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The
Rhododendron Society
Notes.



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THE PACIFIC RHODODENDRON SOCIETY

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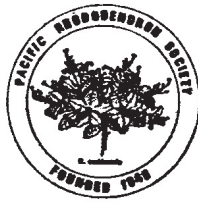
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RHODODENDRON, CAMELLIA
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2017



THE PACIFIC RHODODENDRON SOCIETY

"Dedicated to the Hobbieist and Home Gardeners"

Foreword

The Pacific Rhododendron Society has reprinted the Rhododendron Notes in an effort to further the knowledge of the Genus Rhododendron by those enthusiasts with an avid interest in the history, exploration and biographical sketches contained herein.

The Rhododendron Notes are offered to the end that the reader may more easily understand the progress encouraged by those who contributed the wealth of information contained in these volumes, thereby making clear our understanding of the Genus Rhododendron today.

The Society wishes to gratefully acknowledge the efforts on our behalf by the following persons and organizations: Dr. R. Shaw, Curator and M.V. Mathew, Librarian of the Royal Botanic Garden Edinburgh, Scotland, for providing the missing numbers; Lord Aberconway and John Cowell, Secretary of the Royal Horticultural Society, for certain photocopies and other considerations, Sir Giles Loder and Sir Edmund de Rothchild for their esteemed counsel, and to Thomas V. Donnelly our printer.

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The Pacific Rhododendron Society
1976

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NOTES

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FOR THE YEAR

1922

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THE RHODODENDRONS OF NORTH-EASTERN ASIA from the Altai Mountains in central Siberia to the Pacific Ocean, including the countries of MANCHURIA, KOREA AND JAPAN.

The species of *Rhododendron* enumerated in the following pages are to be found scattered over immense territory from the Altai Mountains in central Siberia (about Long. 90°E.) eastward to the Pacific Ocean in Long. 145°E. ; from north to south they are found between latitudes 60°N. to 30°N. One species (*R. KAMTSCHATICUM* *Pall.*) extends through the Aleutian Islands to Alaska and south to Banks Island in British Columbia and is the only known Amer-asian *Rhododendron*. Another species (*R. MICRANTHUM* *Turcz.*) extends from the mountains of north Korea westward through south Manchuria and northern China to the Chino-Thibetan borderland having its southern limit on the mountains of Hupeh in central China. Twenty-eight species are known from the regions of north-eastern Asia ; of these fifteen are peculiar to Japan, five are common to Japan and Korea, one (*R. PHOENICEUM* *G. Don.*) is of doubtful origin and may be a product of gardens, the distribution of two species has already been mentioned, the remaining five (*R. ADAMSII* *Rehd.*, *R. CHRYSANTHUM* *Pall.*, *R. DAURICUM* *Linn.*, *R. PARVIFOLIUM* *Adams*, *R. REDOWSKIANUM* *Maxim.*) are wide-spread in north-eastern Asia.

In his work on the *Rhododendrons* of Eastern Asia, Maximowicz in 1870 enumerates thirty-one species indigenous in that region. Two of Maximowicz's species are now considered synonyms, five (*R. CHAMPIONÆ* *Hook.*, *R. FARRERÆ* *Tate*, *R. FORTUNEI* *Lindl.*, *R. OVATUM* *Planch.*, *R. SENIAVINI* *Maxim.*), are Chinese, one (*R. OLDHAMII* *Maxim.*) is peculiar to Formosa and another (*R. SCABRUM* *G. Don.*, known to Maximowicz as *R. SUBLANCEOLATUM* *Miq.*) is endemic in the Liukiu Islands leaving twenty-two indigenous in the regions dealt with in this article. Since Maximowicz's account appeared, four additional species (*R. NIPPONICUM* *Matsum.*, *R. PENTAPHYLLUM* *Maxim.*, *R. QUINQUEFOLIUM* *Biss. and Mre.*, *R. TOSÆNSE* *Makino*) have been discovered in Japan, one (*R. YEDOENSE* *Maxim.*) in Korea and to these I have added *R. PHOENICEUM* *G. Don.* With fifteen out of the twenty-eight species enumerated peculiar to Japan, one might have expected a greater number of species in the vast region of continental north-eastern Asia but it must be remembered that as a rule in boreal regions species are few and widely distributed. That Maximowicz should have recognised only five species as indigenous in China proves conclusively how little-known the flora of that country was half-a-century ago ; to-day several hundreds of species are known from China and among them some of the best *Rhododendrons* gardens possess. Seventeen of the species enumerated in this article are popularly known as Azaleas and among them are to be found some of the most useful and most highly valued plants we have ; a majority are perfectly hardy and all are good garden plants. The remaining eleven are mainly *Rhododendrons* in the ordinary acceptance of the word. Most of them have been known since a very long time but they have been slow in reaching our gardens, and, except *R.*

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DAURICUM *Linn.* and *R. MICRANTHUM Turcz.*, have not yet found a proper foothold in cultivation. They are all quite as hardy as *R. PONTICUM Linn.* and most of them more so, but, like many other plants from high northern regions, they are difficult to grow successfully. Several of them fall victims nearly every year to baneful Spring frosts whilst in the case of others the right conditions are hard to find. In England where choice among a wealth of species and a plethora of hybrids obtains it is doubtful if the Rhododendrons of north-eastern Asia will ever be considered of much importance in gardens generally. In eastern North America where the climate is more severe the story is different. For this part of the world *R. BRACHYCARPUM D. Don* and *R. METTERNICHII S. and Z.* are most valuable plants and in the future will probably play a highly important part in the evolution of a race of Rhododendrons by hybridisation suitable to the more extreme climatic conditions which obtain. *R. DAURICUM Linn.*, especially its var. *MUCRONULATUM Maxim.*, is one of our best Spring-flowering Rhododendrons and *R. MICRANTHUM Turcz.* has the distinction of being the only species known from China that is hardy in the Arnold Arboretum.

The seventeen species of Azaleas with all their synonyms are fully treated in the "Monograph of Azaleas" by Wilson & Rehder, published in 1921; a similar account of the eleven species of Rhododendrons appears in the "Journal of the Arnold Arboretum," IV. No. 1, January (1923). Since I have dealt with these plants so thoroughly in the above works which are known and accessible to all the members of the Rhododendron Society it has not been thought necessary to quote synonyms here. I have thought it sufficient to quote the original reference and one good figure. Keys are given not only for the species but also for the subgenera and their sections. The distribution of each species, the time of its discovery and of its introduction into gardens is given as accurately as the state of our knowledge permits. For convenience of reference the species are arranged alphabetically.

CLASSIFICATION.

KEY TO THE SUBGENERA.

Shrubs or trees with persistent, rarely deciduous, glabrous, lepidote or tomentose leaves; stamens 5—20; ovary glabrous, lepidote or tomentose, never setose, sometimes more than 5-celled; corolla 5, 7 or 9-lobed I. EURHODODENDRON.

Shrubs with deciduous, non-lepidote leaves; corolla rotate to sub-rotate; stamens 5; flowers solitary, rarely 2, from lateral, clustered buds II. AZALEASTRUM.

Shrubs or small trees with deciduous, or persistent, strigose or villose sometimes glabrous but never lepidote leaves; corolla funnel-form to rotate, rarely campanulate; stamens 5—10; ovary usually strigose, rarely glabrous, never lepidote; flowers from a terminal bud III. ANTHODENDRON.

Shrublets with deciduous, non-lepidote leaves; corolla rotate; stamens 10; flowers 1 or racemosely 2 or more from a terminal bud; bracts foliaceous IV. THERORHODION.

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Subgen. I. EURHODODENDRON *Endl.*

KEY TO THE SECTIONS.

- Leaves persistent, glabrous or tomentose beneath, never lepidote ; ovary glabrous, glandular or tomentose, never scaly ; stamens 10—20 ; flowers several from a terminal bud.....1. LEIORHODIUM.
- Leaves persistent, more or less clothed with lepidote glands ; corolla rotate, campanulate or funnel-form ; stamens 10 ; ovary lepidote ; flowers several from a terminal bud..... 2. LEPIPHERUM.
- Leaves persistent, more or less lepidote ; corolla salver-shape, with cylindric tube and spreading limb, villose within the tube ; stamens 5—10 ; ovary densely lepidote, 5-celled ; flowers several from a terminal bud 3. POGONANTHUM.
- Leaves usually deciduous, lepidote ; corolla campanulate ; stamens 10 ; flowers solitary from lateral clustered buds..... 4. RHODORASTRUM.

Subgen. II. AZALEASTRUM *Planch.*

NO SECTIONS.

Subgen. III. ANTHODENDRON *Endl.*

KEY TO THE SECTIONS.

Flowers and leaves from the same bud.

Shoots with flattened, appressed, bristle-like hairs ; leaves persistent or sometimes deciduous, usually dimorphic, scattered on the branches, elliptic to lanceolate or oblanceolate.....1. TSUTSUTSI.

Shoots glabrous or villose, without bristle-like hairs ; leaves deciduous, not dimorphic, in whorls at the end of the branchlets, scattered only on vigorous shoots, usually rhombic to obovate, rarely ovate.....2. SCIADORHODION.

Flowers from the terminal bud, leaves from lateral buds below.

Corolla rotate-campanulate ; stamens 8—10.....3. RHODORA.

Corolla funnel-form ; stamens 5.....4. PENTANTHERA.

Subgen. IV. THERORHODION *Rehd.*

NO SECTIONS.

KEY TO THE SPECIES.

Subgen. I. EURHODODENDRON *Endl.*

Sect. 1. LEIORHODIUM *Rehd.*

Bud-scales deciduous ; flowers pale to rose-pink.

Leaves felted on the underside.

Leaf-base narrowed ; corolla 5 to 7-lobed1. R. METTERNICHII.

Leaf-base rounded or sub-auricled ; corolla 5-lobed 2. R. BRACHYCARPUM.

Bud-scales persistent ; flowers pale yellow.

Leaves glabrous on the underside.....3. R. CHRYSANTHUM.

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Sect. 2. *LEPIPERUM* G. Don.

Bud-scales deciduous.

Flowers white ; corolla rotate-campanulate ; stamen-filaments glabrous

4. *R. MICRANTHUM*.

Flowers pale yellow ; corolla broad-campanulate ; stamen-filaments slightly pilose at base.....5. *R. KEISKEI*.

Bud-scales persistent ; flowers rosy-purple ; corolla wide-campanulate ; stamen-filaments villose at base.....6. *R. PARVIFOLIUM*.

Sect. 3. *POGONANTHUM* G. Don.

Leaves and young branches clothed with fulvous lepidote scales ; stamens 5.....7. *R. ADAMSII*.

Sect. 4. *RHODORASTRUM* Maxim.

Leaves deciduous, rarely semi-persistent ; flowers pale to deep rose-purple

8. *R. DAURICUM*.

Subgen. II. *AZALEASTRUM* Planch.

Corolla sub-rotate with 5 oval lobes spreading from a short tube ; stamens exserted ; ovary densely stipitate-glandular.....9. *R. SEMIBARBATUM*.

Subgen. III. *ANTHODENDRON* Endl.

Sect. 1. *TSUTSUTSI* G. Don.

Bud-scales not viscid ; shoots densely clothed with flattened, appressed hairs.

Corolla funnelform-campanulate.

Style glabrous at base.

Leaves linear-lanceolate to lanceolate or oblanceolate.

Leaves crenate-dentate ; flowers red to rose-red ; stamens 5

10. *R. INDICUM*.

Leaves entire ; flowers lilac-purple ; stamens 5—8..11. *R. TOSAENSE*.

Leaves oval or obovate to lanceolate ; stamens 5.

Leaves more than 1 cm. long, the midrib beneath covered with hairs and usually with scattered hairs on the whole undersurface

12. *R. OBTUSUM*.

Leaves never more than 1 cm. long usually less, glabrous beneath except a few brown hairs on the midrib.....13. *R. SERPYLLIFOLIUM*.

Corolla with short cylindric tube and spreading lobes ; flowers white, 4—5 partite.....14. *R. TSCHONOSKII*.

Bud-scales viscid on inner surface ; corolla wide-funnel-form ; calyx-lobes green, ample ; style glabrous.

Shoots densely clothed with flattened, appressed hairs ; leaves conspicuously dimorphic ; stamens 10.

Leaves persistent entire ; calyx-lobes glandular-ciliate 15. *R. PHŒNICEUM*.

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- Leaves deciduous or semipersistent, obscurely crenate-serrate; calyx-lobes glandular 16. *R. YEDENSE*.
 Shoots with few appressed, flattened hairs and many spreading, pilose, often glandular, hairs; corolla viscid without; leaves viscid beneath.
 Stamens 8—10; corolla white or pale-purple; ovary glandless
 17. *R. MUCRONATUM*.
 Stamens 5; ovary glandular..... 18. *R. LINEARIFOLIUM*.

Sect. 2. *SCIADORHODION* Rehd. and Wils.

- Leaves rhombic; fruit cylindric.
 Stamens sub-equal; corolla salmon-red, rotate-funnel-form; style villose
 19. *R. WEYRICHII*.
 Stamens unequal; corolla rotate-campanulate.
 Corolla rose-purple to magenta; style glabrous, villose or lepidote or both; leaves with long scattered hairs when young, glabrescent at maturity; fruit furrowed..... 20. *R. RETICULATUM*.
 Corolla white; style glabrous; leaves densely ciliate, short villose, at least on not the midrib, at maturity; fruit terete..... 21. *R. QUINQUEFOLIUM*.
 Leaves broadly obovate; corolla pink; style glandular; fruit oblong-ovoid, verruculose..... 22. *R. SCHLIPPENBACHII*.

Sect. 3. *RHODORA* G. Don.

- Corolla rotate-campanulate.
 Leaves obovate to oblong-ob lanceolate, pubescent below; flowers 3 to 6, magenta; fruit conic-ovoid, bristly glandular..... 23. *R. ALBRECHTII*.
 Leaves elliptic to narrow-elliptic, glabrescent; petiole bearded; flowers 1 or 2, bright rose-pink; fruit spindle-shape, glabrous, verrucose
 24. *R. PENTAPHYLLUM*.
 Corolla campanulate, white; leaves obovate to panduriform, subsessile with scattered, bristly hairs; fruit oblong-ovoid, verruculose with thin valves, wavy at the margin when open..... 25. *R. NIPPONICUM*.

Sect. 4. *PENTANTHERA* G. Don.

- Flowers non-glandular; stamens shorter than the orange- or flame-red, rarely yellow, corolla; leaves glabrous except on the veins beneath
 26. *R. JAPONICUM*.

Subgen. IV. *THERORHODION* Rehd.

- Leaves petiolate, obovate to spatulate, an inch or more long, venation prominent; flowers an inch or more in diameter 27. *R. KAMTSCHATICUM*.
 Leaves sessile, lanceolate to oblanceolate, less than an inch long, venation not prominent; flowers less than an inch in diameter 28. *R. REDOWSKIANUM*.

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ENUMERATION OF ALL THE KNOWN SPECIES WITH THEIR VARIETIES, FORMS AND HYBRIDS.

RHODODENDRON ADAMSII *Rehder.*

[In Wilson & Rehder, *Monog. Azal.* 190 (1921). Adams in *Mém. Acad. Sci. St. Pétersbourg*, II. 332, t. 14 (1808), as *Azalea fragrans*.]

Native of Eastern Siberia, on the mountains of the Baikal region and northward to the valley of the Lena River. This plant is unknown to me and does not appear to have been introduced into gardens. It was discovered by early Russian travellers in Siberia, probably by Messerschmidt or Steller, and is mentioned by Gmelin in his *Fl. Sib.* IV. 125, t. 55 (1769).

RHODODENDRON ALBRECHTII *Maximowicz.*

[In *Bull. Acad. Sci. St. Pétersbourg*, sér. 3, XV. 227 (*Mél. Biol.* VII. 335) (1870); in *Mém. Acad. Sci. St. Pétersbourg*, sér. 7, XVI. no. 9, 30, t. 2, figs. 14—20 (*Rhod. As. Or.*) (1870).]

This Japanese species is widely distributed on the mountains from Shinano in central Hondo northward to those round Sapporo in central Hokkaido and is found growing on the margins of forests and in thickets. It was discovered about 1860 by Dr. Michael Albrecht of the Russian Consulate in Hakodate and was introduced into cultivation by Professor Sargent who sent seeds to the Arnold Arboretum in 1892.

RHODODENDRON BRACHYCARPUM *D. Don apud G. Don.*

[*Gen. Syst.* III. 843 (1834).—Hooker f. in *Bot. Mag.* CXXIX. t. 7881 (1903).]

This broad-leaved Rhododendron is wide-spread on the high mountains of Shikoku and Hondo in Japan and descends to near sea-level in the northern island of Hokkaido; also it is native of the Diamond Mountains in Korea and on Dagelet Island in the Japan Sea. It was introduced into cultivation by Dr. G. R. Hall who sent a living plant from Japan which passed into the possession of Francis Parkman, the historian, in whose garden in Jamaica Plain, Mass., it grew for a number of years when it was transferred to the Arnold Arboretum.

The following varieties have been recognised: *ROSÆFLORUM Miyoshi*, *LEUCANTHUM Koidzumi*, *NEMOTOANUM Makino*, *LUTESCENS Koidzumi*; the last-named is the *R. FAURIEI Franchet*.

RHODODENDRON CHRYSANTHUM *Pallas.*

[*Reise*, III. 729, t.N. fig. 1, 2 (1776); *Fl. Ross.* I. 44, t. 30 (1784).—Salisbury in Hooker, *Parad. Londin.* II. t. 80 (1807), as *R. officinale*.]

This pale yellow-flowered species is distributed over an immense area from the Altai Mountains eastward through Siberia to Kamtschatka, the Kurile Islands and Saghalien and southward through Hokkaido and Hondo to the high mountains in Shinano province, Japan; also on the mountains of northern Korea. It was discovered by D. G. Messerschmidt in Russian Dahuria sometime between 1720

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and 1727 and is mentioned by Gmelin in his *Fl. Sib.* IV. 121, t. 54 (1769). It seems to have been brought to Petrograd by Pallas and from there introduced into England in 1796 by Mr. Joseph Busch. Under cultivation it has proved an exceedingly difficult and exacting plant and is still extremely rare in gardens.

RHODODENDRON DAURICUM *Linnaeus*.

[*Spec.* 392 (1753).—Sims in *Bot. Mag.* XVII. t. 636 (1803).]

This, the earliest flowering of the boreal species of *Rhododendron*, is distributed over an enormous area from the Altai Mountains in central Siberia eastward to the Japan Sea; it also occurs in Hokkaido where it is rare; throughout the length and breadth of Korea it is abundant and it is likewise common in southern Manchuria and on the mountains west of Peking. It was discovered by D. G. Messerschmidt sometime between 1720 and 1727 and is well figured in an old work by Amman (*Stirp. Rar. Icon. and Des.* 181, t. 27 (1739)). Pallas introduced it to Petrograd and, according to Aiton, it was introduced into England in 1780 by Anthony Chamier.

The following varieties are recognised: *SEMPERVIRENS* Sims, *EMASCULUM* Millais, *MUCRONULATUM* Maximowicz, *CILIATUM* Wilson, *ALBUM* De Candolle. The hybrids of which *R. DAURICUM* Linn. and its varieties are part parents are $\times$ *R. APRILIS* Lindley, $\times$ *R. PRÆCOX* Carriere, $\times$ *R. PRÆCOX* var. "Early Gem" Hort.; the latter is a hybrid of the second generation.

RHODODENDRON INDICUM *Sweet*.

[*Brit. Flow. Gard.* ser. 2, II. sub. t. 128 (1833). Lindley in *Bot. Reg.* XX. t. 1700 (1834), as *Azalea indica lateritia*.]

This old *Azalea* is purely Japanese, and so far as I know, to be found wild only on Yakushima and adjacent regions in south Kyushu, but Makino says that it is also wild in Kii and Yamato provinces in south Hondo. It has been cultivated in Japanese gardens from time immemorial and is known as the "Satsuki-tsutsuji," that is Fifth-month *Azalea*, from the fact that it blossoms in June, which is the fifth month of the year reckoned by the old Chinese calendar. It was one of the first plants of the Orient introduced into Europe and is mentioned in Breyne's *Prodromus*, I. 23 (1680) as being in cultivation in Holland. Subsequently it was lost and was re-introduced into England in 1833 by Mr. M'Killigan.

The following varieties are recognised: *BALSAMINÆFLORUM* Nicholson, *CRISPIFLORUM* Schneider, *VARIEGATUM* De Candolle, *LACINIATUM* Wilson, *POLYPETALUM* Wilson, *KINNOZAI* Millais, *TANIMANOYUKI* Millais, *HAKATASHIRO* Millais.

RHODODENDRON JAPONICUM *Suringar*.

[In *Gartenfl.* LVII. 516 (1908). Hooker f. in *Bot. Mag.* XCVII. t. 5905 (1871), as *R. SINENSE*.]

This handsome species is common over a great part of Hondo, the main island of Japan. I am familiar with it from the neighbourhood of Kamo, on the Kwan-sai railroad beyond Nara, northward to the foot-hills of Hayachine-san. It is a special feature of the moorlands round the base of sacred Fuji-san and of Ontake-san, and of open grass and scrub-clad places in the Nikko region and elsewhere.

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Matsumura reports it from Higo province in Kyushu, but I have not seen it wild anywhere in this southern island. It is cultivated in and around Hakodate in Hokkaido, but I can find no record of its growing wild in that island. It is known to the Japanese as the " Renge-tsutsuji," but is seldom cultivated in their gardens. It appears to have been first introduced into cultivation in Holland by seeds received direct from Japan in 1861 by J. B. Groenewegen ; the plants raised from these seeds passed into the possession of various Belgian nurseryman including Louis Van Houtte.

The following variety is recognised : *AUREUM Wilson*. There is a hybrid between this species and *R. CANADENSE Zabel*, named $\times$ *R. FRASERI W. Watson*.

RHODODENDRON KAMTSCHATICUM Pallas.

[*Fl. Ross. I.* 48, t. 33 (1784). Hutchinson in *Bot. Mag. CXXXIV.* t. 8210 (1908).]

This is the only species of *Rhododendron* common to Asia and North America. It is distributed from Kamtschatka eastward through the Aleutian Islands to Alaska and to Banks Island in British Columbia, and southward through Saghalien, the Kurile Islands, Hokkaido to the high mountains of northern Hondo in Japan. It was discovered in Kamtschatka by Pallas, and according to Loudon, introduced into English gardens in 1802. Both in England and in eastern North America it has proved a difficult and exacting plant under cultivation.

A white-flowered variety is recognised : *ALBIFLORUM Koidzumii*.

RHODODENDRON KEISKEI Miquel.

[In *Ann. Mus. Lugd-Bat. II.* 163 (*Prol. Fl. Jap.* 95) (1865-66). Hemsley in *Bot. Mag. CXXXVI.* t. 8300 (1910).]

This Japanese species with lepidote leaves and pale yellow flowers is widely distributed in Japan from Yakushima, in the extreme south, northward through Kyushu, Shikoku and Hondo to the Nikko region, but is nowhere really abundant. It was introduced into cultivation by Mr. J. G. Jack who sent seeds in the autumn of 1905 from Adera, Shinano province, to the Arboretum of T. E. Proctor, Topsfield, Mass., where it flowered in May, 1908. Into Kew, it was introduced from Yokohama in 1908 and flowered in a pot in 1909.

There is a hybrid between this species and *R. ARBOREUM Smith* named $\times$ *R. KEISKARBOR Magor*.

RHODODENDRON LINEARIFOLIUM Siebold and Zuccarini.

[In *Abh. Akad. Munch. IV.* pt. 3, 131 (*Fl. Jap. Fam. Nat. II.* 7) (1846). Hooker f. in *Bot. Mag. XCV.* t. 5769 (1869), as *Azalea linearifolia*.]

This, the " Seigai-tsutsuji " of the Japanese, is merely a monstrous form of the " Mochi-tsutsuji " (Glandular Azalea) known as *R. LINEARIFOLIUM* var. *MACROSEPALUM Makino* which is common in central Hondo at low altitudes from near Osaka north to Hamamatsu in Totomi province and also in Tosa province

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and Shikoku. It grows gregariously and is partial to gravelly soil and dry situations such as pine woods and open thickets afford.

The following varieties and forms are recognised: *MACROSEPALUM Makino*, *DIANTHIFLORUM Wilson*, *DECANDRUM Wilson*, *RHODOROIDES Makino*, *HANAGURUMA Makino*.

RHODODENDRON METTERNICHII Siebold and Zuccarini.

[*Fl. Jap.* I. 23, t. 9 (1835). Shirasawa, *Icon. Ess. For. Jap.* II. t. 60, figs. 1—13 (1908).]

This is the low-level broad-leaf Rhododendron of Japan and is common on the mountains from Kyushu through Shikoku and Hondo as far north as the borders of Uzen and Iwashiro provinces; it is not known to grow wild outside of Japan. It is occasionally grown in Japanese gardens and it was probably such plants that Thunberg and Siebold knew. According to Nicholson it was introduced into England in 1870; Mangles writing in the "GARDENERS' CHRONICLE," 1882, speaks of it being grown in France and England and tells of receiving the pentamerous form from Luscombe. It was introduced into America by Professor Sargent who sent seeds from the Nikko region to the Arnold Arboretum in the autumn of 1892.

The following varieties are recognised: *PENTAMERUM Maximowicz*, *ANGUSTIFOLIUM Bean*. There is a hybrid between this species and a *CATAWBIENSE* hybrid named $\times$ *R. WATERERI Wilson*.

RHODODENDRON MICRANTHUM Turczaninow.

[In *Bull. Soc. Nat. Mosc.* X. no. 7, 155 (1837). Chipp in *Bot. Mag.* CXXXIV. t. 8198 (1908).]

This interesting Rhododendron is indigenous on the mountains of northern Korea and westward through southern Manchuria, the northern provinces of China to the borders of Thibet and finds its southern limits on the mountains of Hupeh and Szech'uan provinces. It is really a Chinese species and has the distinction of being the only one from that country hardy in the Arnold Arboretum, Boston, Mass. It was the first known Chinese species having been discovered about the middle of the 18th century by the Jesuit Father, Pierre D'Incarville, but was named from material collected on Po-hua-shan, some sixty miles west of Peking, by Dr. P. Y. Kirilov about 1835. So far as I can discover it was first introduced into gardens by myself in 1900, when I sent seeds from Hupeh to Messrs. Veitch.

RHODODENDRON MUCRONATUM G. Don.

[*Gen. Syst.* III. 846 (1834). Hooker in *Bot. Mag.* LVI. t. 2901 (1829), as *Azalea ledifolia*.

This old garden favourite better known as "*R. ledifolium*" has been cultivated by the Japanese since remote times under the name of "*Jedogawa-tsutsuji*," but it is only recently that its habitat, the river banks on the Island of Shikoku, has become known. Kämpfer mentions it in his *Amoen. Exot.* 848

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(1712), and it was cultivated in Java in the days of Burmann, having been brought there from Nagasaki in Japan by Dutch trading ships. It seems to have been first introduced into England in 1819, by Joseph Poole, who sent it from Canton or Macao in China.

The following varieties and forms have been recognised: *RIPENSE Wilson*, *PLENUM Wilson*, *SEKIDERA Wilson*, *AMETHYSTINUM Wilson*, *NARCISSIFLORUM Wilson*, *NOORDTIANUM Wilson*.

RHODODENDRON NIPPONICUM *Matsumura*.

[In *Tokyo Bot. Mag.* XIII. 17 (1899); in *Icon. Pl. Koisikav.* I. 9, t. 5 (1911).]

This, the most recently discovered species of Japan, has a very limited distribution being confined, as far as it is known, to the neighbourhood of Adzuma-yama on the borders of Uzen and Iwashiro provinces in northern Hondo. It was first introduced into cultivation through seeds which I gathered in the autumn of 1914 and sent to the Arnold Arboretum, and which were distributed in Europe and America.

RHODODENDRON OBTUSUM *Planchon*.

[In *Fl. des Serr.* IX. 80 (1854). Lindley in *Bot. Reg.* XXXII. t. 37 (1846), as *Azalea obtusa*.]

This variable species in its many forms is the common red-flowered *Azalea* of Japan where it is abundant from the extreme south through Kyushu, Shikoku, Hondo to southern Hokkaido. Under the names of "Kirishima-tsutsuji" and "Yama-tsutsuji," it has been cultivated by the Japanese from remote times, and is one of their favourite flowers.

The following varieties and forms have been recognised: *ALBUM Schneider*, *MACROSTEMON Wilson*, *AMÆNUM Wilson*, *KÄMPFERI Wilson*, *MULTICOLOR Wilson*, *PLENUM Wilson*, *KOMATSUI Wilson*, *MONSTROSUM Wilson*, *CRYPTOPETALUM Wilson*, *MIKAWANUM Wilson*, *JAPONICUM Wilson*. From the last-named by selection during the last hundred years a race of lovely *Azaleas* with flowers, exhibiting all the delicate shades of colouring usually associated with Sweet Peas, has been evolved in the city of Kurume, in Kyushu, and are now getting known in western gardens under the name of Kurume *Azaleas*. There is a hybrid race with richly coloured, small to medium-sized flowers the result of crossing *R. OBTUSUM Planchon*, with the form "Garnet" of *R. SIMSII Planchon*, named $\times$ *R. SANDERI Wilson*.

RHODODENDRON PARVIFOLIUM *Adams*.

[In *Mém. Soc. Nat. Mosc.* IX. 237 (1834). Harrow in *Gard. Chron.* sér. 3, XXXIX. 164, figs. 66, 67 (1906).]

This boreal species is distributed from about 100°E. long., through the Baikal region eastward to Kamtschatka and Saghalien and south on the mainland to the higher mountains of north Korea. According to Pallas it was discovered by Laxmann on the Stanovoi Mountains, but was confused with the semi-circumpolar

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R. LAPPONICUM *Wahlenb.* It was introduced into Europe during the latter half of the 19th century, and is well figured by Regel in the *Gartenflora*, XXVI. 163, t. 904 (1877). It does not appear to have taken kindly to cultivation and is still rare in gardens.

A white-flowered variety has been recognised : *ALBIFLORUM* *Herder*.

RHODODENDRON PENTAPHYLLUM *Maximowicz*.

[In *Bull. Acad. Sci. St. Pétersbourg*, sér. 3, XXXI. 65 (*Mél. Biol.* XII. 491) (1887). Komatsu in *Icon. Pl. Koisikav.* III. 45, t. 168 (1916), as *R. pentaphyllum* var. *nikense*.]

This Japanese species is essentially a woodland plant, fond of partial shade, and is distributed from the extreme south of Kyushu northward through Shikoku and Hondo to Adzuma-yama on the borders of Uzen and Iwashiro provinces ; it is a feature of some parts of the Nikko region. A very lovely plant it appears to have been first introduced into Europe and America by the Yokohama Nursery Company, under the name of "*Azalea quinquefolia* pink," but is still rare in gardens.

RHODODENDRON PHŒNICEUM *G. Don*.

[*Gen. Syst.* III. 846 (1834). Sims in *Bot. Mag.* LIII. t. 2667 (1826), as *Azalea indica* var.]

Long cultivated in the Orient with its habitat still unknown, this plant was introduced into England in 1824 ; in Japan a variety (*CALYCINUM* *Wilson*) known as the "*Omurasaki-tsutsuji*" is a very general favourite in gardens.

The following garden forms have been recognised : *SEMIDUPLEX* *Wilson*, *SMITHII* *Wilson*, *SPLENDENS* *Wilson*, *CALYCINUM* *Wilson*, *MAXWELLII* *Wilson*, *TEBOTAN* *Wilson*. The last-named has double flowers with small green leaves showing in the centre of each, and is remarkable for the colour of its flowers which is the same as that of the bracts of *Bougainvillea glabra* of Choisy, and quite unique among Azaleas. It is an old plant in Japanese gardens, but is very rare.

RHODODENDRON QUINQUEFOLIUM *Bisset and Moore*.

[In *Jour. Bot.* XV. 292 (1877). Komatsu in *Icon. Pl. Koisikav.* I. 59, t. 30 (1912).]

This fine Japanese species with its pure white flowers and brilliant autumnal foliage appears to be confined to central Hondo, and is a feature of the woods throughout the Nikko region, and of those bordering Lake Hakone. It was introduced into English gardens by Lord Redesdale about 1896, but has not yet won for itself the place it is properly entitled to hold.

RHODODENDRON REDOWSKIANUM *Maximowicz*.

[In *Mém. Acad. Sci. Sav. Etr. St. Pétersbourg*, IX. 189 (*Prim. Fl. Amur.*) (1859) ; in *Mém. Acad. Sci. St. Pétersbourg*, sér. 7, XVI. no. 9, 48, t. 2, figs. 21—25 (*Rhod. As. Or.* (1870).]

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This diminutive species appears to be confined to continental north-eastern Asia and to have its southern limit on the higher volcanic mountains of north Korea. It was discovered early in the 19th century by a Russian traveller, Redowsky, but so far as I can discover, has not yet been introduced into cultivation.

RHODODENDRON RETICULATUM *D. Don apud G. Don.*

[*Gen. Syst.* III. 846 (1834). Hooker f. in *Bot. Mag.* CXIII. t. 6972 (1887).]

Better known as *R. RHOMBICUM* *Miq.*, this is a common plant throughout the greater part of Japan, from Kyushu northward through Shikoku and Hondo to southern Hokkaido. According to G. Don, this species was first introduced into England from Japan by Messrs. Knight, of Chelsea, about 1832. It appears to have been lost for it was unknown in gardens when re-introduced by Maximowicz in 1865.

The following varieties have been recognised: *ALBIFLORUM* *Wilson*, *PENTANDRUM* *Wilson*.

RHODODENDRON SCHLIPPENBACHII *Maximowicz.*

[In *Bull. Acad. Sci. St. Pétersbourg*, sér. 3, XV. 226 (*Mél. Biol.* VII. 333) (1870). Hooker f. in *Bot. Mag.* CXX. t. 7373 (1894).]

This species with its lovely pink flowers is really a Korean plant, being abundant on the mountains throughout the greater part of that country. It crosses the border into north-east Manchuria, where it was found on the shores of Possiet Bay in 1860 by Maximowicz. Quite recently it has been found on Chokai-san in Ugo province of northern Hondo, Japan. It was discovered by Baron A. von Schlippenbach of the Russian navy in 1854. It appears, however, to have been cultivated sparingly in Japan for many years under the name of "Kurofune-tsutsuji." In 1893, James H. Veitch saw it in a Japanese garden and sent the plant to England, and this was its first appearance in the west. In the Arnold Arboretum it was raised from seeds collected in Korea by Mr. J. G. Jack in 1905.

RHODODENDRON SEMIBARBATUM *Maximowicz.*

[In *Bull. Acad. Sci. St. Pétersbourg*, sér. 3, XV. 230 (*Mél. Biol.* VII. 338) (1870). Regel in *Gartenfl.* XXIX. 292, t. 666 (1870).]

This remarkable species with its small, odd-looking flowers is purely Japanese, being distributed through the margins of woods and thickets from the mountains of Kyushu and Shikoku as far north as Mount Iwate in northern Hondo. It was discovered by Maximowicz's Japanese collector, Tschonoski, who sent seeds to the Botanic Garden, Petrograd, where it flowered in a greenhouse in 1870, and was figured by Regel in the *Gartenflora*. I do not know what became of the original introduction, but the plant appears to have been unknown in the gardens of England and America when in 1914 I re-introduced it by means of seeds sent to the Arnold Arboretum.

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RHODODENDRON SERPYLLIFOLIUM Miquel.

[In *Ann. Mus. Lugd.-Bat.* II. 165 (*Prol. Fl. Jap.* 97) (1865-66). Hooker f. in *Bot. Mag.* CXXII. t. 7503 (1896).]

This pretty little Rhododendron is distributed in Japan from Kyushu in the south to the mountains round Lake Hakone in central Hondo. It appears to be confined to volcanic soils and is nowhere common except, perhaps, on the mountains of the Idzu peninsula. It was discovered by C. Wright in 1853, and was introduced into cultivation by Charles Maries, who sent it to Messrs. Veitch, with whom it flowered for the first time in 1882.

A white flowered variety has been recognised : *ALBIFLORUM Makino*.

RHODODENDRON TOSÆNSE Makino.

[In *Tokyo Bot. Mag.* VI. 53 (1892). Komatsu in *Icon. Pl. Koisikav.* II. 91, t. 130 (1915).]

One of the most recently discovered Japanese species, this Rhododendron so far as is known is confined to the Island of Shikoku, where it is abundant in Tosa province from sea-level up to about 3,000 feet altitude, being especially partial to the sides of streams. Discovered by Japanese, it was introduced into cultivation in 1914 by myself by means of seeds sent to the Arnold Arboretum.

RHODODENDRON TSCHONOSKII Maximowicz.

[In *Mém. Acad. Sci. St. Pétersbourg*, sér. 7, XVI. 42, t. 3, figs. 8b—14 (*Rhod. As. Or.* (1870).)]

Remarkable for its small white flowers and its brilliant autumnal foliage, this species is widely distributed in Japan from Shikoku in the south through Hondo to the mountains around Sapporo in central Hokkaido; it also grows on some of the higher mountains of the southern part of the Korean peninsula. It was discovered by Maximowicz's collector, Tschonoski, in 1865, and was introduced into England by Charles Maries in 1878, and into America by Professor Sargent, who sent seeds from the Nikko region to the Arnold Arboretum in 1892.

RHODODENDRON WEYRICHII Maximowicz.

[In *Mém. Acad. Sci. St. Pétersbourg*, sér. 7, XVI. no. 9, 26, t. 2, fig. 1—6 (*Rhod. As. Or.*) (1870).]

This species has a very remarkable distribution being confined mainly to small islands of Japan and Korea. It grows in Shikoku, being quite common round Kochi, from sea-level up to 2,500 feet altitude; also on the Amakusa and Goto Islands off Nagasaki; in Korea it appears to be confined to the Island of Quelpaert, having not yet been recorded from the mainland. It was discovered in 1853 on the Goto Islands by Dr. H. Weyrich, surgeon on the Russian warship, "Vostok." Makino first found it in Shikoku and Père Faurie on Quelpaert Island. It was unknown in gardens until 1914, when I sent seeds from Shikoku to the Arnold Arboretum, which were distributed in Europe and America

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RHODODENDRON YEDENSE *Maximowicz apud Regel.*

[In *Gartenfl.* XXXV. 565, t. 1233 a—b (1886).]

This is merely the double-flowered form of the common Azalea of Korea, which is abundant from Quelpaert Island, in the south, northward to the neighbourhood of Seoul in central Korea ; also it has been found on the west coast of central Hondo in Japan. This double-flowered Azalea has long been cultivated in Japan under the name of "Botan-tsutsuji" (*Pæony Azalea*) and was introduced into Petrograd by Japanese and exhibited at the International Exhibition there in 1884.

The wild form with simple flowers is recognised as : var. *POUKHANENSE Nakai*. This was first introduced into cultivation by Mr. J. G. Jack, who sent seeds from Mount Poukhan, Seoul, to the Arnold Arboretum in the autumn of 1905. Plants raised from these seeds flowered for the first time in May, 1914. It is a perfectly hardy species and with its fragrant flowers and compact habit is a most valuable addition to the gardens of eastern North America.

ERNEST H. WILSON.

Arnold Arboretum, U.S.A., *December*, 1922.

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RHODODENDRONS AT BORDE HILL, 1922.

Spring was dry, but in the garden unusually free from frost, for the first time here *R. FALCONERI*, from the opening of the trusses till these died off naturally, carried them unblemished by its marks; two plants of what I believe to be an unusually good variety of *FLORIBUNDUM* flowered well; and a plant of *HABROTRICHUM* (Forrest 9048) that bloomed for the first time provided a pleasant surprise by bearing crimson flowers. The blooming of *R. ERIOGYNUM* (Forrest 13508) was an event in which realisation surpassed anticipation; to me the great scarlet truss conveyed a resemblance to a fine *BARBATUM*, yet the scarlet seemed to have more yellow in its shades, and there was a suggestion of a network of deeper colour to be faintly traced through the lovely flowers; it opened after the flush of rhododendron blossoms was over and when the work of picking off the dragged trusses of its neighbours was in full swing, unhappily its beauty did not appeal to the pickers and its unblemished trusses were nipped off and thrown on the bed with theirs whose day of beauty had passed, otherwise it might have had the honour of being portrayed in the "BOTANICAL MAGAZINE."

The flowers of *ERIOGYNUM* are not its only attraction, its young growths (silvery, if produced during a wet season, or fawn coloured, from a dense tomentum, in a dry one) are very pleasing.

The spring frosts which spared the garden on the top of the ridge came a long way up the slope to the North and some flowers on plants of Sir Edmund Loder's cross of *THOMSONII* and *BARBATUM* were smashed as soon as they opened, this cross, in this neighbourhood at any rate, seems more satisfactory than the older "*SHILSONII*."

The effects of the drought of 1921 have been largely counteracted by the great rains of the past summer and autumn, but many plants have suffered from its retarded effects that I had hoped had escaped unscathed. *R. FULGENS* is nearly extinct, two large plants of *R. BARBATUM* have died, others are in a bad way, plants of *OREOTREPES* are still dying; *R. ARBOREUM* in places does not look nearly so well as last year though bearing more flower buds; on the other hand, *CAMPANULATUM* and *THOMSONII*, the quickest to suffer, have improved marvellously and after their dead wood was removed show no ill effects in foliage, and carry plenty of flower buds.

R. TRICHOCLADUM in the beds in the garden has never appeared to thrive, but a plant that was accidentally taken up with some *Zenobias* and planted in a bog in a clearing in a wood is doing far better; perhaps the same treatment would suit some other Chinese species, especially in a dry year.

STEPHENSON R. CLARKE.

December, 1922.

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RHODODENDRONS FLOWERING AT DAWYCK IN 1922.

It may be of some interest to members of the Rhododendron Society to see a record in the Society's Notes of the species that flowered in this especially cold climate, and the approximate dates of flowering, during the spring and summer of 1922. The exceptional summer of 1921 when no rain fell here in June and July stored up a reserve of energy in all flowering trees and shrubs which has manifested itself in a profusion of blossom which at Dawyck, as in most other places was quite unprecedented. Moreover it is very evident that we must thank the prolonged heat of last summer for the remarkably vigorous shoots shown by Rhododendrons here of almost all species.

We entirely escaped the serious mortality which the drought inflicted on so many gardens, and I have not found one rhododendron or plant of any other genus that has suffered.

Flowers on rhododendrons appear here in most cases three weeks later than in the southern English counties. The altitude is from 700 to 800 feet, and in most winters the temperature falls to below zero, although 26 degrees of frost was the severest experience of the winter of 1921-22.

R. MOUPINENSE showed flowers sparingly at the end of March, but as usual a slight frost put an end to them. On April 11th, R. PRÆVERNUM, which seems to have so little to distinguish it from R. SUTCHUENENSE, was bearing a few trusses of flowers under the canopy of foliage. I fear this species will be a disappointing one in all the colder parts of the country where late frosts are frequent. R. THOMSONII was laden with bloom from May 15th to June 3rd and never before at Dawyck was in such beauty. In time of flowering R. OREODOXA preceded it by a few days, as did R. FARGESII, R. PACHYTRICHUM, and R. RUBIGINOSUM which all flowered profusely; of the last I have a half-a-dozen six-foot plants which were covered with bloom.

R. AMBIGUUM and R. YANTHINUM I have planted in a mixed group, both are consistently free flowerers at Dawyck, and the yellow and dark mauve colour of their blossom was very striking from May 20th onwards. I recommend this combination of two species so similar in all respects except when in flower.

R. SEARSII was exceedingly fine from May 25th. By May 30th R. SOULIERI was in full flower and remained so for over a fortnight, there is no more satisfactory Rhododendron among the Chinese species in a cold climate than this charming plant, the flowers on their long pedicels opening apple-blossom pink and white, and becoming snow white when the slightly divided corolla is fully expanded.

At the end of May, R. FLAVIDUM bore its small pale yellow flowers in some profusion. On June 1st, R. OREOTREPES was in bloom and remained in flower for over a fortnight; this fine species shows much variation in the size and colour of the flowers on different plants. Also by June 1st the hybrids of R. GRIFFITHIANUM were in flower and never before at Dawyck were "PINK PEARL," "GEORGE HARDY" and "KEWENSE," so fine either in size of flower or truss.

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The following Rhododendrons flowered well in cold frames:—*CUNEATUM*, *CALOSTROTUM*, *ECCLECTEUM* (*syn. MOLLI-COMUM* ?), *SPINULIFERUM*, and *LEPIDOTUM*.

R. GLAUCUM and *R. RACEMOSUM* are shy flowerers at Dawyck in most years but made a good show between May 15th and June 1st. By early June *R. DECORUM* was in flower and some plants of it were carrying bloom five weeks later. At Dawyck its flowering period well overlaps that of the American *R. MAXIMUM*. Some years ago I crossed them and have a few vigorous plants of the hybrid which, however, have not yet flowered. From June 9th *Enkianthus*, both Himalayan and Chinese, were quite covered with flowers. *R. CINNABARINUM* began to flower by June 20th and still carried blossoms a month later.

Of the species blooming later the dates given are those when the flowers opened:—June 15th, *R. HANCEANUM*; June 19th, *R. LONGESQUAMATUM*; July 2nd, *R. BREVISTYLUM*; July 22nd, *R. DISCOLOR*; July 22nd, *R. MICRANTHUM*. By August 1st, *R. AURICULATUM* showed no signs of incipient growth, indeed it began to grow so late that a frost of 6 degrees which occurred here on September 9th has shrivelled the new leaves of every plant I have of the species and seriously injured my best specimen which is about 4 feet high. The only other Rhododendron which has suffered similarly is *R. METTERNICHII*.

In the colder regions it is abundantly clear, as exemplified at Dawyck, that rhododendrons have to be considerably older and larger plants before they reach the stage of blooming than in the more favoured parts of the country. I have large plants of many of Wilson's early introductions, such as *R. FLORIBUNDUM*, *TRAILLIANUM*, *HUNNEWELLIANUM*, *INSIGNE*, *STRIGILLOSUM*, *WATSONII*, *CALOPHYTUM*, *FABERI*, *GALACTINUM*, *PRATHI*, *ADENOGYNUM*, *ARGYROPHYLLUM*, *HYPOGLAUCUM*, and others which, though apparently perfectly at home and vigorous, show no signs of forming flower buds yet.

The low-growing heath-like rhododendrons from high altitudes, curiously enough, do not thrive at Dawyck; but an exception is *R. RUPICOLUM* which for several weeks from about June 9th was purple with bloom.

On page 58 of Vol. II. in the last number of the Society's Notes Mr. Bean, in a footnote to his admirable review of Wilson and Rehder's "A Monograph of Azaleas," asks me if it can have been from the village of Broughton in Tweeddale that *R. "BROUGHTONII AUREUM"* derived its name. I think there can be no doubt that the name has nothing to do with that village. I can find no trace of there having been a nursery garden at Broughton, and the situation and soil are not suited to the cultivation of ericaceous plants. Mr. Bean suggests that the plant may have been first raised by "Broughton, a gardener of Lee, of Hammersmith," and this I think may be accepted as the rightful origin of the name.

I have not found on any plants at Dawyck the Rhododendron "Fly" (*Stephanitis rhododendri*).

F. R. S. BALFOUR.

Dawyck, Tweeddale, N.B., September, 1922.

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CONCERNING STOCKS ON WHICH TO GRAFT RHODODENDRONS.

In distant days it was quite common to hear a lament that "all the beautiful red rhododendrons that father planted round the pond have 'reverted' to common mauve ones." In these more enlightened times *R. PONTICUM*, when seen "coming away from stock," is often referred to as "the robber." Members of the Rhododendron Society and their friends have been inclined to curse roundly all grafted rhododendrons and without doubt, under present conditions, it would be quite sound to advise anyone to have as little as possible to do with them. But time and the trade wait for no man and so it comes about that few gardens (if any) are entirely free from grafted plants, and a little consideration compels the conclusion that it will always be the case. This being so, it would be an important subject for enquiry whether *R. PONTICUM* has a righteous claim to be regarded as the best stock and whether any serious effort has ever been made to discover a stock that would prove to be free from the defects of *PONTICUM* and possibly to possess greater virtues. No doubt many, like myself, have, at any rate casually, considered the claims of stock of a *CAUCASICUM* strain such as *R. "CUNNINGHAM'S WHITE,"* and there is a good deal to be said in favour of it. *R. PONTICUM* is not really such a *very* easy plant to grow and there are certainly many gardens in dry districts in which "*CUNNINGHAM'S WHITE*" will succeed with little or no attention in places where *PONTICUM* will barely exist, if that.

Enquiry of some of the large commercial raisers of rhododendrons has elicited the information that most of them had made no trial with any stock other than *PONTICUM*, but one of the largest raisers said that his firm used a good deal of "that caucasicum stuff" when it was obtainable from the North of England at very low prices, but that, before the war, the source had pretty well dried up. Unfortunately, mild pressure was unsuccessful in eliciting any preference for either of these two stocks and perhaps, under the prevailing circumstances, this buyer thought that apparent impartiality was his wisest course!

The *CAUCASICUM* hybrids possess the additional merit that they are not nearly so rampant in growth as *PONTICUM*, and so would presumably not be so likely to master the graft.

Some professional growers insist that by simple cultural artifices it is quite easy to get a grafted plant on to its "own roots." This may be the case in the soil on which such growers toil but it is certainly not true of the soil with which some of us are compelled to struggle.

Last summer I went, as often before, to the Sunningdale Nurseries, and, while there, discussed this subject with Mr. Harry White. I have his permission to mention that he has started on a new "stunt," new, at any rate, to me. He told me that he was collecting seed of *R. SMIRNOWII* and raising it for use as stocks: he said that he also had considered as important my point that *PONTICUM* was too rampant to make a good stock and urged rightly that *R. SMIRNOWII* was a species that would grow in almost any soil, that it was absolutely hardy, and comparatively slow in growth but not too much so; he added the very important

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statement that this species possesses a leathery bark that lends itself to the operation of grafting in a manner that is more kindly than that of PONTICUM.

All rhododendron lovers will hope that this enterprise will prove successful from every point of view and Mr. White's care for and observation of plants must encourage everyone to have some confidence in the result. What a blessing it would be!

CHARLES ELEY.

East Bergholt, *December*, 1922.

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SOME NOTES ON THE PLANTING OF TREES AND RHODODENDRONS AT FULMODESTONE WOOD, NORFOLK.

In writing these notes as my contribution for the Rhododendron Society, I am hoping that the absence of much reference to the genus *Rhododendron* will not be taken amiss, but the fact is that this species is not very numerous in this wood which, however, contains a remarkable collection of conifers.

The collection was begun in Fulmodestone Wood by the late Earl of Leicester in 1851. Fulmodestone Wood is in the north-centre of Norfolk, and comprises about 200 acres—is about 11 miles distant from the sea, and at an altitude of 234 feet above sea level. The annual rainfall is about 24 inches. Records were kept for about 20 years, but after that date they appear to have been discontinued. One of the first trees planted was *Sequoia sempervirens*. This tree is now 86 feet high and 12 feet in girth. The same year *Pinus Lambertiana* was planted and now measures 71 feet by 6 feet 6 inches. This tree has borne cones, not however fertile. No doubt there were other trees, rare at that time, planted in this year, but the dates are not always given. Amongst the many other good specimens I would mention *Abies cephalonica*, a group of seven trees all very fine, the finest of which measured 78 feet by 7 feet 10 inches. These trees are supposed to have been planted about 50 years ago.

Two remarkable specimens of *A. magnifica* (but showing signs of age) are 80 feet by 6 feet 8 inches. *Cupressus Lawsoniana*, 72 feet by 5 feet, *Pinus insignis*, 80 feet by 13 feet 6 inches: a huge tree with several stems and covering an enormous area. *Pinus Coulteri*, 61 feet by 5 feet 3 inches. Several specimens of *Abies amabilis*, the tallest of which is 65 feet by 5 feet 8 inches. Young seedlings were raised from this tree (which was itself a seedling from a tree now dead) and some are now over 30 feet high.

<i>Picea orientalis</i>	71	feet by	6 feet	1 inch.
<i>Cupressus nootkatensis</i>	60	" "	4 "	" "
<i>Abies nobilis</i>	88	" "	11 "	9 "
<i>Libocedrus decurrens</i>	73	" "	8 "	" "
<i>Picea sitchensis</i>	91	" "	7 "	2 "

(This tree was planted 43 years ago).

<i>Abies pindrow</i>	47	" "		
<i>Juniperus drupacea</i>	47	" "		
<i>Tsuga canadensis</i>	51	" "	6 "	4 "
<i>Tsuga Albertiana</i>	80	" "	9 "	4 "
<i>Thuja gigantea</i>	82	" "	9 "	2 "

(Believed to have been planted in 1860).

<i>Tsuga Pattoniana</i>	52	" "		
<i>Abies grandis</i>	81	" "	9 "	10 "

(Planted in 1852), as was also an

Abies Webbiana which I believe to be the variety *brevifolia*, 60 feet by 4 feet.

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Seedlings have been successfully raised from cones of an *A. Webbiana* of the ordinary form which is 66 feet high, planted in 1852. A fine plant of *Cryptomeria japonica* which has had half of its trunk blown off, but has a girth of 8 feet 2 inches. Two fine specimens of *Sequoia gigantea* planted in 1857, one measuring 100 feet by 15 feet, and the other 90 feet by 12 feet.

Pseudotsuga Douglasii (the Oregon variety) 96 feet by 11 feet. *Cedrus atlantica glauca*, 79 feet by 7 feet 6 inches. *Pinus ponderosa*, 79 feet by 5 feet 2 inches, both planted about 1860.

Rhododendrons are represented by about five species which are believed to have been sent by the late Sir Joseph Hooker to Lord Leicester. No doubt there are other species, but owing to the huge extent of this wood I was not able to go over it thoroughly. I may mention that *R. NIVEUM* was 25 feet high by the same through.

R. CAMPANULATUM, 20 feet by 15 feet. *R. CINNABARINUM*, 16 feet high by 20 feet. Three fine plants, the white *R. ARBOREUM*, over 30 feet, also *R. THOMSONII* in fine vigour. I also saw a very fine specimen of *Pieris floribunda* which was about 16 feet by 30 feet.

The late Lord Leicester took a keen interest in this collection until, during the later years of his life, his increasing infirmities prevented him from giving it continued attention.

I am much indebted to the present owner for his kindness and for allowing me to write these notes, and also for the assistance of the head forester and gardener. All of them take the keenest interest in this fine collection.

HEADFORT.

December, 1922.

The Rhododendron Society Notes.

OF SOIL IN RELATION TO RHODODENDRONS.

There can be no student of the cultivation of rhododendrons, however casual his efforts in this direction, who has not discovered that these plants are exacting in their requirements of soil, situation, and in a lesser degree of climate. The two latter have been simplified by practice until they have been reduced almost to the standard of bookshelf knowledge, but the problem of soil demands in its solution a far more searching examination than has yet been accorded to it.

This being so, it may be of interest to some members who read the Notes to place on record some remarks on the soil in this garden, not because experience or power of observation entitle me to form any definite conclusion therefrom, but because, read in conjunction with information they themselves already possess, the notes may be helpful. While some species appear to be altogether intolerant of the soil they are offered here, others seem to be so well pleased with the bill of fare that they attain a maximum development in a surprisingly short time, bearing both leaves and flowers of remarkable proportions, putting on as much as 18 to 24 inches of young growth, after which in many instances they subsequently collapse—presumably from over eating. A notable instance of this occurred in a plant of *R. CALOPHYTUM*, which, after being raised from a seedling, developed into a really remarkable plant, only to go sick the second year after blooming, and within a few weeks to have passed beyond recall.

Before entering into any detail regarding the soil, it will be well to set on record some general remarks on the situation. Sited some 300 feet above the level of the sea on the top of a hill the summit of which is as though it had been removed with a view to providing a flat planting surface, shelter is provided by a plantation of ash, oak, chestnut, and sycamore, with a dense underplanting of laurel over the whole of the top of the hill. These laurels provide an impenetrable wind screen and from time to time spaces are cleared in them, and the trees cut down, to admit of the planting of rhododendrons and other shrubs of a similar nature. This wood having been planted for a considerable time (at least 100 years), there is a heavy deposit of leaf mould that has been augmented, in quantity by an excellent system under which the leaf sweepings from the paths and lawns have, over many years, been collected and put in heaps amongst the laurels where they are out of sight, and in quality, by a long-established rookery in the trees above. Below this deposit of leaf mould the soil varies both in nature and in depth. In the centre it is clay, while on the outer belt this gives place to loam, although clay lies not very far beneath it; below this again, the subsoil consists of a very clayey shale.

While following generally the outline given above, the arrangement seems to lie in no ordered sequence as to depth or continuity, so that any consideration of the effect of the soil upon the plants committed to it is better made by a survey of some of the openings which have been cut into the wood; each of which cuttings differs to some extent from its neighbour, owing either to a disturbance of the soil, the effect of different trees having been used for the original

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planting, drainage, or for some other reason. It may be helpful while considering the effect upon rhododendrons to mention, where possible, other plants growing in the same clearing in order to provide a comparison or control.

At the point selected for starting there is a deep bed of very rich leaf mould, some nine inches in depth, covering a layer of loam, approximately 15 inches in depth, with clay beneath. While some plants make prodigious growth here, rhododendrons seem unable to get a foothold, and after a few years start going back if permitted to remain. Two *R. ARBOREUM* of an early type seem happy here, while two others are alive; the *YUNNANENSE* group has responded, but with these exceptions there is abundant evidence that the place is unsuited to rhododendrons. *Andromeda* seems to revel in it, as also does *Eucriphia*.

Further on, the deposit of leaf mould is much lighter, while loam is almost absent, the soil being mostly a heavy clay, and here the *AUCKLANDII* lot seem to be happy even if the unfortunate straggling habit of the family is accentuated. *R. ZEYLANICUM* planted here in 1908 has died this year (1922).

In the next clearing, what I believe to be a hybrid between *FORTUNEI* and *PONTICUM* has grown to be one of the show plants of the garden, both in regard to the robust appearance it presents and size and profusion of bloom. *FALCONERI* grows here, but has not such a good situation as the hybrid. It was in this clearing, and in the best situation, that the *CALOPHYTUM*, to which reference has already been made, grew and died. This cutting has a good covering of leaf mould (mainly ash) and rich loam, the former measuring six inches and the latter about two feet, but seems to retain moisture more than any of the other bays. Azaleas grow here in great profusion. Rhododendron *NIVEUM* planted here shared the same fate as *CALOPHYTUM* after deceiving me into thinking, after nine years progress, that I had a very remarkable plant. In a neighbouring clearing where the deposit of leaf mould is shallow (ash trees of large size were cleared from this bay), but where the loam is deep, the rhododendrons are looking very healthy, but do not attain the same standard of growth. *R. "LODERI"* has done very well here, and so has *R. SUTCHUENENSE*. A plant of *KIRKII* has, however, failed to keep pace with the surrounding rhododendrons. *Drimys Winteri* is undoubtedly the best plant in this clearing, seeming to revel in the loam without the richer food provided by a surfeit of leaf mould.

Other neighbouring bays would provide much the same conclusion as will be already obvious from the foregoing, namely, that, where the deposit of leaf mould is shallow, rhododendrons do better for the steadier growth that they make.

One clearing, particularly rich in this leaf mould, is reserved for a nursery with a view to pushing on the young plants that are removed to it at about two or three years growth; but though the plants seem, most of them, to have responded to the treatment, the experiment has not been tried for sufficient time to offer any definite conclusion as to the effect of this forcing on the constitution of the plants. Several small plants of a *CAMPYLOCARPUM* hybrid however have, since they were planted here, quite relinquished the struggle to live.

Lastly, mention should be made of a bay that is of a very different soil composition. This is an old pit from which soft stone has been quarried for the

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garden paths. As the sizeable stone has been removed from the sides, the "burden" has been thrown back into the middle of the pit and has been subsequently levelled, forming a bed of "rubble" tightly bound with clay. Innocent of either leaf mould or loam, this would seem to offer the most inhospitable ground for the cultivation of rhododendrons, and yet I remember but one sick plant of all those that have been planted here. Several *R. ARGENTEUM* were the first that were tried: this was in 1909, and although a little peat was added at the time of planting, nothing has been added since. This group of *ARGENTEUM* has done as well as I could have desired, indeed the same might be said of everything in this quarry which has been put into the natural soil. A large plant of *AUCKLANDII* that has had one mulching of leaf mould after a particularly strenuous flowering year has had no other food added to the soil of which it has been the occupier for more than ten years, being, moreover, a large plant when it came to me.

Unfortunately, the pit being very limited in size does not afford room for more than a few plants, and much of the available space has hitherto been occupied by Waterer hybrids which have grown to a large size, but these are now giving place to more interesting subjects.

R. FULGENS is the only species of those that have been tried that has failed to appreciate the soil here, but I must ascribe its failure to resentment at my method of moving it rather than to any dislike of the soil. *HABROTRICHUM* which is perhaps a difficult plant to find doing well anywhere, and which elsewhere in the garden has defied my threats as well as my entreaties, gives me some encouragement now that it has been removed to the pit.

Had I to assign a reason for the evident liking of the rhododendrons for this place, I should say that it is accounted for by the natural drainage afforded by the sloping bed of the quarry, and that the stones, being of a brittle nature, provide a food which is appreciated, while the clay is of assistance in suspending the moisture, the stones preventing it from becoming sodden or constipated. It is not without interest that local tradition ascribes to this quarry pit "the finest crop of potatoes that have ever been grown in the parish"; the successful cultivator being an employee who had requested of a former owner of this place permission to use the ground for the purpose.

Doubtless time and tradition have not lessened the size of these tubers, but, even allowing for this probability, it is not the site that I should select for an epoch-making crop of potatoes.

It may be observed that no mention has been made of the mountain forms of Rhododendron. This omission is intentional, because their peculiarities do not admit of a share in the same stable as these of the lower altitudes, and the soil in which I have tried to grow them has in all cases been made up specially for the purpose.

I should like to add in concluding, that a somewhat bitter experience prompts me to disclaim any confidence that, because some of the plants have done well over a period of 10 to 15 years in any one of the places to which reference has been made, I am likely to find any if them equally flourishing by the time that I have completed this contribution to our Notes.

GEORGE H. JOHNSTONE.

Trewithen, Cornwall, December, 1922.

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MISCELLANIES.

The year 1922 has been a great contrast to 1921. On the whole it has not been unfavourable to rhododendrons. The hot summer of 1921, although trying and in some cases fatal, was probably one of the chief causes of the profuse flowering of most rhododendrons which characterised the year 1922. The spring was mild, but the first part of May was unusually cold, then came a spell of hot dry weather for about a month. The rest of the summer can only be described as wet and this seems to have had the effect of inducing free and healthy growth.

R. GLISCHRUM, which I owe to the generosity of Mr. J. C. Williams, flowered at Wakehurst for the first time in May, 1922, and I believe elsewhere also, promises to be an attractive plant if not very exceptional in its flower. It was found by Forrest on the Yangtze-Mekong divide in 1914. The plant, which when young somewhat resembles R. HABROTRICHUM in appearance, though with much finer foliage, has very hairy, sticky, twigs. It is allied to R. STRIGILLOSUM *Franch.* It seems to be quite hardy, and of vigorous growth. The blooms are plum or pale-rose in colour with a more or less crimson blotch at the base. Forrest says the shape of the flower is campanulate, but I should hardly have given my specimen that description.

Another rhododendron, which flowered for the first time with me (July, 1922), was one sent me some years ago by Mr. Armitage Moore as "*Aff-CRASSUM.*" It is one of Kingdon Ward's finds in Upper Burmah, and undoubtedly belongs to the Maddenii series—probably a form of CRASSUM. It has long fleshy tubular white flowers, very fragrant. If this proves to be hardy it will be a most valuable addition to gardens in at any rate the South and South-west.

A great feature of the late summer of 1922 was the profuse flowering of R. DISCOLOR in all its forms, including one originally sent out by Messrs. Veitch as KIRKII (a name now no longer admitted). R. DISCOLOR varies very much, and the flowers usually white, are sometimes tinged with pink. It is a most attractive rhododendron, and, flowering as late as it does, is most valuable.

R. AURICULATUM also flowered well and later than usual, some trusses lasting until the first week in September.

A disease known as *Stephanitis rhododendri*, which made its appearance a few years ago, seems to be spreading, but not alarmingly so far. Its presence manifests itself by the sickly appearance of the plant and a red rust on the underside of the leaf. It may be checked by a spray, but I am informed that it is safest to destroy the infected plant altogether. So far as my observations go it has only attacked hybrids, I have not seen it on any species.

G. W. E. LODER.

Wakehurst Place, Sussex, 29th September, 1922.

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NOTES FROM LOGAN, 1922.

The dwarf high Alpine rhododendrons from China, and there are many such species, are very beautiful. For such little plants some of them have quite large flowers which embrace many colours. To see them to advantage they should be massed together, keeping each species to its kind, separate. Yet a border of one sort may with advantage be placed near to and in full view of another. The pale yellow flowers of Forrest No. 16287 look well near the lavender shades of Forrest No. 16577. The one does not mar the beauty of the other, but rather enhances it, if both borders are in sight at once.

It is certain that such little plants cannot cope with rank grass and weeds, and this is the reason why they require a different mode of arrangement when planting and are best *en masse*. Singly they cannot stand unless in a well-kept rock garden, which is again a home for them, and if planted in small groups among the rocks, they at least are interesting.

I have made for these small rhododendrons a terrace rising on sloping ground ; the material used for the purpose is peat cut from a peat bog in slabs much in the shape of large flat bricks and laid one on the top of the other while wet, making a solid wall about 2 feet high. Each bed is fairly big and runs to the foot of the wall above it, allowing many plants of one species to be placed together. There are seven beds rising one above another, each filled with one dwarf rhododendron species.

This arrangement has so far proved most successful and shows off the plants to advantage. A small path leading along the foot of each peat wall enables one to see the flowers well without having to stoop down. Ample drainage is insured, and the beds can be filled with a suitable mixture of soil.

These dwarf rhododendrons flower freely in the spring, and many often bloom again in the autumn. To-day (27th October), there are 74 rhododendrons flowering out on the peat terrace, yellow, lavender, purple and pink. Among the rhododendrons are planted *Liburnus* and other bulbs and plants of spare foliage to flower during the summer months, keeping up a succession of bloom.

Nomocharis pardanthina grows here from Farrer's seed No. 1031, collected in China, and produced five fine single flowers this summer and has since ripened seed, it is a beautiful thing. Half way up one peat wall Farrer's *Primula coryphæa* (1058) and *Primula bella* (879) have found a home where moisture is always present, allowing their small rosettes to branch out and root themselves into the peat. These tiny plants have large single violet flowers produced throughout the spring, summer and autumn months. These primulas absolutely refused to grow anywhere else. Farrer in his notes on *P. bella* states that it grows only on vertical slopes. Along the top edge of each peat wall Alpine plants are growing. These are allowed to hang down in places. The warm brown colour of the peat is good to look at and the bright colours of the rhododendron and lily flowers show up well against the dark background when viewed from the foot of the terrace.

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The peat seems to stand well in position. It does not wash away in wet weather, neither does it shrink much when dry. It should last well and is a cheap material to use where peat can be procured near by.

I cannot conclude my notes without mentioning at least one of the many rhododendrons, which flowered so well this year. I refer to *R. INSIGNE*. This scarce plant produced for the first time six fine blooms in July, the truss has about eight flowers, each a little more than an inch across. They are of a semi-transparent white with a red mid-rib down the centre of each petal, showing clearly on the outside of the bud before the flower expands, and also on the inside of each petal when the flower is out, becoming deeper in colour with age.

KENNETH McDOUALL.

Logan, Wigtownshire, *October, 1922.*

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NOTES AT LAMELLEN, 1921-22.

We had very severe frost during the first week in November, 1921, the ponds being frozen over, and this, following continuous warm weather did a good deal of damage. A good many seedlings suffered, and several plants of *R. ERIOGYNUM* were killed outright, whilst the rest were badly cut. It is only fair to say, however, that they were in what proved to be a frost hole. After this we had a comparatively mild winter, though there was sharp frost in the third week in March.

This week *R. 6775F. CYANOCARPUM* flowered for the first time, but was spoilt before it was fully open—a good-sized blush-white flower—of rather fleshy consistency.

R. "ATALANTA" (THOMSONII × ARBOREUM var. WEAREI) suffered the same fate, but from the two bells which came out some account of it is possible :— 10 flowers to the truss, $1\frac{1}{2}$ inches by 2 inches, 5-lobed campanulate, geranium-red, with darker spots on the three upper segments, filaments and style white, stigma greenish, stamens brown.

These were followed the third week in March by *Rhododendron* No. 175 "*CORNSUTCH*" ("*CORNUBIA*" × *SUTCHUENSE*), a plant with large leaves, up to 9 inches long; 15 in a well-shaped truss, 2 inches by $2\frac{1}{2}$ inches, 5-lobed, rather widely campanulate, carmine-purple, with a dark blotch at the base of the upper segment, breaking into spots as it ascends; filaments and style white, stamens brown, stigma and upper part of style tinged with reddish-brown.

Second week in April, *R. 12889F. FLOCCIGERUM*, but the flower was unfortunately frosted though one or two bells developed. These were six in a loose truss, $1\frac{3}{8}$ inch by $1\frac{1}{2}$ inch, rather narrowly campanulate, carmine-lake first shade, 5-lobed, unspotted, but with rather deeper colour at the base of the flower, style and filaments white, stigma greenish, stamens very dark brown. A small flower of a very attractive colour.

In the first week in May, *R. Farrer 1045 CALOSTROTUM* showed its first flowers. They were in twos on long pedicels at the end of the shoots, 2 inches by 1 inch, 5-lobed, salver-shaped, bright magenta, spotted with brownish-crimson on the upper segments, filaments and style the same colour as corolla, stamens 10 brown, stigma greenish-brown. Not a good colour, but of remarkable size for the plant, which is itself a close-growing compact little thing with very glaucous leaves.

R. "CAUBUT" (CAUCASICUM STRAMINEUM × "MRS. BUTLER") also opened this week. Eight bells to the truss, 7-lobed, white shaded yellow in the interior and spotted with green on the upper segments, $3\frac{3}{4}$ inches by 2 inches, broadly campanulate, style and filaments greenish-white, stamens 14 very pale brown, stigma green. A very nice flower on a low-growing plant.

And lastly, *R. 648a Wilson HOULSTONII*, eight flowers to the truss, $4\frac{1}{4}$ inches by $2\frac{1}{2}$ inches, very widely campanulate, 7 or 8-lobed, pale violet-rose, with three slender lines mixed green and dull crimson in the interior of the upper segments

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with shadings of darker colour outside. Filaments white, stamens 16 light brown, style greenish-white, stigma a little darker.

Third week in May, Rhododendron No. 145, a seedling from CAMPYLOCARPUM, 10 in a loose truss, $2\frac{1}{2}$ inches by $1\frac{1}{8}$ inches, campanulate, pale yellowish-pink, with a blotch of red at the base, filaments and style greenish-white, stamens 10 light brown, stigma light red.

Also Rhododendron No. 220 "CAMPBUT" (CAMPYLOCARPUM $\times$ "MRS. BUTLER") 10 in a loose truss, 3 inches by $2\frac{1}{2}$ inches, very pale yellow, 5 or 6-lobed, with a dense spotting of crimson at the base of the upper segments, style and filaments greenish-white, stamens 10—12 light brown, stigma green. An attractive flower.

Another plant of the same batch had flowered, slightly tinged with pink and an even more pronounced spotting of crimson deepening into a blotch. And a third had deep rose-pink flowers with the same crimson spotting as the first and a rather larger corolla, 4 inches by $2\frac{3}{8}$ inches.

Rhododendron No. 116, a seedling from a bought plant, reputed CAMPYLOCARPUM $\times$ THOMSONII produced pure white flowers with three small crimson blotches at the base, and the shape and size of CAMPYLOCARPUM.

R. "GLAUCOBOOTHII" (GLAUCUM $\times$ BOOTHII) closely resembled R. "LEPIDOBOOTHII," formerly described, but the flowers were rather pinker, the spotting was brownish-red instead of green and the pedicels shorter; also the plant has larger leaves.

Fourth week in May, Rhododendron "PONTAUCK" (PONTICUM $\times$ AUCLANDII), 14 in the truss, 3 inches by $2\frac{1}{2}$ inches, pale violet-mauve, with a slight greenish-brown spotting, filaments white, stamens 10 very pale brown, style greenish-white, stigma reddish. A bush of this covered with flowers is most agreeable in colour, especially at a distance.

R. "KONIGDIS" ("KONIG CAROLA" $\times$ DISCOLOR) 16 to the truss, lilac-white, deeper in bud, 8-lobed, $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches, openly campanulate, with a large blotch of crimson and spots of the same colour on the upper segments, filaments white, stamens brown, style greenish-white, stigma pale green. A fine flower, but I hoped it would have been later.

R. No. 235 "SOULBUT" (SOULIEI $\times$ "MRS. BUTLER"), eight to the truss, blush-white, tinged pink outside and pink in bud, with broad crimson spotting on the upper segments, 6 or 7-lobed, $2\frac{1}{2}$ inches by $1\frac{1}{2}$ inches, broadly campanulate, filaments white, stamens 14—16 brown, style greenish with minute red hairs, stigma green.

R. "GOLDSWORTH YELLOW" (CAUCASICUM $\times$ CAMPYLOCARPUM) sent me by Mr. Slocock, 12 to the truss, pale yellow densely spotted with greenish-brown on the upper segments and tinged pink on the outside, 5-lobed, campanulate, $2\frac{1}{2}$ inches by 2 inches, filaments the same colour as corolla, stamens very light brown, stigma greenish-pink. A nice flower, well worth growing.

Another plant of R. "KONIGDIS," which flowered during the first week in June, gave me a pleasant surprise in that its colour was heliotrope—the lightest shade,

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but one in the *Répertoire de couleurs*—all the segments being spotted at the base with olive-green, the spotting being most pronounced in the upper ones. This is a nice cool-looking flower and in colour resembles some varieties of *AUGUSTINII*.

Also R. No. 269 "BRACHSOUL" (*BRACHYCARPUM* × *SOULIEI*), 11 in a loose truss, $2\frac{1}{2}$ inches by $1\frac{1}{2}$ inches, 5-lobed, very widely campanulate, almost salver-shaped, light rose shading to white, darker on the outside, the upper segment thickly spotted with crimson, filaments white, stamens light brown, style greenish-white, stigma green. The influence of *SOULIEI* is seen in the shape of the corolla, but the flowers are somewhat spoilt by the excessive length of the pedicel. The reminder which has just come in from the Honorary Secretary tells us that it is desirable that the size of some of the best plants should be mentioned, so I am putting down a few of the most noteworthy in this garden, though it has not been going long enough to provide anything of outstanding stature. So far, *R. KEISKEI* is 2 feet 3 inches high and 5 feet across; *R. FARGESII* is 8 feet by 11 feet; *ADENOPODUM* 4 feet 6 inches by 6 feet; *SINOGRANDE* 6 feet; and its largest leaf 26 inches long including petiole; *MOUPINENSE* 2 feet 6 inches by 4 feet 6 inches; *SCOTTIANUM* 3 feet by 3 feet; and *Eucryphia cordifolia* 25 feet by 10 feet.

Another item, which may be of interest, is the appearance of a new species here. I had bought at Coombe Wood several years ago a plant of Wilson's under the number 1539, and on sending a flower to Sir Isaac Bayley Balfour he, having shown it to Wilson, who happened to be there at the time, determined that it had not yet been described and named it *R. MAGORIANUM*. It is a hardy member of the *IRRORATUM* series, 11 flowers to the truss, corolla funnel-shaped, 3.5 c.m. long, pink and white at margin of lobes, with a deeper tinted blotch and a few spots, stamens 12, style and stigma greenish-yellow.

E. J. P. MAGOR.

Lamellen, St. Tudy, 22nd October, 1922.

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THE HARDINESS OF ASIATIC RHODODENDRONS.

Although a good deal has been ascertained already about the hardiness in the British climate of many Asiatic species of *Rhododendron* introduced to this country during the past thirty years, much still remains to be determined in that respect. On the whole, experience of their behaviour has been encouraging ; but it is to be noted that, while growth is more luxuriant in southern and western districts under the mild and moist Atlantic influence, that influence, causing open and wet winters, is a positive hindrance to success with certain species of precocious habit of growth, and that such species—some of them, at least—actually prosper better in places where *R. ARBOREUM* cannot endure the winter cold.

Let me cite *R. OREODOXA* as a case in point, this beautiful plant is apt to be lured into active growth by every mild spell in winter, only to be shorn of its young shoots by March and April frosts. Season after season that has happened to it in our south-western corner of Scotland. In the spring of 1921 the young growth, containing the embryo blooms for 1922, was all destroyed ; each strong shoot was replaced later by three or four weaker ones, with the result that we did not have a single truss of *R. OREODOXA* in the spring of 1922. As the young growth escaped uninjured in that season, we may expect a good display in 1923.

Now contrast our experience in the spring of 1922 with the behaviour of this species at Dawyck in Peebleshire, 600 feet above sea level with a severe winter climate. The winter cold of 1920-21 having kept it from starting into early growth, the young shoots grew uninjured and the plants were loaded with bloom in April, 1922.

I am very far from arguing that precocity of growth is the main or general hindrance to success with Asiatic rhododendrons, but it is undoubtedly an important factor. There are several species, notably some of the Maddenii series, which it would be hopeless to grow without protection in cold inland districts ; but which are perfectly hardy in mild regions near the sea and escape damage from spring frost by starting late into growth.

I think the behaviour of *R. ARBOREUM* is a fair indication of the suitability or otherwise of any district for the cultivation of the finer species of Asiatic rhododendrons. I do not mean the blood-red variety, which is more susceptible to cold than others, including the variety named *CINNAMOMEUM*. Where the ordinary *R. ARBOREUM* not merely grows, but luxuriates, many species reputed to be tender will do the like. Consequently, having been told that there were a considerable number of very large plants of this species at Balbirnie, the seat of Edward Balfour, Esq., in Fife, I made an expedition there in the autumn of 1922. The district is a cold one, winters being severe and Balbirnie is about five miles inland from the east coast. The plants are undoubtedly of great age, ranging from 20 to 24 feet high. Unluckily, I am unable to certify them as pure *ARBOREUM*. They looked very like one of those old *ARBOREUM* × *CATAWBIENSE* hybrids known as "*RUSSELLIANUM*," Knight's hybrid, etc., but it is possible that they are the true species. That cannot be determined till flowering time. I am told that the blossoms are red.

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Besides these, there are many large plants of *R. BARBATUM* and *CAMPANULATUM*, evidently of great age, but among the Indian species none struck me as so remarkable as a number of bushes of *R. CINNABARINUM* var. *ROYLEI*. These stand on an average about 14 feet high, several stems in each rising from an immense rootstock. They are growing on what seems a hungry soil, some of them having had a hard fight with lusty neighbours, and all would benefit greatly from a generous mulch. They are the largest plants of the species that I have seen anywhere, and it is remarkable that they have attained such a size in so cold a district.

But for sheer size, there is no rhododendron at Balbirnie to compare with an immense specimen of *R. CATAWBIENSE* growing in a sheltered woodland glade beside a small stream which it covers from bank to bank. It is said to have been planted in 1808; but whereas the species was not introduced to this country till 1809 there must be a mistake of a year or two. Anyhow, it is well authenticated that this specimen has occupied its present position for more than one hundred years, and must have been one of the earliest plants distributed. A record of dimension has been kept for the last thirty years as follows:—

Year.	Circumference.				Height.	
1892	..	..	195 feet	..	..	16 feet
1920	..	..	216	"	..	18 "
1922	..	..	240	..	..	18 " 3 ins.

The height was somewhat greater before the branches were broken by snow a few years since. I understand that it is not very easy to find good specimens of pure *R. CATAWBIENSE* in this country, owing to the extent to which it was used to cross with other species during the first half of the 19th century. At all events, Sir Isaac Bayley Balfour experienced considerable difficulty a few years ago in obtaining the real thing. He turned down specimens which I sent him from old plants growing here which had been reputed to be the pure species. He considered that the spots on the back of the corolla, though not highly coloured, betrayed a cross strain.

HERBERT MAXWELL.

Monreith, Wigtownshire, *October, 1922.*

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RHODODENDRONS FOR THE ROCK GARDEN.

There can surely be few more fascinating forms of horticulture than the construction and maintenance of a rock garden where, within certain limits, the composition of soil, elevation and aspect are at our command, and where an almost endless variety of plants can be suitably associated within a comparatively moderate compass. Amongst such plants a judicious selection of hard-wooded shrubs should always find a prominent place, and here, thanks mainly to modern introductions, many species of the genus *Rhododendron* will be found to rank as indispensable to any representative collection.

Where ample space and variety of aspect is available, as is here assumed, and bold effects are consequently obtainable, a great array of rhododendrons presents itself for consideration, but, even in gardens of less extensive dimensions, a wide selection of the narrow-leaved and dwarf growing species can readily be made, and nowhere else will they find a more ideal home than in the rock garden. Where else are many truly alpine species of diminutive stature to be grown and shown to the best advantage? There they find their natural neighbours, and the conditions best suited to their general characteristics.

When opportunity offers the natural rock-crevice should be thoroughly exploited and experimented upon. The conditions which it offers to many low-growing species of high altitude are culturally ideal, and surprising results can be obtained if seedlings are taken at an early stage and firmly wedged between stones with a liberal supply of gritty material into the cool depths of which the roots can freely penetrate. Here will be found the moraine-like home of many difficult alpine species, and a happy and easy outlet for many a spare seedling.

Where the natural crevice does not prevail, as so frequently happens, an artificial construction will readily suggest itself to alpine gardeners, and stones can be easily manipulated to provide the desired conditions, and to shield the essential surface fibres from the harmful effects of a sun-dried root-run.

The judicious association of plants provides one of the main factors in good garden effects, and such association is frequently of inestimable benefit from the cultural point of view. Most gardeners have, at one time or another, planted lilies in rhododendron beds, and with good reason.

Similarly a wide range of *Narcissus*, *Primula* and *Meconopsis* can be admirably staged amidst groups of low-growing rhododendrons, and a series of charming combinations with Ferns, *Anemones*, *Trilliums* and *Erythroniums* are easily contrived. In such ways, in sun or shade, both alpine and woodland effects are obtainable, and there is a desirable absence of the formality and artificiality of regular beds and isolated specimens.

There can surely be no finer setting for such species as *Rhododendrons* *HÆMATODES*, *WILLIAMSIANUM*, *APODECTUM*, *DICHROANTHUM*, *SANGUINEUM*, *CAMPYLOGYNUM* and *VALENTINIANUM*, than in the shade and shelter of some cool, moss-grown rock face, where the sun scarcely penetrates, and where purity

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and richness of colouring is intensified. A similar aspect, where space permits, can be richly ornamented with somewhat stronger growers, such as *Rhododendrons* HABROTRICHUM, NERIIFLORUM, OREOTREPHES, CALLIMORPHUM, CRASSUM, and MADDENII; whilst in sheltered nooks good results can be obtained from *R. AUSTRALE*, ASSAMICUM, BOOTHII, BULLATUM and "SESTERIANUM," and even CILIICALYX (*Bailey*) may at times condescend to give a glimpse of its real self.

In more exposed situations, where plants of six feet or more are available, mixed groups, irregular in outline, of such as *R. YUNNANENSE*, CHARANTHUM, DAVIDSONIANUM, CHARTOPHYLLUM PRÆCOX, LUTESCENS, AUGUSTINII, LOCHMIUM, VILLOSUM, BENTHAMIANUM, TRIFLORUM, and HANCEANUM provide a feast of delicate colouring. As viewed here these are plants of the sun, as much so as any shrubby spirea, and when so treated flower with the greatest profusion. Seed-pods are not removed, and already self-sown seedlings on rocky ledges and crevices are conspicuous, promising interesting results in hybridity. Such free groups can be admirably edged with the dwarfier forms of *R. INDICUM*, AMÆNUM, BALSAMINÆFLORUM and also heaths.

An attractive combination is equally available from *R. VASEYI*, ZALEUCUM, BAILEYI, HIPPOPHÆOIDES and FLAVIDUM, with Daffodils, Crocuses, and yellow and white Primroses as groundwork.

On high and fully exposed parts of the garden *R. CILIATUM*, FERRUGINEUM, and its white form, HIRSUTUM, OVATUM (of gardens), MYRTIFOLIUM and HALFENSE will be found to develop from exposure into compact, free-flowering bushes, comparatively unpretentious in themselves yet good covering for the colder and coarser positions.

On low ground of sunny aspect rock edged borders, irregularly broken with suitable stone, provide an attractive setting for a formidable array of dwarf alpine species.

Here may well be grouped such plants as *R. INTRICATUM*, FASTIGIATUM, LEDOIDES, IDONEUM, KEISKEI, SERPYLLIFOLIUM, SARGENTIANUM, SALIGNUM, CHRYSÆUM, SALUENENSE, SETOSUM, POLIFOLIUM, TSCHONOSKII, LAPPONICUM, SPHÆRANTHUM, LEPIDOTUM, HYPOLEPIDOTUM and VERRUCULOSUM, backed by and interspersed with a selection from the following: OLEIFOLIUM, VIRGATUM, HIPPOPHÆOIDES, QUINQUEFOLIUM, BRACHYANTHUM, TRICHOCLADUM, RHOMBICUM, RAVUM, CUNEATUM, MELINANTHUM and KÆMPFERI, some of which, however, such as OLEIFOLIUM, HIPPOPHÆOIDES and KÆMPFERI, may well be preferred in individual groups for massed effect.

An early flowering group, sheltered from morning sun, might be composed of *R. MUCRONULATUM*, DAHURICUM, PRÆCOX, and MOUPINENSE, with a carpet of *Narcissus minimus*.

On exposed positions amidst dwarf heaths there would appear to be a happy future in store for Wilson's Kurume Azaleas. These have come liberally from seed, a large proportion showing a prostrate, spreading habit well suited to carpeting ground and covering low stones and ledges. It may be that in mass formation, and other than as individual specimens, the best effects will be obtained.

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R. HANCEANUM—a variable species of somewhat delicate constitution—has, as mentioned in a previous note, here produced a pigmy sport of most diminutive habit. In this is seen an ideal rock garden plant, a cushion of closely-set rosettes, some five inches high and fifteen across—though twelve years old from seed—bursting with primrose-yellow flowers like a glorified *Saxifraga apiculata*. This is a chance gem for which one cannot be too grateful. Another seedling from the same batch is now under one foot high and over three feet across. Tightly wedged between two rocks and over-spreading their crowns, this specimen, when a mass of bloom in early May, presents a very attractive picture.

Admittedly, the rhododendrons here mentioned as suitable for a rock garden and the conditions suggested for their cultivation, may by no means meet with general acceptance. The exigencies of climate, horticultural opportunity, and personal predilection are very varying factors. No hard and fast rules are applicable and present-day opinions may in ten years time need considerable revision. The field is wide ; experiment is called for, and, especially where the essentially alpine species are concerned, the grower in Truro may be found to exercise no monopoly of success over his friend in Thurso. Let the garden be where it may, there is scope here for every enthusiast, and a great reward for intelligent effort.

Differing in methods as we may, horticulturists in general will at least agree that we have indeed much for which to thank the modern plant collector. His intrepidity and resource have been the means of introducing many priceless treasures to our gardens, but the rock gardener in particular, in many *genera* besides that of *Rhododendron*, has good cause to offer him a grateful acknowledgment.

H. ARMYTAGE MOORE.

Rowallane, Saintfield, Co. Down, *November, 1922.*

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RHODODENDRONS AT BULSTRODE, 1922.

In claiming the forbearance of my fellow Members for my first contribution to the Society's Notes, I feel that I owe a special apology, in that, till four years ago I was unaware that rhododendrons—other than hardy hybrids—were possible for a Buckinghamshire garden. I had always been brought up to believe that to plant "Sikkim rhododendrons" elsewhere than on the South and South-west Coast was folly, and I aspired to nothing more risky than "PINK PEARL" and "GEORGE HARDY." Then in 1914 a Sussex friend, to whom I owe a great debt of gratitude, ordered for me—notwithstanding my protests—twelve different species of Himalayan rhododendrons from Mr. Gill; knowing them to be tender, I naturally planted the poor things in the hottest and sunniest places I could find, and confidently awaited their demise. But although the rabbits ate the greater part of my *R. CINNABARINUM*, they lived through the war and are all alive and well to-day, in pleasanter situations. The fact of their survival coupled with—to me—the wonderful revelations contained in Mr. Millais' book which was just published, brought me from darkness into the light and made me a rhododendron enthusiast, and a bore to all who garden on lime soils. Having read in Mr. Millais' book the statement that he believed he had made every mistake possible in the cultivation of rhododendrons, I decided that I could not do better than place myself under his tutelage. The first difficulty encountered was the absence—owing to the war—of any stock in the hands of nurserymen, of the rhododendrons needed to make a collection. This was remedied to a certain extent by Mr. Millais robbing his own garden for the benefit of mine, and by making up the remainder with plants many years from the flowering age.

In 1920 the disposal of some of the surplus plants from Leonardslee, enabled a real beginning to be made. The garden at Bulstrode lies on high ground 300 feet above the sea, about 20 miles west of London and to the North, and some three miles distant from the slopes of the Thames Valley. The soil, no doubt once covered by a layer of the Bagshot sand, now absent through denudation, is red clayey flint gravel overlying a band of red clay of incredible stodginess, these two soils alone compose the garden; the slopes of the hills reveal that sand and then more gravel intervene before the great underlying mass of chalk is reached, which, outcropping to the North and West forms the Chiltern Hills. The chalk, however, does not affect surface conditions except in so far as it precludes the use of well water for ericaceous plants, and also possibly has a favourable influence by forming a reservoir of subterranean warmth in winter.

The garden may best be described as a wilderness varied by three ponds, the ground is undulating and falls away on three sides. It contains an avenue of fine lime trees, planted (no doubt as a profession of faith to the Hanoverian dynasty) about 200 years ago, and many large trees, among which cedars are especially notable. It overlies a part of the ruins of a vast formal garden created by the Dukes of Portland, who were the owners for the greater part of the 18th century, and which is recorded in its majestic dimensions in the bird's-eye view

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prints of the time. Regarded as a home for rhododendrons it presents both advantages and difficulties. The advantages are those of shade, shelter, background, and a plentiful water supply: the difficulties, those of soil and climate. Climate being beyond a gardener's control, the soil remains the one opponent to be overcome. On the higher ground, the gravel prevails, and the healthy growth of many old *R. PONTICUM* and long-established garden hybrids and azaleas shows this to be to their taste, and even on the clay—which occupies many otherwise desirable situations—so long as their roots are shaded—all rhododendrons do well.

Before venturing to attempt to establish the large plants which had been acquired, it was thought well to supply the best that circumstances would allow; this took the form of the addition of a mixture of about two-thirds of top spit from old pasture, and one-third peaty humus from a neighbouring oak wood on the higher level of the Bagshot sand. This was applied to the depth of about a foot and forked into the natural soil previously trenched two feet deep, keeping as far as possible to the gravel; where the clay was encountered it was either dug out to the depth of two feet and removed, or soil was added to the depth of eighteen inches. The results have been up to the present time (touch wood!) surprisingly successful. Some 100 plants were planted in 1919, but the first extensive planting was in the early autumn of 1920, when four hundred or more, mostly large plants, and among them some twenty-five *R. "LODERI,"* 20 years old and up to 12 feet high, were moved, and these flowered (so much as they were allowed), and put on growth as well or better than they had in their old home, without one failure.

The drought of 1921 necessitated constant watering, which was carried out with an "Evinrude" motor pump, and all plants were kept in good health, though many cases were seen of plants—especially "*LODERI*"—which produced fine trusses in 1921, showing a great falling off in size and number of pips in the second year; on the other hand, many which flowered poorly in 1921 showed a great improvement in 1922,—the particulars having been recorded on labels on the plants.

As the result of the experience of one disastrous delay on some sent by rail the previous year, the rhododendrons were all moved from Sussex by motor lorry and in few cases were they out of the ground for more than a week; from the nearest point of access by lorry they were moved to their new homes on sledges, whereby the turf is saved from damage, and a great deal of lifting and damage to the balls is avoided. A cart with a caterpillar track is also in use which can go anywhere with a ton load, without making a mark on the softest turf.

The rhododendrons were for the most part grouped in beds where conditions of shade and soil seemed favourable. In two places an attempt was made to obtain a bold colour effect by planting "*LUSCOMBE'S SCARLET*," 12 feet high, in masses with smaller plants of "*BODARTIANUM*" in front of them. Unfortunately in 1921 the latter flowered early and were over before the "*LUSCOMBE'S SCARLET*" were fully out, so the next autumn the "*BODARTIANUM*" were removed and "*LODER'S WHITE*" substituted, with the annoying result that the "*BODARTIANUM*" in their new retreat, at a distance, hit off the "*LUSCOMBE'S SCARLET*" exactly,

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while the "LODER'S WHITE" were too late. The only remedy appears to be to have both. For the most part, plants of the same and related species are massed together, though advantage has been taken of dark backgrounds, such as yew trees, to place single plants of "LODERI" where they will show to the best advantage.

In the autumn of 1921 a further 340 rhododendrons were brought from Sussex and planted successfully, the same methods being adopted.

Mistakes have been made in some places in planting too near the roots of trees, horse chestnuts have been proving themselves especially objectionable by their greed for the new soil. Some rhododendrons have too much shade, others too much sun, but on the whole they seem pleased with their new home, and these which appear discontented, will, it is hoped, be appeased by a move.

Among the newer Leonardslee hybrids several flowered for the first time in 1921 and 1922, their relations having no doubt also flowered at home.

R. CAMPANULATUM CAMPBELLII $\times$ THOMSONII. Two plants of this have produced one truss each year of a fine dark red, another plant—never yet flowered—has numerous buds for next season.

R. THOMSONII $\times$ AUCKLANDII. Two plants of this have produced two or three trusses each, low down; they are a fine bright dark pink gradually fading to a pale pink, and notable for lasting three weeks or more.

R. CAMPYLOCARPUM $\times$ BARBATUM. This is a very fine dark red in a close well-formed though rather low truss. This was taken to Vincent's Square, in April, where its parentage was regarded with some scepticism, but it is difficult to see, supposing the Leonardslee records at fault, what else it can be. ARBOREUM BLOOD-RED seems the only alternative to BARBATUM, it shows no signs of the THOMSONII calyx, which is very apparent in every THOMSONII hybrid I have ever seen. On the other hand, there are no hairs on the leaf stalks though both parents have them, the leaf resembles in shape but is less coriaceous than ARBOREUM ALBUM $\times$ CAMPYLOCARPUM. Of this latter, one plant flowered for the first time with a few trusses low down this year, the truss follows too much the pollen parent in shape, but trusses higher up may be better, it was a fine yellow, and I hear that some of this cross at Leonardslee have turned out well.

R. CAMPYLOCARPUM $\times$ AUCKLANDII flowered for the first time this year, a beautifully-shaped pyramidal plant, it was covered with flower from top to bottom, pure white when fully out, but flushed with apricot at first. I believe this is the same cross as R. "MRS. KINGSMILL."

R. "KEWENSE" $\times$ AUCKLANDII. Though on the borderland of tenderness at Bulstrode as regards buds, several of these flowered well this year, the one-quarter FORTUNEI shows hardly at all except in the shapeliness of the bush. Out of four plants which flowered, one was as good as a fair AUCKLANDII, flowers 5 inches across and 8 in a truss. For those with gardens where AUCKLANDII is hopeless this seems a plant worth having. The best "LODERI" crossed with the best AUCKLANDII might be better still.

R. "GAUNTLETTII" $\times$ LODERI. Some five plants of this flowered, all very distinct, none so good as one I saw at Leonardslee. The best at Bulstrode has a fine truss almost pure white (touched with pink) with a peculiar crispness which is most attractive.

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R. CAMPANULATUM CAMPBELLII $\times$ BARBATUM are now about 4 feet. Have not yet flowered here nor—I believe—at Leonardslee. They are plants of beautiful shape and foliage and very vigorous growth. If it turns out as fine a red as CAMPBELLII $\times$ THOMSONII, it will be a very fine thing indeed.

R. THOMSONII $\times$ "OTTO FORSTER." Out of six of these, all varying in shade, some are a horrid magenta, only one is a fair red, and that is rather raw beef coloured, but there are some good ones among those at Leonardslee.

R. FORTUNEI $\times$ THOMSONII. This Leonardslee cross is well known. Eight large plants have flowered magnificently for the last two years. I have been shown a small plant from Mr. Slocock of the reverse cross which had flowers over 4½ inches across, a great size for so bell-shaped a flower, those of this cross from Leonardslee have not flowered yet.

R. "IVORY'S SCARLET" $\times$ THOMSONII and "ASCOT BRILLIANT" $\times$ THOMSONII, of varying quality in colour and size, flowered for the first time, one of the latter had an especially large truss and well closed for a THOMSONII hybrid.

Almost all THOMSONII hybrids at Bulstrode had a few second flowers in July, many combining flower and growth on the same shoot. One large "LODERI," which flowered magnificently in 1921, only had about six flowers this year, and all of the combined flower and growth character, but this flowered in May. It is curious that Pallas figures R. PONTICUM like this, which suggests that he took as typical what someone sent him as a curiosity.

The last three winters have been very kind to the rhododendrons at Bulstrode, except for some lost buds on the tender kinds, the only serious loss has been some six promising young plants of ARBOREUM just at the flowering size, which had their bark split, presumably by a November frost in 1921, and have had to be cut almost to the ground.

To try and counteract the naturally scraggy habit of R. THOMSONII, all leading buds on plants 3 to 5 feet high not yet flowering, have been picked off in the autumn, with the result that there is a tendency to produce three or more shoots from each point instead of only one, and shapely well-furnished plants are promised.

Much cross pollenisation was done on R. AURICULATUM in 1921 and 1922. All done in 1921 failed to ripen. In 1922 two plants were taken in under glass, and flowered at the beginning of July. Everything available of good colour was put on them, but with poor success, except for the pollen of other DECORUM blood all of which have produced enormous pods now ripening.

The Rhododendron Bug, which made itself very apparent in 1921 and 1922 (R. "LUSCOMBE'S SCARLET," R. "FASTUOSUM FLORE PLENO" being the most affected) has been dealt with, apparently effectively, by removing all old leaf and spraying.

The promise of flower on nearly all rhododendrons at Bulstrode for 1923 is very poor indeed.

JOHN F. RAMSDEN.

Bulstrode, Bucks, November, 1922.

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NOTES ON PLANTS AT HEADFORT, CO. MEATH, IRELAND.

Among the collections of plants to be found in Ireland, that which has been got together by Lord Headfort, will I think rank high. There was a fair number of them already growing in the place, when some ten or twelve years ago he added largely to them and has gone on doing so ever since, so that they now represent very fully all that has been introduced into the country—especially those that have come to us in such superabundant quantities during the past quarter of a century. The river Blackwater flowing through the park widens out and encloses two islands, divided by a narrow stream; the smaller some ten acres in size, the other more than four times as extensive. On these two islands the larger part of the plants are grown, the former being generally devoted to conifers, the latter to the other classes of trees and shrubs. The climate of Ireland is as a rule suited to horticulture, and Co. Meath enjoys that advantage, not perhaps to the same extent as Co. Wicklow in respect to half-hardy subjects, nor can it compare with Cornwall; but conditions seem to be as favourable as those which prevail in Gloucestershire and probably in Sussex. All hardy and some of the half-hardy plants thrive luxuriantly, for the soil is deep and good, and though the park itself has lime in it, there are parts of it and also the two islands where there is none and where rhododendrons can be cultivated.

The collection of conifers is rich and well grouped in a pinetum; it is now full of interest as the trees show remarkable vigour, and the interest will increase as years roll on, and when the numerous specimens have had time to develop and to exhibit all their characteristics. Among the rarer sorts I observed fine plants of *Picea brachyphylla*, *P. complanata*, *P. likiangensis*, *P. Sargentiana*, *P. Watsoniana*, *P. Wilsonii*, and one that was received as *P. Morrisonicola*; *Abies Delavayi*, *A. faxoniana*, *A. Forrestii*, and *A. squamata*; *Pinus patula*, *P. Montezumæ* from Mexico, *P. densata*, and the handsome *P. yunnanensis*, *Keteleeria Davidii* seems quite hardy, so also *Dacrydium Franklinii*, and *Libocedrus tetragona* which I have not seen elsewhere. *Juniperus Cedrus* appears to be thriving, *Cupressus formosensis* grows luxuriantly, and even the less hardy *C. cashmeriana* flourishes. Among the Larches it may be sufficient to name *Larix Griffithii*, *L. kurilensis*, *L. Olgænsis* and *L. Principis Ruprechtii* and *Larix Potaninii*.

I was glad to see the bastard camphor, which goes by many names, but which I believe is properly called *Cinnamomum camphora*, growing quite satisfactorily, also the Californian *Dendromecon rigidum*, the Australian *Tollya heterophylla*, and the Chilean *Lomatia ferruginea*. But I was surprised to see *Genista monosperma* looking very healthy and at home against a wall, for this species has always failed with me though often tried in different positions. Bushes of *Osmanthus armata*, *O. Delavayi*, and of *O. suavis* flower very well, and indeed so do other shrubs too numerous to name. Attention may however be directed to *Pieris taiwanensis*, a very lovely plant for which a Certificate of Merit was awarded to Lord Headfort by the R.H.S. last summer, and to *Deutzia pulchra* which pleased me very greatly and which is one of the best of the genus.

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There is a fine Dogwood, an old plant, that seems to be *Cornus contraversa* and measures more than 35 feet high, and a specimen of *Sophora tetraptera*, some 12 feet high.

The trees are well represented, and a few acres of the park have been fenced off to form a special arboretum, containing many of the flowering kinds. But there are also good growing specimens of all the various sorts, including maples which give colour to the landscape when the leaf turns in autumn. The group of Southern Beeches has always interested me; I saw a young plant of *Nothofagus Dombeyi*, not yet put out, but nearly all the others are in their permanent quarters, including *N. Moorei* which is one of the rarest. I noticed too not only *Salix magnifica*, but also *S. hypoleuca* as yet a small plant with distinct red buds, and which promises to be an acquisition. As an indication of the mildness of the climate it should not be omitted that *Acacia linifolia* has been out some few years and seems to grow freely, several others have been tried but without permanent success. I sometimes think there is a confusion over these names; there are two (both hardy) at Rostrevor that look much alike and that came to me as *A. calamifolia* and *A. dietrichiana*, and they bear a strong resemblance to *A. linifolia*. But the hardiest according to my experience, is *A. melanoxyton*. *Eucalyptus urnigera* appears to have done best at Headfort.

There is a very large collection of rhododendrons, but as these are so well known by members of the Rhododendron Society, it is scarcely necessary to give a list of their names. I need only say that all the older kinds and most of the newer introductions are growing very well; also that there are a large number of seedlings coming up under identifying numbers, principally of Mr. Kingdon Ward's collecting in Burmah, and it will be extremely interesting to see what eventually they may be.

JOHN ROSS-OF-BLADENSBURG.

Rostrevor House, Rostrevor, Ireland, 25th October, 1922.

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The work of planting and trenching was continued during the winter and further consignments from Leonardslee and elsewhere carefully disposed of. In the spring and summer it was possible to see what effect the drought of last year had upon rhododendrons. Generally speaking, they seem to have survived remarkably well—only two or three plants dying during the winter.

The following seedling species and hybrids flowered at Exbury for the first time in 1922 :—

1. A curious hybrid of *HABROTRICHUM*, the hose-in-hose flower, of a pleasing pink colour.

2. R. "ASCOT BRILLIANT" × *ARBOREUM BLOOD RED*, raised by the late Sir E. Loder; the finest dark red hybrid I have yet seen and named by me "HARRY WHITE."

3. A curious emasculate rhododendron, evidently an *AUCKLANDII* cross, of a pleasing salmon-rose colour; raised by Gill, and purchased as an unflowered seedling some five years ago; named "COALITION" and given an Award of Merit at Chelsea, 23rd May, 1922.

4. 1045 Farrer, *CALOSTROTUM*; some dozen plants have flowered with the typical rose flower, but in the batch was one rather larger plant with a yellowish-white flower of exactly the same size and shape. This seems to be a stray which has got in amongst the other plants and I noticed several similar ones amongst seedlings which have not yet flowered this year. It appears to be a rather bigger growing plant than *CALOSTROTUM*, with the leaves larger than the typical plant and rather more hairy.

5. Three plants of a cross made between "B. DE BRUIN" and "GEORGE HARDY," of a quite pleasing rose-red shade, named "ALIX."

During the lecture at the R.H.S. on the occasion of the Rhododendron Show a great deal of discussion took place about the Rhododendron Fly, and as the rhododendrons at Inchmery, and later on at Exbury, suffered very severely from this it may be interesting to hear how it was overcome. A mixture of 4 lbs. Whale Oil Soap, 1 quart Bentley's Orchard Spray and 30 gallons soft water was prepared and early in May, when the young fly is appearing, the plants were thoroughly sprayed all over with this mixture. The plants were then watched and in every case when a suspicion of hatching was seen later in the summer a further application was given, but this practically never had to be done as the first spray seemed to be quite efficacious whether the plants were in the sun or in the shade. The plants have been carefully watched since and this year it was found necessary to spray again about three plants which had formerly been treated—otherwise, so far, the fly seems to have been completely killed. In spite of the order of the Board of Trade plants were received this year on which the fly developed and were treated in the same way and there seems no doubt that with the above treatment it is quite possible to keep the fly under control in the climate at Exbury. The

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plants which seem to take the fly worst are the CATAWBIENSE hybrids, which is not to be wondered at seeing that the fly is native of America and largely found on this species in its native habitat. Of general hybrids "FASTUOSUM FLORE PLENO" is the plant which seems to take it worst, but "PINK PEARL" and "BAGSHOT RUBY" are also offenders; "ASCOT BRILLIANT" is another rhododendron which seems to suffer very severely, and the whole health of the plant appears affected. As far as I am aware, the fly does not attack THOMSONII, and it seems curious that the two latter THOMSONII hybrids should be the two to feel the effect of the fly the most. So far as Hants is concerned, the whole outcry against the fly has been largely exaggerated, and the order seems to me to be quite unnecessary as it is so easy to cure the affected plant. An Inspector from the Board of Trade who came to Exbury this year and examined carefully all the plants treated could not find a single fly on any of the leaves of these plants and expressed himself completely satisfied with the result of the spraying. A much greater pest in my opinion is the beetle which eats holes out of the leaves of the Caucasian hybrids and which appears to have also taken a great liking to CALOPHYTUM.

LIONEL DE ROTHSCHILD.

Exbury, *October*, 1922.

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GLENBRANTER.

It may interest readers of these Notes to learn that an informal arrangement has been made between the Royal Botanic Garden, Edinburgh and the Forestry Commission, under which an area will be set aside in the forest of Glenbranter for the trial of exotic trees and shrubs. The Edinburgh Gardens have introduced, raised, and distributed, an immense number of new plants, but the number of these that can be grown without protection in the Garden itself is severely limited by its East coast climate and urban surroundings. For many years, and especially since Sir Isaac Bayley Balfour devoted himself to the study of rhododendrons and the Edinburgh Garden became the principal clearing house for this genus, the need of some place where the more delicate species could be grown and seen by students and the general public has been acutely felt, all the more since neither Kew nor Glasnevin can supply the desired climate.

The acquisition of large tracts of land by the State under the Forestry Act offered a chance which Sir Isaac was quick to seize. In October, 1920, he happened to meet Lord Lovat (the Chairman of the Forestry Commission), and Mr. J. D. Sutherland, Assistant Commissioner for Scotland, under the writer's roof, and the matter was settled in five minutes. It only remained to select a suitable site and this has now been found in Glenbranter.

This forest-to-be lies near the North-west corner of the long peninsula which divides the Firth of Clyde from Loch Fyne. It has a maritime climate with heavy rainfall and little frost. The glen is sheltered by hills which rise to over 2,000 feet, though its floor is less than 200 feet above sea level. It possesses all the charms to which a scene so confined can aspire, and these will be not a little heightened when the bare slopes are covered by groves of spruce and fir. The plantations, as at present planned, will extend to 4,500 acres and, unless the Government abandons its afforestation policy, may be considerably increased. Planting is at the rate of 400 acres a year. The site reserved is at a point where the Branter water meets a wider glen. Here the river falls in cataracts through a fine gorge sheltered by an oak wood with high canopy. The formation is mica-schist, which Professor W. W. Smith welcomes as the soil which in the Himalaya grows the best rhododendrons. In places it is overlaid with peat. Here and there the wood is broken by open glades scattered with oak and birch, and adjoining there is open ground for species requiring less shelter. It is difficult to imagine any setting more picturesque or more suitable for the purpose, and there is no question that there is here the opportunity of bringing together a collection which no public garden now existing in Europe could rival and of creating scenes of the greatest beauty.

It will be for Professor Smith to decide, and I hope to describe in these Notes, how the ground is to be utilised. It is enough to say here that the cost in the earlier years at least will be very small. The feu duty payable by the Forestry Commission works out at 1s. 6d. per acre. The oak on this part of the ground can with advantage be grown on for many years, so that the arrangement will

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scarcely affect the economy of the forest. The occasion will be seized to try the conifers newly imported from China and elsewhere in this favourable climate. In this way the work of the Forestry Department will be directly assisted. Certain old walls and paths facilitate the enterprise.

A word as to access. The long arms of the sea which cut into the West coast of Scotland make sites with the desired climate difficult of access except by sea. The journey to Glenbranter entails a sea passage from Greenock to Dunoon or one of the adjoining piers, and a motor drive of about 15 miles. But the journey is neither long nor tedious. It takes two hours from Glasgow. There is a good service of steamers. In summer motor charabancs plying between the Clyde piers and Strachur on Loch Fyne deposit the visitor within 20 minutes walk of the site. The drive along the shores of Loch Eck is one of the most charming in Scotland. Those who prefer to travel by sea can go by Loch Fyne and land at Strachur which is three miles from Glenbranter. Or the journey may be made all the way by road over the Rest pass. If Glenbranter House be turned into a hotel, for which there have been negotiations, visitors will be able to stay there and combine the study of rhododendrons with excellent sea trout fishing.

The only regret—a regret which no one will feel more deeply than his colleague and successor—is that Sir Isaac has not lived to see this thing through. It will none the less owe everything to him. His traditions will no doubt be carried on by Professor Smith and Mr. Harrow. The forest officers trained in Sir Isaac's class will grudge no trouble in a venture which he had so much at heart. Is it too much to hope that his name will be in some way associated with a place in which so much of his work may live and one of his favourite dreams be realised?

JOHN STIRLING-MAXWELL.

January, 1923.

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MISCELLANEOUS NOTES.

In the second week of June, 1921, I found three fair-sized hybrid rhododendrons smothered with the lace-wing* bug, *Stephanitis rhododendri*. As this was the pest's first appearance here I carefully removed every leaf—complete defoliation of each plant.

This had the effect—despite the drought, and the plants were not watered—of causing a strong healthy secondary growth, and every shoot had a nice plump flower bud. I thought this a great discovery and had hopes that this rather drastic treatment might persuade some of the obstinate species, like *LONGESQUAMATUM* and *PRZEWALSKII*, to flower. This year I experimented on a score of plants with disastrous results. I killed two, damaged sixteen—and two recovered—and I produced no flower bud.

What is the function of the corolla? I take it to be the advertising agent to attract those insects that are necessary for the fertilization of the stigma. If this is so, then as soon as fertilization has taken place it would have no *raison d'être* for further existence and should fade, and until fertilization has taken place it would have every *raison d'être* to remain as perfect as possible.

During the flowering season I selected 40 trusses of various hybrids and species and reduced these to two blooms each, as nearly as possible in the same stage of development, carefully removing the pistil of one, and a few days later fertilizing the pistil of the other. I expected to find the corolla of the flower with the pistil removed to remain in a perfect state longer than the corolla of the fertilized flower. But I could determine no result, both corollas coming to maturity and dying off at identically the same time.

E. H. WILDING.

October, 1922.

* See page 143.—C.C.E.

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INDIAN AND CHINESE SPECIES : A COMPARISON.

The question is sometimes asked, as to whether our gardens have really gained much from the addition of the Chinese rhododendrons to those which Hooker and others sent us in the middle of the last century from India. It is not an easy question to answer, because most of the Indians had shown their value by flowering forty to fifty years ago, and the majority of the Chinese, now in cultivation, have not done so yet, whilst those which have are in very few cases at their fullest development.

A mere roll of names conveys little ; but I have, with a view to reaching some facts to base an opinion upon, grouped the Indians in a rough series, such as ARGENTEUM, FALCONERI, HODGSONII, NIVEUM, WIGHTII, and then put the Chinese equivalents alongside. Measured in this way, the Indian contingents are in every case swamped by the number and variety of the Chinese forms.

An acquaintance with the living and the dried specimens will in many cases indicate the size and beauty of the foliage, and also that the great variety of colour in the flowers is more remarkable in the Chinese forms than in the Indian.

If we next take those tree forms, which are covered in India by ARBOREUM, they will have against them DELAVAYI and its forms, to meet the immense variation in the Indian ARBOREUM. This DELAVAYI seems quite capable of doing, though but few forms have flowered as yet.

After that, if we compare what we have had from BARBATUM, CAMPANULATUM, FULGENS, and HOOKERI, we have from China the large family of the IRRORATUMS, which has lately shown us in ERIOGYNUM a combination in colour of flower and foliage such as we have not known or guessed at before, with the promise of yet more astonishing things from PROPHANTUM, FACETUM, KYAWI, and others of the IRRORATUM series.

Then there is the whole of the extraordinary FORTUNEI series, stretching for hundreds of miles across China, giving scent, colour, vigour, and variety in the season of flowering, which covers nearly every month of the year ; for what we have come to know as DECORUM in its varieties, is in flower for eight months of the year in some places, whilst some forms withstand heat and drought as no other large flowered rhododendron seems able to do. Then the FORTUNEI set gives us AURICULATUM which starts to grow in July and flowers in August and September, having size of bloom, scent, and beauty of foliage in a remarkable measure. For this series there is no real parallel in the Indian lot as far as I know.

This is also the case if you take the MADDENII series, the LAPPONICUM, the LEPIDOTUM, and the TRIFLORUM, and measure them only by what we know to be in cultivation. But when you have done that, you have whole sets of series which as far as I know are not represented in India at all.

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Of these BEESIANUM already gives us 8 or 10 of that family.

CEPHALANTHUM	"	"	10 or 12	"
CAMPYLOGYNUM	"	"	14	"
DASYCLADUM	"	"	7	"
HÆMATODES	"	"	7	"
HELIOLEPIS	"	"	12	"
NERIIFLORUM	"	"	5	"
SALUENSE	"	"	7	"
SANGUINEUM	"	"	18	"
SELENSE	"	"	7	"
SOULIEI	"	"	7	"
STAMINEUM	"	"	7	"
TRICHOCLADUM	"	"	7	"
and others.				

I believe from what I have seen that amongst the TRIFLORUM, and particularly in the YUNNANENSE branch of the family, we shall get plants of a toughness and a readiness to meet the carelessness of the average man with a garden, which joined to their lovely colours and the freedom with which they will grow from seeds, cuttings, or layers, will make them known where other rhododendrons will hardly be seen at all.

As far as my own taste goes, I do think that in all the discoveries of the last thirty years, there is as yet no sign of a species which will eclipse R. AUCKLANDII, mature and at its best, but it does not do well in many places, and is not really hardy.

J. C. WILLIAMS.

Caerhays, *September*, 1922.

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NOTES ON CHINESE RHODODENDRONS.

The following notes on Chinese rhododendrons are a continuation of those written by me in Volume I., Numbers 1 and 5, and are, in most instances, impressions gained from plants growing in this garden.

R. FABERI. A slow grower forming a close habited bush, a rather tight truss of white flowers with small crimson blotch. I have not yet seen a sufficiently attractive form to lead me to suppose it will be a favourite.

R. FLORIBUNDUM. A rather loose-growing upright-habited plant; the beautiful grey young growth will undoubtedly recommend it to many people, but all the plants I have seen in flower had too much magenta to be welcome to everyone—however, I am told one or two very good forms have been flowered.*

R. DELAVAYI. With us seems more tender than ARBOREUM, the flower buds having suffered badly, but the almost cherry-crimson flowers are quite a welcome bit of colour.

R. SINOGRANDE has flowered in many gardens, from white to clear yellow with crimson blotch. I have seen some very fine trusses but the plants suffered most severely from the drought in 1921, when in many cases the leaves did not develop at all.

R. LACTEUM. I have only seen a badly damaged truss, but the colour was certainly a clear good yellow.

R. FICTOLACTEUM (Forrest) flowered here in 1922, and I thought that, while it was the same as Delavaye's "Lacteam,"† it was a better form. The flowers opened from a pink bud to a very pure white flower with crimson blotch. The truss was only of medium size.

R. DISCOLOR. I feel I must again refer to this plant, because it was so remarkably fine in so many gardens in 1922. It was covered with magnificent flowers, and I am sure it has gained a reputation as a really good plant for any rhododendron garden.

R. GLISCHRUM. I only saw one flower of this and fear I was disappointed, it was a rather tight magenta pink truss. It is well worth growing for its remarkable foliage, and it is quite likely that this flower was not typical of the species.

R. HABROTRICHUM. This also leans to a magenta shade in many cases, but I have seen some very pleasant pinks. I do not think it is an easy plant as I often see brown tips to the leaves.

R. STRIGILLOSUM. I hear of crimson forms, but have not seen one, my plants that have flowered have always been white with small crimson spot when open.

* Notably by Colonel Clarke, at Borde Hill.—C.C.E.

† I understand that Delavaye sent home seed of a plant believed to be LACTEUM, of this seed three plants were raised: one of them Vilmorin grew, one went to South Lodge, Horsham, and one to Kilmacurragh. They all proved to be FICTOLACTEUM.—P.D.W.

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R. DICHROANTHUM, a dwarf bush : the orange form with its tinge of scarlet is quite one of the most remarkable bits of colour I have seen. The bright calyx is the better seen owing to the absence of truss.

R. REPENS. Is a gem, it trails like ivy and produces bells of blood-red. I believe it to be difficult, but well worth any extra attention that may be necessary.

R. ADENOPODUM. This plant does not seem happy everywhere as it seems usually to attract a fungus on the leaf. I saw a plant this year in flower that was quite lovely, the contrast between the grey leaf, pale rose flowers, and pale carmine buds was very fascinating.

R. ERIOGYNUM. Made a great impression on me when I first saw it in flower. The broad truss is medium to large in size, the colour an orange-scarlet rather than a crimson-scarlet, and the contrast between it and the wonderful dark green leaf makes me think it will prove to be a rhododendron of the highest class. I saw it in perfect health in Sussex, but it had suffered from frost elsewhere. **R. FACETUM** (1022 Farrer) seems to be very near it.

R. CEPHALANTHUM, one of the small mountain species. With me it is slower and rather more difficult than its relatives, but its white flowers make it a very suitable companion for them.

In conclusion, I should be glad to hear from anyone who has flowered a rosy-red form of **R. AURICULATUM** as described by Mr. E. H. Wilson. I have a plant, with a crimson blotch in the tube of the flower, but have not seen a pink one.

P. D. WILLIAMS.

Lanarth, Cornwall, *December, 1922.*

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RHODODENDRON BUG: A DIGEST OF AN ARTICLE IN "THE JOURNAL OF THE MINISTRY OF AGRICULTURE."

"THE JOURNAL OF THE MINISTRY OF AGRICULTURE" (Vol. XXIX., No. 6), published in September, 1922, contains (p. 555) an article upon the Rhododendron Bug. This bug (*Leptobyrza* (*Stephanitis*) *rhododendri*, Horv.), is also known as R. Fly and Lace Fly, but is not a fly nor should it be confused with that beneficial insect the Lace Wing. The Rhododendron Bug was first observed in this country in 1910, but was probably introduced some years earlier, and it seems likely that it is a native of the Eastern States of North America.

The obvious signs of injury from the attacks of this bug are the presence of chocolate-brown spots on the underside of the leaf and a pale "freckling" on the upper side: the bugs themselves live on the undersides of the leaves, and a brown gummy secretion is often present owing to "bleeding" from the puncture holes made by the insects. The appearance of the adult bug is in colour greyish-white, while the spaces between the veins on the wings are shining and transparent like glass; the body is black and for the most part hidden by the wings which form a complete shield over the "back."

The bugs, which are very sluggish, are full grown during July, and may then be found on the undersides of the leaves.

The female lays her eggs within, but at the side of the midrib of the leaf and several eggs are usually placed together. The bugs die by the end of summer, and the eggs remain through the winter and hatch early in the following summer. The young bug is a minute, rather spiny, black and grey insect, without wings; and after three more stages assumes its adult form.

It would seem probable that the bug flies from plant to plant under some special weather conditions which may occur on one or two days only during the year.

In U.S.A., Rhododendron Bugs are killed by spraying them with such an insecticide as soap and water; the chief difficulty consists in wetting thoroughly the undersides of the leaves, and, to avoid injury to the leaves, this work should be done on dull days. A simple soap wash is made by dissolving 1 lb. of good soft soap in 10 gallons of water: a nicotine wash is more effective and is made by adding 1 fluid ounce of 95-98 per cent. nicotine to each 10 gallons of the above soap wash.*

As the eggs are laid on the leaves it is clear that if the latter are all removed and burnt during the winter, the insects should be destroyed: hand-picking in summer is quite as effective and, as the signs of injury are so obvious, it is not a difficult matter to remove and destroy the infested leaves.

Excellent illustrations accompany the article.

C.C.E.

* Other cultivators have found the following mixture very effective:—1 pint of Bentley's Insecticide (J. Bentley, Ltd., Barrow-on-Humber), two handfuls of soft soap, and two gallons of water.—C.C.E.



