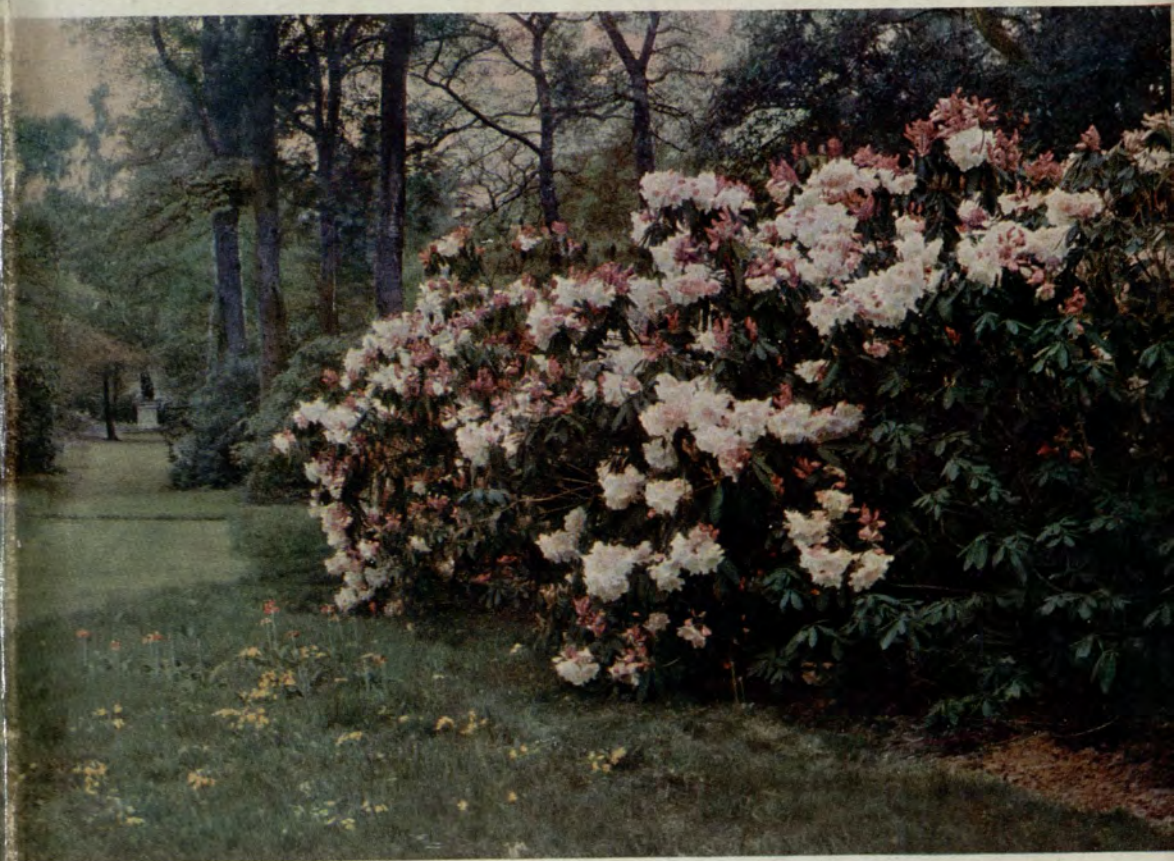


THE  
RHODODENDRON



YEAR BOOK  
1951-2

THE ROYAL HORTICULTURAL SOCIETY



AMONG THE interesting illustrated articles in this issue of the YEAR BOOK is one on Rhododendrons at Brodick Castle, Isle of Arran, by the Duchess of Montrose and Mr. J. P. T. Boscawen. This describes many of the rare and tender Rhododendrons grown on this island off the West coast of Scotland. Mr. B. Y. Morrison, a Vice-President of the Society, writes on the Glenn Dale Azaleas, a strain of hardy Kurume Azaleas raised by him in the United States. Also from America is an interesting article on a new race of hardy Rhododendrons for the East coast of North America by Mr. J. C. Wister. Other aspects of Rhododendron growing are covered by Dr. W. F. Jepson's paper on Rhododendron Bud Blast and the Rhododendron Leafhopper, Rhododendrons as Foliage Plants by Mr. J. P. C. Russell, Rhododendrons for the Cool Greenhouse by Mr. F. Hanger, Curator of Wisley Gardens, and the Development of some hardy hybrid Rhododendrons by Frederick Street. Dr. Cowan and Mr. Davidian continue the revision of Rhododendrons with a paper on the Thomsonii Series, and the forms of *R. repens* at Tower Court are discussed by Mrs. R. M. Stevenson. Dr. Cowan and Mr. Davidian follow this with a new systematic revision of this complicated group of plants. Reports of the Rhododendron Group's activities are included, as well as descriptions of the Rhododendron Show, the awards and a report of the Brains Trust.

Agnes Martin

COVER ILLUSTRATION

Rhododendron 'Loderi'  
var. 'King George' in the  
gardens of Royal Lodge,  
Windsor Great Park. By  
gracious permission of  
His Majesty the King.

Colour photograph by  
J. E. DOWNWARD



# ACKNOWLEDGEMENTS

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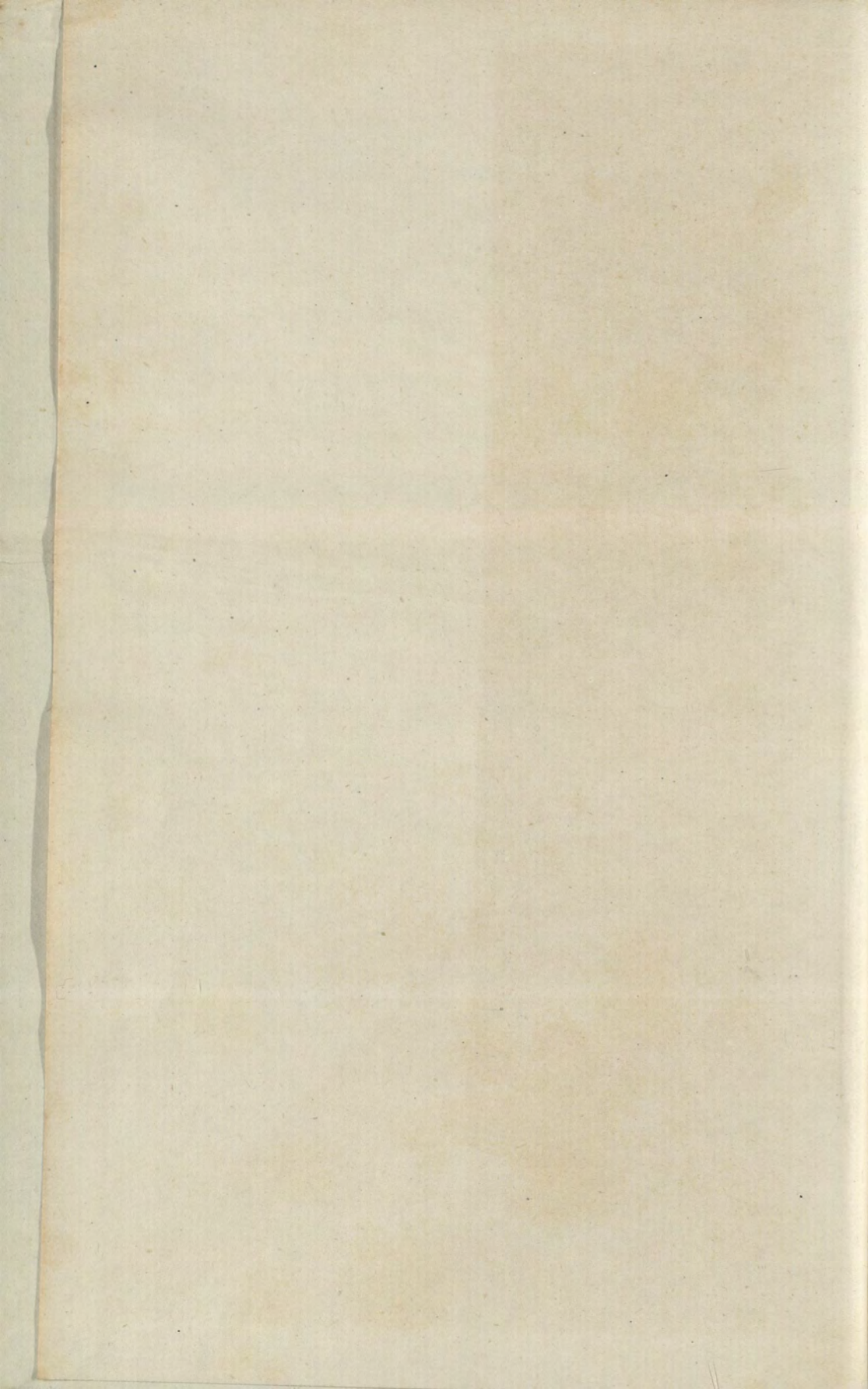
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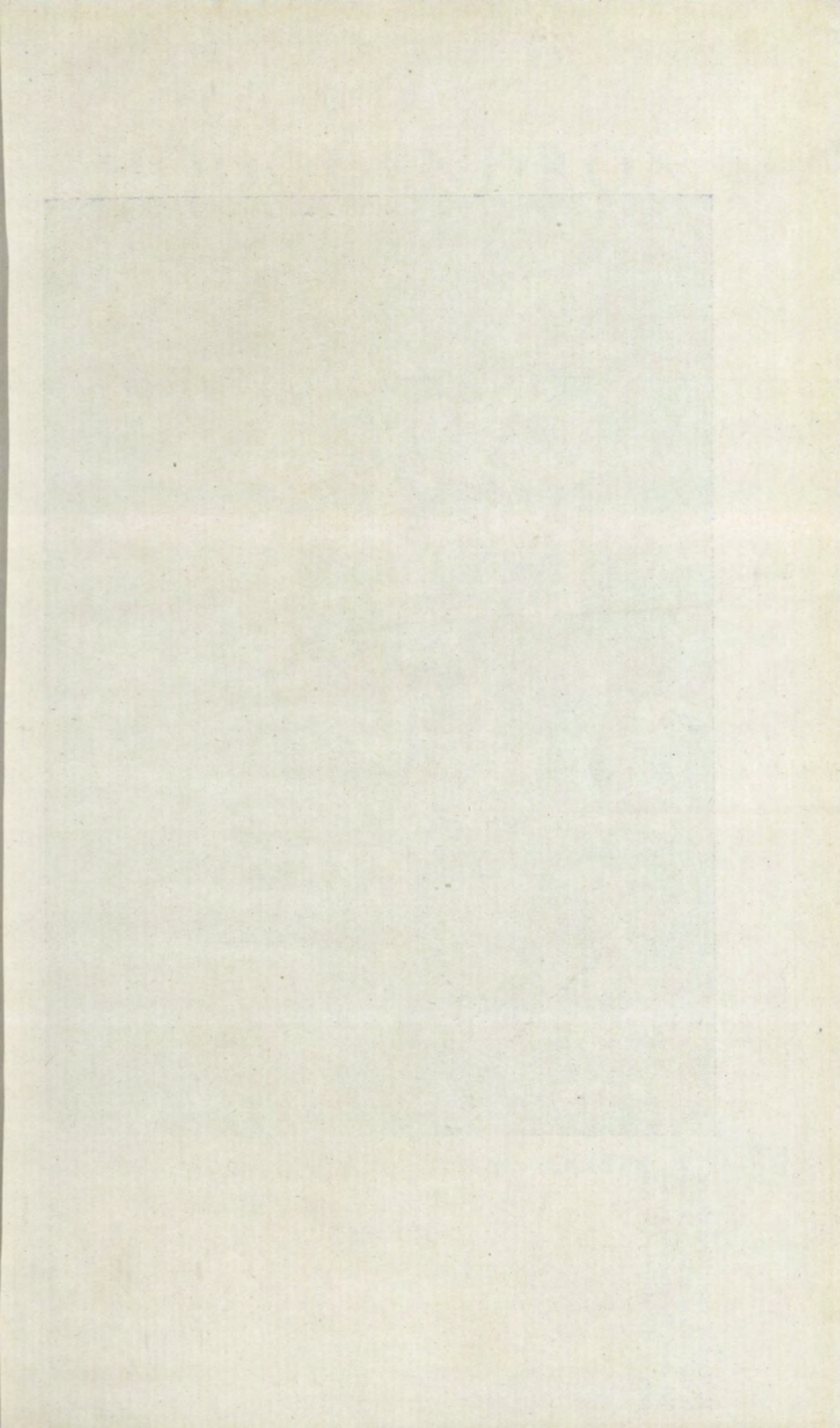
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2024











R. 'Loderi' var. 'King George'  
in the gardens at Royal Lodge,  
Windsor. By gracious permis-  
sion of His Majesty the King



Colour Photograph, J. E. Downward

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## FOREWORD

**A** GAIN The Royal Horticultural Society produces a RHODODENDRON YEAR BOOK, which it is hoped may commend itself to those who are fond of that fine and accommodating plant.

It is indeed good for gardens, or at any rate for the lime-free gardens, that we have a plant which combines in itself most of the merits of a garden shrub. It is, generally speaking, hardy; it is a good grower; disease is scarce; it almost seems to like transplanting; it can be propagated from seed (if they are carefully fertilized); it can, where the twigs are small, and in the case of practically all the Lepidote section, be propagated from cuttings (best rooted in bottom heat) and it flowers over a very long period.

One might perhaps say that it is confusing to have so many species and so very many hybrids, and one is bound to make a choice of those that it is wished to grow. The YEAR BOOK may be of some help in this.

We are fortunate in this Number in having articles on Rhododendrons in many parts of the country and in many parts of the world. We are indeed grateful to the many experts who have contributed to it.

The articles on *Rhododendron repens* are the work of experts in each case, nor has there ever been such a collection of *Rhododendron repens* as that assembled at Tower Court by the late MR. J. B. STEVENSON, while the article on the Thomsonii Series is written by two of the leading authorities on the genus.

In this year's YEAR BOOK, horticultural lore is not lost in botanical erudition, and it is hoped that both have fair play.

ABERCONWAY.





## RHODODENDRONS AT BRODICK CASTLE, ISLE OF ARRAN

By THE DUCHESS OF MONTROSE AND  
J. P. T. BOSCAWEN

“CAN you really grow rare and delicate plants in Arran?” is a remark often made by English people, who have probably seen the film called “Man of Aran,” depicting a small, desolate, rocky island off the north of Ireland. The Isle of Arran in the Firth of Clyde is vastly different—an island with high rocky mountains in the northern half certainly, but the low ground near the sea on the southern and eastern sides is remarkably fertile. The climate is affected by the Gulf Stream, though in recent years its influence has not been so apparent. This year the winter has been the longest and most trying in living memory.

The garden at Brodick is on the eastern coast, but facing south, and lies beneath the small “plateau” on which stands the Castle. It consists of an old walled-in garden, outside which is a shrub garden along the old “raised beach” of the island; below that again, separated from the sea by great bushes of *Rhododendron ponticum*, and overhung on the north in many places by cliffs of water-worn sandstone, runs a woodland path, on either side of which grow many of the big-leaved Rhododendrons. Such is the general layout of this rambling garden, where the chief enemies are the western gales, and the spring frosts which are usually accompanied by an east wind. From the old raised beach you get many beautiful glimpses of the sea and the Ayrshire coast beyond. We have endeavoured to keep the garden wild and informal, and the Rhododendrons are planted in sheltered bays among *ponticum* rather than in beds. The soil is sandy peat and there are great outcrops of sandstone. Until about twenty-five years ago the area which is now the wild garden had been covered for many hundred years with Oak and Scots Fir and Birch scrub. Many of these trees have now been cleared, leaving some magnificent specimens of Silver and Scots Fir, Larch, Oak and Sycamore.

In order to protect the garden from the prevailing south-west wind and the severe gales from the north-west many shelter trees and shrubs, particularly large blocks of *R. ponticum*, have been retained. These unfortunately keep out more sun than is desirable. In fact with such a heavy average rainfall, some 70 inches a year,



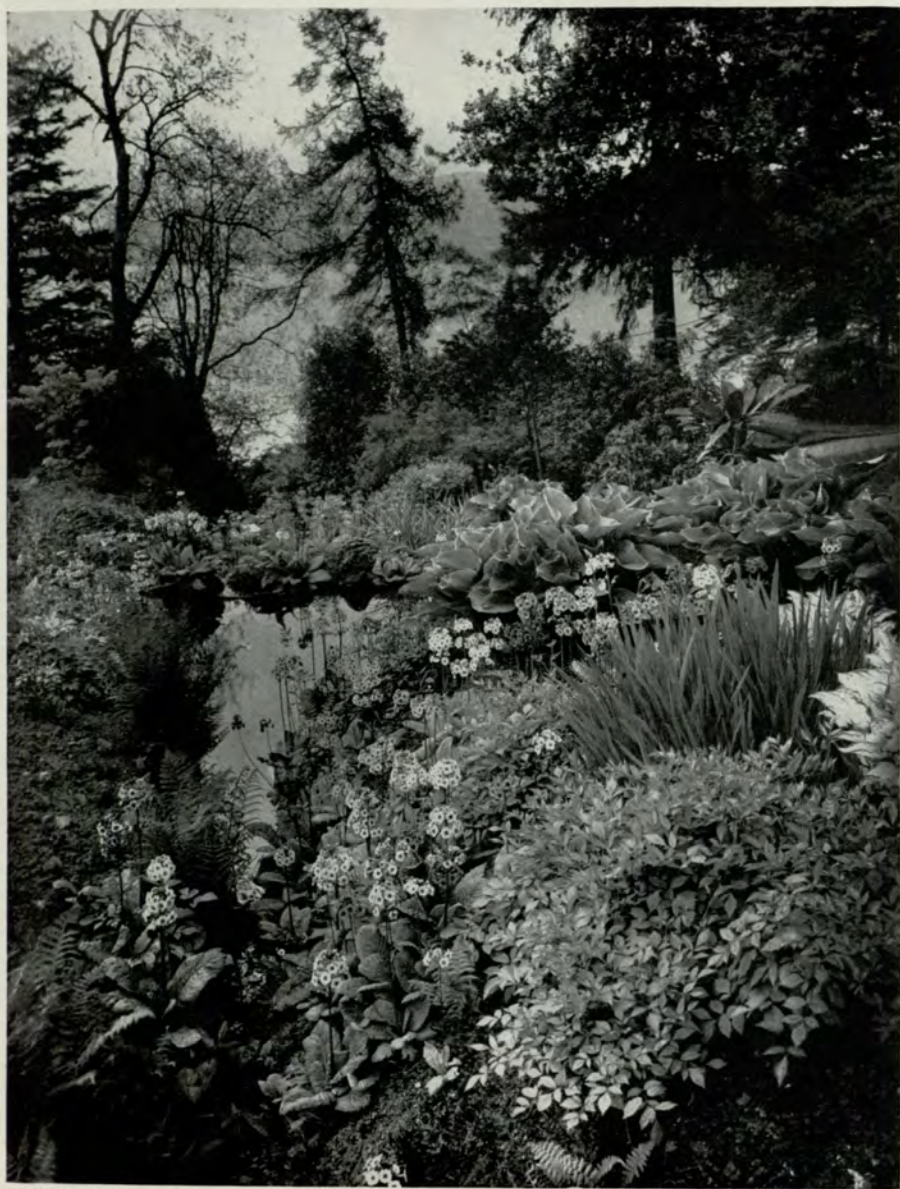
there is seldom too much sun and in many years the Rhododendrons do not seem to get their wood sufficiently ripened to flower really profusely.

It is obviously impossible to describe all the many species in the garden but there are, however, some which seem to have become so happy in their surroundings that it may be of interest to give a short description of their life and habits as we see them in the garden at Brodick.

In the early 1930's the first *R. Macabeanum* were planted. These plants were under the number K.W. 7724 and were not more than 2 feet high. One plant is now about 15 feet high and some 22 feet wide. There is no doubt that this Rhododendron is one of the most attractive of the large-leaved varieties. Its spreading habit and rather round leaf, dark green on the upper surface with greenish-yellow rib, white tomentum on the under-leaf particularly on the younger leaves, and brilliant red bracts is a magnificent sight even if it were not to flower. But at Brodick this species has been a prolific flowerer after plants have reached an age of eight to ten years, and approximately the same height in feet. The truss is large, and the flowers the colour of a newly-hatched brimstone butterfly with a deep purple blotch at the base of the throat of the flower. There are other specimens planted about 1936 which although indistinguishable in habit and foliage nevertheless seem to be less firm in texture of foliage. In 1945 some seedlings were noticed in the moss on the shady side of the older and largest plant. Now there are some hundreds to be seen in a complete circle of the parent and some feet wide. These seedlings appear to be true to type in foliage, but seedlings from a plant which came from Muncaster seem to be a cross with a nearby *grande* or perhaps a *sinogrande*. Time will tell and the progeny will indeed be interesting. Incidentally the seedlings from the latter were first noticed growing in a moss-covered stump below the parent and in a spot which catches the most sunshine (Fig. 6). The excitement of finding these young plants made a wasps' nest in the stump go unnoticed at first!

It is difficult to assess the yearly growth in Arran of Rhododendrons. The early plants were slow until established but after that it may have been as much as 20 inches in an exceptional year, though 10 inches to 12 inches would be a fair average. There have been years when there was both a spring and autumn growth. This has been rare in *Macabeanum* but *sinogrande* seems to do this more frequently. However that may be, an autumn growth in Arran is wasted as the heavy autumn gales and early frosts invariably take their toll. Except for this the plant does





*Photo, R. M. Adam*

#### RHODODENDRONS AT BRODICK CASTLE

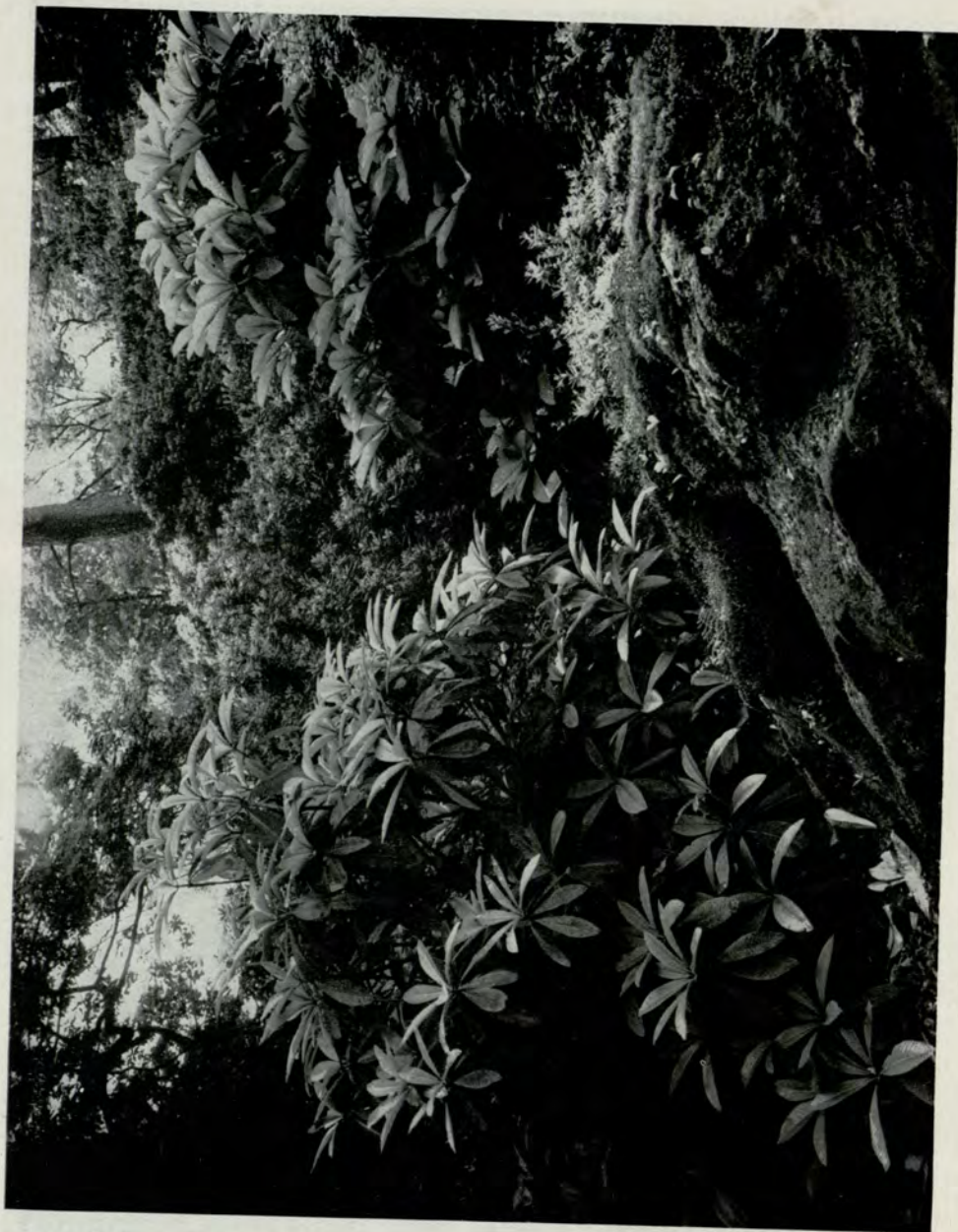
FIG. 1—A view towards the sea, showing Primulas and Hostas (See p. 7)



RHODODENDRONS AT  
BRODICK CASTLE

FIG. 2—Forms of *R. giganteum*,  
Kingdon-Ward's form No. 6782  
on the left and Forrest's form No.  
27730 on the right (See p. 9)

Photo, R. M. Adam



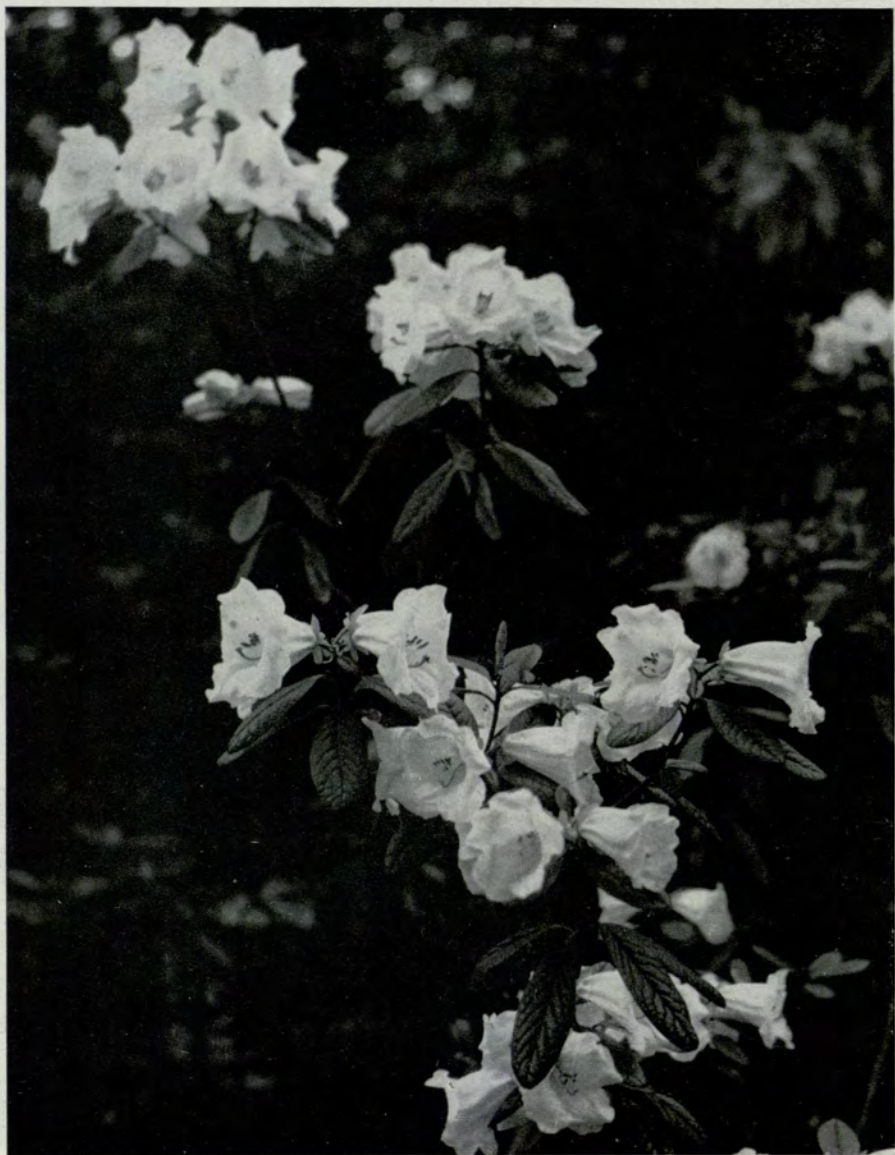
RHODODENDRONS AT  
BRODICK CASTLE

FIG. 3—*R. rhabdotum* (See p. 13)

Photo, J. E. Downcard







Photo, L. Roper

#### RHODODENDRONS AT BRODICK CASTLE

FIG. 4—A tender Rhododendron sp. of the Maddeni Series, probably *R. megacalyx*



FIG. 5—*R. diaprepes*

RHODODENDRONS AT  
BRODICK CASTLE

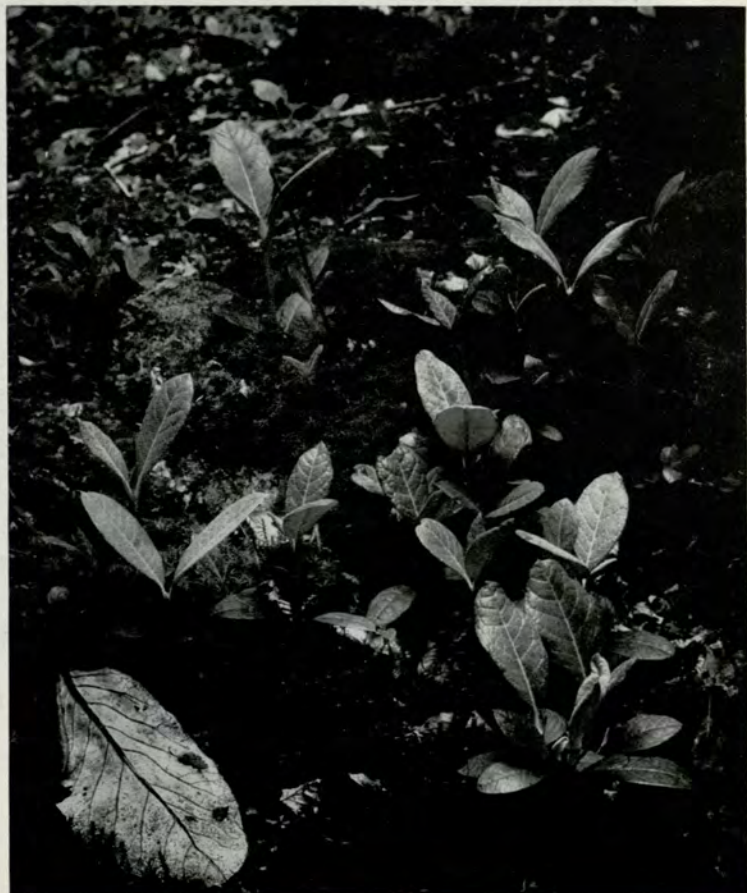


FIG. 6—Seedlings of *R. acabanum* germinated under the parent plant (See 8)

Photos, R. M. Adam





FIG. 7—*Asteranthera ovata* (See p. 13)



*Photos, R. M. Adam*

# RHODODENDRONS AT BRODICK CASTLE

FIG. 8—*R. manipurense*





FIG. 9—The Garden pool with Azalea hybrids



*Photos, R. M. Adam*

**RHODODENDRONS AT BRODICK CASTLE**  
FIG. 10—Groups of Rhododendrons in the Garden





FIG. 11—Rhododendrons in the Garden



Photos, P. M. Syngé

RHODODENDRONS AT BRODICK CASTLE

FIG. 12—*R. Falconeri* right, *R. arizelum* centre, *R. Beanianum* left



not suffer much from wind if planted in a reasonably sheltered position; but severe frost is another matter. Often after a mild winter the flowers come out too soon and catch the April morning frosts which can be so destructive to west coast gardens.

*R. giganteum*, K.W. 6782 and F. 27730 were first planted in the garden about 1936 though a near relation, thought to be a form of *R. magnificum*, was in the garden some years earlier. Of the two forms of *giganteum* the plants under the FORREST number are the more attractive, certainly in foliage and general habit, though they are less hardy.

A short mile from the garden towards the west is a small burn which rushes down from the southern slopes of Goat-fell over big rocks and through steep clefts. On the steep western side of this burn *R. ponticum* covers the ground. It was in clearings made in the *ponticum* that twenty of each variety of *giganteum* were first planted together with a number of *R. coryphaeum* in the less sheltered aspects. Today many of these *giganteum*, some 15 feet in height and forming fine bushes, survive in a more rigorous climate than that in the garden and the K.W. variety flowers well. The FORREST variety has mostly been moved to more favoured positions but the plants that have been left are hardly existing. The soil here is fibrous peat—well drained but shallow in depth—with a top layer of two or three inches of rotted leaf and bracken. In the garden the soil is rather more acid and mostly not so well drained, but the situation is far more sheltered than this wind-blasted gully where the sun hardly penetrates from November to March, so steep are its banks. However, although some two hundred feet more above sea level than the general line of the garden, it does not always receive quite the same attention from spring frost though no doubt the winter is more severe.

Some readers of this article may be already fully aware of the detailed differences between KINGDON-WARD'S and FORREST'S *giganteums*. Briefly the K.W. variety has a more narrow and more glabrous leaf of a darker and thicker texture, whereas that of FORREST'S variety is broader and more ribbed and thinner in texture. The leaves of both are often over 20 inches in length at maturity while that of the FORREST variety is 9 inches broad against 6 to 7 inches for that of K.W.'s. The K.W. variety is a more loosely growing plant and seems to make its young growth later than its FORREST brother (Fig. 2). The best K.W. plants in the garden are fully 15 feet in height, 20 feet in width and flower profusely most years. The flower buds first begin to break open as early as the second week in January. We well remember seeing these plants in mid-January 1950 with several hundred



deep rose-pink flower buds just bursting into flower—a wonderful and heartening sight in the depth of winter and with the austerity of life today.

By contrast the FORREST variety is slower in growth and shy to flower—in fact it first flowered at Brodick so far as is known in 1949. Nevertheless, our impression is that the flower of the FORREST variety has the advantage of being a better colour when fully developed than that of K.W.'s *giganteum*. An additional advantage, though of rather doubtful character as regards frost, is that it seems to flower about a month later.

It does not seem that either of these varieties of *giganteum* are ever likely to attain more than a small part of the immense height they grow to in their native land. Rather their habit is developing to cover a large area as a bush perhaps some 30 feet high and the more attractive if this proves the case.

*R. giganteum* K.W. 6782 has seeded itself the last few years but only in small quantities and it remains to be seen whether the seedlings will come true. Layers have taken two years to root sufficiently before they could be cut from the parent. This seems to be the minimum time which the big-leaved Rhododendrons take to root when layered, so far as experiment at Brodick has shown.

As with *R. Macabeaenum* the yearly growth varies immensely, but on an average that of K.W. 6782 seems to be anything up to 15 inches a year on lateral branches of established plants. That of the FORREST variety is certainly less, mainly because wind and frost so often damage the less hardy young growth.

Another most interesting and beautiful Rhododendron is *grande* K.W. 6261 which has a lovely pale rose coloured flower. The plants, of which we have four, are now 10 to 12 feet high and flower about the end of March.

Shortly before the 1939–1945 war there came to Arran a small and insignificant plant under the name of *R. Taggianum*. After consulting the *Rhododendron Handbook* and other books of reference it was learned that this plant was not hardy but that it had been in cultivation in this country for many years in temperate greenhouses. There was no such luxury to be had at Brodick and in spite of its weakly looking constitution it was duly planted in the garden. The situation chosen had nothing particularly to commend itself except that the surroundings were very beautiful. The soil was poor and shallow and in the summer this spot got more than its fair share of sun for the Brodick garden. However, the little plant thrived and its leaves soon changed from a sickly yellow to a rich deep green. It grew at a great pace in long, straggly branches which, had it not been for



the support of neighbour *R. Griersonianum*, would have sprawled in ungainly fashion over the rocks and nearby grass path. As it is, its branches stand upright to a height of some 8 feet to 10 feet from the ground (Fig. 14).

This Rhododendron has been flowering at Brodick for perhaps eight years. The flowers open towards the end of May, two or three flowers on a head, rarely four. The flowers in bud are cream in colour fading to white when open with a yellow flush at the throat. There is a distinct and sweet scent especially in the morning and evening; but perhaps the most striking feature of this beautiful flower, nearly 4 inches in length, is its texture which gives the appearance of fine porcelain.

The seed pods are large and fleshy and of a golden green colour. They do not ripen until well into the autumn which perhaps accounts for the fact that until recently attempts at raising the plant from seed have been singularly unsuccessful. In fact, the first plants raised from seed were from that which had fallen on a moss-covered stone beneath the plant. These seedlings were lifted three years ago and brought on in pots. They appear true to the parent in habit of growth and foliage so far as can be judged at this early stage.

In 1938 SHERRIFF sent home seeds of a Rhododendron now named *Taggianum* but which to the layman bears little if any resemblance to the plant described above. That is not to say that SHERRIFF's *Taggianum* is not worth growing, on the contrary, it is a magnificent shrub and so far as can be judged from experience at Brodick it may be less tender.

In habit the plant is a loose-growing bush which will perhaps reach 6 feet in height one day. Its leaves are 3 inches long by about 2 inches wide and lanceolate whereas those of the other variety are some 5 inches by 4 inches and oval in shape. In texture the leaf is not so thick and the colouring of the upper surface far lighter. The undersurfaces are similar, however, of a green silver colour with brown glandular markings.

These plants have proved prolific flowerers from an early age and a more delicate and beautiful sight is hard to imagine than a bush covered with pinkish-brown cream coloured flower buds, two to three on a head, and two-thirds of the size of those of the original *Taggianum*. When these buds open they too are a white cream, but they are hardly scented. For some reason no seed pods have, so far, come to maturity—perhaps because the plants are not yet sufficiently mature.

We cannot help reflecting on the many species that have been introduced into this country in the last quarter of a century, and on the many new crosses shown at the Rhododendron and



other shows. Therefore we feel a little nervous attempting to give a short description of what no doubt is regarded by many as an old and outmoded plant. To our minds, however, no modern hybrid and few recent introductions from the native lands of the *Rhododendron* are more beautiful than *R. Lindleyi*.

When first introduced into the garden at Brodick these plants did not thrive, in fact they barely existed. It is difficult to remember now quite why we were prompted to move two plants to places where they could grow through other shrubs. In any case one plant was moved to a situation facing west on the old wall of the original flower garden and between a large bush of *Fuchsia* and *Escallonia edinensis*. The plant quickly established itself, it has grown quite 12 inches in some years. Now it finds support for its branches from the neighbouring bushes where it has gained full light and sun while its roots remain in the damp shade. Another plant was tucked in between some fair-sized bushes of *Erica australis*. It too made quick progress and its branches now protrude in an attractive way above the surrounding shrubs where they get, for most of the day, any sun there may be. It does not seem that at Brodick *R. Lindleyi* would ever make a bush, just a lanky straggling shrub.

The flower is large, 4 inches long, and when fully open is almost white. The scent is heavy and delicious and fills the air for some distance around. The flower buds are a rich yellow cream usually three to five on each head, and are beautifully set off against the dark, luxurious green leaves which are rather rough and corrugated. One plant had a hundred flowers this summer and was a magnificent sight. So far no self-sown seedlings of *Lindleyi* have been noticed, but the plant has been increased easily by layering and the seed pods ripen readily in a normal year.

If the readers of this simple article have had the patience to read so far they will doubtless have come to the conclusion that the writers exaggerate the attractions and beauty of the *Rhododendrons* briefly described and that they merely go from plant to plant trying to make out that the next one is more lovely than the last. It is difficult to admit that such a supposition is not correct when remembering a plant of *R. Cubittii* flowering really well in May 1949!

This *Rhododendron* grew well for four or five years, but for some reason—possibly too much shade—the one plant in the garden has gone back sadly. Seed has been saved and seedlings raised, but they seem difficult and only one or two are struggling on. The leaf of this bush resembles at casual sight that of *bullatum* except that it is rather narrower and more pointed.

The stem has an attractive red hue where the bark peels and its branches are those of a plant of loose growth. The flower is wide at the mouth, 3 inches, but short in length. The scent is very sweet and strong and the colour of both flower and buds is that of most exquisite apple blossom with a yellow streak down the segments and at the throat. Much care and much patience would be amply repaid to make this plant grow to perfection.

Another lovely and barely hardy Rhododendron that now flowers in the garden is *rhabdotum*. *R. rhabdotum* is one of the most striking of all the Maddenii series. In 1951 in late June the sturdy six-foot shrub bore thirteen trusses of handsome, creamy red-striped funnel-shaped flowers of great size, 4 inches in length and 4 inches across the mouth (Fig. 3). It is a very tender plant and well worth attempting, being one of the finest of that or indeed any series. *R. Dalhousiae* also does well here and most years produces its large, lemon yellow flowers. Of the old-fashioned coolhouse plants that are, most years, a truly wonderful sight in full bloom, 'Countess of Haddington' and 'Fragrantissimum' must be mentioned. *R. Johnstoneanum* does well here and has formed a very large clump which flowers and seeds itself freely.

None of the Rhododendrons in the garden are ever protected in the winter, therefore some years frost takes heavy toll of the flowers and flower buds of so many of the varieties mentioned. This is particularly so of the Maddenii group. This series as a generalization makes its growth late and luxuriantly at Brodick and flower buds in a wet season become too soft and gross. However, the plants grow magnificently—some shoots 24 inches in a year—and they cover the ground and rocks rapidly. As a series they flower from June to August according to the variety and without exception they are all sweet-scented. They are beginning to seed themselves naturally in the damp and cool edges of the drains cut in the peat in the flat part of the garden nearest the sea.

These are some of the less hardy Rhododendron inhabitants of the garden at Brodick. Many are the more hardy species that flourish in this beautiful setting, and which may be described in a later article. For they too in many instances grow in a luxuriance seldom seen in the gardens of the dryer climate of the south, and together with such notable plants as *Asteranthera ovata* (Fig. 7) combine to make this garden interesting.



## THE GLENN DALE AZALEAS

By B. Y. MORRISON

AN early interest in Azaleas was made much more acute by a visit to Japan where there was an opportunity to see the Kurume Azaleas as grown in many private collections, as well as some large but less diversified public plantings. All the knowledgeable people in Japan assured the writer there was little hope of growing them out of doors in the colder portions of the United States and, since the garden flora in general contained many species of plants that I knew did not succeed in my area, I was in no position to dispute them. There remained, however, a persistent feeling that the data might be wrong and about 1920 an opportunity came to extend some Azalea plantings beyond the already known and cherished Snow Azalea (*Rhododendron mucronatum* G. Don) and its colour variants, all of which, with various "macrantha" Azaleas (*R. indicum* Sweet) were already happy members of the garden family. The success with these few Kurume varieties made it imperative to press on.

Once the technique of raising seedlings had been mastered, it was a simple matter to extend plantings beyond the relatively few species available as plants. This preliminary period gave an opportunity to grow species from the sections Pentanthera, Sciarhodion and Rhodora as well as Tsutsuji, but it is to this last group that the writer's enthusiasms have been given.

The area about Washington, D.C., is naturally rich in ericaceous plants, but *Rhododendron* itself is represented only by *nudiflorum*, *atlanticum* and *viscosum*. All our native species do well here except *occidentale* from the Pacific Coast and *austrinum* from Florida. Of these so far I have not found any individuals that grow happily although there are some survivors.

By no means all species of Tsutsuji (*Obtusum*) Section have been grown here. Not all have been available, even as seed, but *obtusum* and all its available variants, taxonomic and horticultural, are almost like weeds, *linearifolium*, *phoeniceum* (*pulchrum*), *serpyllifolium*, *poukhanense*, *indicum*, *Simsii*, *mucronatum* are practically standard species. *Oldhami* is usually secure; *scabrum* must have cold house protection and *Tschonoskii* a situation where it will be as cool as possible in summer, not an easy feat for us.

Of garden hybrids, there are almost no end, but it was soon discovered that about one-half the varieties known here as "Indian Azaleas" are quite cold hardy. These, of course, are the

FIG. 13.—The Glenn Dale  
Azaleas in N. America

*Colour Photograph, P. L. Ricker*







early nineteenth century forerunners of the modern florist's or Belgian Azaleas, a race that is not hardy here. Of the three hybrid groups produced in this country, the plants originated by MR. JOSEPH B. GABLE are entirely cold hardy with us, most of the plants known as 'Pericat' hybrids are satisfactory garden plants, but almost none of the beautiful Rutherfordiana Azaleas are of any use at all. The much older Arnoldiana Azaleas are, of course, hardy but scarcely worth growing this far south where better things are possible. The European hybrids between *Kaempferi* and *malvatica* are all robust and vigorous as are the more recently tested Vuykeana clones.

Since anyone who looks at Azalea history must be impressed that all the great periods of Azalea breeding have their rise almost at an amateur level and that there was almost a collector's instinct to be counted upon, it did not seem too foolhardy to conceive the idea that there might be evolved, certainly for local use, a great family that might be expected to include large flowered clones hardy to cold and possibly an extension of the blooming period, which for us was chiefly late April, with a scattering of bloom in June from *indicum* and its variants. The work was undertaken in the U.S. Department of Agriculture, in the Division of Plant Exploration and Introduction, the agency that had helped in bringing together much of the material available only from sources out of the country, and where the writer was then a staff member.

It was decided to make the programme as vigorous as possible so the seedling populations were given the best of greenhouse care and then set out in a thin Oak wood in carefully prepared beds. Every precaution was taken to assure their establishment before autumn frosts and to safeguard all records and labelling. After that, the plants were left to succeed or fail as winter cold, summer heat and drought might determine. From the original seedlings, some 70,000, about 1,000 plants were chosen for preliminary study and, of these, about 450 have been named and put into commerce. This number will be reduced undoubtedly as public taste and nursery decisions begin to operate. For our own area with its long humid and frequently tropically hot summers and variable and frequently zero to sub-zero winters, these plants represent the greatest addition to flowering shrubs for many generations. The blossoming season has been made earlier, largely due to the influence of *R. Simsii*, the dull interval between April and June has been filled in and the range of forms and colours enormously increased.

The group is by no means homogeneous in character, but all are called "Glenn Dale" Azaleas since that was the location of



the garden where the work was done and there is no more fitting way to recall the place and the many colleagues who worked with the writer to turn his project into actuality. If one has a twinge of conscience, it may be lulled by the thought that the Ghent Azaleas are a diversified lot and the modern florist's or Belgian Azaleas are scarcely more uniform, as recent studies are showing.

Only a few of the plants are true hybrids, that is, combinations of two species. Most are combinations of one species and one garden hybrid, many are combinations of two garden hybrids. For the writer, it is a matter of regret that he has not yet found any record of the parentage of most of the garden hybrids used, and he can only surmise, in the light of later experience, what may have gone into their making. In some cases, he believes his surmise is sound, in others it must remain a surmise.

From his own experience he can report that *R. Simsii* itself has been a most valued parent. The only form available came from seed collected in Anhwei Province with flowers of a fine light rose pink, not the more typical dull rose red. It contributed always earliness, prodigality of bloom and oftentimes an erect bush habit that seemed curious in comparison with the somewhat straggling early habit of the species itself. Its small flower rarely reduced seriously the size of bloom of the other parent, but its colour permitted only a modest range of hues. The old Chinese garden plant 'vittata,' now assigned to *R. Simsii* as a form, makes an excellent parent, just as it did when first introduced from China to Europe, but it must be carefully combined to assure a good bush habit in its progenies. These are frequently cold tender up to 50 per cent., but the survivors are robust and given to the production of the same type of sports that enlivened the early days of the production of "Indian Azaleas."

*R. poukhanense* in its single form *yedoense* gave excellent plants with large flowers, predominantly lavender to purple in colour and almost uniformly a deciduous leaf form.

*R. mucronatum* and its form 'Sekidera' make excellent parents, but one must be careful in using them to avoid mating with another plant in which the corolla lobes are narrow. One must expect to discard large numbers of plants with dull purple flowers.

*R. Kaempferi* kept as a species rather than as a form of *R. obtusum*, gives excellent plants but with a rather limited range of colours and a preponderance that are not sunproof.

Its relatives, the many named forms known as the Kurume Azaleas, have been little used, except as a source of excellent scarlet red colouring, particularly from the clone grown from Japan as 'Kagaribi.'





RHODODENDRONS AT BRODICK CASTLE

FIG. 14—*R. Taggianum* (See p. 10)



Photo, N. K. Gould

HARDY HYBRID RHODODENDRONS

FIG. 15—*R. 'Mrs. Furnival'* at Wisley (See p. 79)





*Photos, R. L. Taylor*

#### THE GLENN DALE AZALEAS

- FIG. 16—(top left)—R. 'Bagatelle' is one of the more distinct Kaempferi hybrids, resulting from Maxwell's pollen, rosy salmon in colour, washed over with rose. It is later than the usual Koster hybrids and sometimes lasts into early May.
- FIG. 17 (top right)—R. 'Phoebe' represents one of the series developed for early to mid-May flowering with blooms averaging about 3 inches in diameter. The colour carries as a pale pinkish orange washed with rose and accented by a deep rose blotch on upper lobes.
- FIG. 18 (bottom left)—R. 'Marmora' which somewhat resembles 'Samite' in habit is about 10 days later in flowering, equally tall and pure white, but with more symmetrical flowers. The breeding involves an old Belgian variety and a Kurume clone.
- FIG. 19 (bottom right)—R. 'Samite' was chosen to supply a tall early flowering white, coming in with our earliest. It grows up to 7 feet in semi-shaded locations and has great landscape use.





Photos, R. L. Taylor

#### THE GLENN DALE AZALEAS

FIG. 20 (top left)—R. 'Angelus' blooming here in late April with flowers of pale pinkish lavender accented with a darker blotch of the same tonality, was bred from one of the *mucronatum* clones and one of the Koster Kaempferi hybrids.

FIG. 21 (top right)—R. 'Rosette' bred from old 'Vittata Fortunei' and a double Japanese indicum clone, is one of a series of semi-double to double flowers. In colour it is a pinkish mauve; in blooming time, late April.

FIG. 22 (bottom left)—R. 'Gaiety' belongs to the same series represented by 'Phoebe' but shows another flower form. The colour is a glowing rose pink with a very conspicuous dark rose blotch.

FIG. 23 (bottom right)—R. 'Captivation' is typical of the hybrids developed to repeat in early May the effect given by the Kurume Azaleas in early April. This variety is pale salmon pink in colour but the series includes a wide range of pure pinks, salmon pinks and scarlets.





Photos, R. L. Taylor

#### THE GLENN DALE AZALEAS

- FIG. 24 (top left)—R. 'Constance' combines old 'Vittata' and a Japanese indicum hybrid, to produce a large flowered rose-coloured bloom in great masses in late April.
- FIG. 25 (top right)—R. 'Acme' is the result of crossing 'Fielder's White' with *Kaempferi*, a cross that gave a wide range of hues of rose, bush habit and seasonal bloom. This clone flowers in late April with almost pure rose-coloured blossoms.
- FIG. 26 (bottom left)—R. 'Martha Hitchcock' reproduces for us in a cold-hardy plant the flower pattern of a Japanese indicum hybrid that is not entirely reliable. The colour is pure white broadly margined with rosy purple.
- FIG. 27 (bottom right)—R. 'Dream' represents one of the excellent series bred from a clone of the true *R. Simsii* and *R. mucronatum*. The colour is a very pure pink and the season here, mid-April.

*R. indicum* itself, which has been used chiefly in its usual rose pink form and in a semi-double Japanese clone called 'Warai-gishi,' has been of even greater value than all others, since its progenies give fine bushes of dense habit, with lustrous ever-green leaves, flowers of fine substance and form. Combined with early-blooming species and forms, it has filled in the interval formerly almost empty of bloom. The chief difficulty has been that of breaking up the dominant rose colour.

Its progenies imported from Japan and said to be the result of crossing it with Belgian florist's types have been even more useful, particularly those crosses that resemble it most closely in habit, since they have already accomplished the first steps in colour diversification. These, combined with other June-flowering garden hybrids, promise the working material upon which a still further diversification of June-flowering garden varieties can be had.

*R. scabrum* and *R. Oldhami* were not used during this period of official work, but there are plants from each species in later breeding work in the writer's personal garden. Some of the *scabrum* crosses have flowered, but many lose the flower buds during the winter. Those that have bloomed are superb with flowers of perfect form and in several cases the brilliant scarlet hue of *scabrum* itself. The foliage, however, is not as good as that of *scabrum* and the plants have the unfortunate habit of prolonged autumn growth that leads to early frost injury in October.

It is difficult to offer descriptions or to propose selections. Colour chart terminologies always disturb amateur gardeners and are as unsatisfactory as the charts themselves, for none but the experienced gardener can transmute the opaque and lifeless bit of coloured paper into the living and almost translucent tissues of the corolla. In a great majority of the cases, the problem is complicated by an undertone of colour, usually yellow, that gives luminosity and brilliance to all reds and pinks. The illustrations have been chosen to show their diversity of forms and sizes and indicate in a general fashion one's points of departure.

As it now stands, there are enough varieties in each flowering season and in each general hue so that one might make a two and one-half months' succession in a series that would go from white to scarlet, from white to crimson, from white through lavender to crimson purples. The last group would be the most meagre since the majority of persons care least for it.

Two general goals that seem possible of accomplishment remain, the creation of a group that will never exceed two feet in



height and the diversification in colour of the June-flowering varieties.

A goal that may be possible is the creation of a few sorts that will be deep purples. Deep brownish reds, such as 'Carmel' and 'Burgundy,' have been made, and a few deep red purples have come from the influence of the old and rather tender 'Mrs. Carmichel.'

The as yet seemingly impossible goal is the creation of pure yellows. Cream and ivory we have but nothing that even faintly touches the colour we find in *R. luteum*.

Some would ask for fragrance as well. This we have in only a few varieties and it derives from the old *R. mucronatum* and its allies. But with so much accomplished, we dare not be too carping at present.

## A NEW RACE OF HARDY RHODODENDRONS FOR THE EAST COAST OF NORTH AMERICA

By JOHN C. WISTER

NORTH AMERICA is a land of many climates and consequently the home of many different types of plants. The oldest settled area along the Atlantic Ocean includes the States of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania and Delaware. Here are the oldest gardens, the oldest nurseries and seed houses, the oldest horticultural societies and garden clubs and the greatest number of flower shows. Among the favourite plants the species and varieties of *Rhododendron* stand high.

Winter temperatures often drop below zero and occasionally to ten or twenty degrees below zero. Summer temperatures rise into the 80's and 90's and occasionally above 100° Fahrenheit, accompanied by scorching sun, drying winds and long droughts. With these conditions, the gardeners of the area realize that many *Rhododendrons* which flourish in the milder, moister and more equitable climate of the British Isles cannot be expected to endure.

Therefore, they try to make the most of those kinds which can endure and do flourish in spite of these extremes of temperatures and other difficult conditions. These include the native *Rhododendron maximum*, and *R. catawbiense* from the mountains of Virginia, the Carolinas and Georgia. This latter species first flowered in England about 1809. In 1826 LORD CARNARVON and his gardener, J. R. GOWEN, crossed it with the Himalayan *R. arboreum* and thereby laid the foundation for to-day's popularity of the *Rhododendron*. Other British horticulturists quickly took up *Rhododendron* breeding, and in addition to these species used various other species. The resulting plants, given various scientific race names by taxonomic botanists, were loosely grouped by gardeners under the term *Catawbiense Hybrids*.

American gardeners knew nothing of these new hybrids until ANTHONY WATERER of Woking brought fifteen hundred plants to the Centennial Exposition in Philadelphia, in 1876. They created a sensation, were quickly sold, and were followed by larger quantities shipped by WATERER and other nurserymen in the ensuing years. Old collections of these plants are still to be found around Boston, New York and Philadelphia.



In the 1890's and early 1900's, the largest public collection was at the Arnold Arboretum. Here, after long trial, during which many varieties were winter-killed, those which survived were popularly called "Ironclads." Among these were 'Album Elegans,' 'Atrosanguineum,' 'Charles Dickens,' 'Charles Bagley,' 'Ignatius Sargent,' 'Lee's Purple,' 'Mrs. C. S. Sargent,' 'Old Port,' 'Purpureum Elegans' and 'Grandiflorum,' and 'Roseum Elegans' and 'Grandiflorum.'

There was little American propagation. Most nurserymen bought young plants in England and Holland and resold them.

When the American plant quarantine went into effect in 1919, there were only a few American nurseries propagating Rhododendrons. To supply the new demand, other nurseries took up the work so that to-day many thousands of plants are being produced yearly on both coasts, mostly by grafting on *R. ponticum* stocks. A few nurseries propagate by layering and one or two have been successful with stem cuttings and leaf bud cuttings.

Most of the varieties grown date back nearly a century. In the first quarter of the present century, the great upswing in the popularity of the Rhododendron caused by the introduction to England of hundreds of new species from Asia, encouraged there a new wave of breeding. Hundreds of new varieties became the centre of attraction at British and Dutch flower shows. Soon it was recommended that the old "Ironclads" be discarded as entirely superseded.

The new kinds were brought to America and grew happily in favoured sections on the Pacific coast. In the East, however, they did not succeed. They could not stand the combination of cold winters and hot, dry summers. The old "Ironclads" were still the only ones reliably hardy.

Intrigued by the reports of the new English varieties, a retired manufacturer, the late CHARLES O. DEXTER, of Sandwich, on Cape Cod, some fifty miles south of Boston, determined in 1922 to try his hand at raising hardy hybrids. His property was only a mile or two from the ocean, had the extreme cold winter weather tempered by sea breezes, and was cooled by fog and moist air in summer. It was an ideal place for Rhododendrons.

With the help of his landscape architect, PAUL FROST, who had been a life-long devotee of the genus Rhododendron, he gathered not only the "Ironclads" but many rare species and varieties from a dozen or more sources. The rarest of these came from LEONARD ROSS, of Taunton, Massachusetts, who had been an intimate friend of JACKSON DAWSON, the first superintendent of planting and propagation of the Arnold Arboretum,



and with whom MR. DAWSON had shared many of the treasures which had come to the Arboretum from all parts of the world.

Another rare group came from JOHN FARQUHAR, a Scotsman, who had a flourishing seed store in Boston, and had recently started a nursery on Cape Cod. FARQUHAR had imported for this nursery a collection of Rhododendrons from the VEITCH nursery in Exeter. Among them were plants labelled *R. Fortunei*, a species which had never been considered hardy in New England. These plants, however, grew well. It is now suspected by Rhododendron students that they were not plants of the typical species but selected forms which had arisen in England, perhaps through the medium of pollination by bees. This point can perhaps never be cleared up. MR. FARQUHAR died shortly after MR. DEXTER bought the plants and his firm went out of business. No herbarium specimens were made by anyone. MR. DEXTER kept no records and hardly any labels.

MR. DEXTER seems to have become a Rhododendron breeder almost overnight. He built a special greenhouse and by 1928 and 1929 was setting out yearly, in his woodland nursery rows, about ten thousand Rhododendron and Azalea seedlings. When E. H. WILSON visited him about this time he was astonished to find flowering in America a number of the species he had discovered in China and introduced to Great Britain. At that time, he pronounced this collection of Rhododendrons the most notable he had found in America. Thereafter, he shared with MR. DEXTER the seeds of all new Rhododendron received at the Arnold Arboretum.

In 1930, MR. FROST went to England to visit J. G. MILLAIS, the author of the great two-volume monograph on Rhododendrons. MILLAIS took him to J. C. WILLIAMS in Cornwall, planned his trip to other Rhododendron gardens and gave him a letter of introduction to Kew and to SIR WILLIAM WRIGHT-SMITH in Edinburgh. Everywhere, the rarest of Rhododendron seeds were thrust upon him.

As a result, Sandwich became a test ground for the possibilities of the Chinese and the Himalayan Rhododendrons in our Atlantic seacoast climate. Most of them, of course, proved tender; WILSON once remarked to FROST that if even one species proved hardy, the effort would have been worth while. FROST thinks that *R. haematodes* may be that one, but others flourished also and perhaps scores lived long enough to be used in MR. DEXTER's breeding programme.

By the early 1930's, MR. DEXTER's place was becoming famous and was visited by many horticulturists. Among them was the late LEONARD BARRON, who became so enthusiastic that



he persuaded amateur gardeners near New York to get some of the plants. Before MR. DEXTER died in 1945, there were good collections of his seedlings in a dozen or more arboretums and private estates, but no particular clones had been named or selected for propagation, although a few particularly handsome ones had been given identification numbers.

The DEXTER place in Sandwich has been cut into building lots, but the seedlings he sold or gave away, live on to carry on the strain. In 1950, a small group of Rhododendron enthusiasts felt that some concerted action should be taken to evaluate the various kinds and to make them better known, so that they could be more widely tested under varying conditions. There was no question about the great beauty of most of the flowers, but there was, and there still is, every question about the great variation of hardiness among various seedlings of the same general parentage. There is also great variation in such qualities as reliable blooming year after year, good growth of plant, good foliage, resistance to drought, resistance to cold winters or to late frosts, etc.

The group was headed by DR. CLEMENT G. BOWERS, a research Fellow of Cornell University and author of the only comprehensive American book on Rhododendrons. The other members were DR. DONALD WYMAN of the Arnold Arboretum, DR. HENRY T. SKINNER of the Morris Arboretum of the University of Pennsylvania, MR. PAUL VOSSBERG, a New York nurseryman, and the author of this article. In May and June, 1950, and again in May and June, 1951, the group visited all the known collections of the Dexter Rhododendron from Massachusetts to Delaware. In each collection the outstanding plants were given identification numbers and carefully described. Wherever permission could be obtained, cuttings were secured to produce a small stock of plants for further testing at various arboretums.

The members of the informal committee believe that here on the American East Coast is a totally new group of Rhododendrons worthy of most serious consideration. No claim can be made that these plants will in any way supersede or take the place of the well-known Catawbiense Hybrids, the "Ironclads" so long tested, so well known and so important in our gardens. Any such statement must await testing over many years.

Rather it is pointed out that the value of the new plants comes from the fact that (1) they bloom about two weeks earlier than the "Ironclads," that (2) some of them are much more rapid growers, that (3) their flowers are much larger, that (4) they include apricot colourings not known in the "Ironclads" and that (5) some of them are fragrant. While their hardiness in

more severe climates and through exceptionally cold winters and sudden changes of temperature remains to be tested, they have stood on the Dexter place over thirty years, during which time the thermometer has often gone well below zero. They have lived and bloomed on Long Island for over twenty years and in the Arnold Arboretum and in one garden in northern Ohio for nearly as long. They lived through the record-breaking cold of the winters of 1933, 1934 and 1935, during which time the temperature dropped to 30° below zero.

While there are, in the dozen collections before mentioned, many thousands of plants of all sizes, there has been practically no propagation of selected clones. Most of the plants examined by the informal committee seem to fall into fairly definite colour groupings. The whites are very scarce. The greatest number of plants are close to *R. Fortunei* in quick growth and larger, fragrant, and rather washy, pale pink flowers. A smaller but still numerous group includes more compact, slower growing plants with beautiful rose-pink flowers without fragrance. The reds also are scarce, but there are some wonderful colours among them, some approaching 'Essex Scarlet' which is not hardy with us. The apricots are very scarce and the plants bearing flowers of these colourings have relatively poor foliage. All vary in season from two or three weeks earlier than the "Ironclad" Catawbiense Hybrids to plants which flower with these old, well-known varieties. Further study will undoubtedly bring to light many minor variations in each of these rough groupings.

The informal committee has labelled and described about seventy plants. After further study, the best twenty or twenty-five of the seventy can perhaps be named, propagated and distributed to nurseries through the offices of the American Rhododendron Society and the Association of Botanical Gardens and Arboretums. If this can be done, a great forward step will have been taken for the horticulture of the Eastern United States, in making available valuable new plants.



## RHODODENDRONS FOR THE GREENHOUSE

By FRANCIS HANGER

**D**URING the early months of the year visitors to the Temperate House in the Royal Botanic Gardens, Kew, cannot fail to appreciate the beauty, charm and interest which is created by the wonderful collection of tender flowering plants found growing there. Hundreds of Australian, New Zealand, South African and South American species, together with the wealth of the less hardy treasures from the Himalayas and Western China are beautifully arranged, for the benefit of visitors to the Gardens.

Those of us who had the good fortune to know the late MR. CHARLES P. RAFFILL, V.M.H., will well remember happy meetings with him in his beloved Temperate House and appreciate his knowledge of plants as he pointed out with pride his treasured pets. Many of us realize how much this collection owes to his love of good plants and to his outstanding practical ability to grow these hardy woody plants under glass in a manner worthy of Kew, the most famous of all botanical gardens.

MR. RAFFILL had promised to pen this article as "his" Temperate House contained many of the most worthy of the tender Rhododendrons, but unfortunately he died on March 27, 1951, within a month of his retirement. In deputizing for him I am conscious of the fact I have a most difficult task to perform as I lack his long years of experience gained while he was in charge of that enormous temperate house.

To grow tender Rhododendrons under glass it is not necessary to have such an enormous structure as the Kew Temperate House, nor one as large as the Rhododendron House at Exbury which was 100 feet long by 50 feet wide and 25 feet in height. I had the pleasure of planting this house, seeing it establish itself, and remaining in charge of it until it was ruined by Hitler's bombing.

Naturally should you wish to grow *Rhododendron giganteum* under glass it will be necessary to erect another Crystal Palace as this is a tree which may eventually attain a height of 80 feet. However, the Chancellor of the Exchequer prevents us from fostering such foolish ideas by his heavy taxation; therefore we must have less ambitious aims and content ourselves by converting the peach house, vinery or some moderate-sized greenhouse to suit our requirements. The smaller our growing house the smaller must be the type of Rhododendrons we select to

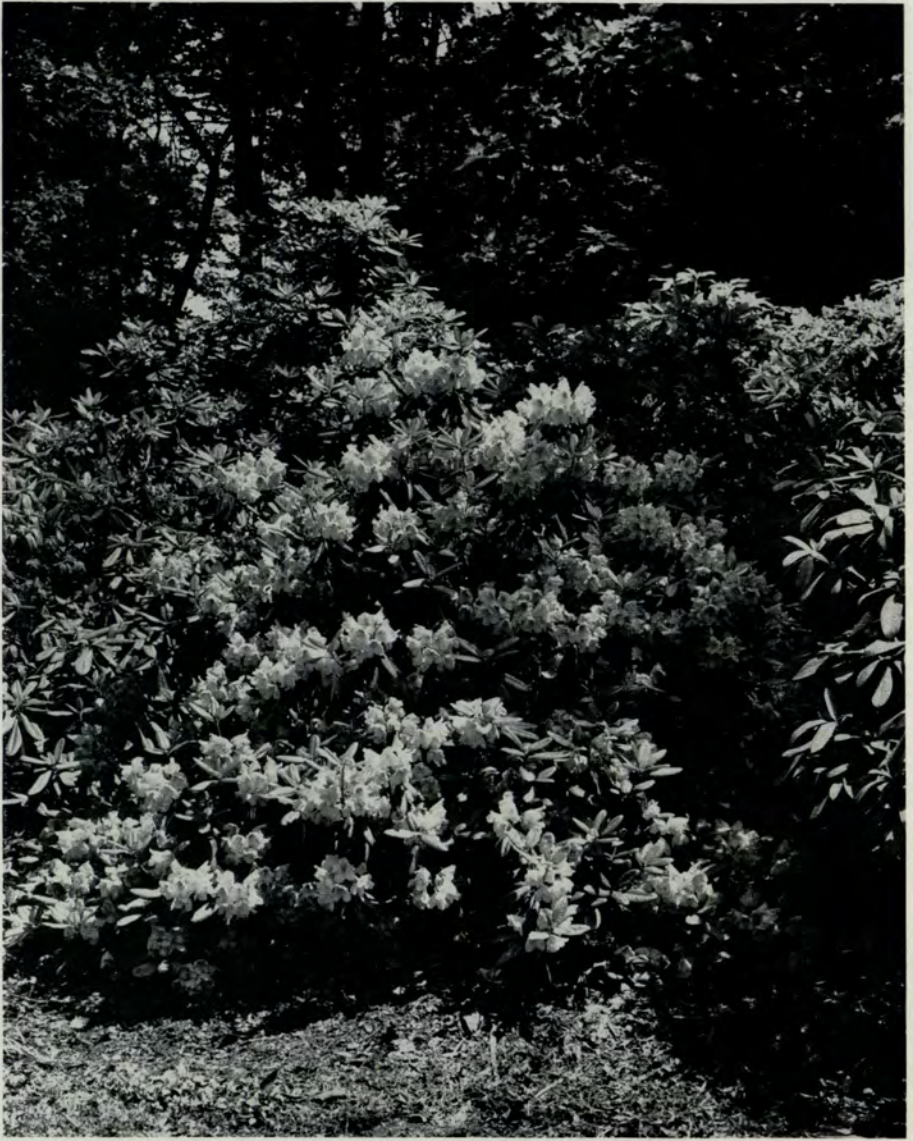


RHODODENDRONS IN NORTH AMERICA

FIGS. 23 and 29—Two of the Dexter hybrids







*Photo, Gottscho-Schleisner*

RHODODENDRONS IN NORTH AMERICA

FIG. 30—One of the Dexter hybrids



*Photo, N. K. Gould*

**RHODODENDRONS FOR THE GREENHOUSE**

**FIG. 31—R. "Tyermannii" at Wisley, 1951 (See p. 26)**





FIG. 32—*R. inaequale* at Wisley, 1951 (See p. 29)



*Photos, N. K. Gould*

#### RHODODENDRONS FOR THE GREENHOUSE

FIG. 33—*R. 'Sir George Holford'* at Wisley

grow in it. By this means it is possible to sustain interest over a period of several months. To grow tender Rhododendrons successfully planted out in beds in a greenhouse it is essential at the commencement to remove all the soil and after giving ample drainage replace with lime-free soil to a depth of not less than 2 feet. Shallow depths of soil are apt to dry out too frequently creating dryness at the root, a condition which is detrimental to good Rhododendron culture. A mixture of peat and neutral loam in equal parts with sand added according to the texture of the loam will be found quite suitable. Planted in a border of lime-free Rhododendron soil the plants will give little trouble. Their requirements are small—just attention to watering, plenty of forcible syringing, shade during the hot sunny weather and ample ventilation on every suitable occasion, remembering to water and syringe with rain water if possible at all times.

Some of the tender species and hybrids of Rhododendrons have long been esteemed for cool greenhouse cultivation and are usually grown in tubs, boxes or large pots. The old species *R. Veitchianum*, the antique hybrids *R. 'Victorianum'*, *R. 'Countess of Haddington'*, also the sweetly scented *R. 'Fragrantissimum'*, are all grown although some of them must soon be approaching their centenary.

Failing a suitable border the growing of Rhododendrons in tubs or pots allows them to be moved from place to place. This is a particularly useful asset as the plants can be used for house or conservatory decoration. Moreover such plants may be conveniently moved into the open during the summer months, and placed on an ash bed situated on the shady north border, there to receive careful attention at all times regarding water. In such a position the rains and heavy dews will help considerably in keeping in check red spider and other pests. Great care must be taken to re-house the plants before the autumn frosts occur, as many of these plants are very bud tender, and easily damaged. Just one more cultural hint—very simple, yet very important—i.e. remove all old flowers as soon as they are faded and before they commence to form seed-pods.

I must now begin to mention different species and hybrid Rhododendrons suitable for the greenhouse—a greenhouse in which the temperature will not be allowed to fall below 30° F., i.e. not more than 2° below freezing point. A little lower would not in any way prove fatal to the plants, many of which are reasonably hardy, but some are very prone to bud-tenderness. Before I proceed further with this article and become involved with the many wonderful Rhododendron species I must single



out the perpetual flowering *R. javanicum* and its many hybrids as these with their wide range of vividly coloured flowers differ very considerably from all other members belonging to this genus. These need warmth and moisture, and being epiphytic are best grown in a compost of equal parts of coarse peat and sphagnum moss—placed on—and tied to—a small platform made with one inch by one inch strips of wood, leaving half-inch spaces between the strips. Teak wood is the best but, failing this, seasoned oak is a good substitute. If grown in pots Javanicum Rhododendrons succeed best in a compost consisting of 3 parts leaf soil, 3 parts peat and  $1\frac{1}{2}$  parts silver sand. This elite group of plants has its habitat in the eastern tropics, making them more or less hot greenhouse plants and consequently luxuries of the past, and, strictly speaking, totally unsuitable to be included in this article. It is very rarely we see them in private gardens to-day and to renew acquaintance with these aristocrats it is necessary to take a busman's holiday and visit botanical gardens. Culturally, *R. Lochae*, the only Australian Rhododendron, might almost be included with the *javanicum* section.

Commencing with the hybrids worthy of a place in our restricted accommodation under glass, the unique hybrid R. 'Grierdal' (*Griersonianum*  $\times$  *Dalhousiae*) raised by Admiral Walker-Heneage-Vivian deserves first place, for with this plant the practical horticulturist astounded the scientific fraternity by achieving what the latter claimed to be impossible—that being the successful hybridization of an elepidote (non-scaly) with a lepidote (scaly) Rhododendron.

R. 'Tyermannii' (F.C.C. 1925) (*Nuttallii*  $\times$  *formosum*), which makes a medium-sized plant up to 8 feet in height, is indeed near the top of the list for beauty, having very large and most delightful white lily-like blooms (Fig. 31).

R. 'Countess of Haddington' (*ciliatum*  $\times$  *Dalhousiae*), which received the highest award, the First Class Certificate, almost a century ago, is still a great favourite with its funnel-shaped light pink flowers. It makes a medium-sized plant up to 4 to 5 feet, and can easily be kept more restricted by hard pruning, either by cutting large sprays for house decoration at flowering time, or immediately afterwards.

Another good hybrid which has stood the test of time for nearly one hundred years is R. 'Fragrantissimum' (*Edgeworthii*  $\times$  *formosum*) and it is perhaps the best known of the tender white, scented Rhododendrons for tub and conservatory work. Its near relative R. 'Princess Alice' (F.C.C. 1862) (*Edgeworthii*  $\times$  *ciliatum*) resembles it closely and rivals it in popularity.



Less well known, but none the less desirable, is R. 'Victorianum' (*Dalhousiae* × *Nuttallii*). This plant possesses many of the fine characteristics of its two noted parents. A tender Rhododendron of more recent introduction with perhaps higher qualities than these older favourites is R. 'White Wings' (A.M. 1939) (*bullatum* × *ciliicalyx*) raised by the late MR. SCRASE-DICKINS who also gave us those two charming hardy Rhododendrons—R. 'Little Ben' (F.C.C. 1937) (*neriiflorum* × *repens*) and R. 'Little Bert' (A.M. 1939) (*repens* × *euchaites*)—both dwarf plants with crimson and red bell-shaped flowers.

There are many excellent newer hybrid Rhododendrons, raised during the past twenty-five years which succeed well in favoured gardens, many of them precocious, and to get the optimum return in the majority of localities cool greenhouse treatment is essential. By this means of protection from the early frosts a stimulating interest is provided during the first three months of the year. Many of us who have to do our gardening in the colder districts are apt to become jealous when we visit the Cornish gardens and see lovely Rhododendrons with tender blood in their make-up flowering well in the open woodland. Some of these hybrids may be quite hardy plants with tender buds, and although the plant itself in many cases flourishes, its flower buds are tender, and never develop perfectly even during mild winters. How tantalizing it is to have a beautifully grown Rhododendron plant covered with plump flowering buds which, when tested, fall away in your hand to show you the brown frozen flower buds inside. In the more exposed gardens such Rhododendrons are well worthy of cool greenhouse treatment, and by this means give excellent returns.

Our President, LORD ABERCONWAY, that great creator of wonderful new Rhododendrons, is well known for his vividly brilliant "new reds," but although these highly coloured varieties may have earned the most comment and praise, he has also given us others with sedateness, which is quite a charm in itself.

In Rhododendrons 'Chrycil' (A.M. 1947) (*chrysodoron* × 'Cilpinense'), 'Chrysaspis' (A.M. 1942) (*chrysodoron* × *leucaspis*), 'Valaspis' (A.M., 1935) (*Valentinianum* × *leucaspis*) and 'Valpinense' (A.M. 1943) (*moupinense* × *Valentinianum*) our President has provided us with four most interesting free-flowering hybrids, all dwarf compact growers with lemon to rich yellow medium-sized flowers and each one most suitable for the cool greenhouse. Another Bodnant hybrid which the writer considers most acceptable is R. 'Seta' (A.M. 1933) (*spinuliferum* × *moupinense*), of erect habit and with exceedingly pretty tubular white flowers, heavily flushed with apple-blossom pink. This plant although



hardy at Wisley flowers very early and often gets damaged by frost, and to assure obtaining full value, a place should be found for an extra plant in any collection of cool greenhouse Rhododendrons in districts subjected to very cold spring frosts. The late MR. LIONEL DE ROTHSCHILD's range of 'Lady Chamberlain,' 'Lady Rosebery' Rhododendron hybrids, all of which have been awarded the First Class Certificate, are exquisite where climatic conditions are suitable, but very disappointing in a garden such as Wisley. Here these plants and their varieties are not hardy, and in many other gardens (although the plant survives) a few pips of each flowering bud are frozen annually, especially so if there should be frosts during late October or early November. Any of these hybrids would be an excellent choice for a cool greenhouse as the plant is not heavy in appearance; a little straggly perhaps, but this is a fault easily rectified by judicious pruning. The best of this group of plants is 'Bodnant Yellow' (F.C.C. 1944), a true butter yellow raised as its name suggests by LORD ABERCONWAY. Yet another excellent yellow originating from the same garden is R. 'Chrysomanicum' (*chrysodoron*  $\times$  *burmanicum*), highly thought of in Cornwall where it has proved hardy.

It is obvious that the wealth of hybrids suitable for the cool greenhouse is great, and the choice must depend greatly on the individual taste. At this stage I think we should pass on to the wonderful array of species, which are not hardy enough to be cultivated in the open, but these—the aristocrats of the Rhododendron genus—are much more refined and beautiful than any man-made crosses thus being worthy of any extra care and attention they demand.

In this short note it will neither be possible to give anything like a good comprehensive list of the species suitable for inclusion, nor to describe them fully, but let us ramble along through the series and select a few here and there. I strongly recommend readers who are desirous of more detailed information to obtain a copy of the second edition of *The Species of Rhododendron*.

The *Maddenii* Series contains a wealth of tender Rhododendrons, with the subseries *Megacalyx*, possessing the more outstanding treasures. Here we find the most wonderful of all species, *R. Nuttallii*, so huge yet refined with its lily-like funnel-shaped blooms, which are yellow at first, becoming pure white as they develop. This plant is inclined to become tall and leggy, and of necessity needs a reasonable amount of head room.

*R. Nuttallii* var. *stellatum* (K.W. 6333) differs from the type form in its spreading green calyx and smaller sweetly scented corolla, a very interesting plant.

Another outstanding *Rhododendron* from the same sub-series, *R. rhabdotum*, introduced by CAPTAIN KINGDON-WARD (K.W. 6415), is quite different from any other *Rhododendron*, having one deep crimson band running the whole length from the tip of each lobe to the base of the cream to white corolla making the truss most attractive. It forms a plant up to 4 or 5 feet high and does not come into bloom until July (Fig. 3).

*R. Taggianum* is another gem of this subseries, and most beautiful, being very free of growth and bearing trusses of large, widely expanded, pure white, deliciously scented flowers, at first light amber in colour fading to creamy-ivory, with an attractive apple-green calyx.

Resembling it slightly in form is *R. Lindleyi*, sometimes flushed pink but more commonly pure white, yellow within at the base. *R. Dalhousiae* is a great favourite, being an epiphyte on tree stems. It is rather a loose grower, but bears lovely tubular flowers deep cream at the commencement finishing pure white with an added sweet fragrance. The nutmeg-scented *R. megacalyx* also belongs to this subseries and remains one of its best members.

There are quite a number of species worth mentioning in the *Maddenii* Series (subseries *Ciliicalyx*) and *R. ciliicalyx* itself might take pride of place, for its freedom of growth, easy culture, and willingness to display its numerous sweet-scented large white to pink flowers annually.

*R. carneum* might almost be described as a shrubby climber, as it can with ease be trained to a pillar or stake to display to perfection its deep flesh-coloured trusses of bloom.

From China we have received the delicately beautiful species *R. inaequale*, which should be included in all collections of cool greenhouse *Rhododendrons*. Its widely open fragrant white flowers have a distinct yellow blotch on the lower segment (Fig. 32).

There are various forms of *R. taronense*, the best being Forrest 27687 which received the First Class Certificate when shown in London on April 2, 1935. This species from the Taron Valley, Yunnan, has large flowers beautifully coloured creamy-yellow, heavily flushed with pink fading to creamy-white.

We cannot record all the worthwhile *Rhododendrons* in this subseries but time and space must be found to mention the yellow *R. burmanicum* and the dwarfer yellow *R. Valentinianum* as both are desirable and have played a large part in the production of hybrids.

The *Edgeworthii* Series is not large, yet it contains a most important member in *R. bullatum*—this *Rhododendron* is almost



hardy but requires a cool greenhouse outside the most favoured gardens to be successful. This is one of the best Rhododendrons to come to us from Western China and Upper Burma.

The species varies considerably. Forrest 26618 (F.C.C.) has milk-white flowers with chocolate-coloured anthers and smaller puckered leaves with both stems and leaves covered densely with yellowish-brown tomentum. Rock 59202 is referred to as the "Pink Bullatum," and is perhaps the hardiest form. Its buds are deep pink to crimson before they open and as the flowers expand they display lobes mostly white with deep pink splashes. *R. Edgeworthii* is a thin-growing bush, with medium-sized pink and white sweetly scented flowers all combining to make a most elegant greenhouse flowering plant.

Keen raisers of new Rhododendrons are always seeking to improve our range of hardy yellows, therefore it is most tantalizing to find that the *Boothii* Series contains the greatest number of yellow species, the majority of which are tender with small yellow flowers. The largest yellow-flowered species in this series is *R. mishmiense*, an epiphytic plant from the Mishmi Hills, with flat open flowers spotted with dull carmine. A much better plant is *R. chrysodoron*, a small shrub with beautiful bright unspotted yellow flowers. *R. Boothii*, *R. cerinum* and *R. sulfureum* all have small yellow flowers with the last-named much the best of this trio. However, this series includes the lovely dwarf white *R. leucaspis*, a joy to behold when seen under glass, unspoiled by the early spring frosts and other atmospheric agencies. Another worthwhile dwarf shrublet is *R. megeratum*. It grows to a height of 1 to 2 feet, and has bright yellow flowers.

The *Scabrifolium* Series contains three Rhododendrons whose hardiness in the open is doubtful, yet all three—*R. scabrifolium*, *R. spiciferum* and *R. spinuliferum*—make small shrubs of interest if grown under glass. *R. spinuliferum* differs from any other Rhododendron, and indeed does not appear to resemble a Rhododendron at all, having narrow tubular upright flowers brick-red in colour. Another dwarf grower is *R. virgatum*, usually with pale mauve-pink flowers, but the pure white form is more pleasing but less hardy than the type.

Much taller, thin growing plants can be found in the *Stamineum* Series but the great majority of this group are too tender to flourish anywhere in the open woodland. *R. stenaulum* carries silvery-lilac, violet tinged flowers, borne on long slender pedicels in loose trusses of ten or more. *R. stamineum* has white fragrant flowers with a yellow blotch, and the third member of this series I would like to mention is *R. pectinatum*, which produces a peculiar cluster of white flowers with a pale yellow

blotch on each. This cluster is made up with three or four blooms appearing in each axillary inflorescence, and usually there are five or six such inflorescences towards the apex of the previous year's growth, the combined effort being outstandingly interesting.

*R. Elliottii*, *R. eriogynum* and *R. Kyawi* belong to the *Irroratum* Series, subseries *Parishii*. All have large, well-built trusses of true red-coloured flowers, all make medium-sized shrubs up to 7 or 8 feet and all are excellent parents for hybridization purposes.

It only remains for me to mention a few of the larger-growing Rhododendrons. Where space is unlimited, blood-red *R. arboreum*, *R. Delavayi* and the most exquisite *R. Griffithianum* would again give wonderful returns with beautiful flowers and the opportunity for more new hybrids.

At the conclusion of this article I feel sure there are many good plants with their praises unsung, but I hope that I have created enough interest to encourage all with the facilities to grow at least a few tender Rhododendrons under glass.



## DECIDUOUS AZALEAS

By G. DONALD WATERER

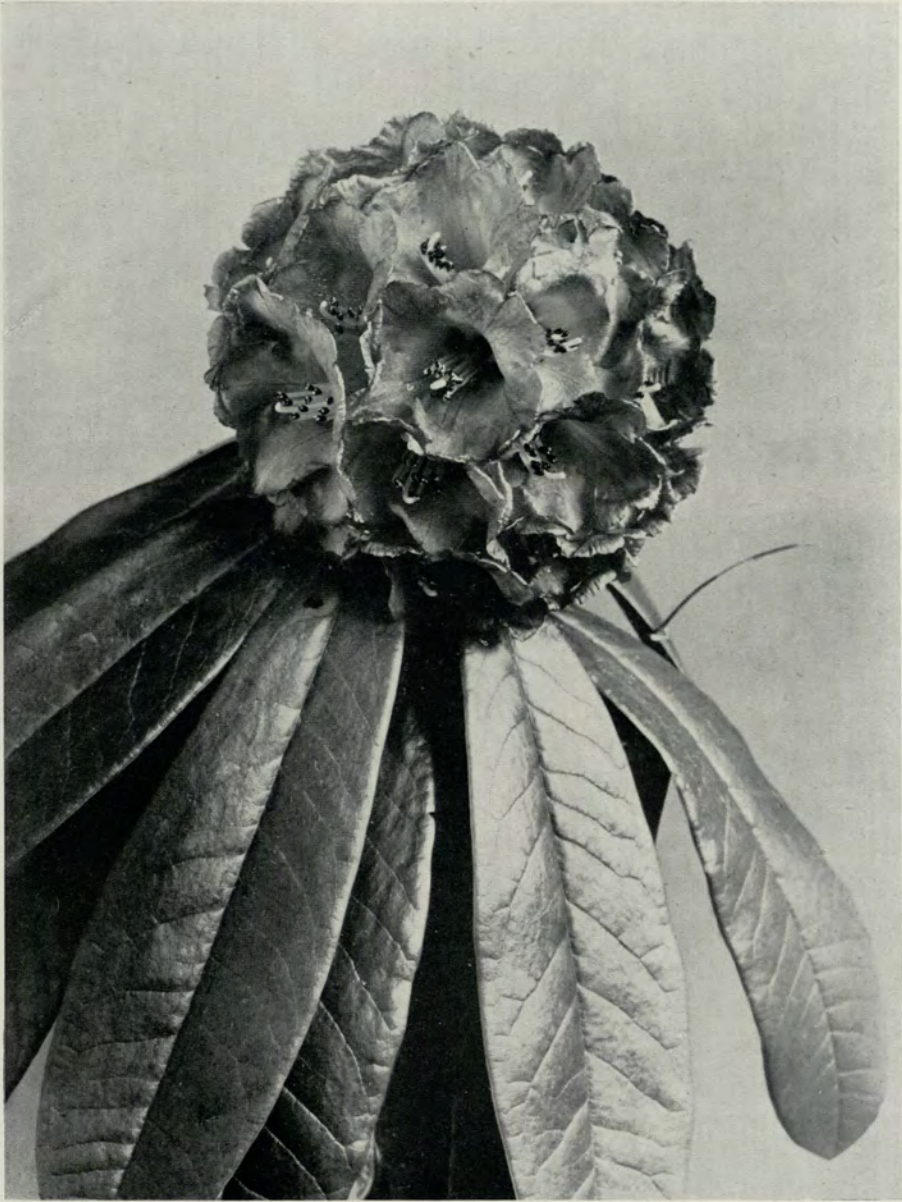
THE word Azalea has been a source of some confusion to the gardening public, since it has been popularly applied to an evergreen as well as to a deciduous section of the *Rhododendron* genus. The deciduous Azaleas themselves fall into three subsections or groups, one of which embraces those magnificent shrubs which are the subject of this article—the Azaleas which people flock to admire in May at Kew and Leonardslee.

Ideally they are shrubs for semi-woodland gardens, delighting in dappled sunlight and the cool mulch of leaves which deciduous trees such as Oak and Beech provide. They are, however, quite tolerant of open situations, provided that due care is given to regular mulching with leaf mould or peat, to protect the surface roots from the heat of the sun and to conserve moisture. In some gardens Bracken, cut early in August, is laid round the plants every year to a depth of two or three inches. Each year's application rots down to a humus which is favourable to ericaceous plants. This treatment is apt to be untidy and unsightly in small gardens but is useful for large-scale plantations. The conservation of moisture is particularly important on light sandy soils which dry out quickly. Azaleas cannot thrive in conditions of drought, especially during the growing season. Humus-held moisture not only assists growth but also enables the fragile flowers to withstand the effects of strong sunshine. For this reason, some of the finest and healthiest plantations in this country are to be found on the banks of lakes or streams, where massed colour is effectively displayed.

In common with Camellias, Azaleas often do very well in *open* situations which face north and are almost entirely protected from direct sunlight. The flowers last longer in these cool conditions and are able to resist the effects of spring frost more readily when shielded from the sudden thawing of direct morning sunlight.

In open situations it is unwise to underplant them with low-growing shrubs which prevent the application of generous mulching and surface cultivation. Heathers should be used sparingly or avoided altogether, for although they give protection to the soil from sun, this virtue is counteracted by the demands they make on the soil moisture.

Azaleas associate happily with Japanese Maples and ericaceous shrubs such as *Leucothoe*, *Vaccinium* and *Enkianthus*,



Photo, J. E. Downward

#### RHODODENDRON AWARDS

FIG. 34—*R. silvaticum*, A.M. March 20, 1951. Two exhibits of this species were shown, the one illustrated was from Mrs. Stevenson of Tower Court and was shown under Kingdon-Ward's No. 6258. The Commissioners of Crown Lands, Windsor Great Park, exhibited this also. (See p. 114)



RHODODENDRON  
AWARDS

FIG. 35—*R. Souliei*, Windsor  
Park variety, F.C.C. May 22,  
1951. Shown by The Commis-  
sioners of Crown Lands,  
Windsor Great Park. (See  
p. 115)

*Photo, J. E. Downward*



## RHODODENDRON

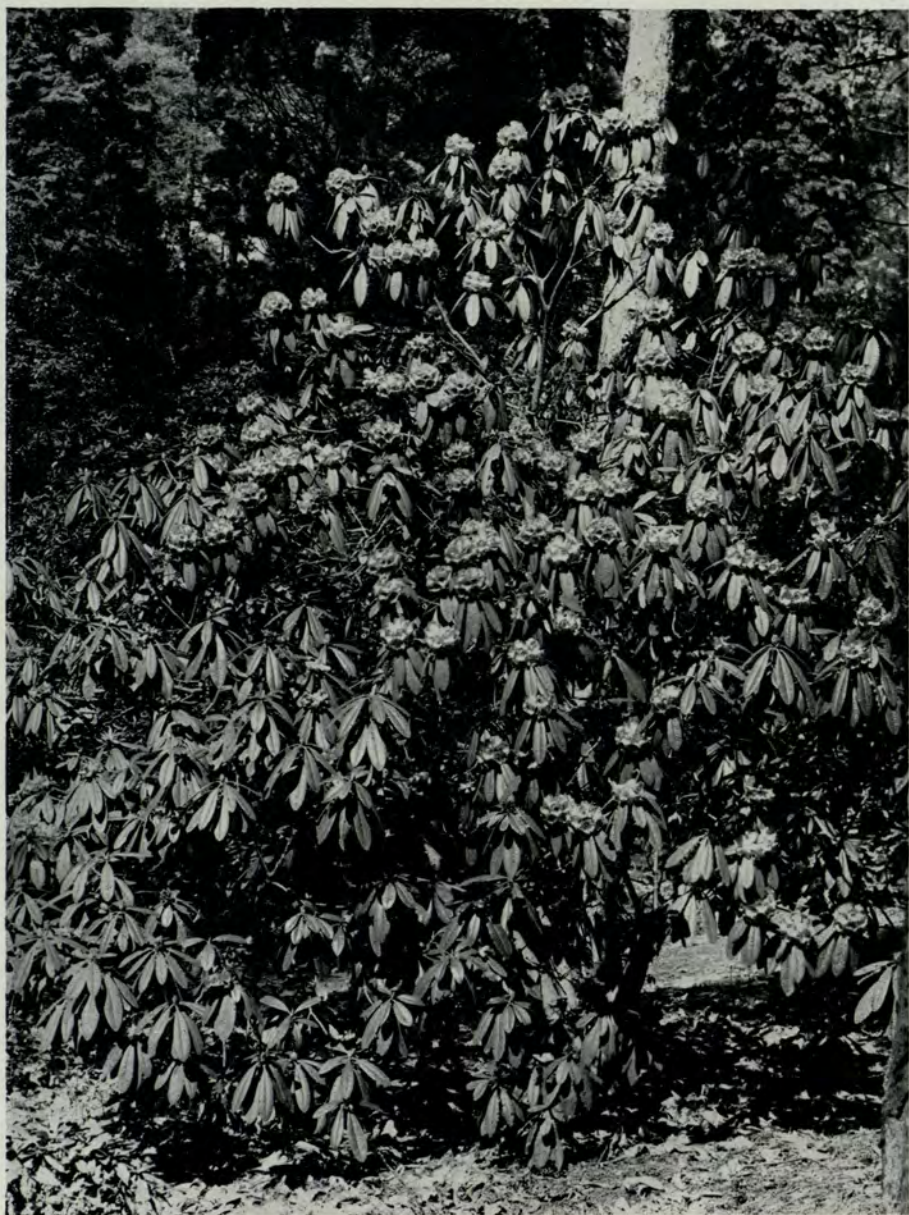
### AWARDS

FIG. 36—R. 'Amor,' A.M.  
June 26, 1951. Shown by  
Mrs. R. M. Stevenson, Tower  
Court. (See p. 113)

*Photo, J. E. Downward*







Photo, J. E. Doneward

#### RHODODENDRON AWARDS

FIG. 37—*R. niveum*, A.M. April 17, 1951, at Tower Court. The specimen shown by Mrs. R. M. Stevenson was taken from this plant (See p. 114)



but great care must be taken when planting them near heavy evergreens—especially the hardy hybrid Rhododendrons. A robust *R. catawbiense* hybrid, with its portly solidity and weight of foliage, can quite easily outcountenance an Azalea, however magnificent a specimen it may be, and reduce it to the state of Cinderella at the stroke of midnight. Consequently, it is more effective to mass Azaleas against a dark evergreen background than to mix them with self-assertive individual evergreens. The reds of the hybrid Rhododendrons do not mix kindly with the reds of Azaleas, but a group of deep red Azaleas against a background of mauve-lavender *R. 'Susan'* or '*Fastuosum flore pleno*,' or yellow Azaleas against the deep purple of *R. 'Purple Splendour'* will give pleasure to a great many people.

Azaleas flower so freely that it is advisable, where possible, to remove the flower heads as soon as the flowers have faded. By preventing the formation of seed, energy is directed to the formation of flower buds for the following year.

They will not grow on calcareous soils. Attempts have often been made to excavate beds and to fill them with the necessary acid soil, but these have usually been doomed to failure after a year or two owing to the percolation of soil water which has been impregnated with lime. They will, however, take quite kindly to culture in pots or tubs, and may be used with good effect in paved courtyard gardens or on terraces. Many Azaleas flower during the first two or three weeks in May, when spring frosts are likely to occur in many areas. Most gardens have parts which are less liable to frost than others, and these should be borne in mind when planting is considered.

Autumn foliage is an attractive characteristic of most Azaleas and on some soils it is so brilliant that they would be worth growing for their foliage alone. The young leaves of certain *R. luteum* (*Azalea pontica*) hybrids are covered with glaucous bloom like a plum. The bloom is exceptionally fine in the hybrid '*Lady Rosebery*' and the foliage as blue as that of *R. Thomsonii*.

It seems that the first Azaleas to reach this country were *R. viscosum* and *R. nudiflorum*, two American species which were sent to PETER COLLINSON by JOHN BARTRAM of Philadelphia about the year 1730. Many early introductions of American plants were due to the energy and enthusiasm of COLLINSON. Towards the end of the eighteenth century two more species arrived from that continent, *R. calendulaceum* and *R. speciosum*. In 1792 MESSRS. LEE & KENNEDY of Hammersmith received seeds of *R. luteum* from the Caucasus.

These five species were soon acquired by private gardeners and nurserymen in and around London. Further interest was



aroused by a shipment of plants brought over from America by JOHN LYON. This included the yellow form of *R. calendulaceum*, which was growing a few years later in the nurseries of JOHN FRASER and of LODDIGES & SONS. It also probably included the delightful *R. arborescens*, which at first was much confused with *R. viscosum*. In 1823 LODDIGES received the tender but highly prized *R. molle*, the Chinese Azalea with yellow flowers which for a long time was wrongly known as *Azalea sinensis*. The stage was now set for the appearance of Azalea hybrids, which reached their first peak of popularity during the 1830's. Notable work was done in this country at Highclere and by LEE & KENNEDY, LODDIGES, OSBORNE of Fulham and also by MICHAEL WATERER of Knap Hill where in 1829 LOUDON noted "one of the most splendid displays of Azaleas ever seen in England in the first week of June this year."

In Belgium P. MORTIER, a baker of Ghent, began hybridizing about 1825 with a view to raising late-flowering seedlings which would escape damage by spring frost. In 1834 he sold his seedlings to LOUIS VERSCHAFFELT of Ghent, and for the next thirty or forty years Belgium was the hub of Azalea production. A bewildering multitude of named varieties appeared. These, together with the hybrids of a similar type raised in this country between 1825 and 1880, are known as the Ghent Azaleas.

Generally speaking the Ghent Azaleas bear small single flowers in great profusion, ranging in colour from white, through yellow and orange to pink and deep red. There are also Double Ghents which will be mentioned later in this article. The flowers usually appear with the foliage in late May or early June. In some the blotch on the upper petal is conspicuous, in others it is scarcely noticeable. Colour combinations are innumerable. Two or more colours may be superimposed on one another, a characteristic which makes accurate description in words or by colour chart a matter of great difficulty.

Many old varieties are unsurpassed. Who can point to a better orange Azalea than 'Coccinea speciosa,' which is well over a hundred years old? Others are best left in obscurity until popular demand brings them scuttling happily once again into nurserymen's catalogues. Old fashioned Roses delight us to-day. To-morrow perhaps we shall realize that some of the oldest Azaleas can still hold their own among the modern, larger-flowered hybrids.

About 1870 ANTHONY WATERER Senior laid the foundation of the Knap Hill Strain of Azaleas by crossing the Chinese *R. molle* with various selected forms of *R. calendulaceum*. He produced wonderful seedlings with brilliantly coloured flowers



which were larger and firmer in texture than those of any other hybrids raised before that time. He encouraged a squareness of shape which became a noteworthy characteristic of this section of his Azaleas and one which MR. LIONEL DE ROTHSCHILD admired and developed further at Exbury. Very few of ANTHONY WATERER'S Azaleas were named during his lifetime (he died in 1897). He raised a great number of seedlings every year, but he very seldom wished to see any one of them after the first year of flowering.

*Rhododendron japonicum* flowered in 1870 in the nursery of WILLIAM BULL of Chelsea. LOUIS VAN HOUTTE of Ghent was very interested in this species with its large flowers, orange-red or red in colour, which appear before the leaves in early May. He raised and named many fine varieties which were introduced to this country by JAMES VEITCH & SONS about 1879. There is a deep yellow form, *R. japonicum aureum*, of which old specimens exist to-day at the Sunningdale Nursery and which may also have been used by VAN HOUTTE.

In the 1880's ANTHONY KOSTER & SONS of Boskoop and ANTHONY WATERER of Knap Hill crossed *R. japonicum* with the Chinese *R. molle*. Very soon other nurseries in Holland, Belgium and England were joining them in the production of thousands of splendid seedlings. The work of the KOSTERS was, and still is, of major importance in this field and Holland particularly is the home of these *molle* × *japonicum* hybrids, which until quite recently were familiarly but wrongly known as "mollis × sinensis" hybrids.

The number of varieties is so bewildering that it is difficult for the average gardener to make a selection. MR. PETER KOSTER has kindly sent me the following list of twelve varieties which he considers to be distinct and outstanding:

- 'Hortulanus Witte'—bright orange-yellow
- 'Adriaan Koster'—deep yellow
- 'Marmion'—pale yellow, amber blotch
- 'Directeur Moerlands' (syn. 'Golden Sunlight')—bright golden yellow
- 'Frans van der Bom'—pale salmon orange
- 'Spek's Orange'—brilliant orange
- 'Hamlet'—deep orange-salmon heavy and dark blotch
- 'Queen Emma'—apricot orange
- 'Koster's Brilliant Red'—glowing orange-red
- 'Dr. M. Oosthoek'—deep orange-red
- 'Hugo Hardÿzer'—bright deep scarlet
- 'Mrs. Peter Koster'—intense deep red.



I myself am in agreement with this list, except that I should cut out 'Adriaan Koster' and put in 'Princess Juliana'—lemon-yellow edged rose or 'F. de Konminck'—soft yellow, pink edge.

Grafting is still used too often as a means of propagation, although it must be observed that certain choice varieties, which grow feebly on their own roots, are quite satisfactory when grafted upon seedlings with strong root systems. A grafted plant, with its tendency to throw shoots from below the graft union, may be better than no plant at all. Seedlings of *R. japonicum* are used as stocks for the *molle*  $\times$  *japonicum* hybrids. The Ghents, to which the foregoing remarks also apply, are usually worked on seedlings of *R. luteum*.

In recent years it has been apparent that blood of several other species has entered into some of the *molle*  $\times$  *japonicum* hybrids. Exactly which ones have been used is difficult to determine. The fine orange Azalea 'Goldball' (syn. 'Christopher Wren'), which grows most vigorously on its own roots, is often listed among the *molle*  $\times$  *japonicum* hybrids, although it is really a hybrid of 'Altaclarensis.'

*Rhododendron occidentale* was introduced to this country by MESSRS. VEITCH, with whom it first flowered in 1857. The white or pink flowers are extremely fragrant and appear in June, a fact which was of great interest to ANTHONY WATERER who always sought to produce hybrids which would flower late enough to escape damage by May frost. After many disappointments he succeeded, during the 1870's, in crossing *R. occidentale* with *R. molle* and also with certain *molle*  $\times$  *japonicum* hybrids. The seedlings were extremely vigorous and the fragrant flowers, carried in huge trusses, opened in late May or early June. The colours were mainly white or pale shades of cream and pink, but some were of a beautiful rich pink. The type plant received an Award of Merit in 1894 and was named 'Albicans': *R. molle* (syn. *Azalea sinensis*)  $\times$  *R. occidentale*.

The varieties 'Exquisita,' 'Delicatissima,' 'Graciosa' and 'Superba' belong to this section and are among the finest of all Azaleas. It is believed that they were raised by ANTHONY KOSTER and not by ANTHONY WATERER. They should never be planted in full sun, the petals being thin and fragile. Ideally, they are plants for cool situations in semi-woodland or among tall-growing shrubs.

The Knap Hill Strain developed further when 'Albicans' was merged with *R. molle*  $\times$  *R. calendulaceum* and with *R. arborescens*. Large-flowered whites and thickly textured pinks with large orange blotches appeared. Salmon-pink was greatly prized and there were also wonderful reds, oranges, and apricots.



The young foliage of many seedlings was tinted, to a varying degree, with the colour of damp peat which provided a most beautiful soil for the flowers and gave a peculiar intensity to their colours.

ANTHONY WATERER Junior clung with great tenacity to his father's collection and himself added to it notably. It was only by much cajoling that he was persuaded to send some of his best seedlings to Caerhays, Lanarth and Exbury. The late MR. LIONEL DE ROTHSCHILD bred extensively from these plants and from various other hybrids and species. His very successful seedlings bear the imprint of his individual and methodical approach to the work of hybridization. Intensive breeding is still carried on at the Knap Hill Nursery and in recent years MESSRS. W. C. SLOCOCK have named a set of Knap Hill Azaleas which they exhibited at Chelsea in 1947 with conspicuous success.

Double-flowered Azaleas are much admired and are capable of resisting the heat of the sun to a greater degree than most of their single brethren. VAN HOUTTE had a collection of small-flowered "Double Ghents," the first of which probably appeared in the 1830's. It should be noted, incidentally, that SWEET referred to several double forms of *R. nudiflorum* which were to be found in English collections in the 1820's.

Towards the end of the nineteenth century the small-flowered Azaleas 'rustica flore pleno' were produced in Belgium. These were said to be Ghent Azaleas crossed with *R. molle*  $\times$  *japonicum*. At the same time ANTHONY WATERER produced double seedlings which are believed to have sprung from Double Ghents crossed with *R. occidentale*. Whatever their origin may have been, nearly all the small-flowered doubles are popularly lumped together under the name of 'rustica flore pleno.'

Large-flowered Azaleas have for many years shown a tendency towards doubleness, but breeders do not seem to have paid much attention to it. A race of large doubles would no doubt achieve great popularity.

From these brief comments on the various groups of hybrid Azaleas, it will be observed that modern hybrids are of very mixed parentage and that group distinctions are becoming increasingly vague. There is perhaps a danger that too much importance may be given to mere size of flower and intensity of colour. Other characteristics should not be overlooked such as fragrance, habit of growth, foliage and the ability to grow vigorously without resource to grafting. There is great charm to be found among the small-flowered Ghents, some of which carry their flowers most elegantly and in great profusion.



Quite recently, two American species have reached this country which are likely to influence hybrids of the future. One is the red-flowered *R. prunifolium* which flowers in July but unfortunately is slightly tender. The other is the low-growing and stoloniferous *R. atlanticum* with deliciously fragrant white flowers.

The breeding of Azaleas is now being pursued with rapidly increasing momentum in the U.S.A., where considerations of winter hardiness are of much greater importance than they are in this country. It has been found that they will grow well in certain parts of South Africa, Australia and New Zealand. Wherever they can be grown the popularity of these rewarding plants is steadily increasing.

## RHODODENDRONS IN EAST ANGLIA

SOME gardeners who strive to grow Rhododendrons in the Counties of Norfolk, Suffolk and Essex have been asked to give readers some account of their experiences. One correspondent writes:

Perhaps what comes first to mind is the desirability of warning anyone who (incited by a visit to the famous gardens in Cornwall) aspires to grow Rhododendrons in the Eastern Counties, that a goodly measure of pertinacity, knowledge, and skill will be needed to achieve outstanding success.

"East is East and West is West and never the twain shall meet" may have seemed to be true when Kipling wrote it, but daily our newspapers tell us that it is so no longer, yet any gardener who has struggled to accommodate in East Anglia a wide range of the Rhododendrons that luxuriate in Cornwall will by the time he has earned a pension be ready to agree that *East is East and West is West*.

A Cornishman when paying a visit to a gardening friend in the Eastern Counties started after breakfast without a hat. His host enquired if he would not like to get his hat, but the Cornishman replied, "You forget that I work in my garden and you don't." After luncheon the host was surprised to see his guest wearing a hat. "Hullo, John," he said, "you with a hat?"

"Yes," replied the Cornishman sourly, "your sun is different from ours."

Remember that in the Eastern Counties the enemies are not only the east wind and the frost but also the fierce sunshine and dry air. So that the plants classified as "B" in the *Rhododendron Handbook* will ask to be shaded, not forgetting those rays that strike from the west at the close of long and hot days.

Assuming the necessary acidity, the light soil presents no difficulty if made up to the usual prescription of leafmould, sand and well-saturated peat. Perhaps the greatest safeguard against destruction by drought especially for two or three years after planting is the provision of a supply of water that can be applied to individual plants by means of cans each with a small hole near the bottom that ensures a slow delivery. Some protection against the fierce sunshine can be obtained by packing round the choice plants with others of less value and somewhat larger: another method is to use small trees, *e.g.* Laburnum or Mountain Ash. A stock of pack plants should be kept wherever the garden is in a state of development.



All the above is easy enough to effect and in most gardens will suffice for the ordinary old-fashioned hybrid Rhododendrons and Azaleas of which the so-called Ghent varieties will be found to be the most satisfactory. But an ever-increasing number of garden owners are eager to possess fine specimens of a multitude of Rhododendrons that will demand conditions that in the Eastern Counties it is difficult to supply. The position can be quite roughly summed up as follows. In the west there is an overall rainfall of 56 inches and in the east 25 inches: in the west the air is charged with moisture to an extent quite unknown in the east: in April, when so many glorious Rhododendrons flower, the east is swept by bitterly cold east and north-east winds that injure the flower buds and young growth and at the same time is subjected to frosts of a severity unknown in the west, and renders watering dangerous, no matter how greatly the plants may desire moisture. Moreover these eastern conditions in the spring compel the provision of perfect drainage which may mean excessive dryness when summer arrives. This gives some idea of the torments that afflict the eastern grower of Rhododendrons. As regards sites there can be no doubt that woodland, the bigger the better, affords the best chance of success and in this connection it is well to remember the large size to which good specimens will attain in the course of twenty or more years.

It remains to shake the dice box of memory and thereby recall a selection of species that experience has proved will succeed in the Eastern Counties if afforded conditions which will give them a fair chance to survive the difficult early stages provided by the unsuitable climatic conditions. The list will be confined to well-established, good-sized plants. Capital letters E, W, and S in brackets signify respectively: early flowering and therefore requires some shelter; woodland conditions; and toleration of sunshine.

#### SPECIES

- |  |                                    |
|--|------------------------------------|
| <i>ambiguum</i> (E)                      | <i>Augustinii</i> (S)              |
| <i>arborescens</i> and its varieties (S) | <i>auriculatum</i> Demands dense   |
| <i>arboreum</i> (W) There are happy      | shade and plenty of well           |
| plants forty years old in Essex          | drained moisture at roots. A       |
| and Suffolk but all the condi-           | site not easy to supply.           |
| tions that this species requires         | <i>barbatum</i> (W)                |
| must be complied with. (E)               | <i>calophytum</i> (W) Uninjured by |
| Blood red <i>arboreum</i> is too         | frost. The flowers will stand      |
| tender. The white 'Sir Charles           | a good deal of frost.              |
| Lemon' seldom flowers.                   | <i>campanulatum</i>                |





FIG. 38—*R. brachyanthum* var. *hypolepidotum*, A.M. June 26, 1951. Shown by The Commissioners of Crown Lands, Windsor Great Park, under the name *R. charitostreptum* (See p. 113)



Photos, J. E. Downward

#### RHODODENDRON AWARDS

FIG. 39—R. 'R. W. Rye,' A.M. March 20, 1951. Shown by the Rt. Hon. the Earl of Stair, D.S.O., K.T., Lochinch (See p. 114)





Photos, H. H. Tansley

#### RHODODENDRONS AT SHERINGHAM PARK

FIG. 40 (top left)—*R. ambiguum* (See p. 42)

FIG. 41 (top right)—*R. galactinum* (See p. 43)

FIG. 42 (bottom left)—*R. argyrophyllum* (See p. 42)

FIG. 43 (bottom right)—*R.* 'Loderi' var. 'Pink Diamond' (See p. 44)





FIG. 44—*R. sutchuenense* (See p. 43)



Photos, J. E. Downward

# RHODODENDRONS AT SHERINGHAM PARK

FIG. 45—*R. 'Christmas Cheer'* (See p. 44)





Photos, P. M. Syngé

FIGS. 46 and 47—*R. Williamsianum* at Bodnant (See p. 47)

- campylocarpum* Uncertain, coy, and hard to please.
- catawbiense*
- caucasicum* That is to say 'Cunningham's Sulphur' and many hybrids.
- cinnabarinum* (S) This lovely shrub and its variety *Roylei* is much more accommodating than its appearance suggests; this applies also to its hybrids 'Lady Rosebery' and 'Lady Chamberlain.'
- crassum* (W) Requires the best place.
- Davidsonianum* (S)
- dichroanthum*
- discolor* (W)
- fastigiatum* (S)
- ficulactaeum* (W) This species and *Hodgsonii* are for East Anglia the best of the big-leaved Rhododendrons.
- Fortunei* (W)
- Griersonianum* Dry and shady situation.
- hippophaeoides* (S)
- Hodgsonii* (W) Hardy and easy to please.
- impeditum* (S)
- intricatum* (S)
- Macabeanum* (W) In shady and moist place, from infancy a plant has, uninjured, attained 6 feet.
- mallotum* Hardy, slow growing and not hard to satisfy.
- neriiflorum* Not really happy.
- niveum* (W) (E)
- occidentale* (W) Flowers demand protection from fierce sunshine that wilts them when opening. This of course applies to several lovely hybrids.
- oreotrephes* (E)
- praevernum* (W)
- racemosum*
- rubiginosum*
- russatum* (S)
- Schlippenbachii* Not seen really happy.
- sinogrande* (W) FORREST'S hardier form doing well; also one reputed to be of WARD'S collection.
- Smirnowi*
- sutchuenense* (W)
- Thomsonii* (W) (E)
- triflorum* (S)
- Ungernii*
- Vaseyi* (E)
- Wardii*
- yunnanense* (S)



## RHODODENDRONS IN EAST ANGLIA— SHERINGHAM PARK

By THOMAS UPCHER

THE woods at Sheringham Park are situated about 2 miles west of the small seaside resort on the north coast of Norfolk, one mile inland from the sea. This is a very cold stretch of coast, and very bitter east and north winds are experienced here, though the fiercest gales are those from the south-west. It is generally believed that were a line to be drawn from Sheringham Hall to the North Pole, no land and certainly no human habitation, would be encountered on the way.

The average rainfall at Sheringham, taken over a number of years, is 22 inches. The soil is peaty, with sand and gravel subsoil, and in this many large flints, such as are found on the seashore, are discovered, which might mean that this stretch of wooded hills is the remains of a one-time ice-floe from Norway. It is a curious fact that no *Rhododendron*, not even a *ponticum*, will grow in the low-lying village of Upper Sheringham, one mile to the east of the woods.

The Sheringham property was bought in 1812 by the great-great-grandfather of the present owner, and the "upper approach"—the entrance drive through the wood, exactly one mile in length and beside which the first of the *Rhododendrons* was planted—was discovered and opened up by HUMPHREY REPTON, the landscape gardener. There are, however, unfortunately no records of when the first *Rhododendron* plantings were made, though according to local tradition this was in the late 1840's.

The largest plants of all are of a red-flowered form of *R. arboreum* which have attained a height of about 30 feet: and *R. ponticum* is present in all ages, where it is effective on great banks and hill-sides, useful as background and for shelter belts, but a great nuisance in later plantings of the older hardy hybrids, where it has to be restrained ruthlessly.

Seed of various species was given to MR. H. M. UPCHER, grandson of the purchaser of the property, from WILSON'S Veitchian Expeditions in the early years of this century. Plants resulting from this sowing included *R. ambiguum*, the largest specimen of which to-day stands 20 feet high (Fig. 40), *argyrophyllum* (one form of which bears flowers much more heavily spotted than the other) (Fig. 42), *calophytum*, *decorum*, of which one plant grows on a single stem like an old Apple tree and stands 15 feet high, some fine specimens of *floribundum*, *lutescens*, *Souliei*, *sutchuenense*,



*sutchuenense* var. *Geraldii* and *praeevernum*, in which last group are to be found some of the finest Rhododendrons in the wood, some plants of the type measuring 16 feet high and 20 feet across (Fig. 44), and *Wasonii*. There are also some good specimens of a Rhododendron indentified by Wisley as "almost certainly *R. galactinum*." If this is correct it has been sadly maligned in the *Rhododendron Handbook*, where it is described as "one of the less attractive of Chinese Rhododendrons," which in the case of the plants at Sheringham is far from true (Fig. 41).

In addition to the above there are some largish plants of *R. fictolacteum* and *laxiflorum*, the origin of which cannot be ascertained as there is no record of WILSON having sent home seed of these species. There are also specimens of *R. niveum*, one of HOOKER's Sikkim introductions, and the largest plant of these measures 13 feet high and as much across.

Unfortunately a large number of the seedlings from this batch were left neglected far too long in a nursery bed, with the result that the initial growth of many of them was curtailed, while others, top-heavy and lanky, grew to an abnormal height in search of light. In fact, when in 1937, the present owner came to the rescue of these forgotten plants, the roots of many of them had become so inextricably entangled that they had to be left, with the result that the site now consists of a thicket of *R. decorum*—both pink and white forms—and a curious 18-foot high pyramid of *R. calophytum*, *floribundum* and *lutescens*, their stems apparently all emanating from the same square foot of earth.

From the date of the planting of WILSON's seeds, no attempt was made in the way of adding any species until 1946, since when young plants of such species as *R. auriculatum*, *caloxanthum*, *callimorphum*, *campanulatum* ('Knaphill Var.'), *campylocarpum*, *catacosmum*, *concatenans*, *croceum*, *Davidsonianum*, *dichroanthum*, *discolor*, *euchaites*, *Falconeri*, *Fortunei*, *haematodes*, *pseudoyanthinum*, *venator*, *Wardii* (K.W. Form), and *yunnanense* have been planted—mostly in newly made clearings in semi-shade along the drive. In addition to this, in a smaller clearing, a few of the dwarf species have been tried, including *R. calostrotum*, *keleticum*, *impeditum*, *pemaköense* and the like, together with such hybrids as 'Blue Diamond,' 'Blue Tit,' 'Sapphire,' 'Bow Bells,' 'Carmen' and 'Yellow Hammer.'

The mass of colour in May and early June, which makes so great an appeal to the public, who come in large numbers every year to see the flowers, comes in the main from the older hardy hybrids. There are particularly fine specimens of such old favourites as 'Doncaster,' 'F. B. Hayes,' 'Joseph Whitworth,'



'Michael Waterer,' 'Gomer Waterer,' 'Marchioness of Lansdowne,' 'Minnie,' 'Mme. Denny' (a very fine old French variety), 'Lady Eleanor Cathcart,' 'Mrs. Holford,' 'Mrs. W. Agnew,' 'Mrs. Mendel,' 'Sappho' and 'Viscount Powerscourt.' Most of these were planted in the early years of the present century, as were some plants of 'Pink Pearl,' the largest of which, standing in a very exposed position at the top of a valley open to the north-east with a magnificent view to the sea beyond, measures 16 feet high by 20 feet through.

Since 1935 a selection of the newer hybrids has been planted which include 'Beauty of Littleworth,' 'Betty Wormald,' 'Britannia,' 'Earl of Athlone,' 'J. H. van Nes,' 'Madame de Bruin,' 'Mrs. de la Mare,' 'Mrs. Furnival,' 'Mrs. G. W. Leak,' 'Mrs. Lionel de Rothschild,' 'Mrs. Philip Martineau,' 'Mars,' 'Mother of Pearl,' 'Red Riding Hood,' 'Purple Splendour,' 'Souvenir of Dr. Endtz,' 'The Hon. Joyce Montagu' and many others.

The 'Loderi' hybrids seem to be very happy in the woodland conditions provided for them at Sheringham, and there are fine plants of R. 'Loderi Venus' and 'Pink Diamond' 12 feet high (Fig. 43), which always flower profusely, and there are younger plants coming on. Another Rhododendron which always attracts considerable attention and is perhaps as lovely as any in the collection is R. 'Queen Souriya,' a *Fortunei*  $\times$  *campylocarpum* hybrid raised by MESSRS. SLOCOCK. It is almost impossible to describe accurately the elusive colouring of the flowers of this very delightful Rhododendron.

It was not until after the last war that such varieties as 'Lady Chamberlain,' 'Lady Rosebery' and any of the *Grier-sonianum* crosses were introduced to Sheringham. Of the latter there are now examples of 'Azor,' 'Fabia,' 'Fire Bird,' 'May Day,' 'Matador,' 'Romany Chai' and 'Sunrise,' as well as the type, which first flowered in 1947, and has done so regularly ever since.

A further selection of later hybrids added includes 'Albatross,' 'Aries,' 'Bonito,' 'Goldfort,' 'Goldsworth Orange,' 'Idealist,' 'Loderi'  $\times$  'Gauntlettii,' 'Margaret Bean,' 'Naomi' (Exbury Form), 'Mrs. Gomer Waterer' (a 'Corona' cross) and a batch of the *Souliei* hybrids such as 'Halcyone,' 'Rosy Morn,' 'Latona' and 'Thomasine.'

On the final section of the drive through the wood, the road, as it sweeps down the hill to the Park, is flanked by some enormous bushes of R. 'Christmas Cheer,' which measure as much as 16 feet across (Fig. 45). These are covered yearly with a sheet of pale pink flowers at any time from late January until March, according to the season. With the sea beyond them, this time to



the north-west—for Sheringham is situated at the north-east corner of the Norfolk coast-line, thus providing many unexpected views of the sea from different angles—these provide early every spring a fitting opening to the yearly Rhododendron pageant that is to follow.

A striking feature in the woods in mid-May is the large south-facing slope of mixed *Azalea mollis* hybrids seen from the drive between the trunks of giant Spanish Chestnuts, the foreground a sheet of Bluebells in the dappled shade, which are joined towards the end of their flowering period by wild Campion mingling their pink flowers with the blue. The whole, particularly on a sunny day, makes a scene of dazzling brilliance. This planting is backed by large specimens of Rhododendron 'Fastuosum flore-pleno' and some natural hybrids between *R. ponticum* and *R. decorum* in a pleasing shade of pinkish-mauve, which in many cases have retained the *decorum* scent: while, to break the line, one single white *R. decorum*, in tree-like form, stands sentinel amongst the Azaleas. And in the further background are some fine old Scots Firs and Beech.

A number of self-sown seedling Rhododendrons of some of the species mentioned above have been collected into a small nursery. These, for the most part, appear to be *R. ambiguum*, *laxiflorum* and *sutchuenense*.

It might be mentioned that in addition to Rhododendrons, a certain number of flowering and ornamental trees and shrubs have been planted since 1935. These include Magnolias in variety, of which there are young plants of *M. mollicomata* and *M. Sprengeri diva*, while *M. obovata* and *M. tripetala* have both flowered the last two seasons. Other families represented include Camellias in many forms—there is one plant of a form of *C. japonica* growing in dense shade under a giant *Rhododendron arboreum* hybrid which has been planted nearly 50 years, and now stands 15 feet high—*Drimys Winteri* (12 feet high), *Eucryphia cordifolia* 10 feet high, a reputedly hardy form of *Embothrium coccineum*, Halesias, Pieris and their kin (including *P. Forrestii*), Stuartias, *Telopea truncata* and *Tricuspidaria lanceolata*, the largest specimen of which stands 11 feet high and, in a sheltered corner, came through the winter of 1946-47 practically unscathed.

Owing to the fact that the plantings at Sheringham are in the open woodland—it is very essentially NOT a woodland garden—the most formidable obstacle to be contended with is the rabbit, with the regrettable result that practically all young plants have to be wired against the enemy. Another hazard is the bracken, which grows to immense proportions in these



woods. Offset against this, though, is the pleasure in seeing the riot of colour and form against the background of natural woodland scenery.

That there have been failures is undeniable, but taking into consideration the fact that Sheringham is situated where it is—open to all the cold winds that blow—their proportion has been quite remarkably low. There is an immense sense of satisfaction in defeating the elements, and a keen plantsman takes great pride in inducing some tender creature to grow and—far more important—to thrive far from its warm and habitual western shore. For instance, an order has just been placed for a plant of *R. Macabe anum* for Sheringham.

It is hoped therefore that these notes may encourage others who live on the colder side of England, and have the advantage of suitable soil and conditions, to venture perhaps somewhat further into the field of Rhododendron planting, rather than to rest content with the tried and hardy favourites.

## RHODODENDRON WILLIAMSIANUM

By LORD ABERCONWAY, C.B.E., LL.D., D.Sc., V.M.H.

IT is very fitting that one of the best Rhododendrons should have been called after MR. J. C. WILLIAMS, who did so in much this century to arrange for and to encourage the importation of Rhododendrons to this country from China, and not only that, but who wished his best finds to go to other gardens where they would give his friends interest and pleasure.

Of all the Rhododendrons that he was instrumental in introducing, *Rhododendron Williamsianum* takes a high place. Its low compact growth, its charming little leaves, its beautifully shaped pink blossoms borne two in a truss hanging thickly over the little bush, are always captivating to the garden lover. It is a good grower given Rhododendron conditions, though one must not expect it to rise more than 4 feet in height, and that only after some years of growth. Its flowers vary in beauty, some of those introduced having a larger bell of a deeper pink shade (Figs. 46, 47).

The plant's one drawback is that its ornamental coffee-coloured growth shoots are apt to be cut by a late frost. If this happens, the plant soon recovers, but the following year's flowers are, of course, not borne so freely on the new shoots which have replaced the original frosted growths.

It has the advantage of striking freely from cuttings, and I have used this to propagate a number of the best form for my garden, a form which I was lucky enough to obtain before that plant flowered.

The plant appreciates a situation which is not too shady, and like all those plants it appreciates an annual top dressing, not too thick, of leafmould or similar soil.



# RHODODENDRONS IN NEW GUINEA

By C. R. STONOR

EDITOR'S NOTE. The following notes were made by MR. STONOR during his short stay in New Guinea. He had no previous knowledge of the Rhododendrons to be found in this area and had the opportunity of familiarizing himself with only a few of the hundred or more species in the field.

It has been difficult to identify his specimens with certainty, because much New Guinea material was destroyed during the war in Berlin and there is none in Edinburgh. Undoubtedly the majority of them are close to previously described species. Determination cannot be made with certainty at present but an indication of affinities is given. The illustrations were drawn by W.C. Turner, student gardener at the Royal Botanic Garden, Edinburgh, from the dried material, in order to indicate the most unusual features of the New Guinea Rhododendrons which Mr. Stonor collected. Seed of three of his numbers has germinated.

THE vast island of New Guinea is reliably held to include among its remarkable flora over a hundred species of Rhododendron. We must therefore look on it as the home of a very important part of the genus. In spite of the tendency to regard Rhododendrons as essentially part of the Sino-Himalayan flora, with a few outlying representatives in Oceania, Europe, and the Americas, it is only logical that the present outlook be revised and that we think of the group as having a distribution in New Guinea second only to the Himalayan region. It is all the more interesting therefore to consider the ecology and general nature of these plants found in the New Guinea mountains.

At the outset it can be stated quite categorically that we must forget our preconceived ideas as to what goes to constitute a typical Rhododendron, both as to form and to their habits of growth in the field. I can state this with all the more confidence since, less than a year before going to New Guinea, I had visited the Tibetan Border and seen for myself the dense stands of Rhododendrons in the Himalayas.

Rhododendron-hunting in New Guinea is rather akin to Orchid-hunting in other parts. There are plenty of Rhododendrons there, but one has to go and look for them. One may search for two hours without seeing more than a few plants and then stumble on an area with a goodly sprinkling. But never in any sense do they stand out as they do in the Himalayas. This is partly because the plants themselves are not very large, and partly because, like Orchids, they are so sporadic in their distribution.

A very essential factor controlling their habitat and mode of growth is the New Guinea climate. In the Himalayas one gets a very sharp alternation of warm wet seasons with cold dry ones. For one part of the year the plant world is flooded out and then



RHODODENDRONS IN NEW GUINEA

FIG. 48—*R. Devriesianum* vel aff. (Stonor 10) (See p. 50)





FIG. 49—*R. aff. Lauterbachianum* (Stonor 8) (See p. 49)



RHODODENDRONS IN NEW GUINEA  
FIG. 50—*R. aff. Carringtonae* (Stonor 3) (See p. 49)



FIG. 51—*R. fuchsioides* vel. aff. (Stonor 1) (See p. 51)



RHODODENDRONS IN NEW GUINEA

FIG. 52—*Rhododendron* sp. nov.? aff. *R. inconspicuum* (Stonor 6) (See p. 51)





FIG. 53—*R. dasylepis* vel. aff.  
(Stonor 13) (See p. 50)

RHODODENDRONS IN  
NEW GUINEA



FIG. 54 — *Rhododendron* sp.  
nov.? allied to *R. Wentianum*  
(Stonor 9) (See p. 50)

for the remainder is compelled to rest through the drought. In New Guinea this is not so. There is no real dry season. Especially in the mountains there is a remarkably equitable climate. Some months, it is true, are better than others, but there is always the rain, the drizzle and the fog. Never do the Rhododendrons have a resting period. This applies to all other plants as well. This condition of high temperatures and copious rainfall culminates in the moss-forests, where growth is so dense that one plant does not leave room for another. Consequently the large forms of Rhododendrons are lacking. The genus has had to adapt itself to the very specialized climatic conditions. To these, epiphytes and the terrestrial species which grow in semi-swampy ground are best adapted. The tree-like Rhododendrons, so typical of the Himalayas, have been entirely suppressed. Instead, within the limits of small-growing forms, which have had to take their place as subordinate members of the plant community in which they are found, we have a striking flora.

From my own field observation a great profusion of Rhododendron species are found from the 5,000-foot level upwards. Nothing seems to be known as to the minimum elevation at which they grow here. I have seen the orange-flowered species aff. *R. Lauterbachianum* (Fig. 49) in semi-open country of an almost tropical nature at 3,000 feet. Unfortunately I did not study the group in the forests at this elevation. It is interesting to note though that it was the only Rhododendron which I found at comparatively low altitudes, growing in the open.

Between 5,000 and 6,000 feet there are thousands of square miles of open grass country where again my No. 8 is the only species. Large colonies are never found but only a few isolated bushes in almost every swamp. Although it will do as a garden shrub in drier situations, it is essentially a bog plant, very much like our native Bog Myrtle. There is little doubt that these grasslands are artificial, in the sense that they were produced by progressive destruction of the forest by the native population. In its primeval state this same species was probably characteristic of swampy glades and the edges of forests where I have also found it, as well as on the steep banks of rocky gullies, where it is also common.

In fairly open situations below the tree-line between 5,000 and 9,000 feet I have seen a striking Rhododendron with a disc of horizontal tubular white flowers resembling a giant Honeysuckle. This comes near to *R. Carringtoniae* (Fig. 50). It makes a fair-sized bush about 4 feet high. It seems to be widespread in distribution over the mountains, but it is rather a shy grower for one only sees a few bushes here and there. It also likes damp



ground, preferring the edges of the moss-forest or small patches in the forest clearings. I have never seen it in the open grasslands.

Turning to the true forest species, which live in the sub-tropical forests between the altitudes of 5,000 and 10,000 feet, I have found in my limited experience that they are all epiphytes, falling into two main categories. Firstly, there are slender-growing scarlet forms recalling *R. neriiflorum*, which are commonly found on the trunks and branches of the trees a few feet above the ground. There is no question of their forming masses of growth. A few plants over a square mile of forest is all that I have ever seen, and the individual plant is slender, with delicate growth, 2 or 3 feet long at the most. The only non-epiphyte I have seen of this type (there are doubtless many others) growing below the upper tree limit is the red and orange species, believed to be allied to *R. Wentianum* (Fig. 54). It is a cliff dweller, clinging to rocky ledges. Unfortunately it is often sickly in its growth.

Secondly, the other epiphytic type is the magnificent species with giant white flowers tinged pink of fleshy texture which comes near to *R. Devriesianum* (Fig. 48). This grows commonly, but individually, over a large area of the Hagen and Bismarck Ranges, not, I think, below 9,000 feet. It is a plant of the dank forests just below the true moss-forest level, and grows on the upper branches of the giant trees, where its huge, lily-like flowers make glowing spots of colour among the greens of the innumerable other epiphytes. This wonderful Rhododendron has a rather faint, but exquisite scent, a little reminiscent of the Regale Lily. The tubular-flowered *R. aff. Carringtoniae* is also characterized by a delicious scent, not unlike the Honeysuckle of country lanes. Why should they be scented? Surely the New Guinea forests of high elevation have but a small insect population. I think it as good a guess as any that these epiphytes are pollinated by the Lory parrots, some of which live in the moss-forests, and the more so as we know parrots to be among the few birds with a sense of smell.

As one climbs up the mountain slopes to an elevation of 9,500 to 10,500 feet, one comes to the true moss-forest, where every tree is festooned with the reeking moss, and one has literally to push one's way through the hanging growths. It is unlikely that this zone houses any Rhododendrons although some remarkably aberrant form might be found. This brings us to the tree-line, and here in the Bismarck Mountains the characteristic type is the tall, rather scraggy, scarlet-flowered species coming near to *R. dasylepis* (Fig. 53). It is a very common shrub exactly on the borderline between the forest and the open

tundra country. It grows as a rather tender shrub, hugging the edge of the timber and reaching up to 15 feet in height. It is the only *Rhododendron* I have seen in New Guinea which makes an attempt to form a stand, but its efforts are feeble compared to Himalayan species.

We come now to the remarkable tundra country above the tree-line. There are literally thousands of square miles which are as yet almost unexplored and undoubtedly will yield up many botanical wonders. The country is essentially grass-covered and very boggy. *Rhododendrons* grow abundantly, but as always individually. One may see three species in a hundred square yards, but probably not more than a few of each. Characteristic is my No. 6 (Fig. 52) a small-leaved, very upright *Rhododendron*, a few feet in height, and reminiscent of giant Heaths. Although these *Rhododendrons* are typical of the flora of the tundra country, they are in no sense spectacular. The most remarkable form is the completely dwarf *R. fuchsoides* aff. (Fig. 51), which is common among the bog grasses. It is comparatively prostrate, with its scarlet scentless flowers standing upright a few inches above the mat of leaves. The extraordinary feature of this plant is the fact that its woody growths are buried in the bog by a foot or more of bare stem, so that the leaf-bearing shoots and the flowers are, as it were, floating on top of the ground.

In this brief paper I have tried to summarize a few observations which I made while in New Guinea. From the illustrations which accompany this article you may obtain some idea of the variety of delightful new types of *Rhododendrons* which await a thorough botanical investigation. What I have tried to do is to emphasize the diversity of forms and the marked differences of habit which these New Guinea *Rhododendrons* show when compared with the familiar Himalayan species.



## RHODODENDRONS AS FOLIAGE PLANTS

J. P. C. RUSSELL

**R**HODODENDRONS vary in size and habit more than any other family of evergreens. They are relatively slow-growing, long-lived shrubs or trees and while an enormous number of species have been introduced to this country, beginning over a hundred years ago and becoming a flood within the last fifty, many have not yet had time to develop to their full beauty. The habit and eventual size of many is still difficult to determine and some, which at first appeared almost valueless, now stand revealed as extremely fine foliage plants.

The great majority of these Rhododendrons need woodland conditions to show to their best advantage in this country. Their proper setting is the woodland glade.

Nowadays, it is seldom possible to keep altering the garden as the various plants grow too large for their positions, and a considerable amount of thought is required before the plants which will form the main design are planted.

When the Rhododendrons are in full flower, few other shrubs can equal their brilliant effect and it is always a temptation to plant with free-flowering varieties in preference to those with fine foliage. But many Rhododendrons have a second season of surprising beauty when the young growth appears. The new leaves are covered with a soft indumentum of fawn or orange or a soft grape-like bloom which is often shown off by scarlet leaf bracts.

In woodland plantings in particular, habit of growth and beauty of foliage should count as much as flower. The evergreen plants and the trunks of the trees will form the character and beauty of the glade.

The East has been gardening for a far greater length of time than the West and it is noticeable that habit of growth or elegance of foliage is considered a greater virtue than brilliance of colour or size of flower. This is, of course, an attitude which can be carried too far and has, in fact, resulted in a rather dreary symbolism in the over-formalised Japanese and Chinese gardens.

In this country it is too little considered where Rhododendrons are concerned and many of the best foliage plants are seldom given sufficient space or a proper background for the display of their foliage and habit. They are too frequently



planted in great banks or stiff unnatural groupings which give the finer species no chance to display their real beauty.

Fine foliage requires a contrast in form and texture and for this the less rampant Bamboos, Ferns, Irises or the smaller-leaved Rhododendrons are excellent.

The choice of varieties which will give character to any woodland is a wide one. Perhaps the most tropical and exciting foliage belongs to the Falconeri and Grande Series. These are small or large trees of majestic habit. They are definitely plants requiring woodland or very sheltered conditions and are to be seen at their best in the moister conditions of the West Coast. The Falconeri Series is the hardier of the two and *R. Falconeri* itself with its huge leathery green leaves, pale fawn beneath and lightly veined with lemon-yellow, is the largest-leaved species which can be grown over most of the country. There are many massive specimens in old gardens and although the leaves decrease in size with age, they make a very fine showing against the shining brown-purple bark.

*R. arizelum* and *eximium* are somewhat smaller versions. *Arizelum* is the smallest grower of this group and one of the hardiest; in poor rather exposed conditions in a cold area it makes a very handsome rather spreading shrub with flat clusters of leaves at the end of stiff brown branches. The young foliage is covered with a soft golden indumentum. *Eximium* is a larger and more handsome plant with deep brown-red indumentum below the leaf. The young leaves are a vivid orange-brown and much of the indumentum will stay on the surface of the leaf throughout the year.

*R. fictolacteum* is the hardiest of all the larger-leaved Rhododendrons and of this there are two forms, both of which will make a shapely forest tree in time. FORREST's form has dark green leaves some 9 inches long with paler veining and a light orange indumentum. The plant sent home under K.W. 4509, which would appear to be identical with *R. rex*, is an altogether finer tree. The long tongue-shaped leaves are over a foot in length, deep green with paler veining and a fawn-coloured indumentum on the growth buds and the lower surface of the leaf. This rapidly forms a strong spreading tree. The real beauty of both the forms of *fictolacteum* is not seen until they are tall enough to show the brilliant colouring of their indumentum. The lower branches are majestic with their dark foliage in well ordered tiers but suddenly, above eye-level the tree becomes fawn-coloured or orange-brown as the indumentum shows instead of the surface of the leaf.

*R. Hodgsonii* is a handsome plant in the same Series, whose



dark leaves are sprinkled with silvery scales, and in *basilicum* we have an extremely exotic plant, the large, somewhat rounded and extremely glossy leaves are about a foot in length. The growth buds have the sticky glistening purple of a Horse-chestnut bud throughout the winter. The young growth is jade-coloured, silver beneath. It forms a widely spreading small tree with something of the tropical appearance of *sinogrande* itself.

The Grande Series is, unfortunately, much more tender. The hardiest of the fine foliated varieties and in its best form perhaps the finest of the yellow-flowered Rhododendrons, is *R. Macabeanum*. In dry and cold climates this is a large spreading shrub; in moister, milder areas a handsome and swift-growing tree. The huge rounded leaves are leathery, deep green with paler veins, silver beneath and with a silvery indumentum in young growth. The bud scales are brilliant scarlet.

This Series is one of large-leaved plants but two stand out. No other tree capable of being grown in this climate is so startling as *R. sinogrande*. The huge leaves are stiff and leathery, bright green above and silvered beneath, growing to over 3 feet in length on the west coast of Scotland. There is a magnificent planting of *sinogrande* in the famous garden of Logan. Here they fill a whole sheltered valley; Ferns and the Banana-like leaves of *Lysichitum* grow at their feet. The immense rigid collars of bottle-green, silver-backed leaves stand out against a feathery background of Bamboos. The effect is so exotic that a tiger strolling down the valley would seem quite normal.

*R. giganteum* is a difficult plant but magnificent in the very few gardens where it will grow. It shows little sign of reaching 80 feet in the British Isles and has developed a wide-spreading habit. It is superb in the garden at Brodick, growing on and amongst huge sandstone boulders. The warm tone of the rock shows up the soft green leaves with their silver under surfaces. The leaves are huge and held in perfect rosettes, each rosette a little further out than the one above it and building up to a huge pyramid.

These two Series all form large round-topped, broad-based, pyramidal trees.

In contrast to these are many species in the Fortunei Series, falling into two groups, the tall straight trees of which *R. diaprepes* might be the type with slender pale green leaves up to ten inches in length, and the strong branching almost heraldic growth of *calophytum* with its rigid stems and magnificent collars of long straight leaves.

In the first group *discolor*, *decorum* and *Fargesii* are perhaps the best known, all three light and graceful trees which show to



greater advantage if kept to a single stem. *Sutchuenense* and *praevernium* resemble *calophytum* closely but cannot quite equal its regular growth.

*R. orbiculare* stands by itself as one of the most remarkable Rhododendrons we have with its extremely formal growth and perfectly rounded pale green leaves. A form of this sent home by LORD ABERCONWAY'S collectors has even finer foliage, the leaves resembling the pads of a Water-lily.

*R. auriculatum* is likely to be a tree of some 40 feet. The sweetly scented, lily-like flowers are sufficiently remarkable but the foliage is extremely beautiful in itself. The leaves are a clear lettuce-green, lance-shaped and up to a foot in length, held in stiff horizontal collars, like a ruff round the pointed growth bud. The young growths appear with bright scarlet leaf-bracts and there is a particularly fine form in which the young growth is a soft bronze-pink. The growth of the tree is very sturdy, pushing out strong horizontal branches. Trees already 30 years old give the effect of fine English oak drawn by a Chinese artist.

*R. arboreum* has lance-shaped bronze-green leaves with a brown indumentum and is perhaps more remarkable for its growth than its foliage. In the milder counties it will form an extremely handsome columnar tree. *R. niveum* is a much hardier plant in this series and very handsome with traces of greyish indumentum on the dark green leaves and a fawn-coloured indumentum below. *R. insigne* is always attractive with its stiff rosettes of greyish-green, sharply pointed leaves, silvery white beneath. *Simiarum* is a larger shrub which carries a fine silvered indumentum throughout the greater part of the year.

In the Barbatum Series, *R. barbatum* itself is a handsome plant with slightly puckered, bristly leaves of a deep green; these are well set off by the glossy purple-brown of the bark. *Exasperatum* is a remarkable plant but difficult to grow well. It is a somewhat stocky bush with large rosettes of handsome bottle-green leaves. The young growth can be the most startling colour from a bright verdigris green to a coppery-beetroot. *Erosum* is a new plant in this Series. The leaves are very similar to those of *barbatum* but the young growth is a deep mahogany colour.

*R. pseudochrysanthum* has dark green, hard leathery leaves ending in a tiny red spine; these are covered in a greyish indumentum when young. The under surface is a shining pale green. The plant grows in a perfect mound. A very attractive form of this was introduced by PROFESSOR YOSHIRADA just before the war. This would appear to be a dwarfer variety; the leaves are thinner and held in stiff rosettes and the habit of growth is low and spreading, very Chinese in effect.



There are several species in the Ponticum Series which are seldom seen in gardens but which have the same very Chinese effect, and are particularly effective in a pinewood setting. *R. Metternichii*, *Makinoi* and *Degronianum* are three very hardy plants, all with narrow dark grey-green leaves in somewhat spiny rosettes. The indumentum is fawn or pale brown and the habit, compact and very wind resistant. The young growth is covered with a soft grey or blue-grey indumentum which is extremely attractive. *Smirnowi* is similar in appearance to these but the indumentum is paler and the leaf surface keeps traces of a silvery indumentum throughout the year. This is an exceptionally hardy plant.

*R. Ungernii* has large, deep green leaves, silver beneath, the young growth is covered with a soft silver indumentum. Two recent introductions, again from PROFESSOR YOSHIRADA have added two very attractive foliage plants to our gardens. *Hyperythrum* is a wide-spreading shrub growing in regular stiffly branched tiers; the leaves are tightly curled, of a bright and very glossy green, and held in tight rosettes. *Yakusimanum* is a dwarf, mounded grower, with dark green leaves on which traces of greyish indumentum remain throughout the year, the under-surface of the leaf is fawn and the young growth covered with a bright silvery indumentum. This is a particularly attractive plant.

The Taliense Series is not renowned for beauty of flower, or even for flowering at all, but it does contain some outstanding foliage plants. *R. Bureavii* is a rounded bush with narrow, sharply pointed leaves of bottle-green. The indumentum is bright salmon-orange when young becoming a pale fawn and, in its second year, a deep orange-brown. When the young growths first appear with their brilliant indumentum, the effect is magnificent. *Vellereum* is narrow-leaved with an unusually thick golden indumentum with the feel of an expensive kid glove. *Clementinae* has a more spade-shaped leaf, blue-green on the surface with a thin golden-brown indumentum spun on the under surface like a spider's web. Considered purely as a foliage plant of some 4 or 5 feet it is excellent. *R. proteoides* is a tiny, tufted species with rosettes of long narrow leaves, and *Roxieanum* has many forms ranging from a plant near to *proteoides* to a fascinating variety with thin, narrow, dark green leaves held in rosettes like a single Chrysanthemum flower.

Less spiky and rigid in habit and with softer and more rounded leaves are some of the Neriiflorum Series. *R. neriiflorum* itself has attractive pale green leaves, silver white on the under surface, but most of the bold foliage is to be found in the



Haematodes subseries. The outstanding plant here is *mallotum* particularly in a wet mild climate, where the dark green leaves will grow to 6-9 inches in length; the indumentum is a bright orange-brown. *Beanianum* is a similar species on an altogether smaller scale.

*R. catacosmum* will make a low rounded bush and the wide 6-inch leaves are very fine with their crinkled dark green surface and pale brown indumentum. *Haematodes* itself is a low-growing plant, eventually some 4 to 5 feet high but very much wider. The leaf is dark green with a light brown indumentum which also covers the young growth. The dwarf of the family, *R. repens*, can be very attractive on a wet bank where the running stems and bright glossy green leaves look exciting and sustain the interest while waiting for a flower.

There are some rather similar plants in the Campanulatum Series. *Lanatum* is a variable species, the HOOKER introduction having woolly rounded leaves with soft-grey brown indumentum on both surfaces. Dwarfier forms with narrower and more woolly leaves have been introduced by both WARD and SHERRIFF. *Tsariense* is a new species which resembles these; the small leaves are very woolly with a deep orange-brown indumentum on the under surface.

*R. campanulatum* var. *aeruginosum* is a beautiful dwarf-growing plant with thick dark green leaves and a fawn indumentum. The young growth is at first pale green and then, as the leaves develop becomes a wonderful soft blue shade. *Campanulatum* itself is a very handsome small tree in all its forms but is at its best in the 'Knaphill' variety with broad dark green leaves with a soft brown indumentum on the under surface and red-purple leaf stalks and buds. Slightly resembling this but with drooping leaves of a dark green and a very handsome orange-brown indumentum is *R. fulvum*. This is a Rhododendron whose leaves blow about very easily and display their indumentum well.

There is a big group of Rhododendrons with blue or blue-green young foliage. In the Thomsonii Series the name plant is outstanding and will make a graceful tree, some 20 feet in height under favourable conditions. The leaves are leathery in texture and rounded, pale glaucous green below and a dull blue-green above. The young growth is at first emerald green but becomes covered with a blue bloom as the leaves develop and is then very beautiful in contrast to the pale fawn-coloured bark of the tree. A very interesting form of *R. Thomsonii* has been introduced by LUDLOW AND SHERRIFF in which the leaves are nearly as rounded as those of *orbiculare*.



Rather similar in growth to *R. Thomsonii* are *Meddianum* and *cyanocarpum*; these have bolder more elongated leaves, deep green in the case of *Meddianum*, blue-green in *cyanocarpum*. *Wardii*, *Souliei*, *croceum* and *litiense* form a group of very attractive large bushes. All have a regular, slightly formal habit of growth and very attractive leaves like an elongated heart on a short leafstalk. The young growth of all these species has the characteristic grape-like blue bloom when first mature.

Dwarfer plants with smaller, lighter foliage and even lighter blue bloom are *caloxanthum*, *callimorphum*, *cyclium* and *telopeum*. Smallest of all is *Williamsianum* with pretty rounded leaves and copper-coloured young growth.

In the Cinnabarinum Series it is extremely difficult to choose between the name plant and *concatenans*; both have blue-green foliage throughout the year and in each case the soft blue of the young growth is startling. *Cinnabarinum* is the larger tree and in its variety *Roylei* has larger foliage and a more open habit. *Concatenans* has a larger leaf and very compact growth. All have elegant blue-grey leaves, greyish brown on the under surface and are amongst the finest of the foliage plants.

In the Triflorum Series, *xanthocodon* is very close to these species but greener in the leaf. A fine and very hardy group of foliage plants are *artosquameum*, *exquisitum*, *oreotrephe*s and *timeteum*, all having a sturdy habit of growth and blue-green leaves, white beneath. The young growth is a bright blue-green. *Lutescens* has pretty willow-like leaves and a graceful spraying habit. The stems are bright brown and the young growth a very attractive brown-red. *R. Keiskei* is a very dwarf plant of mounded growth, the shiny leaves green with a yellow midrib.

There are two beautiful foliage plants in the otherwise dull Trichocladum Series. *Lepidostylum* has soft furry blue-green leaves and a pleasant mounded habit (Fig. 55). The young leaves are as blue as those of *aeruginosum* and surrounded by fine white hairs. *Viridescens* is a taller plant with attractive blue-green leaves throughout the year. The young growth has a bright blue bloom.

There are many good plants for the mildest areas in the tender Madden Series. The huge leaves of *Nuttallii*, the beautifully veined leaves of *megacalyx* and the shiny black-green surface of *polyandrum* and *crassum* are all attractive. *Bullatum* and *Edgeworthii* have dull green crinkled leaves with a grey or fawn indumentum.

Most of the dwarf species have considerable value as a foliage contrast to the larger species and will do well in an open sunny situation. To consider only a few, *R. impeditum* has many forms



*Colour Photograph, P. M. Synge*

**RHODODENDRONS AS FOLIAGE PLANTS**

**FIG. 55—*R. lepidostylum* at Brodick, Isle of Arran (See p. 58)**





and amongst them some with fine blue-grey young growth. *Intricatum* is always attractive with its tiny grey-green leaves. *Flavidum* will make a glossy bright green bush like a minute Poplar; *calostrotum* is a flat-spreading shrub with grey-green leaves, the young growth is a bright grey-blue. The smallest of all is the tiny *radicans* which will run about on a sandy mossy bank with glossy  $\frac{1}{4}$ -inch leaves.

Lastly there is the Azalea Series. All the evergreen varieties have a distinctive habit although there is not an immense variation amongst their foliage. The dwarf mound-like *obtusum*, the more graceful and spreading *mucronatum* or the taller *yedoense* are all very useful evergreen plants.

Of the deciduous species, *pentaphyllum* and *quinquefolium* are very attractive with their green-bronze tipped leaves and many of the species colour brilliantly, perhaps none better than a good form of *R. luteum*.

With this aggregate of Rhododendrons to choose from the possibilities of form and colour and texture contrasts are limitless in any area where ericaceous material will thrive. Secondly, I have tried to answer the often heard criticism that Rhododendrons are so dull when not in flower. Anyone who has seen the magnificent plantings at Bodnant, Windsor, Exbury, Caerhays, or a host of other distinguished gardens will concur. Lastly, there is the important point that the majority of Rhododendrons are interesting foliage plants throughout the year and not seasonal shrubs like so many other genera.



## THE FORMS OF *RHODODENDRON REPENS* (*R. FORRESTII*) AT TOWER COURT

By ROZA M. STEVENSON

IN the *Rhododendron Year Book* for 1948 a general article on the *Rhododendron* collections at Tower Court was published. Tower Court stands on a small ridge between Ascot and Bagshot. *R. repens* is represented by a number of plants grown on a bank of sandy peat facing West at the head of the valley devoted to the *Rhododendron* Species collection. This bank is sheltered from the early morning sun and to some extent from the strong midday sun as well. From time to time the plants have been mulched with sifted leafmould, otherwise they have received no special attention. My oldest plant is one received as the type from the late J. C. WILLIAMS of Caerhays Castle in 1922. The main bulk of the plants have been raised from seed collected by FORREST, ROCK and KINGDON-WARD, but a few have been received from other collections. Upon examining this Sub-Series *Forrestii* of the Series *Neriiflorum* one wonders at the many varying forms and at first one feels extremely puzzled as to how to begin to separate or place them. However, after close inspection of the living forms at Tower Court and herbarium material I have found it possible to distinguish five different forms. To save argument at this stage and to avoid confusion with DR. COWAN's article which follows, I will refer to these by letters and leave it to the botanist to deal with their nomenclature. These are briefly described as follows:

- FORM A: Younger outside *branches creeping*, but branches in older part of plant upright and forming a dense low compact bush. *Leaves small*, rounded but variable in size from  $\frac{1}{4}$  inch to  $1\frac{1}{4}$  inch in length excluding petiole, glabrous inflorescence 1-2 *flowered* (Fig. 57).
- FORM B: With older branches upright up to 18 inches, but *outer branches and tips creeping*. *Leaves larger*, oblong-obovate from  $\frac{3}{4}$  inch to  $1\frac{3}{4}$  inch in length excluding petiole by  $\frac{1}{2}$  inch to 1 inch broad, glabrous. Inflorescence 1-4 (*usually 1-2*) *flowered*.
- FORM C: With main stems upright, up to 19 inches, *branches spreading but not creeping*; leaves large, oblong-obovate up to 2 inches long by 1 inch broad excluding petiole. Inflorescence 3-5 *flowered*.
- FORM D: Low compact bushes, *not domed*, under 1 foot in height, *branches not creeping*; leaves larger than in Form A, oblong-





Colour Photograph, J. E. Downward

FIG. 56—*R. repens* K.W. 6832 at Tower Court (See p. 64)





obovate, up to  $1\frac{1}{2}$  inch in length excluding petiole by 1 inch in width. Inflorescence 1-2 flowered.

FORM E: Bush with *upright* more open habit up to 3 feet 3 inches in height. Very distinct from other forms, leaves larger up to  $2\frac{3}{4}$  inches in length excluding petiole by  $1\frac{3}{4}$  inch broad. Inflorescence 1-6 (*usually* 3-5) flowered (Fig. 58).

Therefore it is possible to distinguish five distinctly different forms, which range from flat creeping forms with small leaves to a definite bush form, while in between come those that have differences in foliage, growth, habit and the number of flowers. In between Forms A-D I can find links and intermediate plants, but between Forms D-E comes the full stop, and there are no intermediates.

I will now endeavour to describe the plants of this Sub-Series *Forrestii* as we know them from the different expeditions and the present names attached to their numbers in the *Rhododendron Handbook* 1947. *R. repens* (*Forrestii*) has no indumentum, but *R. erastum* and *R. serpens* both have indumentum. SIR ISAAC BAYLEY BALFOUR stated that var. 'chamaedoron' had indumentum on the dried specimens but not on the living species. This I am able to endorse from the collection here at Tower Court. We have a plant with a single-flowered inflorescence growing under the name var. 'chamaedoron,' which appears to be intermediate between *R. repens* and *R. serpens*, having the leaves of *R. repens*, pedicels glandular and hairy, stamens hairy in the lower third, not glabrous as in true *repens*. This form comes from the Salwin-Kiu Chiang Divide, west of Chamatong, S.E. Tibet.

We also have a plant labelled var. *chamaethauma* which has upright stems and is taller than typical *repens* (Form A) and has larger leaves. The inflorescence has four to five flowers which are rose, carmine, or pale pink, the filaments of the stamens are hairy, ovary glandular and tomentose. This form comes from the Doshong La in S.E. Tibet.

The collection at Tower Court consists of the following. In brackets are given the identifications from DR. COWAN'S article which follows.

FORM A.: (*R. Forrestii* var. *repens*)

The various plants included here show tremendous differences in leaf size only, varying from  $\frac{1}{4}$  inch in length to  $1\frac{1}{4}$  inch, but remain consistent in habit, shape and form. A plant propagated from the Type number of *R. Forrestii* (F. 699) was sent to us as a gift from the late J. C. WILLIAMS of Caerhays Castle in November 1922. Habit compact, with short erect branches in older part of plant, younger branches



entirely prostrate and creeping and rooting, leaves small. The leaves are green underneath. Usually does not flower but once has flowered magnificently. This plant is now 7 inches high in older part by 36 inches in diam. and is the typical plant we are accustomed to associate with the name *repens*.

- F. 21768: We have four plants which vary considerably, three being placed in Form A and one in Form B, but intermediate between Forms B and C.

*No. 1 plant.* 8 inches high by 30 inches in diam. creeping and compact habit, slightly domed in centre, leaves small, flowers none.

*No. 3 plant.* 12 inches high by 45 inches in diam. Old branches erect but creeping in younger branches, compact. Leaves with long petiole and blade of leaf from  $\frac{3}{4}$  inch to  $1\frac{1}{4}$  inch up to  $\frac{3}{4}$  inch wide. Flowers carmine, fairly free flowering.

*No. 4 plant.*  $4\frac{1}{2}$  inches high by 15 inches in diam. Creeping small compact plant with very small leaves, no flowers.

Collector's notes. "Shrub of 1 ft., flowers deep crimson, almost black in bud, Tsarong S.E. Tibet, open strong Alpine meadows on the Salwin-Kiu Chiang Divide, West of Chamatong. Lat.  $28^{\circ} 18' N.$ , Long.  $98^{\circ} 26' E.$  Alt. 14,500 ft. June 1922."

FORM B: (*R. Forrestii* var. *tumescens*)

- F. 25524: 7 inches by 35 inches in diam. Habit: sprawling, leaf larger than in Form A. Main stems upright with branches prostrate and tips creeping. A shy flowerer.

1924. This number was omitted from the collector's field notes.

- F. 21718: 10 inches high by 38 inches in diam. A plant received from WAKEHURST in 1925. More erect than previous plants.

Collector's notes. "Prostrate, creeping shrub of several feet. Flowers deep crimson. Tsarong S.E. Tibet. Moist stony meadows and on rocks on the West of Chamatong. Lat.  $28^{\circ} 18' N.$ , Long.  $98^{\circ} 27' E.$  Alt. 13,000-14,000 ft. June 1922."

- WARD 5846: There are three plants in the collection. Two of these are of uniform, compact small bush habit with tips slightly creeping; leaves elliptic, shortly petiolate.

*No. 1 plant.* 17 inches high by 50 inches in diam. Has not yet flowered.

*No. 2 plant.* 18 inches high by 60 inches in diam. A beautiful compact plant with larger leaves than No. 1, up to  $1\frac{3}{4}$  inch long by  $\frac{3}{4}$  inch wide but again has not flowered.

Collector's notes. "Flowers crimson, deeper colour than 3845 and borne in trusses of two or three. Prostrate under-shrub, trailing over rocks and on steep slopes, rising a few inches above the ground. Keeps to the sheltered slopes, growing with several other species, woven into dense chromatic carpets. 'Scarlet Pimpernel.' Doshong La. 12,000-13,000 ft. 26/6/24."

WARD 6935: *No. 3 plant*. 10 inches high by 39 inches in diam. Habit compact, domed in centre, leaves up to 2 inches long by  $1\frac{1}{8}$  inch in width. One to two flowers about 2 inches long, crimson.

From this number at Tower Court there are three plants but two of these are included in Form E.

Collector's notes. "A creeping mat plant plastered against the granite cliffs and rocks, on steep sheltered broken slopes. Flowers bright pink, or pinkish purple. In habit and foliage like No. 5846 from Tibet, but flower colour quite different; very rare here. Seinghku Valley. 11,000-12,000 ft. 16/2/26."

FORM C: (*R. chamae-Thomsonii* var. *chamaethauma*)

WARD 5845: 19 inches high by 54 inches in diam. Habit: rounded bush form with tips semi-creeping, leaves large up to 2 inches long by 1 inch broad. Free flowering, flowers three to four on a truss, carmine, open reflexed  $1\frac{3}{4}$  inch to 2 inches across. Extremely beautiful.

Collector's notes. "Flowers bright scarlet, forms prostrate mats on rocks and steep slopes, the flowers always prone; no part of the plant rises 2 inches above the ground. Flowers June-July earliest of the three alpine scarlets. 'Scarlet Runner'."

Here the collector's notes differ considerably from our plant in so far as he states "no part of the plant rises above 2 inches" while our plants have formed bushes up to 19 inches high.

F. 21768: *No. 2 plant*. 10 inches high by 28 inches in diam. Fairly compact bush, but tips not creeping. Leaves less broad up to 2 inches long by  $\frac{9}{10}$  inch. Flowers one to two, salmon. This plant is intermediate in habit between forms B & C.

WARD 5846: *No. 3 plant*. 19 inches high by 54 inches in diam. Main branches erect, then spreading but with prostrate tips, thus separating it from Nos. 1 and 2 plants of this number. Habit slightly more loose. Flowers one to four in the inflorescence, deep crimson. In 1951 very full of flower bud but unfortunately most of the buds have either been frosted or are suffering from bud blast.



FORM D: (*R. chamae-Thomsonii* var. *chamaethauma*)

WARD 6832: 10½ inches high by 35 inches in diam. F.C.C. 1935 (Tower Court). Low compact plant, leaves up to 1¾ inches in length by  $\frac{9}{16}$  inch in width. Covered with deep crimson flowers yearly. In 1951 this plant bore 162 flowers and is shown in Fig. 56. This plant is renowned for its continued yearly crop and for the quality of its flowers.

Collector's notes. "Creeping plant, plastered on rocks and steep talus in very exposed situations and forming fair sized mats. Flowers scarlet. Not such a brave sight as 'Scarlet Runner.' Seinghku Valley. 11,000 ft. 3/6/27."

ROCK 59174: Two plants 8 inches high by 31 inches in diam. and 8 inches high by 39 inches in diam. Low compact shrubs of similar form, but with outer branches slightly more prostrate, leaves of medium size up to 1½ inch in length by 1 inch. Covered in flower buds and sheathed in bright red bracts, a very beautiful habit altogether. Inflorescence two-flowered, flowers reflexed, deep crimson.

Collector's notes. "A very low shrub one to two ft. high found growing, on Mount Kinichunpu. Salwin-Irrawaddy Divide at 13,000 ft. altitude. The obovate spatulate leaves are glabrous dark rich green above and paler beneath—the flowers not seen."

FORM E: (*R. chamae-Thomsonii*)

These plants differ from the typical *R. repens* by the more upright lusty habit, by the larger leaves often obovate and by the calyx being large, cupular and fleshy, and the ovary very glandular. They differ from members of the *Thomsonii* Series in having markedly persistent bud scales. They were collected in South-Eastern Tibet on the Salwin-Chiu Chiang Divide.

WARD 6935: *No. 1 plant.* 39 inches high by 55 inches in diam. Habit upright, open rounded bush, large leaves up to 2¾ inches by 1¾ inch. Very shortly petiolate, glaucescent beneath. Flowers none.

*No. 2 plant.* 18 inches high by 22 inches in diam. Flowers white with four to six flowers per inflorescence. In 1951 full of flowers.

For collector's notes see under Form B.

To sum up:—One finds considerable discrepancies between the plants growing at Tower Court and the collectors' notes, and our plants show many varying types among many of the collectors' numbers.





Photos, P. M. Syngé

FIG. 57—(top)—*R. Forrestii* var. *repens* (form A) at Tower Court (See p. 60)

FIG. 58—(bottom)—*R. chamae-Thomsonii* (form E) at Tower Court (See p. 61)





FIG. 59—R. 'Jeritsa,' A.M. May 22 1951. Shown by Edmund de Rothschild, Esq., Exbury (See p. 114)

#### RHODODENDRON AWARDS



FIG. 60—R. 'Prelude,' A.M. May 1, 1951. Shown by Edmund de Rothschild, Esq., Exbury (See p. 114)

FIG. 61 — R. 'Cinnkeys' Minterne variety, A.M. May 22, 1951. Shown by Colonel the Lord Digby, D.S.O., M.C., T.D., Dorchester (See p. 113)



#### RHODODENDRON AWARDS



FIG. 62—Rhododendron sp. (L & S. (?) 6349), A.M. May 1, 1951. Shown by Captain Collingwood Ingram, Benenden (See p. 115)

*Photos, J. E. Downward*



RHODODENDRON  
AWARDS

FIG. 63—*R. pseudoyanthinum*,  
A.M. May 1, 1951. Shown by  
The Director, R.H.S. Gardens,  
Wisley (See p. 114)

Photo, J. E. Downward



However, here I must retire gracefully and leave such difficult, or should I say easy, problems to our excellent and most diligent botanists at Edinburgh, with whom I spent several hours during a fleeting visit to Edinburgh, and I found the subject so engrossing it became more and more difficult to tear myself away. In fact, I almost became a 'repens' setting my roots and creeping into the fascinating holy of holies, the Herbarium.



## RHODODENDRON REPENS—A REVISION *R. FORRESTII* AND *R. CHAMAE-THOMSONII*

BY DR. J. MACQUEEN COWAN AND H. H. DAVIDIAN, B.Sc.

THE Tower Court collection of *Rhododendron repens* and its varieties is probably the most representative to be found anywhere, and MRS. STEVENSON in her review has succeeded admirably in sorting out and rearranging many of the complicated and confusing forms.

One other form not at Tower Court, but collected in the wild and which is in gardens elsewhere, must, however, be added to the forms which MRS. STEVENSON has listed. Before attempting to arrange these forms in sequence and deciding upon nomenclature we must refer to two important facts.

First, we must accept the conclusion that there is no significant difference between *R. Forrestii* Balf. f. ex Diels and *R. repens* Balf. f. & FORREST. The evidence in support of this view was set out by STAFF in the *Botanical Magazine* in 1927 (t. 9186), and need not be repeated. The two reputed species are alike, within the limits of ordinary fluctuation, except that the under sides of the leaves of *R. Forrestii* are red with anthocyanin colouration, while those of *R. repens* are glaucous green. Even this is not a constant character. Accordingly, the name *R. Forrestii* published in 1912, takes precedence by the Rules of Nomenclature over the name *R. repens* which was published in 1919.

Secondly, there is a marked contrast between typical *R. repens*, a creeping shrub, a few inches high, with small leaves and an inflorescence of 1-2 flowers, and *R. repens* var. *chamae-Thomsonii* an upright shrub, as much as 3 ft. in height, with large leaves and with 4-6 flowers in the truss. The difference is so great that it will generally be agreed that these two plants are specifically distinct.

The correctness of this view can be doubted only on examining a very large number of specimens, when it will be observed that the two extremes are linked by a profusion of intergrading forms, varying not only in habit, size of leaf and number of flowers in the inflorescence, but also in the presence or absence of hairs and glands on the leaf.

The main obstacle to determining the more outstanding forms within the complex is the difficulty of correlating herbarium specimens with plants in cultivation.

The most striking difference in plants in cultivation is the variation in habit and this is, of course, not evident in herbarium



sheets. Then again, plants raised from seed under collectors' numbers frequently do not correspond to plants of equivalent numbers collected by them as herbarium specimens in the field. Moreover, we often find plants in cultivation under the same collector's seed number which are widely different. As far as collectors' numbers are concerned, we have to accept what we find; the chaos, which is revealed in these two papers and which cannot readily be explained has added greatly to the complexity of our task.

Whether or not seed from the typical prostrate *R. repens* with small leaves and 1-2 flowers could produce the upright, larger-leaved form, with 4-6 flowers to the truss, we do not, at present, know, but it appears improbable. Further observation in the field, along with further investigation on the cultural side, is required to complete our knowledge. Meanwhile, it is important to sort out and name the different forms in cultivation. With MRS. STEVENSON'S observations and the collectors' herbarium material before us, we have come to the following conclusions based primarily on a study of plants in cultivation, at Tower Court, in the Royal Botanic Garden, Edinburgh, and elsewhere.

The five forms we consider worthy of special recognition (and four of these agree with those of MRS. STEVENSON) are as follows:

Form 1. Creeping; leaves small or medium, under surface reddish-purple; inflorescence 1-2-flowered.

Form 2. Creeping; leaves small, under surface pale green; inflorescence 1-2-flowered. (MRS. STEVENSON'S Form A.)

Form 3. Dome-shaped, outer branches creeping; leaves medium, under surface pale green; inflorescence 1-4- (usually 1-2-) flowered. (MRS. STEVENSON'S Form B.)

Form 4. Upright, not creeping; leaves medium; inflorescence 1-5- (usually 3-5-) flowered. (MRS. STEVENSON'S Forms C and D.)

Form 5. Upright, not creeping; leaves large, larger than Form 4; inflorescence 1-6- (usually 4-5-) flowered. (MRS. STEVENSON'S Form E.)

The complex will be most readily understood if we regard Forms Nos. 1 and 5 as the types of two distinct species, and draw a dividing line between Forms Nos. 3 and 4. The various forms may therefore be arranged in the following manner—the numbers quoted under "Habitat" are the collectors' field numbers of the appropriate herbarium sheets; plants in cultivation under collectors' numbers are referred to in the subsequent text. As already mentioned plants under collectors' seed numbers and equivalent herbarium specimens do not always correspond and several forms may be found in cultivation under the same seed number.



**R. Forrestii** Balf. f. ex Diels in Notes R.B.G. Edin., V, 211 (1912); Millais, Rhododendrons, 168 (1917); *ibid.* Ser. 2, 143 (1924); Balf. f. in Notes R.B.G. Edin., XI, 121 (1919); Stapf in Bot. Mag., CLIII, t. 9186 (1927); The Sp. of Rhod., 512 (1930).

This form (No. 1) is distinguished by a red anthocyanin colouration on the under surface of the leaves.

FORREST's herbarium specimen No. 699 from the Tsedjiong Pass on the Mekong-Salwin Divide, collected by him in 1905, became the type of *R. Forrestii* when the species was described by DIELS in 1912. FORREST's No. 14011, collected in the same locality in June 1917, became the type of *R. repens*, a new species published by BALFOUR and FORREST in 1919. STAPF pointed out (Bot. Mag. t. 9186), as we mentioned in the introductory paragraphs, that the difference between these two species is insignificant. The one, *R. Forrestii*, is red with anthocyanin on the under surface of the leaves, while the other *R. repens*, has leaves which are green underneath. Further, we find in gardens, plants raised from FORREST's seed No. 699 (*R. Forrestii*) which are typical *R. repens*. The plant under this number at Tower Court is a case in point; the leaves are glaucous green beneath. Again, we have observed among plants raised from FORREST's No. 19515, some which are typical *R. Forrestii* (red on the underside of the leaf), others which are typical *R. repens* (green on the underside of the leaf). As far as living plants are concerned every one which we have seen which has the red colouration is prostrate and also has small leaves. Such plants although named *R. Forrestii* are in fact *R. repens* except for the colouration. There is no doubt that STAPF was correct in his opinion that there should be only one specific name.

We have, however, to take into consideration a number of herbarium specimens which have larger leaves than typical *R. Forrestii* and *R. repens* and yet are distinctly red on the undersides. It may be possible eventually to correlate such specimens with others now quoted under various varietal names, but, since none of these are in cultivation and we have no information as to their habit and the specimens are often without flowers, this cannot be done at present with any reasonable degree of accuracy. We have therefore included all specimens with the red colouration in our citation under *R. Forrestii* and have stressed this character as indicative of the typical plant.

**HABITAT:**

*Tibet.* FORREST 699—type, 20027, 21724, 21786, 22923, 22924.

*Yunnan*. FORREST 16689, 17450. ROCK 8717, 8745, 9234, 9277, 11033, 11074. YÜ 19034.

*Yunnan-S.E. Tibet*. ROCK 23016, 23499.

*Burma*. WARD 3609.

In the Royal Botanic Garden, Edinburgh, we have typical plants growing under the number F. 19515; another plant growing under F. 19515 is, however, typical var. *repens*. This form is not growing at Tower Court.

**R. Forrestii** Balf. f. ex Diels **var. repens** comb. nov.

Syn. *R. repens* Balf. f. & Forrest in Notes R.B.G. Edin., XI, 115 (1919); Stapf in Bot. Mag. CLIII, t. 9186 (1927); Magor in Rhod. Soc. Notes, I, 231 (1919); Millais, Rhododendrons, Ser. 2, 221 (1924); The Sp. of Rhod., 514 (1930).

Typical *R. repens* (Form No. 2) is characterised by its prostrate habit and small leaves (0·8–2·8 cm. long) which are glaucous green beneath. It is represented by the following herbarium sheets:

**HABITAT:**

*Yunnan*. FORREST 14011—type, 13259, 13442, 14138, 16535, 19480, 19515. MCLAREN 'D' 217. ROCK 8788, 9078, 9133, 9279, 10964, 10993, 10994, 10997. YÜ 20372, 22946, 23275.

*Tibet*. FORREST 14534, 16678, 19203, 20226, 22922. ROCK 22069, 22500. WARD 5417.

*Upper Burma*. FARRER 1558.

*Yunnan-Tibet*. ROCK 92, 23001.

In cultivation in the Royal Botanic Garden, Edinburgh, this form is exemplified by FORREST Nos. 13259, 19515, and at Tower Court by FORREST Nos. 699 and 21768, but this last number in the herbarium represents *R. chamae-Thomsonii* var. *chamaethauma*.

**R. Forrestii** Balf. f. ex Diels **var. tumescens** var. nov.

A typo foliis subtus viridibus differt, a var. *repente* habitu tumescente satis distincta.

This variety (Form No. 3) differs from var. *repens* in its dome-shaped habit with the outer branches creeping and with larger leaves. It appears to be in cultivation under two names, var. *chamaedoxa*, an unpublished name, and var. *chamaethauma*.

**HABITAT:**

*Tibet*. WARD 5846. FORREST 21718.

*Yunnan*. FORREST 25524, 25961. YÜ 19341.

*Burma*. WARD 6935.

This variety is represented in the Royal Botanic Garden, Edinburgh, by WARD No. 5846—type, FORREST No. 25524, and at Tower Court by WARD Nos. 5846, 6935, FORREST Nos. 21718, 25524.



**R. chamae-Thomsonii** (Tagg & Forrest) Cowan & Davidian  
comb. nov.

Syn. *R. repens* Balf. f. & Forrest var. *chamae-Thomsonii* Tagg  
& Forrest in Notes R.B.G., Edin., XVI, 206 (1931); The  
Sp. of Rhod., 514 (1930).

*R. Forrestii* Balf. f. ex Diels affinis, sed habitu erecto et foliis  
magnis distinguitur.

Frutex erectus, 15–90 cm. altus; ramuli plerumque glandulosi;  
perulae persistentes vel deciduae. Lamina foliorum obovata vel  
oblongo-obovata, 3–9 cm. longa, 2–4 cm. lata, apice rotundata et  
mucronata, basi obtusa, supra plerumque glauca, costa impressa,  
venis primariis utrinque 8–10 impressis, infra glabra vel basibus  
pilorum sparse costis haud glandulosa vel ad basin sparse  
glandulosa; petiolus 0.7–1.6 cm. longus, glandulosus vel eglandu-  
losus, pilosus vel glaber. Inflorescentia terminalis, 1–4 flora.  
Pedicelli 0.8–3 cm. longi, eglandulosi vel glandulis brevistipitatis  
praediti, glabri. Calyx 2–4 mm. longus, eglandulosus, margine  
raro glanduloso-ciliata. Corolla tubuloso-campanulata, 2.8–4.8  
cm. longa, atro-carmesina; lobi 5, 0.8–1.1 cm. longi, 1.3–2.1 cm.  
lati. Stamina 10, 1.5–3.4 cm. longa; filamenta glabra vel basi  
puberula. Gynoecium 1.8–4 cm. longum; ovarium conoideum,  
5–6 mm. longum, moderate vel dense glandulosum, pilosum vel  
glabrum. Capsula oblonga, 1.5–2.3 cm. longa, 8 mm. lata,  
glandulosa, pilosa vel glabra, calyce persistente.

HABIT: an erect shrub, 15–90 cm. high; branchlets usually glan-  
dular, leaf bud scales persistent or deciduous.

LEAVES: lamina leathery, obovate or oblong-obovate, 3–9 cm.  
long, 2–4 cm. broad; apex rounded and mucronate, base  
obtuse; upper surface usually glaucous, midrib grooved,  
primary veins 8–10 on each side, impressed; under surface  
glabrous or with the bases of scattered hairs, midrib  
eglandular or sparsely glandular towards the base; petiole  
0.7–1.6 cm. long, glandular or eglandular, hairy or  
glabrous.

INFLORESCENCE: terminal, 1–4-flowered.

PEDICELS: 0.8–3 cm. long, eglandular or glandular with short  
stalked glands, glabrous.

CALYX: 2–4 mm. long, eglandular, margin rarely gland-fringed.

COROLLA: tubular-campanulate, 2.8–4.8 cm. long, crimson; lobes  
5, 0.8–1.1 cm. long, 1.3–2.1 cm. broad.

STAMENS: 10, 1.5–3.4 cm. long; filaments glabrous or puberulous  
at the base.

PISTIL: 1.8–4 cm. long; ovary conoid, 5–6 mm. long, moderately  
or densely glandular, hairy or glabrous.

**CAPSULE:** oblong, 1.5–2.3 cm. long, 8 mm. broad, glandular, hairy or glabrous, calyx persistent.

No one will confuse this species (Form No. 5), an upright shrub 2–3 ft. in height, with large rounded leaves and a truss of 1–5 flowers, with the prostrate small-leaved *R. Forrestii*. At first glance the plant, as the name suggests, might indeed be a form of *R. Thomsonii*. Its affinity with *R. Forrestii* is, however, evident by the similar reticulation of the leaves. Moreover, dwarfier forms link the two species together. It will make for clarity if the variety *chamaethauma* is aligned with the species *R. chamae-Thomsonii* rather than with *R. Forrestii* because of its upright habit and larger leaves.

In *R. chamae-Thomsonii* var. *chamaethauma* and *R. Forrestii* var. *tumescens*, however, the two species join hands.

**HABITAT:**

*Tibet.* FORREST 21723—type, 20014, 21900, 22674, 22802. ROCK 11169, 22050, 22453.

*Yunnan.* ROCK 8713, 9228, 9230, 11036, 11597.

This species is represented at the Royal Botanic Garden, Edinburgh, by WARD 8341, FORREST 21900, and at Tower Court by WARD 6935 (a white-flowered form.)

***R. chamae-Thomsonii* (Tagg & Forrest) Cowan & Davidian var. *chamaethauma* comb. nov.**

Syn. *R. repens* Balf. f. & Forrest var. *chamaethauma* Tagg in Notes R.B.G. Edin., XVI, 206 (1931); The Sp. of Rhod., 514 (1930). *R. repens* Balf. f. & Forrest var. *chamaedoron* Tagg & Forrest in Notes R.B.G. Edin., XVI, 206 (1931); The Sp. of Rhod., 514 (1930).

In this variety (Form No. 4) the leaves are smaller than those of the type.

The name var. *chamaedoron* was applied to plants similar to *R. chamae-Thomsonii* var. *chamaethauma* but with a hairy leaf under surface. In cultivation, as confirmed by plants growing at Tower Court, the leaves may be hairy or glabrous.

**HABITAT:**

*Tibet.* WARD 5847—type, 5845. FORREST 19910, 21768, 21916, 22673, 22706.

*Yunnan.* FORREST 19536. ROCK 9233, 9278, 11003, 11042.

*Yunnan-S.E. Tibet.* ROCK 23017, 23498.

In cultivation at the Royal Botanic Garden, Edinburgh, the variety is represented by WARD No. 5845 and LUDLOW AND SHERIFF No. 5582, and at Tower Court by WARD Nos. 5845, 5846. 6832, FORREST No. 21768 and ROCK No. 59174.



# RHODODENDRON BUD BLAST

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## INTRODUCTION

**M**ORE than two years have passed since the subject of Bud Blast was discussed at the Rhododendron Conference, and many garden owners in the Surrey and Berkshire areas have seen the disease forging ahead in their collections. Indeed, those who have favoured the older hybrids have seen very little flower, and have experienced the frustration which the sight of plants suffering from continual setbacks engenders.

What is being done to find some solution to the problem of bud blast?

The research work needed to establish the course of transmission of plant diseases is notoriously long and arduous, and requires funds and trained staff which in times like these are necessarily devoted to food production. However, as a result of collaboration between The Royal Horticultural Society and the Imperial College Field Station, Silwood Park, Sunninghill, it has been possible to pursue a line of investigation which may be of importance. The association of the disease with the fungus *Pycnostyeanus* (*Sporocybe*) *azaleae* and the large green and red Leafhopper (*Graphocephala coccinea* Forst.) had, as far as we know, not been suspected. However, this insect, an importation from North America during the decade 1930-40, has been much in evidence in the Berkshire area during the past few years, and has attracted the attention of post-graduate students in Entomology at the Field Station.

A study of the life-history of *Graphocephala* by G. MORCOS (1948), showed that the eggs of the Leafhopper are laid in the outer scales of the Rhododendron bud, chiefly the flower buds.

The female insect makes an incision in the bud epidermis by means of a sword-like ovipositor.

Since the fungus appears to be windborne in the United States, where the disease has long been known on Azaleas (NEARING *loc. cit.*, p. 27), it is reasonable to suggest that the entrance of the parasite to flower buds would be promoted by lesions made by the Leafhopper.

The present work was designed to test this hypothesis and to attempt the control of the insect by a simple spraying routine. The work was carried out at Silwood Park, and in nearby

Rhododendron gardens. The observations on a wide range of species and hybrids were only made possible by the kind co-operation of the late MR. J. B. STEVENSON in whose unique collection at Tower Court, Ascot, we were privileged to work.

### *Materials and Methods*

The object of the investigations made by one of us (A. F. H. B.) was to determine the distribution of the eggs of the Leafhopper on the flower buds, on the bushes, and on selected species and hybrids.

Counts were made on a number of buds taken at random, and at the same time an arbitrary grading number was given according to the degree of infection by bud blast observed. Special attention was paid to factors which might be related to susceptibility of varieties, viz. size, stickiness, hairiness, or shape of buds.

Concurrently the life-history and habits of the insect have been studied in the field over two seasons.

Preliminary experiments in the control of Leafhopper were made by spraying with 0·2 per cent. D.D.T. the whole of a small but representative collection, mainly of hybrids in the garden of one of us (W. F. J.). A controlled experiment by P. T. WALKER at Silwood Park was done to obtain some indication of the killing power and length of persistence of the same D.D.T. treatment.

Spraying with Bordeaux mixture—previously recommended by DAVIS and quoted on page 28 of *The Rhododendron Year Book* for 1949, was carried out fortnightly on a group of badly infected hybrids at Westbourn, Wentworth, Surrey (MR. F. W. DOBBS) with gratifying results although severe scorching has been reported elsewhere.

### *Cycle of the Disease*

“Bud Blast” is an annual cycle of deterioration, principally affecting the flower buds of Rhododendrons and Azaleas. It is caused by the invasion of a fungus *Pycnostyeanus (Sporocybe) azaleae*. The mode of parasitism urgently needs investigation but the fungus is alleged to penetrate in the axillary region of the lower bud scales.

Patches of brown necrosis appear in October to January, and these spread in area and penetrate to the heart and base of the bud where the vascular supply is cut and the bud dies. In March and April the maximum damage is observed, the dead buds remain adherent to the plant and many become covered with short whisker-like outgrowths knobbed at the ends. These are the coremia of the fungus bearing the spores which continue the next infective cycle. We are aware of the shortcomings of



these observations. We were unable to say whether infection can pass directly through one scale to the next, or whether the hyphae travel through the vascular system at the base of the scales. Only rarely ('Doncaster') was infection of the stem for an inch or two below the bud recorded.

We were also unable fully to explain the bud death in *R. croceum* and *Wardii*, in which neither eggs of the Leafhopper nor coremia of the fungus are normally found. There is no doubt that many species and hybrids are tender to the English winter and frosting is well known. Unless the quick browning characteristic of frosted buds can be followed, the only tentative rule for separating bud blast from frosting is the presence or absence of coremia.

### *Life Cycle of the Leafhopper*

The life-history of *Graphocephala coccinea* Forst. in the field can be summarized as follows:

APRIL-MAY—*Hatching of eggs.* Eggs laid on buds the previous autumn become swollen and yellow, and hatch earlier or later according to season. First hatchings were:

1949	.	.	.	.	May 1
1950	.	.	.	.	May 4
1951	.	.	.	.	May 31

The late hatching in 1951 may result in a greatly decreased Leafhopper population for this year.

MAY-JULY—*Nymphs.* There are four nymphal or immature stages. The nymph is light yellowish or greenish, does not hop, but runs rapidly over the under surface of the current year's foliage, upon which it feeds, sucking the sap by means of the suctorial proboscis.

JULY-AUGUST—*Adults.* In 1950 at Wentworth, Surrey, the first adult Leafhopper was recorded on July 15. About  $\frac{1}{2}$ – $\frac{5}{8}$  inch in length, the insect is bright green with two red lateral stripes. *Graphocephala* is very active in sunny weather, and they feed at the veins of old and new foliage. They do not normally feed on the buds neither do their feeding punctures cause visible damage to the plant.

AUGUST-OCTOBER—*Eggs.* Eggs are laid some 2–3 weeks after emergence in groups of 5–10, often in fan-shaped sequence. They are inserted under the epidermis of the flower bud scales, and are mainly invisible from without until the bud begins to expand during development. The average number of eggs on *R. ponticum* was 28 in 1949–50 and 18 in 1950–51.

NOVEMBER–MAY—*Hibernation of Eggs*. The eggs overwinter on the buds and where the buds die, or the outer scales expand and desiccate in early varieties, there is no hatching.

#### *Field Assessment of the Disease*

A set of five arbitrary grades of bud deterioration was used to assess the disease in bud samples.

- GRADE 0. Apparently healthy—firm with no sign of blast.  
 GRADE 1. Patches of dead brown scale tissue covering less than one half of the bud.  
 GRADE 2. Brown patches covering more than one half of the bud and necrosis extending to heart of bud.  
 GRADE 3. Completely brown bud. Few coremia visible.  
 GRADE 4. Bud quite dry, covered with black coremia externally. Typical of previous years' infections.

#### *Egg Counts and Incidence of Disease*

Counts of eggs on at least 6 bud samples taken from each of 32 species and hybrids of *Rhododendron* were made in January 1950. The results were analysed statistically in respect of the following bud characters.

1 SIZE	Medium buds bore the highest population.
2 STICKINESS	No significant effect on egg numbers.
3 HAIRINESS	No significant effect.
4 COLOUR	Purple buds receive as many eggs as green buds.
5 DEGREE OF ADPRESSION OF SCALES	Possibly more eggs on firmer compact buds.

It would appear that the firm globose medium buds of hybrids like *R. 'Doncaster'* are more susceptible to oviposition than the larger loose leafy buds of *R. auriculatum* or *R. Griersonianum*.

The degree of bud blast shown by the bud samples was then estimated and the total incidence of the disease on bushes of each sampled variety was estimated by the following arbitrary system:

— nil	++ medium
+ light	+++ heavy

The results of the survey are shown in Table I.



TABLE I  
RECORD OF EGG COUNTS  
AT TOWER COURT, JANUARY 1950

Species or Hybrid	Size of bud	Number of eggs on each bud	Degree of blasting observed
<i>R. auriculatum</i>	large	0, 0, 0, 0, 0, 0	—
<i>R. Griersonianum</i>	large	0, 0, 0, 0, 0, 0	—
<i>R. 'Polar Bear'</i>	large	0, 0, 0, 0, 0, 0	—
<i>R. 'Argosy'</i>	large	0, 0, 0, 0, 1, 0, 0	—
<i>R. Falconeri</i>	large	0, 0, 0, 0, 0, 0	—
<i>R. ficolacteum</i>	large	0, 0, 0, 0, 0, 0	—
<i>R. croceum</i>	medium	0, 0, 0, 0, 0, 0	all frosted
<i>R. Wardii</i>	medium	0, 0, 0, 0, 0, 0	all frosted
<i>R. diaprepes</i>	large	0, 0, 0, 0, 0, 0	—
<i>R. artoquameum</i>	small	0, 0, 0, 0, 0, 0	—
<i>R. (Azalea) Albrechtii</i>	small	0, 0, 0, 0, 0, 0, 0, 0	+ +
<i>R. (Azalea) atlanticum</i>	small	2, 0, 0, 0, 1, 2, 0, 0, 0	—
<i>R. 'Queen Souriya'</i>	medium	0, 0, 3, 1, 0, 0, 0	—
<i>R. racemosum</i>	small	1, 0, 0, 0, 1, 2, 2	— (frost)
<i>R. 'Blue Tit'</i>	small	1, 1, 5, 1, 0, 1, 0, 3, 1, 2	+ ? (frost)
<i>R. oreodoxa</i>	medium	8, 1, 21, 13, 12, 14, 2	—
<i>R. repens</i>	small	0, 0, 13, 5, 5, 4, 2, 3	+ ? (frost)
<i>R. selense</i>	small	1, 21, 1, 3, 8, 16	—
<i>R. leucaspis</i>	small	15, 15, 7, 16, 13, 12, 8, 16	—
<i>R. telopeum</i>	small	0, 0, 4, 13, 1, 3	—
<i>R. 'Earl of Athlone'</i>	medium	44, 42, 41, 24, 39, 31, 27	+ +
<i>R. 'Helene Schiffner'</i>	medium	5, 0, 2, 0, 1, 2, 10	+ (dark bud)
<i>R. (Azalea) japonicum</i>	small	12, 16, 17, 12, 11, 13, 15, 9	+ +
<i>R. phaedropum</i>	small	44, 4, 24, 27, 23, 11, 48	+ + + (all grade 1)
<i>R. 'Lady Primrose'</i>	medium	34, 41, 43, 60, 57, 46	+ + + (all grade 1)
<i>R. Beanianum</i>	medium	32, 37, 6, 40, 3, 16, 30, 11	+ + +
<i>R. 'Doncaster'</i>	medium	34, 18, 23, 28, 22, 39, 4	+ + + (all grade 2)
<i>R. 'Cynthia'</i>	medium	32, 53, 39, 54, 56, 30	+ + + (all grade 2)
<i>R. 'Bagshot Ruby'</i>	medium	52, 52, 47, 44, 45, 52, 45	+ + + (all grade 2)
<i>R. 'G. A. Sims'</i>	medium	54, 42, 47, 59, 45, 38, 34	+ + + (all grade 3)
<i>R. ponticum</i>	medium	Average per bud, 28	+ + +

N.B.—“Frost” indicates winter death without fungal coremia.

This list suggests that bud blast is directly associated with Leafhopper, or that there is a common factor in the bud which is favourable both to disease and insects. We believe the first hypothesis to be more reasonable in the light of our investigations.

It has been possible to supplement the 1950 egg counts with visual observations on the incidence of bud blast at Westbourn,

Wentworth (MR. DOBBS), in May 1951. The information gained is summarized in Table II.

TABLE II

SPECIES OR HYBRID	REMARKS
(a) Free from blast or eggs	
<i>R. fulvum</i> . . . . .	heavy dark brown indumentum
<i>R. fictolacteam</i> . . . . .	heavy indumentum
<i>R. Thomsonii</i> . . . . .	
<i>R. lutescens</i> . . . . .	
<i>R. campylocarpum</i> . . . . .	
<i>R. discolor</i> . . . . .	long sheathing bracts
<i>R. cinnabarinum</i> . . . . .	
<i>R. barbatum</i> . . . . .	very sticky bud
<i>R. yunnanense</i> . . . . .	small globular bud
<i>R. Augustinii</i> . . . . .	
(b) Eggs present with little or no blast	
<i>R. neriiflorum</i> . . . . .	
<i>R. 'Cynthia'</i> . . . . .	some healthy growth buds with eggs
<i>R. 'Gibraltar'</i> . . . . .	
<i>R. 'Loderi White Diamond'</i> . . . . .	eggs shed on early flowering
<i>R. 'Dr. Stocker'</i> . . . . .	about 20 per cent. blast
(c) Highly infected with blast. Eggs present	
<i>R. 'Fastuosum flore pleno'</i> . . . . .	estimated 75 per cent. blasted
<i>R. 'Britannia'</i> . . . . .	90 per cent. blasted
<i>R. ponticum</i> var. <i>cheiranthifolium</i> . . . . .	nearly 100 per cent. blasted
<i>R. 'Bodartianum'</i> . . . . .	only 20 flowers on large tree
<i>R. 'Pink Pearl'</i> . . . . .	nearly 100 per cent. blasted
<i>R. 'Prof. Hugo de Vries'</i> . . . . .	nearly 100 per cent. blasted
(d) "Bud Blast" present without eggs	
<i>R. croceum</i> . . . . .	damaged by cold
<i>R. Wardii</i> . . . . .	damaged by cold
<i>R. Souliei</i> . . . . .	frosting frequent
<i>R. repens</i> . . . . .	eggs sometimes present

It must be stressed that such results are incomplete and purely tentative, dependent as they are on only 2 seasons' observations.

### *Control of Bud Blast*

Hand picking of dead buds as they appear, combined with regular spraying with weak Bordeaux mixture (2-2-50) has been recommended by DAVIS in America.

(a) *Control of the Fungus.* Fortnightly spraying from June-October with a proprietary Bordeaux mixture has been done in two areas. The results on one row of bushes of 'Bagshot Ruby' have been striking, and one bush of 'Doncaster' a most susceptible hybrid, bore an almost full crop of flowers for the first time in five years. However, in another test, severe foliage drop was experienced, and the use of copper fungicides at normal strength should be avoided until more work has been done upon them.



Organic mercury fungicides might well be tried during the coming season on selected bushes.

(b) *Control of the Leafhopper.* Since invasion of garden hybrids takes place from surrounding bushes of *R. ponticum* in many areas, the only control of the insect which seems worth while must be done during the period of egg laying (August–October).

Preliminary experiments at Silwood Park by P. T. WALKER indicate that *Graphocephala* adults are readily killed by D.D.T. sprays at ordinary commercial rates (0.1 per cent.—0.2 per cent.) and that treated foliage remains toxic to the Jassid for periods of 2–3 weeks.

The only field trial so far done, at Wentworth, Surrey, was to spray hybrids twice (August 5 and 20, 1950) with 0.2 per cent. D.D.T. using a wettable powder.

Although egg laying was not completely prevented, a marked decrease in bud blast, increased flowering and more immediate spring growth were recorded. At Tower Court, Ascot, MR. KEIR expressed satisfaction as to the results of similar spraying of a number of chronically infected bushes.

Since there appears to be no danger of foliage scorch with D.D.T. provided that formulations approved under the Ministry of Agriculture approval scheme are used, it may be recommended tentatively that isolated susceptible bushes be sprayed every fortnight from August 1 until the end of the Leafhopper flight in late October.

These admittedly *ad hoc* trials are promising enough to point to future development of combined insecticide and fungicide sprays which can easily be applied to the outer foliage by motor or hand sprayers.

It is hoped that this paper will have been of some assistance to afflicted growers of *Rhododendron*, and will at the same time have pointed to the lacunae in our knowledge of the mycology of the disease.

It is most desirable to continue with a combined study of both aspects of bud blast to enable control measures to be based upon sounder fundamental knowledge.

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# THE DEVELOPMENT OF SOME HARDY HYBRID RHODODENDRONS FROM *RHODODENDRON CAUCASICUM*

By FREDERICK STREET

IT is largely due to the rugged individualism of the nineteenth-century nurserymen that there are no records of the breeding of the old hardy hybrids. If they kept any records they were never published. Probably there were none—except the result of many years' work in the brain of the worker. Rivalry between the commercial raisers of the Victorian era was intense. The discovery of a good seed or pollen parent was a matter of first importance and a secret to be closely guarded.

There are some who say that there was no record because there was no plan. They say that breeding was haphazard—depending on the bees or the whim of the moment. Yet, when many of these hybrids are seen in all conditions, in all stages of flower and growth, in all types of weather, it is possible to trace a strong family likeness. It is essential for a commercial grower of Rhododendrons to be able to distinguish the different varieties by habit and foliage as well as by flower. And it is the flouting of this knowledge by the plants themselves which often gives a clue to their evolution. It is particularly difficult to distinguish between different varieties when they have first made their young growth. Often, at this time, one can be wrong in naming a variety because it looks exactly the same as another. Or it may be when the plants are very young that the similarity can be seen, or when the flower is just breaking bud, or in the habit of a very old plant. It is often there—a family likeness which points to a plan, a strong resemblance which suggests an orderly progression rather than a series of lucky chances.

This progression was emphasized for me last autumn when I obtained some plants of *Rhododendron caucasicum pictum* from a nursery in the North of England. Even in foliage I was at once impressed by the similarity of this variety to R. 'Prince Camille de Rohan.' This was of great interest to me for I had often noticed many points of likeness between—

- R. 'Prince Camille de Rohan'
- R. 'Chevalier Felix de Sauvage'
- R. 'Corry Koster'
- R. 'Mrs. G. W. Leak'
- R. 'Mrs. Furnival' (Fig. 15)



The characteristics common to all are:—

1. *Foliage*. The leaves are dark green and leathery. In shape they are lanceolate or broadly lanceolate with margins revolute.

2. *Habit*. The habit is compact, possibly a little stiff. The growth is angular forming a round bush which seldom becomes straggly. This is most marked in the older varieties with the only exception of 'Corry Koster.'

3. *Flowers*. The flowers are all frilled to a greater or lesser degree. They are all pink in colour with a prominent dark blotch.

4. *Flowering period*. All these varieties are early mid-season (end April—1st week May)

5. *Propagation*. All layer well and root quickly.

As I have been interested in this particular series of hybrids for some time I thought it might be possible to find out a little more about the breeding with the help of the additional clue of *R. caucasicum pictum*. I felt that something must have been written about them at some time. Accordingly, I spent one pleasant afternoon in the R.H.S. Library with the Index to the JOURNAL and Proceedings and the old copies of *The Gardeners' Chronicle*, and a second afternoon with the two volumes of J. G. MILLAIS' book on Rhododendrons. They were certainly two pleasant afternoons—the side tracks were delightful and opened up some charming and interesting vistas. But the main line of my investigation was as blank as a factory wall. After following every reference to these six Rhododendrons in the Index to the JOURNAL and looking through the indices of *The Gardeners' Chronicle* from 1842 to 1920, I could find nothing to indicate the other parents used in raising the older of these hybrids. The only tangible result of my investigation was that the species *caucasicum* was listed in LOUDON'S *Encyclopaedia of Gardening* for 1822, that it was introduced in 1803 and that it withstood the hard winter of 1908–09 at Harrow Weald! The only mention of any of the hybrids was that 'Prince Camille de Rohan' was raised from *caucasicum* by the Belgian nursery firm—VAN HOUTTE. This, apart from the pleasure of handling old books, was the total of my afternoon's work.

The parentage of R. 'Corry Koster' is given by MILLAIS as 'Doncaster' × *Griffithianum*—the same cross as 'Goldsworth Crimson,' 'J. J. de Vinck' and 'The Don.' It does not need very great insight or, for that matter, knowledge of Rhododendrons to see that error has crept in here somewhere—either in the form of a bee or a slip of the pen. For there is no trace of either 'Doncaster' or *Griffithianum* in 'Corry Koster.'

Although there are no contemporary records of the breeding



of these hybrids it is still interesting to compare their points of difference and similarity.

*R. caucasicum pictum* has the typical *caucasicum* hybrid foliage—very similar to that of 'Handsworth White.' The habit is compact and geometrical—that is, the growth is regular, angular and a little stiff. The flowers, opening at the end of April, are pink in colour (crushed strawberries and cream with rather more cream than strawberries) with a prominent dark blotch. They are attractively frilled.

R. 'Prince Camille de Rohan' is next in order of seniority. As I discovered from my research, this hybrid was raised from *caucasicum* by MESSRS. VAN HOUTTE of Belgium. The foliage is a little less leathery than that of *caucasicum pictum*. The flowers are a paler pink, the blotch is more pronounced and they open about a week later. The individual flower and truss are much larger than those of *caucasicum pictum* but they are a little less frilled.

R. 'Chevalier Felix de Sauvage' is very much the same as R. 'Prince Camille de Rohan' in foliage and habit. It was this resemblance that first set me thinking about the breeding of the older hybrids. It also "made my name" with my staff when I returned to the nursery after the war. The exact difference (in foliage and habit) is difficult to define. 'Chevalier Felix de Sauvage' is perhaps a little more coarse, a little broader in the leaf, a little stouter in the wood. We were lifting some old plants in the nursery one day shortly after the war and I found a plant of 'Chevalier Felix de Sauvage' labelled 'Prince Camille de Rohan.' I removed the label and replaced it with one bearing the correct name. My foreman, who was with me at the time, looked a little doubtful and he and the other men were not entirely convinced until they saw the flower. It would be unwise to say that 'Chevalier Felix de Sauvage' is better than 'Prince Camille de Rohan' for that is a matter of taste. The colour is certainly darker and richer. The flowers are more frilled—even more than those of *caucasicum pictum*. The colouring is very similar to that of 'Viscount Powerscourt'—rich crimson with a prominent dark eye. In foliage and habit it is a little better than 'Prince Camille de Rohan.' If you like your hardy hybrid Rhododendrons to be rich and warm and gay then 'Chevalier Felix de Sauvage' is the choice. If you prefer a more quiet, more delicate shade then 'Prince Camille de Rohan' is better.

Rhododendron 'Corry Koster' is something of a mystery. The parentage—'Doncaster'  $\times$  *Griffithianum*—given by MILLAIS is, without doubt, a mistake. There is no resemblance in this plant to either of these two parents—a tall-growing shrub of



rather ungainly habit with the typical lanceolate leaves with revolute margins. The flower has all the family likeness—pink with a dark eye, frilled petals and opening in late April. The essential point of difference between 'Corry Koster' and the other five *caucasicum* hybrids is that it is a tall, lanky grower (similar to 'Mrs. Lindsay Smith' and 'Sappho') which is apt to lose the lower leaves, while the others are all bushy compact plants. The general habit and behaviour of the plant would suggest 'Chevalier Felix de Sauvage'  $\times$  'Mrs. Lindsay Smith' as a possible parentage—but that is only a guess. However, there is a quality about 'Corry Koster' which is lacking in the other hybrids and which marks a definite step forward. The colour is better—it lacks the pale, washed out look of 'Prince Camille de Rohan' and it is not flamboyant as is 'Chevalier Felix de Sauvage' and the whole effect is enhanced by the frilled petal. So 'Corry Koster' remains a little different and very much the same.

Rhododendrons 'Mrs. G. W. Leak' and 'Mrs. Furnival' are very close in many ways. They have the family likeness of leathery, lanceolate, margin revolute, leaves. The flowers are large and are described officially as—"Pink with a brown purple blotch" ('Mrs. G. W. Leak') and "Light pink with sienna blotch" ('Mrs. Furnival'). They lack the frilled petal which is not so prominent in these as in the other hybrids from which they are so clearly descended. The texture and the size of the flower, and the fact that both are just a little tender when young, points to a fairly strong influence of *Griffithianum*. 'Mrs. G. W. Leak' was raised by M. KOSTER & SONS of Boskoop, Holland, and 'Mrs. Furnival' was raised by ANTHONY WATERER Junior and introduced by the Knaphill Nursery Company Ltd. 'Mrs. Furnival' received an A.M. in 1933 and 'Mrs. G. W. Leak' was given an F.C.C. in 1934. It was not until 1948 that 'Mrs. Furnival' was honoured with the F.C.C. I remember seeing a truss of 'Mrs. Furnival' at the Rhododendron Show of 1948 and it was particularly good that year.

When comparing these two hybrids it must be remembered that every variety, in fact every plant, like every dog, has its day. This is particularly so with Rhododendrons. One year  $x$  will be good and  $y$  will be a failure. The next year  $y$  will flower worthy of the stars and  $x$  will be "Y" or "Z". It would be impossible to legislate for this as it would mean keeping detailed records of the flowering capacity, colour, shape of truss, length of time in flower, damage by rain and frost for each plant for each year at the Trials over a period of five to ten years. (I know one certain winner under these conditions!)

I must confess to having only a superficial knowledge of



R. 'Mrs. Furnival.' I do not grow this variety. It is a little elusive and difficult to come by. I do not know it intimately—in all stages of growth from a layer on a stool, from a one year graft to a six foot specimen, in better weather and worse, in sickness and in health, in rich soil and in poor. My strongest memory is at the 1948 Rhododendron Show where I saw it among a group of rather indifferent hardy hybrids standing out like a good deed in a naughty world. There was about it an indefinable air of quality which gave it a little extra something that 'Mrs. G. W. Leak' hadn't got.

Although these two hybrids are different, I should find it hard to distinguish between them; but there is not the same very close similarity as between R. 'Professor Hugo de Vries' and R. 'Countess of Derby.'

'Mrs. G. W. Leak' and 'Mrs. Furnival' are the latest from the *caucasicum* stable and they are very beautiful. It must be said that they are by no means as hardy as *caucasicum pictum* but their beauty repays a little extra care. If I were to make a guess at the parentage I would say that 'Mrs. G. W. Leak' was very probably raised from 'George Hardy' (Manglesii) and 'Chevalier Felix de Sauvage.' The *Griffithianum* in 'George Hardy' giving the larger flower and quality, together with a more tender constitution, and eliminating much of the frill. MR. PETER KOSTER, who raised this plant, followed the lead of the late JOHN WATERER in using 'George Hardy' widely as a seed parent. His hybrids 'Betty Wormald' ('George Hardy' × unknown red) and 'Mrs. Charles Pearson' ('George Hardy' × *catarbiense*) are two fine examples.

It is a long way from *caucasicum pictum* to 'Mrs. Furnival' but the family likeness is constant:

1. *Foliage*. Dark green, leathery, lanceolate or broadly lanceolate with margins revolute.

2. *Habit*. Bushy compact "geometrical" ('Corry Koster' is the exception).

3. *Flowers*. Pink with dark blotch, frilled. ('Mrs. Furnival' and 'Mrs. G. W. Leak' have lost much of the frill.)

4. *Flowering Period*. Late April to early May.

5. *Propagation*. All layer well and root quickly.

So much, in detail, for one family of hybrids. There are many more and three that I can think of are:

'Mrs. E. C. Stirling'—'Ajax'—'Jupiter'—'Philip Waterer'—'Kate Greenaway'—'Amy'—'Starfish.'

'Madame Carvalho'—'Gomer Waterer'—'Donald Waterer'—'Eileen.'



'Garibaldi'—'Marquis of Waterford'—'Bagshot Ruby'—  
'Princess Elizabeth'—'Mars'—'Vulcan.'

The connection between the varieties in the last series is indelibly printed on my mind. When I was working on one of the famous Surrey Rhododendron nurseries I once suggested to the Rhododendron foreman (a man with thirty-five years' experience) that he had made a mistake in lifting six Rhododendrons of different sorts. As he dug up a plant of 'Marquis of Waterford' I remarked that he had already lifted 'Bagshot Ruby' (the foliage and habit of these two are, at times, almost identical). His comment was unprintable. But he later relented, forgave my temerity, and showed me the difference between the foliage of 'Marquis of Waterford,' 'Bagshot Ruby,' 'Princess Elizabeth' and 'Mars'—and there is very little indeed.

Although it is interesting to delve into the past, speculation about the future is even more interesting. The possibilities of using the many beautiful species now available with some of the old hybrids to give hardiness to the one and quality to the other are immense. This year I have had the courage to start. I hope that others are doing the same—so that one day we may have the beauty of the more tender species available to the poor unfortunates, such as myself, who suffer, not always in silence and not alone, in a frost pocket.

# THE RHODODENDRON SHOW

May 1 and 2, 1951

By N. K. GOULD

ONCE again the Rhododendron Show was a great success. The number of entries in the competition classes, and the number of competitors, was higher than on any previous occasion, and the quality of the flowers was very high. The eighty-four classes, together with nine non-competitive groups, filled the greater part of the New Hall. The Society was greatly honoured by a visit by Her Majesty the Queen on the morning of the second day; and very many Fellows and other visitors inspected the exhibits closely during the whole period of the Show.

## NON-COMPETITIVE GROUPS

A large, tiered, wall exhibit of cut flowers sent by THE COMMISSIONERS OF CROWN LANDS from the gardens at Windsor Great Park occupied an extensive space under the clock, and was awarded the Silver-gilt Flora Medal. In the centre was a large vase of 'Eleanore,' surrounded by bold bunches of 'Gladys' var. 'Rose,' *fictolacteam* and *coriaceum*. At other points there were conspicuous masses of *Augustinii*, *Albrechtii*, *reticulatum* and *Thomsonii*, as well as such worthy hybrids as 'Dr. Stocker' and 'Cornish Cross.' Around and beneath these, flowers of every size and colour were to be found, and the front was furnished with dainty specimens of 'Yellow Hammer,' *microleucum*, *myrtilloides*, *fimbriatum* and many others.

The SUNNINGDALE NURSERIES were awarded the Silver-gilt Banksian Medal for a large floor exhibit with some tall specimens of *Augustinii* grouped about the centre. Around these there were large plants of *Wardii*, *basilicum*, *campylocarpum* var. *elatum* and *Schlippenbachii*. A feature at one end of the group was a large bush of *taronense* carrying some very good blooms. The margins of the exhibit were finished with masses of small-flowered species, such as *russatum*, and a variety of hybrids of a similar character.

The exhibit staged by MESSRS. J. WATERER, SONS & CRISP, LTD., which won the Silver-gilt Banksian Medal, consisted largely of big specimen plants of a limited number of hybrids. In the centre stood 'Rose Perfection' fully nine feet tall. 'Handsworth White' was full of blossom, and the bushes of 'Fastuosum flore pleno,' 'Pink Pearl,' 'Blue Peter,' 'Cynthia' and 'Mrs. G. W. Leak' were in perfect condition. Around the bases of these plants



an effective groundwork was formed of pink, red and yellow Azaleas in many varieties.

MESSRS. HILLIER & SONS put up a very long and rather flat-tiered wall exhibit comprising an extremely large selection of species and hybrids, all represented by cut sprays. Some of the more prominent were 'Naomi Exbury Variety,' 'Karkov,' 'Ibex,' 'A. J. Ivens,' 'Dr. Stocker' and 'Luscombei.' Some other very excellent vases of 'Bodartianum,' *campylocarpum*, 'Carita' and 'Barbara' filled the centre, and at the ends massed Azaleas made a bright display. The Silver Flora Medal was awarded for this group.

MESSRS. SANDERS (ST. ALBANS) LTD. arranged a large, circular, domed mass of Belgian Azaleas. All the specimens were superbly grown and every one was heavily laden with flowers covering a wide colour range, and all were double. It was unfortunate that the fiery-red 'Apollo' and the purplish-red 'Benvenuto Cellini,' of which generous use was made, were placed so close together as to create a most violent colour discord. This exhibit was awarded the Silver Flora Medal.

A very interesting exhibit, arranged by the WINKFIELD MANOR NURSERIES, LTD. on staging a little above floor level, gained the Silver Flora Medal. A spreading bush of the hybrid 'Quaker Girl' (*hyperythrum* × 'Avalanche'), occupying the centre, was effective, although the influence of the species-parent was not apparent. To mention *Williamsianum*, *Hanceanum*, *russatum*, *calostrotum*, 'Racil' and 'Spinulosum' is sufficient to suggest the high quality of the material used in the body of the group.

The exhibit staged by MESSRS. WALLACE & CO., to which the Silver Banksian Medal was awarded, was composed of Azaleas, mostly of the evergreen section, charmingly arranged with Japanese Maples in young leaf. In the centre the stronger red, orange and yellow shades predominated, while at the ends the white, pink and mauve varieties were used exclusively.

Flora Medals were awarded to LORD DIGBY for a table group of cut sprays of a large variety of different flowers, but unfortunately not labelled; and also to MR. FREDERICK STREET, for a floor group in which shapely young specimens of some of the older hardy hybrids were arranged with Camellias and hybrid Brooms.

#### COMPETITIVE CLASSES

This year the competitive classes numbered eighty-four, this number being higher than that of any previous year. The number of entries was fifty per cent. more than in any year since the war, and it was most encouraging to the organizers to note that the number of exhibitors showed a similar increase.



Class 1, for one truss of each of eight species is always remarkable for high quality and variety, and this year it was well up to standard. From LORD ABERCONWAY and THE NATIONAL TRUST came the first prize entry, consisting of *neriiflorum*, *sidereum*, a fine pink *arboreum*, *Hodgsonii*, a superb truss of *calophytum*, wide-flowered and dark-blotched, *campanulatum*, *Wardii* and *fictolacteum*. MR. DE ROTHSCHILD's exhibit gained second place, and here were a majestic truss of *rex*, a similar pink-flushed *fictolacteum*, *Falconeri*, blood-red *arboreum*, a delicate blue *campanulatum*, *habrotrichum*, *pseudochrysanthum*, and an intense maroon *gymnocarpum*. The third place was taken by SIR HENRY PRICE's collection of *Falconeri*, *fictolacteum*, *habrotrichum*, a translucent rose *arizelum*, *haemaleum*, *haematodes* and a very pretty primrose *lacteum*. Five other exhibitors contributed entries, the whole making a very imposing array.

Class 2 required one truss of each of three species, and here again some fine specimens were to be seen. The EARL OF STAIR won the first prize, with a rich yellow *lacteum*, a glowing blood-red truss of *Delavayi*, and a good blue *campanulatum*. For the second prize COL. R. S. CLARKE put up *basilicum*, *lacteum* and a richly-coloured *strigillosum*. THE COMMISSIONERS OF CROWN LANDS were third with *campylocarpum*, *Thomsonii* and *basilicum*. The eight other entries contained some equally interesting plants.

Class 3, for one truss each of eight different hybrids, attracted some beautiful entries. A distinguished group, consisting of 'Cornish Cross,' 'Carita,' 'Mariloo,' 'Jason' in a paler tint of cream than the preceding, the lovely flattish primrose 'Prelude,' 'Matador,' 'Querida' and 'Gaul,' was set up by MR. E. DE ROTHSCHILD to gain first place. This was closely followed by LORD ABERCONWAY's 'Penjerrick,' 'Cardinal,' 'Choremia,' 'Androcles,' 'Bartia,' 'Gretia,' an un-named hybrid from 'Cornish Cross'  $\times$  'Kewense' and another un-named flower. Another entry from Exbury, placed third, consisted of 'Cornish Cross,' 'Penjerrick,' 'Mariloo,' 'Carita,' 'Yvonne' var. 'Pride,' 'Jason,' 'Orestes' and 'Gaul.' There were five other entries.

Three hybrids, one truss of each, were invited for Class 4, and twelve exhibitors assisted to provide a colourful and interesting display. The first prize was awarded to COL. CLARKE for 'Sussex Bonfire,' of glowing currant red, 'Hermione' of paler shade, and the cream 'Elsae.' The HON. JOHN McLAREN won second place with 'Cornish Cross,' 'Coral Star' and the large white *Griffithianum*  $\times$  *calophytum*. For the third place MAJOR-GENERAL E. G. W. W. HARRISON exhibited 'Barclayi' var. 'Robert Fox,' 'Penllyn,' and an un-named hybrid from *decorum*  $\times$  *grande*.

The McLaren Challenge Cup, awarded in Class 5 for the best



single truss of a species, was won by ADMIRAL WALKER-HENEAGE-VIVIAN with a splendid six-flowered truss of *Lindleyi* in perfect condition. MR. R. O. HAMBRO put up a beautiful example of *sino-grande* which won the second prize; the third went to MR. R. STRAUSS for a good pale rose *fictolacteum*, and a special fourth was awarded to SIR HENRY PRICE for a clear, deep sulphur *lacteum*. Among the many other entries the following were conspicuous: LORD ABERCONWAY'S *Hodgsonii*, the DUCHESS OF MONTROSE'S *Macabeanum*, and a bold specimen of *rex* from THE CROWN LANDS.

There was keen competition in Class 6, for a truss of any hybrid. The Loder Challenge Cup for the best one was awarded to MR. E. DE ROTHSCHILD for a good truss of 'Fortune,' although not quite equalling the superb example which gained the same award at the Conference Show of 1949. Two of LORD ABERCONWAY'S entries, 'Choremia' and *Griffithianum* × *calophytum*, filled the other two places. Among other entries in this class we noticed particularly MRS. STEVENSON'S clear yellow 'Damaris,' LORD DIGBY'S 'Lady Digby,' and the beautiful 'Gladys' var. 'Rose' from THE CROWN LANDS.

Class 7 required one truss or spray of each of six hybrids raised by, or in the garden of, the exhibitor. MR. E. DE ROTHSCHILD'S group of 'Querida,' 'Queen of Hearts,' 'Idealist,' 'Carita,' 'Fortune' and 'Janet' was judged to be the best, and thus won for the exhibitor the Crosfield Challenge Cup. Both second and third places were filled by entries from LORD ABERCONWAY. The second contained 'Edusa,' 'Aspansia,' 'Elizabeth,' 'Alcesta,' 'Camilla' and 'Bluebird'; in the third were 'Bartia,' 'Choremia,' 'Laura Aberconway,' 'Barclayi' × 'Penjerrick,' 'Androcles,' and 'Barclayi' × *calophytum*. There were six other entries.

There was pleasing variety in Class 8, where a single branch or spray of one species was asked for. LORD ABERCONWAY won the first prize with a large spray of a fine heliotrope *rubiginosum*. SIR GILES LODER brought a branch of a pale blush *Souliei* for the second place, and the same exhibitor's *argyrophyllum*, represented by an upright branch carrying no fewer than twenty dense trusses, was third. The HON. JOHN MCLAREN was awarded fourth prize for a very pretty, deep rose-pink *rhaibocarpum*. The other entries included *Searsiae* from MRS. DOUGLAS GORDON, *adenopodium* from SIR HENRY PRICE, *haemaleum* from LORD DIGBY, and *gymnocarpum* from MR. E. DE ROTHSCHILD.

In Class 9, for a truss of *arboreum* or its subspecies, the first place was occupied by MR. E. DE ROTHSCHILD'S fine truss of blood-red *arboreum*, closely followed by LORD ABERCONWAY'S pink form of the same species. In the third place was a nice white *cinnamomeum*, and in the fourth a pink *arboreum* from the EARL OF STAIR. Most



of the other thirteen entries were of the pink or red forms of *arboreum*. In the next class, for different species of the Series Arboreum, a beautiful deep pink *argyrophyllum* entered by MRS. STEVENSON won the first prize, and the same species from LORD ABERCONWAY was placed third, and the second place was occupied by a rich heliotrope *niveum* entered by SIR GILES LODER. The Series Barbatum was well represented in Class 11 by fifteen entries; COL. CLARKE's deep red *strigillosum* being adjudged the best. The other prize-winning flowers were SIR GILES LODER's *habrotrichum*, ADMIRAL WALKER-HENEAGE-VIVIAN's *vesiculiferum*, with neat rose, heavily blotched bells, and a vivid red *barbatum* from LORD ABERCONWAY.

In Class 12, for a truss or spray of the Series Boothii, LORD ABERCONWAY's exhibit of the saffron-yellow *megeratum* headed the prize-list, and was followed by two distinct forms of *tephropeplum*, a large purplish-rose one from COL. CLARKE, and a pink one from ADMIRAL WALKER-HENEAGE-VIVIAN. There were sixteen entries in Class 13, for a truss of the Series Campanulatum, and MR. J. W. HOWLETT's first prize exhibit of the type species was of a large and particularly clear blue form. The second prize was awarded to LORD ABERCONWAY for an attractive primrose-coloured *lanatum*. A specimen of *Wallichii* from LORD DIGBY occupied the third place.

Class 14, for a spray of the Series Cinnabarinum, was poorly supported, but the quality was good. Both LORD ABERCONWAY and SIR HENRY PRICE selected *concatenans*, winning the first and third prizes, respectively. MR. E. DE ROTHSCHILD won the second with a good spray of *cinnabarinum* var. *blandfordiae* *florum*.

In Class 15, *Falconeri* was represented by fourteen entries showing many slight variations. MAJOR HARDY's truss of clear primrose flowers was given first place; MR. E. DE ROTHSCHILD's tall and compact specimen followed, and a form with nearly white, frilly bells from MRS. STEVENSON was third. Class 16, for *fictolac-teum*, attracted an even larger number of competitors. MR. STRAUSS entered two similar specimens with crimped white flowers which were placed first and third. The HON. JOHN MCLAREN had a pretty, blush-pink form in the second place, and a fourth prize was awarded to a very similar example from THE CROWN LANDS. Class 17 required a truss of any species of the Series *Falconeri* except the two already provided for. There were seventeen entries, all of high quality (although several appeared inaccurately labelled), and they must have presented a difficult task to the judges. MR. HAMBRO had a fine truss of *Hodgsonii* in the first place, and LORD ABERCONWAY a specimen of the same species in the third. MRS. STEVENSON's *rex* was placed between the two, and the fourth place was taken by SIR HENRY PRICE's *arizelum*.



In Class 18, for a truss of *Griffithianum*, there were but two entries. The DUCHESS OF MONTROSE showed a beautiful specimen with large pink, widely-expanded bells; ADMIRAL WALKER-HENEAGE-VIVIAN submitted a tall truss of pure white flowers. The next class was open to any other Rhododendron of the Series Fortunei. There were a dozen entries, and of these LORD ABERCONWAY'S large white, red-stalked *calophytum* won the first prize. The other prize-winning entries were a neat blush-pink form of *decorum* from MRS. STEVENSON, a pale mauve-pink, unspotted *vernicosum* from COL. CLARKE, and a fine truss of a rather small-flowered pink *Fortunei* shown by LORD DIGBY.

A most attractive truss of *niphargum*, with neat shining foliage and white, crimson-blotched flowers, won the first prize for LORD ABERCONWAY in Class 20, for a truss of any species of the Series Fulvum. MR. HUTCHINSON and MR. DE ROTHSCHILD both showed white forms of *fulvum*. In Class 21, for a truss of any species of the Series Grande, the first place was taken by a fine tall truss of the type species with clear ivory-white flowers, from ADMIRAL WALKER-HENEAGE-VIVIAN. An almost equally fine specimen of the same species, from MRS. ROGERS, was second, followed by a truss of *sinogrande* with splendid foliage, from MR. HAMBRO.

In Class 22, for a truss of any species of the Series Irroratum, SIR HENRY PRICE'S fine specimen of *irroratum*, with wide white bells, was selected from the ten entries for first prize. LORD ABERCONWAY won the second with a pink-flushed and more distinctly spotted form of the same species. The third place was occupied by LORD DIGBY'S *tanastylum*, with long, narrow leaves and deep rose flowers. COL. CLARKE and SIR HENRY PRICE won the first and second prizes in the following class with very good, full trusses of deep sulphur-yellow *lacteam*. The specimen of *Trailianum* from MR. E. DE ROTHSCHILD, which won the third prize, had crimson-blotched white flowers and leaves covered beneath with heavy, cinnamon-coloured indumentum. ADMIRAL WALKER-HENEAGE-VIVIAN supplied the only entry in Class 24, for a truss of the Sub-Series Megacalyx, a very attractive four-flowered inflorescence of *Lindleyi*.

In Class 25, for one truss of the Series Maddenii other than the Sub-Series Megacalyx, there were six entries. LORD ABERCONWAY entered *inaequale*, white-flowered with orange-yellow basal blotch, and this was given the first place. LORD STAVORDALE'S *Johnstoneanum* was second, and MR. E. DE ROTHSCHILD'S pale rose *ciliatum* third.

A richly coloured truss of *haematodes* won the first prize for MR. E. DE ROTHSCHILD in Class 26, for any species of that Sub-Series, and the same species was shown by LORD ABERCONWAY for third



place. The second prize was awarded to SIR HENRY PRICE for a truss of *chaetomallum*. In the following class, for species of the Sub-Series Neriiflorum, neat, bright specimens of *euchaïtes* won first and third prizes for ADMIRAL WALKER-HENEAGE-VIVIAN and LORD ABERCONWAY, and SIR HENRY PRICE's *sperabile* was second. There were several other entries of *neriiflorum* and *euchaïtes*.

In Class 28, requiring one truss of *aperantum* the species was represented by two entries only, namely a form with neat, tubular blood-red bells from LORD ABERCONWAY, and a pale rose and white form from COL. CLARKE. There was far more competition in the following class, for species of the Sub-Series Sanguineum other than *aperantum*. Of the eleven entries, LORD DIGBY's deep maroon, wide-cupped *haemaleum* was adjudged the best, and the same exhibitor's *dichroanthum*, large and richly coloured, was placed third. COL. CLARKE's blood-red truss of the type species separated these two, and a fourth prize was awarded for an intensely rich maroon *sanguineum* sent by SIR HENRY PRICE.

A single truss of any species in the Series Taliense was admissible in Class 30, and here the first prize went to MRS. MAGOR for a large frilly blush-pink *detonsum*, almost without spotting. MRS. STEVENSON entered a small yellow *Wasonii* which occupied the second place, followed by *Roxieanum*, with neat, narrow foliage and faintly-spotted white flowers, from MR. E. DE ROTHSCHILD.

A whole spray of flowers was permitted in Class 31, for the Sub-Series Campylocarpum, and the bench of sixteen entries made a very attractive display. MR. E. DE ROTHSCHILD gained the first place with a fine branch, bearing ten trusses, of the variety *elatum*. THE COMMISSIONERS OF CROWN LANDS were second with a big vase of *campylocarpum*, and LORD ABERCONWAY won the third place with a large, well-furnished spray of *caloxanthum*.

Class 32, for any species of the Sub-Series Martinianum or Selense, attracted a smaller number of entries, but among them was interesting variety. MR. E. DE ROTHSCHILD entered a specimen of *dolerum* with neat, ovate leaves and long-stalked rose-coloured bells, which was given first place. The uncommon *erythrocalyx* subsp. *docimum*, rather closely resembling *caloxanthum*, was entered by MRS. STEVENSON to win second prize; while COL. CLARKE's shapely exhibit of the deep rose-coloured *rhaibocarpum* came third. There were several equally delightful exhibits in Class 33, for the Sub-Series Souliei. MRS. STEVENSON won the first prize with a lovely branch of a pale sulphur *Wardii*, followed by COL. CLARKE's rather deeper-coloured form of the same species. The third place was accorded to a large, uncommonly floriferous branch of *Williamsianum* from Bodnant. In Class 34, requiring a truss of any species of the Sub-Series Thomsonii, there were



thirteen exhibits, the first prize going to ADMIRAL WALKER-HENEAGE-VIVIAN for a shapely, ten-flowered truss of *Thomsonii*. Specimens of almost equally high quality won the second and third prizes for the DUCHESS OF MONTROSE and THE COMMISSIONERS OF CROWN LANDS.

Class 35, for a spray of any deciduous Azalea, proved popular with competitors, who produced much beautiful material. In the place of honour was MR. E. DE ROTHSCHILD's full-flowered branch of a clear shell-pink *Schlippenbachii*, and the same species in a slightly richer tone from LORD ABERCONWAY, appeared in the third place. From Bodnant came also the very handsome example of *Albrechtii* which gained second place.

The next class was similar, except that three species were required instead of one. The first-prize exhibit, from LORD ABERCONWAY, comprised an unusually deep red *Albrechtii*, a rosy-purple *reticulatum* and a *Schlippenbachii* of high quality. The second prize was awarded to MR. E. DE ROTHSCHILD, who chose a pale *Schlippenbachii*, an attractive *pentaphyllum*, and a plant labelled *Wadanum*, which appeared to be *reticulatum*. The two following classes, for evergreen Azaleas, were poorly supported. In class 37, there were three: MR. DE ROTHSCHILD entered the large, carmine variety 'Marie,' LORD DIGBY the uncommon double form of *mucronatum* called 'Fuji-manyo,' and ADMIRAL WALKER-HENEAGE-VIVIAN the shell-pink 'Kirin.' MR. DE ROTHSCHILD also took the first prize in Class 38, with 'Marie,' 'Pippa' and 'Hi No Mayo.' ADMIRAL WALKER-HENEAGE-VIVIAN showed 'Hi No Degiri,' 'Kirin' and 'Nyagino'; SIR GILES LODER brought 'Hi No Degiri,' 'Hi No Mayo' and the common *obtusum amoenum*. Class 39, for a spray of the Series Anthopogon, contained a pretty pale pink *crebreflorum* from COL. CLARKE, one of similar colour, and a white one, both unlabelled, from LORD ABERCONWAY. Two entries only appeared in the next class, for a spray of the Series Campylogynum, and the only prize awarded went to LORD ABERCONWAY for a very beautiful spray of *myrtilloides*, full of dusky, rose-coloured flowers.

In Class 41, for a spray of any species of the Series Edgeworthii, the first place was taken by LORD STAVORDALE's exhibit of an unusually large and fine *bullatum* bearing the number ROCK 59202. CAPT. ADAMS-ACTON won the second prize with *Edgeworthii*, and COL. CLARKE the third with *bullatum*.

A spray of any species of the Series Glaucum was specified in Class 42, and here LORD ABERCONWAY showed a very free-flowering, rich pink mountain form of the species *glaucum* for the first place, and another of deeper colour and different shape for the third place. The same species in an equally attractive form, from SIR



GILES LODER, was given second place. There were seven other entries. Some very shapely and pretty specimens were brought to Class 43, for the Series *Heliolepis*. LORD DIGBY's exhibits of *heliolepis* and *rubiginosum* won first and second place, respectively; and of nine other entries SIR HENRY PRICE's *rubiginosum* was selected for third place.

Well over twenty entries were received in Class 44, for a spray of the Series *Lapponicum*. The ones selected by the judges were a lovely branch of *russatum*, full of deep violet bloom, a graceful mauve *cuneatum* and a pure white *microleucum*, all from LORD ABERCONWAY, to fill the first, second and fourth places; and a vivid dark blue *scintillans* from THE COMMISSIONERS OF CROWN LANDS at Windsor, for third place. In the next class the only entry, of *Baileyi*, came from SIR HENRY PRICE.

Rather surprisingly, there were only two entries in Class 46, for the Sub-Series *Forrestii*. The first prize was awarded to COL. CLARKE, for a small spray of *chamae-Thomsonii*, with glossy bells of vivid pillar-box red. LORD ABERCONWAY showed a nice specimen of *Forrestii* var. *repens*. The Series *Saluenense* was represented in Class 47 by two distinct and floriferous forms of the type species, entered by LORD ABERCONWAY, a dainty lilac-coloured *riparium* from COL. CLARKE, and two others. Class 48, for a spray of any species of the Series *Scabrifolium* or *Virgatum*, attracted a dozen entries. The first place was occupied by a very interesting spray of *scabrifolium* from LORD ABERCONWAY, carrying neat round heads of deep rose blooms with prominent stamens. MR. DE ROTHSCHILD contributed *spinuliferum*, and the DUCHESS OF MONTROSE *spiciferum*, for the second and third places.

From the Series *Trichocladum*, in Class 49, both COL. CLARKE and THE COMMISSIONERS OF CROWN LANDS were awarded prizes for the sulphur-yellow *melinanthum*, and SIR HENRY PRICE took the third for *mekongense*. The two classes reserved for species of the Sub-Series *Augustinii* were, as usual, among the most spectacular in the Show. In Class 50, for the species *Augustinii*, MR. E. DE ROTHSCHILD won the first prize for one of the best of the Exbury forms—a large and clear blue, green-speckled and pale centred; and another, more evenly-coloured one from the same garden was given second place. LORD DIGBY's selection, in the third place, was of the purple-shaded type, and SIR GILES LODER's, placed fourth, a pale lavender-blue with a hint of green spotting.

The remaining species of the Sub-Series were represented in the following class by two delightful examples of *chasmanthum*, the first a large, densely-flowered branch of deep lavender flowers, from ADMIRAL WALKER-HENEAGE-VIVIAN; the second, from LORD ABERCONWAY, equally attractive although the individual blooms



were smaller. The third place was taken by a pretty violet *Benthamianum*, also from Bodnant.

In Class 52, for the Sub-Series *Oreotrephes*, the three prizes were awarded to MAJOR HARDY for a well-coloured specimen of the species *oreotrephes*, ADMIRAL WALKER-HENEAGE-VIVIAN for a paler example of the same, and LORD DIGBY for a bright rosy-lavender *timetum*. A dozen entries filled the next class for the Sub-Series *Polylepis*, a very rich, rosy-violet form of *concinnum* from ADMIRAL WALKER-HENEAGE-VIVIAN gaining the first prize. It was followed closely by LORD DIGBY's *concinnoides*, and in the third place appeared the remarkable *pseudoyanthinum* from Windsor Great Park Gardens, with glowing, ruby-red corollas. Class 54, in which any species of the Sub-Series *Triflorum* was admissible, had nearly as many entries as the preceding. The first prize went to MR. DE ROTHSCHILD for a rich rose-pink *triflorum*, and the two other top places were filled by LORD ABERCONWAY's exhibits of *ambiguum* and a deep yellow *xanthocodon*. There were no fewer than fourteen entries in Class 55, for the Sub-Series *Yunnanense*, and the three prize-winning exhibits were large and handsome branches of *Davidsonianum*, exhibited by COL. CLARKE, LORD ABERCONWAY and MRS. MAGOR.

Exhibitors were allowed to enter in Class 56 any species not catered for earlier in the Schedule, but only three availed themselves of this opportunity. The prizes were awarded to LORD ABERCONWAY, for a six-flowered truss of *mishmiense*, with flattish deep yellow flowers, and to MR. E. DE ROTHSCHILD for a truss of the uncommon, pure white *hyperythrum*.

The next twenty classes were reserved for hybrids, a single truss or spray of one hybrid being required in most classes. It is not proposed to describe each class in detail, but the following notes will suffice to record some of the more noteworthy entries. In Class 62, for any hybrid (other than 'Penjerrick') of the Sub-Series *Campylocarpum* or *Souliei*, MR. HUTCHINSON's 'Carita' was most striking, having shapely flowers of an exquisite pale primrose hue. Outstanding in Class 67, for a hybrid of the Series *Cinnabarinum*, was CAPT. ADAMS-ACTON's 'Perseverance' var. 'Rose Madder,' with flowers of the 'Lady Chamberlain' type, flushed with deep rose on a yellow ground and carrying a heavy bloom on their waxen corollas. In the following class, for hybrids of the Series *Maddenii* or *Edgeworthii*, LORD ABERCONWAY's 'Tyermanii' was quite spectacular with slender stems bearing immense, orange-throated, lily-like flowers. Another extremely beautiful exhibit was MR. DE ROTHSCHILD's 'Eleanore,' of which he showed a broad spray nearly two feet long, covered with large lavender blooms.

The interest of many visitors was excited by the vase of six



different Javanese hybrids entered by LORD ABERCONWAY in Class 77. This is not a type of plant for which many amateurs could find accommodation, but it is pleasing to know that they are not in danger of being lost to cultivation.

In Class 78, for six "nurserymen's hybrids" MESSRS. WATERER won the first prize with a bright and fresh set consisting of 'Kate Greenaway,' 'Mrs. G. W. Leak,' 'Blue Peter,' 'Alice,' 'Pink Pearl' and 'Fastuosum flore pleno.' MESSRS. SLOCOCK were second, with 'Goldfort,' 'Dairymaid,' 'Gill's Crimson,' 'Mount Everest,' 'Devonshire Cream' and 'Unique.' The third prize was awarded to MAJOR HARDY, who showed 'Cunningham's Sulphur,' 'Jacksoni,' 'Prince Camille de Rohan,' 'Bodartianum,' 'Unique' and 'Queen Wilhelmina.'

The prizewinning entries in Class 79, for any dwarf species suitable for the rock garden, were *russatum* from MESSRS. WATERER, and *fastigiatum* from THE COMMISSIONERS OF CROWN LANDS. In the next class for a specimen plant not over four feet high, the first place was taken by a superb globular bush of *Schlippenbachii* from THE CROWN LANDS, the second by a very lovely specimen of 'Moonstone' (*campylocarpum*  $\times$  *Williamsianum*), shown by MR. DE ROTHSCHILD, and the third by a plant of 'Alice' from MESSRS. WATERER.

Class 81, for two leaves of each of six Rhododendrons, was strongly contested by five exhibitors, an unusually high number. MR. DE ROTHSCHILD showed *Bureavii*, *rex*, *sinogrande*, *Falconeri*, *Macabeanum* and his hybrid 'Fortune.' THE DUCHESS OF MONTROSE put up *basilicum*, *Falconeri*, *sinogrande*, *giganteum*, *arizelum* and *Macabeanum*. LORD DIGBY's third prize entry consisted of *Falconeri*, *sinogrande*, *mallotum*, *Macabeanum*, and two forms of *grande*.

In Class 82, for an arrangement of cut Rhododendrons in vases or bowls provided by the exhibitor, there was a record number of nine entries. The first prize was awarded to LORD DIGBY for a light and dainty blending of cream, rose and pale mauve flowers in a brass vase. Among the materials used we noticed *yunnanense*, *caloxanthum* and *Albrechtii*, with a little cluster of *didymum* to supply colour contrast. MR. H. F. THOBURN won the second prize for a low china bowl arranged with radiating sprays of *racemosum*, *hippophaeoides*, *saluenense* and *microleucum*: a decoration very attractive both in form and colour. MR. DE ROTHSCHILD's third prize entry was in much bolder style. In a tall glass vase a number of different species and hybrids were used to build up a large round bunch in which tints of cream, ivory, primrose and shell pink predominated, with a touch of the blue of *Augustinii*.



The last two classes were open only to exhibitors who had never won a prize at the Rhododendron Show. In Class 83, for a species, the prizewinners were MR. THOBURN (*Roylei*), MR. HAMBRO (*grande*) and MRS. GORDON (*chasmanthum*). In the final class, for a hybrid, the prizes were won by MR. HAMBRO (un-named hybrid), MRS. GORDON ('Millais Seedling') and MR. HUTCHINSON ('Clio').

## RHODODENDRON GROUP BRAINS TRUST

Tuesday, June 12th, 1951

QUESTION MASTER: SIR GILES LODER, BART.

BRAINS TRUST: MR. O. C. A. SLOCOCK  
MR. D. E. GREEN  
MR. FREDERICK STREET  
MR. F. C. PUDDLE  
MR. T. H. FINDLAY

*Sir Giles Loder, Bart.* (QUESTION MASTER), before inviting questions, said:—I must apologize for the small audience. Perhaps another time we can choose a more suitable day. When we decided on this date we had not in mind Ascot Week, which has coincided with our meeting.

We have with us MR. SLOCOCK and MR. PUDDLE whose names are a household word in connection with hybridization; MR. GREEN who is the mycologist at Wisley, and MR. STREET and MR. FINDLAY whom you all know equally well. I expect there are many points you would like to discuss and I feel sure they will all do their best to throw light on any questions which may be raised.

*Mr. Findlay:* What would the Brains Trust recommend as the best parents for future hybridization? There is a whole multitude of hybrids now; where do we go from now on? We have been using *Rhododendron Souliei*, *Wardii*, 'Hawk' and 'Jalisco' quite a bit, to break them into yellow. There seems to be ample reds about.

*Mr. Slocock:* That is a very wide subject; much depends on what one is endeavouring to achieve. It is necessary, first of all, to decide what one is endeavouring to get and then everything done should be a means to that end. Often some remarkable plants are obtained on the way.

Supposing it is intended to get a dwarf plant which looks like a carpet and has large orange bells, then obviously one has to start hybridization with the nearest varieties one can find to this form and colour and perhaps keep on crossing back. Generally speaking, the species as such have been worked out so far as all first crosses are concerned. In the case of other plants other than Rhododendrons it will be found that garden plants are not first crosses between two species but mongrels of a very great degree. That applies to Tulips and many other plants; the same



will happen with Rhododendrons. If you go back to the old WATERER hybrids produced from only a few species, you will note enormous variation of colour and a typical truss because that is what WATERER considered to be the type of plant he was after. The same could be done with *dichroanthum*, and perhaps *Augustinii* in blues, and hybrids of dwarfs which have hardly been worked on at all, the only first crosses have been made of *Williamsianum* on one side and perhaps a hybrid on the other. There is ample work to be done there. We have, indeed, so much material to work with but we have to work very much more on selections of hybrids.

I have in mind a plant which flowered for the first time recently and which I thought rather remarkable. That particular plant was the result of a cross between two very unusual hybrids, *Wightii*  $\times$  *Fortunei*, first, and the second *Fortunei*  $\times$  *campylocarpum* and *Wardii* and another of the *Fortunei* Series which I think was *discolor*. That extraordinary mixture, nearly all yellows, gave one of the most remarkable pinks I have ever seen.

*Mr. Street:* I should like to underline what MR. SLOCOCK has said with regard to the WATERER hybrids. I speak rather in the sense of the onlooker seeing most of the game as I do not do very much hybridization. I feel that one target for future hybridization should be to obtain really hardy plants with the beautiful colouring of many of the species now available—for example, the reds of *Griersonianum*, *eriogynum* and *haematodes*. If one could obtain these colourings in a plant with the hardiness and habit of the old hybrids, such as 'Gomer Waterer,' this would be a great step forward. One other species which I feel is going to be immensely valuable to produce hardy hybrids with the delicate shades, shape of flower and texture of the better species is *yakusimanum*.

THE QUESTION MASTER: That seems to be a possible start. Miniature Rhododendrons, which have also been mentioned, provide another possible avenue for experimenting in hybridization. In these days gardens are growing smaller rather than bigger and the smaller plants are much more suited to them, provided robustness is maintained. There are a number of hybrids which have not yet been tested for robustness.

*Mr. Green:* May I ask as an elementary botany student how to hybridize and how to cross two Rhododendrons? Also if anybody engaged in crossing Rhododendrons uses the system we know as "bagging." If not, why not?

*Mr. Slocock:* Personally I do not use bagging except to keep frost away, bagging then affording protection to seed pods.

*Mr. Puddle:* If a flower is bagged and it becomes wet the



sexual organs may turn mouldy and you may lose a number of seed pods. I think MR. SLOCOCK will support me when I say that in hybridization the point is to examine the stigma under a lens to make sure that it has not already been fertilized. Make your cross well covering the stigma with pollen and if that stands for two hours it is perfectly safe. In all the crossings I have made I have never bagged a single flower. Generally, the objection to bagging is that there is a confined atmosphere within the bag and in damp weather the flower is apt to rot.

*Mr. Green:* I do a lot of *Antirrhinums* in that way because I dare not leave them exposed.

*Mr. Puddle:* I would like to support the system of what I term "line breeding." You may be using a dwarf variety but you must study pedigree all the time. As MR. SLOCOCK mentioned you may have to go back to a second cross; on the other hand, you may not. That is the value of the Stud Book. You have an objective but in order to reach it you can, provided you know the pedigree of other people's *Rhododendrons*, make use of them without having to make certain crosses yourself. I always work on definite lines and never make crosses without a definite object. MR. SLOCOCK said there were very few secondary crosses of *Williamsianum*. I have raised a number, some with four species combined.

*Mr. Findlay:* We took home from the Chelsea Flower Show flowers of *yakusimanum* and we put it on twelve different *Rhododendron* species and hybrids. Each of those has taken. You can tell it after the first year by the difference in the leaf.

*Mr. Green:* My point was bound up with the question of pedigree. It seems to me that some precaution should be taken against the risk of bees bringing unwanted pollen. I would have thought you would have removed the petals or done something in that way.

*Mr. Puddle:* That is done in the case of *Chrysanthemums*. If you remove the petals of *Rhododendrons* you remove a part of the organ of the flower. You must realize that a *Rhododendron* is a single flower whereas a *Chrysanthemum* is just a colony of flowers. If you cut the petals of *Chrysanthemums* you might lose a number of seeds but you would not notice it.

*Mr. S. A. Skinner:* What progress is being made in regard to research into Bud Blast?

THE QUESTION MASTER: We all know the problem to which you refer.

*Mr. Green:* I was not aware any research had been really started.

*Mr. Skinner:* There was a statement about a year ago that



the matter was being thoroughly investigated. (See R.H.S. JOURNAL, Vol. LXXV, June 1950, p. 230.)

*Mr. Green:* Preliminary observations have been undertaken. Undoubtedly all who know anything about Bud Blast realize that it is a very big problem. We really have not the time available to undertake a serious investigation; observations are being taken, but I would not say the problem is being tackled. Arrangements have been made to put down this autumn experimental plots and to work on them in the light of our present theories, and I emphasize that we have at present only theories. The theory at present held is that there is another factor besides the fungus, *Sporocybe azaleae*, which probably you all know as well as I do. That fungus was well known to me twenty years ago, and it can be present on good flowering bushes. It is found behind the flowers; and in some localities it does not affect the bush itself enough for anybody to notice. In other cases in the last five years it has affected about 98 per cent. of flowers, leaving only 2 per cent. of them healthy. Our theory is that there is another factor helping the fungus which at present we cannot trace. I would not at present dare to say that it is the Leafhopper, but I believe it is an insect which is the other factor. We cannot do anything without experimental plots and plants. We have sprayed and we have attempted to come to a conclusion, but I have kept myself from doing that pending the results of observations on experimental plots. Until I get those results I shall not put forward any conclusion. I shall keep an open mind as to the other factor.

In short, sir, I think the answer to Bud Blast will be an insecticide and not a fungicide, but a good deal of experimental work will have to be done before we can be sure of that answer.

*Mr. Puddle:* How does the Leafhopper or any other insect come into it? It is definitely proved that Bud Blast is due to a fungus. Is it suggested that the Leafhopper punctures the cells so that the fungus can enter?

*Mr. Green:* The fungus has been with us at Wisley for the last twenty years, but we have not seen the spread and devastation that we have seen during the last five years. You can conclude that the fungus has altered its nature and that another more virulent strain of it has arisen, or you can conclude that another factor is at work which causes the buds to go off; that is causing injury which enables the fungus to get into the bud.

*Mr. W. Hutchinson:* If it is an insect, how is it the species are not attacked by it?

*Mr. Green:* I would not say that. There is a tremendous



number of plants which are affected, and I would not say the species are not among them.

THE QUESTION MASTER: I can support that. I have found Bud Blast on some species. I have found it on deciduous Azaleas, which I think in North America are the major problem. We have a block of 'Doncaster' at home on which Bud Blast is particularly prevalent; we have ordinary common Azaleas next door to that block and we find a fair amount of the fungus on those Azaleas.

*Mr. Green:* The susceptibility varies, but that may be on account of the insect's preference for different varieties.

*Mr. Puddle:* The spores must spread in the atmosphere.

*Mr. Green:* There are enormous numbers of spores.

*Mr. Puddle:* You think that unless the epidermal cells are punctured the fungus cannot enter into the plant?

*Mr. Skinner:* About a year ago somebody looking round my garden said he saw I had Leafhoppers there. I did not know what they were. He pointed them out and said I ought to do something about it. I have since found that where I saw those Leafhoppers last year is the worst spot for Bud Blast now. As a matter of fact the Bud Blast was on 'Doncaster' and I suppose about 98 per cent. of the buds of that plant have now gone, but not many buds have gone elsewhere.

*Mr. Street:* In the nursery we have nothing but hardy hybrids but, touch wood, we do not get Bud Blast at all, and we have plenty of Leafhoppers about.

THE QUESTION MASTER: We have one plant at Horsham on which we see Leafhoppers every year and as we are walking past we can hear them but that plant has never, to my knowledge, had Bud Blast on it.

*Lady Loder:* As far as we know, it is the only place in the garden where there are Leafhoppers.

*Mr. Puddle:* If it is an insect which allows the fungus to enter by puncturing, then anything in the shape of a wound or cut would also allow the fungus to enter.

*Mr. Green:* There are plenty of other reasons for Bud Blast, but I am after the major factor.

*Mr. Puddle:* I have not been to Bodnant in the last six months and so far as I know there is no Bud Blast there. It seems to be in districts.

*Mr. Green:* I asked for records to be sent from other parts of the country besides the Home Counties where this scourge is, but so far I have not received any record from Cornwall and N. Wales. Last year I went to Ayr in Scotland, and there were plenty of Rhododendron which were covered with masses of



flowers. I was told they did not know of any Bud Blast. I parted the flowers and brought out two infected Buds from two different areas and showed them to my host and he said he had never seen them before. The fungus was there, and it is not doing any more damage than it was doing at Wisley two or three years ago.

THE QUESTION MASTER: I have seen Bud Blast in the Channel Islands on some old plants. I have also seen it at Bodnant in a very obscure forested wood.

Mr. Puddle: That raises a point I was going to mention. I have heard that *ponticum* and *caucasicum* are carriers.

Mr. Street: *Caucasicum* suffers from frost-damage and the result is very like Bud Blast, but there are no black spores.

THE QUESTION MASTER: Don't you think the bud gets blistered and then in the spring time that shows up as Bud Blast.

Mr. Street: I think that can happen, but also it can happen the other way: they get damaged but they do not get that characteristic appearance.

Mr. Hutchinson: We have seen lots of damaged buds on the species, but they are caused by early frost coming on to the original bud; they do not do any harm; it is possible to brush them off. But Bud Blast is absolutely hard. One big professional grower of Rhododendrons told me that Bud Blast came into cultivation during the war, but I am sure he is wrong; I think it is in the blood.

Mr. Green: You can see the most beautiful Rhododendrons which are the picture of health as regards foliage but very heavily Bud Blasted.

Mr. Slocock: I am trying to think what we found when we came back at the end of the war. Of course during the war period the plants were left and became overgrown. Although they were in nursery rows they had grown into a thick mass, and for the first time it was evident that Bud Blast was doing a certain amount of damage. Before that only an odd flower here and there was affected. We have done nothing, so far as I know, to combat it, other than the normal cultivation. We hewed out all the dead wood; we transplanted the plants and fed them, and I can honestly say that the Bud Blast has disappeared. If you hunt in a few places you can find it, but it is not found in rows of young plants although they are growing side by side with plants that had the fungus and many of them were species—such as *Wardii*, *dichroanthum*, *decorum*. It does not seem to do a tremendous amount of damage. Where plants are not moved but are in a permanent position it is often possible to find a succession of shoots with infected buds on the end; one particular



shoot had not been able to bloom for six years and it was covered with Bud Blast. It may be put down to some insect pests which might be carriers, and of course one is spraying against bug all the time. But the extraordinary thing is that the spread has gone into reverse now and I am inclined to encourage other people to do what we did: cut out the dead wood from the plants and feed them. That has in several instances resulted very beneficially. I do not say there will not be any Bud Blast. If it is seen on one or two of the 'Pink Pearl' type and on 'Doncaster' and they have it too badly the only answer is to hew them out altogether.

*Mr. Hutchinson:* I have been told that if you cut two or three inches below the Bud Blast that will cure it; it will not appear again on the same plant.

*Mr. Street:* I have seen plants of Rhododendron 'Doncaster' and I have heard of another case of the same variety, where the plants have been burnt to the ground, have grown again, and again have been attacked by Bud Blast.

*Mr. Puddle:* If the mycelium is in the sap the Bud Blast will continue.

THE QUESTION MASTER: If there are trial plots at Wisley it will be possible to try one insecticide and then another and really get down to forming opinions. It can only be done by having a decent number of trial plots.

*Mr. Puddle:* It seems to me as it has proved to be a fungus which might be distributed by insects the answer is a combined insecticide and fungicide.

*Mr. Green:* This is the time to tell people not to spray their Rhododendrons too much with copper spray. I should advise doing it twice, and no more. I do not say the trouble is in the copper but we would like to know for certain. Combined insecticides are none too safe at the moment.

*Mr. Slocock:* I have seen far more damage from spraying than from Bud Blast.

*Mr. Green:* I would not say that.

*Mr. Slocock:* I have seen it in some cases. From Bud Blast you may not get a flower, but after spraying you may not get a leaf either.

*Mr. Green:* CAPTAIN MAITLAND DOUGALL is the man who collects 10,000 blasted buds a day, and has done for years, and he has cut the plants to the ground, as MR. STREET has suggested, but in two years he has had a beautiful crop of Bud Blast again.

THE QUESTION MASTER: At the moment it does not seem that we can help very much more in regard to the Bud Blast question.



*Mr. Skinner:* There may be some parasite that feeds on the fungus. Is there any natural antidote?

*Mr. Green:* We have no appreciable records apart from the Home Counties.

THE QUESTION MASTER: Until it comes to a head, I do not think people need worry about the odd 2 per cent. or 3 per cent. of Bud Blast, because it is seemingly all over the country and, as we have heard, it occurred before the war.

*Mr. Hutchinson:* But it has since been increasing so much, especially in certain parts of Berkshire, Hampshire and Surrey. We have previously seen it for years but have seen only two or three Bud Blasts on a plant, but now some are covered with the trouble. It appears to be very much on the increase in certain parts of the country.

THE QUESTION MASTER: Did anyone see on some of the Rhododendrons sent up for the Committee to-day a double fork-end to the leaf? It was rather like a fish-tail leaf. I would like to know what causes that? CAPTAIN SOAMES sent it up. It was on the 'Angelo' crosses.

*Mr. Street:* Is it a kind of deformity at the end of a leaf? I believe this is caused by the young growth being slightly damaged by frost before it has fully developed.

THE QUESTION MASTER: In this case you can see the vein at the back of the leaf parted like a Y.

*Mr. Slocock:* I did not see the double fork-end to-day, but I have seen it previously. I believe it is just some damage to the growth. The leaf is split in two and formed as a double leaf just in the shape of a Y.

THE QUESTION MASTER: I wondered whether that particular 'Angelo' cross was liable to throw those leaves.

*Mr. Street:* I have some plants of 'Bagshot Ruby' which were just touched by frost and they are rather twisted and gnarled. That may be the same thing.

*Mr. Hutchinson:* Why do the 'Angelo' whites spot so badly with each shower of rain?

*Mr. Puddle:* *R. auriculatum* spots badly. It is particularly soft; that is the cause of it.

*Mr. Skinner:* I had three small layers of 'Naomi' all split with heavy rain and frost, possibly, or it may have been due to a rabbit. (Cries of "Frost.")

*Mr. Slocock:* It can happen in the autumn just as badly; in fact autumn frosts can do more harm than spring frosts, especially after a dry summer. In the dry year 1947 plants grew very late and they had an early frost on them in November or October. Plants which we considered absolutely A1 for hardiness,



like 'John Walter,' were killed almost to a plant. They were caught with their pipes full and they were split, but we never saw the damage until the next spring, and then nothing could be done about it. Some plants might reasonably carry on growing even if their bark is split; others only require one split and eventually the bark comes away from the wood and they die. That happens with 'Hawk.'

*Mr. Findlay:* We find we have to be very careful when we purchase plants from a mild climate; we bring them in in the autumn and keep them in the greenhouse until the following spring, especially the 'Lady Berry' and 'Lady Chamberlain' type. Once we have had them for a year they are all right. Our own layers of this type are hardy.

*Mr. Slocock:* The first autumn frost cuts down 'Fusilier' and 'Tally-ho'; they go on growing too late, and the first autumn frost cuts them right down.

*Mr. Street:* Here is a rather controversial point. I often wonder whether the popularity among experts of the most tender species and first crosses as opposed to hardy hybrids and the general unpopularity of the hardy hybrid is tending to make the Rhododendron genus less widely grown. People come to the Shows and see the gorgeous plants that are produced nowadays, many of which require at least woodland conditions. They try to grow them under ordinary garden conditions perhaps rather exposed, with the result that they may be disappointed if they do not produce the same flower as seen at the Show. This, I feel may lead to Rhododendrons being less widely grown.

*Mr. Hutchinson:* I should like to suggest that at the next Rhododendron Show a cup should be given to the nurserymen; it used to be done, and they at one time mostly showed hybrids. The majority of those who go to the Rhododendron Show are much more interested in hybrids than in species. It was a pity that cup ceased to be presented to nurserymen for the best exhibition of Rhododendrons at the Rhododendron Show. MR. SLOCOCK won it in previous years.

*Mr. Slocock:* We won it outright and put it up again in perpetuity. It is a great pity it has gone because at that time it used to make the Rhododendron Show. The whole floor of the Hall was filled with groups which everybody had worked to their utmost to make perfect and to compete with one another. The group had to be of a maximum size of 350 or 360 square feet and the standard of the Rhododendrons exhibited then was very much higher than to-day. Unfortunately, that has gone by the board. But the competition brought out the best not only amongst the heads of the industry but also amongst the workers;



they used to work very hard to win that cup; they came at all hours of the day and night to work and to spray. Now I do not say anything goes, but it tends to.

*Mr. Skinner:* Why has the cup gone?

*Mr. Sloccock:* I think what influenced the R.H.S. against it was that they would rather give medals, but if we are going to do something which is worth competing for, let's compete for it.

*Mr. Puddle:* I think MR. STREET is fairly safe in that the owner of a small garden who does not say "No" to Rhododendrons will always go for colour and a big show. Actually, I think he has it in his hardy annuals. I can give an instance of a lady visitor at Bodnant when the Rhododendrons were in flower. I happened to meet her when she was going out of the garden and she said: "What lovely Rhododendrons you have, but I do not think you have the most lovely Rhododendron in cultivation; it seems a great pity; you ought to get it". I asked: "What is it?" and she replied: "'Pink Pearl'!"

*Lady Loder:* People come to see our garden and they invariably ask: "Where is 'Pink Pearl'?"

*Mr. Street:* This brings us back to a point raised earlier that what is definitely needed in crossing is to produce a plant that is perfectly hardy yet with a colour such as in 'Tally-ho!' It is not possible for everyone to grow 'Beauty of Littleworth,' for example, but if we get some of the beautiful characteristics of *Griersonianum*, *discolor*, *auriculatum*, transferred into really hardy plants it would be all to the good. I am often asked if it is possible for someone to grow one of the more tender hybrids. Quite often the enquirers are from the North of England and I explain that I do not think the variety suitable, as I am unable to grow it in the South. I know sometimes these more exotic varieties are tried in unsuitable positions with the result that they are failures and the purchaser is often very disappointed.

THE QUESTION MASTER: But how are we to legislate against that?

*Mr. Puddle:* I think there is a good deal to be said for the hardy hybrids as garden plants rather than woodland plants. I have held the opinion for some years that at the Rhododendron Show there should be classes for what one might term show Rhododendrons which are the ones with large heads of flowers, and another for woodland Rhododendrons. There are certain magnificent Rhododendrons which are most lovely in woodland but not on the show bench. 'Penjerrick' is one. We ought to breed for the two types and those which are good on the show bench are, providing they are sufficiently hardy, the Rhododendron for the average garden.



*Mr. Street:* Then you get difference in habit. *Griersonianum* × 'G. A. Sims' is a magnificent red but as a plant it is like 'Sappho,' only worse.

*Mr. Skinner:* I have come to the conclusion that confusion arises owing to the classification. All Rhododendrons should be awarded on garden merit. Why should there be several kinds of classification? What is the difference between two stars and an Award of Merit?

THE QUESTION MASTER: There are several grades of hardiness, A, B, C, and D etc.; the stars indicate what the Committee responsible for compiling the list of hybrid Rhododendrons think of the leading Rhododendrons in the various grades; if they think one is particularly good they give it four stars and so on, downwards. That is just the opinion of a fairly knowledgeable Committee.

*Mr. Skinner:* I cannot understand why there should be two systems of classification, one by Award of Merit and the other by starrng.

*Mr. Gould:* The Award of Merit and the other awards are purely R.H.S. awards; the starrng by the editorial committee may be independent of those.

*Mr. Puddle:* One is the opinion of the Rhododendron Group and the other the opinion of the R.H.S.

*Mr. Slocock:* I think I see what you mean. But a plant may have an Award of Merit. 'Bagshot Ruby' had an Award of Merit in 1916; it is only considered now to be worth one star; there is many a plant better than 'Bagshot Ruby' which may not be worth an Award of Merit but worth two stars as a garden plant. You can get the Award of Merit by bringing up one truss of a flowering plant or shrub to the Hall. On the other hand, there is an Award of Merit which is gained after years at the Rhododendron trials. The Award of Garden Merit is a very different thing; it is a very high award for a garden plant. Plants are awarded stars merely as a result of checking from year to year and comparing their merit with what else is available in their particular types. If a very fine Rhododendron is awarded four stars and another year one comes along which beats it, then that first Rhododendron has got to come down.

*Mr. Skinner:* It seems ambiguous that there should be two or three systems of selection.

THE QUESTION MASTER: If every single one of these named plants were brought up for Award of Merit or otherwise you would get more uniformity. If improvements take place, what gained an Award of Merit in 1916 may be very much out-dated thirty or forty years later.



*Mr. Skinner:* You may find a number of Rhododendrons F.C.C. which are not starred at all, not in the list.

THE QUESTION MASTER: There are some; they may have got F.C.C.; the Committee may not have considered them worth a general garden award. I appreciate that the Award of Garden Merit, which MR. SLOCOCK has said is a very high distinction, is given to those plants (and only about half a dozen or so Rhododendrons have it) or shrubs which can be grown anywhere and which the Committee think are worthy of being grown in any garden, almost irrespective of where the garden is situated.

*Mr. Hutchinson:* Every plant will have an Award of Merit sooner or later if it is well grown.

THE QUESTION MASTER: If it is worthy of it. I believe I am right in saying that forty-odd Rhododendrons came up at Chelsea and two or three only were given awards.

*Mr. Hutchinson:* I was not confining myself to Rhododendrons.

*Mr. Slocock:* I know there are one or two plants which have been given Awards of Merit and F.C.C. which are now in the classes not recommended for cultivation at all.

*Mr. Skinner:* When are we going to have the next Handbook—in 1952?

*Mr. Gould:* It is in revision now, and we hope it will be published early next spring.

*Mr. Skinner:* May I suggest that at the beginning of the book you include a Glossary explaining the meaning of all the abbreviations in the Handbook—the Award of Merit, First Class Certificate, the starring.

*Mr. Gould:* I will note that suggestion.

THE QUESTION MASTER: There are exceptions to every rule; plants which had awards before the war may not now be considered worthy of general cultivation; it may be that they have in course of time proved to be extremely tender.

*Mr. Skinner:* And some which have received Awards of Merit are not in the Handbook at all. For instance, I have one called 'Handel' which is one of the best I have got and which received an Award of Merit in about 1937; that is not in the Handbook.

THE QUESTION MASTER: If you will let the Group have details the record can be looked up. A plant has sometimes had an Award of Merit and it has then been found that the true parentage has not been disclosed, or something of that sort; or it was a duplication of another plant.

*Mr. Skinner:* Cannot a plant stand on its own merits apart from its parents?

*Mr. Slocock:* It might be a plant which was given some other name previously; that has happened.

*Mr. Skinner:* I think the explanation given me at the time was that the parentage was unknown.

*Mr. Slocock:* A number of plants receive Awards of Merit other than through the trials and they are hardly ever heard of again. It may be just one plant growing in some garden. Accidents happen.

*Mr. Findlay:* We crossed *leucaspis* and 'Cilpinense' and the plant flowered in two years, from seed. They were in the frame the first year and next year in the nursery. Actually it made rather a lovely cross and we called it 'Silkcap.'

THE QUESTION MASTER: That is interesting because so many say that in the cases of *Rhododendron* crosses you do not see any result for a long time. What in your experience, MR. SLOCOCK, is the time one should allow for the plants to flower?

*Mr. Slocock:* Anything up to ten or eleven years; five or six as a general rule. Much depends on the breed. *Sutchuenense* × 'Loderi' may not show any flower for ten or fifteen years.

THE QUESTION MASTER: If there are no more points to be raised I thank you for coming and regret, once more, that we did not have a bigger muster. We must have more publicity next year. It would serve a useful purpose if we had the Group meeting on a more busy *Rhododendron* day. If we can gather some non-*Rhododendron* folk in and make them *Rhododendron*-minded we shall have achieved a good deal.

Thank you all very much for coming and for raising the points the Brains Trust have done their best to answer.



## RHODODENDRONS AND OTHER ERICACEOUS PLANTS

Exhibited at the Alpine Garden Society's  
Conference Show, April 24th and 25th, 1951

By R. A. J. HOLDER and N. K. GOULD

THE selection of Ericaceous plants suitable for a lime-free rock garden exhibited by the R.H.S. Gardens, Wisley, and for which the Alpine Garden Society expressed its thanks for an "outstanding exhibit" will, we hope, induce the rock garden enthusiasts to take a far greater interest in these beautiful plants (Fig. 64).

The centre of the exhibit was raised by an outcrop of sandstone, on which was a lovely plant of *Rhododendron russatum*. Its habitat is North Western Yunnan and when fully grown it reaches a height of about 4 feet. The flowers are deep purple-blue, with a white throat. Two more of these plants were at opposite corners. The other two corners were filled with *R. compactum* and *R. fimbriatum*. *R. compactum*, as its name implies, is very suitable for the small rock garden and has flowers of violet blue. *R. fimbriatum*, another small shrub with erect branches, has flowers of deep purple mauve fading almost to purple.

The centre between and round the rocks was carpeted with *Gaultheria procumbens*. The deep green lustrous foliage and bright red berries were an excellent foil for the Rhododendrons.

The Rhododendrons which formed the bulk of the exhibit were drawn from nine different Series. The great Lapponicum Series, with its wealth of dwarf mountain-dwelling members naturally provided more than any other, and three have already been referred to. Most of these keep to a very compact habit of growth ideally suited for use in the rock garden. The photograph of *R. achroanthum* (Fig. 68) shows this type well, and although this species is described in the Handbook as having "dull deep magenta-red flowers" it is not to be despised, for it can be associated quite pleasingly with the little yellow *R. chryseum* or *R. muliense*. Two of the species represented in the exhibit are given four stars, in recognition of their excellent qualities. They are the lovely *R. scintillans*, in its best forms, such as the Wisley variety, almost royal blue, otherwise of a lavender-blue tendency, but always good; and *R. hippophaeoides*,





FIG. 64—The exhibit of Rhododendrons and Ericaceous plants from the R.H.S. Gardens at Wisley which was shown at the Alpine Garden Show, 1951 (See p. 110)



DWARF RHODODENDRONS FOR THE ROCK GARDEN

FIG. 65—*R. imperator* (See p. 111)





not inaptly named for the suggestion of Sea Buckthorn given by its grey-green foliage. The flowers vary a good deal between lavender and rose. It is a strong grower, and perhaps not as suitable as some for the small rock garden. Occupying conspicuous places in the exhibit were three other well-known and worthy species: *R. fastigiatum* of light blue-purple, *R. impeditum*, in the same colour-range, and *R. intricatum*, of bluish-mauve hue. Two other species of the Lapponicum Series were used, *R. Websterianum*, with rosy-purple flowers, and *R. glomerulatum*, of rather similar colouring.

In the Saluenense Series, the type species was represented by two very different plants; one of a fairly familiar, erect-growing form about 2 feet tall, with deep purplish-crimson flowers, the other a low-growing and spreading form with even deeper purple flowers. Equally vivid were the flat, magenta-purple blooms of *R. calostrotum*, of which several well-flowered little bushes were exhibited (Fig. 67). *R. cosmetum* and *R. riparium*, both neat plants not much over a foot in height, were covered with purple flowers. Nearer the edges of the exhibit were to be found *R. prostratum*, one of the most lowly members of the whole genus, not more than a few inches tall, but bearing plenty of pinkish-violet, red-spotted flowers; and *R. keleticum*, another small and dainty species of semi-prostrate habit, with purplish-crimson flowers.

The newly constituted Uniflorum Series was represented by four species: *R. pumilum*, *R. patulum*, *R. imperator* (Fig. 65) and *R. pemakoense*, all shown in the form of low, flower-covered cushions. They evidently form a closely related group, very puzzling to all but the experts. The rosy, campanulate corolla of *R. pumilum* may serve to separate it from the others, which usually have purple or pinkish-purple, funnel-shaped flowers.

*R. racemosum* is, of course, a shrub for almost every garden, flowering freely every year while still small, and eventually reaching a height of three or four feet. In its best forms the growths of the preceding year cover themselves in April or early May with axillary clusters of bright pink flowers. In a form collected by Forrest (No. 19404) we have a dwarf shrub of exceptional merit, with flowers of very good size and colour. This was illustrated in the 1950 Year Book (Fig. 23). The Wisley exhibit also contained specimens of *R. virgatum*, of the same Series. As in *R. racemosum*, the tubular mauve-pink flowers are carried in axillary trusses, but unfortunately it lacks the hardiness of the last-named species, and requires shelter in the most favoured gardens. There is a white form of great beauty, deserving space in the cool house.

The plant we formerly called *R. radinum*, a dwarf shrub up



to 4 feet in height, with rose-flushed, white flowers clustered at the tips of its branchlets, has been reduced by DR. COWAN and MR. DAVIDIAN to varietal rank, and should properly be called *R. trichostomum* var. *radinum*, and takes its place, together with all the members of the Cephalanthum Series, in the enlarged Anthopogon Series. All this group of dainty, Daphne-like Rhododendrons appreciate some shade and moisture, and well repay any trouble expended in their cultivation.

As the illustrations show, the exhibit was so arranged as to avoid overcrowding, and the total number of species exhibited was, therefore, not great, but in addition to those noted above, space was found for *R. pubescens*, a member of the Scabrifolium Series not unlike *R. racemosum*; *R. xanthostephanum*, a rather tender yellow-flowered plant of the Boothii Series, perhaps better known as *R. aureum*, but not to be confused with the true *R. aureum* (syn. *R. chrysanthum*) of the Ponticum Series; and *R. myrtilloides*, a member of the distinct little Campylogynum Series, a tiny shrub with small, pendent, plum-purple bells (Fig. 66).

As examples of that invaluable group of hybrids raised from crosses between *R. Augustinii* and species of the Lapponicum Series, all remarkable for their intense, purplish-blue flowers, 'Blue Diamond' and 'Blue Tit' were shown.

The whole of the groundwork beneath the Rhododendrons was covered with fresh green moss, and among them were planted a number of other small Ericaceous shrubs, including the following rather uncommon ones: *Tsusiophyllum Tanakae*, a low-growing, semi-evergreen Japanese shrub, allied to Rhododendron, with very small, white-hairy leaves and tubular white flowers; *Vaccinium Delavayi*, a pretty Western Chinese species with glossy, evergreen foliage and inch-long racemes of globose, creamy-white flowers tinged with pink in the bud; *Arcterica nana*, a very small, mat-forming shrub from North East Asia, with small, leathery leaves and erect spikelets of white bells like those of *Pieris*, from which it is, perhaps, not generically distinct; *Phyllodoce coerulea*, a little Heath-like evergreen with terminal umbels of nodding purple bells; and *P. aleutica*, similar in habit but white-flowered.



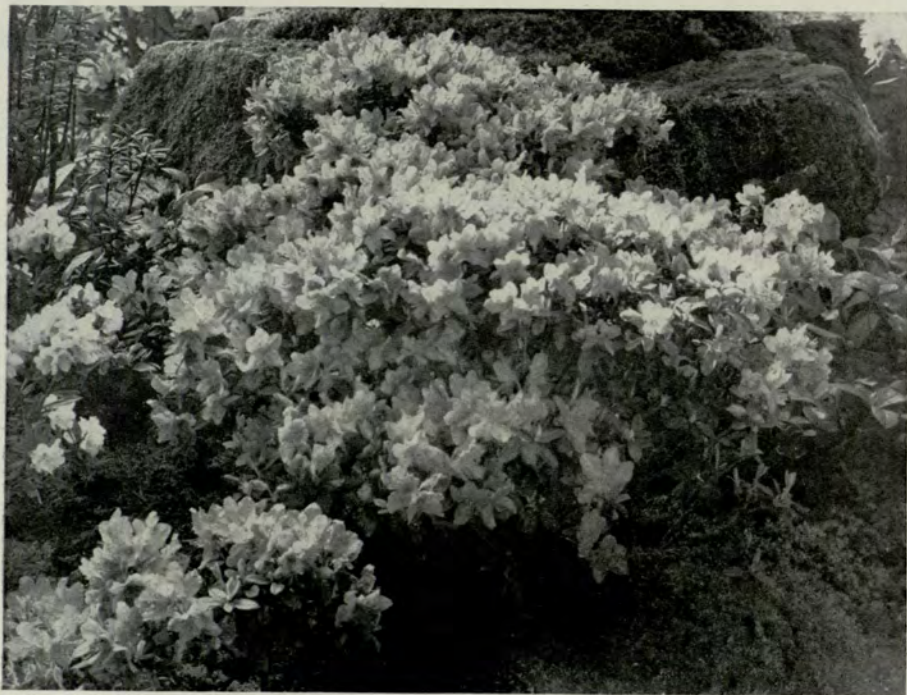
DWARF RHODODENDRONS  
FOR THE ROCK GARDEN  
FIG. 66—*R. myrtilloides* (See  
p. 112)







FIG. 67—*R. calostrotum* (See p. 111)



Photos, J. E. Downward

DWARF RHODODENDRONS FOR THE ROCK GARDEN

FIG. 68—*R. achroanthum* (See p. 110)



## RHODODENDRON AWARDS FOR 1951

**Rhododendron 'Amor'** (*R. Griersonianum* × *R. Thayerianum*), A.M. June 26, 1951. The late Mr. J. B. Stevenson raised this hybrid and it first became a feature of his garden in 1933. The lax truss is made of up about ten flowers each borne on a long red-stained glandular pedicel. The corolla is funnel-campanulate, 3 inches wide and 2 inches long, white tinged with pink and, on the outside, flushed with irregular pink staining. On the upper lobe there are a few small crimson spots. The leaves are oblanceolate, acute at the apex, with slightly recurved margins and a dark glossy green colour; beneath a thick, skin-like indumentum makes the foliage prominent. Exhibited by Mrs. R. M. Stevenson, Tower Court, Ascot, Berks. (Fig. 36).

**Rhododendron brachyanthum** var. **hypolepidotum**, A.M. June 26, 1951. A dwarf shrub of the Glaucum series introduced from Upper Burma. The leaves are mucronate,  $1\frac{1}{2}$  inch long and  $\frac{3}{4}$  inch wide and covered beneath with dense silvery scales. These persist on the pedicels and on the conspicuous, leafy calyces. The corolla is  $\frac{3}{4}$  inch long and 1 inch wide, broadly tubular and coloured a pale shade of Aureolin (H.C.C. 3/2). The stamens are hairy and the style stout, short and curved. Exhibited by The Commissioners of Crown Lands, Windsor Great Park, Berks. (as *R. charitostreptum*) (Fig. 38).

**Rhododendron 'Cinnkeys'** **Minterne variety** (*R. cinnabarinum* × *R. Keysii*), A.M. May 22, 1951. This most attractive and floriferous hybrid was raised from a cross made by the exhibitor in 1931. Its leaves are elliptic, obtuse, and somewhat lepidote on the under surface. The truss is composed of up to thirty pendulous flowers. Both the pedicel and the calyx are scaly. The corolla is tubular,  $1\frac{1}{2}$  inches long and  $\frac{3}{4}$  inch wide; inside it is coloured Nasturtium Red (H.C.C. 14/2), while outside it is Scarlet (H.C.C. 19) gradually paling towards the top. Exhibited by Col. the Lord Digby, D.S.O., M.C., T.D., Cerne Abbey, Dorchester, Dorset (Fig. 61).

**Rhododendron 'Hawk'** var. **'Jervis Bay'**, A.M. May 22, 1951. This variety of the well-known hybrid is another of the progeny from the cross *R. Wardii* and *R. 'Lady Bessborough'*. The leaves are 7 inches long, 2 inches wide and elliptic-lanceolate. Its truss is made up of ten flowers each lightly frilled, emarginate and coloured Sulphur Yellow (H.C.C. 1/3) while the throat is stained with a deep red blotch and some spotting. The filaments are pale yellow and the anthers light brown. The pistil is light green and clad with red glands. Exhibited by Edmund de Rothschild, Esq., Exbury, Southampton.

**Rhododendron 'Jeritsa'** (*R. 'Lady Bessborough'* × *R. Griffithianum*), A.M. May 22, 1951. The large flowers of this plant are borne in a heavy truss. The corolla has a shallow funnel-campanulate shape and is coloured pale Mimosa Yellow (H.C.C. 602/3) which darkens slightly on the upper three lobes and shows, in the base, a small crimson zone and some spotting. Its leaves are about 4 inches long and



2 inches wide, cordulate and a dull olive green colour. Exhibited by Edmund de Rothschild, Esq., Exbury, Southampton (Fig. 59).

**Rhododendron niveum**, A.M. April 17, 1951. This hardy flowering shrub is suitable for the large woodland garden. Its leaves are obovate-lanceolate, 7 inches long and  $1\frac{1}{2}$  inches wide; coloured dull green above and having traces of tomentum, chiefly around the mid-rib, beneath. Each truss is dome-shaped and composed of up to thirty flowers. The corolla is tubular-campanulate,  $1\frac{3}{4}$  inches long and 2 inches across, has deep basal nectaries and is coloured Imperial Purple (H.C.C. 33/3—H.C.C. 33/2) with some darker staining. Exhibited by Mrs. R. M. Stevenson, Tower Court, Ascot, Berks. (Fig. 37).

**Rhododendron 'Prelude,'** A.M. May 1, 1951. A pleasing hybrid resulting from a cross between *R. Wardii* and *R. Fortunei*. Each truss is about ten-flowered, globular in shape and flat-topped. The broadly funnel-shaped corolla is coloured Primrose Yellow (H.C.C. 601/3) which gradually darkens towards the base and also shows a little indistinct staining. The leaves are oblong-lanceolate, cordulate and of a leathery texture. Exhibited by Edmund de Rothschild, Esq., Exbury, Southampton (Fig. 60).

**Rhododendron pseudoyanthinum**, A.M. May 1, 1951. A fine vase of this distinctly coloured species with its flowers of Lilac Purple (H.C.C. 031) was well shown. Each lobe of the corolla is large and the upper three bear some brown spotting. The leaves are a dull green shade while the underside, like the petiole, is covered with dense scaling. Exhibited by The Director, R.H.S. Gardens, Wisley, Ripley, Surrey (Fig. 63).

**Rhododendron 'Radiant Morn'** A.M. May 22, 1951. (*R. 'Fabia'* × *R. 'Sunrise'*). An interesting and also charming, brightly-coloured cross made from two hybrids of *R. Griersonianum*. Its leaves are 6 inches long and 2 inches wide, dull green above while on the underside there appears some sparse tomentum around the mid-rib. Seven large flowers make up the lax truss. The calyx is petaloid, varying in length from 1 inch to  $2\frac{1}{4}$  inches and, like the large, fleshy corolla is coloured Porcelain Rose (H.C.C. 620) suffused with Geranium Lake (H.C.C. 20/1). Exhibited by Lord Aberconway, C.B.E., LL.D., D.Sc., V.M.H., and the National Trust, Bodnant, North Wales.

**Rhododendron 'R. W. Rye,'** A.M. March 20, 1951. This is a particularly attractive hybrid from the cross between *R. chrysodoron* and *R. Johnstoneanum*. The leaves are a dark glossy green with a scaly under-surface. Each lax, flat-topped truss is usually made up of four pendulous flowers. These are rotate-campanulate with pronounced lobes and coloured a light shade of Primrose Yellow (H.C.C. 601/1) gradually darkening in the throat. Unfortunately, although this shrub is hardy its early flowering habit makes it prone to frost damage and it is, therefore, best grown with some protection. Exhibited by Rt. Hon. The Earl of Stair, D.S.O., K.T., Lochinch, Stranraer, Wigtownshire (Fig. 39).

**Rhododendron silvaticum** A.M. March 20, 1951. Two exhibits of this species were shown, the one from Mrs. R. M. Stevenson being under Kingdon-Ward's number 6258. Its leaves are oblanceolate,

7 inches long and 2 inches wide. In colour the upper surface is dull green and the underside pale brown with some light pubescence, soon glabrous. The globular truss is composed of up to twenty tightly packed flowers. In each the corolla is campanulate, fleshy with deeply emarginate lobes, has pronounced nectaries and is coloured Crimson (H.C.C. 22). Under favourable conditions this plant reaches the dimensions of a small tree and is found naturally in South-Eastern Tibet. Exhibited by Mrs. R. M. Stevenson, Tower Court, Ascot, Berks. and The Commissioners of Crown Lands, Windsor Great Park, Berks. (Fig. 34).

**Rhododendron Souliei Windsor Park var.**, F.C.C. May 22, 1951. The form shown was a distinct and interesting variant of the type. The lamina is very leathery, orbicular with a truncated base. The open truss is made up of about nine flowers rotate in shape and coloured white with a pink flush deepening to Phlox Pink (H.C.C. 625/1) at the margins while the base of the upper three lobes is stained with a small crimson blotch. From the centre of this shallow corolla the stamens are clustered tightly around a densely glandular pistil. Exhibited by The Commissioners of Crown Lands, Windsor Great Park, Berks. (Fig. 35).

**Rhododendron 'Welkin,'** F.C.C. May 22, 1951. The parentage of this delightful hybrid is *R. 'Eros' × R. haematodes*. It makes a dwarf, close-growing bush suitable for the front of the border, and has elliptic leaves sparingly tomentose beneath and 3 to 4 inches long. The truss is made up of four or five flowers, each 3 inches long and  $3\frac{1}{2}$  inches wide, with a petaloid, irregularly-lobed calyx up to 2 inches long, varying in colour, like the corolla, from Geranium Lake (H.C.C. 20/1) to Delft Rose (o20). Exhibited by Lord Aberconway, C.B.E., LL.D., D.Sc., V.M.H., and the National Trust, Bodnant, N. Wales.

**Rhododendron sp. (L. & S. (?) 6349),** A.M. May 1, 1951. A low-growing plant with leathery, ovate-elliptic leaves  $1\frac{1}{2}$  inch long and 1 inch wide, olive-green above and densely lepidote beneath. The inflorescence is made up of about five pendulous, campanulate, somewhat fleshy flowers. The corolla is  $1\frac{1}{4}$  inch long and  $1\frac{3}{4}$  inch wide, in colour Phlox Purple (H.C.C. 632/1). The plant was un-named at the time of showing, and the award is subject to naming. Exhibited by Capt. Collingwood Ingram, The Grange, Benenden, Kent (Fig. 62).



## A REVIEW OF RHODODENDRONS IN THEIR SERIES

### IV. *The Thomsonii Series*

BY DR. J. MACQUEEN COWAN AND H. H. DAVIDIAN, B.Sc.

THE problems which confront us in reviewing the Thomsonii Series are numerous and varied. Not only must the status and the inter-relationships of the individual species be examined, but we must discuss also questions connected with the constitution of the several subseries and moreover, consider the validity of the whole alliance.

At the outset we may recall that the plan adopted in *The Species of Rhododendron* was to choose certain better known species round which to group others deemed to be of the same kinship, and these species give their name to series. In accordance with this plan the well-known *R. Thomsonii* Hook. f. of the Eastern Himalayas became the prototype of the large assemblage known as the Thomsonii Series.

As to the alliance as a whole, it is the scope of the series with which we are concerned. If the representative species and many of the others do not closely correspond, is the alliance a valid one?

While it is generally agreed that *R. Thomsonii* is a distinctive species and its main characteristics are readily recognized, when other species of the series are compared it will be found that many do not conform; indeed in certain prominent characters not a few are the very antithesis of the representative plant.

The main characteristics which distinguish *R. Thomsonii* and by which it is readily recognized are as follows: broad rounded glabrous leaves; a loose inflorescence; a large cup-shaped calyx; a fleshy campanulate corolla and glabrous style and ovary. Within the series, as at present constituted, are included species with oblong or elliptic leaves (Selense subseries); species in which the leaves on the under side are clothed with a thin veil of hairs (*R. Stewartianum* Diels); species with a minute calyx (*R. callimorphum* Balf. f. & W. W. Sm.); species with a funnel-shaped not fleshy corolla (Selense subseries); and species where the style is partially (*R. caloxanthum* Balf. f. & Farrer) or completely (e.g. *R. Souliei* Franch.) glandular. Moreover, in the series a glabrous ovary is the exception rather than the rule. The fact is that the series has been extended to include species which lack some of the outstanding features, although, taking a broader view, may yet be regarded as within the orbit of *R. Thomsonii*.



Furthermore, although this review is intended to cover a single series, we must not ignore the fact that there is a close affinity between species of the Thomsonii Series and species of several other series, namely the Fortunei, Irroratum, Barbatum, Taliense and Neriiflorum Series. Certain species in each of these series are intermediate or overlapping in their more prominent characteristics. For example, *R. orbiculare* Decaisne has the rounded leaves of *R. Thomsonii*, but the 7-lobed corolla of *R. Fortunei* Lindl.; *R. Griffithianum* Wight has the oblong leaf of *R. Fortunei*, but the 5-lobed corolla and large calyx of *R. Thomsonii*; *R. vestitum* Tagg & Forrest has an indumentum no less pronounced than that of several species of the Taliense Series; various species of the Selense subseries have long stalked setose glands on the branchlets and petioles (a mark which we are accustomed to regard as typical of the Barbatum Series), and otherwise certain members of the Selense and Maculiferum subseries are not markedly different; *R. cerasinum* Tagg, which has been put in the Thomsonii Series, has almost equal claim to a place in the Irroratum Series.

As to the constitution of the Thomsonii Series, two important facts emerge. First, that the series is not a completely homogeneous unit. It is misleading to claim that "*R. Thomsonii* typifies very well the general characteristics of this extensive series." Secondly that the series is not a distinctive unit entirely apart, and therefore readily distinguished from all the rest. These facts lead, on the one hand, to the view that it would be advisable to restrict the series to species more closely akin to *R. Thomsonii*, and on the other hand, to the desirability of broadening the series even to the extent of uniting it with others.

By its very nature the Thomsonii Series represents an alliance which cannot be strictly defined, a loosely linked, yet recognizable natural association. Furthermore, whether it is allowed to remain within its present limits or is curtailed or extended, the alliance will still be somewhat loose and indefinite because the criteria which nature furnishes are relative rather than precise. The difficulties of classification are inherent in the genus and a decision as to the scope of the series must, to a large extent, be arbitrary.

Yet no ambiguity need arise if the constitution of the series is clearly understood; from a practical point of view it would be disadvantageous to extend it, rather it should be limited. A further sub-division of the Series, with the advantages of clearer delimitation, would appear to meet the immediate need.

Let us now consider the five subseries into which the Thomsonii Series has been sub-divided in *The Species of Rhododendron*.



The main distinguishing features of the subseries—Thomsonii, Martinianum, Souliei, Campylocarpum and Selsense—are summarized below, with the more important characteristics underlined.

1. THOMSONII SUBSERIES. Leaves more or less broadly elliptic, rounded at the ends; calyx very large, cupular; corolla broadly tubular to bell-shaped, usually red or crimson; style glabrous; ovary glabrous or glandular, fruit short and broad, rarely bent.

2. MARTINIANUM SUBSERIES. Leaves narrow elliptic, more or less rounded at both ends; calyx small; corolla bell-shaped, spotted; style glabrous or glandular at the base; ovary glandular, fruit cylindric, slightly curved.

3. SOULIEI SUBSERIES. Leaves orbicular to elliptic, rounded at both ends; calyx distinct, not cupular, gland fringed; corolla saucer- to bowl-shaped, not spotted; style glandular to the apex; ovary densely glandular, fruit stout, slightly curved, rarely slender.

4. CAMPYLOCARPUM SUBSERIES. Leaves orbicular to elliptic, rounded at both ends; calyx small, not cupular; corolla bell-shaped, not spotted; style glabrous or glandular at the base; ovary glandular, fruit slender, much curved, sickle-shaped.

5. SELSENSE SUBSERIES. Leaves oblong to elliptic, apex rounded or pointed; calyx usually small; corolla funnel-shaped, rarely spotted; style glabrous or glandular at the base; ovary glandular, fruit very slender, much curved, sickle-shaped.

There is no doubt that these subseries represent natural associations within the series, yet, when the species are examined, it will be seen that many of them conform only in part to the characters of the group in which they have been placed. Some species have certain characteristics of one subseries, and at the same time outstanding characters of another. Anomalies of this kind are most often observed in species which were discovered after the sub-divisions were made. Personal preference or chance seems to have determined the subseries into which such species have been placed. *R. cerasinum*, for example, with the typical corolla of the Thomsonii subseries, is placed in that group, but may be said to have no less claim to a place in the Souliei subseries, because the style is glandular to the tip. Many instances in which the main distinguishing criteria do not apply make it apparent that, in order to accommodate the species, the criteria have been ignored. The subseries have in practice been expanded far beyond their limits as these have been defined.

The more important discrepancies in each subseries, to which attention should be drawn (reference should be made to the descriptions of the subseries given above) are shown in the following list:

#### THOMSONII SUBSERIES

- (a) Leaf Shape. The leaves of *R. hylaeum* Balf. f. & Farrer and *R. populare* Cowan as well as those of certain forms of the variable *R. Stewartianum* Diels and *R. eclecteum* Balf. f. & Forrest, are narrow, as in the Selse subseries.
- (b) Size of Calyx. The calyx is very variable and often minute or small as in the Campylocarpum and Souliei subseries—in *R. cerasinum* Tagg 1–5 mm., *R. cyanocarpum* (Franch.) W. W. Sm. 2 mm.—1.1 cm.
- (c) The colour of the flower is not red or crimson in certain forms of *R. cerasinum*, *R. cyanocarpum*, *R. eclecteum* (except in var. *brachyandrum*) *R. hylaeum*, *R. Stewartianum*, *R. Thomsonii* var. *candelabrum* and var. *pallidum*.
- (d) Style. In *R. cerasinum* the style is glandular to the tip, as in the Souliei subseries.
- (e) Ovary. The ovary is glandular in *R. cerasinum*, *R. eclecteum*, *R. Stewartianum* and in the following varieties (but not in the typical form of the species): *R. cyanocarpum* (Franch.) W. W. Sm. var. *eriphyllum* Balf. f. ex Tagg, *R. Meddianum* Forrest var. *atrokermesinum* Forrest, *R. Thomsonii* Hook. f. var. *pallidum* Cowan, as it is in all species of the series, except in those of the Thomsonii subseries which have not been listed.

#### CAMPYLOCARPUM SUBSERIES

- (a) Leaf Shape. The small oblong leaves of *R. telopeum* Balf. f. & Forrest forma *telopeoides* Balf. f. ex Tagg are similar to those of species in the Selse subseries.

#### SOULIEI SUBSERIES

- (a) Leaf Shape. *R. croceum* Balf. f. & W. W. Sm. and *R. litiense* Balf. f. & Forrest have oblong leaves. *R. Bonvalotii* Bur. & Franch. has the narrow leaves of the Selse subseries but the style is glandular to the apex.
- (b) Corolla. *R. Williamsianum* Rehd. & Wils. has a campanulate corolla as in the Campylocarpum subseries, but the style is glandular to the apex.

#### SELENSE SUBSERIES

- (a) Leaf Shape. The leaf shape is not typical in *R. cymbomorphum* Balf. f. & Forrest, *R. erythrocalyx* Balf. f. & Forrest,



*R. esetulosum* Balf. f. & Forrest, *R. manopeplum* Balf. f. & Forrest and is very variable in *R. rhaibocarpum* Balf. f. & W. W. Sm.

- (b) Corolla. The broadly campanulate corolla of *R. manopeplum* is characteristic of the Campylocarpum and Thomsonii subseries. The yellow-flowered *R. cymbomorphum* is anomalous.
- (c) Ovary. The ovary is tomentose or tomentose glandular in *R. calvescens* Balf. f. & Forrest, *R. dasycladoides* Hand.-Mazz. and *R. selense* subspecies *duseimatum* Balf. f. & Forrest.

In addition to the above anomalies we may note further that in the Martinianum subseries *R. euryisiphon* Tagg & Forrest has the oblong leaves of the Selense subseries and is described as having the campanulate corolla of the Thomsonii subseries. Several species of the Selense subseries, as mentioned earlier, have setose-glandular branchlets and petioles characteristic of the Barbatum Series. The size of the calyx is very variable, not only in the Thomsonii subseries, but in the Souliei subseries also. The style in the Thomsonii subseries is glabrous (except *R. cerasinum*) and in the Souliei subseries invariably glandular to the tip, while in the Campylocarpum subseries it is glabrous or glandular at the base, rarely to three-quarters of its length. The capsule in the Thomsonii subseries is usually short and stout, but *R. Stewartianum*, *R. populare* and *R. eclectum* are exceptions, where the capsule (as in *R. Wardii* W. W. Sm.) is oblong and stout. The capsule in the Campylocarpum subseries is slender and slightly or much curved as in the Selense subseries where, however, it tends to be narrow. In the Souliei subseries the capsule is stout and variable in length.

From the above statement it will be obvious that the descriptions of the subseries must be revised, if the species are to conform in their main features to the characteristics of those in which they are placed. By re-drafting the descriptions so that they cover a wider field and by excluding aberrant species, we have aimed at greater preciseness and accuracy. The keys to the subseries given in *The Species of Rhododendron* cannot be relied upon.

When we turn to the species with their several subspecies, varieties, and forms, we have again to consider questions of scope and status and to explain apparent inconsistencies in nomenclature.

Among the species three distinct kinds of entities are encountered. Compare and contrast, for example, *R. Hookeri* Nutt.,



*R. selense* Franch. and *R. Stewartianum* Diels. *R. Hookeri* is a stable, relatively unmistakable entity, easily recognized by constant characters. *R. selense* is one of a galaxy of forms, of which many have been described as "species," yet they are quite inseparable according to the criteria furnished to distinguish them. *R. Stewartianum*, again, represents, under the one name, a range of variation comparable to that of the *R. selense* complex, but with the chain of intermediates so entangled as to have discouraged segregation.

The last two plastic or polymorphic species present a difficult problem but there would appear to be no good reason for such marked inconsistency in nomenclature.

In attempting to make adjustments we are faced with the perennial question whether to "lump" or to "split"; whether consistently to "lump" or consistently to "split"; or whether it is preferable to follow precedent, now "lumping" now "splitting," thus avoiding what might appear to be a needless change of names.

The difficulties in the group of species with which we are concerned are the greater, because intergrading is not confined to individual species or to a single complex. For example, the *R. selense* complex merges with the *R. erythrocalyx* complex, and again *R. Stewartianum* is closely linked with *R. eclectum*.

In each of the subseries many of the species confront us with problems of the kind indicated. Extreme variability is a natural feature in the series and there is no alternative to the use of variable diagnostic criteria.

From a general standpoint some comments upon the outstanding characteristics of the species will be of interest.

**HABIT.** All species of the Thomsonii Series are shrubs of medium size, except the anomalous *R. Williamsianum*, a dwarf spreading shrub seldom more than 3 feet in height.

**BRANCHLETS.** Usually the branchlets are glandular, with short stalked glands, but sometimes glabrous or setose glandular (sparsely or densely covered with very long stalked robust glands). The length of the gland stalk is very variable, and (as in the *Campylocarpum* subseries) short stalked, intermediate and long stalked setose glands occur together. Exceptionally long stalked setose glands are a characteristic feature of a group of species in the Selense subseries. A few setose glands (with short and medium stalked glands) are found on the branchlets of *R. Williamsianum* Rehd. & Wils. and *R. Martinianum* Balf. f. & Forrest.

**LEAVES.** Considerable emphasis has been laid on the texture of the leaf as an important character for distinguishing the Martinianum and Selense subseries, the leaves being chartaceous



on the one hand, leathery on the other; but the *Selense* subseries has itself been sub-divided into two groups, according to whether the leaves are chartaceous or leathery. Leaf texture as a diagnostic character is elusive and its use leads to confusion—for example, the leaves of *R. jucundum* Balf. f. & W. W. Sm. are as thick or as thin as those of *R. selense*, and yet these species are classified in separate groups because of this assumed distinction.

The rounded leaf is regarded as a diagnostic criterion of first importance, and leaf shape is used, not only in distinguishing between species, but also, as has been mentioned, in separating subseries. The divergence in the series from the typical rounded leaf of *R. Thomsonii* has already been noted. The truth is that the shape of the leaf is, in certain instances, a reliable character by which species or groups of species may be distinguished (e.g. for distinguishing *R. Thomsonii* and its closest allies from *R. hylaeum* and *R. populare*), but often it is so variable that it is an unreliable character. The leaf of *R. Meddianum*, typically oval, or oblong-oval is, in some forms, markedly obovate. Although leaf shape is the main character used to distinguish *R. eclectum* from *R. Stewartianum*, forms of both species are identical in this respect. The leaves of *R. eclectum* are typically obovate, but may be oblong-obovate or oblong, while those of *R. Stewartianum* (also very variable), are obovate, oblong-obovate or elliptic. Again, leaf shape is given as the principal character to be used in separating the allied species *R. Wardii*, *R. croceum*, *R. litiense* and *R. astrocalyx*. It is true that typical *R. Wardii*, with orbicular or broadly elliptic leaves, differs from typical *R. croceum* with more or less oblong leaves. Between the two extremes there is every intermediate form, and opinion will differ as to whether these are, in fact, two species or only one.

When difference in leaf shape is correlated with other characters it is, in our view, a useful auxiliary criterion, but without supporting evidence is not significant. The marked contrast between the leaves of *R. Thomsonii* and those of *R. hylaeum* may be taken as an instance where leaf shape is relatively constant and an important diagnostic character. On the contrary, where the herbarium material can be arranged in a completely intergrading sequence as in *R. eclectum* the character is diagnostically of little significance. Variation of leaf shape within limits is obviously a marked feature of certain species.

As to the base of the leaf and length of petiole (characters which have also been stressed), these are equally subject to variation, and therefore, require supporting evidence.

Leaf size has some significance as a diagnostic criterion. The two species *R. caloxanthum* and *R. telopeum* Balf. f. & Forrest



differ only in size of leaf; *R. Wardii* and *R. oresterum* differ in a similar manner. We may remark that in *The Species of Rhododendron* the first two mentioned are recognized while *R. oresterum* Balf. f. & Forrest has been "reduced" to *R. Wardii*. Other species again, like *R. Meddianum* and *R. Stewartianum*, have leaves greatly varying in size. Various adjustments in nomenclature are required for the sake of uniformity.

As to the under surface of the leaf, it is true that "to the eye it appears to be glabrous, but a lens often discloses the presence of fine hairs or minute glands or their vestiges." It should be emphasized, however, that some species are distinctive—the fasciculate hairs on the veins of the leaf of *R. Hookeri* are an important diagnostic character—*R. Stewartianum* and *R. vestitum* Tagg & Forrest have an indumentum clearly evident to the naked eye—the hairs of *R. eclectum* are conspicuous but confined to the midrib.

Glands or bristles associated with the petioles are of the same type as those on the branchlets.

**INFLORESCENCE.** The inflorescence is usually few-flowered, never a dense or compact truss, with an unusually small number of flowers in *R. Lopsangianum*, *R. populare*, *R. Williamsianum*, and *R. Martinianum*.

**PEDICELS.** The pedicels are usually glandular. The exceptions (species of the Thomsonii subseries, usually with glabrous pedicels) are noteworthy.

**CALYX.** Earlier reference has been made to variation in size of calyx. This may be great even in a single species. The large cup-shaped calyx of *R. Thomsonii* (and some of its allies) is a mark of importance, but in the same subseries we have *R. Lopsangianum* and *R. cerasinum*, where the calyx is not cup-shaped and never very large. In *R. Stewartianum* and several other species the calyx varies from a mere rim to a large cup and may be of any intermediate size. A form of *R. eclectum* with an exceptionally large, unequally lobed calyx has been given the name *R. anisocalyx*, but this modification, confined to a single specimen, would appear to be fortuitous. Whether the lobed, divaricate calyx of *R. astrocalyx*, a species which otherwise agrees with *R. Wardii*, should be taken to denote specific distinction seems open to question. Species of the Campylocarpum subseries are remarkably consistent; the calyx is always small. Except in *R. Thomsonii* and some of its nearest allies, where the calyx is completely glabrous, it is glandular and gland-fringed throughout the series.

**COROLLA.** The corolla is campanulate in the Thomsonii and Campylocarpum subseries, bowl-shaped or openly cup-shaped in



the Souliei subseries, and funnel-shaped in the Selense subseries. This is, on the whole, a reliable diagnostic character, subject to the exceptions already noted. The value of this criterion is, however, limited when there is no living material, but only herbarium specimens are available. It is often difficult to decide from dried material whether a corolla is campanulate or funnel-shaped.



Fig. 1.



Fig. 2.

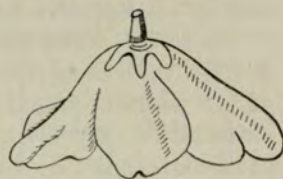


Fig. 3.

#### THOMSONII SERIES—COROLLA

TEXT FIG. 1—Campanulate, *R. Thomsonii*. FIG. 2—Funnel-shaped, *R. selense*. FIG. 3—Bowl-shaped, *R. Wardii*.

The size of the corolla which is somewhat variable is of little importance diagnostically.

As to colour, it may be noted that crimson flowers occur only in the Thomsonii subseries (except very rarely in *R. selense*). The flowers of the Selense subseries show the greatest variation, pink, rose, yellow or white, spotted or unspotted and with or without a basal blotch.

STAMENS. The filaments are puberulous or glabrous. Most species in this series are consistent, except several of the Campylocarpum subseries.

OVARY. Disregarding a few exceptions, it may be said that the ovary of species of the Thomsonii and Souliei subseries is conoid, of the Selense subseries narrowly elongate, cylindric, of the Campylocarpum subseries either conoid or narrowly elongate.

The ovary is glandular throughout the series with the following exceptions: in the Thomsonii subseries, *R. Thomsonii*, *R. cyanocarpum*, *R. Meddianum*, *R. Hookeri*, *R. hylaeum*, *R. Lopsangianum* and *R. populare*. This is a useful distinction although it should be noted that varieties of the first three species differ from the type in that the ovary is glandular.

STYLE. Excepting *R. cerasinum*, the style is glabrous in the Thomsonii subseries; invariably glandular to the tip in the Souliei subseries; glabrous or glandular at the base or sometimes up to half its length in the Campylocarpum subseries; glabrous or glandular at the base or rarely glandular to three-quarters of its length in the Selense subseries.

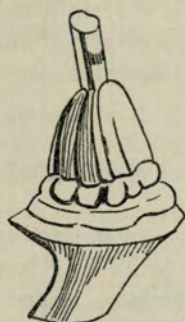


Fig. 4.

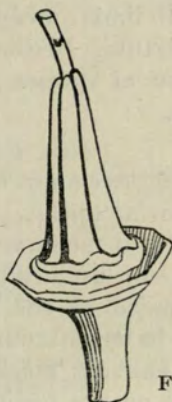


Fig. 5.

## THOMSONII SERIES—OVARY

TEXT FIG. 4—Conoid, *R. Thomsonii*. FIG. 5—Narrowly elongate, *R. selense*.

**CAPSULE.** The capsule in the Thomsonii subseries is short and stout or broadly oblong (Text Figs. 6 & 7); in the Selense subseries slender and often curved or sickle-shaped (Text Figs. 9 & 10); in the Campylocarpum subseries either oblong, slender, straight or curved; in the Souliei subseries short and stout to oblong, but never slender. This criterion is a valuable one in separating subseries.

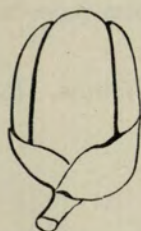


Fig. 6.

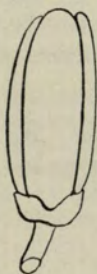


Fig. 7.

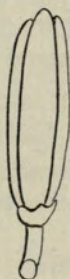


Fig. 8.

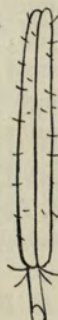


Fig. 9.

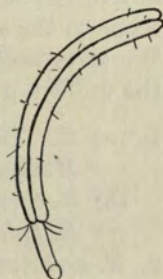


Fig. 10.

## THOMSONII SERIES—CAPSULE

TEXT FIG. 6—Short broad, *R. Thomsonii*. FIG. 7—Broadly oblong, *R. eclectum*. FIG. 8—Narrowly oblong, *R. eclectum*. FIG. 9—Slender cylindric, *R. selense*. FIG. 10—Slender cylindric, *R. selense*.

It will be apparent from the foregoing general observations how important it is, in reviewing the series, to choose criteria which can, in fact, be depended upon. We propose to adhere closely to the arrangement in *The Species of Rhododendron*, but, by some rearrangement and careful selection of criteria, have



sought to limit ambiguity and to maintain a certain balance in nomenclature. Because of the natural overlapping and intergradation of species, ambiguity cannot, however, be entirely avoided.

#### THOMSONII SERIES

The series cannot be strictly defined, but may be described in the following terms.

Habit, of medium height with no large trees or very dwarf species; leaf, usually broad in proportion to its length, more or less rounded at the ends, frequently cordate, under surface appears to be glabrous but a lens often discloses the presence of minute hairs; a marked development of glands is commonly observed on the pedicels, calyx, ovary and style; inflorescence few-flowered, not forming a dense truss; calyx large or small; the 5-lobed corolla is saucer-shaped, funnel-shaped, bell-shaped or broadly tubular; ovary glabrous to densely glandular, rarely entirely hairy; fruit, a capsule, short and blunt or slender and sickle-shaped.

The sub-divisions of the series as set out in *The Species of Rhododendron* require to be revised. It is true that the four species *R. Thomsonii*, *R. campylocarpum*, *R. Souliei* and *R. selense* are the centres of four distinctive associations, but these by no means fully indicate the variations and relationships throughout this group. Moreover, the distinguishing characters given in the key to the subseries do not hold and it is only by restricting the scope of the subseries that delimitation can be made more exact. We have accordingly rearranged the species and group them in the following manner.

1. (a) *R. Thomsonii*, *R. cyanocarpum*, *R. Meddianum*, *R. Hookeri*, *R. Lopsangianum*, *R. populare*.  
(b) *R. Stewartianum*, *R. eclectum*.  
(c) *R. hylaeum*.
2. *R. cerasinum*, *R. Bonvalotii*.
3. *R. campylocarpum*, *R. caloxanthum*, *R. telopeum*, *R. panteumorphum*, *R. callimorphum*, *R. myiagram*.
4. *R. Williamsianum*.
5. *R. Souliei*, *R. puralbum*, *R. Wardii*, *R. litiense*.
6. (a) *R. selense*, *R. erythrocalyx*, *R. esetulosum*.  
(b) *R. dasycladum*, *R. jucundum*, *R. dasycladoides*, *R. Martinianum*, *R. euryisiphon*, *R. setiferum*, *R. vestitum*.

Whether or not the *Selense* group should be regarded as a separate series can be decided when other related series have been re-examined. In the meantime it is included here.

The names of species which do not appear in the above list will be found in synonymy.

## KEY TO THE SUBSERIES

- A. Style glandular to the tip.
  - B. Corolla bowl- or saucer-shaped, yellow, white or pink; calyx usually 0.4–1.2 cm. long . . . . . Souliei sub-series
  - B. Corolla campanulate, pink or rose; calyx 1–5 mm. long or a mere rim.
    - C. Leaves orbicular or ovate; low spreading shrub; branchlets setose-glandular; inflorescence 2–3- (rarely up to 5-) flowered . . . . . Williamsianum subseries
    - C. Leaves oblong or oblong-elliptic; erect shrubs; branchlets not setose-glandular; inflorescence 5–7-flowered . . . . . Cerasinum sub-series
- A. Style eglandular or glandular at the base (rarely to three-fourths its length but never to the tip).
  - B. Corolla usually funnel-shaped; branchlets setose-glandular or not setose-glandular; capsule slender, curved (sickle-shaped); leaves oblong, elliptic or oblong-oval . . . . . Selense sub-series
  - B. Corolla campanulate; branchlets not setose-glandular; capsule short, stout or oblong or slender, straight or curved; leaves orbicular, broadly elliptic, obovate or oblong.
    - C. Ovary eglandular . . . . . Thomsonii sub-series
    - C. Ovary glandular.
      - D. Leaves orbicular, elliptic or oblong; calyx large, 0.4–2 cm. long; flowers crimson, pink or white (sometimes yellow); style eglandular; capsule short, stout or broadly oblong, straight . . . . . Thomsonii sub-series
      - D. Leaves orbicular or elliptic (in *R. panteumorphum* oblong); calyx small, usually 1–3 mm. (sometimes up to 5 mm.) long; flowers yellow, pink or white; style glandular at the base or up to one-half its length or eglandular; capsule slender, often curved . . . . . Campylocarpum subseries

## CAMPYLOCARPUM SUBSERIES

GENERAL CHARACTERS: Shrubs, 60 cm.–3 m. high, branchlets glandular. Leaves orbicular, ovate or broadly elliptic (in *R. panteumorphum* often oblong); lamina 2–10 cm. long, 1.4–5.6 cm. broad; under surface glabrous. Inflorescence terminal, umbellate or shortly racemose, 4–10-flowered. Pedicels 1–3.5 cm. long, glandular. Calyx 0.5–6 mm. long, glandular. Corolla 5-lobed, campanulate, 2.5–4.5 cm. long, yellow, pink or white. Stamens 10; filaments glabrous or puberulous at the base. Ovary narrowly elongate-cylindric or conoid, 4–6 mm. long, densely glandular;



style glandular at the base or up to one-half of its length or eglandular. Capsule slender, cylindric, or oblong, curved or straight, glandular.

## KEY TO THE SPECIES

- A. Flowers yellow.
  - B. Leaves elliptic or ovate or oblong.
    - C. Leaves elliptic or ovate, Himalayan species . . . *R. campylocarpum*
    - C. Leaves usually oblong (sometimes elliptic) predominantly Chinese species . . . *R. panteumorphum*
  - B. Leaves more or less orbicular.
    - C. Average leaf length to breadth 5-4 cm. . . *R. caloxanthum*
    - C. Average leaf length to breadth 4-3 cm. . . *R. telopeum*
- A. Flowers rose or pink or white.
  - B. Flowers rose or pink . . . . . *R. callimorphum*
  - B. Flowers white . . . . . *R. myiagrum*

## DESCRIPTION OF SPECIES (AMP. ET EM.)

**R. callimorphum** Balf. f. & W. W. Sm. in Notes R.B.G. Edin., X, 89 (1917); Bot. Mag., CXLV, t. 8789 (1919); Millais, Rhododendrons, Ser. 2, 97 (1924); Tagg in The Sp. of Rhod., 699 (1930); Rhod. Handb., 14 (1947). *R. cyclium* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 39 (1920); Millais, Rhododendrons, Ser. 2, 121 (1924); Tagg in The Sp. of Rhod., 703 (1930); Rhod. Handb., 26 (1947). *R. hedythamnium* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 261 (1922); Millais, Rhododendrons, Ser. 2, 153 (1924); Tagg in The Sp. of Rhod., 704 (1930); Rhod. Handb., 44 (1947). *R. hedythamnium* Balf. f. & Forrest var. *eglandulosum* Hand. Mazz. in Akad. Amz. Wien., No. 19 (1923).

**HABIT:** shrub, 60 cm.-2.75 m. high; branchlets glandular with short stalked glands, rarely eglandular, those below the inflorescences 3-5 mm. in diameter.

**LEAVES:** lamina thinly leathery, orbicular or ovate or broadly elliptic, 3-7 cm. long, 2-5.3 cm. broad, apex rounded or broadly obtuse, mucronate, base cordulate or truncate or rounded; upper surface glabrous or with scattered vestiges of hairs, glossy, midrib grooved, primary veins 9-12 on each side, impressed; under surface glaucous, glabrous, midrib raised, sparsely or moderately glandular with minute glands; petiole 0.7-2.6 cm. long, usually glandular with short stalked glands, hairy or glabrous.

**INFLORESCENCE:** umbellate or shortly racemose, 5-8-flowered; rachis 2-4 mm. long, glandular, hairy or glabrous.

**PEDICELS:** 1-3 cm. long, glandular with short stalked glands.

**CALYX:** minute, 5-lobed, 1-3 mm. long; lobes rounded or triangular, glandular outside and gland fringed.



THE THOMSONII SERIES  
FIG. 69—*R. Thomsonii* (See  
p. 179)







FIG. 70—*R. cyanocarpum* (See p. 165)



THE THOMSONII SERIES

FIG. 71—*R. callimorphum* (See p. 129)

**COROLLA:** campanulate or sometimes funnel-campanulate, 3-4.5 cm. long, pink or deep rose with or without a crimson blotch at the base; lobes 5, 1-1.4 cm. long, 1.6-2.4 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.3-3 cm. long; filaments glabrous or sometimes puberulous at the base.

**PISTIL:** 2.6-3.5 cm. long; ovary narrowly elongate-cylindric or conoid, 4-5 mm. long, densely glandular with short or long stalked glands; style glandular at the base or eglandular.

**CAPSULE:** slender, cylindric, 1.4-2.2 cm. long, 4-6 mm. broad, slightly curved, glandular, calyx persistent.

**HABITAT:**

*Yunnan.* FORREST 12019—type, 9055, 11601—type of *R. hedythamnum*, 15808, 17651, 18044—type of *R. cyclium*, 18685, 24350, 27389, 27801.

*N.E. Burma.* WARD 3408, 3721.

Alt. 9,000-11,000 feet.

The name *R. callimorphum* was given to a plant discovered by FORREST (No. 12019) in 1913 on the Shweli-Salwin Divide and the name *R. cyclium* to the plant collected in 1919 under his number 18044 on the N'Maikha-Salwin Divide. The distinguishing characters given in *The Species of Rhododendron*—the more orbicular leaf with thicker and more leathery texture, the corolla of a deeper tint—do not hold. The isotype of *R. callimorphum* matches exactly the isotype of *R. cyclium*. The truth is that the leaf shape of *R. callimorphum* is variable—orbicular, broadly elliptic or ovate. As to the texture of the leaf, a distinction is drawn in the Key, but in the text the leaves of both species are described as thinly leathery (Fig. 71).

Among plants in cultivation we are accustomed to regard those with smaller leaves as *R. cyclium* and those with larger leaves as *R. callimorphum*. But this is in fact incorrect. According to the original specimens, the leaves of *R. callimorphum* are no longer than those of *R. cyclium*, in fact the specimens are identical. While it is possible to distinguish between extreme forms the majority of plants in gardens have leaves intermediate in size and shape and these plants have been assigned to the one or the other name at random. Undoubtedly the various forms represent merely different aspects of a single variable species.

A plant (F. 11601) from the Tali range to which the name *R. hedythamnum* was given had been confused with *R. jucundum*. Its similarity with *R. callimorphum* must have been overlooked. It is no more than a variant of this species, the distinguishing



characters given in *The Species of Rhododendron*—size of calyx, shape and texture of the leaf are (within limits) variable, while the presence or absence of hairs on the filaments of the stamens cannot be relied upon diagnostically.

**R. caloxanthum** Balf. f. & Farrer in Notes R.B.G. Edin., XIII, 238 (1922); Millais, *Rhododendrons*, Ser. 2, 98 (1924); Tagg in *The Sp. of Rhod.*, 700 (1930); *Rhod. Handb.*, 14 (1947); Rothschild in *New Flora & Silva*, IV, 6 (1931–2); Bean, *Trees & Shrubs*, III, 358 (1933); *Journ. Roy. Hort. Soc.*, LIX, 403 (1934).

**HABIT:** shrub, 60 cm.–1.85 m. high; branchlets below the inflorescences 3–4 mm. in diameter, glandular with long or short stalked glands, rarely eglandular.

**LEAVES:** lamina leathery, orbicular or ovate or broadly elliptic, 3.2–8 cm. long, 2.6–5.6 cm. broad, apex rounded and mucronate, base truncate or cordate; upper surface dark green, glabrous, midrib grooved, primary veins 10–12 on each side, impressed; under surface pale glaucous green, papillate, glabrous or minutely hairy, midrib raised; petiole 1.1–2.8 cm. long, sparsely or moderately glandular with long or short stalked glands or eglandular, rarely hairy.

**INFLORESCENCE:** umbellate or shortly racemose, 4–9-flowered; rachis 0.1–1.8 cm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 0.9–2.7 cm. long, moderately or densely glandular with short or long stalked glands, rarely hairy.

**CALYX:** small, 5-lobed, 1–5 mm. long, lobes rounded, densely glandular or sometimes eglandular outside, margin glandular.

**COROLLA:** campanulate, 2.5–4 cm. long, citron or sulphur yellow, sometimes tinged pink, flushed and tipped orange-scarlet in bud; lobes 5, 0.8–1.2 cm. long, 1.5–2.5 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.4–3.5 cm. long; filaments glabrous or puberulous at the base.

**PISTIL:** 2.3–3.4 cm. long; ovary narrowly elongate-cylindric or conoid, 4–6 mm. long, densely glandular with long or short stalked glands; style glandular in the lower one-fourth or eglandular.

**CAPSULE:** slender, cylindric, or oblong, 1.7–2.5 cm. long, 5–7 mm. broad, curved or straight, glandular, 5–7-celled, calyx persistent.

**HABITAT:**

*Burma.* FARRER 937—type, 1672. FORREST 24543, 24619, 26985, 27123, 27125, 27495, 27574, 27664.

*Tibet.* LUDLOW & SHERRIFF 1656.

*Yunnan.* FORREST 17725, 17772. ROCK 17073, 18405, 22898, 23408.

Alt. 11,000–13,000 feet.

*R. caloxanthum*, "of a beautiful yellow," is the name given to a plant first collected by FARRER in N.E. Upper Burma in 1919. Subsequently FORREST found it in the same locality, he and ROCK record it from Yunnan, LUDLOW AND SHERRIFF from Tibet. The difference between this species and *R. campylocarpum* is mainly of leaf shape, orbicular or ovate in *R. caloxanthum*, oblong or oblong-elliptic in *R. campylocarpum*, and the two species merge into one another.

*R. caloxanthum* received an Award of Merit when it was exhibited by MR. LIONEL DE ROTHSCHILD in 1934.

***R. campylocarpum*** Hook. f. in Rhod. Sikk. Himal., t. 30 (1851), and in Journ. Hort. Soc., VII, 79, 101 (1852); Journ. Roy. Hort. Soc. J7, 79, 99, 101 (1852); *ibid.*, XVI, 138 (1893–4); *ibid.*, XLV, 411 (1919–20); Hook. f. in Bot. Mag., LXXXIII, t. 4968 (1857); Clarke in Hook. f. Fl. Brit. Ind., III, 467 (1882); Gard. Chron., XXI, 832 (1884); *ibid.*, Ser. 3, XXI, 230 (1897); *ibid.*, Ser. 3, XLIX, 321 (1911); *ibid.*, Ser. 3, LVIII, 338, 355, 369, 386 (1915); *ibid.*, Ser. 3, LXXIX, 343 (1926); *ibid.*, Ser. 3, LXXXV, 319 (1929); The Garden, XXVIII, 319 (1885); *ibid.*, LIV, 183 (1898); Millais, Rhododendrons, 134 (1917); *ibid.*, Ser. 2, 100 (1924); Tagg in The Sp. of Rhod., 702 (1930); Rhod. Handb., 15, 131 (1947).

**HABIT:** shrub, 1.25–3 m. high; branchlets below the inflorescences 3–4 mm. in diameter, glandular with short or long stalked glands, rarely hairy.

**LEAVES:** lamina leathery, elliptic or oblong-elliptic or ovate, 4–10 cm. long, 2.3–5.4 cm. broad, apex broadly obtuse or rounded and mucronate, base truncate or cordate or rarely rounded; upper surface glabrous, glossy, midrib grooved, eglandular or glandular, primary veins 10–15 on each side, impressed; under surface pale glaucous green, papillate, glabrous or minutely hairy, midrib raised, glandular towards the base; petiole 0.8–2.4 cm. long, glandular with short or long stalked glands or eglandular, sometimes hairy.

**INFLORESCENCE:** umbellate or a racemose umbel of 6–10 flowers; rachis 3–8 mm. long, glandular with short stalked glands or eglandular, hairy or glabrous.



PEDICELS: 1.5–3.5 cm. long, glandular with short or long stalked glands.

CALYX: minute, 5-lobed, 0.5–1.5 mm. long, rarely more, lobes rounded or triangular, glandular outside and gland fringed.

COROLLA: campanulate, 2.5–4 cm. long, pale or bright yellow with or without a faint basal crimson blotch; lobes 5, 1.1–2 cm. long, 1.5–2.5 cm. broad, rounded, emarginate.

STAMENS: 10, unequal, 1.2–3.3 cm. long; filaments glabrous or puberulous at the base.

PISTIL: 2.4–5 cm. long; ovary narrowly elongate-cylindric, rarely conoid, 4–6 mm. long, densely glandular with short or long stalked glands; style glandular at the base or sometimes up to one-half of its length or eglandular.

CAPSULE: slender, cylindric, 1.7–3 cm. long, 3–5 mm. broad, slightly or much curved, glandular, 5–7-celled, calyx persistent.

#### HABITAT:

*Sikkim.* HOOKER, no number, no date. CAVE in 29/5/14. BOR & KIRAT RAM 19844. COOPER 15, 749. WATT 5285, 5607.

*East Himalaya.* RIBU & RHOMOO in 15/6/12. CAVE 1735, 2365, 6713, 6927, in 15/5/15, 17/1/20, 1/7/22.

*Bhutan.* COOPER 2504, 3491, 3875. LUDLOW & SHERRIFF 9, 3048.

*Assam.* WARD 8256.

*Tibet.* LUDLOW & SHERRIFF 1628. BOR & KIRAT RAM 19203, 19260. WARD 5853.

Alt. 10,000–14,000 ft.

HOOKER in *The Rhododendrons of the Sikkim-Himalaya* describes *R. campylocarpum* as “a small bush averaging 6 feet in height,” and this is true of plants growing at about the upper limits of the Rhododendron forest zone, at elevations of about 12,000 feet and upwards. But *R. campylocarpum* occurs, often plentifully, at lower elevations, as one of the dominating species in the wide tracts of Rhododendron forest, and here it is usually much taller; plants 10–15 feet in height, or more, are common; actual size depends largely upon altitude, soil and exposure.

This variation, evident in plants in their native habitat, is, as Millais points out, reflected in plants in cultivation. To the various forms names have been given. The form *compactum* is a dense dwarf bush—smaller than the one usually grown, which is a large shrub, 10–12 feet in height or more. Variation in cultivated plants is not confined to habit but may be observed also in size and shape, and colour and texture of leaf as well as in the size and colour of the flowers.



*R. campylocarpum* received a First Class Certificate when exhibited by Messrs. Veitch & Son in 1892. It has usually been supposed that *R. campylocarpum* is confined in its distribution to the Sikkim Himalayas but it has certainly a much wider range. The records show that it occurs in Eastern Nepal, in Bhutan and in Tibet and it is not improbable that it may extend even well into Yunnan. Yet no plant from Western China has been given that name. Those which are not *R. caloxanthum* or *R. telopeum* but most closely resemble *R. campylocarpum* have been assigned to *R. telopeum* as forma *telopeoides*. Now the species *R. campylocarpum*, *R. caloxanthum* and *R. telopeum*, all with yellow flowers, are very closely allied and there is a definite intergrading. Leaf shape and size are the only characters of importance in distinguishing between them. Typical *R. campylocarpum* has large (6–10 cm.) oblong leaves, typical *R. caloxanthum* large (5–8 cm.) orbicular leaves, and typical *R. telopeum* small (2·5–4 cm.) orbicular leaves. As a diagnostic criterion the glabrous or glandular nature of the style cannot be relied upon. In *R. campylocarpum* (plants from Sikkim) the style is glandular at the base or sometimes up to one-half of its length or eglandular; in *R. caloxanthum* glandular in the lower one-fourth or eglandular; in *R. telopeum* glandular at the base or eglandular.

However, the three species can, as a rule, be readily distinguished by their differing leaves. As to the name *R. telopeum* forma *telopeoides* this is strictly applied to plants with small leaves like those of *R. telopeum*, where "the leaf tends to lose its orbicular shape and becomes more ovate and more pointed" and plants with this characteristic can also be seen in cultivation. But the name has been used to accommodate also plants collected by FORREST (No. 11067) and ROCK (Nos. 16980, 17019, 18383) in China with much larger oblong-elliptic leaves, which resemble neither *R. telopeum* nor (if strictly interpreted) *R. telopeum* forma *telopeoides*; they are, in fact, indistinguishable from *R. campylocarpum* in leaf and have no other outstanding characteristic. None the less, a comparison of living plants suggests, however, that those raised from FORREST and ROCK's seed, although they resemble *R. campylocarpum*, do not attain the dimensions of the typical plant and moreover, the leaves tend to have a glaucous sheen absent from the leaves of Himalayan plants.

Until further evidence is available it is perhaps preferable to regard these Chinese plants as somewhat apart from *R. campylocarpum*, but they ought not to be confused with *R. telopeum*. It is unnecessary to find a new specific name for they appear to match very closely FORREST's No. 5068, which was named *R. panteumorphum* and the description fits exactly. Moreover *R. panteumorphum*



has been wrongly placed in the *Selense* subseries as the only 'Yellow *Selense*' for the corolla is described as, "a basi vere campanulata." If further evidence shows that *R. campylocarpum* extends to Yunnan, the name *R. panteumorphum* will become synonymous.

**R. myiagrum** Balf. f. and Forrest in Notes R.B.G. Edin., XIII, 52 (1920); Millais, *Rhododendrons*, Ser. 2, 191 (1924); Tagg in *The Sp. of Rhod.*, 705 (1930); *Rhod. Handb.*, 64 (1947).

**HABIT:** shrub, 90 cm.—1.50 m. high; branchlets below the inflorescences about 3 mm. in diameter, glandular with short stalked glands.

**LEAVES:** lamina leathery, orbicular or ovate or elliptic, 2–7 cm. long, 1.5–4.8 cm. broad, apex rounded, rarely obtuse, mucronate, base cordulate or truncate; upper surface glabrous, midrib grooved, primary veins 7–12 on each side, impressed; under surface glabrous, glaucous, papillate, midrib raised, minutely glandular towards the base; petiole 0.9–2.2 cm. long, glandular with short stalked glands or setose-glandular.

**INFLORESCENCE:** an umbel of 4–5 flowers.

**PEDICELS:** 1.5–2.8 cm. long, glandular with short or long stalked glands.

**CALYX:** small, 5-lobed, 1–6 mm. long; lobes oblong or rounded or triangular, densely glandular outside and gland fringed.

**COROLLA:** campanulate, 2.5–3.3 cm. long, white, spotted or unspotted, and with or without a crimson blotch at the base; lobes 5, 1–1.2 cm. long, 1.4–2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.3–3 cm. long; filaments glabrous or rarely puberulous at the base.

**PISTIL:** 2.5–3.6 cm. long; ovary narrowly elongate-cylindric or conoid, 4–5 mm. long, densely glandular with short stalked glands; style glandular at the base or rarely up to one half its length, rarely eglandular.

**CAPSULE:** slender, 1.6–2 cm. long, 5 mm. broad, straight or slightly curved, glandular or with vestiges of glands, calyx persistent.

**HABITAT:**

Yunnan. FORREST 17993—type, 18068.

Burma. FORREST 27142, 27488, 29647.

Alt. 10,000–13,000 feet.

*R. myiagrum* was collected by FORREST in June 1919 in Yunnan on the N'Maikha-Salwin Divide and again in July 1925 in N.E. Upper Burma on the western flank of the same divide. It is said

that "it has the appearance of a white *R. cyclium* with small flowers and with such glandular pedicels that in Yunnan they are often found plastered with small flies." The name *myiagram* refers to this characteristic for it signifies "the fly-catcher" (Fig. 72).

In its distribution, as far as we know, it is confined to the area indicated and it might be regarded as a geographical form of *R. callimorphum*. There is only one constant character whereby *R. myiagram* and *R. callimorphum* can be distinguished, namely, the colour of the flower. We have now at our disposal a much larger amount of material than was available when the species was described, and it is evident that the long stalked glands associated with this species are not infrequently seen in its nearest allies.

**R. panteumorphum** Balf. f. & W. W. Sm. in Notes R.B.G. Edin., IX, 257 (1916); ("*R. selense*" Diels non Fr. in Notes R.B.G. Edin., VII, 295 (1913); Millais, Rhododendrons, 223 (1917), and ibid., Ser. 2, 205 (1924); Tagg in The Sp. of Rhod., 721 (1930); Bean, Trees & Shrubs, III, 416 (1933); Hand. Mazz., Symb. Sin., VII, 782 (1936); Rhod. Handb., 109 (1947). *R. telopeum* Balf. f. & Forrest forma *telopeoides* Balf. f. ex Tagg in the Sp. of Rhod., 706 (1930).

**HABIT:** shrub, 60 cm.-3 m. high; branchlets below the inflorescences 2-4 mm. in diameter, glandular with short stalked glands, rarely floccose.

**LEAVES:** lamina leathery, elliptic or oblong-elliptic or oblong, 3-7 cm. long, 1.4-4.2 cm. broad, apex rounded or broadly obtuse and mucronate, base rounded or cordulate; upper surface glabrous, midrib grooved, primary veins 10-12 on each side, impressed; under surface pale glaucous green, glabrous (rarely with minute hairs), midrib raised; petiole 0.6-1.6 cm. long, glandular with short or long stalked glands or eglandular, rarely floccose.

**INFLORESCENCE:** terminal, umbellate or shortly racemose, 4-8-flowered; rachis 3-5 mm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 1.3-2.2 cm. long, glandular with short stalked glands, rarely hairy.

**CALYX:** small, 5-lobed, 1-5 mm. long; lobes rounded or triangular, usually glandular or sometimes hairy.

**COROLLA:** campanulate, 3-3.6 cm. long, pale yellow; lobes 5, 1-1.4 cm. long, 1.5-1.8 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.6-3.1 cm. long; filaments puberulous at the base or glabrous.

**PISTIL:** 2-3.4 cm. long; ovary narrowly elongate-cylindric or conoid, 3-5 mm. long, moderately or densely glandular



with short stalked glands and rarely tomentose; style eglandular.

CAPSULE: slender cylindric or oblong, 1.4–1.8 cm. long, 4 mm. broad, curved, glandular, calyx persistent.

HABITAT:

*S.E. Tibet.* FORREST 5068—type, 21755, 21905.

*Yunnan.* FORREST 13560, 15005, 15571. ROCK 11067, 16980, 16996, 17011, 17012, 17019, 18353, 18373, 18383.

Alt. 11,000–14,000 feet.

In September 1904 FORREST found on the Mekong-Salwin Divide, north-west of Tsekou, a small shrub 2–4 feet high with yellow flowers. It was represented in his collection by a single flowering specimen F. No. 5068. On FORREST's authority his later gathering No. 15571 represents the same species. The former plant was named *R. panteumorphum* which had been incorrectly named *R. selense*. Apparently it was not recognized that the affinity of this species is with the Himalayan *R. campylocarpum* rather than with *R. selense*, and that the chief claim of the species to distinction is its geographical distribution remote from the Eastern Himalaya where *R. campylocarpum* is commonly found.

The flowers are not funnel-shaped as in *R. selense* but campanulate as in *R. campylocarpum*, as is stated in SIR ISAAC BAYLEY BALFOUR's description, so that *R. panteumorphum*, with yellow flowers, is not unique in the *Selense* subseries but a typical member of the *Campylocarpum* subseries.

***R. telopeum*** Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 61 (1920); Millais, *Rhododendrons*, Ser. 2, 248 (1924); Gard. Chron., Ser. 3, LXXXV, 221, f. 105 (1929); Tagg in The Sp. of Rhod., 706 (1930); Bean, *Trees & Shrubs*, III, 359 (1933); Hand. Mazz., *Symb. Sin.*, VII, 781 (1936); Rhod. Handb., 94 (1947).

HABIT: shrub, 90 cm.–3 m. high; branchlets below the inflorescences about 3 mm. in diameter, sparsely or moderately glandular with short stalked glands.

LEAVES: lamina leathery, orbicular or ovate or elliptic, 2.5–5 cm. long, 1.7–3.5 cm. broad, apex rounded or broadly obtuse, mucronate, base rounded or truncate or cordulate; upper surface dark green, glabrous, midrib grooved, primary veins 7–9 on each side, impressed; under surface pale glaucous green, papillate, glabrous or minutely hairy, midrib raised; petiole 0.8–1.8 cm. long, glandular with long or short stalked glands or eglandular,

INFLORESCENCE: umbellate, 4-5-flowered; rachis 1-4 mm. long, glandular, hairy or glabrous.

PEDICELS: 1.1-2.5 cm. long, glandular with short stalked glands.

CALYX: minute, 5-lobed, 1-2 mm. long; lobes rounded or triangular (rarely eglandular) outside, margin glandular.

COROLLA: campanulate, 2.6-4 cm. long, bright yellow with or without a faint basal crimson blotch; lobes 5, 1-1.5 cm. long, 1.5-2.2 cm. broad, rounded, emarginate.

STAMENS: 10, unequal, 1.6-3 cm. long; filaments puberulous at the base or glabrous.

PISTIL: 2.5-3.6 cm. long; ovary conoid or narrowly elongate-cylindric, 4-5 mm. long, densely glandular with short stalked glands; style eglandular or sometimes glandular at the base.

CAPSULE: slender cylindric or oblong, 1.3-2 cm. long, 4-7 mm. broad, slightly or much curved, glandular, calyx persistent.

HABITAT:

*S.E. Tibet.* FORREST 18963—type, 20023, 21875, 22769.  
ROCK 10147, 22109.

*Yunnan.* FORREST 25573, 25752. ROCK 9236.

Alt. 12,000-14,000 feet.

*R. telopeum* was discovered by FORREST on the Salwin-Ch'iu-chiang Divide in 1919, while *R. caloxanthum* was found by FARRER in N.E. Upper Burma in the same year. The two species are closely akin, differing only as to leaf size and this is not a constant character, so that the one might well be regarded as the variety of the other.

Typical *R. telopeum* with small orbicular leaves is, however, easily distinguished from typical *R. caloxanthum* where the leaves are much larger. Although in a comparable instance in another subseries a reduction has been made—*R. oresterum* has been reduced to *R. Wardii*—we have in this instance preferred not to disturb the nomenclature in preference to uniformity, since the name *R. caloxanthum*, published in 1922 and well known in horticulture, would give place to the name *R. telopeum* published two years earlier.

CERASINUM SUBSERIES

GENERAL CHARACTERS: Shrubs, up to 3.6 m. high; branchlets glandular or eglandular. Leaves oblong, oblanceolate or oblong-elliptic; lamina 4-10 cm. long, 1.5-4 cm. broad, under surface glabrous. Inflorescence terminal, umbellate, 5-7-flowered. Pedicels 1.3-2 cm. long, glandular. Calyx small, 1-5 mm. long, glandular. Corolla campanulate, 5-lobed, 2.3-4.5 cm. long,



cherry-red, brilliant scarlet, or creamy-white with a broad cherry-red band round the summit. Stamens 10, filaments glabrous. Ovary conoid, 5–8 mm. long, densely glandular; style glandular to the tip. Capsule oblong, glandular.

## KEY TO THE SPECIES

- |  |                      |
|--|----------------------|
| A. Corolla large, 3.5–4.5 cm. long; leaves 5–10 cm. long | <i>R. cerasinum</i>  |
| A. Corolla small, 2.3 cm. long; leaves 4–5 cm. long      | <i>R. Bonvalotii</i> |

## DESCRIPTION OF SPECIES (AMP. ET EM.)

**R. Bonvalotii** Bur. & Franch. in Journ. de Bot., V, 94 (1891); Millais, Rhododendrons, 128 (1917), and *ibid.*, Ser. 2, 93 (1924); Tagg in The Sp. of Rhod., 727 (1930); Rhod. Handb., 11 (1947).

**HABIT:** shrub; branchlets eglandular.

**LEAVES:** lamina leathery, oblong, 4–5 cm. long, 1.5 cm. broad, apex shortly acute, base obtuse; upper surface glabrous, midrib grooved, primary veins 12–14 on each side, impressed; under surface glabrous, midrib raised; petiole 8 mm. long, eglandular.

**INFLORESCENCE:** a terminal umbel of 5–6 flowers; rachis 3 mm. long, glandular.

**PEDICELS:** 1.3–1.7 cm. long, glandular with short stalked glands.

**CALYX:** 5-lobed, 3–5 mm. long, lobes unequal, ovate or rounded, glandular outside and gland fringed.

**COROLLA:** campanulate, 2.3 cm. long, (rose?); lobes 5, 1 cm. long, 1.5 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1–1.5 cm. long; filaments glabrous.

**PISTIL:** about 2 cm. long; ovary conoid, densely glandular; style glandular to the tip.

**CAPSULE:** not known.

**HABITAT:** *S.W. Szechuan*. BONVALOT no number, no date—*isotype*.

Very little is known of *R. Bonvalotii* from the neighbourhood of Tatsienlu. The leaves are rather small and narrow, the style is glandular to the tip. The corolla is campanulate. It is, therefore, an anomalous species in the Thomsonii series, nearest the Thomsonii subseries in its flowers, Selense subseries in its leaves, and Souliei subseries because the style is glandular to the tip. It differs from *R. Souliei* from the same locality in the shape and size of the leaf and in the shape of the flower. It appears to be closely related to *R. cerasinum*, from which it differs in its smaller leaves and smaller flowers.

**R. cerasinum** Tagg in Notes R.B.G. Edin., XVI, 188 (1931), and in The Sp. of Rhod., 737 (1930); Gard. Chron., LXXXVII, Ser. 3, 330 (1930); *ibid.*, CIV, Ser. 3, 288 (1938); Ward, Plant Hunting, 106, 270 (1930); Bean, Trees & Shrubs, III, 421 (1933); Bot. Mag., CLXI, t. 9538 (1938-9); Journ. Roy. Hort. Soc., LXIII, 401, ciii (1938); *ibid.*, LXIV, 155 (1939); Rhod. Handb., 18 (1947).

**HABIT:** shrub, 1.80-3.60 m. high; branchlets below the inflorescences 3-4 mm. in diameter, glandular or eglandular, rarely hairy.

**LEAVES:** lamina leathery, oblong or oblanceolate or oblong-elliptic, 5-10 cm. long, 2-4 cm. broad, apex obtuse or rounded, base obtuse or rounded; upper surface glabrous, midrib grooved, primary veins 14-16 on each side, impressed; under surface glabrous, midrib raised; petiole 0.7-2 cm. long, sparsely glandular or eglandular, hairy or glabrous.

**INFLORESCENCE:** an umbellate truss of 5-7 pendulous flowers; rachis 3-5 mm. long.

**PEDICELS:** 1.6-2 cm. long, glandular with subsessile or short stalked glands.

**CALYX:** 5-lobed or an undulate rim, 1-5 mm. long, lobes ovate or rounded or triangular, glandular or eglandular outside, margin glandular.

**COROLLA:** campanulate, 3.5-4.5 cm. long, fleshy, cherry-red or brilliant scarlet or creamy-white with a broad cherry-red band round the summit, the base pouched with 5 deep purple nectaries; lobes 5, 1.1-2 cm. long, 1.5-2.6 cm. broad, emarginate.

**STAMENS:** 10, unequal, 1.7-3.3 cm. long; filaments glabrous.

**PISTIL:** 2.4-3.5 cm. long; ovary conoid, 5-8 mm. long, densely glandular; style glandular to the tip.

**CAPSULE:** oblong, about 2 cm. long, glandular, calyx persistent.

**HABITAT:**

*Burma.* WARD 6923—isotype.

*Tibet.* WARD 5830

*Assam.* WARD 8258.

Alt. 10,000-12,000 feet.

*R. cerasinum* was discovered by WARD at Seinghku Wang, N. Burma in 1926. Its position in the Thomsonii subseries, as we have pointed out, is anomalous on account of its oblong to oblong-elliptic leaves. In the series *R. cerasinum* takes an intermediate position between the Thomsonii and Souliei subseries, agreeing with the former in the shape of the flowers but with the style glandular to the tip as in the latter.



Various colour forms are in cultivation, the flowers are crimson with deep dark coloured nectar pouches at the base, white with lobes of deep crimson, or pale rose or white. It received an Award of Merit when exhibited by Col. Messel in 1938.

Although closely allied to *R. Bonvalotii* it appears to differ in its larger flowers and larger leaves.

#### SELENSE SUBSERIES

GENERAL CHARACTERS: Shrubs, 60 cm.-6 m. high; branchlets glandular with short stalked glands or setose-glandular or eglandular, hairy or glabrous. Leaves oblong, elliptic to oval; lamina 2-12.5 cm. long, 0.8-5.3 cm. broad. Inflorescence terminal, umbellate or shortly racemose, usually 4-10- (sometimes 1-3-) flowered. Pedicels 0.7-3.5 cm. long, glandular, rarely hairy. Calyx 0.1-1 cm. long, usually glandular. Corolla 5-lobed, funnel-campanulate or funnel-shaped (sometimes campanulate), 2.5-5 cm. long, rose, pink or white. Stamens 10; filaments puberulous at the base (rarely glabrous). Ovary narrowly elongate-cylindric or conoid, 3-7 mm. long, densely glandular (rarely tomentose); style glandular at the base, rarely up to three-fourths its length or eglandular. Capsule usually slender, slightly or much curved (sickle-shaped), rarely straight, glandular.

#### KEY TO THE SPECIES

- A. Indumentum on the under surface of the leaves absent or a thin veil of hairs.
  - B. Branchlets and, usually, petioles setose-glandular.
    - C. Ovary tomentose (glandular); under surface of the leaves often with long stalked glands.
      - D. Leaves oblong, 3-7.6 cm. long, under surface with long stalked glands (rarely eglandular) . . . . . *R. dasycladoides*
      - D. Leaves oblong-lanceolate, 7-10 cm. long, under surface eglandular . . . . . *R. selense* var. *duseimatum*
    - C. Ovary not tomentose (glandular); under surface of leaves without long stalked glands. . . . .
      - D. Corolla unspotted or with a few spots, funnel-shaped or funnel-campanulate.
        - E. Leaves usually 2-4 cm. long; inflorescence usually 1-3-flowered, rarely more . . . . . *R. Martinianum*
        - E. Leaves usually 5-12 cm. long; inflorescence 5-12-flowered. . . . .
          - F. Under surface of the leaves markedly glaucous . . . . . *R. jucundum*
          - F. Under surface of the leaves pale green.
            - G. Leaves thin, chartaceous in texture, oval, elliptic or oblong; calyx usually 1-2 mm. (sometimes 3-6 mm.) long . . . . . *R. dasycladum*
            - G. Leaves thick, coriaceous in texture, oblong; calyx 3 mm.-1 cm. long . . . . . *R. setiferum*

- D. Corolla copiously spotted with crimson, campanulate . . . . . *R. euryisiphon*
- B. Branchlets and petioles not setose-glandular.
  - C. Leaves usually more than 7.5 cm. long and 4 cm. broad; leaf base usually cordate, sometimes rounded or obtuse; calyx 1 mm.-1 cm. long; corolla usually 3.5-4.5 cm. long (rarely less).
    - D. Under surface of the leaves glabrous; leaves thin, chartaceous in texture . . . . . *R. erythrocalyx*
    - D. Under surface of the leaves with a thin veil of hairs; leaves coriaceous in texture . . . . . *R. esetulosum*
  - C. Leaves usually less than 7.5 cm. long and 4 cm. broad; leaf base obtuse or rounded, not cordate; calyx 1-3 mm. long; corolla usually 2.2-3.5 cm. long.
    - D. Corolla unspotted or with a few spots, funnel-shaped or funnel-campanulate.
      - E. Leaves usually more than 4 cm. long; inflorescence 4-8-(rarely 3-) flowered; pedicels usually 1-2 cm. long . . . . . *R. selense*
      - E. Leaves usually 2-4 cm. long; inflorescence 1-3-flowered, rarely more; pedicels 2.2-3.5 cm. long, rarely less . . . . . *R. Martinianum*
    - D. Corolla copiously spotted with crimson, campanulate . . . . . *R. euryisiphon*
- A. Indumentum on the under surface of the leaves patchy-scurfy and with scattered tufts of dark brown hairs . . . . . *R. vestitum*

## DESCRIPTION OF SPECIES (AMP. ET EM.)

**R. dasycladoides** Hand. Mazz., Symb. Sin., VII, 781 (1936); Rhod. Handb., 26 (1947).

**HABIT:** shrub, about 2-4 m. high; branchlets below the inflorescences 3-5 mm. in diameter, setose-glandular.

**LEAVES:** lamina oblong, 3-7.6 cm. long, 1.8-3.3 cm. broad, apex obtuse or acute, mucronate, base cordulate or rounded; upper surface with vestiges of hairs, midrib grooved, primary veins 12-13 on each side, impressed; under surface often glandular with long stalked glands, minutely hairy or glabrous, midrib glandular with long stalked glands; petiole 0.7-1.2 cm. long, setose-glandular.

**INFLORESCENCE:** umbellate or racemose umbel of about 5-8 flowers; rachis 3-5 mm. long, tomentose.

**PEDICELS:** 0.7-1.6 cm. long, densely glandular with long or short stalked glands or densely hairy.

**CALYX:** 5-lobed, 2-7 mm. long, lobes oblong or rounded, glandular or hairy outside, margin glandular or hairy.

**COROLLA:** funnel-campanulate, 3.1-3.7 cm. long, pink or pinkish-purple, with crimson spots; lobes 5, 1.4-1.7 cm. long 1.7-2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.3-2.5 cm. long; filaments puberulous at the base.



PISTIL: about 3 cm. long; ovary conoid, 4–6 mm. long, tomentose, glandular with long or short stalked glands or eglandular; style eglandular.

CAPSULE: not seen.

HABITAT: *Szechuan*. SCHNEIDER 4083—isotype. ROCK 16045, 16112. HAND.-MAZZ. 2617.  
Alt. 7,000–14,500 feet.

*R. dasycladoides* is a little known species first discovered by CAMILLO SCHNEIDER in S. Szechuan and later in the same locality by HANDEL-MAZZETTI and by ROCK. It is closely allied to *R. dasycladum* which occurs in Yunnan and S.E. Tibet. Both species have distinctly setose-glandular branchlets and the undersides of the leaves are glabrous or minutely hairy. The main distinction between them is that the ovary of *R. dasycladoides* is always tomentose and usually glandular, long stalked glands are often present on the undersides of the leaves, whereas the ovary of *R. dasycladum* is glandular but not tomentose and there are no long stalked glands on the undersides of the leaves.

**R. dasycladum** Balf. f. & W. W. Sm. in Notes R.B.G. Edin., X, 98 (1917); Millais, *Rhododendrons*, Ser. 2, 123 (1924); Tagg in *The Sp. of Rhod.*, 714 (1930); *Rhod. Handb.*, 26 (1947).  
*R. rhaibocarpum* Balf. f. & W. W. Sm. in Notes R.B.G. Edin., X, 142 (1917); Millais, *Rhododendrons*, 235 (1917), and *ibid.*, Ser. 2, 223 (1924); Tagg in *The Sp. of Rhod.*, 720 (1930); Bean, *Trees & Shrubs*, III, 417 (1933); *Rhod. Handb.*, 80 (1947).

HABIT: shrub, 90 cm.–3.6 m. high; branchlets below the inflorescences 3–5 mm. in diameter, moderately or densely setose-glandular, hairy or glabrous.

LEAVES: lamina thinly leathery, oblong, oblong-oval, oval or elliptic, 3–12.5 cm. long, 1.5–4.7 cm. broad, apex obtuse or rounded, mucronate, base obtuse, cordulate, truncate or rounded; upper surface glabrous or with vestiges of hairs, midrib grooved, primary veins 9–16 on each side, impressed; under surface glabrous or with a thin veil of hairs, midrib raised, glandular or eglandular, hairy or glabrous; petiole 0.8–2.5 cm. long, setose-glandular or sometimes eglandular, hairy or glabrous.

INFLORESCENCE: umbellate or shortly racemose, 5–10-flowered; rachis 2–4 mm. long, slightly or moderately glandular, hairy or glabrous.

PEDICELS: 0.8–2.4 cm. long, glandular with long or short stalked glands.

**CALYX:** 5-lobed, 1-6 mm. long, lobes rounded or oblong or triangular, moderately or densely glandular outside and fringed with long or short stalked glands.

**COROLLA:** funnel-campanulate, 2.5-3.6 cm. long, rose or pink or white, with or without a crimson blotch at the base, spotted or unspotted; lobes 5, 0.8-1.6 cm. long, 1-2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1-3.4 cm. long; filaments puberulous at the base.

**PISTIL:** 2.4-3.7 cm. long; ovary narrowly elongate-cylindric or sometimes conoid, 3-7 mm. long, densely glandular with long or short stalked glands; style eglandular or glandular (rarely hairy) at the base.

**CAPSULE:** slender (rarely oblong), 1.5-2.8 cm. long, 3-5 mm. broad, slightly or much curved (sickle-shaped), glandular and rarely hairy, calyx persistent.

**HABITAT:**

*Yunnan.* FORREST 10430—type, 11312, 12667, 12982—type of *R. rhaibocarpum*, 12950, 13897, 13912, 15018, 15283, 15404, 15414, 17023, 20066, 21563, 21967, 22019, 22606, 23012, 23294, 25510, 25535, 25736, 25737, 25880, 25899, 25993, 28244, 30884. ROCK 3982, 3984, 6357, 8393, 8395, 8397, 8417, 8448, 8700, 8778, 8824, 9088, 9184, 9185, 9533, 9544, 10915, 11259, 11269, 11270, 11289, 11385, 24656, 25094, 25206, 25260, 25398, 25428.

*S. E. Tibet.* FORREST 14486. ROCK 10146, 10253, 11194, 11213, 22030, 22032, 22102, 22606, 22640, 23026.  
Alt. 10,000-14,000 feet.

*R. dasycladum* was first found by FORREST (No. 10430) in the N.E. of the Yangtze bend, Yunnan, in July 1913. In August 1914, he discovered a second plant (No. 12982) in the Kari Pass, Mekong-Salwin Divide and this too was described as a new species under the name *R. rhaibocarpum*. It is said to differ from *R. dasycladum* in the longer leaves, corolla glandular outside, and the style glandular at the base. In *The Species of Rhododendron* the distinction is based upon leaf shape and size, elliptic to oval, 3-7 cm. long in *R. rhaibocarpum*; oblong, 5-8 cm. long in *R. dasycladum*. Material collected in later years proves that the characters by which the two species were distinguished are inconstant, and the species merge into each other. In the specimens of each species, we find considerable variation in leaf shape and size—in *R. dasycladum* oblong or elliptic, 4.3-12.5 cm. long; in *R. rhaibocarpum* oblong, elliptic or oval, 3-9.2 cm. long. The two species cannot be



distinguished by this character. As to the "more copious development of bristle-like glands on shoots and petioles" of *R. dasycladum*, we find, that both in cultivated and herbarium specimens, those of *R. dasycladum* are variable from moderately to densely bristly, and the bristles may be short or long. Moreover, differences in leaf shape and size and the densely bristly branchlets cannot be correlated. If separation of the two species by leaf shape is attempted, as in *The Species of Rhododendron*, it is found that glandular and eglandular corollas and style bases (which constituted some of the original differential characters) occur in both groups.

**R. erythrocalyx** Balf. f. & Forrest in Notes R.B.G. Edin., XII, 110 (1920); Millais, *Rhododendrons*, Ser. 2, 136 (1924); Tagg in *The Sp. of Rhod.*, 715 (1930); *Rhod. Handb.*, 34 (1947). *R. beimaense* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 32 (1920); Millais, *Rhododendrons*, Ser. 2, 92 (1924); *R. erythrocalyx* subsp. *beimaense* (Balf. f. & Forrest) Tagg in *The Sp. of Rhod.*, 716 (1930); *Rhod. Handb.*, 11 (1947). *R. cymbomorphum* Balf. f. & Forrest in Notes R.B.G. Edin., XII, 102 (1920); Millais, *Rhododendrons*, Ser. 2, 121 (1924); Tagg in *The Sp. of Rhod.*, 713 (1930); *Rhod. Handb.*, 26 (1947). *R. erythrocalyx* subsp. *docimum* Balf. f. ex Tagg in *The Sp. of Rhod.*, 716 (1930); *Rhod. Handb.*, 31 (1947). *R. eucallum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 43 (1920); Millais, *Rhododendrons*, Ser. 2, 137 (1924); *R. erythrocalyx* subsp. *eucallum* (Balf. f. & Forrest) Tagg in *The Sp. of Rhod.*, 716 (1930); *Rhod. Handb.*, 34 (1947). *R. truncatulum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 63 (1920); Millais, *Rhododendrons*, Ser. 2, 254 (1924); *R. erythrocalyx* subsp. *truncatulum* (Balf. f. & Forrest) Tagg in *The Sp. of Rhod.*, 716 (1930); *Rhod. Handb.*, 97 (1947).

**HABIT:** shrub, 90 cm.-2.4 m. high; branchlets below the inflorescences 3-5 mm. in diameter, glandular with short stalked glands or sometimes eglandular.

**LEAVES:** lamina thinly leathery, elliptic, oval, oblong-elliptic or ovate, 3-10.6 cm. long, 2.1-5.3 cm. broad, apex rounded or broadly obtuse, with or without a beaked tip, mucronate, base cordulate or broadly obtuse or rounded; upper surface dark green, glabrous or with vestiges of hairs, midrib grooved, primary veins 10-16 on each side, impressed; under surface pale green or pale glaucous green, glabrous or minutely hairy, midrib raised; petiole 1.1-3 cm. long, glandular with short stalked glands or eglandular, rarely hairy.

INFLORESCENCE: umbellate or shortly racemose, 4-10-flowered; rachis 0.3-1 cm. long, glandular.

PEDICELS: 1.3-3 cm. long, glandular with short stalked glands.

CALYX: 5-lobed, usually unequal, 1-7 mm. long, lobes oblong or triangular or rounded, glandular outside, margin glandular and sometimes hairy.

COROLLA: funnel-campanulate, 2.2-4.5 cm. long, creamy-white or white or pink (rarely yellow), with or without a basal crimson blotch, spotted with a few crimson spots or unspotted; lobes 5, 0.8-1.8 cm. long, 1-2.5 cm. broad, rounded, emarginate.

STAMENS: 10, unequal, 1.3-3.6 cm. long; filaments glabrous or puberulous at the base.

PISTIL: 2.3-4.2 cm. long; ovary narrow, elongate, 4-7 mm. long, densely glandular with short stalked glands; style glandular at the base or in the lower one-third (rarely up to one-half its length) or eglandular.

CAPSULE: slender, 1.4-1.7 cm. long, about 4 mm. broad, slightly or much curved, glandular or with vestiges of glands, calyx persistent.

#### HABITAT:

Yunnan. FORREST 13989—type, 13936—type of *R. truncatulum*, 13938—type of *R. eucallum*, 13939—type of *R. cymbomorphum*, 13951A—*R. docimum*, 13951B—type of *R. beimaense*, 13999. ROCK 8848, 8956, 9070, 11127.

S.E. Tibet. FORREST 21892, 21917, 22758.

Alt. 11,000-13,000 feet.

*R. erythrocalyx* discovered by FORREST in June 1918 was thought at first to be restricted in its distribution to the Bei-ma-Shan. A number of forms which, when compared with the type, have smaller or larger leaves, somewhat larger or somewhat smaller flowers in varying shades of pink, more or less with a blotch and more or less glandular, have been given distinct specific names. But further material has produced still more forms intermediate between them and typical *R. erythrocalyx*. It is now clear that the diagnostic criteria which were used are variable; the whole material represents a single variable species. Moreover, it is now known that *R. erythrocalyx* is not confined to Bei-ma-Shan, but has a wider distribution, and that it is linked with *R. selense*, overlapping not only in distribution but also in the characters which were said to distinguish them (Fig. 75).

*R. cymbomorphum* is a form of this species with yellow flowers, which was also found at Bei-ma-Shan.



*R. esetulosum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 42 (1920); Millais, Rhododendrons, Ser. 2, 137 (1924); Tagg in The Sp. of Rhod., 717 (1930); Rhod. Handb., 34 (1947).  
*R. manopeplum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 275 (1922); Millais, Rhododendrons, Ser. 2, 184 (1924); Tagg in The Sp. of Rhod., 719 (1930); Rhod. Handb., 59 (1947).

**HABIT:** shrub, 1·2–1·8 m. high; branchlets below the inflorescences 4–6 mm. in diameter, glandular with short stalked glands, hairy or glabrous.

**LEAVES:** lamina thick, coriaceous, oblong or elliptic or oblong-ovate, 5–9·4 cm. long, 2·3–5·1 cm. broad, apex shortly acuminate or broadly obtuse, mucronate, base rounded, truncate or cordulate; upper surface glabrous or with vestiges of hairs, midrib grooved, primary veins 12–14 on each side, impressed; under surface with a thin veil of hairs, midrib prominent, glandular; petiole 1–2 cm. long, glandular with short stalked glands or eglandular, hairy or glabrous.

**INFLORESCENCE:** a racemose umbel of 8–10 flowers; rachis 0·1–1 cm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 1–2·4 cm. long, glandular with short stalked glands.

**CALYX:** 5-lobed, 0·1–1 cm. long, lobes rounded, oblong or triangular, glandular or eglandular outside and fringed with glands.

**COROLLA:** broadly funnel-campanulate or campanulate, 3·1–5 cm. long, creamy-white or white, flushed or not flushed rose or purplish, spotted crimson or unspotted; lobes 5, 1·2–2 cm. long, 2–2·6 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1·1–3 cm. long; filaments puberulous at the base or up to one-half their length.

**PISTIL:** 2·4–3·4 cm. long; ovary oblong or conoid, 4–6 mm. long, densely glandular with short stalked glands; style glandular at the base or up to three-fourths its length, rarely eglandular.

**CAPSULE:** not yet available.

**HABITAT:**

Yunnan. FORREST 16581—type, 23333. ROCK 9105, 9954, 11094A.

S. E. Tibet. FORREST 18654—type of *R. manopeplum*. ROCK 9354, 9356.

Alt. 10,000–14,000 feet.

*R. esetulosum* is represented in the herbarium by FORREST No. 16581 from north-east of Chungtien, Yunnan. While closely

similar to *R. erythrocalyx*, it is distinguished by the thin veil of hairs on the under surface of the leaves which are somewhat coriaceous.

In the type of *R. manopeplum*, FORREST No. 18654, from Tsarong, south-east Tibet, the calyx is small, while in *R. esetulosum* it is typically large. But this is a variable character and the species cannot otherwise be distinguished. We have added to our citation FORREST No. 23333 from the Chienchuan-Mekong Divide, and ROCK's Nos. 9354, 9356 from the mountains above Tseku.

**R. euryisiphon** Tagg & Forrest in The Sp. of Rhod., 708 (1930); Notes R.B.G. Edin., XVI, 191 (1931); Rhod. Handb., 35 (1947).

**HABIT:** shrub, 90 cm.—1.5 m. high; branchlets below the inflorescences 2–3 mm. in diameter, setose-glandular or eglandular, nodular.

**LEAVES:** lamina thinly leathery, rigid, oblong or oblong-elliptic, 2.6–7.5 cm. long, 1.3–2.8 cm. broad, apex rounded or broadly obtuse, mucronate, base rounded or obtuse; upper surface glabrous, midrib grooved, primary veins 8–16 on each side, impressed; under surface glabrous, minutely glandular or eglandular, pale glaucous green, midrib raised; petiole 0.5–1.2 cm. long, setose-glandular or eglandular, nodular.

**INFLORESCENCE:** terminal, umbellate, 3–5-flowered; rachis 3–5 mm. long, tomentose or glabrous, glandular or eglandular.

**PEDICELS:** 1.2–2.6 cm. long, glandular with short stalked glands.

**CALYX:** 5-lobed, 2–4 mm. long, lobes rounded or triangular, glandular outside and gland fringed.

**COROLLA:** campanulate, 3–4 cm. long, creamy-white or very pale rose flushed deep magenta, copiously spotted with crimson; lobes 5, 1.2–1.5 cm. long, 1.5–2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.3–3 cm. long; filaments puberulous at the base.

**PISTIL:** 2.2–3.5 cm. long; ovary conoid, 3–5 mm. long, densely glandular with short stalked glands; style eglandular.

**CAPSULE:** oblong, 1.2–1.6 cm. long, 4–6 mm. broad, slightly curved or straight, glandular, calyx persistent.

**HABITAT:** *S.E. Tibet*. FORREST 21694—type, 22938.

Alt. 13,000 feet.

FORREST discovered this plant (No. 21694) in the Salwin-Ch'iu-chiang Divide, S.E. Tibet, in June 1922. Other gatherings by



FORREST from the same region which have been assigned to *R. curysiphon* are, in fact, forms of *R. Stewartianum*.

It is allied to *R. selense* and *R. Martinianum* but distinguished by its campanulate corolla which is copiously spotted with crimson.

**R. jucundum** Balf. f. & W. W. Sm. in Notes R.B.G. Edin., IX, 242 (1916); Millais, Rhododendrons, 197 (1917); *ibid.*, Ser. 2, 167 (1924); Tagg in The Sp. of Rhod., 718 (1930); Rhod. Handb., 50 (1947). *R. blandulum* Balf. f. & W. W. Sm. in Notes R.B.G. Edin., 87 (1917); Millais, Rhododendrons, Ser. 2, 93 (1924); Tagg in The Sp. of Rhod., 718 (1930); Rhod. Handb., 50 (1947).

**HABIT:** shrub or tree, 60 cm.-6 m. high; branchlets below the inflorescences 3-5 mm. in diameter, usually setose-glandular, hairy or glabrous, often warty.

**LEAVES:** lamina leathery, elliptic or oblong or oblong-elliptic, 3.8-7.4 cm. long, 2-4 cm. broad, apex broadly obtuse or rounded, mucronate, base rounded to cordulate; upper surface dark green, glabrous or with vestiges of hairs, midrib gooved, primary veins 13-15 on each side, impressed; under surface glaucous, glabrous or minutely hairy, midrib raised, sparsely glandular towards the base with short stalked glands or eglandular; petiole 0.9-2.2 cm. long, usually setose-glandular, hairy or glabrous.

**INFLORESCENCE:** umbellate or a racemose umbel of 5-8 flowers; rachis 3-7 mm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 1-2.8 cm. long, glandular with long and short stalked glands, hairy or glabrous.

**CALYX:** 5-lobed, 1-6 mm. long, lobes oblong or rounded, glandular or eglandular outside, margin glandular and sometimes hairy.

**COROLLA:** funnel-campanulate, 3-4 cm. long, rose, pink or white, with or without a crimson blotch at the base; lobes 5, 0.8-1.9 cm. long, 1.3-2.5 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.3-2.5 cm. long; filaments puberulous at the base.

**PISTIL:** 3-3.6 cm. long; ovary narrowly elongate, 4-7 mm. long, densely glandular with long stalked glands; style eglandular.

**CAPSULE:** slender, 1.3-2.2 cm. long, 3-6 mm. broad, slightly or much curved, glandular or with vestiges of glands, calyx persistent.

**HABITAT:** Yunnan. FORREST 4150—lectotype, 4148, 4154, 6765, 11577—type of *R. blandulum*, 13711.

Alt. 9,000-12,000 feet.



The original publication of *R. jucundum* cited four specimens (FORREST 4148, 4150, 4154, 6765), without indicating any of them as the type. Of these, two (4150, 6765) agree in having bristly branchlets, with the plants grown as *R. jucundum* in gardens. The other two (4148, 4154) lack these bristles and were subsequently transferred to *R. hedythamnium*, but we cannot agree with this identification. On the contrary we retain them in *R. jucundum*, under which they are identifiable with the form with bristleless branchlets represented by the synonym *R. blandulum* (Fig. 74).

The original description of *R. jucundum* emphasises the bristly branches of the species and clearly it is right to take one of the specimens showing this character as typical. FORREST No. 4150 is therefore designated as the lectotype of *R. jucundum*. The fact that in the Edinburgh herbarium the non-bristly specimens, FORREST 4148, 4154, have been designated "type" and "paratype" respectively, is insufficient to overrule this judgment. The original description of *R. jucundum* as having bristly branches and the later action of one of the authors of that species (Sir Isaac Bayley Balfour) in transferring the non-bristly specimens to another species provide sufficient argument.

**R. Martinianum** Balf. f. & Forrest in Notes R.B.G. Edin., XI, 96 (1919); Millais, Rhododendrons, Ser. 2, 184 (1924); Cox, Farrer's Last Journey, 231, 238 (1926); Tagg in The Sp. of Rhod., 709 (1930); Bean, Trees & Shrubs, III, 396 (1933); Journ. Roy. Hort. Soc., LXVIII, 16 (1933); Rhod. Handb., 59 (1947).

**HABIT:** shrub, 60 cm.–1.8 m. high; branchlets below the inflorescences 1.5–3 mm. in diameter, moderately or sparsely setose-glandular or sometimes eglandular, nodular.

**LEAVES:** lamina thinly leathery, rigid, oblong, elliptic or oblong-elliptic, 1.9–4 cm. (sometimes up to 5.4 cm.) long, 0.8–2.5 cm. broad, apex rounded or broadly obtuse, mucronate, base broadly obtuse or rounded; upper surface glabrous or with vestiges of glands, midrib grooved, primary veins 8–10 on each side, impressed; under surface glabrous, glaucous or pale glaucous green, punctulate with minute glands, midrib raised; petiole 3–7 mm. long, slightly or moderately glandular with long or short stalked glands.

**INFLORESCENCE:** terminal, umbellate, 1–3-flowered, rarely more; rachis 2–8 mm. long, glandular, hairy or glabrous.

**PEDICELS:** 2–3.5 cm. (rarely 1.5 cm.) long, glandular with long or short stalked glands and rarely hairy.

**CALYX:** 5-lobed, 1–3 mm. long, lobes rounded or triangular, glandular or eglandular outside, margin usually gland-fringed.



**COROLLA:** funnel-campanulate, 2·5–4 cm. long, pale rose or white or creamy-white, with or without crimson markings; lobes 5, 1·3–1·8 cm. long, 1·5–2·2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1·5–3·2 cm. long; filaments puberulous at the base.

**PISTIL:** 2·7–3·8 cm. long; ovary narrow, elongate-cylindric (rarely conoid), densely glandular with short stalked glands, 5–6-celled; style glandular at the base or eglandular.

**CAPSULE:** slender-cylindric or oblong, 1·5–2·5 cm. long, rarely less, 5–7 mm. broad, curved or straight, glandular or with vestiges of glands, calyx persistent.

**HABITAT:**

*Yunnan.* FORREST 13301—type, 13439, 13949, 17421, 18666, 19540, 20960, 25614, 25811. ROCK 8782, 8786, 9153, 10912, 10958, 10965, 17068, 18421.

*E. Tibet.* FORREST 20246, 20826, 21695, 21775, 22939, 22940. ROCK 10170, 11205, 22119, 22123, 22590, 22591, 23032, 23482. WARD 5434, 5486.

*Burma.* FARRER 1540, 1650. WARD 7612.

Alt. 10,000–13,500 feet.

*R. Martinianum* first collected by FORREST in the Mekong-Salwin Divide in September 1914, was later found by ROCK, FARRER and WARD.

It is akin to *R. selense* from which it differs in its smaller leaves, longer pedicels, 1–3-flowered inflorescence and usually in the setose-glandular branchlets.

***R. selense*** Franch. in Journ. de Bot., XII, 257 (1898); Hemsl. & Wils. in Kew Bull., 10 (1910); Diels in Notes R.B.G. Edin., VII, 295 (1913); Millais, Rhododendrons, 240 (1917), and ibid., Ser. 2, 233 (1924); Tagg in The Sp. of Rhod., 721 (1930); Bean, Trees & Shrubs, III, 416 (1933); Rhod. Handb., 86 (1947). *R. axium* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 30 (1920); Millais, Rhododendrons, Ser. 2, 90 (1924). *R. selense* Franch. subsp. *axium* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930); Rhod. Handb., 9 (1947). *R. chalarocladum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 240 (1922); Millais, Rhododendrons, Ser. 2, 106 (1924). *R. selense* Franch. subsp. *chalarocladum* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930); Rhod. Handb., 18 (1947). *R. dolerum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 40 (1920); Millais, Rhododendrons, Ser. 2, 131 (1924). *R. selense* Franch. subsp. *dolerum* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930); Rhod. Handb., 31 (1947). *R. metrium* Balf. f. &

Forrest in Notes R.B.G. Edin., XIII, 52 (1920); Millais, Rhododendrons, Ser. 2, 188 (1924). *R. selense* Franch. subsp. *metrium* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930); Rhod. Handb., 61 (1947). *R. nanothamnum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 53 (1920); Millais, Rhododendrons, Ser. 2, 192 (1924). *R. selense* Franch. subsp. *nanothamnum* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930), Rhod. Handb., 64 (1947).

**HABIT:** shrub, 60 cm.—2.7 m. high; branchlets below the inflorescences 3–4 mm. in diameter, glandular with short stalked glands or sometimes eglandular, hairy or glabrous.

**LEAVES:** lamina thinly leathery, oblong, obovate, oblong-oval or elliptic, 2.6–8.2 cm. long, 1.5–3.9 cm. broad, apex obtuse or rounded, mucronate, base broadly obtuse or rounded, rarely cordulate; upper surface dark green, glabrous or with vestiges of hairs, midrib grooved, primary veins 10–15 on each side, impressed; under surface green or pale glaucous green, glabrous or minutely hairy or sometimes with a thin veil of hairs, midrib raised; petiole 0.6–3 cm. long, glandular or eglandular, hairy or glabrous.

**INFLORESCENCE:** umbellate or shortly racemose, 3–8-flowered; rachis 2–4 mm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 1–3 cm. long, glandular with short stalked glands, hairy or glabrous.

**CALYX:** 5-lobed, 1–3 mm. long, lobes rounded or triangular, moderately or slightly glandular outside and gland-fringed.

**COROLLA:** funnel-campanulate, 2.2–4 cm. long, pink or rose, unspotted, rarely with a few spots, with or without a blotch at the base; lobes 5, 0.9–1.7 cm. long, 1.2–2.2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1.3–3.4 cm. long; filaments puberulous at the base.

**PISTIL:** 2.2–4.2 cm. long; ovary narrow, elongate, 4–5 mm. long, densely glandular with short stalked glands and sometimes sparsely hairy; style eglandular or sometimes glandular at the base.

**CAPSULE:** slender, 1.3–2.9 cm. long, 4–6 mm. broad, curved, glandular or with vestiges of glands, calyx persistent.

**HABITAT:**

*Tibet.* SOULIÉ 1001—*isotype*, 1002. FORREST 14265, 14458, 14793, 16679—*type* of *R. metrium*, 16684—*type* of *R. axium*, 18646—*type* of *R. chalarocladum*, 19019—*type* of *R. nanothamnum*, 21879A. ROCK 11209, 22028, 22033, 22225, 22237, 22291, 22626, 23023,



*Yunnan.* FORREST 14057, 16750, 17324, 19566, 19785, 20283. ROCK 8836, 8846, 8850, 8859, 9089, 9143, 9152, 9199, 9203, 9213, 9218, 9219, 9239, 10929, 10961, 11028, 11058, 11062, 11063, 11064, 11066, 11095, 11111.

*Szechuan.* FORREST 16318—type of *R. dolerum*.

Alt. 10,000–14,500 feet.

The name *R. selense* was given by FRANCHET in 1898 to a plant collected by SOULIÉ at Si La at the summit of the mountain between the Mekong and the Salwin. As the result of FORREST's work in the same region and round about, twenty-four new species were described, all of them closely akin to *R. selense* and grouped together in *The Species of Rhododendron* as the Selense subseries. In this work some of the names are already in synonymy and some of the species have been reduced in rank and are listed as subspecies. The intergrading and confusion is considerable. *R. selense*, either in the strictest sense, or in the broader view, when taken to include the eight subspecies, is not a readily distinguishable entity. When the herbarium material is examined an overlapping will be observed particularly between *R. selense* and *R. erythrocalyx* and its subspecies.

In the whole complex there is considerable variation in size and shape of leaf, size of calyx and size and colour of flower but extremes of contrast are linked by intermediates and variations of any two characters are incapable of correlation. The material now available is considerably more than when many of the twenty-four species were first described and it is clear that many of the distinguishing characters cited are wholly unreliable.

The species as they stand cannot be distinguished. If account were to be taken of every variation which has been regarded as of diagnostic significance it would be necessary greatly to add to the number of existing names and still it would not be possible to distinguish clearly the numerous forms. We have accordingly restricted our elaboration to the indicating of essential distinctions. To attempt to go further with the material available would serve no useful purpose. The characters by which the species are most clearly differentiated are set out in the key. The descriptions of the species as amended cover the full range of variation.

***R. selense* Franch. var. *duseimatum* (Balf f. & Forrest) comb. nov. *R. duseimatum* Balf. f. & Forrest in Notes Roy. Bot. Gard. Edin., XIII, 41 (1920); Rhod. Handb., 32 (1947). *R. selense* Franch. subsp. *duseimatum* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930).**

HABITAT: *S.E. Tibet*. FORREST 14464—type.

Alt. 12,000 feet.

The variety differs from the type in its tomentose ovary and oblong-lanceolate leaves, which are 7–10 cm. long.

**R. selense** Franch. var. **pagophilum** (Balf. f. & Ward) comb. nov. *R. pagophilum* Balf. f. & Ward in Notes R.B.G. Edin., IX, 256 (1916); Rhod. Handb., 70 (1947). *R. selense* Franch. subsp. *pagophilum* (Balf. f. & Ward) Tagg in The Sp. of Rhod., 722 (1930).

HABITAT:

*Yunnan-Tibet Border*. WARD 487—type, 596.

*Yunnan*. FORREST 14009, 15297, 18658, 19477, 21000, 25746. ROCK 8719, 8724, 8834, 8835, 8868, 9162, 9216, 10930, 10963, 11026, 11077, 11241.

*S.E. Tibet*. FORREST 19180, 21689, 21743, 21876, 21890, 22739, 22800, 22899. ROCK 11635, 22456, 22508, 22999, 23022, 23492.

Alt. 12,000–14,000 feet.

We retain the varietal name for plants with small elliptic leaves and small flowers although there is gradation between these and more typical forms. The colour of the flowers is often, but not always, dark rose to crimson.

**R. selense** Franch. var. **probum** (Balf. f. & Forrest) comb. nov. *R. probum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 288 (1922); Rhod. Handb., 76 (1947). *R. selense* Franch. subsp. *probum* (Balf. f. & Forrest) Tagg in The Sp. of Rhod., 722 (1930).

HABITAT:

*Yunnan*. FORREST 14227—type, 18661, 20084. ROCK 9240, 11065.

*S.E. Tibet*. FORREST 18673, 19168, 21874, 21878, 21879, 22898, 22905, 22906.

Alt. 11,000–13,000 feet.

The name is retained for a form with white flowers without markings; the under surface of the leaf is green or glaucous.

**R. setiferum** Balf. f. & Forrest in Notes R.B.G. Edin., XI, 137 (1919); Millais, Rhododendrons, Ser. 2, 235 (1924); Tagg in The Sp. of Rhod., 723 (1930); Rhod. Handb., 87 (1947).

HABIT: shrub, 1.5–2.7 m. high; branchlets below the inflorescences 4–7 mm. in diameter, setose-glandular and with shorter stalked glands, hairy or glabrous.



**LEAVES:** lamina thick, coriaceous, oblong, 5–9 cm. long, 2–3·7 cm. broad, apex obtuse, shortly beaked, base obtuse, rounded or truncate; upper surface dark green, glabrous or with vestiges of hairs, midrib grooved, primary veins 14–17 on each side, impressed; under surface with a thin veil of hairs and short-stalked glands, midrib raised, glandular and slightly or moderately hairy; petiole 0·8–1·7 cm. long, setose-glandular and slightly or moderately hairy.

**INFLORESCENCE:** a racemose umbel of 6–10 flowers; rachis 5–8 mm. long, glandular and hairy.

**PEDICELS:** 1·3–2·1 cm. long, glandular with short stalked glands and sparsely hairy.

**CALYX:** 5-lobed, 0·3–1 cm. long, lobes oblong, glandular outside and fringed with glands and hairs.

**COROLLA:** funnel-campanulate, 3·1–3·5 cm. long, creamy-white, lined crimson at base; lobes 5, 1·1–1·5 cm. long, 1·6–2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1·8–3 cm. long; filaments puberulous at the base.

**PISTIL:** 2·8–3·2 cm. long; ovary narrow, elongate-cylindric, about 4 mm. long, densely glandular with long and short stalked glands; style puberulous at the base, eglandular.

**CAPSULE:** not yet available.

**HABITAT:** *Yunnan*. FORREST 14066—type.

Our material consists of FORREST's single number, F. 14066, a shrub 5–9 feet high with flowers creamy-white lined crimson at the base, which he found in open thickets and pine forests in June 1917, on the Mekong-Salwin Divide. There is no doubt that *R. setiferum* is closely allied to *R. dasycladum* but there is a marked difference in the thickness of the leaves evident in the herbarium specimens and borne out by plants in cultivation. In leaf shape and size of calyx certain forms of *R. dasycladum* and *R. setiferum* agree. From *R. jucundum*, which is also a close ally, *R. setiferum* is distinguished by the under surfaces of the leaves which are not glaucous and are covered by a thin veil of hairs.

***R. vestitum*** Tagg & Forrest in Notes R.B.G. Edin., XVI, 210 (1931); Tagg in The Sp. of Rhod., 724 (1930); Rhod. Handb. 100 (1947).

**HABIT:** shrub, 1·2–1·5 m. high; branchlets below the inflorescences 3–4 mm. in diameter, sparsely or moderately setose-glandular and with short stalked glands.

**LEAVES:** lamina leathery, oblong, elliptic, obovate or oval, 3·2–6·2 cm. long, 1·5–3 cm. broad, apex rounded or broadly obtuse, mucronate, base rounded or broadly obtuse; upper

surface glabrous, midrib grooved, primary veins 9-12 on each side, impressed; indumentum on the under surface of the leaves with patchy-scurfy and scattered tufts of tawny or brown hairs; midrib raised, slightly or moderately glandular; petiole 5-9 mm. long, setose-glandular and sometimes hairy.

INFLORESCENCE: an umbel of about 6 flowers; rachis 2-5 mm. long, glandular and hairy.

PEDICELS: 0.9-1.5 cm. long, setose-glandular and with shorter stalked glands.

CALYX: minute, 5-lobed, 1-2 mm. long, lobes rounded or triangular, glandular outside and gland-fringed.

COROLLA: funnel-campanulate, 3-3.5 cm. long, white flushed rose, deep rose in bud, with a few crimson markings and a basal blotch; lobes 5, 1-1.2 cm. long, 1.3-1.6 cm. broad.

STAMENS: 10, unequal, 1.5-3 cm. long; filaments puberulous at the base.

PISTIL: 3-3.5 cm. long; ovary 3-4 mm. long, conoid or narrowly elongate-cylindric, densely glandular with long stalked glands; style sparsely glandular at the base.

CAPSULE: slender, 1-1.5 cm. long, 3-4 mm. broad, straight or slightly curved, glandular, calyx persistent.

HABITAT: *S.E. Tibet*. FORREST 21877—type, 22895.

Alt. 14,000 feet.

Because of the distinct indumentum on the under side of the leaf—a patchy-scurfy covering with scattered tufts of hairs, *R. vestitum* is an anomalous species in this subseries. It shows affinity with certain members of the Lacteum Series, although except for the presence of the indumentum it is a typical member of the Selense group, and indeed so closely allied to *R. dasycladum* that disregarding the indumentum the species could scarcely be distinguished. It occurs in S.E. Tibet within the range of distribution of *R. dasycladum*.

*R. vestitum* was found by FORREST in June 1922 on the Salwin-Ch'iu-chiang Divide. He collected it only twice. His field notes describe it as a shrub of 4-5 feet with flowers white flushed rose with a blotch and a few crimson markings. It is doubtful whether any of the plants in cultivation under this name are correctly named.

#### SOU-LIEI SUBSERIES

GENERAL CHARACTERS: Shrubs, 90 cm.-7.6 m. high; branchlets glandular or eglandular. Leaves oblong-elliptic, oblong, ovate or more or less orbicular, 3-12 cm. long, 1.8-5 cm. broad, under



surface glabrous. Inflorescence terminal, umbellate or racemose, 5-14-flowered. Pedicels 1.5-4.8 cm. long, glandular. Calyx 0.2-1.2 cm. long, glandular or eglandular outside, margin glandular. Corolla 5-lobed, openly cup- or saucer-shaped, 2-4.4 cm. long, yellow, pink or white. Stamens 10, filaments glabrous or puberulous at the base. Ovary conoid, 4-6 mm. long, densely glandular; style glandular to the tip. Capsule short, stout, or oblong, 1.3-3.6 cm. long, straight or slightly curved, glandular, calyx persistent.

## KEY TO THE SPECIES

- A. Flowers yellow.
  - B. Leaves orbicular or ovate or oblong; under surface of the leaves green or glaucous; corolla 3-4 cm. long . . . *R. Wardii*
  - B. Leaves oblong; under surface of the leaves markedly glaucous; corolla 2-3.8 cm. long . . . *R. litiense*
- A. Flowers rose or pink or white.
  - B. Flowers rose or pink or white tinged pink . . . *R. Souliei*
  - B. Flowers pure white . . . *R. puralbum*

## DESCRIPTION OF SPECIES (AMP. ET EM.)

**R. litiense** Balf. f. & Forrest in Notes R.B.G. Edin., XII, 126 (1920); Millais, Rhododendrons, Ser. 2, 176 (1924); Tagg in The Sp. of Rhod., 729 (1930); Journ. Roy. Hort. Soc., XXXIII, 57 (1932); Bean, Trees & Shrubs, III, 367 (1933); Hand. Mazz., Symb. Sin., VII, 782 (1936); Rhod. Handb., 55 (1947).

**HABIT:** shrub, 90 cm.-4.8 m. high; branchlets below the inflorescences 3-6 mm. in diameter, glandular.

**LEAVES:** lamina leathery, oblong or sometimes oblong-oval, 3.5-9.7 cm. long, 1.8-4.4 cm. broad, apex obtuse, mucronate, base truncate or cordulate; upper surface glabrous, midrib grooved, primary veins 12-14 on each side, impressed; under surface glabrous, minutely punctulate with glands, glaucous, midrib prominent; petiole 1-2.3 cm. long, glandular or eglandular, glabrous or sometimes floccose.

**INFLORESCENCE:** umbellate or a racemose umbel of 5-7 flowers; rachis 0.3-1 cm. long, sparsely or moderately glandular, floccose or glabrous.

**PEDICELS:** 1.5-4 cm. long, glandular with short stalked glands.

**CALYX:** 5-lobed, 5-8 mm. long, lobes oblong or rounded, sparsely or moderately glandular outside with short stalked glands, margin glandular.

**COROLLA:** widely campanulate, 2-3.8 cm. long, yellow, eglandular outside; lobes 5, 1-1.6 cm. long, 1.8-2.6 cm. broad, rounded, emarginate.



FIG. 72—*R. myiagrum* (See p. 134)



THE THOMSONII SERIES  
FIG. 73—*R. litiense* (See p. 156)





FIG. 74—*R. jucundum* (See p. 148)



THE THOMSONII SERIES

FIG. 75—*R. erythrocalyx* (See p. 144)

STAMENS: 10, unequal, 1-2 cm. long; filaments glabrous, rarely puberulous at the base.

PISTIL: 2-2.6 cm. long; ovary conoid, 4 mm. long, densely glandular with long stalked glands; style glandular to the tip.

CAPSULE: short, stout, or oblong, 1.4-2 cm. long, 0.5-1 cm. broad, straight or slightly curved, glandular, calyx persistent.

HABITAT: *Yunnan*. FORREST 13922—type, 12969, 13548, 15439, 17366, 19467, 19467A, 21017, 21551, 21954, 22018, 23295, 29242, 29305. HAND.-MAZZ. 8499. ROCK 8947, 8965, 9399, 11137, 11389, 11567, 25037, 25133, 25391, 25467.

Alt. 9,000-13,000 feet.

*R. litiense*, when described in 1920, was regarded as an interesting local species confined in its distribution to Li-ti-ping in Yunnan. It was subsequently found in other localities in Yunnan by FORREST, ROCK, and HANDEL-MAZZETTI. The typical plant differs from *R. Wardii* in its oblong or oblong-oval leaves, which are waxy glaucous underneath; the flowers are often smaller than those of its ally, with a tendency to be campanulate and less openly cup-shaped. There is no doubt that this species merges in *R. Wardii*, but is somewhat more distinct than the other species mentioned in our descriptive notes under the latter name. The close affinity between *R. litiense* and yellow-flowered species of the *Campylocarpum* subseries must not be overlooked. Mention has been made of the tendency in *R. litiense* for the flowers to become campanulate; on the contrary the flowers of *R. caloxanthum* and *R. panteumorphum* are sometimes openly campanulate approaching the cup-shaped form. The deciding factor taken to determine the relationships of plants intermediate in certain respects is the glandular or eglandular nature of the style. Plants of the *R. litiense* alliance have the style glandular to the tip; in those regarded as more closely related to *R. campylocarpum* the style is usually glabrous, although it may be glandular at the base or even to half its length (Fig. 73).

A plant exhibited by MR. L. DE ROTHSCHILD received an Award of Merit in 1931.

***R. puralbum*** Balf. f. & W. W. Sm. in Notes R.B.G. Edin., IX, 266 (1916); Millais, *Rhododendrons*, 232 (1917), and *ibid.*, Ser. 2, 217 (1924); Tagg in *The Sp. of Rhod.*, 730 (1930); Bean, *Trees & Shrubs*, III, 367 (1933); *Rhod. Handb.*, 77 (1947).

HABIT: shrub, 2.45-4.55 m. high; branchlets below the inflorescences 3-5 mm. in diameter, glandular.



- LEAVES:** lamina leathery, oblong-ovate or oblong or oblong-elliptic, 5–12 cm. long, 2.4–5 cm. broad, apex obtuse or rounded, base truncate or cordulate or rounded; upper surface dark green, glabrous, midrib grooved, primary veins 9–12 on each side, impressed; under surface glaucous green, glabrous, midrib raised; petiole 1.5–3 cm. long, glabrous.
- INFLORESCENCE:** umbellate or shortly racemose, 5–8-flowered; rachis 4–8 mm. long, glandular with short stalked glands or eglandular, rarely hairy.
- PEDICELS:** 2–5.3 cm. long, slightly or moderately glandular with short stalked glands.
- CALYX:** 5-lobed, 0.5–1.1 cm. long, lobes unequal, oblong or rounded, glandular or eglandular outside, margin glandular.
- COROLLA:** openly cup- or saucer-shaped, 2.8–4 cm. long, rarely less, pure white; lobes 5, 1.1–1.5 cm. long, 1.5–2.7 cm. broad, rounded, emarginate.
- STAMENS:** 10, unequal, 1–2 cm. long; filaments glabrous or puberulous at the base.
- PISTIL:** 1.8–3 cm. long; ovary conoid, 4–6 mm. long, densely glandular with long or short stalked glands; style glandular to the tip.
- CAPSULE:** oblong, 1.3–3.6 cm. long, 5–8 mm. broad, slightly or moderately curved, glandular, calyx persistent.
- HABITAT:** *Yunnan*. FORREST 10616—type, 12698, 15417, 20801. Alt. 11,000–14,000 feet.

*R. puralbum* was first discovered by FORREST on the mountains north-east of the Yangtse bend, in July 1913, and subsequently in 1914, 1917 and 1921. It is closely allied to *R. Wardii* and *R. Souliei*, differing from both in its pure white flowers.

**R. Souliei** Franch. in Journ. de Bot., IX, 393 (1895); Gard. Chron., XLV, Ser. 3, 380, fig. 167 (1909); *ibid.*, LXXXII, 467, f. 217 (1927); Journ. Roy. Hort. Soc., LXXIII, 266 (1948); *ibid.*, XLI, 529 (1915–16); Hemsl. & Wils. in Kew Bull., 108 (1910); Bean, Trees & Shrubs, II, 205, 380 (1914); *ibid.*, III, 359 (1915); Rehd. & Wils. in Sarg. Plant. Wils., I, 537 (1913); Bot. Mag., CXLI, t. 8622 (1915); Millais, Rhododendrons, 245 (1917), and *ibid.*, Ser. 2, 240 (1924); The Garden, LXXXIV, 324 & fig. (1920); Tagg in The Sp. of Rhod., 732 (1930); Rhod. Handb., 89 (1947). *R. cordatum* Lévl. in Bull. Geogr. Bot., XXIV, 282 (1914); Lévl. in Cat. Pl. du Yunnan, 89, fig. 21 (1915–16); Millais, Rhododendrons, Ser. 2, 117 (1924); Tagg in The Sp. of Rhod. 732 (1930); Rhod. Handb., 106 (1947).

**HABIT:** shrub, 1·2–5 m. high; branchlets below the inflorescences 3–5 mm. in diameter, glandular or eglandular.

**LEAVES:** lamina leathery, ovate or ovate-elliptic or oblong-elliptic or almost orbicular, 3·5–8·2 cm. long, 2·2–5 cm. broad, apex rounded or broadly obtuse, base truncate or cordulate or rounded; upper surface dark green, glabrous, midrib grooved, primary veins 8–14 on each side, impressed; under surface glabrous, pale glaucous green, midrib prominent; petiole 1·5–2·5 cm. long, eglandular or sparsely glandular with short stalked glands.

**INFLORESCENCE:** umbellate or a racemose umbel of 5–8 flowers; rachis 0·3–1 cm. long, glandular with short stalked glands.

**PEDICELS:** 1·8–4·3 cm. long, glandular with short stalked glands.

**CALYX:** 5-lobed, 2–8 mm. long, lobes unequal, oblong or rounded, moderately or sparsely glandular outside or eglandular, margin glandular.

**COROLLA:** openly cup- or saucer-shaped, 2·5–3·5 cm. long, pink or deep rose or white tinged pink; lobes 5, 1–1·7 cm. long, 1·8–2·7 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1–2·4 cm. long; filaments glabrous.

**PISTIL:** 1·8–2·5 cm. long; ovary conoid, about 5 mm. long, densely glandular with short stalked glands; style glandular to the tip.

**CAPSULE:** oblong, 1·8–2·2 cm. long, about 6 mm. broad, slightly curved, glandular, calyx persistent.

**HABITAT:**

*Tibet.* SOULIÉ 793—isotype.

*Szechuan.* ROCK 17629, 17630, 17721, 17764. WILSON 1222.

*W. China.* MAIRE in June 1911—isotype of *R. cordatum*, and in June 1914.

Alt. 9,000–14,000 feet.

Many would agree that there are few more beautiful shrubs than *R. Souliei* with its roundish leaves of a metallic green lustre, and open saucer-shaped flowers of a beautiful soft shade of rose. It was found in the neighbourhood of Tatsienlu by PÈRE R. P. SOULIÉ about the year 1893. Ten years later, in 1903, WILSON found it in the same locality when collecting for MESSRS. VEITCH, and it is to him that we owe its introduction to cultivation. He collected it again when working on behalf of the Arnold Arboretum in 1908 and 1910. E. E. MAIRE's specimens from the summit of Io-Chan collected in 1911 and 1913 and erroneously named by LÉVEILLÉ *R. cordatum* are also SOULIÉ's plant. The other material in our herbarium was collected by ROCK in 1928 and 1929. It is often erroneously thought that FORREST also collected *R.*



*Souliei*—several of his gatherings Nos. 4148, 4150, 4154 were named *R. Souliei* by DIELS and the mistake was perpetuated by MILLAIS—but FORREST'S plants, as was pointed out by SIR ISAAC BAYLEY BALFOUR, are not *R. Souliei*. They are correctly named *R. jucundum*.

*R. Souliei*, *R. Wardii* and *R. puralbum* are very closely allied, but easily distinguished by the colour of the flowers.

As evidence of its merit as a garden plant, it may be mentioned that a First Class Certificate was three times awarded to *R. Souliei*, first in 1909 when exhibited by MR. J. VEITCH, secondly in 1936 when shown by Mr. L. de Rothschild, thirdly in 1951 when shown by THE COMMISSIONERS OF CROWN LANDS, WINDSOR.

**R. Wardii** W. W. Sm. in Notes R.B.G. Edin., VIII, 205 (1914); Millais, Rhododendrons, 260 (1917), and *ibid.*, Ser. 2, 259 (1924); Tagg in The Sp. of Rhod., 733 (1930); Rothschild in New Flora & Silva, IV, 7, fig. 4 (1931-32); Journ. Roy. Hort. Soc., XXXII, 57 (1932); Bean, Trees & Shrubs, III, 428 and fig. (1933); Gard. Chron., CVII, Ser. 3, 57 (1940); Rhod. Handb., 101 (1947). *R. gloeoblastum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 260 (1922); Millais, Rhododendrons, Ser. 2, 148 (1924); Tagg in The Sp. of Rhod., 733 (1930); Bean, Trees & Shrubs, III, 428 (1933); Rhod. Handb., 107 (1947). *R. oresterum* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 55 (1920); Millais, Rhododendrons, Ser. 2, 203 (1924); Tagg in The Sp. of Rhod., 733 (1930); Bean, Trees & Shrubs, III, 428 (1933); Rhod. Handb., 109 (1947). *R. Mussoti* Franch. MS. Diels in Notes R.B.G. Edin., V, 212 (1912); Millais, Rhododendrons, Ser. 2, 191 (1924). *R. croceum* Balf. f. & W. W. Sm. in Notes R.B.G. Edin., X, 93 (1917); Millais, Rhododendrons, 150 (1917), and *ibid.*, Ser. 2, 119 (1924); Journ. Roy. Hort. Soc., LII, 52 (1927); Tagg in The Sp. of Rhod., 728 (1930); Bean, Trees & Shrubs, III, 367 (1933); Hand. Mazz., Symb. Sin., VII, 782 (1936); Rhod. Handb., 25 (1947). *R. prasino-calyx* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 57 (1920); Millais, Rhododendrons, Ser. 2, 214 (1924); Tagg in The Sp. of Rhod., 728 (1930); Bean, Trees & Shrubs, III, 367 (1933). *R. astrocalyx* Balf. f. & Forrest in Notes R.B.G. Edin., XIII, 30 (1920); Millais, Rhododendrons, Ser. 2, 87 (1924); Journ. Roy. Hort. Soc., LII, 52 (1927); Tagg in The Sp. of Rhod., 726 (1930); Bean, Trees & Shrubs, III, 428 (1933); Rhod. Handb., 8 (1947).

**HABIT:** shrub, 90 cm.-7.6 m. high; branchlets below the inflorescences 3-5 mm. in diameter, glandular or eglandular.

**LEAVES:** lamina leathery, more or less orbicular or ovate or oblong-elliptic or oblong, 3–12 cm. long, 2–6·5 cm. broad, apex rounded or broadly obtuse, mucronate, base cordulate or truncate or rounded; upper surface dark green, glabrous, midrib grooved, primary veins 10–15 on each side, impressed; under surface glabrous, minutely punctulate with glands, pale glaucous green, midrib prominent; petiole 1–3·3 cm. long, eglandular or sometimes glandular.

**INFLORESCENCE:** umbellate or a racemose umbel of 5–14 flowers; rachis 0·3–2·2 cm. long, sparsely to densely glandular, floccose or glabrous.

**PEDICELS:** 1·6–4·8 cm. long, slightly or moderately glandular with short stalked or sessile glands, rarely eglandular.

**CALYX:** 5-lobed, 0·4–1·2 cm. long, lobes usually unequal, rounded or oblong-oval or oblong, glandular or eglandular outside, margin glandular.

**COROLLA:** openly cup- or saucer-shaped, 2·4–4 cm. long, bright yellow, with or without a basal crimson blotch, more or less glandular or eglandular outside; lobes 5, 0·8–2 cm. long, 1·3–3 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1–2 cm. long; filaments glabrous, rarely puberulous at the base.

**PISTIL:** 2–2·9 cm. long; ovary conoid, 4–6 mm. long, densely glandular with short or long stalked glands; style glandular to the tip.

**CAPSULE:** short, stout, or oblong, 1·5–2·5 cm. long, 0·5–1 cm. broad, straight or slightly curved, glandular, calyx persistent.

**HABITAT:**

*Yunnan.* WARD 529—type, 586. FORREST 10428—type of *R. croceum*, 10680, 11317, 11466, 12697, 13315, 13991, 14028, 14095, 14128—type of *R. astrocalyx*, 15402, 15412, 16511—type of *R. prasinocalyx*, 16749, 17022, 17351, 17373, 17399, 17459, 19512, 19565, 19651, 19742, 19743, 27094, 22604, 23096, 25494, 25511, 25534, 25978, 25979, 29276, 29284, 29322, 30890. ROCK 3983, 8930, 9252, 9320, 9351, 9353, 9363, 9372, 9582, 9592, 9777, 10093, 10925, 11114, 11145, 11147, 11152, 11247, 11321, 11355, 17136, 18332, 18333, 18455, 18482, 22807, 23314.

*Szechuan.* FORREST 16321, 16493, 20470. ROCK 5542, 16111, 16168, 16192, 16282, 16447, 17744, 18030, 18080, 18227, 23752, 23785, 23802, 24079, 24339, 24360, 24368, 24487, 24495. WARD 4170, 4458, 5197, 5320.



*S.E. Tibet.* FORREST 14190, 14357, 15396, 16715—type of *R. oresterum*, 18672—type of *R. gloeoblastum*, 19212, 19692, 20834. ROCK 22936, 23544. SOULIÉ 1003—*R. Mussoti*. WARD 5736.  
Alt. 10,000–14,000 feet.

*R. Wardii* has a confusing history and associated with it is a somewhat complex nomenclature. The species named in honour of KINGDON-WARD was described by W. W. SMITH in 1914, based upon WARD's Nos. 529 and 586 collected in the Doker La and at Atuntze, in June 1913. FORREST's No. 10428 collected in Yunnan on the mountains N.E. of the Yangtse bend in July 1913 was also cited. This FORREST gathering later became the type of *R. croceum*, a name which was published in 1917. MILLAIS states that *R. Wardii* was discovered by FORREST on the eastern flank of the Lichiang Range in 1906, but this would appear to be a mistake; neither we nor the late MR. TAGG have been able to discover a FORREST specimen collected before 1913. *R. Wardii* was known, however, at an earlier date. It was in fact first discovered by SOULIÉ (No. 1003) on June 28, 1895, at Si La and was named *R. Mussoti* by FRANCHET. FRANCHET did not, however, publish the name, although it is cited by DIELS under his description of *R. Stewartianum* in *Notes of the Royal Botanic Garden, Edinburgh*, V, 212 (1912). *R. Wardii* is therefore the valid name.

Various plants apparently differing in minor details from *R. Wardii*, have been given distinct specific names. The type of *R. croceum* was, as we have mentioned, first labelled *R. Wardii* and later segregated and given specific status. In *The Species of Rhododendron*, *R. croceum* is described as "a very close ally of *R. Wardii*, from which it differs chiefly in the more oblong, less orbicular leaves, and a greater tendency to glandularness, which on the ovary is expressed by long stalked glands." The difference in leaf shape is evident when the two type specimens are compared, but when more material is examined it will be found that the one form passes into the other. Many plants in cultivation are intermediate and may be given either name.

*R. oresterum* with the orbicular leaf of the typical *R. Wardii* was made a distinct species because of its small leaves "quam typus multo minor." This is a notable difference when the two types alone are compared, but again one which disappears when a wide range of material is examined. In *The Species of Rhododendron* the name *R. oresterum* rightly appears in synonymy.

*R. prasinocalyx* with the oblong leaves of *R. croceum* described as "Species *R. croceo* Balf. f. et W. W. Sm. valde affinis" was distinguished mainly by the green calyx lobes glandular all over and



gland-fringed, but the glandularness of the calyx is a variable feature, and this name too in *The Species of Rhododendron* rightly appeared in synonymy.

The name *R. gloeoblastum* (represented by a single gathering, F. No. 18672), also appears in *The Species of Rhododendron* in synonymy. This species was said to be distinguished by the glandular sticky leaf-buds, the small oval leaves with short yellow stalks and yellow midrib and glaucous under surface.

*R. astrocalyx*, another plant represented by a single gathering, F. No. 14128, is said to differ from *R. Wardii* by its smaller leaves, smaller flowers and peculiar calyx. The size of the leaves, as we have seen, is variable and the size of the flower is variable also, even in the type specimen. The calyx, with narrow diverging lobes presenting a star-like appearance, is, in our opinion, an insufficient distinction on which to justify separate specific status. We have examined a large number of cultivated plants within the *R. Wardii* complex and find that the width of the lobes varies and the lobes are more or less spreading.

As herbarium material has accumulated and the plants have become better known in cultivation, it is evident that the distinctions upon which these other species were founded are unreliable and inconstant, and moreover, all the separate forms are linked by intermediates.

*R. litiense*, which is described above, is somewhat more distinct. In the typical plant the leaf is oblong in shape and markedly glaucous beneath. The flowers are often smaller and less openly cup-shaped than those of *R. Wardii*. We include under the name *R. Wardii* forms with larger or smaller orbicular leaves, green or glaucous beneath, and forms with larger oblong leaves green beneath. The size and shape of the calyx and of the corolla is somewhat variable, occasionally the corolla is blotched at the base.

Awards of Merit were awarded under the names *R. croceum* and *R. astrocalyx* in 1926 and *R. Wardii* in 1931.

#### THOMSONII SUBSERIES

GENERAL CHARACTERS: Shrubs or trees, 60 cm.-12 m. high; branchlets glandular or eglandular. Leaves orbicular, elliptic, obovate or oblong; lamina 2.7-18 cm. long, 1.5-9 cm. broad, under surface usually glabrous. Inflorescence terminal, racemose or umbellate, 3-15-flowered. Pedicels 0.6-2.7 cm. long, usually glabrous. Calyx 0.1-2 cm. long, usually glabrous. Corolla campanulate or tubular-campanulate, fleshy, crimson (except in *R. cyanocarpum*, *R. hylaeum*, *R. Stewartianum* and *R. eclecteum*), 2.5-6.3 cm. long. Stamens 10, often glabrous. Ovary conoid,



4-7 mm. long, eglandular or glandular; style eglandular. Capsule short, stout, or oblong, straight, 1-3 cm. long.

## KEY TO THE SPECIES

- A. Bead-like tufts of hairs present on the lateral veins on the under surface of leaves. (Flowers crimson) . . . . . *R. Hookeri*
- A. Bead-like tufts of hairs absent from the lateral veins on the under surface of leaves.
  - B. Flowers crimson.
    - C. Leaves large, usually 6-18 cm. long; calyx large, usually 4-18 mm. long; inflorescence 6-12-flowered; midrib on the under surface of leaves hairy or glabrous; corolla up to 6 cm. long.
      - D. Ovary eglandular.
        - E. Leaves orbicular or broadly elliptic . . . . . *R. Thomsonii*
        - E. Leaves usually obovate or oblong-oval . . . . . *R. Meddianum*
      - D. Ovary densely glandular.
        - E. Midrib on the under surface of leaves glabrous; leaf stalk long; leaves obovate . . . . . *R. Meddianum* var. *atrokermesinum*
        - E. Midrib on the under surface of leaves usually hairy; leaf stalk short for size of leaf; leaves oblong or obovate . . . . . *R. eclectum* var. *brachyandrum*
    - C. Leaves small, 2.7-8 cm. long; calyx small, 2-3 mm. long; inflorescence 3-5-flowered; midrib on the under surface of leaves glabrous; corolla up to 4.2 cm. long.
      - D. Leaves oval or broadly elliptic or oblong; under surface of leaves papillate; ovary glandular or eglandular . . . . . *R. Lopsangianum*
      - D. Leaves oblong; under surface of leaves epapillate; ovary eglandular . . . . . *R. populare*
  - B. Flowers white or yellow or pink.
    - C. Leaves orbicular or broadly elliptic; under surface of leaves glabrous; petiole long.
      - D. Calyx usually red or red in upper half; corolla pink . . . . . *R. Thomsonii* varieties
      - D. Calyx green; corolla white or pink . . . . . *R. cyanocarpum*
    - C. Leaves obovate or oblong or oblong-obovate; under surface of leaves or midrib hairy or glabrous; petiole short for size of leaf or long.
      - D. Ovary eglandular . . . . . *R. hylaeum*
      - D. Ovary densely glandular.
        - E. Petiole short for size of leaf (except in *R. eclectum* var. *bellatulum*); under surface of leaves glabrous, except midrib often hairy; leaves obovate or oblong . . . . . *R. eclectum*
        - E. Petiole long; under surface of leaves usually with a thin veil of hairs or farinose; leaves obovate or elliptic . . . . . *R. Stewartianum*

## DESCRIPTION OF SPECIES (AMP. ET EM.)

**R. cyanocarpum** (Franch.) W. W. Sm. in Trans. Bot. Soc. Edin., XXVI, 274 (1914); Millais, Rhododendrons, Ser. 2, 249 (1924); Tagg in The Sp. of Rhod., 738 (1930); Bean, Trees

and Shrubs, III, 368 (1933); Journ. Roy. Hort. Soc., LIX, xxxv (1934); Hand. Mazz. Symb. Sin., VII, 781 (1936); Rhod. Handb., 26 (1947); Bot. Mag. CLXVIII, n.s.t. 155. *R. Thomsonii* Hook. f. var. *cyanocarpum* Franch. in Journ. de Bot., IX, 389 (1895); Millais, Rhododendrons, 253 (1917); Tagg in The Sp. of Rhod., 738 (1930); *R. hedythamnium* Balf. f. & Forrest var. *eglandulosum* Hand. Mazz., Akad. Amzeig. Wien, No. 19 (1923); Tagg in The Sp. of Rhod., 738 (1930); Bean, Trees & Shrubs, III, 368 (1933).

**HABIT:** shrub or small tree, 1·20–6·70 m. high; branchlets below the inflorescences 4–7 mm. in diameter, eglandular, glaucous.

**LEAVES:** lamina leathery, broadly elliptic or orbicular, 5–12·6 cm. long, 4–9 cm. broad, apex rounded, base rounded or cordulate or truncate; upper surface glabrous, midrib grooved, primary veins 10–15 on each side, impressed; under surface glabrous or minutely hairy, glaucous green, midrib raised; petiole 1·5–3 cm. long, sparsely glandular or eglandular, glaucous green.

**INFLORESCENCE:** umbellate or shortly racemose, 6–10-flowered; rachis 0·5–1 cm. long, eglandular.

**PEDICELS:** 1–2 cm. long, eglandular.

**CALYX:** cup-shaped, 0·2–1·1 cm. long, greenish, 5-lobed, lobes unequal, rounded or truncate, eglandular, glaucous.

**COROLLA:** campanulate or widely funnel-campanulate, 4–6 cm. long, white or creamy-white flushed rose or rich soft rose; lobes 5, 1·2–2·2 cm. long, 1·8–3·1 cm. broad, emarginate.

**STAMENS:** 10, unequal, 2–4 cm. long; filaments glabrous.

**PISTIL:** 3–4·5 cm. long; ovary conoid, 5–7 mm. long, eglandular, grooved; style glabrous.

**CAPSULE:** broad, stout or oblong, 1–2·5 cm. long, 0·6–1 cm. broad, eglandular, slightly or moderately glaucous, calyx persistent.

**HABITAT:** *Yunnan*. FORREST 4137, 6775, 6779, 11576, 11629, 15520, 15570, 15588, 16247, 19407, 10418, 28245, 28278, 28293, 29120. MCLAREN 'C' 54, 'L' 125a, 'Misc. Coll.' 121. ROCK 3129, 3141, 3145, 6273.  
Alt. 10,000–13,000 feet.

*R. cyanocarpum* was discovered by the ABBÉ DELAVAY and described by FRANCHET as a variety of *R. Thomsonii*, but later raised to specific rank. Not much was known of this plant until it was introduced by FORREST in 1906. One of his plants raised by LADY LODER was given an Award of Merit in 1933 (Fig. 70).

*R. cyanocarpum* is very closely allied to *R. Thomsonii*, and



although no other character can be relied upon, is readily distinguished from its Himalayan counterpart by the colour of its flowers, white or rose, not deep blood red. In its distribution *R. cyanocarpum* seems to be confined to the Eastern and Western flanks of the Tali Range in Yunnan.

Evidence of the very close linkage between this and the above species is furnished by their varieties.

**R. cyanocarpum** (Franch.) W. W. Sm. var. **eriphyllum** Balf. f. & W. W. Sm. ex Tagg in The Sp. of Rhod., 738 (1930); *R. eriphyllum* Balf. f. & W. W. Sm. nomen, Balf. f. in Notes R.B.G. Edin., X, 98 (1917); Millais, Rhododendrons, Ser. 2, 136 (1924).

HABITAT: Yunnan. FORREST 11593—type.

Alt. 11,000 feet.

In *Notes from the Royal Botanic Garden* cited above, BALFOUR remarks that *R. candelabrum* and *R. eriphyllum* are microforms respectively of *R. Thomsonii* and *R. cyanocarpum*. The only point of difference between *R. cyanocarpum* and its variety is the presence and absence of glands on the ovary and moreover the glands may be few or many. Obviously a very close connection exists between *R. Thomsonii* var. *candelabrum* and *R. cyanocarpum* var. *eriphyllum* both with glandular ovaries. Probably there is no significant difference but our material is insufficient as conclusive evidence. In view of a wide separation geographically we have made no change in nomenclature.

**R. eclectum** Balf. f. & Forrest in Notes R.B.G. Edin., XII, 105 (1920); Journ. Roy. Hort. Soc., XLIX, 28–9 (1924); Millais, Rhododendrons, Ser. 2, 132 (1924); Tagg in The Sp. of Rhod., 739 (1930); Ward, Plant Hunting, 82 (1930); Rothschild in New Flora & Silva, VI, 80 (1933–34); Kew Bull., 96 (1939); Rhod. Handb., 32 (1947).

HABIT: shrub, 60 cm.–2.40 m. high; branchlets below the inflorescences 3–7 mm. in diameter, sparsely or moderately glandular, rarely eglandular.

LEAVES: lamina leathery, obovate or oblong-obovate or oblong, 5–14.5 cm. long, 2–6 cm. broad, apex rounded, base cordulate or obtuse or truncate; upper surface glabrous, glaucous, midrib grooved, primary veins 12–15 on each side, impressed; under surface glabrous, midrib raised, hairy or glabrous; petiole often broad, 0.3–1.8 cm. long, eglandular or sometimes glandular, rarely hairy, more or less glaucous.

INFLORESCENCE: umbellate or a racemose umbel of 6–12 flowers; rachis 0.4–1.5 cm. long, eglandular, rarely glandular or hairy.

PEDICELS: 0.8–2 cm. long, eglandular, rarely glandular, more or less glaucous.

CALYX: 5-lobed, variable in size, 0.2–2 cm. long, lobes rounded or ovate or oblong-oval, eglandular outside, margin rarely glandular or hairy.

COROLLA: tubular-campanulate, 3–5.3 cm. long, fleshy, white or yellow or pink or deep rose, spotted or unspotted; lobes 5, 0.9–1.8 cm. long, 1.2–2.4 cm. broad, rounded, emarginate.

STAMENS: 10, unequal, 1.2–3.9 cm. long; filaments glabrous or puberulous at the base.

PISTIL: 3–5.1 cm. long; ovary conoid, 4–6 mm. long, densely or moderately glandular and rarely hairy, grooved; style eglandular.

CAPSULE: broadly oblong, 1.4–2.8 cm. long, 0.7–1.2 cm. broad, glandular, rarely eglandular, calyx persistent.

HABITAT:

*Yunnan.* FORREST 14804—type, 17475, 18203, 18857, 19517, 19710, 25770, 25821. ROCK 8720, 8748, 8750, 8884, 9202, 9205, 9207, 9208, 9238, 10939, 11032, 11035, 11038, 11051, 11055, 11056, 11060, 11080, 16952, 17085, 17095, 18415, 18416.

*S.E. Tibet.* FORREST 14485, 15293, 18901, 18911, 19952, 20053, 20836, 21770, 21838—type of var. *benemaculatum*, 21882, 21886, 22630, 22647, 22648, 22850, 22851, 22853, 22893. ROCK 22096A, 22100, 22222, 22224, 22230, 22269, 22445, 22447, 22592, 22594, 22661, 22663, 22664, 22665, 22912, 22998, 23004, 23006, 23183, 23509, 23511, 23516, 23632.

*S.W. Szechuan.* FORREST 21013.

*N.E. Upper Burma.* FORREST 25603. WARD 6896.

Alt. 10,000–14,000 feet.

*R. eclectum* was discovered in fruit by FORREST in July 1917, in Yunnan and S.E. Tibet. It was thought that the flowers were deep red. Subsequently ample material of this species was collected not only by FORREST but also by ROCK. The typical plant has obovate or oblong-obovate leaves, broad at the base, with very short petioles, suggesting in shape a jargonelle pear. The under surface of the leaves is glabrous except for the often hairy midrib.

Amongst the herbarium material under this name are many



specimens which depart considerably from the type. The extreme divergence is seen in specimens with oblong leaves more or less tapered to the base; or with a distinct petiole as much as 1.8 cm. long. In these specimens the base of the leaf is usually broad, but sometimes narrowly obtuse.

As to the calyx, which is rather large in the type, this varies from very large to relatively small. The size of the calyx bears no relation to variation in leaf shape.

The colour of the flower is very variable, white or yellowish, pink to dark crimson purple, without apparent correlation with any other character.

Certain forms of *R. eclecleum* and of *R. Stewartianum* are very similar. The two species overlap, but can usually be distinguished by the combined characters given in the preceding analytical key.

From time to time distinctive names have been given to variant forms. In 1920 FORREST collected a plant with a small corolla, shortly petiolate leaves, stamens half the length of the corolla, and flowers flushed deep crimson. This was described as *R. brachyandrum*. In practice forms with crimson or reddish-purple flowers have been placed under this name regardless of variation in size and shape of leaf, length of petiole, size of calyx and corolla or the length of the stamens. The type of the species is a fruiting specimen but the flowers were said to be deep red.

The name *R. bellatulum* was applied—in *The Species of Rhododendron* as a varietal name—to a form with petiolate leaves, bright rose flowers and puberulous stamens. In a number of specimens the stamens are puberulous, although more often glabrous. The distinctly petiolate leaves are the noteworthy character distinguishing these plants.

The name *R. anisocalyx* was proposed for a form with oblong leaves which are petiolate and which, as the name suggests, was at the same time distinguished by a large irregular development of the calyx, one lobe being markedly longer than the others. Within the whole complex the variation in size of calyx corresponds closely to the variation found in *R. Stewartianum*. This again cannot be correlated with any other character and the unequally lobed calyx appears to be fortuitous.

It has been noted in cultivation that the flower bud scales of some plants are green, of others deep crimson. Many plants with the latter characteristic have been named var. *brachyandrum* but again this is a modification which cannot be correlated with any anatomical variation. The name *R. benemaculatum* which was never published, was proposed for a form with white flowers "heavily and regularly marked deep crimson."

The above remarks sufficiently indicate the wide variation and



to attempt to attach varietal names to all the many variant and intergrading microforms would serve no useful purpose.

The main distinction is between forms which, as in the typical plant, have obovate to oblong-oval leaves, broadly rounded or cordulate at the base, very shortly stalked—the leaf at first inspection appears to be sessile or subsessile—and those in which the leaf is oblong or obovate, obtuse or rounded at the base and with a relatively long petiole—the leaf at first inspection appears to be distinctly stalked. No hard and fast line can be drawn between these two forms but they appear so different in cultivation that a distinguishing name seems to be desirable. The form with deep crimson flowers is from a horticultural standpoint also worthy of distinction.

**R. eclectum** Balf. f. & Forrest var. **bellatulum** Balf. f. ex Tagg in *The Sp. of Rhod.*, 739 (1930); *Rhod. Handb.*, 32 (1947).

A typo foliis valde petiolatis haud subsessilis, plus minusve oblongis, basi obtusis vel rotundatis recedit.

**HABITAT:**

*Yunnan.* FORREST 19535—type, 19548—type of *R. anisocalyx*. ROCK 8739, 8741, 8742, 8743, 8744, 8751, 8886, 9198, 9200, 9201, 9229, 9231, 9237, 10910, 11025, 11027, 11030, 11031, 11037, 11040, 11041, 11050, 11053, 11054.

*S.E. Tibet.* FORREST 21839, 21887, 22708.

Alt. 10,000–14,000 feet.

It is mentioned in *The Species of Rhododendron* that “a form with smaller leaves, bright rose flowers and puberulous stamens has received the varietal name, *bellatulum*.” No further description of the variety has been published. The striking feature, however, of the specimen which was selected as the type, when compared with typical *R. eclectum* is the petiolate, more or less oblong leaves, obtuse or rounded at the base. The leaves are by no means subsessile. Other specimens which exhibit this character, regardless of flower colour, have been placed under this varietal name.

**R. eclectum** Balf. f. & Forrest var. **brachyandrum** (Balf. f. & FORREST) Tagg in *The Sp. of Rhod.*, 739 (1930); *Rhod. Handb.*, 32 (1947). *R. brachyandrum* Balf. f. & Forrest in *Notes R.B.G. Edin.*, XIII, 32 (1920); Millais, *Rhododendrons*, Ser. 2, 93 (1924).

**HABITAT:**

*S.E. Tibet.* FORREST 18943—type, 21769, 21840, 21842, 21881, 21883, 22710, 22891, 22892. ROCK 10172,



11180, 22003, 22005, 23003, 23005, 23021, 23134,  
23235, 23510, 23512, 23621, 23630.

*N.E. Upper Burma.* FORREST 25604.

*Yunnan.* ROCK 9204, 11059.

Alt. 12,000–14,000 feet.

The variety differs from the type in that the colour of the flowers is deep rose or crimson.

**R. Hookeri** Nutt. in Hook. Kew Journ., V, 359 (1853); Bot. Mag., LXXXII, t. 4926 (1856); C. B. Clarke in Hook. f. Fl. Brit. Ind., III, 468 (1882); Gard. Chron. XVII, New Ser., 628, (1882); *ibid.*, III, 3rd. Ser., 365 (1888); *ibid.*, XCIX, 3rd Ser., 278 (1936); Millais, Rhododendrons, 187 (1917), and *ibid.*, Ser. 2, 156 (1924); The Garden LXXXIV, 196 & fig. (1920); Journ. Roy. Hort. Soc., LII, 4 (1927); *ibid.*, LIX, xxxv (1934); Tagg in The Sp. of Rhod., 740 (1930); Bean, Trees & Shrubs, III, 385 (1933); Rhod. Handb., 46 (1947).

**HABIT:** tall shrub, 3–6 m. high; branchlets eglandular, those below the inflorescences about 4 mm. in diameter.

**LEAVES:** lamina leathery, oblong or oblong-oval, 6·3–17 cm. long, 3–7·5 cm. broad, apex rounded or obtuse, mucronate, base obtuse or rounded or truncate; upper surface glabrous, midrib grooved, primary veins 9–15 on each side, impressed; under surface pale glaucous green, glabrous except the lateral veins studded with isolated hair tufts which at first are white, ultimately brown, midrib raised; petiole 1·5–2·6 cm. long, eglandular.

**INFLORESCENCE:** a racemose umbel of 8–15-flowers; rachis 1·4–1·6 cm. long, eglandular.

**PEDICELS:** 0·7–1·6 cm. long, eglandular.

**CALYX:** 5-lobed, unequal, 0·5–2 cm. long, lobes rounded or oblong, eglandular.

**COROLLA:** tubular-campanulate or funnel-shaped, 3·5–4·4 cm. long, cherry-red or deep crimson, with 5 dark crimson nectaries at the base; lobes 5, 1–1·4 cm. long, 1·6–2·2 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 1·5–3 cm. long; filaments glabrous.

**PISTIL:** 2·7–4 cm. long; ovary conoid, 5–7 mm. long, eglandular, 7–8-celled; style eglandular.

**CAPSULE:** cylindric-ovate, 2–2·5 cm. long, calyx persistent.

**HABITAT:** *Assam.* WARD 8238, 11566.

Alt. 10,000–12,000 feet.

*R. Hookeri* is a native of Bhutan discovered by Booth in 1852 and recorded as having flowered at Mosely Hall, near Liverpool, in

April 1856. It was for long one of the rarest plants in cultivation and is still uncommon. When exhibited by LORD ABERCONWAY in 1933 it was awarded a First Class Certificate. The wild plant does not appear to have been collected again until WARD found it in May 1928 and again in May 1935 in Assam.

*R. Hookeri*, *R. Thomsonii* and *R. Meddianum* are closely related, and very similar to each other in their flowers. The calyx of *R. Hookeri* is often large. No other species of *Rhododendron* has isolated tufts of hairs on the lateral veins on the under surface of the leaves, a character which makes recognition easy.

**R. hylaeum** Balf. f. & Farrer in Notes R.B.G. Edin., XIII, 265 (1922); Millais, *Rhododendrons*, Ser. 2, 157 (1924); Cox, *Farrer's Last Journey*, 175, 232 (1926); Tagg in *The Sp. of Rhod.*, 741 (1930); *Rhod. Handb.*, 47 (1947).

**HABIT:** shrub or tree, 2·4–12 m. high; branchlets glandular or eglandular, those below the inflorescences about 5 mm. in diameter.

**LEAVES:** lamina leathery, oblong or oblanceolate, 6–17·5 cm. long, 2–4·8 cm. broad, apex rounded or obtuse, narrowed to the base or obtuse or cordulate; upper surface glabrous, midrib grooved, primary veins about 18 on each side, impressed; under surface pale green, glabrous, minutely punctulate with sessile glands, midrib raised; petiole 1–2·4 cm. long, eglandular, more or less glaucous.

**INFLORESCENCE:** a racemose umbel of 10–12 flowers; rachis 1·3–4 cm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 0·8–1·5 cm. long, eglandular.

**CALYX:** cup-like, undulately 5-lobed, 4–8 mm. long, hairy or glabrous outside at the base, eglandular.

**COROLLA:** tubular-campanulate, fleshy, with 5 basal nectar pouches, pale rose, spotted on the petals, 3·6–4·5 cm. long; lobes 5, 1·3–1·5 cm. long, 1·6–2·5 cm. broad, deeply emarginate.

**STAMENS:** 10, unequal, 2–3·5 cm. long; filaments glabrous.

**PISTIL:** 3·5–4 cm. long; ovary conoid, 4–6 mm. long, eglandular, 7–8-celled; style eglandular.

**CAPSULE:** broadly oblong, straight, 1·4–2·5 cm. long, 0·6–1 cm. broad, slightly or moderately glaucous, eglandular, calyx persistent.

**HABITAT:**

*N.E. Upper Burma.* FARRER 1551—type. FORREST 24660.  
WARD 6833, 7484.

*Tibet.* FORREST 20315, 20961, 21717, 22660.

*Yunnan.* FORREST 25674, 25816.

Alt. 7,000–12,000 feet.



REGINALD FARRER who discovered *R. hylaeum* in May 1920 on the Chawchi Pass in N.E. Upper Burma describes it as a tidy round-headed tree with a smooth bare trunk. After a long search he found a few flowers, pink and handsome, spotted rather carelessly on the lobes. WARD collected the same species on the Seinghku Wang in 1926. It is probable too that plants collected by FORREST on the Salwin Ch'iu-chiang Divide in 1922 and in 1924 and from Htawgaw Bum in 1924 are this same species, but FORREST's specimens are without flowers and cannot be named with certainty.

Although *R. hylaeum* has many of the characters of *R. Thomsonii*, yet it differs markedly in its oblong or oblanceolate leaves. This species, allowed to remain for the present in the Thomsonii Series, is perhaps better placed in the Irroratum Series.

**R. Lopsangianum** Cowan in Notes R.B.G. Edin., XIX, 250 (1937); Rhod. Handb., 56 (1947).

**HABIT:** shrub, 30 cm.—1.80 m. high; branchlets glandular, those below the inflorescences 2–3 mm. in diameter.

**LEAVES:** lamina elliptic or oblong-elliptic or oval, 2.7–6 cm. long, 1.6–4 cm. broad, apex broadly obtuse or rounded, base obtuse or truncate or cordulate; upper surface eglandular or glandular along the grooved midrib, primary veins about 9 on each side, impressed; under surface papillate, glabrous, midrib raised; petiole 0.6–1 cm. long, glandular or eglandular.

**INFLORESCENCE:** terminal, umbellate, 3–5-flowered.

**PEDICELS:** 0.7–2 cm. long, eglandular.

**CALYX:** 5-lobed, small, 2–3 mm. long, crimson, lobes rounded, eglandular outside, margin glandular.

**COROLLA:** tubular-campanulate or funnel-campanulate, 3–4.2 cm. long, deep crimson; lobes 5, 0.6–1.3 cm. long, 1.1–2 cm. broad, emarginate.

**STAMENS:** 10, unequal, 2.2–3.1 cm. long; filaments glabrous or puberulous at the base.

**PISTIL:** 3–4 cm. long; ovary conoid, 5–7 mm. long, eglandular or glandular; style eglandular.

**CAPSULE:** oblong, 1.1–1.5 cm. long, 5 mm. broad, straight, eglandular; calyx persistent.

**HABITAT:** *Tibet*. LUDLOW & SHERRIFF 1718—isotype, 1651 (at Brit. Mus.) 1776, 2736.

Alt. 8,500–14,000 feet.

This is one of the new Rhododendrons discovered by LUDLOW AND SHERRIFF in 1936 in Southern Tibet and it is named in honour of NGA-WANG LOPSANG TUP-DEN GYATSO, the late Dalai Lama of

Tibet. It is closely allied to *R. Thomsonii* with leaves of similar shape and deep crimson flowers, but it is a smaller plant and readily distinguished by the smaller flowers, the small calyx not forming a distinct cup, and by the smaller leaves.

**R. Meddianum** Forrest in Notes R.B.G. Edin., XII, 136 (1920); Millais, Rhododendrons, Ser. 2, 185 (1924); Tagg in The Sp. of Rhod., 742 (1930); Hutch. in Bot. Mag., CLXIII, t. 9636 (1940-42); Rhod. Handb., 59 (1947).

**HABIT:** shrub, 90 cm.-1.80 m. high; branchlets eglandular, thinly glaucous, those below the inflorescences 4-10 mm. in diameter.

**LEAVES:** oval or oblong-oval or obovate, rarely oblong, 5.5-18 cm. long, 3.5-8 cm. broad, apex rounded or truncate or retuse, base rounded or obtuse or truncate; upper surface glabrous, dark green, glaucous, midrib grooved, primary veins 10-15 on each side, impressed; under surface glabrous, midrib raised, primary veins conspicuous; petiole 1-3 cm. long, eglandular, rarely glandular, glaucous or not glaucous.

**INFLORESCENCE:** umbellate or shortly racemose, 5-10-flowered; rachis 0.2-1.8 cm. long, glandular or eglandular.

**PEDICELS:** 1-2.4 cm. long, eglandular, reddish.

**CALYX:** cup-shaped, fleshy, red, 5-lobed, 0.4-1.8 cm. long, lobes unequal, rounded or ovate, eglandular.

**COROLLA:** tubular-campanulate, 4-6.3 cm. long, fleshy, rich deep crimson, base 5-pouched; lobes 5, 1.3-2 cm. long, 2-3 cm. broad, rounded, emarginate.

**STAMENS:** 10, unequal, 2.7-4.5 cm. long; filaments glabrous.

**PISTIL:** 3.7-6.2 cm. long; ovary conoid, 4-6 mm. long, eglandular, grooved; style eglandular.

**CAPSULE:** broad, stout or oblong, straight or slightly curved, 1.5-2 cm. long, 7-8 mm. broad, glandular, usually glaucous, calyx persistent.

**HABITAT:** Yunnan. FORREST 15767—type, 16037, 17703, 17729, 18018, 18036, 18073, 24104, 24219.  
Alt. 10,000-11,000 feet.

*R. Meddianum*, the counterpart of *R. Thomsonii*, was found by GEORGE FORREST in the Shweli-Salwin Divide in June 1917, and was named by him in honour of MR. GEORGE MEDD who had given him much assistance on his journeys. It is restricted to Western Yunnan and occurs at elevations of 10,000-11,000 feet. The variety, *atrokermesinum*, was found in N.E. Upper Burma.

Although *R. Meddianum* is said to have larger flowers than *R. Thomsonii* of a deeper red and with a highly coloured calyx, these distinctions are not constant. The leaves, however, are not



so rounded, usually oblong-oval or obovate, and sometimes they are very large. These combined characters, even though there is some overlapping, serve readily to distinguish the two species.

**R. Meddianum** Forrest var. **atrokermesinum** Tagg in The Sp. of Rhod., 742 (1930); Forrest in Notes R.B.G. Edin., XVI, 202 (1931); Rhod. Handb. 59 (1947).

**HABITAT:** *Burma*. FORREST 26499—type, 27623, 26495, 27606, 17991, 26476, 27465.  
Alt. 11,000 feet.

The variety differs from the species in its densely glandular ovary. It cannot be said that the flowers of the variety are always darker and larger than those of the species, but in the variety the pedicels and branchlets (as well as the ovary) are usually glandular.

**R. populare** Cowan in Notes R.B.G. Edin., XIX, 251 (1937); Rhod. Handb., 74 (1947).

**HABIT:** shrub or tree, 90 cm.—4.60 m. high; branchlets glandular or eglandular, those below the inflorescences 2–3 mm. in diameter.

**LEAVES:** oblong or oblong-elliptic or elliptic, 3.5–8 cm. long, 1.5–3.5 cm. broad, apex broadly obtuse or rounded, mucronate, base obtuse or cordulate; upper surface glabrous, midrib grooved, floccose or glabrous, primary veins 8–12 on each side, impressed; under surface glabrous, midrib raised; petiole 5–7 mm. long, sparsely or moderately floccose, eglandular.

**INFLORESCENCE:** terminal, umbellate, 3–5-flowered; rachis 3–4 mm. long, hairy or glabrous.

**PEDICELS:** 0.6–1.2 cm. long, eglandular.

**CALYX:** 5-lobed, 0.1–1 cm. long, crimson, lobes rounded or ovate, eglandular.

**COROLLA:** funnel-campanulate or campanulate, 2.5–3.7 cm. long, crimson, with or without deeper spots; lobes 5, 0.8–1 cm. long, 1.3–2 cm. broad, emarginate.

**STAMENS:** 10, unequal, 1.4–2.6 cm. long; filaments glabrous.

**PISTIL:** 2.5–3.5 cm. long; ovary conoid, 4–5 mm. long, eglandular, grooved; style eglandular.

**CAPSULE:** not known.

**HABITAT:** *Tibet*. LUDLOW & SHERRIFF 1391—type, 1359.

Alt. 11,500–12,000 feet.

*R. populare* was discovered by LUDLOW AND SHERRIFF in Southern Tibet in 1936 in Rhododendron and Bamboo forest at elevations of 11,500–12,000 feet. It agrees with *R. Thomsonii* in its

crimson flowers and glabrous ovary but is quite unlike it in its narrow oblong leaves; moreover the calyx is often small. The shape of the leaves and the absence of papillae on the under surface distinguish this species from *R. Lopsangianum*. In its leaf shape it resembles *R. hylaeum*, but markedly differs in the colour of the corolla, in the size of the leaves and in its inflorescence.

**R. Stewartianum** Diels in Notes R.B.G. Edin., V, 211 (1912); Millais, Rhododendrons, 248 (1917), and *ibid.* Ser. 2, 244 (1924); Tagg in The Sp. of Rhod., 743 (1930); Rothschild in New Flora & Silva, III, 103 (1930-31); Bean, Trees & Shrubs, III, 421 (1933); Journ. Roy. Hort. Soc., LIX, 359, clxxxvi (1934); Gard. Chron., xcvi, Ser. 3, 239 (1935); Rhod. Handb. 91 (1947). *R. niphobolum* Balf. f. & Farrer in Notes R.B.G. Edin., XIII, 277 (1922); Millais, Rhododendrons, Ser. 2, 194 (1924); Cox, Farrer's Last Journey, 233 (1926); Tagg in The Sp. of Rhod., 743 (1930); Bean, Trees & Shrubs, III, 421 (1933).

**HABIT:** shrub, 60 cm.-2.70 m. high; branchlets eglandular or glandular, rarely hairy, those below the inflorescences 3-4 mm. in diameter.

**LEAVES:** lamina leathery, obovate or elliptic or oblong-obovate, 5-12 cm. long, 2.5-6.5 cm. broad, apex rounded, base obtuse or rounded or truncate; upper surface bright green, glabrous, more or less glaucous, midrib grooved, primary veins 9-14 on each side, impressed; under surface with a thin veil of hairs or with farinose indumentum or glabrous, midrib prominent; petiole 0.6-1.9 cm. long, usually eglandular, rarely hairy.

**INFLORESCENCE:** umbellate or shortly racemose, 3-7-flowered; rachis 2-6 mm. long, glandular or eglandular, hairy or glabrous.

**PEDICELS:** 0.8-2.5 cm. long, glandular or eglandular.

**CALYX:** 5-lobed, variable in size, 0.1-1.4 cm. long, lobes rounded, rarely oblong, eglandular outside, margin glandular or eglandular and rarely hairy.

**COROLLA:** tubular-campanulate, 3.6-5.4 cm. long, very variable in colour, pure white or yellow, white or yellow flushed rose, deep rose or rarely crimson, with or without markings; lobes 5, rounded, emarginate, 1.2-1.5 cm. long, 1.8-2.5 cm. broad.

**STAMENS:** 10, unequal, 1.8-3.8 cm. long; filaments puberulous at the base, rarely glabrous.

**PISTIL:** 3.1-4.1 cm. long; ovary conoid, 4-5 mm. long, moderately or densely glandular, rarely eglandular; style glabrous.



CAPSULE: oblong, straight or slightly curved, 1.5–3 cm. long, 0.6–1 cm. broad, glandular or with vestiges of glands, rarely eglandular, calyx persistent.

HABITAT:

*S.E. Tibet.* FORREST 5069—type, 21763, 21841, 21888, 21889, 21919, 22613, 22614, 22616, 22618, 22621.

*Yunnan.* FORREST 18808, 25615, 25618, 25646, 25859, 25864, 30537. ROCK 17003, 17017, 17023, 17024, 18350, 18375, 18376, 18377, 18378.

*N.E. Upper Burma.* FORREST 24522, 24528, 24530, 24531, 24598, 25403, 25873, 26921, 26929, 26932, 26962, 26980, 26981, 26984, 26993, 27013, 27133, 27136, 27138, 27143, 27144, 27475, 27482, 27484, 27492, 27582, 27586, 27588, 27592, 27596, 27629, 27643, 27647, 27649, 27652, 29663, 29685. FARRER 1552B —type of *R. niphobolum*. WARD 3096, 3300.

*Assam.* WARD 8294.

Alt. 10,000–14,000 feet.

*R. Stewartianum* was described in 1912. It was for some time known only by a single rather inadequate specimen, which FORREST had collected on the Tsedjiong Pass on the Mekong-Salwin Divide. Later he collected much material on the Salwin-Ch'iu-chiang Divide and on the N'Maikha-Salwin Divide in N.E. Upper Burma. *R. Stewartianum* was found also by FARRER, ROCK and WARD.

In the type specimen, F.5069, the two leaves are of medium size (6–6.7 cm. long, 2.8–3.7 cm. broad) and the rather cup-shaped calyx is of medium length. The extremes of variation from this central plant are seen in certain specimens where the leaves are as much as 11 cm. long, 4 cm. broad and as little as 4 cm. long, 2 cm. broad; and in others where the lobes of the large cup-shaped calyx are as much as 1.7 cm. long and as little as 2 mm. long. There is a marked difference between extreme forms and the large calyx is more often than not associated with larger leaves but between the extremes there is a continuous and complete intergrading; at no point can a break be made. No correlation appears to exist between any particular character or set of characters and geographical distribution. The conclusions in *The Species of Rhododendron* that the whole complex material represents but one variable species seems to be correct. None the less the extremes are so dissimilar that it seems advantageous and consistent to distinguish varieties, although the forms run together. Sometimes it is impossible to decide where a particular plant had best be placed; in such cases numbers have been cited

with the typical plant, which must be taken to cover considerable variation.

The name *R. aiolosalpinx* was given to a specimen with an extremely large calyx found by FARRER in N.E. Upper Burma. We propose to use the varietal name, var. *aiolosalpinx* for specimens where both the calyx and the leaves are exceptionally large. At the other extreme where the calyx and the leaves are exceptionally small we use the varietal name var. *tantulum*.

FARRER'S 1552B for which the name *R. niphobolum* was used has flowers said to be crimson, spotted, with a blotch.

*R. Stewartianum* was given an Award of Merit when exhibited by MR. L. DE ROTHSCHILD in 1934.

**R. Stewartianum** Diels var. *aiolosalpinx* (Balf. f. & Farrer) comb. nov. *R. aiolosalpinx* Balf. f. & Farrer in Notes R.B.G. Edin., XIII, 227 (1922); Millais, Rhododendrons, Ser. 2, 79 (1924); Cox, Farrer's Last Journey, 78, 178, 224, 231 (1926); Tagg in The Sp. of Rhod., 743 (1930); Bean, Trees & Shrubs, III, 421 (1933); Rhod. Handb., 91 (1947).

**HABITAT:**

*N.E. Upper Burma.* FARRER 926—type, 1547. FORREST 24545, 24548, 25620, 25814, 26986, 26992, 27129, 27131, 27135, 27479, 27500, 27577, 27659, 27667.

*S.E. Tibet.* FORREST 21885, 21888, 21891, 22612, 22615, 22620.

*Yunnan.* FORREST 25642, 25869.

Alt. 11,000–14,000 feet.

The specimens cited differ from the type in having very much larger calyx and leaves.

**R. Stewartianum** Diels var. *tantulum* var. nov.

A typo calycis lobis brevissimis folia multo minora recedit.

**HABITAT:** *S.E. Tibet.* FORREST 21918—type, 21708, 21781, 21787, 22610, 22611, 22617, 22619.

The name is applied to forms with a minute calyx and small leaves.

**R. Thomsonii** Hook. f. in Rhod. Sikkim Himal., t. xii (1851); Gard. Chron., 163 (1851); *ibid.*, 255, 325 (1857); *ibid.*, 390, 438, 462 (1864); *ibid.*, 364 (1865); *ibid.*, IX, New Ser. 534 (1878); *ibid.*, III, 3rd. Ser. 365 (1888); *ibid.*, XIII, 3rd Ser. 332 (1893); *ibid.*, XLVII, 3rd Ser. 402 (1910); Fl. des



Serres, VII, t. 688-690 (1851-52); Hook. f. in Journ. Hort. Soc., VII, 77 (1852); Journ. Roy. Hort. Soc., J7, 77, 99, (1852); *ibid.*, LI, 85 (1926); *ibid.* LXXIV, 453 (1949); Rev. Hortie., IV, 121, t. 7 (1855); Bot. Mag., LXXXIII, t. 4997 (1857); Morr. Belg. Hortie., VIII, 33, pl. 10, fig. 1 (1858); Clarke in Hook. f. Fl. Brit. Ind., III, 468 (1882); W. W. Sm. in Records of the Bot. Surv. Ind., IV, No. 5, 216 (1911); Bean, Trees & Shrubs, II, 382 (1914); Millais, Rhododendrons, 252 (1917), and *ibid.*, Ser. 2, 249 (1924); Tagg in The Sp. of Rhod., 745 (1930); Ward, Plant Hunting, 132 (1930); Rhod. Handb., 95 (1947); var. *flocculosa* C. B. Clarke in Hook. f. Fl. Brit. Ind., III, 468 (1882); var. *grandiflorum* Millais, Rhododendrons, 253 (1917); var. *album* Millais, Rhododendrons, 253 (1917).

**HABIT:** shrub or small tree, 1.80-4.30 m. high; branchlets glandular or eglandular, thinly glaucous, those below the inflorescences 4-6 mm. in diameter.

**LEAVES:** lamina leathery, orbicular or ovate or broadly elliptic, 4-9 cm. long, 3-6.7 cm. broad, apex rounded, mucronate, base rounded or cordulate or truncate; upper surface dark green, glabrous, midrib grooved, primary veins 9-15 on each side, impressed; under surface glaucous or pale glaucous green, glabrous, midrib raised; petiole 1-2.6 cm. long, eglandular, rarely glandular, glaucous green.

**INFLORESCENCE:** a racemose umbel of 6-10 flowers; rachis 0.5-1.8 cm. long, hairy or glabrous, rarely with a few glands.

**PEDICELS:** 0.8-2.7 cm. long, eglandular, rarely glandular, glaucous or not glaucous.

**CALYX:** cup-shaped, 0.6-2 cm. long, often tinted red, 5-lobed, lobes unequal, rounded or truncate, eglandular.

**COROLLA:** campanulate, 3.5-6 cm. long, fleshy, deep blood red, with or without spots on the upper posterior part; lobes 5, 1.3-2 cm. long, 1.6-2.6 cm. broad, emarginate.

**STAMENS:** 10, unequal, 2-4.5 cm. long; filaments glabrous or puberulous at the base.

**PISTIL:** 3.2-5 cm. long; ovary 5-7 mm. long, conoid, eglandular, grooved, 6-10-celled; style eglandular.

**CAPSULE:** short, stout or broadly oblong, 1.5-2.4 cm. long, 0.8-1 cm. broad, eglandular, glaucous or not glaucous, calyx persistent.

**HABITAT:**

*Sikkim.* J. D. HOOKER no number, no date. BOR and KIRAT RAM 18603. W. W. SMITH 3281.

*East Himalaya.* RIBU and RHOMOO in 15/6/12. CAVE in 15/5/15, 755, 6717, 6935. G. WATT 5603.

*Bhutan.* COOPER 2928, 3505, 3991. LUDLOW & SHERRIFF 18, 31, 595.

*Tibet.* LUDLOW & SHERRIFF 1283.

Alt. 10,000–14,000 feet.

*R. Thomsonii* was found by SIR J. D. HOOKER in the Sikkim Himalaya in 1849, who named it after his travelling companion, DR. THOMAS THOMSON. He sent home seed in the same year and it is recorded as flowering at the Stanwell Nurseries, Edinburgh, in 1857.

No comment is required on the garden value of this species which was given the R.H.S. Award of Merit in 1925 and has played its part in the parentage of many of our finest Rhododendron hybrids (Fig. 69).

*R. Thomsonii* is a common plant in the Rhododendron forest of the Darjeeling district and of Sikkim and Bhutan at elevations of 10,000–14,000 feet. It also extends into Nepal and into Tibet.

We have seen no specimen of var. *flocculosa*, which, according to C. B. CLARKE, has "leaves beneath cinnamoneous flocculose or furfuraceous." On none of the many plants we have examined is there any trace of indumentum. The stated character is perhaps fortuitous or the specimen may have been wrongly identified.

The name var. *grandiflorum* was given to a form with "flowers and leaves rather larger than the type," raised by MR. GILL from seed he received from the Himalayas, and the name var. *album* to a plant of unknown origin at Caerhays "a white flowered variety or a hybrid."

*R. Thomsonii* Hook. f. var. *candelabrum* (Hook. f.) C. B. Clarke in Hook. Fl. Brit. Ind., III, 468 (1882); Tagg in The Sp. of Rhod., 745 (1930); Cowan in Notes R.B.G. Edin., XIX, 322 (1938); Rhod. Handb., 96 (1947). *R. candelabrum* Hook. f. in Rhod. Sikkim. Himal., t. xxix (1849); Millais, Rhododendrons, 136 (1917), and *ibid.*, Ser. 2, 249 (1924).

HABITAT: *East Himalaya.* CAVE in 15/5/15.

Alt. 10,000–13,000 feet.

SIR JOSEPH HOOKER gave the name *R. candelabrum* to a plant which he found in the thick pine woods near Lachen in Sikkim, "before" he remarks, "I was well acquainted with the *R. Thomsonii* of which I fear it is only a pale-flowered variety." The shorter gland-fringed calyx and glandular ovary, he adds, are the only further distinctions "and they are quite unimportant." We may note that a gland-fringed calyx cannot be correlated with a glandular ovary; in LUDLOW AND SHERRIFF'S No. 3066 the margin of the calyx is glandular, the ovary is glabrous; moreover in CAVE'S specimen the ovary is sparsely but by no means densely glandular.



The variety is, however, distinguished by the glandular ovary, small calyx and paler coloured corolla.

**R. Thomsonii** Hook. f. var. **pallidum** Cowan in Notes R.B.G. Edin., XIX, 253 (1937).

HABITAT: *Tibet*. LUDLOW & SHERRIFF 1728—type.

Alt. 11,000 feet.

This plant was collected by LUDLOW AND SHERRIFF in 1936 in S. Tibet well beyond the generally accepted distribution of the species. It differs in its rose-pink flowers which have magenta patches at the base and in its glandular ovary. From var. *candelabrum* it is distinguished by the pronounced calyx and colour of the flower.

#### WILLIAMSIANUM SUBSERIES

##### DESCRIPTION OF SPECIES (AMP. ET EM.)

**R. Williamsianum** Rehd. & Wils. in Sarg. Pl. Wilson., I, 538 (1913); Millais, Rhododendrons, 262 (1917), and *ibid.*, Ser. 2, 260 (1924); The Garden, LXXXIV, 256 & fig. (1920); Bot. Mag., CXLVIII, t. 8935 (1922); Journ. Roy. Hort. Soc., L, 165, 199 (1925); *ibid.*, LXIII, 297 (1938); Cox in New Flora & Silva, I, 275 (1928–29); Tagg in The Sp. of Rhod., 734 (1930); Bean, Trees & Shrubs, VIII, 430 (1933); Gard. Chron., XCIII, Ser. 3, 2, fig. (1933); *ibid.*, CXI, Ser. 3, 146 (1942); Fang in Ic. Pl. Omei., I, Pl. 32 (1942); Rhod. Handb., 103 (1947).

HABIT: spreading flattish shrub, 60 cm.–1.50 m. high; branchlets below the inflorescences 1.5–3 mm. in diameter, sparsely or moderately setose-glandular.

LEAVES: lamina leathery, ovate or rounded or broadly elliptic, 1.5–4.2 cm. long, 1.3–4 cm. broad, apex rounded or very broadly obtuse, base cordate or truncate; upper surface bright green, glabrous, midrib grooved, primary veins about 6 on each side, impressed; under surface glaucous, papillate, glabrous or punctulate with vestiges of hairs, midrib raised; petiole 0.7–1.5 cm. long, setose-glandular, the glands often extending to the margin of the leaf base.

INFLORESCENCE: umbellate or a racemose umbel, 2–3- (rarely up to 5-) flowered; rachis 3–5 mm. long, eglandular.

PEDICELS: 1–2 cm. long, sparsely or moderately glandular with long stalked glands, rarely eglandular.

CALYX: 5-lobed, lobes rounded, 1.5 mm. long, or a wavy rim, glandular with long stalked glands.

COROLLA: campanulate, 3–4 cm. long, pale rose with spots; lobes 5, 1.2–1.4 cm. long, 1.5–2 cm. broad, rounded, emarginate.

STAMENS: 10, unequal, 1.5–3 cm. long; filaments glabrous.

PISTIL: 2.6–4 cm. long; ovary oblong-conoid, 4–5 mm. long, glandular, 5–6-celled; style glandular to the tip.

CAPSULE: oblong, 1.5–1.8 cm. long, about 5 mm. broad, straight, eglandular or sparsely glandular with stalked glands, calyx persistent.

HABITAT: *Szechuan*. E. H. WILSON 1350—isotype.

Alt. 8,000–10,000 feet.

The well-known *R. Williamsianum* is an anomalous species in the Thomsonii Series on account of its dwarf spreading habit. As in the Souliei subseries, the style is glandular to the tip, but the corolla is campanulate. Moreover, the species is exceptional in the series in having 2–3, rarely as many as 5, flowers to the truss.

Thus unique in habit, with the corolla of the Campylocarpum subseries, with the glandular style of the Souliei and Cerasinum subseries, *R. Williamsianum* stands in an intermediate position and apart. Its main characters are at the same time suggestive of some affinity with *R. chamae-Thomsonii* of the Neriiflorum Series.

*R. Williamsianum* received an Award of Merit when shown by LORD ABERCONWAY in 1938.

#### LIST OF SPECIES AND SYNONYMS

*aiolosalpina* Balf. f. & Farrer = STEWARTIANUM var. AILOLOSALPINX

*astrocalyx* Balf. f. & Forrest = WARDII

*axium* Balf. f. & Forrest = SELENSE

*beimaense* Balf. f. & Forrest = ERYTHROCALYX

*blandulum* Balf. f. & W. W. Sm. = JUCUNDUM

BONVALOTII Bur. & Franch.

*brachyandrum* Balf. f. & Forrest = ECLECTEUM var. BRACHYANDRUM

CALLIMORPHUM Balf. f. & W. W. Sm.

CALOXANTHUM Balf. f. & Farrer

CALVESCENS Balf. f. & Forrest (excluded from this series)

CAMPYLOCARPUM Hook. f.

*candelabrum* Hook. f. = THOMSONII var. CANDELABRUM

CERASINUM Tagg

*chalarocladum* Balf. f. & Forrest = SELENSE

*cordatum* Lévl. = SOULIEI

*croceum* Balf. f. & W. W. Sm. = WARDII

CYANOCARPUM (Franch.) W. W. Sm.

CYANOCARPUM (Franch.) W. W. Sm. var. ERIPHYLLUM Balf. f. & W. W. Sm. ex Tagg

*cyclium* Balf. f. & Forrest = CALLIMORPHUM

*cymbomorphum* Balf. f. & Forrest = ERYTHROCALYX

DASYCLADOIDES Hand.-Mazz.



- DASYCLADUM Balf. f. & W. W. Sm.  
*docimum* Balf. f. MS. = ERYTHROCALYX  
*dolerum* Balf. f. & Forrest = SELENSE  
*duseimatum* Balf. f. & Forrest = SELENSE var. DUSEIMATUM  
 ECLECTEUM Balf. f. & Forrest  
 ECLECTEUM Balf. f. & Forrest var. BELLATULUM Balf. f. ex Tagg  
 ECLECTEUM Balf. f. & Forrest var. BRACHYANDRUM (Balf. f. & Forrest) Tagg  
*eriphyllum* Balf. f. & W. W. Sm. = CYANOCARPUM var. ERIPHYLLUM  
 ERYTHROCALYX Balf. f. & Forrest  
 ERYTHROCALYX Balf. f. & Forrest subsp. *beimaëns* (Balf. f. & Forrest) Tagg = ERYTHROCALYX  
 ERYTHROCALYX Balf. f. & Forrest subsp. *docimum* Balf. f. ex Tagg = ERYTHROCALYX  
 ERYTHROCALYX Balf. f. & Forrest subsp. *eucallum* (Balf. f. & Forrest) Tagg = ERYTHROCALYX  
 ERYTHROCALYX Balf. f. & Forrest subsp. *truncatulum* (Balf. f. & Forrest) Tagg = ERYTHROCALYX  
 ESETULOSUM Balf. f. & Forrest  
*eucallum* Balf. f. & Forrest = ERYTHROCALYX  
 EURYSIPHON Tagg & Forrest  
*gloeoblastum* Balf. f. & Forrest = WARDII  
*hedythamnum* Balf. f. & Forrest = CALLIMORPHUM  
*hedythamnum* Balf. f. & Forrest var. *eglandulosum* Hand.-Mazz. = CALLIMORPHUM  
 HOOKERI Nutt.  
 HYLAEUM Balf. f. & Farrer  
 JUCUNDUM Balf. f. & W. W. Sm.  
 LITIENSE Balf. f. & Forrest  
 LOPSANGIANUM Cowan  
*manopeplum* Balf. f. & Forrest = ESETULOSUM  
 MARTINIANUM Balf. f. & Forrest  
 MEDDIANUM Forrest  
 MEDDIANUM Forrest var. ATROKERMESINUM Tagg  
*metrium* Balf. f. & Forrest = SELENSE  
*Mussoti* Franch. MS. = WARDII  
 MYIAGRUM Balf. f. & Forrest  
*nanothamnum* Balf. f. & Forrest = SELENSE  
*niphobolum* Balf. f. & Farrer = STEWARTIANUM  
*oresterum* Balf. f. & Forrest = WARDII  
*pagophilum* Balf. f. & Ward = SELENSE var. PAGOPHILUM  
 PANTEUMORPHUM Balf. f. & W. W. Sm.  
 POPULARE Cowan  
*prasinocalyx* Balf. f. & Forrest = WARDII

*probum* Balf. f. & Forrest = SELENSE var. PROBUM

PURALBUM Balf. f. & W. W. Sm.

*rhaibocarpum* Balf. f. & W. W. Sm. = DASYCLADUM

SELENSE Franch.

SELENSE Franch. subsp. *axium* (Balf. f. & Forrest) Tagg = SELENSE

SELENSE Franch. subsp. *chalarocladum* (Balf. f. & Forrest) Tagg =

SELENSE

SELENSE Franch. subsp. *dolerum* (Balf. f. & Forrest) Tagg =

SELENSE

SELENSE Franch. subsp. *duseimatum* (Balf. f. & Forrest) Tagg =

SELENSE var. DUSEIMATUM

SELENSE Franch. var. DUSEIMATUM (Balf. f. & Forrest) Cowan &

Davidian comb. nov.

SELENSE Franch. subsp. *metrium* (Balf. f. & Forrest) Tagg =

SELENSE

SELENSE Franch. subsp. *nanothamnum* (Balf. f. & Forrest) Tagg =

SELENSE

SELENSE Franch. subsp. *pagophilum* (Balf. f. & Ward) Tagg =

SELENSE var. PAGOPHILUM

SELENSE Franch. var. PAGOPHILUM (Balf. f. & Ward) Cowan &

Davidian comb. nov.

SELENSE Franch. subsp. *probum* (Balf. f. & Forrest) Tagg =

SELENSE var. PROBUM

SELENSE Franch. var. PROBUM (Balf. f. & Forrest) Cowan &

Davidian comb. nov.

SETIFERUM Balf. f. & Forrest

SOULIEI Franch.

STEWARTIANUM Diels

STEWARTIANUM Diels var. *aiolosalpinx* (Balf. f. & Farrer)

Cowan & Davidian comb. nov.

STEWARTIANUM Diels var. *tantulum* Cowan & Davidian

TELOPEUM Balf. f. & Forrest

TELOPEUM Balf. f. & Forrest forma *telopeoides* Balf. f. ex Tagg =

PANTEUMORPHUM

THOMSONII Hook. f.

THOMSONII Hook. f. var. *album* Millais = THOMSONII

THOMSONII Hook. f. var. *flocculosa* C. B. Clarke = THOMSONII

THOMSONII Hook. f. var. *grandiflorum* Millais = THOMSONII

THOMSONII Hook. f. var. *candelabrum* (Hook. f.) C. B. Clarke

THOMSONII Hook. f. var. *cyanocarpum* Franch. = CYANOCARPUM

THOMSONII Hook. f. var. *pallidum* Cowan

*truncatulum* Balf. f. & Forrest = ERYTHROCALYX

VESTITUM Tagg & Forrest

WARDII W. W. Sm.

WILLIAMSIANUM Rehd. & Wils.



## RHODODENDRON COMMITTEE MEETINGS 1951

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MARCH 3, 1951—SIR GILES LODER, BT., in the Chair, and twelve other members present.

### Awards Recommended

#### *Award of Merit*

To *Rhododendron silvaticum* (KW 6258) (votes 9 for, 0 against), as a hardy flowering shrub, from MRS. R. M. STEVENSON, Tower Court, Ascot, and THE COMMISSIONERS OF CROWN LANDS, Windsor Great Park, Berks.

To *Rhododendron* 'R. W. Rye' (*chrysodoron*  $\times$  *Johnstoneanum*) (votes 10 for, 0 against), as a half-hardy flowering shrub, from the RT. HON. THE EARL OF STAIR, D.S.O., K.T., Lochinch, Stranraer.

### Other Exhibits

*Rhododendron* 'Robin Hood' (*calophytum*  $\times$  *sutchuenense*) from THE COMMISSIONERS OF CROWN LANDS, Windsor Great Park, Berks.

*Rhododendron Beesianum* from C. Armytage Moore, Esq., Winterfold House, Cranleigh, Surrey.

*Rhododendron* (*leucaspis*  $\times$  *Johnstoneanum*), from the RT. HON. THE EARL OF STAIR, D.S.O., K.T., Lochinch, Stranraer.

*Rhododendron* 'Mira' (*Beanianum*  $\times$  *Meddianum*), from MRS. R. M. STEVENSON, Tower Court, Ascot.

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APRIL 4, 1951—SIR GILES LODER, BT., in the Chair, and eight other members present.

### Exhibits

*Rhododendron calophytum* (F.C.C. 1933), from the HON. LADY NORMAN, Ramster, Chiddingfold, Sussex.

*Rhododendron* 'Morfar' (*Morii*  $\times$  *Fargesii*), from CAPT. COLLINGWOOD INGRAM, The Grange, Benenden, Cranbrook, Kent.

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APRIL 17, 1951—SIR GILES LODER, BT., in the Chair, and seven other members present.

### Award Recommended

#### *Award of Merit*

To *Rhododendron niveum* (votes 8 for, 0 against), as a hardy flowering shrub, from MRS. R. M. STEVENSON, Tower Court, Ascot.

### Other Exhibits

*Rhododendron lacteum* (Forrest 11575) (F.C.C. 1926), from MRS. R. M. STEVENSON, Tower Court, Ascot.

*Rhododendron Keiskei* (A.M. 1929), from G. L. PILKINGTON, ESQ., Grayswood Hill, Haslemere.

*Rhododendron* 'Calotum' (*irroratum*  $\times$  *calophytum*) and *R.* 'Thomaleum' (*Thomsonii*  $\times$  *haemaleum*), from CAPT. COLLINGWOOD INGRAM, The Grange, Benenden, Cranbrook, Kent.

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MAY 1, 1951—SIR GILES LODER, BT., in the Chair, and seventeen other members present.

#### Awards Recommended

##### *Award of Merit*

To *Rhododendron* 'Prelude' (*Wardii* × *Fortunei*) (votes 11 for, 0 against), as a hardy flowering plant for the woodland from EDMUND DE ROTHSCHILD, ESQ., Exbury, Southampton.

To *Rhododendron* sp. (? L. & S. 6349) subject to naming (votes unanimous), as a hardy flowering plant from CAPT. COLLINGWOOD INGRAM, The Grange, Benenden, Cranbrook, Kent.

To *Rhododendron pseudoyanthinum* (votes 6 for, 3 against), as a hardy flowering plant for the woodland, from THE DIRECTOR, R.H.S. GARDENS, Wisley, Ripley, Surrey.

#### Other Exhibits

*Rhododendron cinnabarinum* var. (L. & S. 1354), from MRS. R. M. STEVENSON, Tower Court, Ascot.

*Rhododendron* 'Blue Tit' var. (*impeditum* × *Augustinii*), from MR. M. HAWORTH-BOOTH, Farall Nurseries, Haslemere, Surrey.

*Rhododendron selense*, *R. maculiferum* and *R. adenopodum* (A.M. 1926), from CAPTAIN COLLINGWOOD INGRAM, The Grange, Benenden, Cranbrook, Kent.

*Rhododendron* 'Carita' var. 'Biscuit Rose' ('Naomi' × *campylocarpum*), *R.* 'Jason' (*lacteum* × 'Penjerrick') of which the Committee would like to see a spray at a future meeting and *R. rex* which was sent to DR. J. MACQUEEN COWAN, from E. DE ROTHSCHILD, ESQ., Exbury, Southampton.

*Rhododendron* 'Porpora' (*polylepis* × *carolinianum*) from THE DIRECTOR, R.H.S. GARDENS, Wisley, Ripley, Surrey.

MAY 22, 1951—LIEUT.-COL. LORD STRATHCONA AND MOUNT ROYAL in the Chair, and fifteen other members present.

#### Awards Recommended

##### *First Class Certificate*

To *Rhododendron Souliei* Windsor Park var. (votes 13 for, 0 against), as a hardy flowering plant, from THE COMMISSIONERS OF CROWN LANDS, Windsor Great Park, Berks.

To *Rhododendron* 'Welkin' ('Eros' × *haematodes*) (votes 12 for, 0 against), as a hardy flowering plant, from LORD ABERCONWAY, C.B.E., LL.D., D.SC., V.M.H., and THE NATIONAL TRUST, Bodnant, North Wales.

##### *Award of Merit*

To *Rhododendron* 'Radiant Morn' ('Fabia' × 'Sunrise') (votes 10 for, 0 against), as a hardy flowering plant, from LORD ABERCONWAY, C.B.E., LL.D., D.SC., V.M.H., and THE NATIONAL TRUST, Bodnant, North Wales.

To *Rhododendron* 'Cinnkeys' Minterne var. (*cinnabarinum* × *Keysii*) (votes 9 for, 1 against), as a hardy flowering plant, from COL. THE LORD DIGBY, D.S.O., M.C., T.D., Cerne Abbey, Dorchester, Dorset.

To *Rhododendron* 'Hawk' var. 'Jervis Bay' (*Wardii* × 'Lady Bessborough') (votes 7 for, 1 against), as a hardy flowering plant, from EDMUND DE ROTHSCHILD, ESQ., Exbury, Southampton.

To *Rhododendron* 'Jeritsa' ('Lady Bessborough' × *Griffithianum*) (votes 6 for, 0 against), as a hardy flowering plant, from EDMUND DE ROTHSCHILD, ESQ., Exbury, Southampton.

#### Selected for trial at Wisley

*Rhododendron* (*Azalea*) 'Cerita', *R.* (*Azalea*) 'Nettie' and *R.* (*Azalea*) Nos. B.61 and B.138, from MESSRS. D. STEWART AND SONS, LTD., Ferndown Nurseries, Ferndown, Dorset.



## Other Exhibits

*Rhododendron* 'Angelo' var. 'Diadem' (*discolor* × *Griffithianum*), from MR. M. HAWORTH-BOOTH, Farall Nurseries, Farall, nr. Haslemere, Surrey.

*Rhododendron* (*gunnanense* × 'Lady Rosebery') and *R. (decorum* pink form × *Griersonianum*), from LORD STAVORDALE, Abbotsbury Gardens, nr. Weymouth, Dorset. *Rhododendron* (*Wardii* × *decorum*), *R. scyphocalyx* (Forrest 27011), *R. ('Albino' × Griffithianum)*, *R. (Ernest Gill × 'Dorothea')* and *R. 'Coney Gar' (Souliei × 'Loder's White')* from COL. THE LORD DIGBY, D.S.O., M.C., T.D., Cerne Abbey, Dorchester.

*Rhododendron Windsori*, *R. 'Betelgeuse' ('Cornish Cross' × 'Beauty of Tremough')* and *R. 'Loderi' var. 'Titan' (Griffithianum × Fortunei)*, from MESSRS. G. REUTHE, LTD., Keston, Kent.

*Rhododendron* 'Rosemary Seys' ('Moser's Maroon' × 'Aries'), *R. 'Ella' ('General Sir John du Cane' × Griffithianum)*, *R. 'Gibraltar' ('Bibiani' × Elliottii)* and *R. 'Naomi' Exbury var. ('Aurora' × Fortunei)*, from EDMUND DE ROTHSCHILD, ESQ., Exbury, Southampton.

*Rhododendron* 'Loderi' seedlings Nos. 1 and 2 (*Griffithianum × Fortunei*), *R. ('Gill's Gloriosa' × 'Loderi' var. 'Pink Topaz')*, *R. (orbiculare × decorum)* and *R. (zeylanicum* Clyne form × *Griersonianum*), from ADMIRAL A. WALKER-HENEAGE-VIVIAN, C.B., M.V.O., D.L., Clyne Castle, Blackpill, Swansea, Glam.

*Rhododendron croceum* (A.M. 1926) and *R. Souliei* (F.C.C. 1909), from MAJOR A. E. HARDY, Sandling Park, Hythe, Kent.

*Rhododendron* 'Chaste' (*campylocarpum* × 'Queen o' the May'), from E.N. KING, ESQ., Romsey College, Embley Park, Romsey, Hants.

*Rhododendron* 'Wardi Wink' ('Tip the Wink' × *Wardii*), from LIEUT.-COL. GILES LODER, High Beeches, Handcross, Sussex.

*Rhododendron cinnabarinum* from MRS. R. M. STEVENSON, Tower Court, Ascot.

*Rhododendron* 'Bodartianum' var. (*campanulatum × arboreum*), from MESSRS. F. STREET, Heathermead Nursery, West End, nr. Woking, Surrey.

*Rhododendron* 'Hallali' (*venator × haemaleum*) and *R. cerasinum* (A.M. 1938), from CAPT. COLLINGWOOD INGRAM, The Grange, Benenden, Cranbrook, Kent.

*Rhododendron* (*Azalea*) 'Fenella' and *R. (Azalea)* 'Charles F. Brown,' from MESSRS. D. STEWART AND SONS, LTD., Ferndown Nurseries, Ferndown, Dorset.

*Rhododendron* (*decorum × orbiculare*) from MRS. D. THOMPSON, Sansaw Gardens, Clive, Shrewsbury.

*Rhododendron* 'Voltaire' ('Eros' × 'Loderi'), from LORD ABERCONWAY, C.B.E., LL.D., D.Sc., V.M.H., and THE NATIONAL TRUST, Bodnant, North Wales.

JUNE 12, 1951—SIR GILES LODER BT., in the Chair, and seven other members present.

## Selected for trial at Wisley

*Rhododendron* (*Azalea*) (*mucronatum* white form × *indicum*) from CAPT. COLLINGWOOD INGRAM, The Grange, Benenden, Cranbrook, Kent.

*Rhododendron* (*Azalea*) 'Lanarth' from M. P. WILLIAMS, ESQ., Lanarth, St. Keverne, Cornwall.

## Other Exhibits

*Rhododendron* 'Theresa' var. 'Festival' ('Romany Chal' × *Griersonianum*) from THE DIRECTOR, R.H.S. GARDENS, Wisley, Ripley, Surrey.

*Rhododendron* 'Angelo' (*Griffithianum × discolor*) Seedlings Nos. 1 and 2. Four seedlings of *R. ('Loderi' × Griffithianum)* of which the Committee desires to see again those numbered 3 and 4 from CAPT. A. GRANVILLE SOAMES, O.B.E., Sheffield Park, Uckfield, Sussex.

JUNE 26, 1951—LORD ABERCONWAY, C.B.E., LL.D., D.Sc., V.M.H., in the Chair, and nineteen other members present.

**Awards Recommended***Award of Merit*

To *Rhododendron* 'Amor' (*Griersonianum*  $\times$  *Thayerianum*), (votes 10 for, 0 against) as a hardy flowering shrub, from MRS. R. M. STEVENSON, Tower Court, Ascot.

To *Rhododendron brachyanthum* var. *hypolepidotum* (votes 9 for, 0 against), as a hardy flowering shrub, from THE COMMISSIONERS OF CROWN LANDS, The Great Park, Windsor.



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s.f.t. = *Selected for trial*

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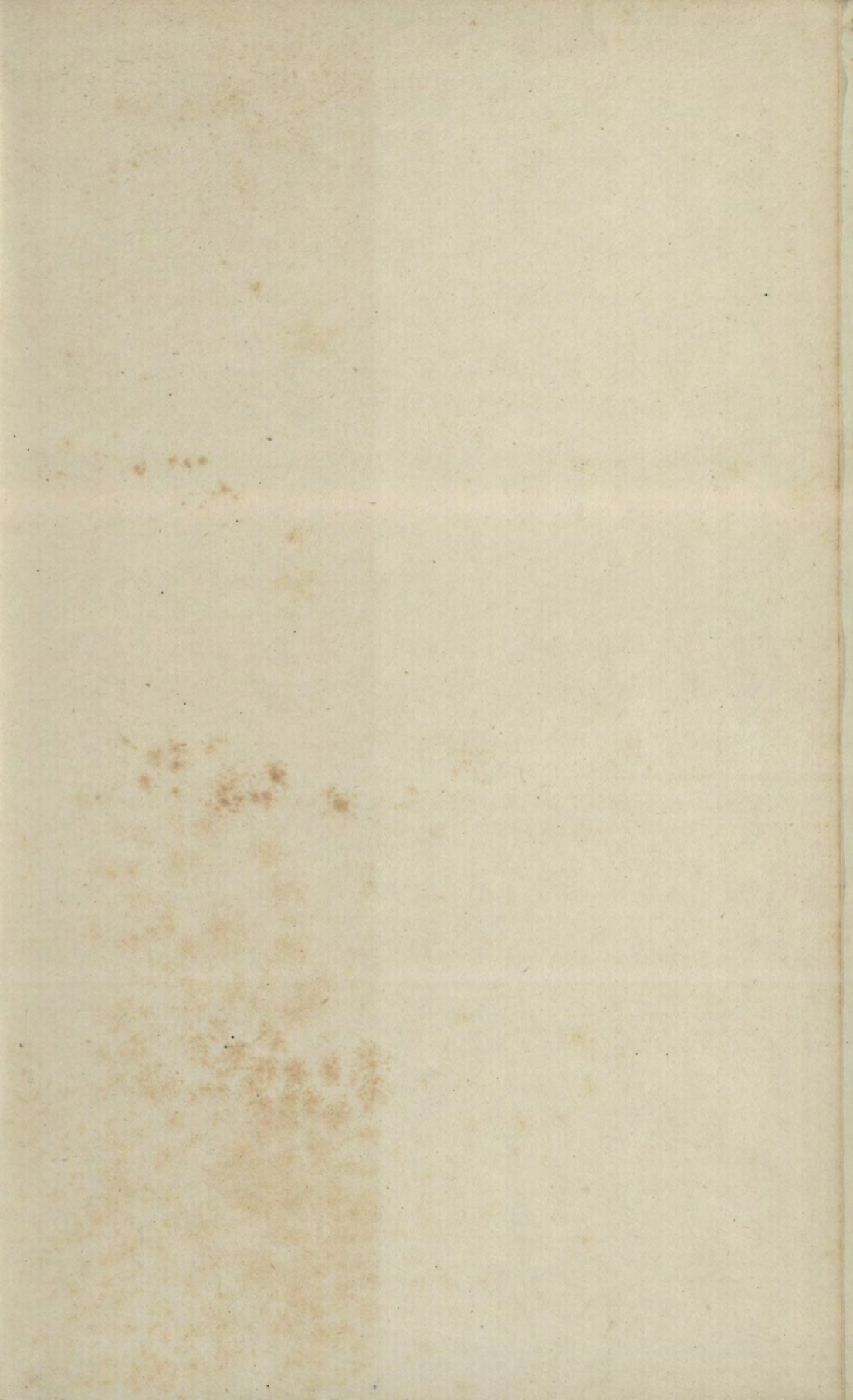
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1951-2 YEAR BOOKS

## LILY

THIS VOLUME CONTAINS a most important and interesting article on recent advances in Lily breeding by Dr. S. L. Emsweller of the U.S.A.; this will prove of interest to all Lily growers. Lilies in India are described by Colonel Lowndes, who recently visited Nepal, while Captain Kingdon-Ward discusses Lilies in Assam; the Countess Grey describes the Lilies in gardens in Northumberland. The extracts from the Supplement to Elwes's Monograph are continued this year by the article on *Lilium Bolanderi*. The needs of beginners in Lily growing will be met by an article specially written for this purpose by Mr. R. G. Walter. There are articles from America by Mr. Jan de Graaff, Dr. F. McWhorter and Mr. C. Grant Wilson. Contributions from other overseas authors are also included. Dr. Turrill contributes an article on the Snake's-head *Fritillaria Meleagris*. Reports of the Lily Shows, Group Meetings and Awards to Lilies are also included.

## FRUIT

THIS, THE FIFTH VOLUME, is dedicated to Professor T. Wallace. There are articles of interest to fruit growers both in this country and overseas, including a description by Mr. Eric Hobbs of a new method of pruning and training cordon Apple trees. There are articles on pests and diseases, as well as one on new fungicides and the sulphur shortage by Dr. R. W. Marsh. Articles on fruit growing and breeding in America are included. It contains, also, Reports of the Fruit Group Discussion and Brains Trust as well as descriptions of fruit which have received Awards during the year.

## DAFFODIL AND TULIP

THIS ISSUE OF the YEAR BOOK is dedicated to Alexander M. Wilson. Mr. W. E. Th. Ingwersen contributes a very complete and delightful account of the Dwarf-growing Species of Narcissus. Mr. Guy L. Wilson, V.M.H., and Mr. G. H. Johnstone write on the 1951 Daffodil Season. Other articles include Experiments in Narcissus Culture by Prof. John Caldwell and the Development of the Narcissus Plant by Miss Tsin-Tze Chan. Mr. F. Hanger contributes an article on Daffodils for Garden Decoration and Major C. B. Habershon writes on his recollections as an amateur Daffodil grower. Mr. John P. Tuke, from West Australia, writes on his impressions of Daffodils in this country. Overseas contributors include Mr. Grant E. Mitsch on the 1951 Daffodil Season in Oregon, U.S.A., Mr. H. Alston on the Daffodil in Victoria, while Mr. O'More and Mr. Dyer report on Daffodil growing in New Zealand.

Tulips are represented by articles on their cultivation as well as their history. Dr. Ernst H. Krelage writes a most interesting account of the Historical Tulip in Literature. Mr. G. R. Barr writes on Old English Florist's Tulips and their Cultivation, and Mr. J. F. Ch. Dix on *Tulipa Fosteriana* and its hybrids. Reports of the R.H.S. Daffodil Competition and Shows are included as well as reports of Daffodil Shows held in many parts of this country and overseas.

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