hydon Nurseries 'P. J. Mezzitt', A.M. (*carolinianum* × *dauricum*).

Class 16, for a truss of any hybrid, attracted four entries, and was also won by The High Beeches's 'Shilsonii'; second was *arboreum album*

× *lacteum* (Endeavour) from Lamellen; third *sutchuenense* × *arboreum* (Snow Bunting) from Borde Hill, and fourth 'Rocket' from the Hydon Nurseries.

Class 17, for a hybrid of which one parent is a species of the Arboreum series, attracted six entries, and was won by another *arboreum* × *sutchuenense* hybrid, this time from Leonardslee; 'Arbad' from Lamellen was second; 'Blushing Beauty', an *arboreum* hybrid from Borde Hill, was third. There were also a nice 'Choremia' from the Hydon Nurseries, and 'Nobleanum Album' shown by Mrs Potter.

Class 18, for a hybrid of which one parent is a species of the Fortunei series, attracted four entries, and was won by a nice *arboreum* × *sutchuenense* from Borde Hill. 'Nimrod' ('Polka Dot' × *calophytum*) from Leonardslee was second, and 'Arbcalo' from Lamellen third.

There were four entries also in class 19, for any hybrid of which one parent is a species of the Barbatum or Thomsonii series. This was won by Mr Strauss's 'Shilsonii' from The High Beeches's 'Shilsonii' with Hydon Nurseries' 'Rocket' third, and 'Campirr' from Lamellen was also in this class.

There were four entries in class 24 for a rhododendron plant in bloom, but only one exhibit, *R. keiskei* shown by Mrs Dryden.

E.W.M.M.

The Rhododendron Show

April, 19/20, 1977

The Silver Jubilee calendar necessitated Chelsea being a week earlier than usual in 1977, and the Rhododendron Show was a fortnight earlier than in 1976. This should have benefited the earlier gardens which so often are past their peak by the time the show is held, but this year the combination of frosts in December and again in March and April, following a severe drought, resulted in the poorest Rhododendron Show for years. There were no entries from Cornwall, and none from Exbury; Bodnant and Sussex were well below standard, and only some of the Scottish gardens could produce really good exhibits. The Society therefore had no difficulty in fitting the Rhododendron Show into the New Hall, in addition to the Camellia and Daffodil Shows, an impossible feat in a normal year.

A number of classes attracted no entries, and others were hardly worthy of mention. On the whole, the standard of the Species classes was slightly better than that of the Hybrids.

There were two entries in Class 1, for trusses of eight species which, as so often before, was won by a fine exhibit from Mr Sylvester Christie of Black Hills, Morayshire, who showed *uvarifolium* var. *griseum*, with a silky whitish indumentum; a large-leafed *barbatum* with a good truss; a mauve *sutchuenense* var. *geraldii*; a cream *arizelum* with a crimson blotch; *basilicum*; *monosematum*; *gymnogynum* with crimson flowers; and a rather small *niveum*. This exhibit won the Lionel de Rothschild Challenge Cup. The second entry came from Messrs E. A. T. and H. C. Wright of Arduaine, the famous Campbell garden at the head of Loch Melfort in Argyll, described by Sir Ilay Campbell in the *Rhododendron*

Yearbook for 1966, and now so happily being restored by its new owners. It was a great pleasure to see their exhibits this year and, with a little more experience of staging, one looks forward to seeing some notable exhibits from Arduaine in future years from some of the splendid plants in their garden. In class 1, they included in their exhibit trusses of *fulvum* and *sulfureum*; they were also second in class 3, restricted entry, with *arboreum* f. *roseum*, *irroratum* and *uvarifolium*.

Class 2, for trusses of three species, had three entries, and was won by Mr Ingall of Corsock House, Kirkcudbrightshire; the class also included an *arizelum* with a large leaf from Brodick who were second; and from Borde Hill a good *wightii* and a *galactinum* with a narrow leaf and small white flowers with a purple spot. Class 3, for trusses of three species, shown by an exhibitor who did not win a first prize in class 1 or class 2 in 1973 or any subsequent year, was won by Major Hardy with *hyperythrum*, *neriiflorum* and *rex*.

Class 4 for any species attracted ten entries, and the McLaren Challenge Cup was won by Mr Christie, with a fine *basilicum*. Brodick were second with *meddianum* var. *atrokermesinum* from the 1950 Kingdon Ward expedition, which went on to receive an A.M. Borde Hill were third and fourth with *arboreum* and their good *wightii*, and other entries included a fine purple *hodgsonii* from Major Hardy, *habrotrichum* from Arduaine and *taggianum* from Brodick.

Class 5 for one spray of a species and the Roza Stevenson Challenge Cup attracted five entries, and was won by Brodick with a large spray of *spinuliferum*, which went on to receive an A.M., and has been given the clonal name 'Blackwater'; they were also third with *sulfureum* KW 21001. Borde Hill were second with *hemitrichotum* KW 4050 and also showed *cuneatum* F.22203. Black Hills was fourth with *gymnogynum*.

Class 6 attracted three trusses of *arboreum* f. *roseum*, and was won by Bodnant. In class 7, Mr Christie's *niveum* beat a truss of *argyrophyllum* var. *cupulare* from Borde Hill. There were four entries in the Barbatum class, in which Mr Christie's lovely *barbatum* beat two trusses of *morii*.

In class 9 for the Boothii series, a truss of *chrysodoron* from Leonardslee beat two exhibits of *sulfureum*, a spray from Brodick and a truss from Arduaine.

There were two entries in class 10, won by a fine *campanulatum* from Brodick. In class 11, the only entry, a spray of *cinnabarinum* from Arduaine, received a second prize. There were no entries in the Falconeri class, but class 13 attracted four exhibits, and was won by *fictolacteum* from The High Beeches, beating two other trusses of *fictolacteum* and a *rex*. Class 14, for other species in the Falconeri series, attracted seven entries, and was won by Mr Christie's *basilicum*; second was a *hodgsonii* also from Black Hills, and other entries included the good Brodick *arizelum*, *coriaceum*, *eximium*, and *galactinum*.

Class 15 for the Fortunei series had four entries, and was won by the deep mauve *sutchuenense* which Mr Ingall had shown in class 2; this beat a var. *geraldii* and a *vernicosum* from Black Hills. Class 16, for the Fulvum series, was won by Mr Christie's *fulvum*, from his *uvarifolium* var. *griseum*. Arduaine also showed both species and Borde Hill showed *fulvum*. Class 17, Grande series, had four entries and Brodick were first and second with *macabeanum* and *praestans* respectively; *sinogrande* was also shown.

There were three entries in class 18 for the Irroratum series, Mr

Christie being first and second with a good *anthosphaerum* and with *gymnogynum*; an *irroratum* from Arduaine was third. Class 19 for the Lacteum series attracted three entries, and was won by an unusually well-shaped *wightii* shown by Lady Adam Gordon, beating a rather pale *lacteum* from Corsock and a good, but more typical *wightii* from Borde Hill.

In class 20, for the Megacalyx sub-series, the only two entries both came from Brodick, their *lindleyi* winning from their *taggianum*. In class 21, Ciliicalyx sub-series, Mrs Elizabeth Mackenzie, formerly of the Isle of Mull and now living in East Anglia, was first with *inaequale* and second with *iteophyllum*. Major Hardy was third with *parryae*; and *ciliatum*, *formosum*, *johnstoneanum* and *lasiopodum* were also among the ten entries.

In class 22, for the Haematodes sub-series, Mr Christie won with *pocophorum*, and was third with *beanianum* var. *compactum*, while Brodick were second with *beanianum* and also showed *hemidartum*. There were five entries in the class for the Neriiflorum sub-series, which was won by a truss of *sperabile* var. *weihsiense* F.25481. There were no entries in class 24 for the Forrestii and Sanguineum sub-series.

In class 25 for the Ponticum series, Mr Christie's *degronianum* won from Mr Stephenson Clarke's *metternichii* 'Ho Emma', A.M. In class 26 also there were two entries, both from Mr Christie: *globigerum* winning from *roxieanum* var. *oreonastes*. In class 27, Mr Christie's *adenophorum* won from Mr Ingall's *adenogynum*.

In class 39, a nice spray of *bullatum* KW 20839, won for Leonardslee from two other entries. In class 40, *glaucophyllum* var. *luteiflorum* from Brodick won from their *charitopes* and *glaucophyllum* var. *tubiforme* from Arduaine. In class 41, *rubiginosum* from Bodnant beat *desquamatum* F. 26482, from Borde Hill. In class 42, there were five entries, *hippophaeoides* winning for Leonardslee from *fastigiatum* from The High Beeches and *cuneatum* from Borde Hill.

In class 43, there were three entries, *uniflorum* from Brodick winning from *pemakoense* from Arduaine. There were two entries for *racemosum* in class 45, the Bodnant exhibit winning from Borde Hill. Class 46 attracted four entries, and was won by a spray of the A.M. *spinuliferum* from Brodick; second was *hemitrichotum* KW 4050, from Borde Hill, and there were two sprays of *scabrifolium*. In class 48 for *augustinii*, there were two entries, the Bodnant exhibit beating that from Borde Hill. Class 53 for a Malesian species attracted one entry, *R. christianae* from Leonardslee.

Class 56, restricted entry, had one exhibit, a beautiful *galactinum* from Mr J. A. Fox of Crowborough. This exhibitor also had the only entry in class 63, restricted entry, three unnamed hybrids in perfect condition.

There were no entries for the eight hybrids, the three hybrids open classes, the six or the three hybrids raised in the exhibitor's own garden, or the three hybrid spray class, an indication of the unusually poor standard of the show this year. Class 65 for any hybrid attracted five entries, and was won by Mr Strauss with a perfect 'Mariloo'. Second was a very good *calophytum* hybrid from Brodick, and third Major Hardy's 'Lionel's Triumph'.

Class 78 for a *lacteum* hybrid attracted two entries, Mr Strauss's 'Mariloo' winning from Major Hardy's 'Lionel's Triumph'. Class 81 for a hybrid of the Maddenii or Edgeworthii series was perhaps the

best class in the show, and all the entries were good. Lady Adam Gordon's lovely 'Tyermannii', F.C.C. 1925, was first; the Brodick 'Mi Amor', A.M. 1975 third; and Sir Giles Loder was awarded second, fourth, H.C. and "Commended" cards for 'Lady Alice Fitzwilliam', F.C.C. 1881; 'Beatrix Anderson', A.M. 1968; 'Folies Bergère', P.C. 1967; and 'Harry Tagg', A.M. 1958, respectively.

In class 86, for a hybrid between two species not otherwise included, Bodnant won with a good hybrid between *eximium* and *sinogrande*. In class 91, for a spray of any hybrid, Brodick won with a beautiful spray of an unregistered hybrid, *lindleyi* × *ciliatum*.

Class 93, restricted entry, attracted two entries, and was won by Mr J. A. Fox's *calophytum* hybrid, from Mrs Frost's 'Christmas Cheer'. Class 103, for an evergreen rhododendron in bloom, was won by Mr Urlwin-Smith's nice dark form of *hippophaeoides*.

Class 105 for six rhododendron leaves attracted three entries, and was won by Brodick, showing *basilicum*, *giganteum*, *lanatum*, *macabeanum*, *mallotum* and *sinogrande*.

Class 106 for a vase of rhododendrons was won by Miss Jessica Boscawen from The High Beeches, with an arrangement in which *fictolacteum* and *racemosum* predominated.

E.W.M.M.

The Camellia Competition

15th and 16th March, 1977

GEORGE AYLING

It is probable that 1976 will be remembered by camellia folk as the year when the Camellia Show was everything that it should be. There will be similar memories of 1977 except that this time they will concern the Camellia Competition. As one who has had something to do with this event since its inception, I am sure that I had never seen so many flowers of such quality as the exhibitors brought to the Hall this year. It was surprising in some ways because the cold weather early in the year made us wonder whether we should have any blooms ready in time, and then the weather changed so that those of us who had used heat to push things on were hoping to have some blooms left and the cold-house people were feeling gleeful. So it all came right in the end.

The judges had a most difficult task and the prizewinners should be especially proud of their success in this year of all years. Sir Giles Loder headed the list, with Mr R. Strauss a good second and other successful exhibitors were Mrs P. Eunson, Mrs Frost, Mrs A. H. Potter, Mrs Preston, the Duke of Devonshire and Messrs H. Anderson, H. G. Ayling, R. H. Ellis, R. S. Hood and A. M. Miller.

Winners of the classes were as follows:

DIVISION I. SPRAYS

Three sprays *japonica*, one of each cultivar – Sir Giles Loder: 'Flowerwood', 'Scentsation' (a massive flower), and 'Leonardslee Seedling'.

One spray, semi-double *japonica* – R. Strauss: 'Miss Charleston Var.'.

One spray, anemone- or paeony-formed *japonica* – Sir Giles Loder: 'Betty Sheffield Supreme'.

One spray double *japonica* – R. Strauss.

One spray *C. reticulata* – Sir Giles Loder: 'Butterfly Wings'.
One spray *C. saluenensis* – Mrs A. H. Potter.
Three sprays hybrids, one of each cultivar – Sir Giles Loder: 'Grand Jury', 'Bonnie Marie', 'Elegant Beauty'.
One spray, any single flowered × *williamsii* cultivar – Sir Giles Loder: 'November Pink'.
One spray, any semi-double × *williamsii* cultivar – H. Anderson: 'Molly Anderson'.
One spray, any paeony or double × *williamsii* cultivar – Sir Giles Loder: 'Bonnie Marie'.
One spray, any hybrid other than × *williamsii* – Mrs A. H. Potter: 'Francie L'.

DIVISION II. PLANTS IN BLOOM

One plant in bloom – A. M. Miller: 'Contessa Lavinia Maggi'.

DIVISION III. BLOOMS

Section A. Cultivars of Camellia japonica.
One bloom each, any three single-flowered cultivars – R. Strauss: 'Mattie Cole', 'Clarissa', 'Rogetsu'.
One bloom, any single-flowered white cultivar – Mrs P. Eunson: 'Henry Turnbull'.
One bloom, any single-flowered self-coloured cultivar – Sir Giles Loder: 'Shiro Azahani'.
One bloom, any single-flowered variegated cultivar – R. Strauss: 'Clarissa'.
One bloom each, any three semi-double cultivars – R. Strauss: 'Guilio Nuccio', 'Wildfire', 'Angel'.
One bloom, 'Drama Girl' – R. Strauss.
One bloom, 'Mrs D. W. Davis' – R. Strauss.
One bloom, any semi-double white cultivar – The Duke of Devonshire: 'Angel'.
One bloom, any self-coloured cultivar – Mrs A. H. Potter: 'Guilio Nuccio'.
One bloom, any self-coloured variegated cultivar – Mrs A. H. Potter: 'Betty Sheffield Supreme'.
One bloom, each, any three anemone- and/or paeony-formed cultivars – Sir Giles Loder: 'C. M. Wilson'. 'Elegans Supreme', 'Barbara Woodroof'.
One bloom, any anemone- or paeony-formed white cultivar – Sir Giles Loder: 'The Pilgrim'.
One bloom, any anemone- or paeony-formed self-coloured cultivar – R. H. Ellis: 'Kick Off'.
Three blooms, one each of any rose-formed or formal double cultivar – R. Strauss: 'Mathotiana', 'Berenice Perfection', 'Nuccio's Gem'.
One bloom, any rose-formed or formal double white cultivar – R. Strauss: 'Nuccio's Gem'.
One bloom, any rose-formed or formal-double self-coloured cultivar – The Duke of Devonshire: 'Mathotiana'.
One bloom, any rose-formed or formal-double variegated cultivar – Sir Giles Loder: 'Augusto Pinto'.
One bloom each, any six cultivars – R. Strauss: 'Nuccio's Gem', 'Faith', 'Betty Sheffield Supreme', 'Miss Charleston Var.', 'Wildfire', 'Margharita Coleoni'.

One bloom each, any three cultivars – R. L. Ellis: 'King Size', 'Purple King', 'Dr Tinsley'.
One bloom, any cultivar, restricted entry – Mrs Preston.

Section B. Reticulata.

One bloom, wild single form – Mrs A. H. Potter.
One bloom, *reticulata* 'Captain Rawes' – The Duke of Devonshire.
One bloom, any other form of *reticulata* – Mrs P. Eunson: 'Arch of Triumph'.

Section C. Hybrids.

One bloom each, any three hybrids – Sir Giles Loder: 'Francie L', 'Brigadoon', 'Fire Chief'.
One bloom, any single-flowered hybrid of which one parent is *reticulata* – R. Strauss: 'Barbara Hillier'.
One bloom, any hybrid as above other than single – Sir Giles Loder: 'Valley Knudsen'.
One bloom, any hybrid other than *reticulata* – Mrs Potter: 'Debbie'.

My personal comments would be that the sprays were the best ever. 'Clarissa' is a very fine single, 'Nuccio's Gem' as shown by Mr Strauss must be the formal double white of the future, Sir Giles Loder produced what must be the biggest ever 'Guest of Honor' without reward and what a camellia 'Betty Sheffield Supreme' would be but for her unfortunate habit of turning pink all over. Finally, how good it is to see *williamsii* hybrids being raised and shown by amateurs, I refer to Mr Anderson's 'Molly Anderson' and Mrs Potter's *saluenensis* × 'Alba Simplex'.

Camellias were present on trade stands also. That of James Trehane Ltd was devoted entirely to camellias in pots and included *japonicas, williamsii* and *reticulata* hybrids. South Down Nurseries had large sprays, mostly of *williamsii* hybrids raised at Caerhays, and there were plants of well tried cultivars on show on stands from Russells and Hilliers.

The International Camellia Society had a stand of individual blooms any of which equalled in quality those in the Competition, and I noticed in particular a very fine bloom of a camellia which has found much favour in the U.S.A., 'Dr Clifford Parks'.

The Camellia Show

19th and 20th April, 1977

GEORGE AYLING

I suppose that it is possible that one day some fortunate person may be able to write that in some future year both the Camellia Competition and Camellia Show were equally splendid. Unfortunately I am not able to write this of the 1977 events. I imagine that, when I was writing about possibly the best-ever Competition, one of the weather gremlins must have looked over my shoulder and decided to put a stop to that sort of thing forthwith. Anyway, in the intervening weeks we had cold winds, frost and even heavy snowfalls in some localities. The result was that the usual Cornish challenge was lacking, and we missed among others the exhibits from Major-General Harrison who had such a

triumph last year. There was one exhibitor from south Devonshire, but the remainder were either resident in the Sussex camellia country or curiously enough from round about London, although Mrs A. Potter and Mr R. Winter were missing. Sir Giles Loder had the most successes as has often been the case in previous years, and the Hon. Edward Boscawen, Mr R. Strauss and Surgeon-Captain Lock were also well to the fore. The classes varied widely in the measure of support, some well filled and others vacant. Details of winners follow:

SPRAYS

One spray each, any six cultivars – the Hon. Edward Boscawen: 'Mathotiana Rosea', 'Lady Clare', 'Elegans', 'Donckelarii', 'Adolphe Audusson', 'Donation'.
One spray each, any three – Sir Giles Loder: 'Anticipation', 'Inspiration', 'Inchmay'.
One spray each, any three cultivars of *C. japonica* – Sir Giles Loder: 'Guilio Nuccio', 'Jupiter', 'Monte Carlo'.
One spray, any single-flowered cultivar of *C. japonica* – Mrs C. Benn: 'Gertrude Preston'.
One spray, any semi-double-flowered cultivar of *C. japonica* – Sir Giles Loder: 'Guilio Nuccio'.
One spray, any anemone-formed or paeony-formed cultivar of *C. japonica* – Sir Giles Loder: 'Elegans'.
One spray, any rose-formed or formal double cultivar of *C. japonica* – Sir Giles Loder: 'Sacco'.
One spray, any hybrid of or descendant from *C. reticulata* – Sir Giles Loder: 'Inspiration'.
One spray, *C. saluenensis* – Mr R. Strauss.
One spray, *C.* × *williamsii* 'Donation' – Sir Giles Loder.

BLOOMS

Any twelve blooms, one of each, any cultivar or species – Mrs P. Eunson: 'Guilio Nuccio', 'Elegans Splendor', 'Debbie', 'Margharita Coleoni', 'Donckelarii', 'Haku-Rakuten', 'High Hat', 'Blaze of Glory', 'R. L. Wheeler', 'Royalty', 'Leonard Messel', 'Laurie Bray'.
One bloom each, any three single-flowered cultivars of *C. japonica* – Sir Giles Loder: 'Berenice Boddy', 'Snow Goose', 'Hatsu Zakura'.
One bloom, 'Alba Simplex' or 'Devonia' – The Hon. E. Boscawen: 'Alba Simplex'.
One bloom, 'Jupiter' or 'Sylva' – Sir Giles Loder: 'Jupiter'.
One bloom, 'Furoan' or 'Apple Blossom' – Mrs P. Eunson: 'Furoan'.
One bloom, single-flowered white cultivar of *C. japonica* – Surgeon-Captain Lock: 'White Swan'.
One bloom, any single-flowered self-coloured *C. japonica* – Mrs P. Eunson: 'Jennifer Turnbull'.
One bloom each, any three semi-double cultivars of *C. japonica* – The Hon. E. Boscawen: 'Lady Clare', 'Lady Vansittart', 'Adolphe Audusson'.
One bloom 'Adolphe Audusson' – Mrs M. A. Tame.
One bloom 'Donckelarii' – The Hon. E. Boscawen.
One bloom 'Guilio Nuccio' – Surgeon-Captain Lock.
One bloom 'Lady Clare' – The Hon. E. Boscawen.
One bloom 'Magnoliaeflora' – Mrs P. Eunson.
One bloom 'Nagasaki' – Mr R. Strauss.

One bloom semi-double white cultivar of *C. japonica* – Mr R. Strauss: 'Lotus'.

One bloom semi-double self-coloured cultivar of *C. japonica* – Mr R. Strauss: 'Disneyland'.

One bloom semi-double variegated cultivar of *C. japonica* – The Hon. E. Boscawen: 'Lady Vansittart'.

One bloom each, any three anemone-formed and/or paeony-formed cultivars of *C. japonica* – Sir Giles Loder: 'Althaeaflora', 'R. L. Wheeler', 'Elegans'.

One bloom 'Elegans' – Sir Giles Loder.

One bloom 'R. L. Wheeler' – Sir Giles Loder.

One bloom any anemone-formed or paeony-formed white cultivar of *C. japonica* – Mr R. Strauss: 'Shiro Chan'.

One bloom any anemone-formed or paeony-formed self-coloured cultivar of *C. japonica* – Mrs A. Hooton: 'Miss Charleston'.

One bloom any anemone-formed or paeony-formed variegated cultivar of *C. japonica* – Mr R. Strauss: 'Marguerite Gouillon'.

One bloom each, any three rose-formed or formal double cultivars of *C. japonica* – Mr R. Strauss: 'Ed Anderson', 'Mathotiana Alba', 'Contessa Lavinia Maggi'.

One bloom 'Contessa Lavinia Maggi' – Sir Giles Loder.

One bloom, 'Rubescens Major' – Surgeon-Captain Lock.

One bloom, 'Mathotiana' – Sir Giles Loder.

One bloom, 'Mathotiana Rosea' – The Hon. E. Boscawen.

One bloom, 'Mathotiana Alba' – Sir Giles Loder.

One bloom 'Souvenir de Bahuaud Litou' – Mr R. Strauss.

One bloom 'Coquetti' – Mr P. J. Urlwin-Smith.

One bloom any rose-formed or formal double white cultivar of *C. japonica* not specified previously – Surgeon-Captain Lock: 'Alba Plena'.

One bloom any rose-formed or formal double self-coloured cultivar of *C. japonica* not specified previously – Mrs P. Eunson: 'Margharita Coleoni'.

One bloom any rose-formed or formal double variegated cultivar of *C. japonica* not specified previously – Sir Giles Loder: 'Herme'.

One bloom each, any six cultivars of *C. japonica* – Mrs P. Eunson: 'Blaze of Glory', 'Guilio Nuccio', 'Jennifer Turnbull', 'Sergeant Barrios', 'Drama Girl', 'Laurie Bray'.

One bloom any four other than cultivars of *C. japonica* – Mrs P. Eunson: 'Debbie', 'Brigadoon', 'Anticipation', 'Elegant Beauty'.

One bloom each, any three cultivars × *williamsii* – Mrs P. Eunson: 'Debbie', 'Brigadoon', 'Anticipation'.

One bloom any double, paeony-formed or semi-double cultivar of *C. reticulata* – Sir Giles Loder: 'Crimson Robe'.

One bloom *C. saluenensis* – Mr R. Strauss.

One bloom any single cultivar of × *williamsii* – Surgeon-Captain Lock: 'Elizabeth Rothschild'.

One bloom × *williamsii* 'Donation' – The Hon. E. Boscawen.

One bloom × *williamsii* other than 'Donation' or a single cultivar – Surgeon-Captain Lock: 'Debbie'.

One bloom 'Leonard Messel' – Mr P. J. Urlwin-Smith.

One bloom 'Grand Jury' – Mrs P. Eunson.

An arrangement of camellias – Mrs M. E. McDonald.

In addition to those already mentioned, winners of minor prizes in the classes for blooms were Mrs L. M. Frost and Mr H. J. Tooby and in the floral arrangement class, Mrs Holland and Miss J. Boscawen.

My outstanding impressions at this Show both concerned ladies, the terrific bloom of 'Adolphe Audusson' which secured first prize in its class for Mrs Tame and the size, quality and freshness of Mrs Eunson's exhibits.

In the Hall, the International Camellia Society had an interesting display and Messrs James Trehane & Sons Ltd. had a well filled stand which included a spectacular plant of 'Red Rogue', a new *japonica* cultivar 'Leonora' and two new hybrids 'Dreamboat' and 'Sally'.

At the end of the Show there was an unusual anticlimax. The blooms disappeared. The harpies who attend these functions for gleaning at five o'clock had, in the words of one indignant lady, "Swiped the —— lot!".

The Competition for Magnolias and Ornamental Shrubs

29th/30th March, 1977

For once conditions came right this year for the R.H.S. Magnolia Competition; at least for three of the Sussex gardens; the Cornish magnolias had been exceptionally good, but they had been out too long to show. The two magnolia classes were filled though; with the exception of one magnolia from Cornwall, the exhibits all came from the small area between Handcross and Haywards Heath in Sussex.

Class 1, for a vase of magnolia in bloom, had seven entries, and was won by a lovely vase of a seedling from *M. campbellii* 'Charles Raffill', shown by the Countess of Rosse and the National Trust from Nymans. Second prize went to a very nice vase of *M. sargentiana robusta*, shown by the Hon. H. E. and Mrs Boscawen from The High Beeches. Nymans also took third prize with *M. salicifolia*, and fourth with *M.* × *loebneri* 'Leonard Messel'. They also showed *M.* × *soulangiana* 'Rustica Rubra' and 'Michael Rosse', with large soft purple flowers, believed to be a seedling of *M. sargentiana robusta*. There was also a vase of *M. cylindrica* from Cornwall, but this does not seem to travel well, and in any case cannot really compete with the Yulania section.

Class 2, for one bloom each of three distinct magnolias, had five entries, and was won by Mr Robert Stephenson Clarke of Borde Hill with *M. campbellii* 'Charles Raffill'; *M. dawsoniana*; and *M. sargentiana robusta*. Nymans were second with the 'Charles Raffill' seedling which won class 1; 'Michael Rosse'; and 'Rustica Rubra'. The High Beeches was third with *M. campbellii*, *M. sargentiana robusta*, and *M.* × *soulangiana* 'Alexandrina'.

In class 3, for a vase of a rhododendron in bloom, there were seven entries, and it was won by The High Beeches with *R. sutchuenense* × *calophytum*. Second prize went to Borde Hill for *R. phaeochrysum* R. 59229, which went on to receive an A.M. Third was *R. barbatum* from Nymans.

E.W.M.M.

AWARDS AT LONDON SHOWS

(Colour references are to the R.H.S. Colour Chart 1966)

CAMELLIAS 1977

Camellia japonica 'Carter's Sunburst' A.M. March 29, 1977, as a hardy flowering plant. Flowers paeony form to formal double, white to pale pink, heavily striped or marked with the darker colours of Red Group 55A, B and C, up to 10 cm (5 in.) across. Raised and introduced (1958) by Carter's Camellia Gardens, (Calif., U.S.A.), exhibited by Mrs Bernardine Gallagher, Oldfield, Verwood, Dorset.

Camellia japonica 'Haku-rakuten' (syn. 'Wisley White'). **A.M.** March 29, 1977, as a hardy flowering plant. Flowers semi-double to loose paeony form with curved and fluted petals; White Group 155D, up to 10.5 cm ($4^1/_5$ in.) across. Raised in Japan, before 1929, exhibited by Mrs Bernardine Gallagher.

Camellia maliflora A.M. April 19, 1977, as a half-hardy flowering plant. Flowers double, up to 5 cm (2 in.) across; Red Group 55D with darker veining of Red Group 55C. Leaves obovate, lanceolate, shortly acuminate, minutely serrulate. A native of China. Origin not recorded, raised and exhibited by The Director, Royal Botanic Gardens, Kew, Richmond, Surrey.

Camellia 'Tristrem Carlyon' (*japonica* 'Rosea Simplex' × 'Salutation'). **A.M.** March 15, 1977, as a hardy flowering plant. Flowers paeony form, up to 10 cm (4 in.) across; Red Group 55A, with centrally a few petaloides streaked white. Raised, introduced and exhibited by Miss Gillian Carlyon, Tregrehan Camellia Nurseries, Par, Cornwall.

Camellia 'Fragrant Pink' (*rusticana* × *lutchuensis*) **P.C.** February 22, 1977, as a flowering plant for the cool greenhouse. Flowers miniature paeony form, up to 6 cm ($1^2/_5$ in.) across, fragrant; Red Group 62B, with darker veining of Red Group 62A. Raised and introduced by Professor William L. Ackerman (U.S.A.), exhibited by James Trehane and Sons Ltd., Stapehill Road, Hampreston, Wimborne, Dorset.

MAGNOLIAS 1977

Magnolia campbellii subsp. campbellii 'Queen Caroline', A.M. March 24, 1977, as a hardy flowering tree. The flowers, when opened, were about 23 cm (9 in.) in diameter, of a rich red-purple colour outside, paler inside. The largest of the perianth segments was 10 to 11 cm ($4^1/_5$ in.) long and 4 to 5 cm ($1^4/_5$ in.) wide. The basic colour was whitish pink, more or less heavily suffused outside with red-purple 63A. The overall effect was near to 63B on the darker parts, 57C on the paler parts. Specimen in Herb. Hort. Wisley. Exhibited by The Director, The Royal Botanic Gardens, Kew, Richmond, Surrey.

RHODODENDRONS 1976-7

Rhododendron uvarifolium 'Reginald Childs' A.M. March 30, 1976, as a hardy flowering plant. Truss loose, rounded, 20-22 flowered. Corolla openly campanulate, 4.5 cm ($1^4/_5$ in.) long and 5.5 cm ($2^1/_5$ in.) across; white suffused Red-Purple Group 65C with large blotch Red Group 53A in upper throat. Stamens 14, irregular in length, held within. Anthers dark brown. Style held free; stigma yellow. Calyx rudimentary, pale green. Leaves oblanceolate, 26 cm ($10^2/_5$ in.) long and 7 cm ($2^1/_5$ in.) across, glossy dark green above with nerves impressed; ash-grey plastered indumentum below. Collector not recorded, exhibited by The Director, The Royal Botanic Gardens, Kew, from Wakehurst Place, Ardingly, Sussex.

Rhododendron 'Anne Clarke' (*arboreum* forma *roseum* × *sutchuenense*) **A.M.** March 29, 1977, as a hardy flowering plant. Flowers borne in firm rounded 20-22 flowered trusses, up to 16 cm ($6^2/_5$ in.) across. Corolla widely funnel-campanulate, 5 joined lobes, up to 6 cm ($2^2/_5$ in.) long and 6 cm ($2^2/_5$ in.) across. Red Group 55B, paling to white upon opening except for a faint bar of colour along each petal join. Stamens 12 to 14, irregular, held within, filaments white, anthers brown; style of equal length, yellowish, stigma red. Calyx rudimentary, green, 5 irregular joined lobes, to 2 mm. Leaves narrowly elliptic, up to 16.5 cm ($6^2/_5$ in.) long and 5.8 cm ($2^2/_5$ in.) across, dark green above, silvery-grey felted below. Petioles to 3 cm ($1^1/_5$ in.) in length, rounded, heavily felted. Origin not recorded, raised by Col. S. R. Clarke, exhibited by R. N. S. Clarke, Borde Hill, Haywards Heath, Sussex.

Rhododendron cinnabarinum 'Nepal' (L.S.H. 21283) **A.M.** May 16, 1977, as a hardy flowering plant. Truss lax, 4-8 flowered. Corolla tubular, 4.5 cm (2 in.) long and 3.2 cm ($1^2/_5$ in.) across; Yellow Group 12C, lightening near the lobes and deepening towards base to near Red Group 51A. Leaves broadly oblanceolate, up to 5.8 cm ($2^3/_{10}$ in.) long and 3.3 cm ($1^2/_5$ in.) across, glaucous, scaly reverse. Raised by J. B. Stevenson, grown and exhibited by Hydon Nurseries Ltd., Hydon Heath, Nr. Godalming, Surrey.

Rhododendron 'Grouse' (*campylogynum* var. *cremastum* 'Bodnant Red' × *calostrotum* 'Gigha') **A.M.** May 16, 1977, as a hardy flowering plant. Flowers 5-lobed, campanulate, up to 2.3 cm (1 in.) long and 3.5 cm ($1^2/_5$ in.) across, carried in 1 to 4-flowered clusters. Calyx 5 deeply divided lobes, up to 4 cm ($1^3/_5$ in.) long, glandular-hairy. Leaves elliptic, up to 2.5 cm (1 in.) long and 1.4 cm ($^2/_5$ in.) across. Crossed, raised and exhibited by P. A. Cox, Glendoick Gardens Ltd., Perth.

Rhododendron houlstonii 'John R. Elcock' A.M. May 16, 1977, as a hardy flowering plant. Trusses loosely held, comprising 8 to 10 flowers, funnel-campanulate, 7-lobed, up to 5 cm (2½ in.) long and 8 cm ($3^1/_5$ in.) across. Purple Group 75B, paling to Yellow Group 11D in throat with slightly spotting in upper throat. Leaves oblong-elliptic, up to 9 cm ($3^3/_{10}$ in.) long and 4 cm ($1^7/_{10}$ in.) across. Collector not recorded, raised and exhibited by Crown Estate Commissioners, The Great Park, Windsor, Berks.

Rhododendron 'Ignea Nova' a Ghent Azalea **A.M.** June 14, 1977, as a hardy flowering plant. Truss loose, 6 or 7 flowered: flowers tubular funnel-shaped. Corolla 5-lobed, up to 3.5 cm ($1^2/_5$ in.) long by 4 cm ($1^3/_5$ in.) across, Red Group 43C with shades of Red Group 43D and 47B; upper lobe strongly flushed Yellow-Orange Group 23A. Outer corolla densely glandular-hairy. Stamens 5, held free; filaments flushed red, anthers orange. Style held free; stigma green. Calyx small, green, densely ciliate. Pedicels to 1 cm ($^2/_5$ in.) long. Leaves broadly elliptic, deciduous. A Ghent Azalea, raised before 1876, raiser not recorded. Grown and exhibited by Major A. E. Hardy, Sandling Park, Hythe, Kent.

Rhododendron kiusianum var. album 'Chidori' A.M. May 16, 1977, as a hardy flowering plant. Flowers funnel-shaped, in 2 to 4-flowered clusters, 1.4 cm ($^2/_5$ in.) long and 2 cm ($^4/_5$ in.) across; white. Leaves elliptic-ovate, up to 2.9 cm ($1^2/_5$ in.) long and 1.9 cm ($^4/_5$ in.) across. Collector not recorded, raised and exhibited by Capt. Collingwood Ingram, The Grange, Benenden, Cranbrook, Kent.

Rhododendron laxiflorum 'Folks Wood' A.M. May 16, 1977, as a hardy flowering plant. Trusses up to 14-flowered and 14 cm (5½ in.) across. Corolla campanulate, 5-lobed, white, up to 3.5 cm (1½ in.) long and 7 cm ($2^4/_5$ in.) across. Calyx rudimentary, green, glandular-hairy. Leaves up to 15 cm (6 in.) long and 5 cm (2 in.) across, oblong to oblong-elliptic. Collector not recorded, raised and exhibited by Major A. E. Hardy.

Rhododendron macgregoriae 'Elsie Louisa' A.M. May 16, 1977, as a flowering plant for the cool greenhouse. Flowers tubular in loose trusses of up to 10 per truss. Corolla 5-lobed, up to 2 cm ($^4/_5$ in.) long and 3.7 cm (1½ in.) across, scaly; Orange Group 29A shading through 29B to Yellow-Orange Group 23B in throat. Calyx rudimentary, yellow-green. Leaves elliptic-oblong, up to 6.5 cm ($2^3/_5$ in.) long and 2 cm ($^4/_5$ in.) across. Collected by Michael Black (No. 331), raised and exhibited by Geoffrey Gorer, Sunte House, Haywards Heath, Sussex.

Rhododendron meddianum var. atrokermesinum 'Bennan', A.M. April 19, 1977, as a hardy flowering plant. Truss fullish but open-topped, 17 cm ($6^4/_5$ in.) across, comprising 17 flowers. Corolla 5-lobed, tubular campanulate, 6.5 cm ($2^3/_5$ in.) long and 7.5 cm (3 in.) across, Red Group 53C, with moderate dark marking of upper lobes. Stamens 10, irregular, held within, filaments flushed red, anthers black. Style reddish, held free. Ovary glandular. Calyx 5 joined sepals, red, to 5 mm. Pedicels to 2 cm ($^4/_5$ in.) sparsely glandular. Leaves dark glaucous green, oblong-oval, up to 17 cm ($6^4/_5$ in.) long and 8 cm ($3^1/_5$ in.) across. Collected by F. Kingdon-Ward (thought to be K.W. 19431 or 19452), raised and introduced by The National Trust for Scotland, Brodick Castle Gardens, Brodick, Isle of Arran.

Rhododendron parmulatum 'Ocelot', A.M. March 15, 1977, as a hardy flowering plant. Truss loose, 3 to 6-flowered; corolla tubular-campanulate, up to 5 cm (2 in.) long and 5.5 cm ($2^1/_5$ in.) across; Yellow-Green Group 150D, each lobe having a slightly deeper coloured central band. Upper throat heavily spotted with Greyed-Purple 187B. Stamens 10, irregular, held within; filaments flushed greyed-purple, anthers black. Style of equal length, green-yellow. Calyx 5 joined irregular lobes, reflexed, to 2 mm. Leaves ovate, dark green above, glaucous beneath, up to 7.5 cm (3 in.) long and 3 cm ($1^1/_5$ in.) across. Raised by E. J. P.

Magor, from seed collected by F. Kingdon-Ward; exhibited by Major-General E. G. W. W. Harrison, Tremeer, St. Tudy, Bodmin, Cornwall (now of Swallowfield Park, Reading RG7 1TG).

Rhododendron phaeochrysum 'Greenmantle', (Rock No. 59229), **A.M.** March 29, 1977, as a hardy flowering plant. Flowers in round trusses of 11 to 15, up to 13 cm ($5^1/_5$ in.) across. Corolla widely funnel-campanulate, 5 joined lobes up to 5 cm (2 in.) long and 5 cm (2 in.) across; White Group 155C with small red blotch in throat. Stamens 10, irregular, held within; anthers light brown, filaments white. Style greenish. Calyx green, 5-joined hair fringed lobes, irregular, to 2 mm. Leaves narrowly elliptic, up to 13 cm ($5^1/_5$ in.) long and 4.5 cm ($1^4/_5$ in.) across, lightly covered below with rusty-brown indumentum. Petioles rounded, to 2.2 cm (1 in.). Collected by Joseph Rock, raised by Col. S. R. Clarke, exhibited by R. N. S. Clarke.

Rhododendron spinuliferum 'Blackwater', A.M. April 19, 1977, as a hardy flowering plant. Flowers tubular, 5-lobed, upright in crowded terminal axillary clusters. Corolla Red Group 46C, greenish white at base. Stamens 10, more or less equal, held free; filaments white, anthers black. Style yellowish, held well free of stamens. Ovary glandular. Calyx rudimentary, green, to 2 mm. hairy, sparingly scaly. Pedicels to 15 mm. Leaves oblanceolate to obovate, up to 11 cm ($4^1/_5$ in.) long and 3 cm ($1^1/_5$ in.) across, pubescent. Collected by F. Kingdon-Ward, raised and introduced by The National Trust for Scotland, Brodick Castle Gardens.

Rhododendron 'Teal' (*brachyanthum* var. *hypolepidotum* × *fletcheranum*) **A.M.** May 16, 1977, as a hardy flowering plant. Flowers, broadly campanulate, in 5 to 8-flowered trusses; 5-lobed, up to 2.8 cm ($1^1/_5$ in.) long and 3.5 cm ($1\frac{1}{2}$ in.) across; Yellow Group 3D. Calyx green, 5 deeply divided lobes, up to 8 mm. long, ciliate. Leaves narrowly elliptic, up to 5.5 cm ($2^1/_5$ in.) long and 2 cm ($^4/_5$ in.) across. Crossed, raised and exhibited by P. A. Cox.

Rhododendron 'Welcome Stranger' (*discolor* × *lacteum*) (Repose gr.) **A.M.** May 16, 1977, as a hardy flowering plant. Flower trusses large, open, flat-topped. Corolla 7-lobed, campanulate, up to 10 cm (4 in.) long and 7 cm ($2\frac{3}{4}$ in.) across; Yellow Group 4D deepening in throat to Yellow Group 8D with greenish red markings on upper lobes. Calyx rudimentary, green, glandular. Leaves narrowly elliptic to elliptic, up to 18 cm ($7\frac{1}{8}$ in.) long and 6.5 cm ($2^7/_{10}$ in.) across. Crossed and raised by Lionel de Rothschild, exhibited by Major A. E. Hardy.

Rhododendron 'Wards Ruby', (a Kurume azalea), **P.C.** May 16, 1977, as a hardy flowering plant. Flowers 5-lobed, campanulate, in clusters of 2 or 3. Corolla up to 2.5 cm (1 in.) long and 3 cm ($1^1/_5$ in.) across, a dark ruby red. Calyx green, hirsute, 5 deeply divided lobes. Leaves elliptic, up to 3 cm ($1^1/_5$ in.) long and 1.7 cm ($^7/_{10}$ in.) across, mid-rib hairy. Introduced to U.S.A. by Domoto Bros., grown and exhibited by Capt. Collingwood Ingram.

RHODODENDRON TRIALS AT WISLEY 1977

On the recommendation of the Rhododendron & Camellia Committee, Council has made the following awards to Rhododendrons, after trial at Wisley.

The number given in brackets after the description of the plant is that under which it was grown in the trial. The colour references are to the R.H.S. Colour Chart 1966.

HARDY HYBRID RHODODENDRONS

Caroline Allbrook (*R. yakushimanum* × *R.* 'Purple Splendour'). (Raised by Mr A. F. George, introduced and sent by Messrs. Hydon Nurseries Ltd., Hydon Heath, Godalming, Surrey.) **A.M.** May 25, 1977. Plant $2\frac{1}{2}$ feet high, $2\frac{3}{4}$ feet spread, vigorous, slightly spreading compact habit; very free flowering; leaves $4\frac{1}{2}$ inches long, $1\frac{5}{8}$ inches wide, medium dull green. Flower truss 5 inches diameter, 5 inches deep, globular shaped, compact, 20 flowers per truss; corolla $2\frac{1}{4}$ inches diameter, $1\frac{1}{4}$ inches long, widely expanded funnel shaped, margins very waved and recurved, Red-Purple Group 69D lightly flushed with Purple Group 76C, centre of upper segment cream, with very small spots of Yellow Group 6C and Yellow-Green Group 145B. Flowering from May 21, 1977. (290)

Dopey ((*R. eriogynum* hybrid × 'Fabia') × (*R. yakushimanum* × 'Fabia Tangerine')). (Raised, introduced and sent by Messrs John Waterer, Sons & Crisp Ltd., The Nurseries, Bagshot, Surrey.) **A.M.** May 25, 1977. Plant 2 feet high, 2 feet spread, vigorous, upright and compact habit; very free flowering; leaves 4 inches long, 1½ inches wide, medium dull green. Flower truss 6 inches diameter, 5 inches deep, globular shaped, compact; 16 flowers per truss; corolla 2 to 2½ inches diameter, 1½ inches long, campanulate shaped, margins wavy, nearest a slightly glossy Red Group 53B getting paler towards margins, dark brown spots on upper segment. Flowering from May 21, 1977. (280)

Hoppy (*R. yakushimanum* × *R.* 'Doncaster' selfed). (Raised, introduced and sent by Messrs John Waterer, Sons & Crisp Ltd.) **A.M.** May 25, 1977. Plant 2 feet high, 3½ feet spread, vigorous, upright and compact habit; free flowering; leaves 3½ inches long, 1⅝ inches wide, fairly dark dull green. Flower truss 7 inches diameter, 4½ inches deep, globular shaped, fairly compact, 18 flowers per truss; corolla 2 inches diameter, 1¾ inches long, expanded funnel-shaped, white with spots of between Yellow Group 12B and Yellow Group 12C on upper segment. Flowering from May 20, 1977. (277)

Hydon Ball (*R. yakushimanum* × *R.* 'Springbok'). (Raised by Mr A. F. George, introduced and sent by Messrs Hydon Nurseries Ltd.) **A.M.** May 25, 1977. Plant 2 feet high, 3¼ feet spread, vigorous, slightly spreading compact habit; free flowering; leaves 3½ inches long, 1⅛ inches wide, fairly dark dull green. Flower truss 6 inches diameter, 5 inches deep, globular-shaped, compact, 17 flowers per truss; corolla 1½ to 2 inches diameter, 1⅝ inches long, campanulate shaped, very pale cream, with spots of Yellow-Orange Group 21B on upper segment. Flowering from May 19, 1977. (289)

Starshine ((*R. yakushimanum* × 'Britannia') × (Loderi × *R. yakushimanum*)). (Raised, introduced and sent by Messrs John Waterer, Sons & Crisp Ltd.) **A.M.** May 5, 1977. Plant 1½ feet high, 1½ feet spread, fairly vigorous, upright compact habit; free flowering; leaves 4 inches long, 1¼ inches wide, medium dull green. Flower truss 4½ inches diameter, 3¼ inches deep, dome shaped, fairly crowded, 12 flowers per truss; corolla 2¼ inches diameter, 1⅝ inches long, campanulate shaped, very pale pink flushed with Red-Purple Group 62C. Flowering from May 17, 1977. (132)

White Olympic Lady (*R.* 'Loderi King George' × *R. williamsianum*). (Raised by Ostbo-Clarke, introduced by Glendoick Gardens Ltd., and sent by the late Mr E. H. M. Cox, Glendoick Gardens Ltd., Perth.) **A.M.** May 5, 1977. Plant 3¾ feet high, 5 feet spread, vigorous, upright compact habit; very free flowering; leaves 2 inches long, 1¼ inches wide, dark dull green. Flower truss 4½ inches diameter, 3½ inches deep, loosely conical shaped, lax, 14 flowers per truss; corolla 2½ inches diameter, 2 inches long, campanulate shaped, white, young florets flushed with pale pink. Flowering from April 23, 1977. (239)

Georgette (*R. yakushimanum* × *R.* 'Exbury Cornish Cross'). (Raised by Mr A. F. George, introduced and sent by Messrs Hydon Nurseries Ltd.) **H.C.** May 5, 1977. Plant 1¾ feet high, 2 feet spread, vigorous, upright compact habit; very free flowering; leaves 3½ to 5 inches long, 1½ to 2 inches wide, medium dark green, slightly glossy. Flower truss 6 inches diameter, 6 inches deep, globular shaped, compact, 12 flowers per truss; corolla 2½ inches diameter, 2 inches long, campanulate shaped, white, outside flushed pink when young. Flowering from April 29, 1977. (292)

Golden Torch ((*R.* 'Bambi' × ('Grosclaude' × *griersonianum*)). (Raised introduced and sent by Messrs John Waterer, Sons & Crisp Ltd.) **H.C.** May 25, 1977. Plant 1¾ feet high, 2 feet spread, healthy, fairly upright compact habit; fairly free flowering; leaves 2½ inches long, 1 inch wide, medium dull green. Flower truss 6 inches diameter, 4½ inches deep, globular shaped, compact, 13 to 15 flowers per truss; corolla 2 inches diameter, 1½ inches long, campanulate shaped, Yellow Group 11D very lightly flushed with Yellow Group 13D, faintly spotted with Yellow Group 11B on upper segment. Flowering from May 20, 1977. (283)

Morning Magic (*R. yakushimanum* × 'Springbok'). (Raised by Mr A. F. George, introduced and sent by Messrs Hydon Nurseries Ltd.) **H.C.** May 25, 1977. Plant 1¾ feet high, 2 feet spread, vigorous, upright compact habit; very free flowering; leaves 3½ inches long, 1⅛ inches wide, medium dull green. Flower truss 6 inches diameter, 5 inches deep, globular shaped, compact, 16 flowers per truss; corolla 2 to 2½ inches diameter, 2½ inches long, campanulate slightly funnel shaped, margins notched, and slightly wavy, white, spots of Yellow-Orange Group 22C on upper segment. Flowering from May 19, 1977. (296)

Percy Wiseman (*R. yakushimanum* × 'Fabia Tangerine' selfed). (Raised, introduced and sent by Messrs John Waterer, Sons & Crisp Ltd.) **H.C.** May 25, 1977. Plant 1¾ feet high, 3 feet spread, vigorous, fairly upright compact habit; very free flowering; leaves 3 inches long, 1¼ inches wide, dark dull green. Flower truss 5 inches diameter, 5 inches deep, globular shaped, compact, 13 to 15 flowers per truss; corolla 2 inches diameter, 1½ inches long, funnel shaped, margins slightly lobed, cream getting darker towards base, very lightly flushed with a colour slightly paler than Red Group 55D, spotted with Greyed-Orange Group 167B on upper segment. Flowering from May 18, 1977. (288)

Tidbit (*R. dichroanthum* × *R. wardii*). (Raised by Mr Rudolph Henny, introduced by Glendoick Gardens Ltd. and sent by the late Mr E. H. M. Cox, Glendoick Gardens Ltd.) **H. C.** May 25, 1977. Plant 5 feet high, 5½ feet spread, vigorous, fairly upright slightly straggling habit; free flowering; leaves 2¼ inches long, 1'/$_{16}$ inches wide, dark glossy green. Flower truss 4 inches diameter, 4 inches deep, dome shaped, compact, 9 flowers per truss; corolla 1¼ inches diameter, 1⅛ inches long, campanulate shaped, margins slightly waved, Yellow Group 8C flushed with Yellow Group 8B, younger florets flushed with Red Group 41D. Flowering from May 17, 1977. (238)

CAMELLIA TRIALS AT WISLEY 1977

On the recommendation of the Rhododendron & Camellia Committee, Council has made the following awards to cultivars of *Camellia* × *williamsii*, after trial at Wisley.

The number given in brackets after the description of the plant is that under which it is grown in the trial.

AS CULTIVARS FOR GARDEN DECORATION

Mary Christian (Supplied by The Director, The Royal Horticultural Society's Garden, Wisley, Woking, Surrey, GU23 6QB.) **F.C.C.** March 23, 1977. Plant 12 feet high, 6½ feet spread, vigorous, erect and compact habit; free flowering. Leaves 3¼ inches long, 1¾ inches wide, dark glaucous green. Flowers 3 inches diameter, single, with one row of petals, Red Group 55B heavily veined with Red Group 55A, getting paler towards margins. Flowering from March 14, 1977. (16)

J. C. Williams (Raised by the late Mr J. C. Williams, sent by Messrs Hillier & Sons, West Hill Nurseries, Winchester, Hants., Messrs L. R. Russell Ltd., Richmond Nurseries, Windlesham, Surrey, and Messrs Treseders' Nurseries (Truro) Ltd., Truro, Cornwall.) **A.M.** March 23, 1977. Plant 6 to 7½ feet high, 5 to 6½ feet spread, vigorous, erect and fairly compact habit; free flowering. Leaves 2¾ inches long, 1⅝ inches wide, fairly dark glaucous green. Flowers 3½ inches diameter, single with one row of petals, Red Group 56D, flushed with Red-Purple Group 62D, veins slightly lighter than Red-Purple Group 62C. Flowering from March 2, 1977. (4, 5, & 6)

Mildred Veitch (Raised, introduced and sent by Messrs Robert Veitch & Son Ltd., The Nurseries, Alphington, nr. Exeter, Devon.) **A.M.** May 5, 1977: Plant 4¼ feet high, 6 feet spread, vigorous, spreading habit; free flowering. Leaves 3½ inches long, 1½ inches wide, dark breen. Flowers 3¼ inches diameter, semi-double, with 5 rows of petals and 8 petaloides, Red-Purple Group 62A. Flowering from March 26, 1977. (**H.C.** 1974). (32)

C. F. Coates (Sent by Messrs Hillier & Sons.) **H.C.** March 23, 1977. Plant 7½ feet high, 5¾ feet spread, vigorous, erect and fairly compact habit; free flowering. Leaves 3½ inches long, 1½ inches wide, dark glaucous green. Flowers 3½ inches diameter, single, with one row of petals, Red-Purple Group 65D, very slightly flushed with Red Group 55B, veins a slightly lighter colour than Red Group 55A. Flowering from March 10, 1977. (25)

ADDITIONS TO THE INTERNATIONAL RHODODENDRON REGISTER 1977

Additions to the International Rhododendron Register are published annually in this yearbook, but it has not yet proved possible to publish a new edition of the Register since 1958.

To fill this gap, in part, Ed. Parker, the American Registrar, has prepared a list of rhododendron cultivar names registered since the publication of the International Rhododendron Register in 1958, complete up to the 15th June 1976. This consists of an alphabetical list of names, with breeders' names and a reference to the year when a description was published, 1829 names in all, not including the 222 additions below. This list gives the registered names alone, without the plants' identities, but it should prove useful to breeders and others seeking new names to register.

Copies are obtainable from the Registrar, American Rhododendron Society, Route 2, Box 35, Astoria, OR 97103, U.S.A., price $1; or, if there is a sufficient demand, from the Hon. Sec. Rhododendron & Camellia Group.

The following list contains names registered up to 15 *July*, 1977.

Airy Fairy — (*lutescens* × *mucronulatum* Cornell Pink). Truss 3-flowered. Corolla Red Group 55B with Greyed-Red 182B spotting on dorsal lobe sector of throat. Int. 1975. Crossed (1968-9) by Mrs P. J. Francis Maloney, raised, introduced and registered by Mrs Mae K. Granston, Redmond, Washington.

Angel Falls — (unknown × unknown). Truss 10-12 flowered. Corolla White Group 155B with creamy yellow throat and overall light pink blush. Crossed (1962) by Roy J. Kersey, raised, introduced and registered (1977) by Mrs Halsey A. Frederick, Jr., Bryn Mawr, Pennsylvania.

Ann Carey
(*keiskei* × *spinuliferum*). Truss many flowered. Corolla Chartreuse, changing to Coral Pink 0619/1-3 (H.C.C.). Int. 1966. Crossed (1951) by Halfdan Lem, introduced and registered (1977) by Mrs Stephen E. Anderson, Bellevue, Washington.

Anne Clarke
(*arboreum* forma *roseum* × *sutchuenense*). Truss 20-22 flowered. Corolla Red Group 55B, paling to white. Int. 1977. Origin not recorded. Raised by S. R. Clarke, introduced and registered by R.N.S. Clarke, Haywards Heath, Sussex. A.M. 1977.

Antigua
(Mary Belle × Dexter's Apricot). Truss 10-flowered. Buds pink. Corolla Red Group 38C shading to Yellow Group 11D towards throat. Throat Red Group 45D with dorsal blotch and spotting on all lobes. Int. 1977. Crossed (1970) by Joseph Becales, raised, introduced and registered by Charles Herbert, Phoenixville, Pennsylvania.

Apple Dumpling
((Catalgla × *yakushimanum* Koichiro Wada) × (*lanigerum* 'Round Wood' × *catawbiense* (red clone))). Truss 7-flowered. Corolla Yellow Group 2C; throat Green-Yellow 1A, with indistinct green-yellow blotch. Int. 1976. Crossed (1967) by Henry Yates, raised, introduced, and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

April Dream
(unknown × unknown). Truss 12-flowered. Corolla Red Group 55B; throat 55D; heavy fan-shaped darker spotting in upper ½ corolla, 53B, extending ¾ distance from throat to margin. Int. 1975. Crossed (1955) and raised by W. E. Whitney, introduced and registered (1976) by George and Anne Sather, Whitney Nursery, Brinnon, Washington.

Beckyann
(*discolor* × *campylocarpum* selfed). Truss 11-12 flowered. Corolla Yellow White Group 158B with little Greyed-Red 180A spotting; colour intensifies with age. Int. 1970. Crossed (1961/2) and raised by Henry Yates, introduced, named and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Bellefontaine
(*fortunei* × *smirnowii*). Truss 10-flowered. Buds Rose Opal 022 (H.C.C.). Corolla throat Neyron Rose 623/3 shading to 623/1 at lobe edges; dorsal lobe flecked Olive Brown. Crossed (before 1958) by R. B. Pike, Lubec, Maine, raised by G. S. Swain, Kentville Research Station, introduced and registered (1977) by Dr. D. L. Craig, Canada Dept. of Agriculture Research Station, Nova Scotia.

Bennan
(form of *meddianum* var. *atrokermesinum*). Truss 17-flowered. Corolla Red Group 53C with moderate dark markings of upper lobes. Int. 1977. Collected by F. Kingdon-Ward, raised, introduced and registered by The National Trust for Scotland, Brodick Castle Gardens, Brodick, Isle of Arran. A.M. 1977.

Betsie Balcom
(Princess Elizabeth × Elizabeth). Truss 13-flowered. Corolla Red Group 46A, shading to 45B in centre; no blotch or spotting. Int. 1974. Crossed (1961), raised, introduced and registered (1977) by Thomas J. McGuire, Portland, Oregon.

Betsy Kruson
(Cataldi × Mars). Truss 10-flowered. Corolla Red-Purple Group 57D shading to 62D and almost White in throat; small flare of Greyed-Yellow Group 160B with few spots. Int. 1975. Crossed (1960), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Betty Anne Voss
(Evergreen Azalea) (Robin Hill) ((Louise Gable × Tama-giku) × Shinnyo-no-tsuki). Truss 2-4 flowered. Corolla Red-Purple Group 62A with faint 62B spotting. Int. 1972. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Big Mac — (*catawbiense* var. *album* Labars' White × *macabeanum*). Truss 11-12 flowered. Corolla Barium Yellow 503/3 (H.C.C.) with dark red blotch. Int. 1968. Crossed (1955), raised, introduced and registered (1977) by Mrs John F. Knippenberg, West Wayne, New Jersey.

Bill Massey — ((*ciliatum* (a clone known as "var. *bergii*") × *sinonuttallii*). Truss 4-6 flowered. Corolla whiter than 155C; very slight pink at edge and reverse stripe. Crossed, raised and registered (1977) by Basil Vaerlen, Camp Meeker, California. (Introduced by Trillium Lane Nursery).

Black Prince's Ruby — (*sanguineum* subsp. *haemaleum* × *thomsonii*). Truss 5-flowered. Corolla Red Group 46A; reverse Greyed-Purple 187A with crimson edges. Very waxy with black veins and nectaries. Crossed (1965) by Ben F. Nelson, raised, introduced and registered (1976) by Howard A. Short, Bainbridge Island, Washington.

Blackwater — (form of *spinuliferum*). Flowers tubular, 5-lobed, upright in crowded terminal axillary clusters. Corolla Red Group 46C, greenish-white at base. Int. 1977. Collected by F. Kingdon Ward, raised, introduced and registered by The National Trust for Scotland, Brodick Castle Gardens, Brodick, Isle of Arran. A.M. 1977.

Bodega y Quadra — (Yvonne Opaline × Loder's White). Truss 9-flowered. Corolla Red Group 55B, lighter in throat; Red-Purple Group 57B spot deep in throat. Crossed (1967-8) unknown, raised, introduced and registered by Carl G. Heller, M.D., Bodega Rhododendron Nursery, Poulsbo, Washington.

Bonnie Brae — (Scintillation × Atrier). Truss 15-17 flowered. Corolla Red-Purple Group 73C with Yellow-Green Group 153C blotch in throat spreading out over dorsal lobe; lobe edges darker purple. Crossed (1964), raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.

Brenda Lee — (*catawbiense* var. *compactum* × Purple Splendour). Truss 11-flowered. Corolla Purple-Violet Group 81B with blotch of lighter colour covered with Greyed-Purple 187A spots. Int. 1970. Crossed (1960) and raised by Henry Yates, introduced, named and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Bridge North — (Henry R. Yates × Boule de Neige). Truss +14-flowered. Corolla Red Group 55B, fading to 55D with gold spotting in dorsal lobe sector. Crossed (1968) by Charles Herbert, raised, introduced and registered (1977) by Dr Whildin A. Reese, Pennsburg, Pennsylvania.

Buckland Beauty — (*griffithianum* × Letty Edwards). Truss 11-flowered. Corolla Yellow Group 4D, upper lobes tinted Yellow Group 2D, with slight basal spotting of Red Group 47C on upper lobe. Int. 1977. Crossed (1960), raised, introduced and registered (1977) by L. S. Fortescue, Buckland Monachorum, Devon.

Caernarvon — (*fortunei* hybrid). Truss 14-flowered. Corolla Red-Purple Group 63A with Red 53A flecks in dorsal throat. Crossed by Anthony Consolini, raised by Roger De Longchamp and Dr W. A. Reese, Pennsburg, Pennsylvania.

Canada — (Lepidote hybrid). Truss 3-5 flowered. (3-5 trusses). Corolla Red-Purple Group 66B. Int. 1965. Crossed (1946) and raised by Mr and Mrs E. J. Greig, introduced and registered (1976) by James F. Caperci, Seattle, Washington.

Caperci Special — (a Lepidote – probably a hybrid). Truss 5-7 flowered. Corolla Red-Purple Group 72D, with a few red spots on dorsal lobe. Int. 1965. Unknown cross. Raised, introduced and registered (1976) by James F. Caperci, Seattle, Washington.

Carol Jean — (Vulcan × Robin Hood). Truss 14-flowered. Corolla Carmine 21/1 (H.C.C.) with dark blotch on dorsal lobe, deeper colour in throat. Int. 1957. Crossed, raised, introduced and registered (1977) by Joe H. Klupenger, Aurora, Oregon.

Cathy Carter — ((*discolor* × Nereid × Tally Ho) × Autumn Gold) (exact combination unknown). Truss 8-11 flowered. Buds Red Group 45A-B to Red 47B-C. A bicolor, throat Yellow-Orange Group 14D and 16D, edging Red Group 52D; spots on upper lobes Greyed-Red 180B on Yellow-Orange 14C background (some giving Red 46B effect). Reverse 46D shading to 47D at lobe edges. Fluorescent effect. Int. 1976. Crossed (1963), raised, introduced and registered (1977) by Mrs Bernice I. Jordan, North Tumwater, Washington.

Cecil Smith — (King of Shrubs × Crest). Truss 10-11 flowered. Corolla Dresden Yellow 64/2 (H.C.C.) Int. 1970. Crossed (1958), raised and introduced by Cecil C. Smith. Named and registered (1976) by Carl H. Phetteplace, Leaburg, Oregon.

Chidori — ((form of *kiusianum* var. *album*). Truss 2-4 flowered clusters. Corolla white. Int. 1977. Collector not recorded, raised, introduced and registered by Capt. Collingwood Ingram, Cranbrook, Kent. A.M. 1977.

Clara Curry — (Vulcan × America). Truss 12-14 flowered. Corolla Red-Purple Group 59A; no spots or blotch. Crossed (1965), raised, introduced and registered (1977) by J. Hollis Hughes, Warrior, Alabama.

Connie Yates — (Mars × *yakushimanum* Koichiro Wada). Truss 14-flowered. Corolla Red-Purple Group 63A (fading with age) with White 155D flare with dorsal Yellow-Green 153C spotting. Buds 57A. Int. 1972. Crossed (1963) and raised by Henry Yates, introduced, named and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Conversation Piece — (Evergreen Azalea) (Robin Hill) ((Emil Rosseau × Carol) × Eikan). Truss 1-3 flowered. Corolla very variable: Red Group 49A shading to lighter edge with prominent Red-Purple 57B spotting on dorsal lobes; sectored; Red Group 48C self; white; spotting does not occur on all flowers. Int. 1969. Crossed (1964), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Cornwallis (syn. Acadia) — (*fortunei* – open pollinated). Truss 11-flowered. Corolla Dawn Pink 523/2 (H.C.C.); heavy spotting 00823/3 dorsal lobe sector and extending on to adjacent lobes. Seed collected by F. W. Schumacker, raised by G. S. Swain and D. L. Craig, Kentville Research Station, introduced and registered (1977) by Dr D. L. Craig, Canada Dept. of Agriculture Research Station, Nova Scotia.

Craswell — (Mars × *yakushimanum* Koichiro Wada). Truss 14-flowered. Buds Red Group 53B; open flowers 52C. Crossed (1968), raised, introduced and registered (1977) by Dr Whildin A. Reese, Pennsburg, Pennsylvania.

Cream Delight — (chance *burmanicum* hybrid). Truss 5-11 flowered. Corolla Yellow-Green Group 150D, with green spotting on upper lobe. Int. 1973. Raised, introduced and registered (1977) by B. W. Campbell, Ravensbourne, Dunedin, New Zealand.

Dalkeith — (dwarf chance seedling, possibly natural hybrid, Uniflorum series with some Triflorum characteristics.) Truss 10-17 flowered. Corolla Purple-Violet Group 80D. Int. 1966. Raiser unknown, introduced by C. A. McLaughlin (N.Z.), and registered (1977) by Mrs P. J. Warren, Dunedin, New Zealand.

Dexter's Appleblossom — (unknown × unknown). Truss 12-15 flowered. Corolla White with deep Purplish Pink 7.5 RP 6/12 (Nickerson) edging and yellow green blotch and darker spotting in throat in dorsal 2 lobe sector. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Apricot — (unknown × unknown). Truss 12-15 flowered. Corolla light Purplish Pink 7.5 RP 8/5 (Nickerson) with appleblossom pink edging and yellow green basal blotch in 3 dorsal lobes sector. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Brandy-Green — (unknown × unknown). Truss 8-flowered. Corolla moderate Pink 10 RP 8/5 (Nickerson) with heavy yellow-green spotting on dorsal lobe and edges of adjacent lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Brick Red — (unknown × unknown). Truss 12-flowered. Corolla deep Purplish Pink 7.5 RP 6/12 (Nickerson) with slight moderate Red 2.5 4/10 spot in throat in 3 dorsal lobes sector. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Cream — (unknown × unknown). Truss 6-8 flowered. Corolla Cream with Pale Pink 2.5 R 9/3 (Nickerson) on lower outer edge; pale yellow blotch and stripes on edges of 4 adjoining lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Crown Pink — (unknown × unknown). Truss 10-flowered. Corolla strong Purplish Pink 7.5 RP 7/10 (Nickerson) with olive green spotting covering central area of dorsal lobe and edges of adjacent lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Giant Red — (unknown × unknown). Truss 12-15 flowered. Corolla strong Purplish Red 7.5 RP 4/11 (Nickerson) with very dark red blotch at base of throat, disbursing to spots on 3 lobes; light red spots covering remainder of corolla. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Glow — (unknown × unknown). Truss 8-10 flowered. Corolla strong Purplish Red 7.5 RP 5/12 (Nickerson) with paler throat and dark red blotch around base of corolla. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Horizon — (unknown × unknown). Truss 12-flowered. Corolla deep Purplish Pink 7.5 RP 6/12 (Nickerson) edging with white central area and yellow green blotch extending to central area of dorsal lobe. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Orange — (unknown × unknown). Truss 8-flowered. Corolla strong Purplish Red 10 RP 5/12 (Nickerson) with rose pink edging and veins; slight brownish-red basal blotch in throat dorsal lobe sector and adjacent lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Peppermint — (unknown × unknown). Truss 10-15 flowered. Corolla light Purplish Pink 2.5 RP 8/5 (Nickerson) with light yellow green blotch in throat in sector of 3 dorsal lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Pink Glory — (unknown × unknown). Truss 6-8 flowered. Corolla deep Purplish Pink 2.5 RP 6/10 (Nickerson) with blended yellow-green and deep red spotting on dorsal lobe and edges of adjacent lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Spice — (unknown × unknown). Truss 5-7 flowered. Corolla white with pale yellow-green spotting of 2 dorsal lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Springtime — (unknown × unknown). Truss 7-10 flowered. Corolla Cream with Deep Pink 2.5 R 6/11 (Nickerson) ¼in. edging and 4 rays reddish-brown spotting in throat of 3 dorsal lobe sectors. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Vanilla — (unknown × unknown). Truss 8-flowered. Buds bi-colour Pink/White. Corolla Creamy White, with strong Purplish Pink 7.5 RP 7/10 (Nickerson) edging and along central veins of lobes; reddish-brown blotch on dorsal lobe. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Dexter's Victoria — (unknown × unknown). Truss 12-15 flowered. Corolla moderate Purplish Red 5 RP 5/10 (Nickerson) with greenish brown blotch covering whole base of dorsal lobe and edges of adjacent lobes. Crossed (1925-1942) and raised by Charles Dexter, named by John Cowles, introduced (after 1959) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Massachusetts.

Doctor Franklin West — (Evergreen Azalea) (Linwood Hardy) (unknown × unknown). Truss 2-3 flowered. Corolla Delft Rose 020 (H.C.C.) with purple blotch and darker spots on upper lobes. Int. 1976. Crossed (1966), raised, introduced and registered (1977) by G. Albert Reid, Linwood, New Jersey.

Dorothy Hayden	(Evergreen Azalea) (Robin Hill) ((Glacier × (Louise Gable × Gable seedling) × Getsu-toku). Truss 1-2 flowered. Corolla white with 149D spots on dorsal throat and lobes. Int. 1971. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.
Dorothy Rees	(Evergreen Azalea) (Robin Hill) ((Glacier × (Louise Gable × Tama-giku)). Truss 1-2 flowered. Corolla white with Yellow-Green Group 145D throat. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, New Jersey.
Double Date (syn. Toandos Rose; Whitney's Double Pink)	(parentage unknown). Truss 10-flowered. Corolla Red Group 55A. Int. 1975. Crossed and introduced by Wm. E. Whitney, named by George and Anne Sather, and registered (1975) by Mrs W. O. Griswold, Kirkland, Washington.
Dream of Kings	(A. Bedford × Purple Splendour). Truss 16-20 flowered. Corolla Purple Group 78C with 79A darker blotch. Crossed (1967), raised, introduced and registered (1977) by Mrs Halsey A. Frederick, Jr., Bryn Mawr, Pennsylvania.
Earlene	(Shaazam × *yakushimanum* Koichiro Wada). Truss 14-flowered. Corolla Orange Group 27B, no blotch or spotting; reverse Red Group 50C. Buds 51B. Int. 1970. Crossed (1963) and raised by Henry Yates, introduced, named and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.
Early Beni	(Evergreen Azalea) (Robin Hill) (Louise Gable × (Oakland × (Belgian hybrid × Carol))). Truss 1-3 flowered. Corolla Red Group 43B with no blotch or spotting. Int. 1969. Crossed (1958), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.
Electra's Son	(Electra × open pollinated natural seedling). 1-4 trusses, 2-4 flowered. Corolla Violet Group 82C to 88C, fading toward throat; Yellow-Green 152D blotch and almost coalescing spots on dorsal lobe sector extending slightly on adjacent edges. Reverse with Red-Purple 70B shading on throat (with slight orange cast) and extending upward. Int. 1975. Originated c. 1968. Raised, introduced and registered (1976) by Edwin K. Parker, Astoria, Oregon.
Elsie Louisa	(form of *macgregoriae*). Truss up to 10-flowered. Corolla Orange Group 29A, shading through 29B to Yellow-Orange Group 23B in throat. Int. 1977. Collected by Michael Black (No. 331), raised, introduced and registered by Geoffrey Gorer, Haywards Heath, Sussex. A.M. 1977.
Ernie Dee	(*dauricum* × *racemosum*). 4-5 trusses each with 4-5 flowers. Corolla Purple Group 75A; upper lobe spotted red. Int. 1974. Crossed (1968) by James F. Caperci, raised and introduced by Ernest Dzurick, registered (1976) by James F. Caperci, Seattle, Washington.
Eunice Updike	(Evergreen Azalea) (Robin Hill) (Louise Gable × Shinnyo-no-tsuki). Truss 1-3 flowered. Corolla Red Group 43C with no blotch or spotting. Int. 1973. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.
Fireman Jeff	(The Hon. Jean Marie de Montague × Grosclaude). Truss 10-flowered. Corolla Red Group 46B with brown spotting on dorsal 3 lobes. Int. c. 1970. Crossed and raised by Lester Brandt, introduced and registered (1976) by John Eichelser, Olympia, Washington.
Folk's Wood	(form of *laxiflorum*). Truss up to 14-flowered. Corolla white. Int. 1977. Collector not recorded, raised, introduced and registered by Major A. E. Hardy, Hythe, Kent. A.M. 1977.

French Creek — (natural seedling – possibly a *fortunei* hybrid). Truss 15-18 flowered. Corolla Red-Purple Group 69A, fading to white; Greyed-Orange Group 163C blotch and spotting in throat and on dorsal lobes. Int. 1966. From Charles Herbert garden (about 1957), raised, introduced and registered (1977) by Charles Herbert, Pheonixville, Pennsylvania.

Frontier — (Letty Edwards × Crest). Truss 14-flowered. Corolla French Rose 520/1 (H.C.C.) fading to 520/3, with very pronounced shading of Barium Yellow 503/2 on centre of dorsal lobe, extending almost full length and less pronounced shading on 2 adjoining lobes. Int. 1975. Crossed (1966), raised, introduced and registered (1977) by James A. Elliott, Astoria, Oregon.

Fundy (syn. Evangeline) — (*fortunei* × *smirnowii*). Truss 10-flowered. Buds Rose Opal 022 (H.C.C.). Corolla lobe edges Neyron Rose 623/3 with dorsal olive brown blotch and light flecking. Crossed before 1958. Raised by G. S. Swain, Kentville Research Station, introduced and registered (1977) by Dr D. L. Craig, Canada Dept. of Agriculture Research Station, Nova Scotia.

Gabriel — (Dr H. C. Dresselhuys × *smirnowii*). Truss 18-flowered. Corolla Rhodamine Pink 527/2 (H.C.C.) with olive brown flecks on dorsal lobe. Crossed (1958) and raised by G. S. Swain, Kentville Research Station, introduced and registered (1977) by Dr D. L. Craig, Canada Dept. of Agriculture Research Station, Nova Scotia.

Garden State Glow — (Evergreen Azalea) (Linwood Hardy) (Salmon Spray × Hino-Crimson). Truss 3-4 flowered. Corolla China Rose 024/1 (H.C.C.), very slight spotting in upper lobe. Int. 1962 by Charles Fisher Jr., crossed (1955), raised and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Garden State Pink — (Evergreen Azalea) (Linwood Hardy) (Dawn × Hino-Crimson). Truss 3-4 flowered. Corolla China Rose 024/1 (H.C.C.) with uniform dark pink spotting on 3 upper lobes. Int. 1964. Crossed (1955), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Garden State Red — (Evergreen Azalea) (Linwood Hardy) (unknown hybrid × (Hexe × Vervaeniana)). Truss 3-flowered. Corolla Solferino Purple 26/1 (H.C.C.) with darker spots on upper lobe. Int. 1972. Crossed (1960), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Garden State Salmon — (Evergreen Azalea) (Linwood Hardy) (Koenig ? × Orange Cup). Truss 3-4 flowered. Corolla Blood Red 820/3 (H.C.C.) with darker spotting on upper three lobes of both whorls. Int. 1964. Crossed (1953), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Garden State White — (Evergreen Azalea) (Linwood Hardy) (Salmon Glow × unknown). Truss 3-flowered. Corolla white with light Chartreuse blotch and spots on upper lobe. Int. 1972. Crossed (1956), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Gemini — (Evergreen Azalea) (Helen Close × Purple Splendor). Truss 2-flowered. Corolla strong Purplish Pink 2.5 RP 6/10 (Nickerson). Crossed, raised, introduced and registered (1977) by W. L. Guttormsen, Canby, Oregon.

George Budgen — (*laetum* × *zoelleri*). Truss 5-flowered. Corolla Indian Yellow 6/2-6/1 (H.C.C.) at centre shading to Marigold Orange 11/1 toward lobe edge. Int. 1970. Crossed (1966), by Tom Lelliott, raised and introduced by Strybing Arboretum, registered by Bill Pollard, Berkeley Horticultural Nursery, Berkeley, California.

Glamora — (Evergreen Azalea) (Robin Hill) ((Louise Gable × Tama-giku) × Wako). Truss 2-3 flowered. Corolla Red-Purple Group 62D with faint Yellow Green dorsal spotting. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Glencora — (Evergreen Azalea) (Robin Hill) (Shinnyo-no-tsuki × Tama-giku). Truss 2-3 flowered. Corolla Red Group 47C with faint 43A spotting on dorsal lobes. Int. 1972. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Golden Wit — (*dichroanthum* subsp. *scyphocalyx* seedling × (Moonstone × Adrastia)). Truss 7-9 flowered. Corolla Primrose Yellow 601/2 (H.C.C.), with throat and upper lobes spotted and blotched Jasper Red 018. Crossed by J. A. Witt, raised, introduced and registered (1977) by Lawrence J. Michaud, Issaquah, Washington.

Greenmantle — (form of *phaeochrysum*) (Rock No. 59229). Truss 11-15 flowered. Corolla White Group 155C with small red blotch in throat. Int. 1977. Collected by Joseph Rock, raised by Col. S. R. Clarke, introduced and registered by R. N. S. Clarke, Haywards Heath, Sussex. A.M. 1977.

Greta — (Evergreen Azalea) ((Oakland × (Belgian hybrid × Carol)) × Getsu-toku). Corolla Red-Purple Group 58C with dark red spotting on 3 dorsal lobes. Int. 1972. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Gretchen Gossler — (Idealist × Crest). Truss 12-flowered. Corolla near Brilliant Yellow Green 2.5 GY 9/8 (Nickerson); 1 cm blotch, Moderate Red 2.5 R 4/10 deep in dorsal lobe sector. Crossed (1953), raised, introduced and registered (1976) by Carl H. Phetteplace, Leaburg, Oregon.

Grouse — (*campylogynum* var. *cremastum* Bodnant Red × *calostrotum* Gigha). Truss 1-4 flowered. Int. 1977. Crossed, raised, introduced and registered by P. A. Cox, Glendoick, Perthshire. A.M. 1977.

Guy Bradour — (Mrs C. S. Sargent × Purple Splendour). Truss 10-flowered. Corolla Purple-Violet Group 80B with large black dorsal blotch with peripheral spotting. Int. 1975. Crossed (1963) and raised by Henry Yates. Introduced, named and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Gwenda — (Evergreen Azalea) (Robin Hill) ((Louise Gable × Tama-giku) × Eikan). Truss 1-3 flowered. Corolla Red Group 56B with faint 56A spotting. Int. 1969. Crossed (1960), raised, introduced and registered by Robert D. Gartrell, Wyckoff, New Jersey.

Helen Child — (*fortunei* hybrid × *williamsianum*). Truss 9-flowered. Corolla Red-Purple Group 58B with lighter 56A spotting on dorsal and partially on adjacent lobes. Buds Red Group 46A. Int. 1973. Crossed (1958), raised, introduced and registered (1976) by H. L. Larson, Tacoma, Washington.

Helen Scott Richey
((*racemosum* × *moupinense*) × *mucronulatum* Cornell Pink). Terminal inflorescence of 1-5 trusses, with 1-2 flowers. Buds Fuchsine Pink 628/1 (H.C.C.). Corolla 627/3 with light spotting Porcelain Rose 620/1 at base of dorsal lobes; tube reverse 627/1. Int. 1974. Crossed (1965), raised, introduced and registered (1977) by Robert W. Scott, Kensington, California.

Hot Line
(open-pollinated Gumpo azalea). Truss 1-2 flowered. Corolla Red Group 54B to C, strongly blotched and spotted 53B on dorsal 3 lobes; reverse base of tube Red Group 44D. Int. after 1967. Seed collected (1963) by Dr T. Rokujo, raised, introduced and registered (1976) by Mary Louisa B. Hill, Vineyard Haven, Massachusetts.

Ida Bradour
(Mary Belle × *vernicosum*). Truss 12-14 flowered. Corolla Red-Purple Group 62C to D, shading to Yellow-Green Group 154D in throat. Int. 1968. Crossed (1959) by Joseph Gable, raised by Henry Yates, introduced, named and registered (1977) by Mrs Henry Yates, Frostburg, Maryland.

Illahee
(Mrs Furnival × Evening Glow). Truss 10-12 flowered. Corolla strong Purplish Pink 5 RP 7/9 (Nickerson); throat suffused light Yellowish Pink 2.5 YR 9/3, strong Orange Yellow 7.5 YR 7/11 flare; reverse and veining 7.5 RP 6/12 to 7.5 RP 5/12. Buds strong Purplish Red 10 RP 5/12 to 10 RP 4/12. Int. 1972. Crossed (1965) by Allen van Veen, raised by Elsie Yoder, introduced and registered (1976) by Allen van Veen, Portland, Oregon.

Indian Penny
(Sarita Loder × Idealist). Truss 12-14 flowered. Corolla H.C.C. Aureolin 3/3-2 (Yellow Group 12D-C). Int. 1956. Crossed, raised, introduced and registered (1977) by Del W. James Eugene, Oregon.

Jack Owen Yates
(Cataldi × Mars). Truss 12-13 flowered. Buds red; corolla Red-Purple Group 66A, shading lighter in centre of lobes and in throat with 2 small flares of Yellow Group 5B spotting dorsally. Reverse 66A. Crossed (1960), raised and named by Henry Yates, introduced and registered by Mrs Henry Yates, Frostburg, Maryland.

Jalipeno
(((Fabia × *haematodes*) × Earl of Athlone) × The Hon. Jean Marie de Montague). Truss 16-18 flowered. Corolla Red Group 45A with a few dark brown spots and dark brown nectaries at base. Int. 1975. Crossed (1965), raised, introduced and registered (1976) by Dr David W. Goheen, Camas, Washington.

Jason's Maxim
(*maximum* × unknown). Truss 16-flowered. Corolla white with yellow spotting on dorsal lobe; reverse tube light pink shading to white toward lobes. Crossed (approx. 1927) by Dr Clement G. Bowers, raised and introduced by Planting Fields Foundation Arboretum, named and registered (1976) by Rober F. Miller, Era Kay See Nurseries, New Hope, Pennsylvania.

Jodi
(*racemosum* × *moupinense*). Up to 6 trusses, 3-4 flowered. Corolla Red Group 55C with minor 55A spotting on dorsal throat; 55A stripe on back of each lobe. Int. 1969-70. Crossed (before 1966) probably by Halfdan Lem, raised by Halfdan Lem, introduced by Anna Lem, named and registered (1976) by Mae K. Granston, Redmond, Washington.

John R. Elcock
(form of *houlstonii*). Truss 8-10 flowered. Corolla Purple Group 75B, paling to Yellow Group 11D in throat with slight spotting in upper throat. Int. 1977. Collector not recorded, raised, introduced and registered by Crown Estate Commissioners, Windsor, Berks. A.M. 1977.

Juan de Fuca — (Blue Ensign × *ponticum*). Truss 12-flowered. Corolla Violet Group 87C with 87A edging. Red-Purple 59B blotch and spots on dorsal lobe. Buds 81A (Purple-Violet) with stripes of 87A. Int. 1976. Crossed (1964), raised, introduced and registered (1976) by H. L. Larson, Tacoma, Washington.

King of Jordan — (Nereid × Tally Ho × *discolor*) (exact combination unknown). Truss 10-flowered. Buds Red Group 39A becoming 38A. A bicolor, Yellow-Orange Group 15D to 16D in centre shading to edging of Red Group 49A to C; slight greenish spotting in throat and on dorsal lobes. Int. 1976. Crossed (1946-8) by ? Mrs Else Frye, raised, introduced and registered (1977) by Mrs Bernice I. Jordan, North Tumwater, Washington.

King Oluf — (Evergreen Azalea) (unknown × unknown). Corolla pink with peach throat and tube. Int. 1954. Seed collected (1949), raised, introduced and registered (1977) by Verne L. Wood, Tacoma, Washington.

Kyoto Coral — (*discolor* × Nereid × Tally Ho × unknown) (exact combination unknown). Truss 11-13 flowered. Corolla Red Group 47D and C, throat 45C; reverse with streaks of 46C or 45C. Int. 1976. Crossed (1963), raised, introduced and registered (1977) by Mrs Bernice I. Jordan, North Tumwater, Washington.

Lady April — (Dido × *williamsianum*). Truss 5-flowered. Corolla white, lightly flushed Red Group 54D, fading to a very pale translucent pink. Crossed (1958) by Arthur A. Childers, raised and introduced by Arthur and Maxine Childers, registered (1977) by Arthur A. Childers, Vida, Oregon.

Lady Jayne — (Deciduous Azalea) (unknown Exbury × Klondyke). Truss 8-9 flowered. Corolla Buttercup Yellow 5 (H.C.C.), partially suffused with Fire Red 15/1, with Saffron Yellow 7 blotch. Int. 1974. Crossed (1967), raised, introduced and registered (1976) by James A. Elliott, Astoria, Oregon.

Lady Louise — (Evergreen Azalea) (Louisa Gable × Tama-giku). Truss 1-3 flowered. Corolla Red Group 48C (Empire Rose) with faint 51A spotting. Int. 1967. Crossed, raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Lady Robin — (Evergreen Azalea) ((Glacier × Tama-giku) × Getsu-toku). Truss 1-3 flowered. Corolla – 1. sectored Red-Purple Group 66B with white. 2. White, slightly tinted. 3. 66B stripes on white. All with faint light brown spotting. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Late Love — (Chineyi × *nakaharai*). Truss 2-flowered. Corolla Red Group 48C with moderate Red-Purple 61B blotch and spotting on 3 dorsal lobes. Int. after 1974. Crossed (1961) by Dr T. Rokujo, raised, introduced and registered (1976) by Mary Louisa B. Hill, Vineyard Haven, Massachusetts.

Laura Morland — (Evergreen Azalea) ((Louise Gable × Tama-giku) × (Kaigetsu × Carol)). Truss 1-6. Corolla Red Group 49B (Venetian Pink) striped, sectored 49A, with faint blotch (spotting) 49A. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Leah Yates — (Mars selfed). Truss 8-10 flowered. Corolla Red-Purple Group 66B with large white dorsal flare containing two dashes Greyed-Yellow 162A of spotting. Int. 1963. Crossed (1956) raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Linwood Lavender — (Evergreen Azalea) (Linwood Hardy) (Salmon Glow × un-named seedling). Truss 3-flowered. Corolla Fuchsia Purple 28/2 (H.C.C.); purple to brown spots on 5-7 upper lobes. Int. 1965. Crossed (1956), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Linwood Lustre — (Evergreen Azalea) (Linwood Hardy) (Crimson King × un-named seedling). Truss 2-3 flowered. Corolla white with Chartreuse spots blending into blotch on upper lobe. Int. 1970. Crossed (1956), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Linwood Pink Giant — (Evergreen Azalea) (Linwood Hardy) (un-named seedling × (Rose Greeley × Mrs L. C. Fischer)). Truss 2-4 flowered. Corolla Tyrian Purple 727/3 (H.C.C.), with slight 727 spotting on upper lobe. Int. 1973. Crossed (1958), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Linwood Salmon — (Evergreen Azalea) (Linwood Hardy) (un-named seedling × (Rose Greeley × Mrs L. C. Fischer)). Truss 3-flowered. Corolla Delft Rose 020 (H.C.C.) with darker spotting on upper lobes. Int. 1968. Crossed (1958), raised, introduced and registered by G. Albert Reid, Linwood, New Jersey.

Linwood White — (Evergreen Azalea) (Linwood Hardy) (Salmon Glow × un-named seedling). Truss 2-4 flowered. Corolla white with very light Chartreuse spots on upper lobe. Int. 1966. Crossed (1956), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Lionel Fortescue — (Hawk × *wardii* Ellestee). Truss 11-flowered. Corolla Yellow Group 3C, paling at edges to Yellow Group 3D, with dark blotch of Red-Purple Group 59A. Crossed (1970), raised, introduced and registered by L. S. Fortescue, Buckland Monachorum, Devon.

Little Amy — (*campylogynum* var. *cremastum* × *campylogynum*). Truss 5-6 flowered. Corolla Red Group 36D, reverse 36B. Buds 36B. Int. 1977. Crossed (1961), raised, introduced and registered by James F. Caperci, Seattle, Washington.

Lovelock — (*chrysodoron* × unknown). Truss 5-flowered. Corolla Green-Yellow Group 1D, darkening at base to Yellow Group 2B. Raised by Dunedin Botanic Garden, introduced (about 1970) by H. G. Rutland (N.Z.), and registered (1977) by Dunedin Rhododendron Group, Dunedin, New Zealand.

Malemute — (Loderi King George × un-named semi-dwarf orange Lem hybrid: parents unknown). Truss 10-11 flowered. Corolla Phlox Pink 625/3 (H.C.C.) with 625/1 edging and reverse: Brick Red 016/2 spotting in dorsal sector. Crossed (1966), raised, introduced (1975) and registered (1977) by James A. Elliott, Astoria, Oregon.

Margaret Einarson — (Vulcan × Azor). Truss 12-flowered. Corolla Geranium Lake 20/3 (H.C.C.). Deep Rose stripes on reverse. Buds 20/2. Crossed (1961), raised, introduced and registered (1977) by Mrs Sigrid Laxdall, Bellingham, Washington.

Markeeta's Flame (syn. Markeeta's Prize No. 2) — (Loderi Venus × Anna). Truss 10-13 flowered. Corolla Red-Purple Group 58C with spotting 58A on dorsal lobe. Int. 1972. Crossed (1960) by Mrs Howard Beck, raised by Flora Markeeta Nursery, introduced and registered by Allan C. Korth, Santa Cruz, California.

Marquis of Lothian — (*thomsonii* × *griffithianum*). Truss 7-10 flowered. Corolla Red Group 52A to C with pronounced flush of darker colour. Crossed (before 1880) and raised by William Martin, introduced by Wm. Martin & Sons, Nurserymen, Dunedin and registered (1977) by Dunedin Rhododendron Group, Dunedin, New Zealand.

Mary Tranquillia — ((*discolor* × Nereid × Tally Ho) × Autumn Gold) (exact combination unknown). Truss 10-11 flowered. Buds Red Group 47C to B, a bicolour; ½ inch edging Red Group 55B, C, D, with touches of 55A; throat Yellow-Orange Group 16B, C, D, extending into centre of lobes with fine peppering Red Group 44C and 43B in dorsal lobe sector. Reverse 55B, C, D with streaks of 55A and lobe tips shading to 55B; outside of tube 55D over Yellow Orange (Gold effect). Int. 1976. Crossed (1963), raised, introduced and registered (1977) by Mrs Bernice I. Jordan, North Tumwater, Washington.

Mary Yates — (Pink Twins × Leah Yates). Truss 10-flowered. Corolla Red-Purple Group 68B becoming lighter toward centre of lobes and in throat; throat with slight yellowish tint with a few small gold spots. Int. 1969. Crossed (1959), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Maurice Skipworth — (*bullatum* × *burmanicum*). Truss 5-flowered. Corolla White Group 155C with yellow speckling at base. Int. about 1960. Crossed (1954) by M. R. Skipworth, raised by Dunedin Botanic Garden and registered (1977) by Dunedin Rhododendron Group, Dunedin, New Zealand.

Maxine Childers — (*strigillosum* × Elizabeth). Truss 8-10 flowered. Corolla near Cardinal Red 822/3 (H.C.C.) Crossed (1958) by Mrs Arthur Childers, raised, introduced and registered (1976) by Carl H. Phetteplace, Leaburg, Oregon.

Maxine Margaret — (*strigillosum* × Elizabeth). Truss 8-11 flowered. Corolla Red Group between 46A and 47A (Currant Red) with black nectaries. Crossed (1958), raised and registered (1976) by Arthur Childers, Rhodoland Nursery, Veda, Oregon.

May Belle — (Evergreen Azalea) (Helen Curtis × Hino Red). Truss 3-flowered. Corolla Deep Pink 10 RP 6/12 to strong Purplish Red 10 RP 5/12 (Nickerson). Int. 1975. Crossed (1965), raised, introduced and registered (1976) by Anthony M. Shammarello, South Euclid, Ohio.

May Schwarz — (Candi × *tephropeplum*). Truss 4-6 flowered. Corolla Fuchsine Pink 627/3, no spots or blotch. Reverse tube and streaking to lobes 627/1. Int. 1976. Crossed (1967), raised, introduced and registered (1977) by Robert W. Scott, Kensington, California.

Meliz — (*kotschyi* × unknown). 1-4 trusses, 5-8 flowered. Corolla Red Group 49B, slightly spotted 47B on 2 lobes; reverse spotted 47B in line from base of flower to clefts between lobes. Int. 1974. Crossed (1962), raised, introduced and registered (1976) by James F. Caperci, Seattle, Washington.

Millicent Scott — ((*racemosum* × Saffron Queen) × (*racemosum* × Saffron Queen)). Truss 3-flowered. Corolla Egyptian Buff 407/2–407/3 (H.C.C.), light spotting Spiraea Red 025 on lobes. Int. 1974. Crossed (1963), raised, introduced and registered by Robert W. Scott, Kensington, California.

Morning Sunshine — (unknown × unknown). Truss 11-14 flowered. Buds Yellow-Orange Group 22A. Corolla Yellow Group 4B with no spots or blotch. Crossed (1967) and raised by William E. Whitney, introduced and registered (1977) by George and Anne Sather, Whitney Nursery, Brinnon, Washington.

Mrs Emil Hager — (Evergreen Azalea) ((Louise Gable × Tama-giku) × Shinnyo-no-tsuki). Truss 1-3 flowered. Corolla Red-Purple Group 68A with faint red spotting. Int. (1972). Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Nancy of Robinhill — (Evergreen Azalea) (Vervaeniana × (Louise Gable × Tama-giku)). Truss 2-3 flowered. Corolla Red-Purple Group 62C with inconspicuous small red blotch with peripheral spotting on dorsal lobes of some flowers. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Nepal — (form of *cinnabarinum*). Truss 4-8 flowered. Corolla Yellow Group 12C, deepening towards base to near Red Group 51A. Int. 1977. Collectors Ludlow, Sherriff & Hicks, raised by J. B. Stevenson, introduced and registered by Hydon Nurseries, Surrey, A.M. 1977.

Noyo Brave — (Noyo Chief × *yakushimanum* Koichiro Wada). Truss up to 22-flowered. Corolla Red Group 40B (21238), with small dorsal radiant red blotch. Int. 1976. Crossed (1963), raised, introduced and registered (1977) by Cecil C. Smith, Aurora, Oregon.

Ocelot — (form of *parmulatum*). Truss loose, 3- to 6-flowered. Corolla Yellow-Green Group 150D, each lobe slightly deeper-coloured central band; upper throat heavily spotted with Greyed-Purple 187B. Seed collected by F. Kingdon Ward. Raised by E. J. P. Magor, introduced and registered by Major-General E. G. W. W. Harrison, Bodmin, Cornwall. A.M. 1977.

Opal — (Evergreen Azalea) (Linwood Hardy) (un-named seedling × Mrs L. C. Fischer). Truss 2-4 flowered. Corolla Fuchsia Purple 28/2 (H.C.C.); heavy spotting 027 on all upper lobes. Int. 1974. Crossed (1959), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Orchid Beauty — (Evergreen Azalea) (Linwood Hardy) (Mrs L. C. Fischer × Maryann). Truss 3-4 flowered. Corolla Tyrian Rose 24/2 (H.C.C.), with irregular spotting deep rose to light brown. Int. 1965. Crossed (1955), raised, introduced and registered by G. Albert Reid, Linwood, New Jersey.

Paleface — (Evergreen Azalea) (Helen Close × Madrigal). Truss 1-2 flowered. Corolla white. Crossed, raised, introduced and registered by W. L. Guttormsen, Canby, Oregon.

Papineau — (Evergreen Azalea) (Glacier × Swansong). Truss 2-3 flowered. Corolla white with pale green throat. Int. 1973. Crossed (1967), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Patches — (Evergreen Azalea) (Satsuki) (Chichibu selfed). Truss 2-flowered. Corolla Red Group 39A or white; some flowers selfs, others blotched, others lined, others half in half. Crossed (1956), raised, introduced and registered (1976) by James F. Caperci, Seattle, Washington.

Patty Bee — (*keiskei* Yaku Fairy × *fletcheranum*). Truss 6-flowered. Corolla Yellow Group 2C; no blotch or spotting. Crossed (1970), raised, introduced and registered (1977) by Warren E. Berg, Kent, Washington.

Peach Fuzz — (Evergreen Azalea) (Linwood Hardy) (un-named seedling × Mrs L. C. Fischer). Truss 3-flowered. Corolla Empire Rose 0621 (H.C.C.) with very dark spots on upper lobes. Int. 1972. Crossed (1959), raised, introduced and registered (1977) by G. Albert Reid, Linwood, New Jersey.

Pennywise — (Mars × *yakushimanum* Koichiro Wada). Truss 17-flowered. Buds Red Group 53B. Corolla 52C. Crossed (1968), raised, introduced and registered (1977) by Dr Whildin A. Reese, Pennsburg, Pennsylvania.

Pepperpot — (Goldbug × un-named semi-dwarf orange Lem hybrid: parent unknown). Truss 8-10 flowered. Corolla Straw Yellow 604/1 (H.C.C.) with heavy spotting Jasper Red 018 on dorsal 3 lobes; light spotting. Int. 1973. Crossed (1966), raised, introduced and registered (1977) by James A. Elliott, Astoria, Oregon.

Pickering — ((*catawbiense* var. *album* Catalgla × (*fortunei* × *campylocarpum*)) × unknown). Truss 8-10 flowered. Corolla Red Group 49D with deeper rose edging; 3 dorsal lobes Yellow Group 11D with deeper yellow spotting. Int. 1967. Crossed (1953), raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.

Pieces of Eight — (Virginia Richards × un-named hybrid). Truss 10-flowered. Corolla Yellow Group 11D with Orange 26D spotting on upper 3 lobes, blush effect. Crossed (1967), raised, introduced and registered (1977) by Mrs Halsey A. Frederick, Jr., Bryn Mawr, Pennsylvania.

Pink Fancy — (Evergreen Azalea) (Helen Close × Purple Splendor). Truss 2-4 flowered. Corolla Strong Purplish Pink 7.5 RP 7/10 (Nickerson). Crossed, raised, introduced and registered (1977) by W. L. Guttormsen, Canby, Oregon.

Pink Lace — (Evergreen Azalea) (Helen Close × Purple Splendor). Truss 2-4 flowered. Corolla Deep Purplish Pink 7.5 RP 6/12 (Nickerson). Crossed, raised, introduced and registered (1977) by W. L. Guttormsen, Canby, Oregon.

Pink Panther — (*mucronulatum* (pink clone) selfed). Corolla Red-Purple Group 66C with insignificant blotch. Buds 63A. Int. 1975. Crossed (1966) by Ernest K. Egan, raised, introduced and registered (1976) by G. David Lewis, Colts Neck, New Jersey.

Pink Pincushion — (Evergreen Azalea) (Linwood Hardy) (un-named seedling × Mrs L. C. Fischer). Truss 3-4 flowered. Corolla Spiraea Red 025/2; darker spots on lower 4-5 lobes from throat outward. Int. 1972. Crossed (1959), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Pink Radiance — (Evergreen Azalea) (Fedora (open pollinated) × prob. Hinodegiri). Truss 2-4 flowered. Corolla Red Group 55B with deeper spotting on dorsal lobe; central almost white stripe on reverse of each lobe. Crossed (1958), raised, introduced and registered (1977) by Louis A. Hindla, Bohemia, New York.

Queen Nefertiti — (Loderi Venus × Anna). Truss 10-13 flowered. Corolla Red Group 55C with dorsal lobe spotting Red-Purple Group 58A; edging and reverse 58C. Int. 1969. Crossed (1960) by Mrs Howard Beck, raised by Flora Markeeta Nursery, introduced and registered (1977) by Allan C. Korth, Santa Cruz, California.

Rainier Pink — (unknown × unknown). Truss 8-9 flowered. A bicolor, Yellow Group 10C in dorsal sector, remainder 10D, with staining of Red Group 55B at edge of lobes; slight red spotting in throat. Reverse pink, striped Red Group 55A to B. Crossed (1963), raised, introduced and registered (1977) by Mrs Bernice Jordan, North Tumwater, Washington.

Rain of Gold — (unknown × unknown). Truss 9-flowered. Corolla Yellow-White Group 158D with chartreuse blotch and medium green spots. Int. 1975. Crossed (1960) by Roy J. Kersey, raised, introduced and registered (1977) by Mrs Halsey A. Frederick, Jr., Bryn Mawr, Pennsylvania.

Ravels — (Leah Yates × Pink Twins). Truss 12-flowered. Red Group 55B, with veins 55A and with large dorsal blotch of spotting Yellow-Green Group 151A extending into throat. Int. 1970. Crossed (1959), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Red Fountain — (W. Leith × *nakaharai*). Truss 2-flowered. Corolla Red Group 42B to C with 46A moderate blotch and spotting on dorsal 3 lobes. Crossed (1961) by Dr T. Rokujo, raised, introduced and registered (1976) by Mary Louisa B. Hill, Vineyard Haven, Massachusetts.

Redmond — ((Louise Gable × Tama-giku) × Heiwa). Truss 1-3 flowered. Corolla Red Group 39B, with darker 47B spotting on dorsal lobes. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Red Pantaloons — (Wilbar × *chamaethomsonii* var. *chamaethauma*). Truss 4-flowered. Corolla Red Group 46A. Crossed (1968), raised, introduced and registered (1976) by Carl G. Heller, Bodega Rhododendron Nursery, Poulsbo, Washington.

Red Red — (Evergreen Azalea) (Hino Red × Ward's Ruby). Truss 3-4 flowered. Corolla Red Group 47B. Int. 1974. Crossed (1961), raised, introduced and registered (1976) by A. M. Shammarello, South Euclid, Ohio.

Reginald Childs — (form of *uvarifolium*). Truss 20-22 flowered. Corolla white suffused Red-Purple Group 65C with large blotch Red Group 53A in upper throat. Int. 1976. Collector not recorded. Raised, introduced and registered (1976) by The Director, The Royal Botanic Gardens, Kew, from Wakehurst Place, Sussex. A.M. 1976.

Reid Red — (Evergreen Azalea) (Linwood Hardy) (unknown × unknown). Truss 3-5 flowered. Corolla Rose Red 724/1 (H.C.C.); no spotting. Int. 1975. Crossed (1966), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Robert Balch — (*zeylanicum* × *elliottii* KW 19083). Truss 10-16 flowered. Corolla Red Group 46A. Int. 1977. Crossed (1960) by R. W. Balch, raised by Dunedin Botanic Garden, introduced by C. A. McLaughlin, and registered (1977) by Dunedin Rhododendron Group, Dunedin, New Zealand.

Robin Hill Frosty — ((Oakland × (Belgain hybrid × Carol)) × (Louise Gable × Tama-giku)). Truss 2-3 flowered. Corolla Red-Purple Group 62A with 62D edging and inconspicuous Red Group 55A spotting. Int. 1969. Crossed (1956), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Robin Hill Gillie — (Evergreen Azalea) ((Oakland × (Belgian hybrid × Carol)) × Getsu-toku). Truss 1-3 flowered. Corolla Red Group 42C with dark red dorsal spotting. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Ronkonkoma — (Blue Peter × Purple Splendour). Truss 22-flowered. Corolla Purple-Violet Group 81C with large dorsal flare Greyed-Purple 187A; edging and reverse 81B. Buds Purple 77A. Crossed (1967), raised, introduced and registered (1976) by Alfred A. Raustein, Holbrook, New York.

Rose Haines	(*fortunei* × unknown). Truss 9-11 flowered. Corolla Cyclamen Purple 30/3 (H.C.C.); throat flushed Sap Green 62/2; buds and corolla reverse 30/2. Int. 1967. Crossed (1957) by Carl English, Jr., raised, introduced and registered (1976) by Clarence R. Burlingame, Hoquiam, Washington.
Rose Lancaster	(Tally Ho × *yakushimanum*). Truss 18-30 flowered. Corolla Red Group 55A; no spots or blotch. Int. 1973. Crossed (1962) by Ben Lancaster, raised and introduced by Ray Austin, and registered (1977) by Dr David W. Goheen, Camas, Washington.
Rose Pantaloons	(Wilbar × *chamaethomsonii* var. *chamaethauma*). Truss 5-flowered. Corolla Red Group 54B. Crossed (1968), raised, introduced and registered (1976) by Carl G. Heller, Rhododendron Nursery, Poulsbo, Washington.
Rose Scott	(Else Frye × (*johnstoneanum* × *cubittii*)). Truss 4-6 flowered. Corolla white, irregular patches. Fuchsine Pink (H.C.C.) 627/3 – 627/1, with large flare China Rose 024/1 and Orange Buff 507/3; reverse heavily flushed Fuchsine Pink and rib markings of Spiraea Red 025/1. Buds Cardinal Red 822 with white scales. Int. 1976. Crossed (1968), raised, introduced and registered (1977) by Robert W. Scott, Kensington, California.
Rothesay	(open pollinated seedling). Truss 6-10 flowered. In bud, Red Group 38C opening to white, flushed pink reverse, with greenish spotting on upper lobe. Int. 1973. Raised, introduced and registered (1977) by B. W. Campbell, Dunedin, New Zealand.
Roy Hudson	(*burmanicum* × *nuttallii*). Truss 6-8 flowered. Corolla white; throat Saffron Yellow 7/2 (H.C.C.). Int. 1970. Crossed, raised, introduced and registered (1977) by Howard W. Kerrigan, Hayward, California.
Royal Blazer	(Evergreen Azalea) (parentage unknown – a natural seedling). Truss 4-5 flowered. Corolla Purple Group 78A with darker 79D blotch on dorsal lobe. Int. 1976. From Charles Herbert garden (1962), raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.
Rudolph's Orange	(Fabia ×Temple Belle). Truss 6-flowered. Corolla Orange Group 29B with pink shaded edging, both inside and outside. Int. 1965. Crossed by Rudolph Henny, raised by Elmer Fisher, introduced, named and registered (1976) by James F. Caperci, Seattle, Washington.
Salmon Pincushion	(Evergreen Azalea) (Linwood Hardy) (un-named seedling × Mrs L. C. Fischer). Truss 3-4 flowered. Corolla Geranium Lake 20/2 (H.C.C.); no spotting. Int. 1972. Crossed (1959), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.
Schuylkill	(natural seedling – probably *catawbiense* × *decorum*). Truss 18-flowered. Corolla Red-Purple Group 62B, fading to cream white with some spotting of deeper pink and pink stripe down centre of each lobe; yellow trace in dorsal throat. Int. 1967. From Charles Herbert garden (1944), raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.
Sea-Tac	(Moser's Maroon × *williamsianum*). Truss 6-7 flowered. Corolla 53A. Buds Greyed-Red Group 181A. Int. 1976. Crossed, raised, introduced and registered by H. L. Larson, Tacoma, Washington.

Shaazam — (Pink Twins × Leah Yates). Truss 8-10 flowered. Corolla Red Group 55A edging, shading to 55C, with Yellow 14B dorsal flare and gold spotting, becoming greenish in throat. Int. 1970. Crossed (1959), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Shirley Rose Lent — (*strigillosum* × *praevernum*). Truss 13-flowered. Corolla Red-Purple Group 58B with some dark red spotting on upper lobe. Crossed (1966) by Ben Nelson, raised, introduced and registered (1976) by Carl G. Heller, Bodega Rhododendron Nursery, Poulsbo, Washington.

Sigrid — (Marinus Koster × Pilgrim). Truss 12-flowered. Corolla Phlox Pink 625/1 (H.C.C.), fading to 625/2; small red spot in throat; edging and reverse darker. Crossed (1961), raised, introduced and registered (1977) by Mrs Sigrid Laxdall, Bellingham, Washington.

Skyglow — (unknown × unknown). Truss 10-12 flowered. Corolla pale Peach Pink with pale Purplish Pink 10 P 8/5 (Nickerson) edging and 2 pale greenish yellow blotches along lower edges of dorsal lobe. Obt. from Veitch (U.K.) pre 1925 and raised by Charles Dexter. Int. by Dexter 1928 (named/introduced 1966 by Warren Baldsiefen) and registered (1977) by Heritage Plantation of Sandwich, Sandwich, Maryland.

Snow Crest — (Fawn × Crest). Truss 9-11 flowered. Corolla white, very lightly tinted Red Group 49C to D with tiny maroon spot on dorsal lobe. Crossed (1959) by Arthur A. Childers, raised and introduced by Arthur and Maxine Childers, registered (1977) by Arthur A. Childers, Vida, Oregon.

Spink — (Evergreen Azalea) (Robin Hill) (unknown × unknown). Truss 2-3 flowered. Corolla Red-Purple Group 62A with no spots or blotch. Int. 1971. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Spring Fiesta — (Marion × (*griersonianum* × *fortunei*)). Truss 12-flowered. Corolla Red Group 56A. Int. 1975. Crossed, raised, introduced and registered (1976) by G. Langdon, Victoria, Australia.

Star Trek — (*davidsonianum* × *davidsonianum* Ruth Lyons). Truss 3-4 flowered. Corolla Purple Group 76A with large blotch in dorsal sector of Red Group 44A spots and dots. Int. 1970. Crossed (1957), raised, introduced and registered (1976) by Arthur Childers, Rhodoland Nursery, Vida, Oregon.

Summer Scandal — (unknown × unknown). Truss 10-12 flowered. Corolla Red-Purple Group 62D, shaded 62C at lobe edges; throat greenish. Buds pink. Crossed (1960) by Roy J. Kersey, raised, introduced and registered to Mrs Halsey A. Frederick, Jr., Bryn Mawr, Pennsylvania.

Sundari — (*augustinii* × *trichanthum*). Truss 4-5 flowered. Corolla Violet Group 85A, diffusing to 85D at centre. Crossed (1968), raised, introduced and registered (1976) by Howard A. Short, Bainbridge Island, Washington.

Sun Flame — (King of Jordan × unknown hybrid). Truss 9-13 flowered. Buds Red Group 39A. Corolla throat Yellow Group 8B shading to 36B at lobe edges (general effect apricot). Reverse Red Group 41C shading to Orange-Red 32D at lobe edges, striped. Int. 1976. Crossed (1963), raised, introduced and registered (1977) by Mrs Bernice I. Jordan, North Tumwater, Washington.

Sunset Yates
(Pink Twins × Leah Yates). Truss 15-flowered. Corolla Red Group 55B, shading to 56D large dorsal flare and darker spotting 53C. Int. 1970. Crossed (1959), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Sweet Christy
(Knap Hill Azalea) (unknown × unknown). Truss 11-14 flowered. Corolla Pinard Yellow IV 21 d (Ridgway) fading to Baryta Yellow IV f, Naphthalene Yellow XVI 23 f to almost white. Blotch deep Chrome III 17 b each side dorsal lobe of coalescing dots. Int. 1976. Raised by De Wilde Nursery, introduced and registered by Dr Roy Magruder, Washington, D.C.

Teal
(*brachyanthum* var. *hypolepidotum* × *fletcheranum*). Truss 5-8 flowered. Corolla Yellow Group 3D. Int. 1977. Crossed, raised, introduced and registered by P. A. Cox, Glendoick, Perthshire. A.M. 1977.

Terry Herbert
(*carolinianum* × *augustinii*). Truss 7-12 flowered. Corolla Red-Purple Group 73A, no blotch or spotting. Int. 1966. Crossed (1962), raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.

Tinker Hill
(*catawbiense* (red form) × Lavender Charm). Truss 13-flowered. Corolla Red Group 55B, with Red-Purple Group 59A dorsal blotch and spotting on dorsal lobe. Int. 1976. Crossed (1968) by Mathew Gordon, raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.

Tiny
(Evergreen Azalea) (Linwood Hardy) (un-named seedling × (Hexe × Vervaeniana)). Truss 2-4 flowered. Corolla Solferino Purple 26/2 (H.C.C.), with a few darker spots on upper lobes. Int. 1973. Crossed (1959), raised, introduced and registered (1976) by G. Albert Reid, Linwood, New Jersey.

Tish
(Beckyann × (*fortunei* × *vernicosum*)). Truss 10-flowered. Corolla Yellow Group 11C, slightly deeper in throat; no blotch or spotting. Int. 1976. Crossed (1966) by Henry Yates, raised, named, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Traci Suzanne
(Blue Peter × Loderi King George). Truss 12-flowered. Corolla Red-Purple Group 75C to D with Green Group 139C spotting from throat to edging bordering corolla covering most of dorsal lobe and somewhat on adjacent lobes; edging 74C to D; reverse 74B to C, colour concentrated as edging and in band down centre of each lobe to base; area between bands and edging 75C. Int. 1969. Crossed, raised and introduced by E. L. Kaiser, registered by Mae K. Granston, Redmond, Washington.

Tressa McMurry
(Azaleodendron) (*occidentale* × *ponticum*). Truss 10-18 flowered. Corolla 627/1 (H.C.C.) with small Sienna dots (almost a blotch). Crossed (1966), raised, introduced and registered (1977) by Mrs Tressa McMurry, Bellingham, Washington.

Trill
(open-pollinated Gumpo azalea). Truss 2-4 flowered. Corolla Red Group 41B to C, with moderate blotch and spotting 45A on 3 dorsal lobes. Int. about 1967. Seed collected (1963) by Dr T. Rokujo, raised, introduced and registered (1976) by Mary Louisa B. Hill, Vineyard Haven, Massachusetts.

Twins Candy
(Pink Twins × Cotton Candy). Truss 18-flowered. Corolla Red Group 54A with cardinal red spotting on 2 dorsal lobe; throat a lighter colour. Int. 1977. Crossed (1968), raised, introduced and registered (1977) by Charles Herbert, Phoenixville, Pennsylvania.

Vera Elliott — (Virginia Richards × *fortunei*). Truss 10-flowered. Corolla Red-Purple Group 58D with slight Orange Red spotting on upper 3 lobes. Crossed (1966), raised, introduced and registered (1977) by Walt Elliott, Shelton, Washington.

Verne's Red — (Evergreen Azalea) (James Gable × unknown). Corolla glowing, vivid red with no blue. Int. 1963. Seed collected (1950-1) and raised by Verne L. Wood, introduced and registered (1977) by Vera K. Wood, Tacoma, Washington.

Victoria Hohman — (Evergreen Azalea) (Linwood Hardy) (unknown × unknown). Truss 2-4 flowered. Corolla Solferino Purple 26/1 (H.C.C.); light spotting on 1 upper lobe. Int. 1976. Crossed (1966), raised, introduced and registered by G. Albert Reid, Linwood, New Jersey.

Vineland Flame — (Knap Hill Azalea) (Gibraltar × Favor Major). Truss 10-12 flowered. Corolla Red Group 44A to B. Crossed (1960) by Henny and Wennekamp, raised, introduced and registered (1977) by The Horticultural Research Institute of Ontario, Vineland Station, Ontario, Canada.

Vineland Flare — (Knap Hill Azalea) (Klondike × George Reynolds). Truss 10-12 flowered. Corolla Yellow-Orange Group 15B. Crossed (1960) by Henny and Wennekamp, raised, introduced and registered (1977) by The Horticultural Research Institute of Ontario, Ontario, Canada.

Vineland Glow — (Knap Hill Azalea) (Gibraltar × Favor Major). Truss 10-12 flowered. Corolla Orange-Red Group 33A. Crossed (1960) by Henny and Wennekamp, raised, introduced and registered (1977) by The Horticultural Research Institute of Ontario, Ontario, Canada.

Vinestar — (*keiskei* × *racemosum*). Truss 2-4 flowered. Corolla Yellow Group 9D with brownish orange flecking in throat. Crossed (1961), raised, introduced and registered (1977) by The Horticultural Research Institute of Ontario, Ontario, Canada.

Watchet — (Evergreen Azalea) (Amagasa × (Louise Gable × Tama-giku)). Truss 1-3 flowered. Corolla Red Group 49B with faint 49A spotting on dorsal lobes. Int. 1972. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

Welcome Stranger — (*discolor* × *lacteum*). Corolla Yellow Group 4D, deepening in throat to Yellow Group 8D with greenish-red markings on upper lobes. Int. 1977. Crossed and raised by Lionel de Rothschild, introduced and registered (1977) by Major A. E. Hardy, Hythe, Kent, A.M. 1977.

Welshpool — (*decorum* × *yakushimanum* Koichiro Wada). Truss 10-flowered. Corolla white with faint splash of yellow and approx. 12 yellow dots in throat. Crossed (1962), raised, introduced and registered (1977) by Dr Whildin A. Reese, Pennsburg, Pennsylvania.

White Moon — (Evergreen Azalea) ((Glacier × Tamu-giku) × Getsu-toku). Truss 1-2 flowered. Corolla white with Yellow-Green 149D spotting and occasional Red Group 43C sectoring. Int. 1969. Crossed (1960), raised, introduced and registered (1977) by Robert D. Gartrell, Wyckoff, New Jersey.

White Princess — (Evergreen Azalea) ((White Kurume seedling × *poukhanense*) × Orchid Lace). Corolla pure white. Raised and introduced by Peter Girard, Sr., and registered (1977) by Girard Nurseries, Geneva, Ohio.

Yaku Duchess — (King Tut × *yakushimanum* Koichiro Wada). Truss 15-flowered. Buds strong Red 25 R 5/12 (Nickerson). Corolla deep Pink 2.5 R 6/11 with light pink blotch; no spotting; reverse deep Purplish Pink 7.5 RP 6/12. Flower colour becomes lighter with age. Int. 1976. Crossed (1961), raised, introduced and registered (1977) by Anthony M. Shammarello, South Euclid, Ohio.

Yaku Duke — (King Tut × *yakushimanum* Koichiro Wada). Truss 14-flowered. Buds strong Purplish Red 10 RP 4/12 (Nickerson). Corolla deep Purplish Pink 7.5 RP 6/12; throat light pink; reverse 7.5 RP 6/12; no blotch or spotting. Flower colour becomes lighter with age. Int. 1976. Crossed (1961), raised, introduced and registered (1977) by Anthony M. Shammarello, South Euclid, Ohio.

Yaku King — (King Tut × *yakushimanum* Koichiro Wada). Truss 18-flowered. Buds Strong Red 2.5 R 5/12 (Nickerson). Corolla deep Pink 2.5 R 6/11 with light pink blotch; no spotting; reverse deep Purplish Pink 7.5 RP 6/12. Flower colour becomes lighter with age. Int. 1976. Crossed (1961), raised, introduced and registered (1977) by Anthony M. Shammarello, South Euclid, Ohio.

Yaku Prince — (King Tut × *yakushimanum* Koichiro Wada). Truss 14-flowered. Buds Strong Red 5 R 4/12 (Nickerson). Corolla strong Purplish Pink 7.5 RP 7/10 with blotch pale Purplish Pink 7.5 RP 9/2 and spotting dark Reddish Orange 7.5 R 4/11; reverse strong Purplish Red 7.5 RP 5/12. Flower colour becomes lighter with age. Int. 1976. Crossed (1961), raised, introduced and registered (1977) by Anthony M. Shammarello, South Euclid, Ohio.

Yaku Princess — (King Tut × *yakushimanum* Koichiro Wada). Truss 15-flowered. Buds strong Purplish Pink 7.5 RP 7/10 (Nickerson). Corolla Apple Blossom Pink, turning white; pinkish white blotch and green spots. Reverse Pale Pink 2.5 R 9/3. Int. 1976. Crossed (1961), raised, introduced and registered (1977) by Anthony M. Shammarello, South Euclid, Ohio.

Yaku Queen — (King Tut × *yakushimanum* Koichiro Wada). Truss 16-flowered. Buds deep Purplish Pink 7.5 RP 6/12 (Nickerson). Corolla pale Pink 2.5 R 9/3 from darker colour when first open, gradually turn white with age; faint yellow blotch and no spots. Reverse strong Pink 2.5 R 7/8. Int. 1976. Crossed (1961), raised, introduced and registered (1977) by Anthony M. Shammarello, South Euclid, Ohio.

Yates' Albino — (*catawbiense* (red clone) × Mars). Truss 11-flowered. Corolla White Group 155D with blotch of Yellow-Green 144C and Red 47A sparse spotting. Int. 1968. Crossed (1959), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Yates' Best — (Mrs H. R. Yates × *yakushimanum* Koichiro Wada). Truss 13-flowered. Buds rose. Opening corolla pink, soon becoming White 155D with minor spotting Yellow 9A. Int. 1968. Crossed (1962), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Yates' Hazel — (Mrs C. S. Sargent × *vernicosum*). Truss 12-flowered. Corolla Red-Purple Group 62A with Greyed-Yellow blotch containing Yellow-Green 144C spotting. Int. 1971. Crossed (1963) and raised by Henry Yates, named, introduced and registered by Mrs Henry Yates, Frostburg, Maryland.

Yates' Red

(Leah Yates × Pink Twins). Truss 13-15 flowered. Corolla Red Group 53A to B to C, shading to Red-Purple 66A in throat; large blotch in throat and spotting Greyed-Purple Group 187A. Int. 1965. Crossed (1959), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Yates Second Best

(Mrs H. R. Yates × *yakushimanum* Koichiro Wada). Truss 10-flowered. Corolla White Group 155D with Yellow 4A dorsal spotting. Buds pink. Int. 1968. Crossed (1962), raised and named by Henry Yates, introduced and registered (1976) by Mrs Henry Yates, Frostburg, Maryland.

Yellow Wolf

(*dichroanthum* subsp. *scyphocalyx* seedling ×(*chrysanthum* × (Rubina × Fabia))). Truss 5-7 flowered. Corolla Orange Buff 507/2 (H.C.C.), with outside of tube and lobe edge stained Peach 512. Crossed by J. A. Witt, raised, introduced and registered (1977) by University of Washington Arboretum, Seattle.

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*Denotes award after trial at Wisley

Rhododendrons listed in the Additions to the International Rhododendron Register pp. 106-127 are not included in the Index.

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