CAMELLIAS AND MAGNOLIAS

Conference Report

1950

Colour Photo, J. E. Downward

MAGNOLIA SARGENTIANA ROBUSTA AT BODNANT

CAMELLIAS AND MAGNOLIAS

Report of The Conference held by The Royal Horticultural Society April 4-5, 1950

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NOTE BY THE EDITOR

The Council of the Society wishes to point out that in the following papers the authors alone are responsible for the names they have adopted.

CAMELLIA & MAGNOLIA CONFERENCE—1950

THE Council of the Royal Horticultural Society decided to hold the Camellia and Magnolia Conference on April 4 and 5, 1950. On each of these days Camellia and Magnolia experts gave Papers in the Lecture Room of the Society's New Hall, Greycoat Street, particulars of which are given below. The papers were circulated beforehand and taken as read, each lecturer speaking shortly on his subject and illustrating it with lantern slides, the audience then being invited to discuss it. A two-day Show was held concurrently with the Conference, in which displays of Camellias and Magnolias were a special feature and at which there was an exhibit of Camellia and Magnolia literature. A special report of the Show is given later in this book.

On March 31 and April 1 there were day excursions to outstanding Camellia and Magnolia Gardens in the vicinity of London and to the Society's Gardens at Wisley; and a six-day tour by motor-coach was arranged, starting on March 21, and visiting Cornish gardens, renowned for their collections of Camellias and Magnolias. A dinner was held in the Restaurant of the New Hall on the evening of April 4 and after dinner brief speeches were made by LORD ABERCONWAY, C.B.E., LL.D., V.M.H., the Chairman, DR. H. HAROLD HUME of the United States of America, MR. RALPH S. PEER of Los Angeles, U.S.A. and PROF. E. G. WATERHOUSE of Sydney, Australia.

PAPERS GIVEN AT THE CONFERENCE

Tuesday, April 4, 1950

2.30 P.M. "Camellias in Cornish Gardens": lantern slides with a commentary by MR. G. H. JOHNSTONE, O.B.E.

"The varieties of *Camellia reticulata* in Yunnan" by MR. T. T. YÜ. (A brief summary only with lantern slides was given).

followed by—

"Forms of *Camellia japonica*" by DR. H. HAROLD HUME, President-Emeritus of the American Camellia Society.

Wednesday, April 5, 1950

10.30 A.M. "Propagation of Camellias and Magnolias" by MR. H. G. HILLIER.

followed by—

"Survey of the Genus Magnolia together with Michelia and Manglietia" by MR. J. E. DANDY, M.A., F.L.S., Department of Botany, British Museum (Natural History).

2.30 P.M. "Chinese Magnolias in Cultivation" by MR. G. H. JOHNSTONE, O.B.E.

followed by—

"Camellia Species" by MR. J. R. SEALY, B.SC., F.L.S., Royal Botanic Gardens, Kew.

SIX-DAY TOUR BY MOTOR COACH VISITING CORNISH GARDENS RENOWNED FOR THEIR COLLECTIONS OF CAMELLIAS AND MAGNOLIAS

SATURDAY, MARCH 25 London—Falmouth (by train).

SUNDAY, MARCH 26 Visit to Trewithen, Grampound Road (property of G. H. JOHNSTONE, ESQ., O.B.E.) and to Scorrier House, Scorrier (property of MRS. F. WILLIAMS).

MONDAY, MARCH 27 Visit to Tregothnan, Truro (property of VISCOUNT FALMOUTH) and to Heligan, St. Austell (property of CMDR. H. H. THOMAS).

TUESDAY, MARCH 28 Visit to the Truro Flower Show and to Caerhays Castle, Gorran (property of CHARLES WILLIAMS, ESQ., M.P.).

WEDNESDAY, MARCH 29 Visit to Lanarth, St. Keverne (property of M. P. WILLIAMS, ESQ., M.B.E.), to Trewidden, Buryas Bridge, Penzance (property of MRS. CHARLES WILLIAMS), and to Trengwainton, Penzance (property of COL. E. W. H. BOLITHO, D.S.O.).

THURSDAY, MARCH 30 Return to London (by train).

DAY EXCURSIONS

FRIDAY, MARCH 31 Visit to Tittenhurst, Sunninghill (property of MRS. D. MOSENTHAL) . . . to the Royal Horticultural Society's Gardens, Wisley . . . and to the Royal Botanic Gardens, Kew.

SATURDAY, APRIL 1 Visit to Nymans, Handcross (property of LT.-COL. L. C. R. MESSEL, O.B.E., F.L.S., V.M.H.) . . . and to Borde Hill, Haywards Heath (property of COL. R. S. CLARKE, M.P.).

THE CONFERENCE

OPENING ADDRESS

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

(*President of The Royal Horticultural Society*)

The Chairman. Ladies and Gentlemen, the Council of the Royal Horticultural Society has asked me to preside at this afternoon's papers read in connection with the Camellia and Magnolia Conference.

We have these Conferences, as you know, periodically. They serve to focus the interest of Fellows and the public on certain distinguished and outstanding groups of plants. The fact that they have centred the interest of the public on this occasion on Camellias and Magnolias can be seen by anyone who visits the Show in our large hall beneath this room. There never has been in our history a better display both of Camellias and of Magnolias than has been put before you in this hall, both by amateurs and by our most skilled nurserymen.

We want to focus the notice of our Fellows and the public not only on a display of beautiful flowers but on the more scientific part of the botany and classification of the plants in question. We have got together a number of skilled cultivators and botanists to give you their views, and the views of no one cultivator are more valuable than those of our friend MR. GEORGE JOHNSTONE of Trewithen who is here to read the first paper to you.

Now, there are two kinds of Camellias. There is the old *C. japonica*, which was the most vigorous sporter. It sported into all kinds of different colours and sizes. These sports were developed some hundred years ago, and since that time there has been great confusion in their nomenclature. Americans in the Southern States are taking up the culture of the Camellia in the most enthusiastic way. Their climate encourages the growth of that plant out of doors, and it is a leading feature in all the gardens of that district. We are fortunate in having here to-day an American friend who is a leading light on Camellias in the Southern States and he has expressed himself in the most unmeasured terms of congratulation on our Show which he has seen this morning—and from one who is used to American Shows that is very high praise indeed. Now the *C. japonica* is the one which is grown in America, and which has been grown in this country for generations, but in the last few years MR. J. C.

WILLIAMS of Caerhays obtained the services of an explorer whom he engaged to go out to China to find him plants of all kinds. As a result he introduced *C. saluenensis*, and he not only produced that Camellia, a good Camellia, though not perhaps a very remarkable one, but he crossed that Camellia with more than one form I think of the old Japanese Camellia, and he produced a race of plants which personally—it is only a personal opinion—I think were one of the best introductions of flowering shrubs that our gardens have ever had. They are wonderful semi-double pinks, in a good deal of variety. They have a beautiful habit, they grow easily, anyone can grow them; they bury their dead in a most obliging way. You know the ordinary Camellia has lovely live flowers and then there are dead and brown ones, all withered, which have to be picked off every morning if you want to have your garden really smart—which we cannot all do nowadays. These other Camellias, as soon as the flower is dead, drop it off on to the ground. Wonderful! Not only that, but they have an abundance of flowers, to which the ordinary Japanese Camellia, free-flowering as it is, is quite a stranger. I reckon that they have four or five times the number of flowers on them per square yard, or however you count it, as does the old *C. japonica*. The only drawback to these new Camellias is that you almost get tired of them before they cease flowering, they go on so long. All the buds are quite hardy to the biggest frost and never fall off before they open.

MR. GEORGE JOHNSTONE is a great authority, the greatest authority, I think, on these new Camellias. He has studied them very closely with our friend MR. CHARLES WILLIAMS of Caerhays and he knows a great deal about them, and I hope that, talking of Camellias in Cornwall, he will devote some time at any rate to this new race.

CAMELLIAS IN CORNISH GARDENS

GEORGE H. JOHNSTONE, O.B.E.

(LORD ABERCONWAY, C.B.E., LL.D., V.M.H., *in the Chair*)

Mr. G. H. Johnstone. My Lord President, Ladies and Gentlemen, I should like, if I may, to preface the remarks which I am going to make—which will be very few because we have a good many slides to see—with a word to let you know that this talk could only have been made possible by the kind help and co-operation of DR. STEWART whose slides you will presently see. You may recognize some of the places you have seen.

LORD ABERCONWAY, who introduced this subject to-day, referred to the old Camellias of a generation or two generations ago, and it is only in the old gardens, the oldest gardens of Cornwall, that you will have to seek for what I call "Grandmamma's Camellias." Their growth was before the day when the foundations were laid of the great gardens of Lanarth and Caerhays; those came with a later generation, as our President has told you, and opened the door for the work which was done by FORREST, WILSON and other explorers who started to supply the species of Camellia which the old gardens have not got. Some of you will have visited Scorrier last week and will have seen some of the old Camellias there: one of them, I believe a form of *C. japonica*, is said to be 35 feet across, pinned to a wall. From there you went on, I think, to Caerhays and from there to Lanarth, and there you would see the collections of Camellias got together by introduction from China in the form of seeds and by the cultivation and hybridization which MR. J. C. WILLIAMS and MR. P. D. WILLIAMS used to practise. I suppose it would be fair to say that of all workers in plants and specialists in plants there have never been more intensive workers than MR. J. C. WILLIAMS and MR. P. D. WILLIAMS, the cousins who lived respectively at Caerhays and at Lanarth.

(Lantern slides followed with a commentary by MR. G. H. JOHNSTONE on each slide. Unfortunately it has not been possible to reproduce this.)

DISCUSSION

The Chairman. Ladies and Gentlemen, we have listened to a most interesting talk. It was not a paper; it came from a man whose mind is saturated with the knowledge of these plants, and was certainly not one about which it could be said that "an extempore speech is not worth the paper it is written on!" MR. JOHNSTONE has it all in his mind and can tell it to us.

We are also greatly indebted to DR. STEWART for the admirable colour photographs from which the slides were made. It is a very difficult thing indeed to photograph garden plants like Rhododendrons and Magnolias and DR. STEWART has achieved a great success. We are grateful to him for coming here to-day, and I hope he will find all his patients much better for having a day free from the doctor!

I would like to ask you to thank MR. JOHNSTONE and DR. STEWART for their kindness in giving us this most interesting dissertation.

(The vote of thanks to MR. JOHNSTONE and DR. STEWART proposed from the Chair was carried with acclamation.)

CAMELLIA RETICULATA AND ITS GARDEN VARIETIES

TE-TSUN YÜ

(LORD ABERCONWAY, C.B.E. LL.D. V.M.H. *in the Chair*)

DURING the past fifty years, the rich alpine flora of Yunnan, the south-western province of China, has become well-known to horticulturalists. However, there are still many plants from Yunnan that should be more widely known, and this applies not only to the naturally occurring species but also to the garden forms that have long been cultivated by Chinese gardeners. There are, for instance, numerous garden varieties of *Camellia reticulata* that are known neither in this country nor in America. The purpose of this note is to introduce these Chinese garden varieties to horticulturists in other countries. An outline is given of the history of *C. reticulata* in cultivation, a description of the important varieties grown in Yunnan, and a short account of the methods of propagation and cultivation used by the local gardeners.

C. reticulata was described by LINDLEY in 1827, and figured in the *Botanical Register*, t. 1078. The type specimen was a semi-double form which was introduced by J. D. PARKS for the Horticultural Society of London in 1824. Before this introduction, CAPT. R. RAWES had also brought a garden form of this Camellia from China for his friend, T. C. PALMER, in whose garden at Bromley, Kent, it flowered in 1826. Both introductions were plants with semi-double flowers from Chinese gardens and they might well be the parents of those now occasionally cultivated in the western gardens.

For more than a century, the species was known only in the semi-double flowered garden form. In 1935, however, J. R. SEALY published a figure in *Curtis's Botanical Magazine*, t. 9397, of a wild form which was raised from seeds collected in the hills around Tengyueh in western Yunnan by GEORGE FORREST in 1924. This plant was cultivated by J. C. WILLIAMS of Caerhays Castle, Cornwall, where it began to flower in March 1932. This is one of the few examples in plant taxonomy where the original description of the species was based on a garden form and not on the wild plant. Undoubtedly, Yunnan is the native home of *C. reticulata* and its varieties have been cultivated there for centuries by the local gardeners.

In this country, two single forms of *C. reticulata*, raised from FORREST'S seeds, have received Awards of Merit from the Royal Horticultural Society. These are the pink form from Exbury and the larger-flowered form from Caerhays. In addition, two hybrids have recently been raised. COL. STEPHENSON-CLARKE made a cross between *C. saluenensis* and the semi-double flowered *C. reticulata* which produced a delightful wavy petaled and semi-double flowered plant named 'Salutation' (see *Journ. Roy. Hort. Soc.*, **63** (1938), 262); while *C. saluenensis* crossed with the single *C. reticulata* produced *C.* × *Inamorata* which has single rose-pink flowers 3 to 4 inches in diameter. (See *Journ. Roy. Hort. Soc.*, **73** (1948), 283.)

The Yunnan forms of *C. reticulata* differ from each other in flower and foliage as well as in habit and stature. The flowers may be single, semi-double or fully double; while the shape of the petals shows so wide a variation that some flowers resemble Paeonies and others resemble Roses. The colour ranges from pale pink to dark crimson and there are also bicoloured forms. The leaf shape varies from narrow lanceolate to broad ovate. Some varieties have a dwarf bushy habit, others are of medium height, and some are trees becoming eventually 50 feet tall.

The early history of the cultivation of this Camellia in China is rather obscure. The *Cha-Hua-Pu* which is a genealogical record of Chinese Camellias written by P. CHAO, a literary naturalist of the eleventh century, listed 72 varieties. Unfortunately, the original work was lost, but reference to it was made in the *Sze-Ku-Ti-Yao*, a complete list of Chinese literature, which was compiled and published early in the Manchu Dynasty. The Chinese name of *C. reticulata* is *Nan-Shan-Cha* which means Camellia of the south mountain. This name was included in the important herbal, *Pen-Tso-Kon-Mou*, a treatise on Chinese materia medica, written by S. C. LEE in 1590. A book entitled *Chi-Wu-Min-Shi-Tu-Kao* or an illustrated study of Chinese plants and their literature, written by C. T. WU in 1848 gave a full description and some critical notes on this plant. Another semi-monographic note of importance is the *Tien-Nan-Cha-Hua-Hsio-Chi*, a synopsis of Yunnan Camellias which was written by a Yunnan scholar, S. M. FANG. He included in this work a collection of poems and songs on Camellias from the early Ming Dynasty to the beginning of the Republic, and he gave a short literary description of the 72 kinds of Camellias grown in local gardens.

The Yunnanese are so fond of this Camellia that they have planted it extensively in gardens and parks, and they also use it as a pot plant in almost every courtyard. There are several very

big trees, more than 300 years old, growing in the temple courtyards near Kunming, the capital of Yunnan province. Since the Camellias flower in spring at the time of the Chinese New Year, which is a popular season for making excursions to the countryside, it is natural that the flowers should have become an object of great admiration by the local people. Their love of the flower has resulted in the development and preservation of the superior varieties, and its culture is the favourite amusement of the nobility, the literary, and the rich. Consequently it is the most important plant in the local horticultural trade. The beautiful evergreen foliage with red flowers is regarded by the Chinese as a sign of fortune and wealth, and in olden times several pairs of Camellia plants were given as a portion of marriage dowries. During the Chinese New Year, a vase of red Camellia flowers is one of the offerings every family presented to its ancestors. In the art and literature of Yunnan, this Camellia also occupies a prominent place and it has appropriately become the floral emblem of the province.

The author visited many gardens and temples in Yunnan that were famed for their Camellia culture. Unfortunately he failed to find as many varieties as were cited in the old literature. These old literary descriptions are inadequate for diagnostic purposes and the characteristics that are mentioned for separating the varieties are in many cases so slight that it is impossible to distinguish the 72 distinct kinds. Moreover, some of these 72 names used in the present local horticultural trade belong to the forms of *C. japonica* which are not so ornamental and are only used as stocks on which the *C. reticulata* varieties are grafted.

However, 18 distinct varieties have been identified by the author, and an analytical key and a full description of these varieties are given below. It is very difficult to translate the names of these garden varieties from the Chinese into suitable English varietal names and at the same time to retain their descriptiveness. Therefore the Chinese common names have been given along with English equivalents.

DESCRIPTION OF THE GARDEN VARIETIES

The flowering periods of these Camellias are naturally affected each spring by the weather, but the order of blooming is always constant out of doors in Kunming and the flowering time there of each variety is given below. The names of the colours are based on the *Horticultural Colour Chart* (H.C.C.), published in 1938–41 by the Royal Horticultural Society.

1. *Tsueban or Rose Flower*

Leaves concave, elliptic to elliptic-ovate, acute at apex, rounded to broad cuneate at base, dark green and prominently reticulate above, bright yellowish-green beneath, 2–2½ inches long, 1–2 inches broad. Flowers light carmine (H.C.C. 21/3), formal double, 3–4 inches across. Petals in 6–7 whorls, each with 5 petals, broadly obovate, flat, emarginate at apex, cuneate at base, gradually diminishing in size towards the centre; stamens very few, pistil undeveloped. (Fig. 4.)

This is an early flowering variety of the rosiform flowered group. It is highly ornamental on account of its beautiful light carmine-pink flowers which are borne in great profusion. Its petals are flat, fleshy and regularly arranged in closely imbricate whorls, which resemble those of *Camellia japonica* var. *Pink Perfection*. Another Chinese name for this plant is *Tungtsaoban* or *Pith-paper Petal*, which aptly describes their texture. The flowering season is from January to March.

2. *Sungtzelin* or *Pine Cone*

Leaves oblong-ovate to oblong-obovate, acute to acuminate at apex, cuneate at base, dark green and reticulate above, bright yellowish-green beneath, 2½–3 inches long, 1–1½ inches broad. Flowers deep scarlet (H.C.C. 19), formal double, 4–5 inches across. Petals in 8–10 whorls, orbicular, flat, emarginate or slightly lobed at apex, rounded to broad cuneate at base, gradually reduced in size toward the centre. Stamens very few, pistil rudimentary. (Figs. 2 and 5.)

This plant is closely related to the variety *Tsueban*, but differs in having larger leaves, larger petals and scarlet red flowers. The petals are arranged almost in the same way as the scales of a pine cone, hence its Chinese name. An old tree of this variety in the temple of Hsishan at Kunming is fully 30 feet tall and has a trunk 20 inches in diameter. The flowering season extends from the middle of January to the end of February.

3. *Tzepao* or *Purple Gown*

Leaves broad ovate to oblong-ovate, acuminate at apex, broad cuneate at base, 2½–3½ inches long, 1½–2 inches broad. Flowers deep oriental red (H.C.C. 819), dark purple when unfolding, formal double, 5–6½ inches across. Petals orbicular to obovate, flat, emarginate or slightly lobed at apex, 6–7 whorls, mostly imbricately arranged. Stamens nearly all petaloid, often divided into 5–6 groups and connate at the base with the small petals. Pistil green and rudimentary, style short and flattened, sometimes connate with the innermost petals.

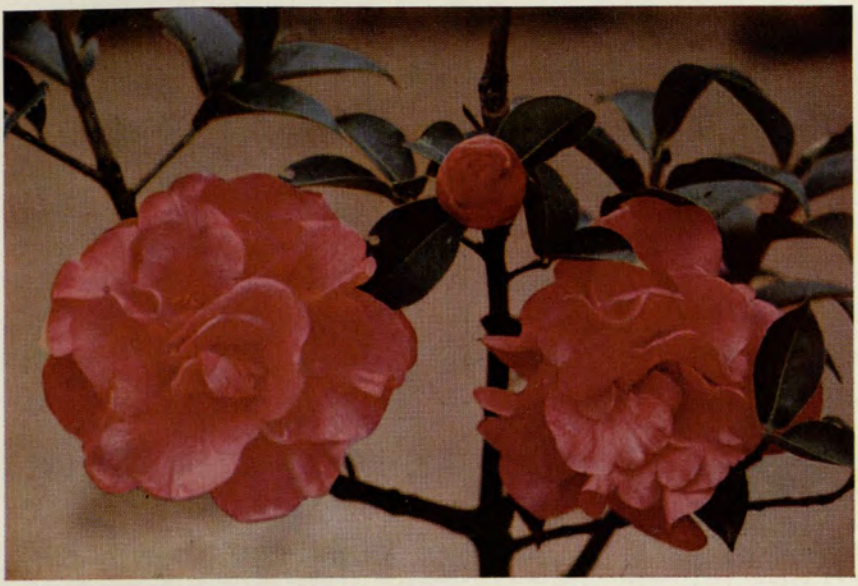


FIG. 1—*Camellia reticulata* var. 'Hoyehtiechih' or 'Thick Leaf Butterfly'
(See p. 20)

VARIETIES OF *CAMELLIA RETICULATA* IN YUNNAN

FIG. 2—*Camellia reticulata* var. 'Sungtzelin' or 'Pine Cone' (See p. 16)

VARIETIES OF *CAMELLIA RETICULATA* IN YUNNAN

FIG. 3—*Camellia reticulata* var. 'Tamarnao' or 'Large Cornelian' (See p. 22)

FIG. 4—*Camellia reticulata* var. 'Tsueban' or 'Rose Flower' (See p. 16)

This variety is remarkable for the immense size of its flowers which are intense oriental red. Some forms have white stripes and are known as *Tzepao-yutai* meaning purple gown with white tape. They are rare and might be treated as a different variety. The flowering season is from mid January to March.

4. *Hentienko* or *The Dwarf*

Leaves ovate to elliptic-ovate, short acuminate at apex, rounded to broad cuneate at base, sometimes with a notch on the margin, dark green and reticulate above, yellowish-green beneath, 2–3 inches long, 1½–2 inches broad. Flowers light carmine (H.C.C. 21/2), margin of petals shaded white, formal double, 3½–4½ inches across. Petals in 7–8 whorls, oblong-obovate, emarginate or slightly lobed at apex, attenuate at base, the inner whorls much smaller than the outer. Stamens and pistil rudimentary. (Fig. 7.)

This variety is one of the most beautiful of the pink flowered Camellias. It is characterized by its very full double flowers which range from light carmine to geranium pink and are tinged with white along the margins of the petals. The flowering season is very late, from March to April, usually closing the flowering season of all the Camellias in Kunming. Being a rather slow grower of dwarf habit, it is appropriately called *Hentienko* meaning jealous of the height of the sky. It is very rare and valuable and is usually found in the gardens of the wealthy.

5. *Hsiaokueiyeh* or *Small Osmanthus Leaf*

Leaves lanceolate, concave, long acuminate at apex, cuneate at base, 2–3 inches long, ⅔–1 inch broad. Flowers light carmine (H.C.C 21/3), sometimes marked with white stripes on the inner petals, double, 3½–4 inches across. Petals 5–6 whorls, oblong-obovate, flat, emarginate or slightly lobed at apex, attenuate at base, loosely arranged. Stamens many, filaments short, sometimes petaloid and narrow lanceolate. Pistil rudimentary. (Fig. 11.)

This variety can easily be distinguished by its very narrow lanceolate leaves and small carmine flowers. The leaf shape is very like *Osmanthus fragrans*, hence its Chinese name. The flowering season is rather late, generally in February and March.

6. *Takeiyeh* or *Large Osmanthus Leaf*

Leaves ovate-lanceolate or obovate-lanceolate, slightly concave, acuminate at apex, cuneate to rounded at base, 2½–3 inches long, 1–1½ inches broad. Flowers deep carmine (H.C.C. 21/2), double, 3½–4½ inches across. Petals in 4–5 whorls, oblong-obovate, flat or wavy, emarginate or slightly lobed at apex,

attenuate at base. Stamens no more than 20, divided into 3–4 groups, adnate to the inner petals. Pistil with broadened and irregularly branched style.

This variety is characterized by its ovate-lanceolate leaves and medium-sized carmine pink flowers. It flowers during February and March.

7. *Tayinhung* or *Large Pink*

Leaves ovate to elliptic-ovate, acuminate at apex, rounded at base, dark green and slightly reticulate above, bright green and pubescent on midrib beneath, 2½–3 inches long, 1–1½ inches broad. Flowers bright spinel pink (H.C.C. 625/1), semi-double, 4–4½ inches across. Petals in 3–4 whorls, broad obovate, emarginate or slightly lobed at apex, loosely arranged. Stamens many, filaments united at base. Pistil green, with pubescent ovary.

In view of the simple floral structure and the great fertility of the stamens and pistil, this variety is undoubtedly a primitive form of the spinel pink group. It begins to flower in January and continues until March. It is very robust, flowers freely, and occasionally sets seeds.

8. *Mayehyinhung* or *Reticulate Leaf Pink*

Leaves oblong-ovate to ovate-lanceolate, long acuminate at apex, cuneate at base, dark green and prominently reticulate above, bright yellowish-green beneath, 3–4 inches long, 1–1½ inches broad. Flowers bright spinel pink (H.C.C. 625/2), with red veins, double, 3½–4 inches across. Petals 3–4 whorls, obovate, emarginate and slightly lobed at apex, broad cuneate at base, loosely arranged. Stamens many, divided into 2–3 groups around the green and pubescent pistil. (Fig. 8.)

This plant is closely akin to the *Large Pink* variety, but differs in the narrow and prominently reticulate leaves, and in the lighter spinel pink flowers. The flowering season is from January to March.

9. *Liuyehyinhung* or *Willow Leaf Pink*

Leaves oblong-ovate to ovate-lanceolate, acuminate at apex, cuneate at base, dull green and slightly reticulate above, yellowish and glabrous beneath, 3–4 inches long, 1–1½ inches broad. Flowers light spinel-pink (H.C.C. 625–3), double, 4½–5 inches across. Petals in 3–4 whorls, oblong-obovate, emarginate or slightly lobed at apex, attenuate at base, loosely arranged. Stamens many, divided into 5 fascicles around the pistil. Pistil pale green with pubescent ovary. (Fig. 9.)

This is a very attractive variety on account of its light spinel pink flowers which contrast with the deep green willow-like leaves on the spreading and pendulous branches. It is closely related to the variety *Mayehyinhung*, but differs in the slightly reticulate leaves with short acuminate apex and in the lighter spinel pink flowers. In the temple of Helungtan, north of Kunming, there is a large tree with a trunk 14 inches in diameter, and during the Chinese New Year it bears a thousand flowers. The flowering season is from February to March.

10. *Tataohung* or *Large Crimson*

Leaves broad ovate, long acuminate, rounded to nearly truncate at base, sharply serrulate, 3–4 inches long, 1½–2 inches broad. Flowers bright crimson (H.C.C. 22), semi-double, 4–4½ inches across. Petals in 2–3 whorls, the outer whorls flat, the inner wavy, broad obovate, emarginate or slightly lobed at apex, broad cuneate at base, sometimes having two petals united at base. Stamens many, divided into 5–6 groups, around the pistil. Pistil pale green, with 4-branched style and pubescent ovary.

This variety seems to be a primitive form of the double crimson-red Camellia on account of its relatively simple floral structure and the greater fertility of stamens and pistil which set seeds freely. It is in flower during January and February.

11. *Tsaotaohung* or *Early Crimson*

Leaves elliptic to elliptic-ovate, long acuminate at apex, cuneate or rounded at base, 2½–3½ inches long, 1½–2 inches broad. Flowers bright crimson (H.C.C. 22/1), semi-double, 4–5 inches across. Petals in 3–4 whorls, the outer whorl nearly flat, the inner whorls wavy, concave or convex, sometimes two petals united at base. Stamens many, divided by the curved petals into 8–10 fascicles. Pistil with 3–4 yellowish-white styles and pubescent green ovary.

This variety is chiefly valuable for its early flowers which are produced one to two months earlier than the other varieties. It flowers in December and January and it is used in floral decorations during Christmas and the Gregorian New Year. The semi-double garden form which is cultivated in this country belongs here. It is possible that the type specimen from which LINDLEY originally described *C. reticulata* might also belong here. Although in the British Isles the flowering season is later than in Yunnan, this is due to the different climate.

12. *Moutancha* or *Paeony Flower*

Leaves oblong-ovate, long acuminate, cuneate at base, sharply serrulate, very prominently reticulate on the upper surface,

3–3½ inches long, 1½ inches broad. Flowers light crimson to bright carmine (H.C.C. 22/1–22/3), marked with white veins and stripes on the inner petals, formal double, 4–5 inches across. The petals are in 5–6 whorls, the outer whorls orbicular-ovate, flat, rounded or slightly emarginate at apex, rounded at base; the inner whorls oblong-ovate, wavy and curved, sometimes 2–3 petals united at base, emarginate or lobed at apex, attenuate at base. Stamens many in 2–3 whorls around the pistil. Pistil green with irregularly branched style and pubescent ovary. (Fig. 10.)

This is one of the late varieties which flower from February to March. Its light crimson to bright carmine flowers surpass in beauty all the other pink Camellias. The Chinese word *Moutan*, which is also the name of the tree paeony, means wealth and dignity.

13. *Hoyehtiechih* or *Thick Leaf Butterfly*

Leaves elliptic-ovate to oblong-ovate, acuminate at apex, cuneate at base, sharply serrulate, 3–4 inches long, 1½–2 inches broad. Flowers light crimson (H.C.C. 22/2), double, 4–5 inches across. Petals in 3–4 whorls, the outer two whorls flat, the inner wavy, curved and folding lengthwise. Stamens many, divided into 7–8 groups, connate with the curved petals at base. Pistil pale green with 3–5 broad styles. (Figs. 1 and 6.)

This variety is characterized by its wavy and curved petals which resemble the wing of a butterfly, hence the name *Tiechih*. There is an old tree in the temple of Chintien, east of Kunming, fully 30 feet high and with a trunk 24 inches in diameter. It is said that this Camellia was planted when the temple was built almost 300 years ago. It flowers from February to March.

14. *Mayehtiechih* or *Reticulate Leaf Butterfly*

Leaves oblong-ovate, long acuminate at apex, rounded or broad cuneate at base, prominently reticulate and dark green above, bright green and glabrous beneath, 2½–3½ inches long, 1–1½ inches broad. Flowers crimson (H.C.C. 22/2), double, about 4 inches across. Petals in 6 whorls, outer whorls obovate, inner spathulate, all wavy and curved, deeply emarginate at apex, broad cuneate at base. Stamens nearly all modified into petals, pistil undeveloped.

There is a close resemblance between this variety and the preceding one, but the present variety differs by its prominently reticulate leaves and fully double flowers with very few stamens and rudimentary pistil. It flowers from February to March, a little later than the preceding variety.

KEY TO THE GARDEN VARIETIES OF *CAMELLIA RETICULATA*

A. Flowers rosiform, formal double; petals all flat, regularly and imbricately arranged, 6–9 whorls; stamens few, less than 20.
  B. Leaves concave; flowers light carmine, 3–4 inches across . . . . . 1. *Tsueban* (*Rose Flower*)
  BB. Leaves flat.
    C. Flowers deep scarlet, 4–5 inches across . . . . . 2. *Sungtzelin* (*Pine Cone*)
    CC. Flowers dark oriental red, 5–6 inches across . . . . . 3. *Tzepao* (*Purple Gown*)
    CCC. Flowers light carmine, margin of petals shaded white, 3½–4½ inches across . . . . . 4. *Hentienko* (*The Dwarf*)

AA. Flowers peoniform, semi-double or formal double; petals generally wavy and curved, irregularly and loosely arranged, 3–6 whorls; stamens few to many.
  B. Flowers light carmine to spinel pink.
    C. Leaves concave.
      D. Leaves lanceolate; flowers light carmine; stamens many . . . . . 5. *Hsiaokueiyeh* (*Small Osmanthus Leaf*)
      DD. Leaves ovate-lanceolate; flowers deep carmine; stamens less than 20 . . . . . 6. *Takueiyeh* (*Large Osmanthus Leaf*)
    CC. Leaves flat.
      D. Leaves ovate to elliptic-ovate, short acuminate, slightly reticulate above, pubescent on midrib beneath; flowers bright spinel pink . . . . . 7. *Tayinhung* (*Large Pink*)
      DD. Leaves oblong-ovate to ovate-lanceolate, glabrous beneath.
        E. Leaves long acuminate, prominently reticulate above; flowers bright spinel pink . . . . . 8. *Mayehyinhung* (*Reticulate Leaf Pink*)
        EE. Leaves acuminate, slightly reticulate above; flowers light spinel pink . . . . . 9. *Liuyehyinhung* (*Willow Leaf Pink*)
  BB. Flowers crimson or rose red.
    C. Stamens many, filaments united at base and grouped in 4–6 fascicles around the pistil.
      D. Leaves slightly reticulate above; petals in 2–4 whorls.
        E. Leaves broad ovate, rounded or nearly truncate at base; flowers bright crimson . . . . . 10. *Tataohung* (*Large Crimson*)
        EE. Leaves elliptic to elliptic-ovate, cuneate to rounded at base; flowers light crimson . . . . . 11. *Tsaotaohung* (*Early Crimson*)
      DD. Leaves oblong-ovate, cuneate, prominently reticulate above; petals in 5–6 whorls; flowers light crimson to bright carmine . . . . . 12. *Moutancha* (*Paeony Flower*)
    CC. Stamens few or many and divided into several irregular groups scattered and adnate at base with the curved petals.
      D. Leaves slightly reticulate above; stamens many, divided into 7–8 groups . . . . . 13. *Hoyehtiechih* (*Thick Leaf Butterfly*)
      DD. Leaves prominently reticulate above; stamens few, nearly all petaloid . . . . . 14. *Mayehtiechih* (*Reticulate Leaf Butterfly*)
  BBB. Flowers turkey red or oriental red.
    C. Stamens many, adnate at base or united into 2–3 groups around the pistil; leaves flat, broad elliptic to broad ovate . . . . . 15. *Talicha* (*Queen of Tali*)
    CC. Stamens many, divided into 4–9 groups united with and scattered among the curved petals.
      D. Leaves flat, broad ovate to obovate; flowers bright turkey red . . . . . 16. *Paochucha* (*Noble Pearl*)
      DD. Leaves concave, oblong-ovate to oblong-obovate.
        E. Flowers deep turkey red . . . . . 17. *Shihtzetou* (*Lion Head*)
        EE. Flowers bright turkey red with white variegation . . . . . 18. *Tamarnao* (*Large Cornelian*)

15. *Talicha* or *Queen of Tali*

Leaves broad elliptic to elliptic-ovate, acute or acuminate at apex, rounded to broad cuneate at base, 3½–4 inches long, 2–2½ inches broad. Flowers turkey red (H.C.C. 721/3) or oriental red, double, 5–6 inches across. Petals in 5–6 whorls, the outer whorls flat, the inner wavy, orbicular-obovate, emarginate or slightly lobed at apex, broad cuneate at base. Stamens many, divided into 2–3 fascicles united with the petals at base; pistil rudimentary.

This variety is very ornamental on account of the great size of its turkey red flowers. It is commonly cultivated in gardens at Tali, West Yunnan, hence its Chinese name. It flowers from January to March.

16. *Paochucha* or *Noble Pearl*

Leaves broad ovate to obovate, flat, short acuminate at apex, rounded or broad cuneate at base, 3–4 inches long, 1½–2½ inches broad. Flowers bright turkey red (H.C.C. 721/3), double, 4½–5½ inches across. Petals in 4–5 whorls, the outer two whorls flat, the inner curved and folding lengthwise. Stamens many, divided into 4–6 groups, united with and scattered among the curved petals; pistil rudimentary.

This variety resembles the variety *Lion Head* but differs in its flat and larger leaves, and larger and brighter turkey red flowers. The flowering season is from February to March, rather later than the following variety.

17. *Shihtzetou* or *Lion Head*

Leaves concave, oblong-ovate to oblong-obovate, acuminate at apex, cuneate at base, 2½–3½ inches long, 1⅙–2 inches broad. Flowers turkey red (H.C.C. 721), double, 4–5 inches across. Petals in 4–5 whorls, the outer two whorls flat, the inner whorls wavy and curved, folding lengthwise at base. Stamens many, divided into 5–9 groups by the wavy petals. Pistil with filiform or broadened style adnate to the pubescent ovary.

This is a common favourite in Yunnanese gardens because of its floriferousness, easy culture, and rich colour. Another Chinese common name is *Chiusin-shipaban* which means nine groups of stamens and eighteen petals. In the temple of Hsishan, Kunming, there is an old tree of this variety about 50 feet tall having a trunk 20 inches in diameter. It is supposed to have been planted over 300 years ago. The flowering season is from January to March.

18. *Tamarnao* or *Large Cornelian*

Leaves oblong-ovate, concave, acuminate at apex, broad cuneate at base, sharply serrulate, 2½–3½ inches long, 1–1⅔ inches broad. Flowers turkey red (H.C.C. 721), variegated white, double, 4–5 inches across. Petals 4–5 whorls, orbicular-ovate, emarginate or lobed at apex, wavy and curved, sometimes having two petals connate at the base. Stamens many, divided into 5–8 fascicles and united with the curved petals at the base. Pistil pale green, rudimentary. (Fig. 3.)

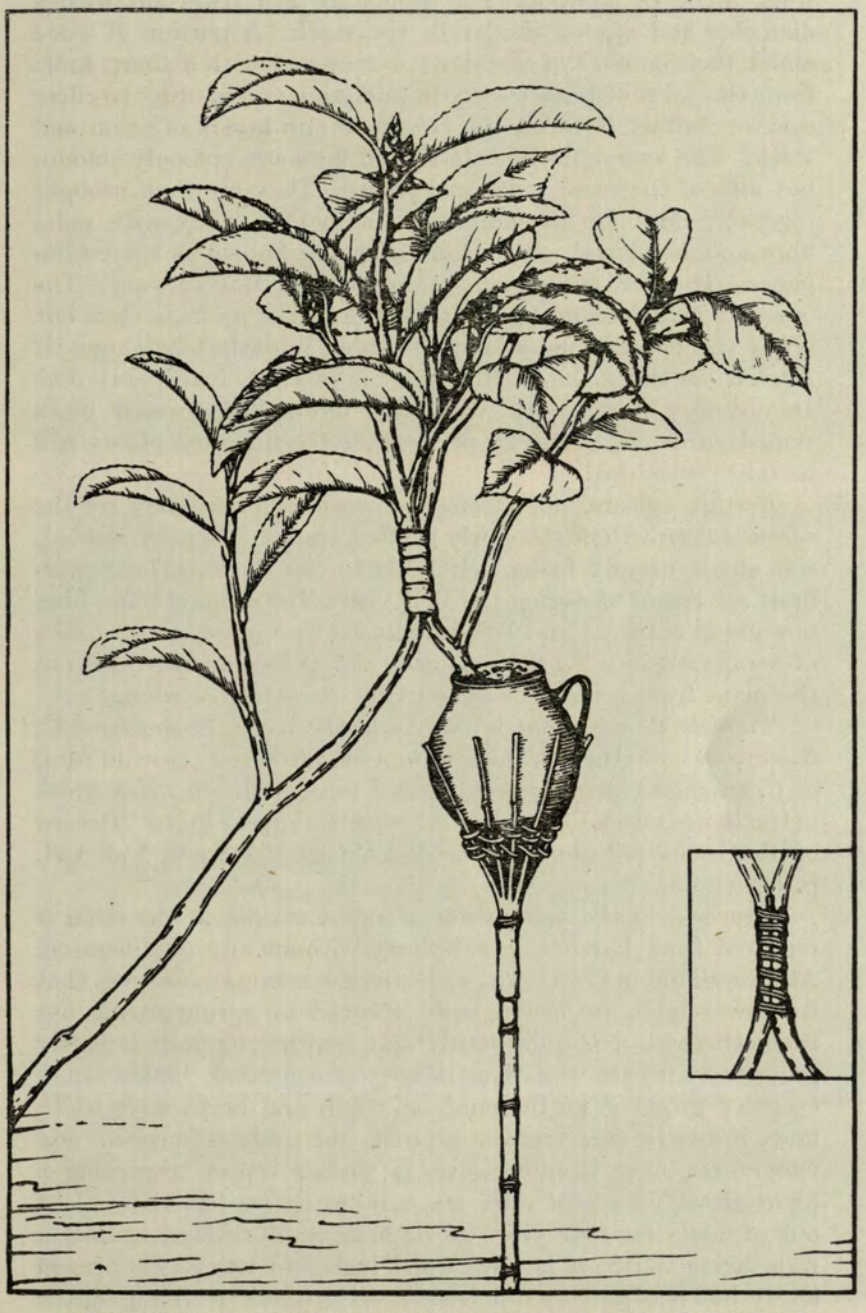
The growth habit and leaf shape of this variety are very similar to the preceding one but the present variety has bicoloured flowers. There are several other bicoloured varieties separable on account of the relative dominancy of white or red. Two of these are *Hungmarnao* or *Red Cornelian* and *Peimarnao* or *White Cornelian*, the latter being rare and much valued. Some of the other names, however, do not appear to belong to distinct varieties. The flowering season is in February and March.

From the above notes it will be seen that there are many improved garden varieties of *C. reticulata* worthy of introduction. There are two possible reasons why they have not previously been introduced and these are the difficulty of propagation and the frost tenderness of the plant. A note on the experience of Chinese gardeners in cultivating and propagating the plant might be interesting to other horticulturists.

CULTIVATION AND PROPAGATION OF *CAMELLIA RETICULATA*

The cultivation of *C. reticulata* is similar to that of *C. japonica*. The latter is usually a bushy shrub while most varieties of *C. reticulata* are medium-sized trees. *C. reticulata* has only one flush of growth a year, compared with two or three flushes in *C. japonica*. Moreover, in *C. reticulata*, the vegetative buds are mostly terminal, so the pruning of *C. reticulata* is restricted to the removal of dead or unhealthy branches or merely to the thinning out of superfluous shoots. For the better development of flowers, some of the young flower buds are usually removed.

The Chinese gardeners propagate the wild form of *C. reticulata* by seeds and the seedlings flower in 5–6 years. All the garden varieties are, of course, propagated by vegetative methods. Cuttings are very difficult to strike and only a low percentage of layers become established. Inarching or grafting by approach is the method of propagation generally used by Chinese gardeners. The stocks are raised from cuttings of *C. japonica* or seedlings of *C. reticulata*, *C. Pitardii* and *C. saluenensis*. They are planted in jug-like pots, 3 inches in diameter and 4 inches in height, and



INARCHING OF CAMELLIA RETICULATA VARIETY IN YUNNAN

are held in position near the scions by an umbrella-like framework made of bamboo. The scions are 2–3 years old with a diameter and vigour similar to the stock. A portion of wood about the diameter of the shoot is removed with a sharp knife from the sides of both the stock and scion and in order to effect a close contact between the two cambium layers of scion and stock. The two opposite cuts should be made not only smooth but also of the same width and length. They are then brought together, cambium to cambium, and bound firmly with palm fibre and bandaged with a kind of paper known as the cotton paper. The best time for inarching is from May to June. The union is complete in 100–120 days, and the scion is then cut below the point of union and the stock immediately above it. After a few days, the grafted plant is carefully transplanted to an ordinary flower-pot. With this method performed by a skilled gardener, about 95 per cent of the inarched plants will become established.

Certain cultural operations are considered necessary for the successful growth of the newly grafted plants. They are shaded, side shade usually being preferable to top shade. The flower-buds are removed during the first year. The original palm fibre binding is removed and this is replaced by a more loose binding of hemp fibre or linen string at each end of the union to prevent the plant from being broken apart by the action of wind.

Though *C. reticulata* is not as hardy as *C. japonica* or *C. Sasanqua*, nevertheless, the semi-double form and the wild form of *C. reticulata* have been cultivated successfully in many parts of the British Isles. The following remarks appear in the "Record of Borderline Shrubs" in *The New Flora and Sylva*, Vol. VII, p. 119 (1935).

"Success in the cultivation of this Camellia in the open is reported from Lanarth and Exbury without any qualification. At Rowallane in Co. Down, MR. ARMYTAGE-MOORE observes that its flower buds are occasionally affected by spring frosts, but that otherwise it is quite hardy and healthy; he finds it better grown on an east wall than in the open ground. LORD ABERCONWAY grows it at Bodnant on north and north-west walls, finds it hardy there, never injured and quite a success. MR. CROSFIELD, near Romsey, gives a similar report respecting a plant grown on a west wall. MR. ROBERT JAMES has had a plant out of doors for four years at Richmond, Yorkshire, against a wall facing north; it is now 5 feet high and has so far proved hardy but it is protected in winter with thatch overhanging the wall about 18 inches."

Therefore *C. reticulata* seems to be hardy in certain parts of

VARIETIES OF CAMELLIA RETICULATA IN YUNNAN

FIG. 5—An old tree of *C. reticulata* var. 'Sungtzelin' or 'Pine Cone' in the Temple of Hsishan, Kunming, China (See p. 16)

VARIETIES OF *CAMELLIA RETICULATA* IN YUNNAN

FIG. 6—An old tree of *C. reticulata* var. 'Hoyehtiechih' in the Temple of Ching-tien, Kunming, China (See p. 20)

FIG. 7—'Hentienko' or 'The Dwarf' (See p. 17)

VARIETIES OF *CAMELLIA RETICULATA* IN YUNNAN

FIG. 8—'Mayehyinhung' or 'Reticulate Leaf Pink' (See p. 18)

FIG. 9—'Liuyehyinhung' or 'Willow Leaf Pink' (See p. 18)

FIG. 10—'Moutancha' or 'Paeony Flower' (See p. 20)

VARIETIES OF *CAMELLIA RETICULATA* IN YUNNAN

FIG. 11—'Hsiaokueiyeh' or 'Small Osmanthus Leaf' (See p. 17)

the British Isles. Considering that it was introduced to this country in 1820, it ought to be more common than it is. In the gardens of milder parts of America, of Australia, New Zealand and South Africa, a very prominent part should be played by this fine Camellia.

ACKNOWLEDGMENT

An expression of thanks is due to MR. Y. T. LIU for information on the culture and propagation of this Camellia. Most of the fresh material described in this paper was supplied by MR. LIU, who has a very fine collection of Yunnan Camellias in his garden in the vicinity of Kunming. Thanks are also due to MR. E. E. KEMP, Assistant Curator of Royal Botanic Garden, Edinburgh, for criticism.

DISCUSSION

The Chairman (prior to reading of paper). Now we jump to a far distant part of the world, and that is China, because I have here MR. YÜ, a distinguished botanist who has had much of his training in England, but whose knowledge of China is, of course, most thorough. He has been good enough to come here to give us certain aspects of the plants in which we are interested.

The Chairman. We are very much indebted to MR. YÜ for his presence here to-day, for his admirable lecture and for the beautiful slides he has brought with him. We knew the Chinese were wonderful at painting, but we did not know that they had advanced so far in colour-photography, and we are very fortunate in having a man so much interested in that wonderful plant, the Camellia, as is MR. YÜ.

We have hopes in this country, through the energy of an American friend, of getting specimens of these Camellias, but, unfortunately, as some of you know, they are very difficult to strike from cuttings; therefore the plants have to be got from those localities where they are grown, through Communist lines, to a place from which they can be brought by air to Europe or America. I understand that our kind friend from the United States, MR. PEER, has already managed to get to Wisley eight or ten of these wonderful Camellias in a living state, so we shall hope that, with the usual Wisley skill in propagating all kinds of plants, we may gradually see these plants extend to Camellia growers in Europe.

I am sure we all owe DR. YÜ the most cordial thanks for his presence to-day.

LADY FALMOUTH. Does the speaker know of a sweet-scented Camellia?

MR. YÜ. I am sorry, no. Not yet.

LADY FALMOUTH. When I was at Tregothnan, years and years ago, I came across one. It was a white one, rather a poor little thing, and I think it died. So that is something for some of our people to develop.

MR. YÜ. As far as I know, there are two species of Camellia which have scent, but not *C. reticulata*. One is *C. oleifera*, and the other is *C. Sasanqua*—the single white one, not the pink one.

MR. CHARLES WILLIAMS, M.P. I have three or four scented ones. There is no doubt that a considerable proportion of the ordinary single *japonica* has some scent. Also *oleifera* as we have always called it, and this will draw every wasp that is about. I think that about four out of five people can smell one of our *japonica* × *saluenensis* hybrids that has scent.

MR. G. JOHNSTONE. I think undoubtedly the tree LADY FALMOUTH was referring to is the *C. Sasanqua*. There is often a confusion between *C. Sasanqua* and the other white one, *C. oleifera: C. oleifera* has a matt-surface leaf, while that of *C. Sasanqua* is shiny. *C. oleifera* is a very hard plant indeed to come by and it seems to take a long time before it comes into flower. *C. Sasanqua*, on the other hand, now masquerading very often as the other, is a plant which has been in our gardens for a long time. It is rather a ragged-looking flower in a way, pure white and with a most delicious scent.

Colour Photo, J. E. Downward

FIG. 12—*Camellia japonica* 'Lady Clare' at Bodnant

FORMS OF *CAMELLIA JAPONICA* L.

H. HAROLD HUME

(LORD ABERCONWAY, C.B.E., LL.D., V.M.H., *in the Chair*)

ENGLEBERT KAEMPFER, in his *Amoenitatum Exoticarum* gave the names of several horticultural varieties of Camellias, derived mostly from the species, *Camellia japonica* L. He, of course, did not list all that were known in Japan at the time of his sojourn there but he stated in Latin that of native forest and garden plants, "There are innumerable varieties of both, named for place of origin, condition of flower or shape of parts." Since 1712 when his famous work was published, many varieties have been added both in the western world, following their introduction, and in the Orient, as a result of increasing interest in their culture. If a complete list of varieties could be assembled as of to-day, it would number many hundreds. It probably would exceed three thousand, a number so large that it certainly indicates great diversity in the forms of varieties derived from the species *C. japonica.*

As all cultivated 'Japonicas' of to-day are descendants of wild plants that normally produce single flowers, an examination should be made of such flowers of that type as are available that we may arrive at some understanding of the many and varied forms that in cultivation represent the species. Single flowers are available, and lest it may be objected that they do not rightly represent *C. japonica* in its primitive form as they doubtless are many generations removed from their wild forbears, let it be said that the structure of a single Camellia of to-day is not essentially different from those specimens collected on the Island of Chusan by JAMES CUNNINGHAM about 1700 that are in the Sloane Herbarium at the British Museum (Natural History). That is as far back as we have been able to go. The appearance of CUNNINGHAM'S specimens indicates that they were taken from a wild plant or from one not far removed from a wild or natural state.

Typical unmodified flowers of *C. japonica* are complete flowers. That is to say they are made up of floral envelopes (calyx and corolla) and essential reproductive parts, stamens (androecium) and pistils (gynoecium) are present. Each flower

is borne on a short scale-covered pedicel. It is difficult to separate sepals from scales or as MR. J. R. SEALY terms them "perules" but let us dispose of them by saying that the calyx consists of 5 sepals. They are green, overlapping and not conspicuous. Next there is a corolla of 5 or 7 or maybe 9 petals and regardless of the form of the flower, the corolla is always present. The petals are united to one another and overlap. There are stamens located in the centre of the flower, their filaments united a third or half their length forming what may be termed a cylinder. Inside this cylinder there are other stamens, about 10 in number that are free to the bases of their filaments. A botanist might dispose of the number of stamens by saying they are numerous, but since their number is important actual counts show that there are 140 or more. The number found in flowers from different plants is variable but they are numerous all right. It is important to note that in addition to most of the stamens being united with one another (connate) they are also joined to the petals (adnate). Lastly there is in each flower a complete pistil consisting of ovary, styles (united) and stigmas. So firm is the union of these parts that when 'Japonica' flowers fall, they do not shatter, instead the corolla and stamens fall as one piece.

Let us now look into the relation of the different flower parts to doubling. First, it may be postulated that doubling in Camellias takes place through the metamorphosis of certain parts or structures that are present in or that make up single flowers. Metamorphosis may be partial or it may be complete. On looking into this transformation it will be noted that the sepals in a double flower are essentially the same as in a single one. Some of the inner sepals take on a small amount of colour and some resemblance to petals but really they have no part in doubling.

Coming next to the corolla, it is found that in some varieties there is an increase in the number of petals, the total varying from 11 to 20 or 21, while the stamens are still located as in single flowers but with some reduction in numbers. The increase in the number of petal-like parts found in double flowers could come about by division or proliferation of the normal number of 5 to 9, but it appears that the corolla such as is present in single flowers has had no real part in the formation of double flowers.

In partly double or double flowers, the pistil may be malformed or entirely absent. In either case it is not a source through which the number of petal-like parts has been increased.

There remain then only the stamens to be considered. It is by replacement with petal-like parts (petaloids) that double flowers are formed.

The first slight indication of a change having taken place in a stamen is where a small piece of the tissue that forms the anther sack is separated and stands out from the remainder of the anther, usually at its apex where it forms a tiny "flag." In the next stage the anther has almost disappeared, the tissue has enlarged with remnants of the sack on either side of the filament, at the point of normal attachment to the anther, still containing pollen. Final transformations are further enlargements of the filament and the total disappearance of any part that could hold pollen. The transition is complete and a petaloid having no particular resemblance to a stamen has been formed. On the other hand petaloids in some flowers are indistinguishable from the petals located in the outer ring of the flower. Petaloids replace single stamens in which case they are small, spatulate or strap-shaped and often curved or twisted. But a different transition also occurs in many instances whereby a group or fascicle of stamens is replaced as a unit and large petaloids are formed. It follows then that in some flowers there are numerous small petaloids only, in others all petaloids are large and look more or less like ordinary petals and in still others small and large petaloids are intermixed. The metamorphosis of the numerous stamens may be incomplete with the remaining stamens and petaloids intermixed in various combinations and arrangements giving rise to flowers of many different forms.

These discussions bring us to the classification of Camellia flower forms. More than a century ago it was recognized that some sort of classification of *Camellia japonica* varieties was necessary because of the large numbers being propagated, introduced and grown. The first attempt at an orderly arrangement was made by L'ABBÉ BERLÈSE who in 1837 in his *Monographie du Genre Camellia* proposed one based on colour, followed in 1840 by a second based on form and the resemblance of Camellia blooms to flowers of other kinds, Anemone, Rose, Ranunculus, Peony, Warratah, etc. Another was proposed by LUIGI COLLA in 1843. In this, form and colour were used as a basis. The BERLÈSE classification with its nomenclature came into wide use while the COLLA classification passed unnoticed.

Owing to difficulties encountered in the use of the BERLÈSE classification in describing Camellia flowers and in grouping blooms at flower shows it was recognized that a simpler one was needed. Studies of flower forms, that extended over several seasons were undertaken and a simple classification based on the metamorphosis of the stamens was worked out. The classification, in short, may be regarded as an answer to the question raised when looking at a partly double or double Camellia,

"What has become of the stamens?" This classification is as follows:

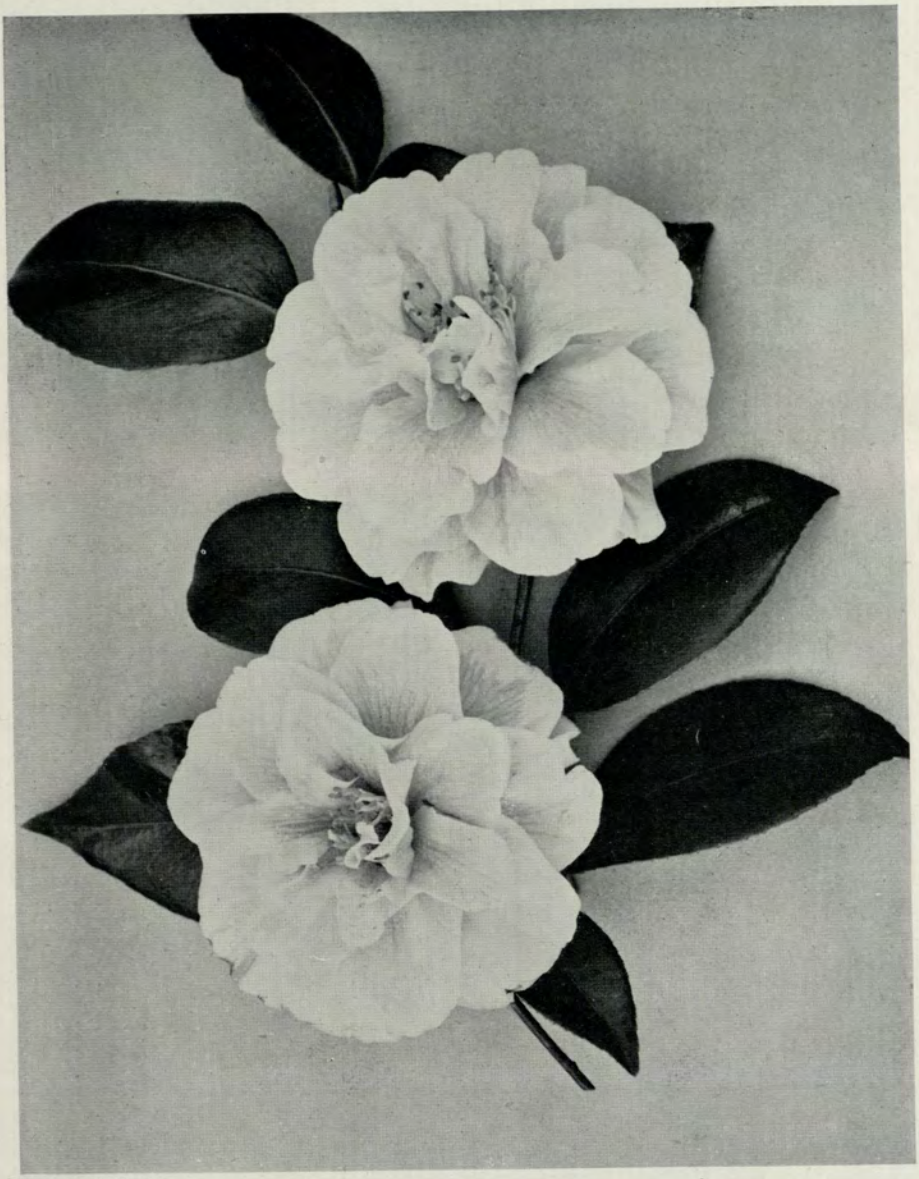
I. Simple. Stamens all central, united in a cylinder or occasionally in fascicles.
   A. Single—Petals 5 to 9, e.g. *C. japonica* (original form).
      B. Semi-double—Petals more than 9, usually 14 to 21, e.g. 'Tricolor.'

II. Incomplete Double. Petaloids numerous with stamens, single or fascicled intermixed, forming an irregular mass.
   A. Petaloids large representing fascicles of stamens, e.g. 'Gloire de Nantes.'
      B. Petaloids small, replacing single stamens or very small fascicles, e.g. 'Elegans.'
         C. Petaloids large and small intermixed, combining the features of A and B, e.g. 'Nobilissima.'

III. Complete Double. Petaloids have replaced all stamens, or few remaining hidden.
   A. Regular imbricated. Petaloids regularly imbricated from circumference to centre completely or with a very small unopened remnant in centre, e.g. *Alba Plena* or 'Lady Hume's Blush.'
      B. Incomplete imbricated. Petaloids imbricated, with a relatively large unopened centre, e.g. 'Mathotiana.'
         C. Tiered. Petaloids in six tiers or rows from centre to circumference, producing a star-shaped effect, e.g. 'Candidissima' and some flowers of 'Lady Hume's Blush.'
            D. Irregular. Petaloids usually spatulate, strap-shaped or obovate and folded, forming an irregular convex mass, e.g. 'Altheaflora.'

Within sections II and III there are almost innumerable minor variations that add greatly to the interest of the flowers. In the older period of Camellia culture, regular imbricated flowers were favourites but in recent years there is a trend toward the informality of incomplete double flowers. At the same time the distinct beauty of simple forms is not being overlooked. To some it might appear that the flowers of *C. japonica* have run the gamut of all possible variations. But this is not so and it may be confidently predicted that there will be others in the future though it must be admitted that in securing them there is danger of duplicating varieties all ready in hand.

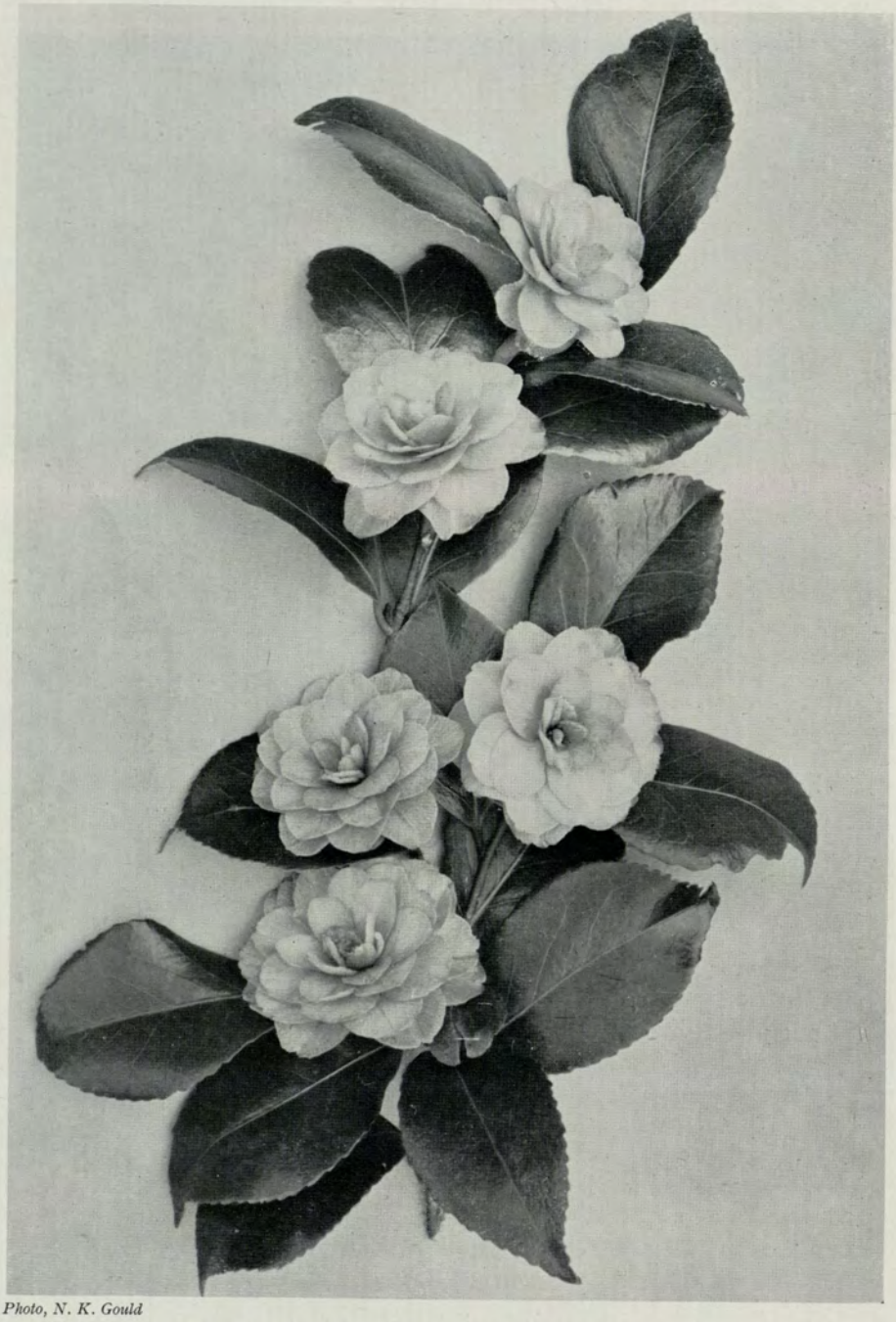
How did this great diversity of 'Japonica' forms start? This question of course cannot be answered with any degree of certainty. From KAEMPFER's statement, however, we can be sure that variations in *C. japonica* began in the Orient at an early date. Increase in the number of forms making up a group of garden plants has sometimes started with the fortuitous finding of a specimen possessing certain different, desirable characters. Such a "break" then becomes part of the parentage of another generation and so on, giving rise to additional forms. Those forms may be confined to and derived from a single



Photo, N. K. Gould

FORMS OF *CAMELLIA JAPONICA*

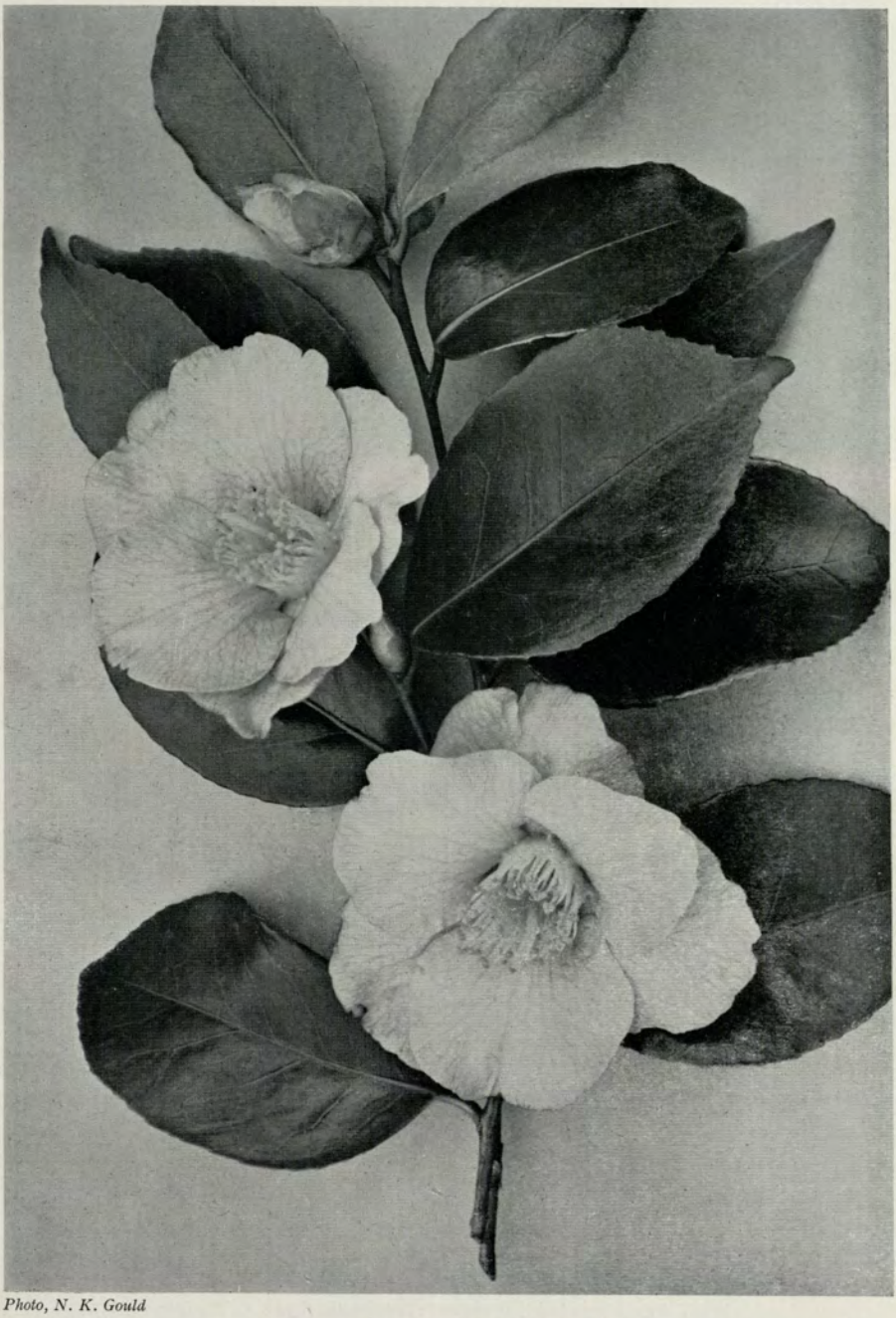
FIG. 13—*Camellia japonica* 'Mikado' at Wisley



Photo, N. K. Gould

FORMS OF *CAMELLIA JAPONICA*

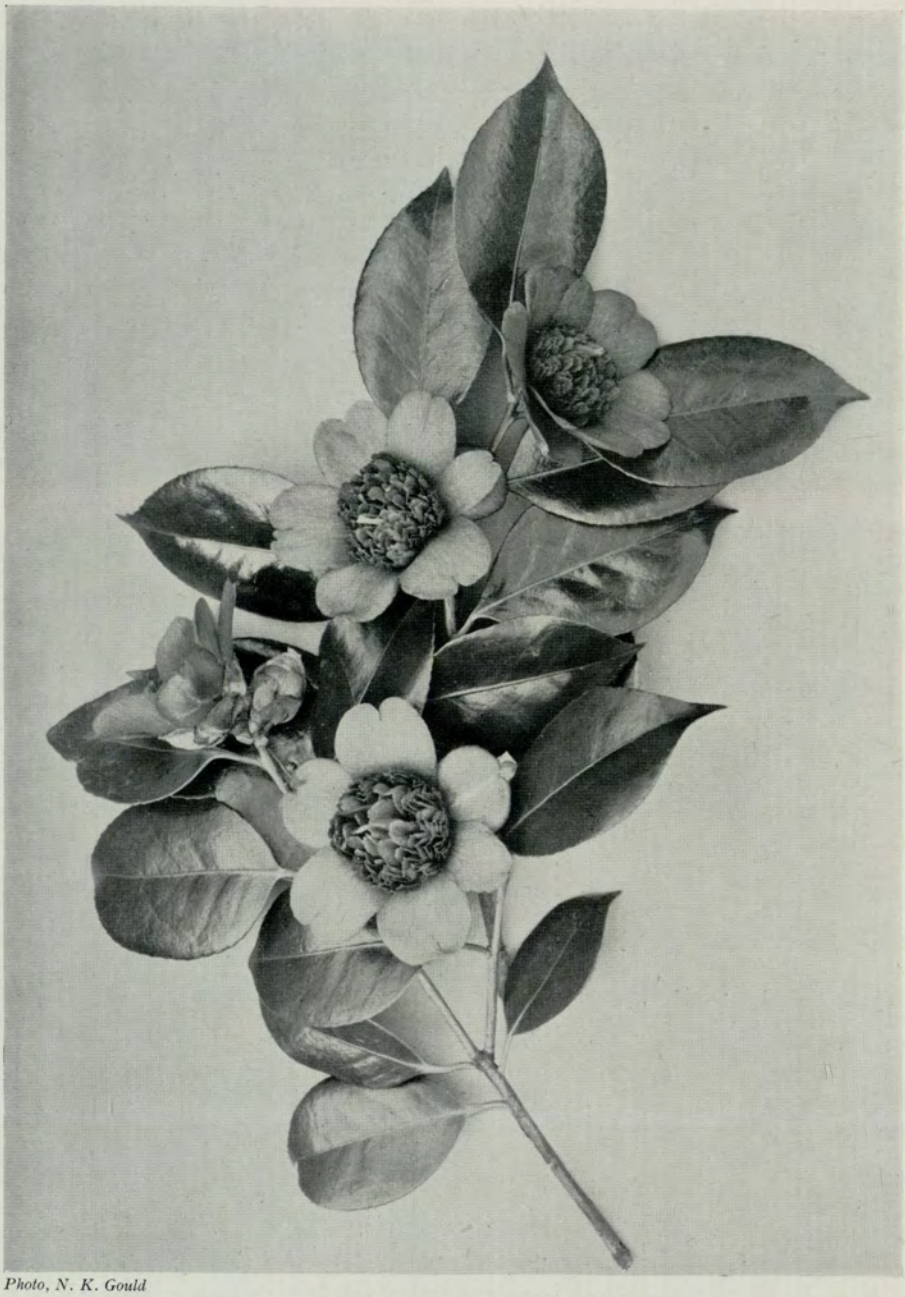
FIG. 14—*Camellia japonica*, small double pink at Wisley



Photo, N. K. Gould

FORMS OF *CAMELLIA JAPONICA*

FIG. 15—*Camellia japonica*, large single pink at Wisley



Photo, N. K. Gould

FORMS OF *CAMELLIA JAPONICA*

FIG. 16—*Camellia japonica* 'Anemonaeflora' at Wisley

species as in *C. japonica* or they may have been due to accidental hybridizing.

It is with some trepidation that I mention the subject of hybrid Camellias of which *C. japonica* is said to be one of the parents. I am using the term "hybrid" in a restricted sense, covering only forms that have originated from crossing plants belonging wholly or in part to different species. In older European Camellia literature, let us say prior to 1900, there are references to hybrids, but those hybrids, if they were such, have not come down to us among the numbers of old Camellias that have survived the years.

Leaving out of consideration, those varieties that have resulted from crosses made here in England in a very recent period from which some very interesting plants have been secured, I have come to look with suspicion upon any Camellia designated as a hybrid among the great number of varieties that, since 1792, have been named, described and introduced. Certainly the number of such forms has been very small, so small, that there may have been none at all. This fact then stands out, the great number of forms of 'Japonicas' has not come into existence through the admixture of other Camellia species. On the contrary they are straight line descendants of a single species, *C. japonica.* They are not mongrels in the sense that modern Roses, for instance, are, and they are not surpassed in numbers or variety by any other group of woody plants that have emerged from a single species. In this respect, the horticultural varieties of *C. japonica* are an unusual group, unusual in their origins, unusual in their diversity, unusual in their beauty.

Since hybridizing has not been a factor in the development of the great mass of forms of 'Japonica' and as there are now available additional species that were not available to early Camellia breeders, there is presented a golden opportunity for securing new varieties by interspecific crossings. Camellias are entering a new era of varietal development thanks to the interest and foresight of English plantsmen.

DISCUSSION

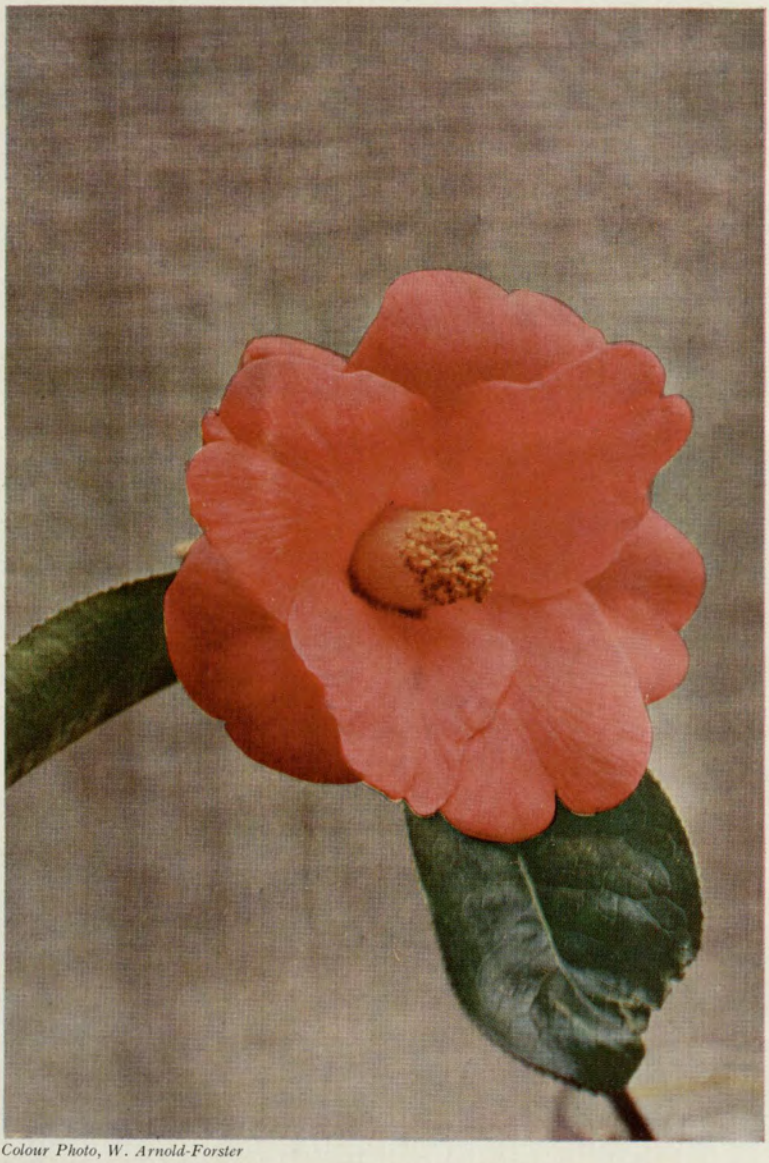
The Chairman (prior to reading of paper). I have now pleasure in calling upon DR. HUME to address you. DR. HUME is probably well known to many of you because of that sumptuous book he has written on Camellias in America. It is rather difficult to buy books from America now, unless you have dollars, but some of us have been able to get DR. HUME'S

wonderful work, and we are hoping that one day he will continue that work and deal with some of the *C. saluenensis* hybrids. It is extremely kind of him to come over here and lecture to us.

The Chairman. DR. HUME, we have listened to a most scholarly exposition of the development of the Camellia. If we can really do that kind of classification we shall do a great deal to disentangle the confusion of names under which Camellias, at any rate in England, are grown, and, as you may see by our Show to-day, in fact English growers will, to use a vulgar expression, have to pull up their socks. At present we have no standard, or very few standards, to divide one lot of Camellias from another, but I think that with the help of DR. HUME and those who have conducted similar research we ought to be able to classify our Camellias more exactly than we do at present. I think we shall have to look to the co-operation—in fact, I would say more than that—to the leadership of our American friends who are interested in Camellias to put the whole subject of the naming of Camellias on a proper basis, and if we can do that, and co-operate, we shall be in a very much better position to hold our shows, to name our varieties, and to be really skilled cultivators of that fine plant.

I will conclude by offering DR. HUME our heartiest thanks. I ought to have said, in introducing him, that he is an Emeritus President of the American Camellia Society, that is a President who deserves to be a President, whereas I just happen to be a President.

(The vote of thanks to DR. HUME proposed from the Chair was carried with acclamation.)



Colour Photo, W. Arnold-Forster

FIG. 17—*Camellia reticulata* 'Mary Williams' (See p. 105)

Colour Photo, J. E. Downward

FIG. 18—Flowers of *Magnolia Sargentiana robusta* at Bodnant (See p. 57)

THE PROPAGATION OF CAMELLIAS AND MAGNOLIAS

H. G. HILLIER

MR. J. R. RUSSELL *in the Chair*

THERE is no better way of reproducing the species than by seed if one is able to obtain seeds which have been produced by plants sufficiently isolated to exclude the possibility of cross-pollination. A plant grown vegetatively has one rather attractive, though temporary, advantage in that it will usually flower earlier than a seedling.

It is unusual for a garden variety, hybrid or selected form, to reproduce itself by seed; the seedlings invariably exhibit variations, hence plants of this class must be increased vegetatively.

To those endeavouring to create new varieties and new hybrids, I would suggest that there are already too many named sorts of *Camellia japonica* but there remains useful work to be done by the hybridist in employing combinations of the various species, *C. japonica*, *C. Sasanqua*, *C. cuspidata*, *C. oleifera*, *C. saluenensis* and *C. reticulata*.

In the multitude of varieties of *C. japonica* there is a certain sameness in habit of growth, size and season of flower, size and colour of leaf. These are qualities which may be modified by the other species and it is possible to picture new races of Camellias flowering from September to April with fragrant flowers varying in size from 1 inch to 6 inches in diameter, and in habit of growth from stiff pyramids to lax semi-weeping bushes.

In the genus Magnolia, with a greater number of species hardy in this country, the scope for making new and worthy hybrids is even greater. One ponders the possibilities of inducing some of the tree-like species to flower at an early age; of obtaining persistent foliage with spring flowers and coloured blossoms in the summer.

SEED—CAMELLIAS

The best time to gather any seed is when it is fully ripe and when to leave it longer on the plant would run the risk of loss. Camellias have a comparatively large fleshy seed which loses its viability fairly quickly. The sooner the seed is sown the better and if there is a considerable lapse of time between gathering and sowing, then special storing is required. Sawdust, sphagnum moss, coconut fibre, or some similar slightly moistened material, is a good medium in which to store.

The seeds should be sown in pans, pots or boxes; if wooden containers are used it is desirable to paint them with Cuprinol some time before use: Cuprinol is both a preservative and sterilizer. The seeds should be sown to a depth of about 1 inch. The compost should be formed of fibrous loam, leaf mould and peat in about equal parts with sufficient coarse sand to keep a good open mixture.

Good drainage is essential. This can usually be achieved by using pieces of broken pot over which it is desirable to put a thin layer of undecayed last year's Beech leaves, Oak leaves or moss —the object being to keep the drainage from becoming clogged by the soil. The containers may then be stood outside or, better, in cold pits. If they are placed in the open one should cover, in the event of hard frost or severe cold wind, with broken bracken or leaf-mould—the object being not only one of protection, but to try and conserve an even moistness.

When the seeds commence to germinate they may be retained in a cold pit or brought inside into a cool house from which such enemies as frost, mice, slugs and other vermin are excluded, or at least controlled.

SEED—MAGNOLIAS

Magnolias are like Camellias in that they have a fleshy seed but they differ in being clothed with a thin, oily coating which should be removed before sowing, otherwise there is a tendency for mildew to form. If the seeds are stratified for a short time in damp sand, this coating can be fairly readily removed by rubbing between the fingers.

The general remarks referred to Camellias are equally true of Magnolias but, unlike Camellias, the seed is capable of remaining dormant in the ground for at least the first season; in fact, it is quite usual to have a few seedlings germinate the first spring and the bulk not to germinate until the following year.

VEGETATIVE PROPAGATION

Vegetative propagation is desirable for the exact reproduction of a given plant and essential when it is proposed to increase a hybrid, garden variety or particular form.

CUTTINGS—CAMELLIAS

Given the essential requirements, Camellias may be increased by cuttings so readily as to make other methods of vegetative propagation unnecessary.

It seems strange that in bygone days grafting on seedling *Camellia japonica* was the accepted practice; incidentally, this

rule still persists in most of the French and Belgian Nurseries where pot-grown Camellias are propagated in large quantities for conservatory and indoor decoration.

In an average season the best time to take cuttings is the latter part of July, though success can be achieved throughout the year. If it was desired to increase a particular Camellia and material was only available when the plant was in soft, young growth, one would remove this and use growths of the previous season.

For the ideal cutting select current season's ripened growths about 4 inches long. There is no better medium in which to root the cuttings than silver sand to which has been added a little peat. Whatever frame or container is used, good drainage is even more essential than for seeds. (Fig. 19.)

For a person proposing to reproduce a few plants, the best container is a 5-inch pot and if a new pot is to be used soak it in water for a few hours before use; if an old pot make sure it is clean.

It is important that there is the minimum loss of time between taking the cuttings and placing them in a close frame, preferably a frame within a propagating house.

As a boy I was always taught to select short side-growths preferably about 3 to 4 inches long and make the cutting with a thin heel of the older wood, but nowadays we achieve better results by being less fastidious in the selection of our material, and half-ripened wood at the end of July roots well either with or without a heel and whether the cut is made immediately below the leaf axil or is internodal. In the table setting out the results of some Camellia cuttings inserted last summer, the phrase "internodal cuttings with elongated cut" refers to shoots of an average length of about 4 inches and carrying about three wood buds. These cuttings were made internodal and a diagonal cut of about 1 inch in length was made and not the usual less oblique cut. If one is treating with a variety of which the material available for cuttings is scarce, then by adopting the leaf-bud method a greater number of plants can be raised, since, with care, each sound wood-bud is a potential plant. By this method the selected shoot is cut immediately above each good wood-bud which, on a free-growing healthy plant, will give a stem length of about 1 to 1½ inches. It is best to make the cut opposite the bud for the full length of the stem, so that the diagonal cut tapers to a not too thin base, that is to say the cut base should be about one-fifth of the thickness of the shoot: if tapered to a very fine point it is liable to crumple when inserted in the sand. The chief advantage of retaining this piece of basal shoot with

In the following Table is set out the Result of Camellia Propagation by Cuttings in Five Lights of one of our Propagating Houses for 1949

Variety	Date Cuttings Inserted	Date Cuttings Potted	Number put in	Number Rooted	Number not Rooted and put Back	Number Dead	Type of Cutting
'Chandleri elegans'	July 28, 1949	Dec. 1, 1949	12	2	10	0	Heels
,, ,,	,, ,,	,, ,,	94	71	21	2	Internodal cuttings with elongated cut
'Cornish Snow'	,, ,,	,, ,,	24	24	0	0	,, ,, ,, ,,
cuspidata	July 27, 1949	,, ,,	97	72	11	14	,, ,, ,, ,,
Donckelaari	,, ,,	,, ,,	10	4	6	0	Heels
,,	,, ,,	,, ,,	168	107	53	8	Internodal cuttings with elongated cut
'Jupiter'	Sept. 2, 1949	,, ,,	12	12	0	0	,, ,, ,, ,,
'Kelvingtonia'	July 28, 1949	,, ,,	148	93	50	5	,, ,, ,, ,,
'Lady Clare'	,, ,,	,, ,,	14	7	7	0	Leaf bud cuttings
,, ,,	,, ,,	,, ,,	190	96	80	14	Internodal cuttings with elongated cut
,, ,, (*no* hormones)	,, ,,	,, ,,	11	5	6	0	,, ,, ,, ,,
'Lady de Saumarez'	Sept. 2, 1949	,, ,,	25	16	8	1	,, ,, ,, ,,
'Nagasaki'	July 27, 1949	,, ,,	27	26	0	1	Leaf bud cuttings
,,	,, ,,	,, ,,	24	20	0	4	Heels
,,	,, ,,	,, ,,	232	208	19	5	Internodal cuttings with elongated cut
'nigra'	July 28, 1949	,, ,,	40	18	21	1	,, ,, ,, ,,
Nobilissima	,, ,,	,, ,,	80	69	9	2	,, ,, ,, ,,
'Salutation'	,, ,,	,, ,,	6	5	0	1	,, ,, ,, ,,
Williamsii var. 'J. C. Williams'	,, ,,	,, ,,	57	25	26	6	,, ,, ,, ,,
'Yoibijin'	Sept. 2, 1949	,, ,,	25	17	8	0	,, ,, ,, ,,

Total put in	1296
,, potted	897
,, not rooted and put back	335
,, dead	64

the leaf bud is that the cutting is more easily inserted and better anchorage is obtained.

In recent years a considerable amount has been written about the use of hormones. It is my experience that their application tends to speed the production of roots, which to a commercial grower may sometimes gain some valuable space in his propagating pits. It is probable that the future holds new practices in the use of chemicals for propagation.

As soon as the cuttings are inserted, water liberally. Cuttings put in during the summer may not need watering again, apart from spraying, until after artificial heating is commenced. In an average season heating will be required during cold nights towards the end of September. When bottom heat is being used, if the cuttings are in pots the medium on which they are standing will need fairly frequent watering.

It is of the greatest importance to maintain as even a temperature and state of moisture as possible. In the summer without bottom heat the temperature should be held between 70° to 80° and 55° to 60° in the winter with bottom heat. Daily airing is a necessary requirement and the early morning, before the sun is hot, is the best time for this routine job. In the summer during hot weather it will be necessary to use a fine spray twice, or even three times a day and the period of airing will not need to be longer than half an hour, probably less, and there will be little, if any, superfluous moisture to wipe away. In the winter, when artificial heat is being used, a greater quantity of moisture will accumulate and longer periods of airing will be required.

If one is obliged to use frames situated in the open, airing will only be needed about twice a week during the summer, and in the winter fortnightly intervals will be sufficient. During really severe weather, protection is essential and no airing should be given.

Where frames are exposed to sun, shading is required. This is most easily achieved by chain and lath blinds fitted to the house. If blinds are not available, spray the outside of the glass with whitewash or some preparation sold for this purpose. If the glass area to be covered is not extensive, it is safest to paint the material on the glass rather than spray over the whole area since some compounds have been known to remove the paint from the wood-work.

During hot weather shading and airing are top priorities for the propagator, calling for hourly attention. To reduce the temperature by airing and yet avoid draughts and maintain an even humidity needs skill and long practice.

For a house exposed to the south or west it will be found

necessary to give additional shade during the hottest months of the year and for this purpose thin hessian, which can be readily rolled, is a very easy way of covering the frames.

Unheated outdoor frames, cloches, or bell glasses are not satisfactory for propagating Camellias or deciduous Magnolias but some success can be achieved under these conditions with *Magnolia grandiflora* and *M. Delavayi*, but the time needed is about eighteen months instead of three or four months in a properly heated glasshouse.

CUTTINGS—MAGNOLIAS

We have not yet obtained the same degree of success in increasing Magnolias from cuttings.

The evergreen species, such as *M. grandiflora* and its varieties, and *M. Delavayi*, may be rooted as readily as Camellias under precisely the same conditions as those described for Camellias, but greater care is needed in the selection of the cuttings and the amount of satisfactory material on plants of equal size is very much less on a Magnolia. The best time to insert the cuttings of evergreen species is September or October. We are only just beginning to increase the deciduous species and varieties in a sufficiently large percentage to regard this as a worth-while method of propagation. (Fig. 21.)

That all Magnolias can be rooted from cuttings is established but we are only in the experimental stage for commercial production. It is evident that the deciduous Magnolias are not to be so easily rooted as Camellias. The selection of the cutting and the time it is taken are very much more important than with Camellias. The beginning of June to the end of August is probably the maximum period for deciduous Magnolias grown under average conditions. Cuttings taken from plants growing under glass are more easily rooted and the time of taking them is rather earlier. Firm, rather short and thin, half-ripened growths of the current year should be selected. Avoid sappy tips and too thick shoots. (Fig. 20.)

The slightest heel of the previous year's wood seems desirable but is not essential. Always cut immediately beneath a node. Given the right material and conditions, *Magnolia Soulangiana* and some of its forms will give a " take " of from 40 per cent. to 90 per cent. which, like the Camellias, may be potted within twelve weeks. Believing Dutch nurserymen may be ahead of us in propagating deciduous Magnolias, I wrote to my friend MR. F. M. KLUIS, and I was interested to learn that his experience compared closely with our own. He confirms that *M. Dawsoniana*, *M. Sargentiana*, *M. denudata* and *M. mollicomata* are

alike difficult to strike. They will make callus but a very small percentage will take root.

Cuttings inserted in July, whether Magnolias or Camellias, should be examined in October by which time a good percentage will be sufficiently rooted to pot.

All those cuttings carrying a few roots should then be potted: this avoids losses by crowding and damping and it is easier to pot the new plant before the roots are too elongated and intertwined. The newly-potted plants should be stood back in the frames until they have commenced to make new roots when they should be stood on open benches in a house of about the same temperature.

Unrooted cuttings, or those insufficiently rooted, should be reinserted in the store pots and all that are going to root should be ready for potting by the early spring.

To emphasize the effect of soil and climate and to substantiate the necessity for constant experimenting, I cannot refrain from reference to a piece of unusual propagation carried out by MR. CHARLES WILLIAMS, M.P. I had the pleasure of again visiting Caerhays Castle last summer, when MR. WILLIAMS showed me two large cuttings he had made when, two years previously, his magnificent specimen of *Magnolia Campbellii alba* was blown down. The two dormant cuttings were about 2 feet 6 inches long and 3 inches, or rather more, in diameter, heavier than is usually used for a willow set. One cutting was dead but the other very much alive, having firmly rooted and made 8 feet of growth.

LAYERING

This is the principal method of increasing the deciduous garden varieties of Magnolia in general cultivation. There is no point in using this method for Camellias or those evergreen Magnolias which can be freely propagated by cuttings.

Before the branches are placed in position, the soil should be cleaned and cultivated, and a good compost, comprising a liberal proportion of sand and peat, to a depth of 4 inches to 6 inches should be placed beneath them.

The plant which lends itself to layering is the one in which the lower branches sweep more-or-less to the ground. Healthy shoots of the previous season's growth should be selected. Layering is, perhaps, best carried out in the autumn, although there seems little to choose between the autumn and the spring for this operation. A branch, or branchlet, say from 12 inches to 24 inches long, should be selected and bent in a more-or-less erect position and at the U-like bend, or elbow, the lower bark should be pared for a length of about 2 inches: it is at this point

that the roots are most likely to occur. Each potential plant should be secured with a small stake. When all is set, the branches should be covered with a good compost, primarily comprising sandy-peat, to a depth of about 4 inches to 6 inches. It is important that the branches are held in position with wooden pegs, care being taken to ensure that the possibility of movement by wind is ruled out. The most necessary cultural requirement after layering is adequate watering during periods of drought. So often layers are put down and forgotten about, whereas they should be given as much attention as a well-kept kitchen garden. Layers should be examined at the end of the first growing season or the spring following: if they are well-rooted the branch may be severed where it springs from the mother plant. Like newly-potted cuttings, these young layers will need special care at the first transplanting, and a close, humid day should be chosen. If rooting is inadequate, split the branch half-way through and bind to prevent breaking, and give another growing season before moving.

MR. H. DEN OUDEN of Boskoop, Holland, tells me that they have 'stool' plants of the various varieties of *Magnolia Soulangiana* and *M. stellata* thirty and more years old. They consider August or September the best time for putting down the layers and that these layers are sufficiently rooted to be taken off one and a half years later, in April or May, just as the leaf buds begin to break. He emphasizes the necessity of special care at time of transplanting and the need for selecting the right day for this operation: if weather conditions and other factors are against them, they sometimes sustain heavy losses at the first transplanting. A really good stool plant of *M. Soulangiana* and *M. stellata* will produce 200–250 layers but such varieties as 'Lennei' produce very considerably less and are more difficult to transplant: he considers it is quite impossible to produce *M. denudata* (*conspicua*) from layers, hence inarching, or grafting by approach, is the method of propagation adopted for this species.

GRAFTING—MAGNOLIAS

Magnolias may be successfully grafted, under glass, either when dormant in the early spring—when the top of the stock is entirely removed—or in the summer when the top of the stock is retained until a good union is formed.

Winter or early-spring grafting. It is important that only established stocks be used; these should have been grown in 3-inch pots for at least a season before grafting; healthy stocks are essential, hence a first-quality compost should be used when potting.

THE PROPAGATION OF CAMELLIAS AND MAGNOLIAS

FIG. 19—Camellia Cuttings

Top row: *Camellia japonica* 'Elegans'. Internodal cuttings with elongated cut. Inserted July 28, 1949. Photograph taken January 23, 1950.

Second row: *Camellia cuspidata*. Internodal cuttings with elongated cut. Inserted July 27, 1949. Photograph taken January 23, 1950.

Third row: *Camellia* 'elegans'. Heel cuttings. Inserted July 27, 1949. Photograph taken January 23, 1950.

Bottom row: *Camellia japonica* 'Nagasaki'. Elongated leaf-bud cuttings. Inserted July 27, 1949. Photograph taken January 23, 1950. (See p. 35)

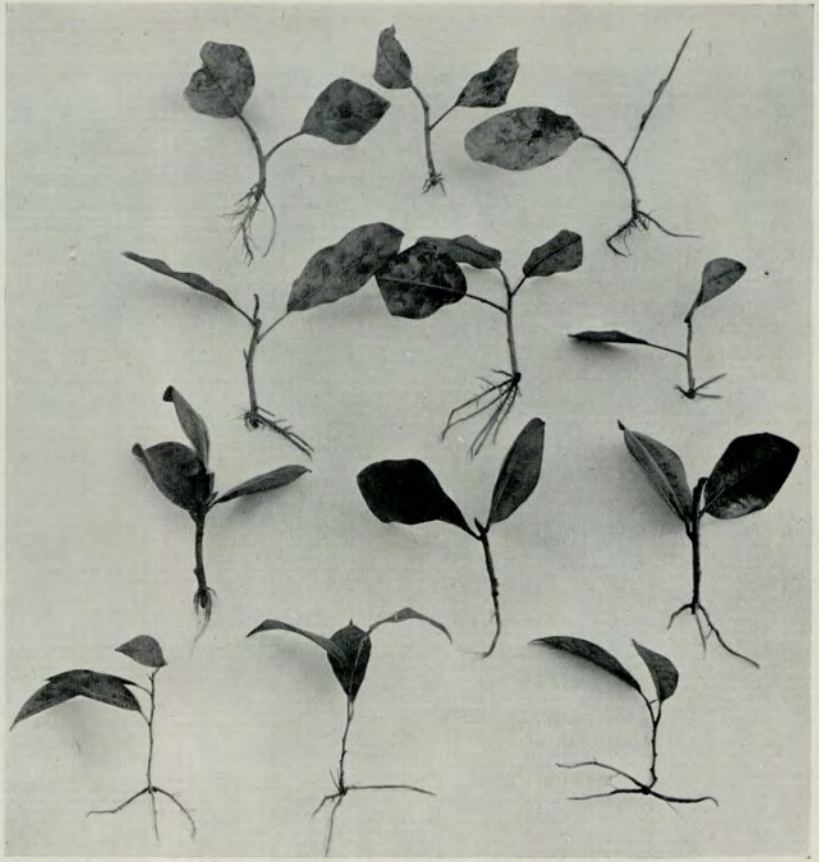


FIG. 20—Selected cuttings showing the type of material desirable. Top row: *Magnolia Soulangiana Lennei*. Second row: *Magnolia salicifolia*. Third row: *Magnolia stellata*. Bottom row: *Magnolia Kobus* (See p. 38)

FIG. 21. Top row: *Magnolia Delavayi*. Internodal cuttings with elongated cut. Inserted September 20, 1949. Photograph taken January 23, 1950. Second row: *Magnolia Delavayi*. Heel cuttings. Inserted September 20, 1949. Photograph taken January 23, 1950. Third row: *Magnolia grandiflora* 'Goliath'. Internodal cuttings with elongated cut. Inserted September 20, 1949. (No heels yet rooted, put in at the same time.) Photograph taken January 23, 1950. Bottom row: *Michelia Doltsopa*. Heel cuttings. Inserted October 8, 1949. Photograph taken January 23, 1950. (See p. 38)

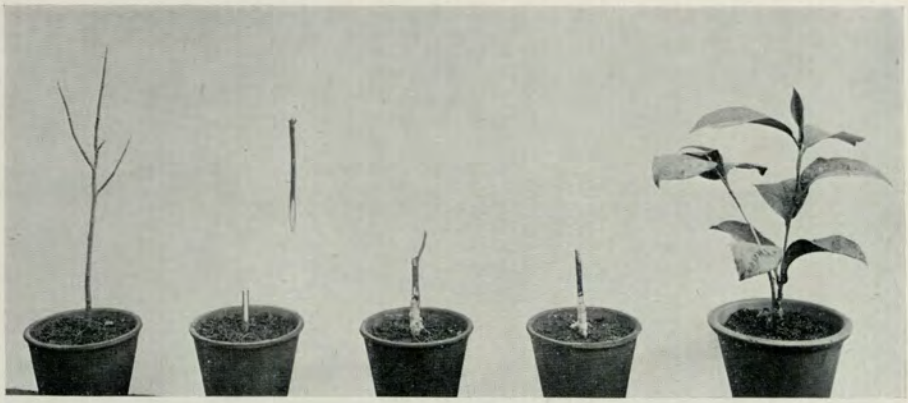


FIG. 22—From left to right—(1) Established Magnolia stock (*M. Veitchii* seedling), (2) Magnolia stock and scion ready for tying, (3 and 4) *Magnolia Sargentiana robusta* grafted on to *M. Veitchii* seedling (waxed). Showing 2-year and 1-year scions. Photograph taken January 23, 1950. (See p. 41)

THE PROPAGATION OF CAMELLIAS AND MAGNOLIAS

FIG. 23—Recently inserted cuttings of evergreen Magnolias and Camellias. Photograph taken October 4, 1949.

THE PROPAGATION OF CAMELLIAS AND MAGNOLIAS

FIG. 24 (top) *Magnolia Soulangiana* 'Lennei,' layered. Photograph taken September 27, 1949.

FIG. 25 (middle)—Batch of 2-year-old Magnolias, with Camellias in background, propagated from cuttings.

FIG. 26 (bottom)—Batch of about 1,700 Camellias propagated by cuttings, including some *Camellia saluenensis* from seed: 2 and 3 years old.

Early February is the best time for grafting, and the stocks should be brought into the propagating house and stood on the bench three weeks earlier, or long enough for root action to commence; the stock should be cut off about 2 inches above the pot. Ordinary side grafting is the simplest and surest method: after tying, the area for the length of the cut should be sealed with paraffin wax, which is applied in liquid form with a brush; the plant should then be stood on the open bench, plunged in fine ash, sand or suitable medium up to the rim of the pot, leaving the top open to take water. The day temperature of the house should be kept to about 60° F. and shaded against sun. It is important to select healthy well-ripened shoots for the scions; these should be one- two- or even three-year-old growths. Often times the scion will comprise both one- and two-year wood. It is important to select scions, if possible, of the same thickness as the stocks, never larger. (Fig. 22.)

The stock usually employed is *Magnolia Kobus* or *M. acuminata* but further experimenting is necessary so as to obtain the best stock for a particular species. We have recently noticed that *M. salicifolia* has united better and is looking happier on seedlings of *M. Veitchii* than on *M. Kobus*.

Veneer grafting in summer. This should be carried out towards the end of July and whilst the operation calls for greater precision, narrowing down the margin for errors, it can, under favourable conditions, produce the best results. It is our experience that it is useless to obtain scions, when in leaf, from another garden which necessitates the material travelling by post or rail: I have, in fact, noticed that scions will deteriorate when brought, by car, from Chandler's Ford to Winchester, a distance of only six miles.

We have only used *Magnolia Kobus* at this season of the year but there is no reason to suppose other stocks would not be equally successful. The stocks should be prepared in the same way as for spring grafting. If possible, a close, deep, unheated frame in a propagating house should be made available: oftentimes a frame of the desired depth is not at hand and it means the plants, after grafting, have to be placed in their pots at an angle of about 45 degrees, care being taken to see that the top of the plant is not touching the glass otherwise the moisture will be attracted down the stem and accumulate at the point of union—this is liable to cause decay.

Before grafting, remove half the leaves from the stock in addition to any side-shoots or leaves from the side on which the scion is to be placed. Smaller scions should be selected than for spring grafting—terminal growths of the right texture being

selected in preference to older wood. In addition to the removal of the basal leaves from the scion, one or two others should also be pinched off—leaving about half the normal number. It is essential to make the graft immediately the scions are cut: the grafts will need to be tied in the usual manner but waxing is not necessary. The stock and scion are prepared in much the same way as for side-grafting except that the top of the stock is retained and a small tongue is made at the base of the cut surface against which the scion is placed.

If the frame is deep enough to allow the plants to stand erect, it is an advantage to plunge the pots to the rim. Shading of the house and frame from strong sun is essential: the frame should be aired for a short time each day—not more than half-an-hour, usually less—the object is to change the air and to dry off any superfluous moisture. When the scion is calloused and a good union made, the lights should be raised a few inches for air and after a fortnight the plants should be stood on the open bench in the same house when about one-third of the stock should be cut away. The plants should be moved into 5-inch pots in the early spring and the final removal of the stock should be made after root action has taken place.

GRAFTING BY APPROACH

It is well known that certain species do not respond readily to any of the common methods of vegetative propagation, notable examples being *Camellia reticulata* and *Magnolia denudata*. For these the method known as "approach grafting" is practised in nurseries. It differs from other methods of grafting in that the scion is not detached until union with the stock has taken place. The stocks must first be established in pots so that they can be placed in convenient positions for joining them to branches of similar thickness on the plant which it is desired to increase. This is most easily done by the spliced approach graft, which involves making cut surfaces, exposing the cambium, of equal size on both stock and scion, and tying these securely together. Approach grafting may be carried out at almost any time of the year, but, for obvious reasons, callusing occurs most quickly while the plants are in active growth.

In conclusion I would like to emphasize the importance of such elementary principles as cleanliness; the propagation house and pits should always be clean and special attention needs to be given to this after each cropping. I am of the opinion that a high-gloss paint is better than whitewash on wood-work. Only two tools are necessary—a pair of secateurs for gathering the branches and a sharp, clean knife with which to make the cuttings

or scions. One cannot over-emphasize the importance of selecting the right material at the right time. In a commercial nursery the propagator is gathering his material almost every day and takes precautions to see that there is only the minimum exposure of the newly-cut branches. There is perhaps nothing better than a piece of well damped sacking in which to wrap the cuttings as collected. It would be a mistake to take more material than can be handled and got into the propagating house within a short time. In a private garden where it is desired to make only a few new plants, one would, if possible, choose a day when the atmosphere is cool and humid.

Propagation is a subject which many commercial growers tend to shroud in mystery; and some nurserymen are jealous to protect what they regard as trade secrets. There are a number of authoritative books written on the subject and I am convinced that the observance of a code of rules will never make a propagator. A real propagator has to be born and bred among plants and have a feeling for them and understanding of them.

DISCUSSION

The Chairman (prior to reading of paper). Ladies and Gentlemen, it is my pleasure to introduce to you MR. H. G. HILLIER. He is no doubt well known to most of you, perhaps personally, but certainly by the fine exhibits which he so frequently stages in these halls from his Nurseries at Winchester. His subject, the propagation of Camellias and Magnolias, is one which is of great interest to us all and his advice, on which you can rely, is very sound.

I think that perhaps, after you have listened to him, he will be the first to admit that even his good advice may not result in success with your efforts, as it is generally known that the successful propagator has a rather uncanny knowledge of the Four "Ws"—When, Which, Where and Water:—when to take the cutting, which cutting to take, where to put it and the amount of water, or humidity, and moisture required. Although MR. HILLIER will do his best, I am sure, to advise you on these points, it is really only constant practice that can give you a good chance of success. So if you feel, after seeing the fine displays down below, tempted to go home and start propagating to fill your gardens, don't be surprised if you meet with a few failures. It is only constant practice which will bring perfection.

The Chairman. That has been extremely interesting, I am sure you all agree. MR. HILLIER will be pleased to illustrate any points you may not be quite clear about and to answer questions.

THE EASTERN MAGNOLIAS

A Gardener's Key

GEORGE H. JOHNSTONE, O.B.E.

I HAVE chosen this sub-title for my talk chiefly because it gives me the elbow room that I want in discussing this subject, while at the same time imposing on our review of the genus some sort of order instead of flitting like a butterfly to whichever flower takes our fancy; and partly because having been at some pains to work out this key for my own satisfaction, or as near that as I can get, I now want to try it out on others so as to find out whether it fulfils its purpose, and in doing so maybe to attract suggestions for improvement.

As we run through the Magnolias of the East with this key we can, of course, discuss their several peculiarities, merits and requirements; but let me at the start disclaim any intention of submitting it with the purpose of superseding a scientific, or botanical key. That will always be necessary for the botanist, and mine is certainly not a scientific key, but there are others besides myself who make no claim to be botanists but are nevertheless very much interested in this genus, especially in its Eastern representatives, who feel the need of some vade-mecum with which they can identify the Magnolias they meet with in other people's gardens—in our own they are, of course, conveniently, though not always legibly, labelled.

Now let us start with the evergreen species of which two only are included here—they are the only two evergreen Magnolias which have as yet been introduced to our gardens from the East but you are not to suppose that this means that these two exhaust the resources of the Eastern Hemisphere in evergreen Magnolias. MR. DANDY has, I believe, described three others—one from Formosa and two from China—which are nearly related to *M. nitida.*

The two included in my key present no difficulty in recognition, and both have great merit as foliage plants apart from flower. With a leaf more than 6 inches long, *M. Delavayi* forms, if you have room to accommodate it, a gigantic bush. Some of you may have seen the two big plants at Caerhays, between them covering more than the length of a cricket pitch. A dignified if rather sombre plant; just the plant for a churchyard, if the churchyard is in the right position.

The flower is not the highlight of this Magnolia—it opens at night and you may have to sacrifice your breakfast if you want to see it at its best; after 12 hours it is past its best. The plant is very easy to increase by layers, and it has the great merit that it will take a bit of wind. In the bleak winter of 1946–47, one of my plants of this Magnolia which was planted in defiance of the east wind, was pretty well denuded of leaves, but this in no way affected its well being. Plant it if you have room; crucified to a wall it is not satisfactory unless you can afford a large space for it to grow out from the wall.

M. nitida, having the flower primrose-yellow with broad purple streak on the outside tepals, is not as spectacular a flower as some, but it has few rivals for the foliage class. The highly polished green leaf looks as though varnished, and the young growth is bronze and also highly polished, while the margin of the leaf is bordered with silver—hyaline I think the botanists call it—clearly seen if the leaf is held so that the light shines through it. The seed cone when ripe is singularly beautiful with vivid green carpels, and brilliant orange seeds.

This brings us to the deciduous species and you will observe that in my key I have divided these into those with white flowers and those coloured. Here I admit that the key is not watertight for colour is a poor character on which to attempt identification. Thus there is a white form of *M. Campbellii*, and there is now a pink form of *M. stellata*—flowers usually with, or usually without, colour might seem better wording.

Then we can get another characteristic less subject to variation, namely those species which flower before the leaf unfolds and those which flower when in leaf, but here, too, is another leak in the key because some Magnolias, of which the hybrid *Soulangiana* would be a good instance, flower before the leaf in some parts of the country and after it in others.

There is a much easier clue to identification provided by the position or poise of the flowers upon the tree for this is upright in some cases, fully pendent in others, and with others midway between the two—nodding is perhaps the right term. Yet another very definite characteristic is provided by those Magnolias which have both sepals and petals which are definitely distinct, and those in which there is no such definite distinction between these two parts of the flower, when the term tepals is used to cover both.

Now let us take first of all the species which have upright and generally white flowers which precede the leaf.

Of those having sepals as distinct from petals there are two, namely *M. salicifolia* and *M. Kobus* with its form *Kobus borealis*,

and these two species are easily identified apart by the shape of the leaf which, in the case of *M. salicifolia* is oblong-lanceolate or narrowly elliptic, while the leaf of *Kobus* is obovate; and a further distinction is seen in the hairless peduncles (flower-stalks if preferred) of *M. salicifolia* as against the pubescent flower-stalks of *Kobus*.

I do not think we have sufficient evidence of difference between *M. Kobus* and its form *borealis* to encourage any assurance in identifying these two apart, and I am quite sure that these Magnolias have been confused over a considerable number of years so that there are many of the type under the name of the variety and *vice versa*.

One of the characteristics of *M. Kobus borealis* is said to be that it flowers at a younger age than does *Kobus*, but this does not conform to my experience, for two plants in my garden—the gift of a friend who had received the seed from the late PROFESSOR SARGENT of the Arnold Arboretum as being the true *K. borealis*—have flourished in my garden since 1926 and have not as yet offered so much as a single flower in acknowledgment of the space they occupy.

Of those white Magnolias which have sepals and petals alike, or nearly so, there are three in the section with upright flowers—one with tepals numbering more than 12 which also has an oblong but sharply pointed leaf, namely *M. stellata*; one with usually 12 tepals, and in this case the leaf generally obovate, namely *M. elongata*; and one with usually 9 tepals and a leaf oval and obovate, namely *M. denudata*.

Of Magnolias which flower when in leaf—we are still considering those which are white and upright upon the tree—we can divide into those with leaves which are predominantly obovate, and those the leaf of which is elliptic, or at least narrowly obovate, and in the first of these we require a further characteristic to separate *M. rostrata* from *M. obovata*, which characteristic we can find in the rufous pubescence of the former and the silvery-grey pubescence of *M. obovata*.

It is not without interest that if the leaf bud of *M. rostrata* is dissected before unfolding it will be found that the underside of the embryo leaf is very heavily pubescent with bronze hairs—I think more so than in the case of any other Magnolia, not excluding *M. globosa* which we shall presently consider when we get to those with semi-pendent or nodding flowers.

M. rostrata is a disappointing tree, except in so far as foliage is concerned, for the flowers are not comparable with the gigantic leaves of this species. I think that the most attractive feature of the flowers is after they have fallen, leaving the seed

THE EASTERN MAGNOLIAS

A Tentative Key

A. Leaves evergreen.
  B. Leaves more than 6 inches, dull; flowers ivory white . . . . . *Delavayi*
  BB. Leaves 6 inches or less, shiny; flowers primrose yellow . . . . . *nitida*
AA. Leaves deciduous.
  C. Flowers white.
    D. Flowers precede leaves; flowers upright.
      E. Tepals differentiated into sepals and petals.
        F. Leaves oblong, lanceolate, or narrowly elliptic; leaf buds glabrous; peduncles glabrous . . . . . *salicifolia*
        FF. Leaves obovate; leaf buds pubescent; peduncles pubescent . . . . . *Kobus* and *Kobus borealis*
      EE. Tepals (sepals and petals) alike or nearly so.
        G. Tepals more than 12; leaf oblong lanceolate . . . . . *stellata* (note that there is a red form lately introduced)
        GG. Tepals usually 12; leaf obovate . . . . . *elongata*
        GGG. Tepals usually 9; leaf oval to obovate . . . . . *denudata*
    DD. Flowers when in leaf.
      H. Flowers upright.
        J. Leaves predominantly obovate.
          K. Pubescence on lower side of leaf rufous . . . . . *rostrata*
          KK. Pubescence on lower side of leaf silvery grey; petioles purplish green . . . . . *obovata*
        JJ. Leaves elliptic or narrowly obovate; petioles yellowish green . . . . . *officinalis*
      HH. Flowers fully pendent when open.
        M. Leaves elliptic, apex acute, pubescence grey; branchlets glabrous, dark brown . . . . . *Wilsonii*
        MM. Leaves, obovate, apex obtuse, pubescence grey; branchlets glabrous, light fawn . . . . . *sinensis*
      HHH. Flowers nodding (not fully pendent) when open.
        N. Leaves obovate, apex pointed, pubescence grey (or nil); branchlets glabrous, light brown . . . . . *Sieboldii*
        NN. Leaves elliptic, pubescence rufous.
          O. Branchlets pubescent with chestnut felt . . . . . *globosa* (Chinese var.)
          OO. Branchlets glabrescent . . . . . *globosa* (Indian var.)
  CC. Flowers coloured.
    P. Flowers when in leaf; sepals and petals not alike; petals narrow, purple . . . . . *liliflora*
    PP. Flowers precede leaves; sepals and petals alike.
      Q. Flowers upright.
        R. Leaves oval elliptic.
          S. Flowers branchlets with apical internodes glabrous; flower buds narrowly ovoid . . . . . *Campbellii*
          SS. Flower branchlets with apical internodes pubescent; flower buds oblong, apex lanceolate . . . . . *mollicomata*
        RR. Leaves obovate, broadest well above middle; flower branchlets slender; internodes glabrous, purplish; flowers saucer-shaped . . . . . *Sprengeri diva*
      QQ. Flowers pendent or nodding.
        T. Leaves obovate, broadest well above middle.
          V. Leaves dark green, leathery . . . . . *Dawsoniana*
          VV. Leaves light green, stained red when young, not leathery, 4–6 inches, obovate, apex often notched. Flower buds (February) $1\frac{1}{4}$ inches $\times$ $\frac{1}{2}$ inch, elliptic; thickly pubescent with grey green hairs . . . . . *Sargentiana*
        TT. Leaves elliptic, obovate, apex notched, $5\frac{1}{2}$–6 inches $\times$ $2\frac{1}{4}$–$2\frac{1}{2}$ inches at about two-thirds of length from base, branchlets green. Flower buds (February) $2\frac{1}{2}$ inches $\times$ $\frac{3}{4}$ inch oblong, flattened on one side, apex curved, perule leathery, black, rather thinly pubescent; seam of perule obvious on both sides . . . . . *Sargentiana robusta*

cones upright upon the tree, the stiff and long-beaked carpels contributing a feature which does not seem to be shared with any other Magnolia: but then one must add that this Magnolia appears to be very susceptible to frosts so that the flowers, and so the fruit cones, are seldom seen. How unfitting it seems that the seeds of this huge-leaved Magnolia should be the smallest of any of the genus; but this gives a clue to the unimportance of the flower.

Differentiation between *Ms. obovata* and *officinalis* leads me on to controversial ground, but I think they are separable in that the leaves of *M. officinalis* are elliptic or narrowly obovate, while those of *M. obovata* are broadly obovate. The petiole, or leaf stalk, of *M. obovata* is a purplish-green, while the petiole of *M. officinalis* is a yellowish-green.

I am doubtful whether there are many examples of the true *M. officinalis* in cultivation in this country, and had it been otherwise I do not think there would have been the same difficulty in separating this Chinese species from the Japanese *M. obovata.*

M. officinalis is cultivated commercially in China for the drug derived from its bark, and I believe it is a fact that this species has not up to date been found growing in a wild state.

Now the bark of these two Magnolias having the same medicinal properties, it is not difficult to believe that as the glad Chinese species became less common the gaps in trees cut down to make the drug would be filled with imported Japanese plants (*obovata*); and it does not require a much greater stretch of imagination to accept the possibility that where the two species are grown together the seeds of *M. obovata* may have been introduced to this country as those of *M. officinalis.*

M. officinalis has a curious characteristic in that some plants, according to the late DR. E. H. WILSON who introduced it, have emarginate leaves, with a deep notch at the apex; and a few, but very few, of the leaves on the only adult trees that I have seen and regard as unquestionably of this species show this characteristic. The flower is smaller than that of *M. obovata* and the scent is almost overpowering. It is tree-habited—one at Caerhays which blew down a few years ago measured 51 feet as it lay.

This finishes the white flowers which are upright on the tree and we now come to those which are white but pendent, or nodding, and of these there are four species. *M. Wilsonii* is easily recognizable at all times of the year by the very dark brown branchlets—they commence green of course, but by the autumn are a very dark brown, appearing almost black as they get older: the leaf is elliptic and lanceolate at the apex. Next is

M. sinensis, the leaves of which are obovate and with a blunt rounded apex, the branchlets are a light fawn colour.

The pubescence on the underside of the leaf of these two is grey, but they are not likely to be confused, for the shape of the leaf differs as much as does the colour of the branchlets. Moreover, you cannot persuade *M. sinensis* to grow as a tree which *M. Wilsonii* will do—*M. sinensis* is always straggly—but what a magnificent flower it is—the largest of this section.

The flowers of both *Ms. Wilsonii* and *sinensis* are fully pendent when mature, and both have the great merit that they produce late flowers after the main crop has fallen.

Next in my key comes *M. parviflora*, which should be called *M. Sieboldii* and I hope that any botanists amongst you will forgive me if I tread on your corns by the use of this apt and more tuneful name.

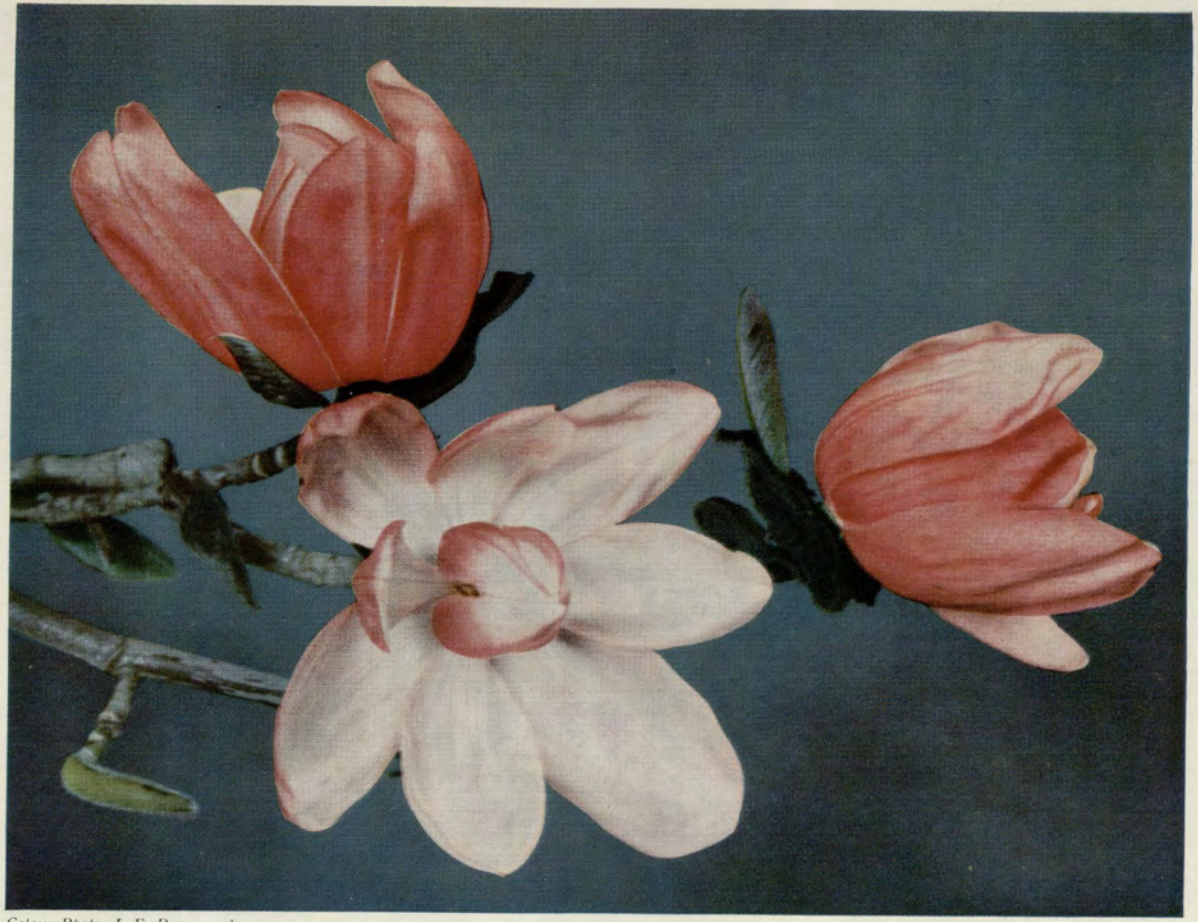
I have been puzzled as to how to describe the leaf pubescence of this species because it generally weathers off at an early stage, leaving a glabrous under-surface. The leaf is obovate, contracting rather abruptly to a pointed apex, and the flower is never fully pendent—seldom below the horizontal.

M. globosa has flowers which hang a little below the horizontal. It is not, I think, to be recommended where garden space is limited because—with me at any rate—the flower is very susceptible to damp which in the sodden climate of the West causes the flowers to turn brown, even before they are fully open.

I cannot see anything to distinguish between the Indian form of *M. globosa* and that from China, which was introduced as *M. tsarongensis*, except that the branchlets of the former lack the heavy chestnut felting which makes the Chinese form so intriguing. A sketchy differentiation, and probably one that is inconsistent, but I thought that if I mentioned this characteristic of the Indian species in my key it might save me a question when my talk is finished.

This brings me to the species with coloured flowers, and these too readily lend themselves to division into flowers that are upright on the tree and those that are not.

Here too we find one species, *M. liliflora*, the flowers of which have sepals quite distinct from the petals, three of them, triangular in shape and a purplish green in colour, but they are generally shed before the flower is fully developed. Probably many of you grow it, though quite likely under another name, for this species pops up now and then behind the label *M. Soulangeana nigra*, which is, I believe, a *Soulangeana* hybrid crossed back to *M. liliflora*. This Magnolia sometimes flowers



Colour Photo, J. E. Downward

CAMELLIA AND MAGNOLIA SHOW

FIG. 27—*Magnolia Campbellii* from Exbury (See p. 120)

late in the summer after the leaves are fully developed, which robs it of any spectacular display. In 1950, this Magnolia (*M. liliflora*) has flowered before making leaf—presumably out of spite.

All the rest of the species included in my key flower before the leaves unfold and we can here again divide them between those that carry their flowers upright on the tree and those that have pendent or nodding flowers.

Of those with upright flowers we have three species, possibly four, and here again I shall find myself on controversial ground for those who know far more than I do about the genus regard *M. mollicomata* as being no more than an Eastern form of *M. Campbellii*; but I take refuge once more in the claim that mine is not a scientific key—it is constructed to enable the unscientific to recognize the species that we grow in our gardens, and I claim there are distinctions between those two Magnolias which enable everyone to recognize them apart.

The flower buds are very different in shape and in size—those of *M. Campbellii* being smaller and conical in shape (narrowly ovoid is perhaps the correct description) whereas the buds of *M. mollicomata* are larger, oblong in shape with a lanceolate apex and—what I have never seen on the flower buds of *M. Campbellii*—a pinched or waisted appearance near the base, and one or more longitudinal indentations, caused by the developing leaf bud within the hairy perules which protect the bud.

There is another distinction which should be mentioned because I believe it to be constant—and this is the hairy internodes of the flowering branchlets. There may be five or more of these internodes below the peduncle of the flower and whereas I have never seen anything but glabrous internodes below the flower of *M. Campbellii*, I have yet to see a flowering branchlet of *M. mollicomata* without one, two, or even three thickly pubescent internodes immediately below the peduncle of the flower, a characteristic which remains visible on the flower stool for at any rate 12 months, and is often traceable two years after the flower has fallen.

Third on my list is *M. Sprengeri diva*, but before I say something about that species I want to mention the Magnolia at present nameless—FORREST'S number 25655. I have suggested that room may have to be found in my key for a fourth species here, and this place is reserved for 25655 which, although similar to *M. mollicomata* in flower—though not in colour—has quite a different shaped leaf, and is by far the hairiest of all the Magnolias we grow—a veritable hedgehog. This woolly pubescence

clothes as many as four of the internodes below the flower, as well as the peduncle in the case of the Werrington plant.

The colour of the flower is a dark lilac, almost a purple, and those of you who saw the flower exhibited at the R.H.S. show by MR. M. P. WILLIAMS last year will agree with me that this is a most beautiful flower. Unfortunately the plant is rather softer than either *Ms. Campbellii* or *mollicomata.*

There are three adult plants of 25655 growing in this country —there may be more but I only know of three—one at Werrington Park (COMMANDER A. M. WILLIAMS) which, in 1941, was the first of the three to flower, one at Borde Hill (planted by the late COL. STEPHENSON CLARKE) which has yet to flower, and the Lanarth plant which MR. M. P. WILLIAMS showed last year.

M. Sprengeri diva is the last of the upright flowers and is recognizable by the slender flower branchlets, of which the apical internodes are glabrous and green tinged with purple. Again a most beautiful flower the colour of which challenges all but *the* darkest of the crimson *Campbellii*, flowering a week or so later than that species, it is less apt to be frosted, and no one, who has seen the Caerhays plant of this in full bloom, is likely ever to forget the peerless beauty of it.

Unfortunately there is only this one adult specimen of this species, and all others in this country are derived from this single plant, so it is not safe to claim that the flowers of this species are always the lovely rose-pink of the Caerhays plant— already it has been identified as conspecific with *M. Sprengeri* described by the Italian PAMPANINI some years before WILSON collected this treasure.

M. Sprengeri diva has been tentatively linked with *M. elongata*, but I regard them as distinct species. *M. Sprengeri diva* was at one time regarded as a pink form of *M. denudata*, but the number of tepals negatives this.

Lastly we have three species the flowers of which are not upright on the tree on which they grow. Of these I would remark that *M. Dawsoniana* is easily identified by the dark green, leathery, leaf which always looks as if it was meant to be evergreen.

The flowers of this species are, to me, indistinguishable from those of *M. Sargentiana* at the stage of development at which they are at their best—I was interested at a flower show last year to see blooms of these two shown alongside each other and I do not think anyone could have told them apart.

The internodes below the flower of *M. Dawsoniana* are glabrous, and thinly pubescent in the case of *M. Sargentiana.*

Lastly we have *M. Sargentiana robusta*—perhaps the most

desirable of all these beautiful plants. There is no likelihood of this and *M. Sargentiana* being confused, whether in flower or not, provided that they are adult plants—by which I mean of flowering age. So conspicuously do they differ in shape of leaf, in bud, and in flower that one is inclined to rank them as separate species, but if this is attempted one finds so many characteristics which are common to both, although developed in one of them to a larger degree than the other, that one cannot get a sufficiently clear line of division.

If it were possible to prove it I should like to hazard the opinion that *M. Sargentiana robusta* is the type and *M. Sargentiana* a hybrid of it with another species such as *M. Dawsoniana*; but while *M. Sargentiana robusta* came to us from Wa-shan in Western Szechwan and *M. Sargentiana* from 30 miles west of the same place, *M. Dawsoniana* was collected at Tachienlu, also in Western Szechwan but about 80 miles from Wa-shan.

Unfortunately *M. Sargentiana* seems about the shyest of the Magnolias to seed, and I do not know of any plants of it having been raised from home grown seed, or we might find some clue to hybridity; the great majority of the plants we have of this are grafted.

My key is, as you will observe, headed "tentative"—it is especially tentative regarding the last three, and perhaps four, species included in it, because I feel sure that the characteristics of these species require further sorting out. As an instance of my meaning—I noted last year that the flower buds of *M. Sargentiana robusta* opened first at the tips, forming a tunnel into the gynoecium of the flower while access to the androecium is closed by the tepals still lightly "rolled" round the base of the flower, and one was led to remember that in the *Campbellii* subsection the outer tepals open first, exposing the anthers, while the female organs are still covered by the inner tepals which are curled over the gynoecium somewhat in the shape of an inverted wine-glass.

I then measured some of the tepals of this plant of *M. Sargentiana robusta* and was interested to find that the inner tepals were longer than the outer ones.

I lacked opportunity to test this with other plants of the same species last year; indeed the significance of it did not immediately "sink in." Neither did it occur to me at the time to compare the unfolding of the flower buds of *M. Sargentiana* and also those of *M. Dawsoniana.*

This paper is already over long, and I have said nothing regarding cultivation—too large a subject to attempt now, so

I will content myself with adding a word on positioning—the siting of Magnolias—for this is all-important owing to the space that they demand if much of their beauty and character is not to be sacrificed. Shelter from wind is essential not only to the flowers but also because the branches are brittle and liable to be torn off. And then for those who are fortunate enough to have some say in this important consideration there is the selection of background. The blue sky, the dark green of evergreen trees or even the background provided by the leafless woodlands of March—each offers its reward, but to earn it one must site those Magnolias which flower before the leaves unfold with due regard to space and wind.

CHINESE MAGNOLIAS IN CULTIVATION

GEORGE H. JOHNSTONE, O.B.E

(SIR GILES LODER, BART., *in the Chair*)

The Chairman. Ladies and Gentlemen, we are fortunate enough again to have MR. GEORGE JOHNSTONE to give us a talk on Eastern Magnolias. You will see, if you have read his paper, that he has given us a comparatively simple Gardener's Key to their identification.

I do feel that those who were lucky enough to go on that recent Cornish tour saw the Magnolias in all their glory. They are the most difficult things to pack, otherwise there would be a far bigger collection at this hall, but they do bruise extremely easily. If only you could see some Magnolias in full blossom, I think there would be many more grown than there are at the moment, for actually they do not have many difficult requirements. We find at home, although we are far from the Western seaboard, that they grow very happily, and, provided they are kept out of the wind to a certain extent, they survive and prosper, and, except when you have very early spring frosts, they give a worthwhile show.

MR. JOHNSTONE is now going to give us some elucidation on that.

Mr. George H. Johnstone. I hope you will not hesitate to ask any questions, because my purpose in giving this talk to-day is not altogether to help you, but in order to tempt you to help me, which you can well do, perhaps best do, by asking questions on any subject to do with Magnolias which presents problems to you.

Now, my paper has been distributed, and, as you will note, in the final paragraph it says that the time I am allowed for my paper has been pretty well used up and I have said nothing about the cultivation of Magnolias. If I may presume that you have done me the honour of reading that paper, then I think we can diverge from it for a few moments to talk about cultivation.

MR. HILLIER this morning was giving a lecture on propagation, so what I will do, with your permission, is to start from the stage where you plant out the Magnolia.

First of all, the most important thing is, of course, drainage. Drainage is the foundation of gardening and I suppose the most important part of it if you are going to get your plants to live and grow for years. The Magnolia is not a marsh plant. I know *M. glauca* in America is called the 'Swamp Bay,' and this it may

be, but it won't do in a swamp in this country, and even your swamp, if swamp it be, must have drainage. Drainage is, as I say, the most important matter to study when you are planting Magnolias. Dig a hole in the ground, and then do not omit to break the bottom of it so that the roots can get down and the drainage will work well.

Then I would say that the next most important point, as already touched on by our Chairman in his opening remarks, is shelter. The Magnolia is a dreadfully brittle tree. I have myself a large tree of *M. Veitchii* and the top has been riven and smashed by the wind time after time. But happily the Magnolia, though susceptible to wind-break, is at the same time extraordinarily accommodating in the way in which it mends itself. I mention that because it is an indication, too, of the facility with which you can prune back a Magnolia. I suppose there are, it would be fair to say, a great many more plants which are killed by want of the knife than because of it, and the Magnolia is certainly amongst those.

The next point I would mention is to give it room. The Magnolia is a magnificent plant, but you only get the full value of it if you can afford to give it room, and that, in turn, is rather difficult if you are going to shelter it at the same time. If you plant it in a screen of other things, Laurels or whatever it may be, then it is difficult to provide room for it. It is difficult, too, to provide room because you realize you have to go on the waiting list for a considerable time with many of the varieties of Magnolia before you will see a flower, and while you are waiting you think: "Let us plant some Azaleas—or whatever you choose—in front, to give something to look at while we are waiting." That is all right, but the time will come when your Magnolia has reached out to those Azaleas, or whatever you have planted, and then you naturally think, "We ought to take up the Azaleas and put them somewhere else"; and that is a trap into which you should not fall, because the roots of a Magnolia are a most delicate part of its anatomy and if you injure the roots you will very likely kill the Magnolia. I can speak from experience here, and I am not alone in this. Others have done the same, who have moved plants from amongst the root-system of the Magnolia, with the result that the Magnolia has died. I am sure that that is one of the most frequent causes of killing Magnolias—digging up plants fairly near or in the root-system of a Magnolia in order to clear away what should never have been planted there at all. Another point which you want to look out for, especially when you are planting these small Magnolias, is, as they grow, to make sure that the plant is firm in the ground. There is nothing which

will kill any plant so surely as what we call "wind-shake." You all know, the draught comes in and starts the plant just waving a little, and presently a hole is made at the base of the stem by the plant going round with the winds, and that is absolutely fatal, not only to Magnolias but to almost anything else.

Now I think I should perhaps say a word about sunshine, because the Magnolia is a tree that likes to get a bit of sunshine, though not to be grilled in it. There are, of course, exceptions. Unfortunately, in Magnolias there are exceptions constantly cropping up, and those that like sunshine especially are *M. stellata*, *salicifolia* and probably *Kobus* as well. These seem to take more sun than do the larger-leaved groups.

I suppose, too, one should say just a word about those which grow in lime. I always think it is rather wrong to regard plants as being lime-loving. I think they are generally lime-tolerant rather than lime-loving, and very often they are lime-intolerant, and, generally speaking, Magnolias are amongst the latter, but you can grow some of them. I am not very knowledgeable about what can be grown on lime in the way of Magnolias, because I have not any lime on my place, but I know that *Wilsonii*, and I think *parviflora*, and I believe the other nearly allied one, *sinensis*, in which I include *highdownensis*, and *Delavayi*, are all Magnolias which will grow on lime.

Well, now, in the recognition of Magnolias—I am coming to that now—I would urge that it is awfully deceptive to try to recognize Magnolias in this country except when dealing with adult plants. They seem to change, in fact they certainly do change to some extent in habit, to some extent in leaf, and to some extent in flower, as they increase in age. I can give you a very good example of that in *M. Sargentiana robusta*. This has a very characteristic leaf, elliptic, emarginate, with a notch at the top of it, a long slender base, and very easy to recognize. I do not know any other Magnolia leaf which is like it at all. But that leaf does not come until the tree reaches adolescence. There is a rather interesting story there. Some years ago, my good friend and neighbour, MR. CHARLES WILLIAMS, raised a number of these *M. Sargentiana robusta* seedlings, and he kindly gave me my pick. I picked out the three which I thought looked as if they might some day have that emarginate leaf. I carried the seedlings home and grew them, and two or three years later I looked at them again, and there was no emarginate leaf at all; but I kept on with them, and they have now started to make this characteristic leaf. They were, I think, about five years from seed when they made the first typical leaf, and it is rather interesting that the first time that they developed this emarginate

leaf was at the end of one or two shoots, being the last leaf made on the current year's growth; only on one or two shoots, but they started. Last year was the second year they developed some "notched" leaves and there was a second typical leaf on some of the shoots, the terminal one and the one next to the terminal. It will be interesting to see how soon the whole of the branchlets on those trees bear this typical leaf.

Now, having started with a reference to the last paragraph of my paper, perhaps it would be easier if you let me work backwards, more or less, through that paper, dealing with the various Magnolias which are mentioned there. There are one or two corrections which I shall ask you to let me make. The first of these is, where I refer to the way in which the gynandrophore is protected in the *M. mollicomata—Campbellii* subsection by a formation in the centre of a sort of ball by the four inner tepals. Now, that is not right. It is not a ball. It is more like a wine-glass turned upside down and broken off at the stem. It is rather interesting the way in which that centre is protected. If you watch it carefully, you see it starts first of all as a pointed cone, the outer tepals having already opened out, and in the centre is this sharp pointed cone formed by the four central tepals. They are attached to each other at the top; and as the flower develops, the base of these four central tepals is rather forced apart and therefore gives the impression of what I have called a ball, which I now alter to inverted wine-glass minus the stem, and, as the tepals continue to develop while still attached at the apex they are forced further apart at the base, thus providing an entrance between the tepals for insects to reach the anthers and so the pollen. I have mentioned somewhere in my paper that some of these Magnolias, instead of opening their flowers in that way, open them in a different fashion, from the centre outwards. *M. Sargentiana robusta* is an example.

I want to say a good deal, if I may, on the subject of *M. Sargentiana* and *M. Dawsoniana*, because they are extraordinarily difficult to tell apart. There are differences between them and I will try to emphasize what those differences are. There seems some idea that *M. Sargentiana* and *M. Sargentiana robusta* are difficult to tell apart, but you will find far more difficulty in differentiating between *M. Sargentiana* and *M. Dawsoniana*. *M. Sargentiana robusta* has quite a different habit from *M. Sargentiana*, which grows as a tall spindly tree with very whippy twigs. *M. Sargentiana robusta*, on the other hand, has much stouter legs and is a spreading bush rather than a tree, as far as this country is concerned, and I do not think you will have any difficulty in telling them apart. (Frontispiece.)

Photo, W. Abbing

THE EASTERN MAGNOLIAS

FIG. 28—*Magnolia Dawsoniana* (See p. 57)

A specimen shown in the Camellia and Magnolia Show

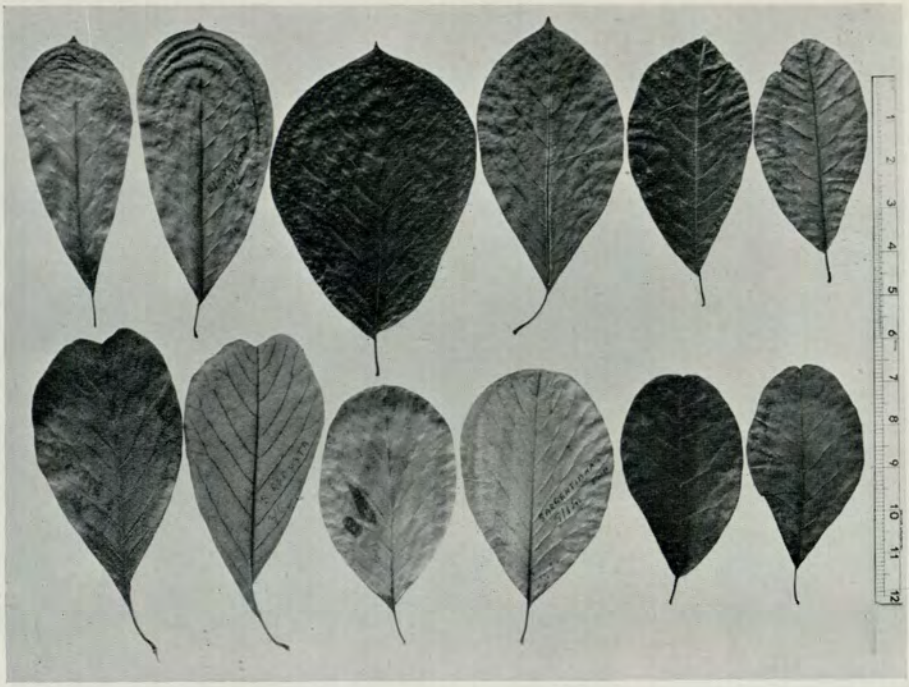


FIG. 29—Leaf specimens of the Eastern Magnolias
Top row: *M. elongata*; *M. Sprengeri diva*; *M. Dawsoniana*
Bottom row: *M. Sargentiana robusta*; *M. Sargentiana* from Trewithen; *M. Sargentiana* (See p. 57)

Photos, J. E. Downward

FIG. 30—Leaf specimens of the Eastern Magnolias
Top row: *M. globosa*; *M. sinensis*
Bottom row: *M. Kobus borealis*; *M. salicifolia*; *M. Wilsonii*

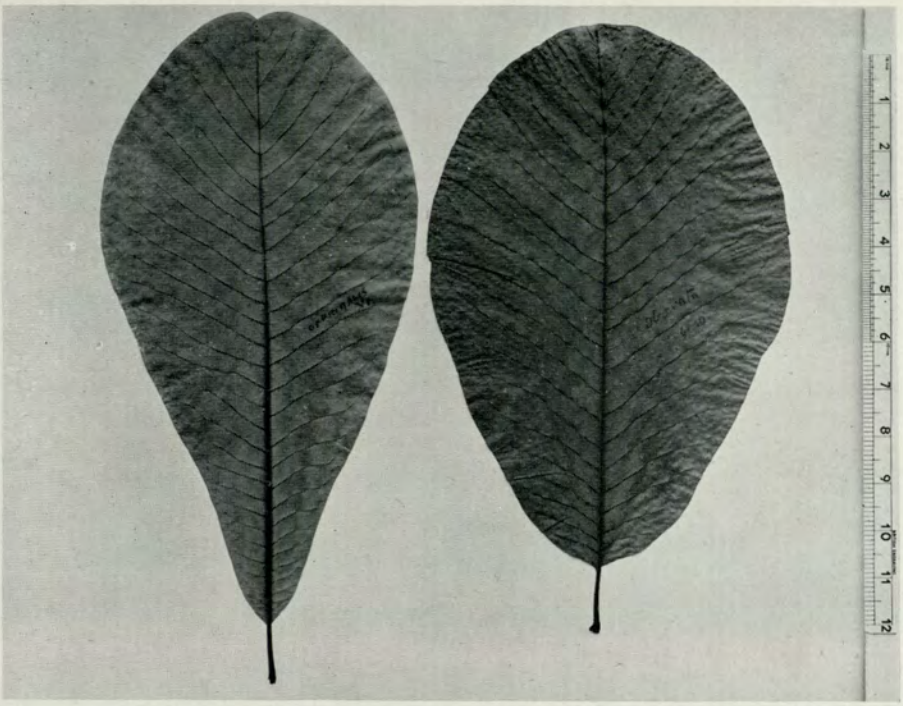


FIG. 31—Leaf specimens of the Eastern Magnolias
M. officinalis; *M. obovata*

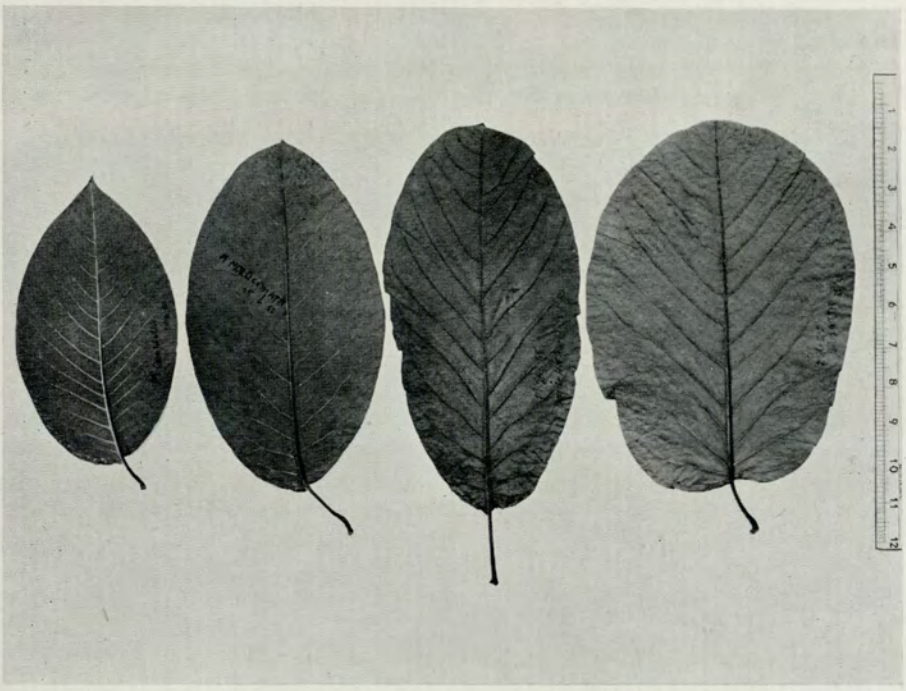


FIG. 32—Leaf specimens of the Eastern Magnolias
M. Campbellii; *M. mollicomata*; *Magnolia* F. 25655 'Borde Hill' form;
Magnolia F. 25655 'Lanarth'

Photo, Chandlers, Exeter

FIG. 33—*Magnolia Veitchii*. (Left) Original tree which first flowered in 1917. (Right) *Magnolia Veitchii* var. 'Isca' in the Exminster Nurseries of Robert Veitch & Son Ltd. Photograph taken March 1950. (See pp. 102 and 123).

FIG. 34—*Magnolia Sprengeri* var. *diva* from the plant at Caerhays Castle (See p. 58)

Photo, 'Country Life'

If you follow the development of the flower from an opening bud of *M. Sargentiana robusta* you will see that it starts to open from a nearly horizontal position, bending over yet more as it develops so that when fully unfolded you look into the face of that lovely flower, but it is not pendulent. Neither are the flowers of *M. Sargentiana* strictly speaking, pendulous, but as the tepals unfold they hang in a, broadly, campanulate bunch until—a little later in development—the tepals curl back to expose the gynandrophore. (Fig. 18.)

The bud of *M. Sargentiana robusta* is also very characteristic and quite different from that of *M. Sargentiana.* Those of the former are pubescent, but not densely so while the internodes, just below the peduncle of the flower, are glabrous and not hairy. The somewhat sickle-shaped bud of *M. Sargentiana robusta,* seamed on both sides, is unmistakable from about January month.

Now let us compare *M. Sargentiana* and *M. Dawsoniana* and see if we can find out the difference between them. First of all, there is the leaf of *M. Dawsoniana.* That presents no difficulty in recognition, when it is there, or even if you pick a dead leaf up from the ground. In *M. Sargentiana,* the leaf is very often notched (but with many exceptions) and is much broader at the apex than the leaf of *M. Dawsoniana*; much broader and much rounder: obovate and obtuse; emarginate, *i.e.* notched: though I have found one tree on which none of the leaves were notched at all, so avoid that trap. (Fig. 29.)

Then the habit as between these two is undoubtedly different. I want you to notice the type of tree. All the trees of *M. Dawsoniana* that I have seen are of the spreading bush type. I have never seen *M. Sargentiana* like that: it is, in every case, a tall, spindly tree, and if you want to pick the flowers you have to use steps. With *M. Dawsoniana* the flowers are in quantity right down to eye level. (Fig. 48.)

The way in which the flowers develop from the bud is similar in these two Magnolias and indeed the flowers themselves are at first sight identical. They are not easy to tell apart, but one fairly reliable way in which you can distinguish them is that *M. Dawsoniana* has fewer tepals than has *M. Sargentiana*—generally 10–11 as against 12–14, but there are exceptions. I counted the tepals of a few flowers in the hall last night, and they ran true to form. (Fig. 28.) Then I have already mentioned that in *M. Sargentiana* the internodes arevery often hairy: in *M. Dawsoniana* those internodes immediately below the flower are always glabrous. There is another distinction which you can note to some extent, that is that the lenticels on the young

growth of *M. Dawsoniana* are inconspicuous; you hardly notice them at all; but in *M. Sargentiana* they are both conspicuous and long in shape. I do not know how far that holds good. I have not examined enough examples of either one to be sure, but in those examples I have seen, that is definitely a reliable mark of distinction. Then I mentioned the poise of the flowers being the same, but the number of tepals is greater in the case of *M. Sargentiana* and they are rather longer, about half an inch, and rather broader, and, in those I have seen, a shade darker than those of *M. Dawsoniana*, but I do not think it is very safe to go by colour for distinction when dealing with Magnolias; you will get into frightful confusion and difficulty if you attempt that.

There are some good examples of *M. Sprengeri diva* in the hall, and I do congratulate SIR GILES LODER on the wonderful packing which has brought up this particular type of Magnolia in such good form. The reason I put that on the screen is that there is still a tendency to fall into the trap of thinking this must have some relationship with *M. denudata*. There is, of course, a very easy way to distinguish between these two for the number of tepals on this particular Magnolia is 12, and it is only 9 in the case of *M. denudata*. (Fig. 34.)

There is another confusing Magnolia which, in this Gardener's Key (which is not meant to be a scientific key at all) I have separated altogether from this *Sprengeri* group: I am referring to *M. elongata*. There is no real foundation for its being included in that group. It is not a very attractive Magnolia, I think. The tepals are very narrow and insignificant. I think MR. BEAN in his book rates it about level with *M. Kobus* but I do not think it is as good. You do not meet with it much. It is a very hardy plant, but a very different proposition from the lovely *M. Sprengeri diva*.

Now I want to go on to *M. mollicomata* and *M. Campbellii*. Here is the flower of *M. mollicomata*, and I have had it put on the screen in order to demonstrate what I was speaking of earlier. You see the tepals forming the pointed cone in the centre, and the other points of which I spoke.

Now there was, and perhaps is still, quite a controversy as to the difference between *M. mollicomata* and *M. Campbellii*. I am not concerned this afternoon as to whether they are separate species, or the same, one form from the East and the other from the West, but what I want to do is to try to help you to distinguish between the two. I think you can pretty well do so at all times of the year, and this is the first, and I think the easiest, way to do it. You will see that in outline the buds of *M. Campbellii* are a kind of filbert shape, and those of *M. mollicomata* are oblong

with a pointed top. That holds good pretty well always, I think. There is another distinction. Just below the flower you will note the two internodes on the *M. mollicomata* are hairy, while the internodes below the *M. Campbellii* buds are, as far as I have been able to see, never anything but glabrous.

Now we come to something a little different. Here we have the flower of M. 25655. It was shown at the R.H.S. Hall last year as *M. mollicomata*, 'Lanarth variety.' It is a very interesting and beautiful flower. There are three plants of this 25655, the FORREST number, growing in this country, and FORREST in his notes records he never saw this particular Magnolia in flower, but he assumed it was *M. mollicomata*, which indeed it may have been; but it is a break in colour altogether, and darker than any Magnolia with the exception of *liliflora*. There is no shading off of the colour in the tepals of this Magnolia; it carries that colour right through from the apex to the base of the tepals. Of the three plants that I know of in this country, the one at Borde Hill in Sussex has never flowered yet, the one at Werrington Park, near Launceston, flowered first in 1942, and then there is this wonderful plant at Lanarth. The leaf is quite a different one from that of *M. mollicomata*. Unfortunately, it is more susceptible to frost than either *M. mollicomata* or *M. Campbellii*. It has one very outstanding characteristic—that it is more hairy than any Magnolia I have seen. When I say "hairy" I refer to the pubescent internodes below the bud. (Figs. 35 and 36.)

When it opens out you can see that the centre is still protected, and the inner tepals, attached at the top, are beginning to spread out at the bottom. That is the Lanarth flower. In the Werrington flower, you can see still more strongly demonstrated what I wrongly called that ball shape in the centre. You will see that the shape of the bud follows that of the rest of the *M. mollicomata*, and it has three internodes, all of which are hairy.

In the flower stool from the Werrington M. 25655 you can see intense hairiness. In that case the hair goes downwards as well as upwards. It is the most extraordinary thing I have ever seen in the way of pubescence on a Magnolia.

A leaf of *M. Campbellii* or *M. mollicomata* would have been without the lobes at the base or if there, they would be much less pronounced and at the apex they would be narrowed to a point instead of being that rounded as in the leaf of M. 25655 which is also normally larger than that of *M. mollicomata*. Unfortunately there are very few herbarium specimens of this Magnolia. Most of them I think are in the Arnold Arboretum of America and therefore out of my reach to examine.

I want you to note one remarkable characteristic of this

particular plant at Lanarth, namely the hairy collar at the base of the growth shoot. I noticed the other day on a bloom of this Magnolia that was shown in Truro by MR. WILLIAMS of Lanarth that the base of the branchlet carrying the flower still carried the collar of pubescence at the base. If that is a characteristic which is constant it will provide a very easy means of identification.

Before I leave the subject of *M. mollicomata*, may I tell you this: *M. mollicomata* differs from *M. Campbellii* very much in the time that it takes to reach adolescence. I can give you chapter and verse for it. You can raise a *M. mollicomata* from seed, flower it, ripen the seed, and sow it and bring the resulting plant to flower in the same period that it will take you to raise from seed and flower one single plant of *M. Campbellii*. *M. mollicomata* will do it in half the time. I would also just like to say in passing that not only in flower is *M. mollicomata* a worth-while plant but in fruit too it has its claim. The long pendant fruits which are bright red in the early autumn really make a spectacular display.

A plant of *M. globosa*, Indian variety, was sent from India to the late DR. WATT in Aberdeen and he, shortly before he died, sent me the plant, because it had outgrown his greenhouse, and it has continued to flourish with me ever since. That is the Indian form of *M. globosa*. The Chinese form came to us under the name of *M. tsarongensis*, which is not a good name, because the Chinese form is identical with the Indian form except that the latter lacks the chestnut hairs growing on the petioles of the leaves; it is more glabrescent. But it is not right to judge by one or two plants. You want to see several dozen before you can determine whether the difference is typical or not.

In the Chinese form you may note the poise of the flowers. They never come down much below the horizontal.

M. sinensis is always easy to identify. It has a very characteristic leaf and is a species of Magnolia always easy to recognize at all times of the year because of the fawn-coloured bark as well as the characteristic leaf. At MR. DANDY'S lecture, you remember I raised the question as to whether *M. highdownensis* is a hybrid or a form of *M. sinensis*.

Now, the characteristic of *M. highdownensis* is the pointed leaf. In *M. sinensis* the leaf is rounded and blunt at the apex and more pronouncedly obovate and a bit broader there than that of *M. highdownensis*. It is not without interest that there is a batch of this particular Magnolia growing at Caerhays and they are all true to *highdownensis* type. I cannot see any difference between any of them.

There is one characteristic of interest here, namely that, do what you will, you cannot make *M. sinensis* grow into a tree. It will never be anything but a bush. MR. WILLIAMS has tried, but it is not a success. And the whole lot of this which I believe to be what is now regarded as *M. highdownensis* are absolutely typical. I suggest that if you are going to argue that this is a hybrid, then you must expect to find some difference in characteristics in some members of the batch which has been raised. I have grown this particular form myself—true to *highdownensis* type. I have sown seed of it; that has come true to type. But that does not mean that in the case of my plants precautions were taken to ensure that the bumble bee had no hand in the fertilization, they may not, nevertheless. As far as I personally am concerned, I prefer to regard this plant (*M. highdownensis*) as a form of *M. sinensis*, not a hybrid although intermediate in the shape of leaf between *M. Wilsonii* and *M. sinensis*.

Now we come to quite a different proposition, *M. nitida*. It has the most lovely foliage, the leaves being more highly polished than any evergreen leaf that I know of—better than the best hollies. The young growth is bronze, also very highly polished. The leaf has a silver edge to it. If you hold it up so that the sun is behind it, you will see that silver edge all the way round each leaf. I think it is, without exception, the most beautiful of all the evergreen trees I know. It is so easy to recognize that I do not think we need go into that here.

The best forms have flowers which are a pale primrose-yellow with a purple streak down the outer tepals. The highlight of *M. nitida* is the seed. The cone is a most beautiful brilliant green and the seed, instead of being scarlet, is a most lovely shade of orange.

That, I think, takes us back to page 1 of the paper which I have distributed, and I will only say in conclusion that, for those who have the patience and room to grow those Magnolias, no plant offers a greater reward.

DISCUSSION

A MEMBER. When is the best time to transplant a Magnolia from the nursery to the permanent site?

MR. JOHNSTONE. What I prefer to do is to move a deciduous one in the autumn and the evergreen in the spring; but what is more important, when you are moving them, is to be extremely careful of the surface roots. That is where you get into trouble. I do not think it really matters what time of year you move them if you take care of the roots.

A MEMBER. At what age do they begin to resent being moved?

MR. JOHNSTONE. I would say from about a year old. What I have found is, with those fleshy roots at the surface, when you are moving even tiny seedlings you want to be extremely careful of them. When I am potting a Magnolia, I do not thumb down the soil, for fear of injuring the root, and if I am moving one from a frame to a permanent site or nursery, I like to work my hands right underneath the roots and carefully lift them up intact.

MR. HANGER. I am rather interested in this movement of Magnolias, the deciduous ones. I myself have found I can move them and do what I like with them, provided I do not break the roots, in the early part of May. I have moved hundreds and I have never lost one. Of course, in Cornwall things grow of themselves! But in Surrey I would certainly advise moving your deciduous Magnolias in the early part of May.

MR. JOHNSTONE. Would you not agree with me that what matters much, much more than the time of year to move the Magnolia is to have a team of men who know what is required in moving them?

MR. HANGER. I quite agree there. And I would never suggest a bright day. I would advise a humid, or cloudy, or misty day.

THE CHAIRMAN. The biggest move I know of was a *M. officinalis* which was moved when about 15 feet high, or higher, and it survived the move without, apparently, any difficulty at all. That, I think, was moved in early spring.

A MEMBER. MR JOHNSTONE said it was wise to use the knife. At what time of year would he advise using the knife?

MR. JOHNSTONE. The best time of year to make a wound in the plant is the early spring, because plants, like people, seem to recover a bit easier in the springtime than at any other time.

MR. HILLIER. I cannot help thinking that MR. HANGER is thinking of moving a plant from one part of an estate to another; but if you are going a few hundred miles, I would rather move it when it is more dormant than at the beginning of May. Provided the plant moves with a good ball of earth, there is no reason why one cannot move it even in January.

MR. HANGER. I once had a *Magnolia Campbellii*. The first year I had it at Wisley, I put it in the boot of my car, that was in the first week in May, no soil on it, and I forgot it. After a week I took it out and planted it, and it has grown well.

MR. ROSE. Two years ago, from Townhill, a *M. macrophylla* nearly 10 feet high, was moved, in June and in full leaf, to

Windsor Great Park. MR. SAVILL tells me that it is now established and doing well. This proves the truth of the saying that gardening is not an exact science!

MR. JOHNSTONE. I moved a Magnolia just about 20 feet high to see if it could be moved. I dug a trench round the plant, the year before it was to be moved and then I filled the trench with leaf mould. Then we took infinite pains and spent all the day in taking up this plant with a magnificent ball between the base of the stem and the perimeter where it had been dug round. I gave it to someone with a team of men, a vast lorry, and a good garden in which to plant it. The team of men lifted this Magnolia with the greatest difficulty, because I had left such a large ball of soil. They conveyed it to the lorry by hand but just as they were putting it on the lorry, they dropped it, and every single bit of soil fell off it. That plant is still living to-day.

THE CHAIRMAN. I think, Ladies and Gentlemen, that you are fairly convinced in your minds that Magnolias can easily be moved. Though the treatment seems to vary, the result in the end seems happy.

We must thank MR. JOHNSTONE for this extremely interesting talk, especially for telling us about those newer types of Magnolia and how to differentiate them. As he points out himself, there are many snags and pitfalls, and they are not all true to type. But his "Gardener's Key" is a fairly simple one and will, I feel, go a long way to help us to differentiate between the different types and we must thank him very much for getting it out for us.

(The vote of thanks to MR. GEORGE JOHNSTONE proposed from the Chair was carried with acclamation.)

A SURVEY OF THE GENUS *MAGNOLIA* TOGETHER WITH *MANGLIETIA* AND *MICHELIA*

J. E. DANDY, M.A., F.L.S.

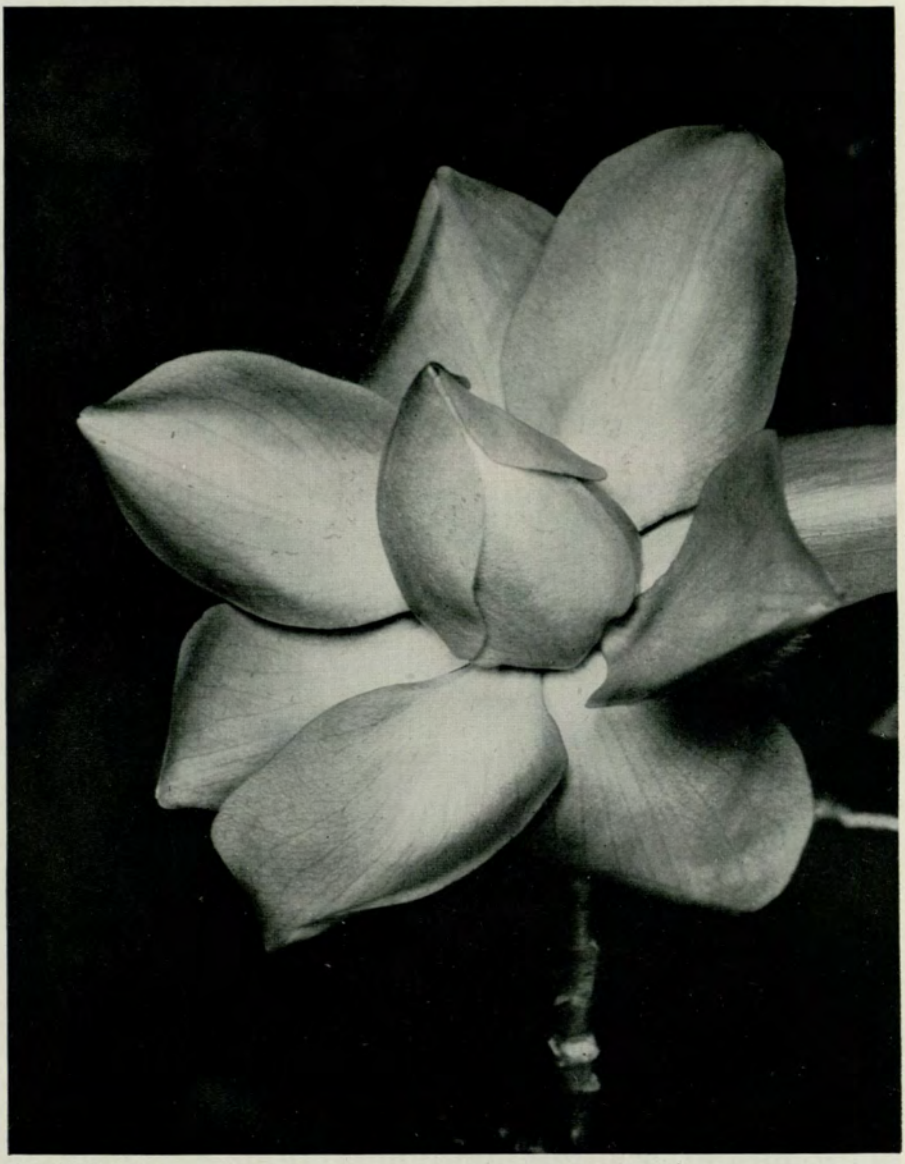
(SIR EDWARD J. SALISBURY, C.B.E., D.SC., F.R.S., F.L.S., *in the Chair*)

MANY who grow Magnolias must at times have wondered what exactly is the scope of the genus *Magnolia*: what it contains in addition to the species they know. If they grow species of *Manglietia* and *Michelia* they may have wondered, too, about the relationship of these plants to *Magnolia*. As a botanist I shall attempt in this survey to answer these questions, and at the same time to provide a botanical classification of the numerous species of *Magnolia*. The number of Magnolias known to botanists, and to gardeners, has been greatly increased by the explorations of the present century, and a working classification of them will be welcomed by all who have an interest in the genus.

What is *Magnolia*? To gardeners it is one of the most magnificent genera of flowering trees and shrubs, containing both evergreen and deciduous species and many whose beauty is enhanced by the appearance of the flowers before the leaves. To botanists it is the type genus of the *Magnoliaceae*, a family of very special interest because of its primitive floral characters allied with an impressive fossil record and a discontinuous present-day distribution in eastern Asia and eastern America. Indeed some botanists, notably DR. JOHN HUTCHINSON, consider it to be the most primitive living family of flowering plants. All those who have examined a typical *Magnolia* flower will have noticed the extremely simple (unspecialized) arrangement of the parts: the free perianth-leaves (tepals) which are arranged in three or more whorls and not differentiated into a true calyx and corolla; and the numerous free spirally arranged stamens and carpels. The flowers, which are usually large, are solitary and not borne in special inflorescences. At one time or another the family *Magnoliaceae* has been held to include such diverse elements as *Illicium*, *Schisandra*, *Trochodendron* and *Tetracentron* (all genera in cultivation), but the modern view restricts it to *Magnolia* and its immediate allies, including *Manglietia*, *Michelia* and *Liriodendron*.

The genus *Magnolia* has varied in limits according to the views of different botanists. SPACH (1839) * excluded from it

* Hist. Nat. Vég., Phan. vii: 468.



Photo, P. M. Synge

THE CAMELLIA AND MAGNOLIA TOUR

FIG. 35—*Magnolia mollicomata* 'Lanarth' (F. 25655). Bloom shown by Mr. M. P. Williams at the Truro Show (See pp. 59 and 102)

Photo, Dr. Stewart

FIG. 36—*Magnolia mollicomata* 'Lanarth' (F. 25655). March 1950 (See p. 108)

such species as *M. acuminata*, *M. denudata* (the Yulan, also known as *M. heptapeta* and *M. conspicua*) and the tropical *M. pterocarpa*. On the other hand BAILLON (1866) * expanded it to include all the allied genera except *Liriodendron*. According to his view both *Manglietia* and *Michelia* belonged to *Magnolia*. The ENGLER-PRANTL classification (1888) † took an intermediate course but retained *Manglietia* under *Magnolia*. Certainly *Manglietia* is very closely related indeed to *Magnolia*, as also is the tropical *Talauma*, but I consider that both may be recognized as distinct genera. According to my views *Magnolia* may be defined as containing those Magnoliaceous plants which have terminal flowers and free biovulate carpels which in fruit split longitudinally to release the seeds.

As thus defined, *Magnolia* is a genus of about eighty species and is the largest in the family. The number of species is not exactly known as new ones are continually being discovered in the tropics, and some of these are not yet described or fully understood. The genus is both temperate and tropical, and the temperate species number about thirty-one, thus forming about two-fifths of the total. These temperate species, which are the ones suitable for cultivation in our climate and therefore of interest to gardeners, are of course the better-known group, and it is disappointing from the horticultural point of view that the new species which now come to light are almost entirely tropical and useless as garden plants.

The geographical range of *Magnolia* is of the same discontinuous type as that of the allied *Liriodendron*, *i.e.* eastern Asia and north-eastern America, but of course the area covered in each continent is much larger than in *Liriodendron*, which is a small genus of only two species. In Asia *Magnolia* occurs in a roughly triangular area extending from Japan to the eastern Himalaya in the west, and to Java in the south. In America the genus is found in the eastern United States and extreme south-eastern Ontario, and extends southwards into the Greater Antilles and through Mexico and Central America to northern South America. The greater number of species (over fifty) are Asiatic, of which about twenty-two are temperate. The American species number about twenty-four of which nine are temperate. Thus less than a third of the species are American, and of the temperate species (*i.e.* those suitable for cultivation) the American proportion is only nine out of thirty-one.

The first Magnolias to be brought into cultivation in Europe were of course American, for botanical exploration of North

* In Adansonia vii: 66.

† Engler & Prantl, Nat. Pflanzenfam. iii, 2: 16.

America was far ahead of that of temperate east Asia, and though Magnolias had been grown for centuries by the Chinese and Japanese it took a long time for most of their species to reach Europe. Easily the first species in cultivation here was *M. virginiana* (1688). Then came *M. grandiflora* (by 1732), *M. acuminata* (1736), *M. tripetala* (by 1752) and *M. Fraseri* (1786). The first Asiatic species to arrive were *M. denudata* (1789) and *M. liliflora* (1790), though the non-hardy *M. Coco* had made its appearance in 1786. More American species followed, namely *M. macrophylla* in 1800, *M. cordata* in 1801 and *M. pyramidata* in 1806, by which date all the North American species were in cultivation with the exception of *M. Ashei*, a recently described species brought into cultivation in North America in 1933. During the sixties of last century four Japanese species, *M. obovata*, *M. Sieboldii*, *M. Kobus* and *M. stellata*, were imported into North America, whence they reached European gardens; and in the same decade the Himalayan *M. Campbellii* was introduced into Britain (1868). The fifth Japanese species, *M. salicifolia*, came in 1892. Up to this time no species of *Magnolia* from western China was in cultivation, but from 1900 onwards, as botanical exploration developed in this isolated and dangerous region, many new species were introduced, thanks mainly to the seed-collecting activities of E. H. WILSON and GEORGE FORREST on their various expeditions. The present century has seen the introduction into gardens of a magnificent array of species from the region of western and central China, including *M. Delavayi*, *M. officinalis*, *M. rostrata*, *M. globosa*, *M. Wilsoni*, *M. sinensis*, *M. nitida*, *M. Sargentiana*, *M. Dawsoniana*, *M. Sprengeri* and *M. Biondii*. At the present time the Asiatic species, many of them precocious-flowered and far surpassing their American congeners in floral beauty, are the "fashionable" Magnolias, though *M. grandiflora* holds its own as an evergreen and many fine examples of the other American species remain.

CLASSIFICATION OF *MAGNOLIA*

Users of ALFRED REHDER'S admirable *Manual of Cultivated Trees and Shrubs* (second edition, 1940) will have seen that this great authority divided the cultivated Magnolias into two subgenera, the first of which contains those species (including the evergreens) which flower with or after the leaves, while the second contains those species, all Asiatic, which flower before the leaves appear. This arrangement, though convenient, is not entirely an accurate reflection of the natural relationships of the plants. I agree that the primary division of the genus is into two subgenera, but I consider that two of the American species,

M. acuminata and its close ally *M. cordata*, belong naturally to REHDER'S second subgenus along with the precocious-flowered Asiatic species. It is true that the flowers of *M. acuminata* and *M. cordata* are not precocious, but, this character apart, these two species agree in all important respects with the precocious-flowered Asiatic plants, and in particular with *M. liliflora* which, it should be noted, is not truly precocious. Some of the important characters which unite *M. acuminata* and *M. cordata* with the precocious-flowered group are the laterally dehiscent anthers, the oblong or cylindric (but often distorted) type of fruit, and the much-reduced outer whorl of tepals which simulates a calyx as in *M. liliflora* and *M. Kobus*.

This division of *Magnolia* into two subgenera indicates the primary grouping of the species but is not sufficient to give a satisfactory picture of their relationships. Within each subgenus several natural sections can be recognized, of which the characters and contents can be shown most clearly and concisely by means of a key. The key, which is appended, covers the whole of the genus, not merely the cultivated species.

It will be noted that of the eleven sections only two (*Rytidospermum* and *Tulipastrum*) are found in both Asia and America —one in each subgenus; and that only two sections (*Magnoliastrum* and *Theorhodon*) are confined to America. The remaining seven are entirely Asiatic.

SURVEY OF THE SECTIONS

SUBGENUS MAGNOLIA

Magnolia subgen. *Magnolia*; based on *Magnolia* L., Sp.Pl. i: 535 (1753) et Gen.Pl., ed. 5: 240 (1754).

Sect. *Gwillimia*

Magnolia sect. *Gwillimia* DC., Regn. Veg. Syst. Nat. i: 455, 548 (1817) emend.

This is the largest section of the genus, with about eighteen species in south-east Asia, ranging from southern China through Siam and Indo-China to the Philippines and British North Borneo. The species are very similar in appearance to species of the tropical genus *Talauma*, which differs chiefly in having a different type of fruit. Indeed so close is the resemblance that in the absence of fruiting material the generic position of some of the species remains uncertain. The only temperate species in the section is *M. Delavayi*, of Yunnan, and this is the only one of real interest to gardeners, by whom it is specially valued on account of its handsome evergreen foliage. It has been in cultivation for about fifty years. Another species, *M. Coco* (formerly called *M. pumila*), has the distinction of being the first Asiatic Magnolia to be grown in this country, but it is not hardy and in any event

has no great horticultural merit. The other species of the section include *M. Henryi* (the largest-leaved evergreen Magnolia), *M. fistulosa*, *M. talaumoides*, *M. paenetalauma*, *M. Championi*, *M. Clemensiorum*, *M. pulgarensis*, *M. thamnodes*, *M. Craibiana*, *M. nana*, *M. pachyphylla* and *M. persuaveolens*.

Sect. *Lirianthe*

Magnolia sect. *Lirianthe* (Spach) Reichb., Deutsch. Bot. i: 192 (1841); based on *Lirianthe* Spach, Hist. Nat. Vég., Phan. vii: 485 (1839).

There is only one species in this section: *M. pterocarpa*, a tree of India and Burma, remarkable for the long flattened beaks which terminate the fruiting-carpels. The species is tropical and not suitable for cultivation in our climate.

Sect. *Rytidospermum*

Magnolia sect. *Rytidospermum* Spach, Hist. Nat. Vég., Phan. vii: 474 (1839).

This section contains nine species of deciduous trees and is one of the two sections which occur both in Asia and America. Its most striking character is the whorl-like arrangement of the leaves, because of which the American species have long been known as umbrella-trees. Except for the tropical *M. dealbata* all the species are in cultivation. Three series can be recognized, one Asiatic, the other two American, and each contains three species.

The Asiatic series comprises *M. obovata*, *M. officinalis* and *M. rostrata*. *M. obovata* (often known as *M. hypoleuca*) is a well-known species in cultivation; it is native of Japan and is the easternmost of the Asiatic species. Closely allied to it, but differing in the colour of the branchlets and the size of the fruit, is *M. officinalis*, a Chinese species which was at first identified as *M. hypoleuca* and may be found in gardens under that name. This tree appears to occur wild in east China, but further west it is found only in cultivation; it is remarkable for the fact that its leaves are often bilobed at the apex. *M. rostrata*, distinguished by its longer-beaked fruiting-carpels and rufous indumentum, grows in north-western Yunnan and adjacent parts of south-eastern Tibet and north-eastern Upper Burma. When first introduced into cultivation it was believed to have precocious flowers, but this was due to a misapprehension: the flowers, as always in this section, appear after the leaves.

The first of the two American series of this section comprises *M. tripetala*, *M. Fraseri* and *M. pyramidata*, the two latter being characterized by their auriculate-cordate leaves and complete lack of hairs. *M. tripetala*, the original Umbrella-tree, is one of

KEY TO THE SUBGENERA AND SECTIONS OF *MAGNOLIA*

A. Anthers dehiscing introrsely; flowers neither precocious nor with a much-reduced (calyx-like) outer whorl of tepals; leaves evergreen or deciduous; fruit various . . . . . Subgen. MAGNOLIA; type *M. virginiana* L.

B. Stipules adnate to the petiole, leaving a scar on its upper surface:

C. Leaves evergreen; flower-buds at first enclosed in one or more spathaceous bracts which leave as many annular scars on the peduncle; Asiatic species :

D. Fruiting-carpels short-beaked, the beak not dorsally flattened . . . . . Sect. *Gwillimia* DC.; type *M. pumila* Andr. = *Gwillimia indica* Rottl. ex DC. = *M. Coco* (Lour.) DC.

DD. Fruiting-carpels long-beaked, the beak forming a dorsally flattened lanceolate coriaceous appendage and finally becoming more or less recurved . . . . . Sect. *Lirianthe* (Spach) Reichb.; type *Lirianthe grandiflora* (Roxb.) Spach = *M. pterocarpa* Roxb.

CC. Leaves deciduous (sometimes persistent in the American section *Magnoliastrum*); flower-buds at first enclosed in a single spathaceous bract which leaves a single annular scar on the peduncle:

E. Leaves crowded into false whorls at the ends of the branchlets, usually large or very large; Asiatic and American species . . . . . Sect. *Rytidospermum* Spach; type *M. umbrella* Desr. = *M. tripetala* (L.) L.

EE. Leaves not crowded into false whorls at the ends of the branchlets:

F. Anthers with the connective produced into a short acute appendage; leaves deciduous or sometimes persistent, glaucous on the under-surface; American species . . . . . Sect. *Magnoliastrum* DC.; type *M. virginiana* L.

FF. Anthers with the connective blunt or retuse and not normally produced into an appendage; leaves deciduous, the under-surface pale-green or somewhat glaucescent; Asiatic species . . . . Sect. *Oyama* Nakai; type *M. parviflora* Sieb. & Zucc. = *M. Sieboldii* C. Koch.

BB. Stipules free from the petiole, the latter unscarred; leaves evergreen:

G. Tepals subsimilar in texture; fruit ellipsoid to oblong, sometimes distorted; leaves with a more or less elongated petiole:

H. Gynoecium sessile; American species . . . . . Sect. *Theorhodon* Spach; type *M. grandiflora* L.

HH. Gynoecium shortly stipitate; plants entirely glabrous; Asiatic species . . . . . Sect. *Gynopodium* Dandy; type *M. nitida* W. W. Sm.

GG. Tepals of the outer whorl much thinner in texture than those of the inner whorls; fruit more or less cylindric, usually distorted; leaves with a comparatively short petiole; Asiatic species . . . . . Sect. *Maingola* Dandy; type *M. Maingayi* King.

AA. Anthers dehiscing laterally or sublaterally; flowers precocious and/or with a much-reduced (calyx-like) outer whorl of tepals; leaves deciduous; fruit cylindric or oblong, usually more or less distorted . . . . . Subgen. PLEUROCHASMA Dandy; type *M. Campbellii* Hook. & Thoms.

I. Tepals subequal; flowers appearing before the leaves, white to rose or rose-purple; Asiatic species . . . Sect. *Yulania* (Spach) Reichb.; type *Yulania conspicua* (Salisb.) Spach = *M. denudata* Desr.

II. Tepals very unequal, those of the outer whorl much shorter and simulating a calyx:

J. Flowers appearing before the leaves; inner (large) tepals white, sometimes tinged with rose or purple; Asiatic species . . . . . Sect. *Buergeria* (Sieb. & Zucc.) Baill.; type *Buergeria stellata* Sieb. & Zucc. = *M. stellata* (Sieb. & Zucc.) Maxim.

JJ. Flowers appearing with or after the leaves; inner (large) tepals purple or green to yellow; Asiatic and American species . . . . . Sect. *Tulipastrum* (Spach) Reichb.; type *Tulipastrum americanum* Spach = *M. acuminata* (L.) L.

the oldest-established Magnolias in cultivation, but like most of the other American species it has gone out of favour; it is indigenous to the Appalachian and Ozark mountain-systems of the eastern United States. *M. Fraseri* has a more restricted distribution in the southern Appalachian Mountains. Very closely allied to *M. Fraseri* is *M. pyramidata*, a plant of the coastal plain of the south-eastern United States. This species was introduced into Britain as long ago as 1806, but it is doubtful whether any trees survive.

The other American series includes three closely allied species remarkable for the enormous dimensions attained by the leaves, which are the largest in the genus. Best known is *M. macrophylla*, which is native of the south-eastern United States in the region of the southern Appalachian and Ozark Mountains. Its leaves may attain over a yard in length, and the flowers also are very large. *M. Ashei*, described in 1926 from the coastal plain of north-west Florida, is very closely related to *M. macrophylla*. It was introduced into cultivation at the New York Botanical Garden by J. K. SMALL, and in an article entitled "A Magnolia as a New Border Plant"* he has described how plants in cultivation flowered when only about one foot tall! The species also behaves like this in the wild state, but normally it is a shrub or small tree up to a height of about 25 feet. Seeds of it were received at Wisley last year from MRS. NORMAN HENRY of Philadelphia. Another close ally of *M. macrophylla* is *M. dealbata*, from the mountains of southern Mexico, which is notable as the only deciduous Magnolia found in the tropics; it is not known in cultivation. Very surprisingly this Mexican species is the earliest recorded Magnolia, it having been described and figured by HERNANDEZ as long ago as 1651.

Sect. *Magnoliastrum*

Magnolia sect. *Magnoliastrum* DC., Prodr. i: 80 (1824) emend.

This section, originally founded by DE CANDOLLE to include all the American Magnolias, is now restricted to a single species, *M. virginiana*, the type of the genus. *M. virginiana* is a very distinct and easily recognized species, differing widely from *M. grandiflora* in its glaucous leaves and adnate stipules. Its home is in the region of the Atlantic coastal plain in the eastern Unites States, and two geographical varieties can be recognized. The northern (typical) variety, which is the one usually found in cultivation, extends from Massachusetts to eastern Florida; it is a shrub or small tree, the leaves deciduous or sometimes persisting. The southern variety, *M. virginiana* var. *australis*, ranges

* In Journ. New York Bot. Gard. xxxiv : 150-152, fig. 1 (1933).

from North Carolina to Texas. It grows to a larger size than the typical variety and its leaves are more persistent, while the young branchlets and flower-stalks are densely hairy. *M. virginiana*, as already mentioned, has the distinction of being the first Magnolia to be brought into cultivation.

Sect. *Oyama*

Magnolia sect. *Oyama* Nakai, Fl. Sylv. Korean. xx: 117 (1933).

This is a group of deciduous shrubs or small trees confined to temperate east Asia. There are four species, all in cultivation and deservedly popular on account of the beauty of the flowers, in which the usually white tepals contrast pleasingly with the purple-red stamens and green carpels. The easternmost species, and the oldest one in cultivation, is *M. Sieboldii* (well known under the name *M. parviflora*) which is found in Japan, Korea, Manchuria and the eastern Chinese province of Anhwei. There is a striking gap between the distribution of *M. Sieboldii* and that of the allied species in western China. Two of these, *M. sinensis* and *M. Wilsoni*, occur in western Szechwan, but whereas the former is known only from a single locality *M. Wilsoni* is wider spread and extends into eastern Sikang and northern Yunnan. *M. sinensis*, like *M. Sieboldii*, has leaves which are mostly of an obovate type. In *M. Wilsoni*, however, the leaves are chiefly of an ovate or elliptic type, as they are also in *M. globosa*, the most western species of the section, which extends from Sikkim along the eastern Himalaya to extreme north-western Yunnan.

Sect. *Theorhodon*

Magnolia sect. *Theorhodon* Spach, Hist. Nat. Vég., Phan. vii: 470 (1839).

This is the largest of the American sections, having about fifteen species. These are all evergreen trees, often growing to large dimensions, and it is unfortunate that with one exception they are all tropical and not suitable for cultivation in our climate. The exception is *M. grandiflora*, a native of the south-eastern United States in the region of the coastal plain. *M. grandiflora* was one of the first Magnolias to be brought into gardens, and until the coming of *M. Delavayi* was the only hardy evergreen species. It has retained popularity as an evergreen, and numerous garden strains have been developed especially in the south of Europe where the species is more at home. The allies of *M. grandiflora* form two series of tropical species, one of which is confined to the Greater Antilles in the islands of Cuba, Hispaniola and Puerto Rico, while the other extends on the

mainland from Mexico through Central America to northern South America.

The tropical series on the mainland begins in the north with the Mexican *M. Schiedeana*. Then, in geographical order, come *M. guatemalensis* (from Guatemala), *M. Yoroconte* (from Honduras), *M. poasana* (from Costa Rica), *M. sororum* (from Panama) and a recently discovered species from the mountains of south-eastern Venezuela. All these appear to be closely related to *M. Schiedeana*.

The West Indian series contains about eight species, including the following: *M. cubensis*, from eastern Cuba; *M. domingensis*, *M. emarginata* and *M. Ekmanii*, all from Haiti; *M. pallescens* and *M. Hamori*, from the Dominican Republic; *M. portoricensis*, from western Puerto Rico; and *M. splendens*, from eastern Puerto Rico. *M. splendens* is notable for its beautiful indumentum of shining appressed hairs, contrasting remarkably with the entirely glabrous *M. portoricensis* which inhabits the western end of the same island.

Sect. *Gynopodium*

Magnolia sect. *Gynopodium* Dandy in Curt. Bot. Mag. clxv: sub t. 16 (1948).

The species of this small Asiatic section are characterized by a shortly stalked gynoecium, a complete lack of hairs, and comparatively small glossy evergreen leaves with free stipules. Geographically they range from south-eastern Tibet to south-eastern China and the island of Formosa. The only one in cultivation is *M. nitida*, an account of which was recently given in *Curtis's Botanical Magazine* (vol. clxv: t. 16). Its home is in north-western Yunnan and adjacent parts of south-eastern Tibet and north-eastern Upper Burma—a distribution very similar to that of *M. rostrata*. *M. Kachirachirai*, an allied species from Formosa, is tropical and not a likely proposition for gardeners. It has smaller leaves and flowers than *M. nitida*. The other species of the section are not yet fully understood; they are distributed in south-eastern China.

Sect. *Maingola*

Magnolia sect. *Maingola* Dandy in Curt. Bot. Mag. clxv: sub t. 16 (1948).

This is a tropical Asiatic section, of great interest botanically but containing no species suitable for cultivation in our climate. The species are evergreens, with short-petiolate leaves and free stipules. In some species the gynoecium is shortly stalked as in Sect. *Gynopodium*, but the fruit resembles that of the next subgenus. The geographical range of Sect. *Maingola* extends from

Assam to Indo-China and the Malay Archipelago, further south, in fact, than any other section of *Magnolia*. There are about ten species, including the following: *M. Griffithii*, from Assam and Upper Burma; *M. Pealiana* and *M. Gustavi*, both from Assam; *M. annamensis*, from Annam; *M. Maingayi*, from the Malay Peninsula and Sarawak; *M. aequinoctialis*, from Sumatra; and *M. Macklottii*, from Sumatra and Java. The last-named is the southernmost of all Magnolias, either in Asia or America.

SUBGENUS PLEUROCHASMA

Magnolia subgen. *Pleurochasma* Dandy in Journ. R. Hort. Soc. lxxv: 161 (1950).

Sect. *Yulania*

Magnolia sect. *Yulania* (Spach) Reichb., Deutsch. Bot. i: 192 (1841); based on *Yulania* Spach, Hist. Nat. Vég., Phan. vii: 462 (1839).

This is without doubt the finest section of *Magnolia* from a garden point of view. The flowers are precocious with nine or more large tepals which vary in colour from white to rose or rose-purple; and the trees when in full flower are objects of surpassing beauty. There are five or more species, distributed in temperate east Asia from the eastern Himalaya to eastern China, but not extending to Japan. The oldest species in cultivation is the white-flowered Yulan, native of east China but long cultivated in many parts of that country as well as in Japan; it is now called *M. denudata*, but it is also known by a variety of other names such as *M. heptapeta*, *M. precia*, *M. conspicua* and *M. Yulan*. In central China, in the region of western Hupeh, western Honan and eastern Szechwan, the place of the Yulan is taken by *M. Sprengeri*, of which two or three forms are in cultivation. Some plants of *M. Sprengeri* are white-flowered, while in others the flowers are rose or rose-purple—a variation which occurs also in *M. Campbellii* and the other western species of the section. Two of these western species are found in eastern Sikang. One of them, *M. Dawsoniana*, an account of which was recently given in *Curtis's Botanical Magazine* (vol. clxiv: tt. 9678, 9679), is apparently a very rare species for it has been collected in only one locality. The very closely allied *M. Sargentiana*, however, has a wider range, occurring also in western Szechwan and northern Yunnan. This is a magnificent species, rivalling *M. Campbellii* in size and beauty of flower; it was introduced into cultivation by WILSON in 1908 along with *M. Dawsoniana*. *M. Campbellii*, another striking species, is the westernmost representative of the section, its geographical range extending from eastern Nepal along the eastern Himalaya to western Yunnan. The type of *M. Campbellii* came from the Sikkim

Himalaya, and it was from here that the species was originally brought into cultivation in 1868. Specimens from the eastern end of the range (western Yunnan and extreme south-eastern Tibet) have been named *M. mollicomata*, and plants from FORREST'S seed collected in this area are in cultivation. As often happens in species with this distribution (Himalaya to west China) the plants from the two extremes of the range show differences, the significance of which is open to different interpretations. It must be borne in mind, however, in this case as in others, that the individuals in cultivation, numerous though they may be, are the progeny of but a few wild plants from the two extremes of the range and do not represent a fair sample of the wild population *in toto*. To my mind the differences which exist between the *mollicomata* forms and typical *M. Campbellii* are not of specific value.

In addition to the species mentioned above, two others have been described which are apparently closely allied to the Yulan and therefore belong to this section. *M. Zenii*, from the neighbourhood of Nanking in southern Kiangsu, has white tepals with a purple base. *M. amoena*, from north-western Chekiang, is described as having pink flowers. I have not seen specimens and am unable to make any further botanical comment on these plants; but whatever their taxonomic status they appear desirable subjects for cultivation.

Sect. *Buergeria*

Magnolia sect. *Buergeria* (Sieb. & Zucc.) Baill. in Adansonia vii: 2 (1866); based on *Buergeria* Sieb. & Zucc. in Abhandl. Math.-phys. Cl. K. Bayer. Akad. Wiss. iv, 2: 186 (1846).

This is another temperate Asiatic section and, like the last, is precocious-flowered and very popular in cultivation. It differs technically from Sect. *Yulania* in the form of the perianth, the tepals of the outer whorl being much reduced in size and forming a small "calyx." The prevailing flower-colour is white, though there is sometimes a tinge of rose or rose-purple. There are five species: three in Japan, one in eastern China and one in north-central China. The three Japanese species are *M. Kobus*, *M. salicifolia* and *M. stellata*, all well known in cultivation. *M. Kobus*, the most widely distributed of the three, falls into two geographical varieties which are both in cultivation. Typical *M. Kobus* inhabits southern Japan and is found also in Quelpart Island off the southern coast of Korea. The more northern variety *borealis* occurs in northern Japan (Hokkaido and northern Honshu); it is a bigger tree with larger leaves and flowers and is said to be the hardiest of the Asiatic Magnolias in cultivation.

M. salicifolia, which as its name implies has willow-like leaves, has a more restricted distribution than *M. Kobus* and does not reach the northern island of Hokkaido; two forms of it are in cultivation, one of which has a fastigiate habit. *M. stellata*, which is said to be spontaneous in the islands of Honshu and Kyushu, is a very distinct species on account of its flowers, which have numerous tepals giving the characteristic starry effect; these are typically white, but forms are grown in which the tepals are more or less deeply suffused with pink. The two Chinese species of the section are not familiar to gardeners, though according to REHDER one of them is in cultivation. This is *M. Biondii* (*M. aulacosperma*), which was one of the species brought to the Arnold Arboretum from China by WILSON in 1908. *M. Biondii* is the northernmost of Chinese Magnolias, with a range extending from Shensi to western Honan, western Hupeh and eastern Szechwan, and it should certainly be hardy. Like *M. salicifolia* it is a "willow-leaved" species with white flowers. The other Chinese species, *M. cylindrica*, is not known in cultivation. Its home is in eastern China, from southern Anhwei to northern Fukien, and it appears to be most closely allied to *M. Kobus*.

Sect. *Tulipastrum*

Magnolia sect. *Tulipastrum* (Spach) Reichb., Deutsch. Bot. i: 192 (1841); based on *Tulipastrum* Spach, Hist. Nat. Vég., Phan. vii: 481 (1839).

This is one of the two sections of *Magnolia* which are common to Asia and America. It resembles Sect. *Buergeria* in the reduction of the outer whorl of tepals to a small "calyx," but differs in the form and colour of the inner tepals which are purple, green or yellow. The leaves are deciduous, appearing either before or along with the flowers, so that the latter are never truly precocious as in Sections *Yulania* and *Buergeria*. There are three species, one Asiatic and two American, and all have long been in cultivation. The American species, which have green or yellow flowers, are *M. acuminata* and *M. cordata*. *M. acuminata*, known as the Cucumber-tree on account of the form of the unripe fruit, is the most widely distributed of American Magnolias and the only one which reaches Canada, where it occurs in extreme south-eastern Ontario. Its range extends through the Appalachian and Ozark mountain-systems of the eastern United States from New York southwards. The very closely allied *M. cordata*, which has canary-yellow flowers, was described and introduced into cultivation at the beginning of last century, but for a long time was "lost" as a wild plant. It was rediscovered in eastern Georgia in 1910 and appears to be confined to that region.

The Asiatic species of this section is *M. liliflora*, which is

known also as *M. quinquepeta*, *M. purpurea*, *M. discolor* and *M. gracilis* and was at one time wrongly named *M. obovata*. It is a very distinct species with purple flowers and has long been cultivated in China and Japan along with the Yulan, with which it has had a close and tangled association in botanical literature. Unlike the Yulan, however, *M. liliflora* is unknown in the truly wild state, though it is believed to have originated in eastern China and probably in the temperate region south of the Yangtze-kiang. Again unlike the Yulan, *M. liliflora* has no close allies in Asia, and it is my opinion that, despite the contrast in flower-colour, the affinities of this species are with the American *M. acuminata* with which it agrees closely in both vegetative and floral structure.

HYBRIDS

No natural (wild) hybrids have been recorded in the genus *Magnolia*, but in gardens hybrid Magnolias are common. Some of these, like *M.* × *Veitchii*, are the result of deliberate artificial crossing, while others, like *M.* × *Thompsoniana*, have apparently arisen by accident in gardens. In the case of *M.* × *Watsoni*, which was imported from Japan, we have no evidence about the origin.

There is no example of hybridization between the two subgenera, but there are several cases of inter-sectional hybrids, *i.e.* hybrids between different sections of the same subgenus.

M. × *Watsoni* is an inter-sectional hybrid between *M. obovata* and *M. Sieboldii*. It is a plant of Japanese origin, which was introduced into Europe in 1889. Apparently it had reached North America some years earlier, for it flowered in the United States before 1883.

M. × *Thompsoniana* (*M. tripetala* × *virginiana*) is another inter-sectional hybrid, which originated in THOMPSON'S garden at Mile End, London, in 1808.

Still another inter-sectional cross, *M. virginiana* × *grandiflora*, is recorded in REHDER'S *Manual*. It is stated to have evergreen leaves and to have originated in 1930.

M. × *highdownensis* is apparently an intra-sectional hybrid between *M. sinensis* and *M. Wilsoni*. It is believed to have originated in 1927 in the garden of J. C. WILLIAMS at Caerhays Castle in Cornwall.

M. × *Veitchii* is also an intra-sectional hybrid, raised in the Royal Nurseries at Exeter in 1907 by P. C. M. VEITCH, who used pollen of *M. Campbellii* to pollinate flowers of *M. denudata*.

The commonest hybrid, or series of hybrids, is *M.* × *Soulangiana*, the parent species of which are *M. denudata* and *M. liliflora*. This is an inter-sectional cross, of which many forms

have been raised and have received names in gardens. The original *M.* × *Soulangiana* was raised by CHEVALIER SOULANGE BODIN, an officer of the French army, in his garden at Fromont, near Paris, in 1820. Some of the forms, such as "*spectabilis*" and "*alba superba*," have white or nearly white flowers and approach the Yulan, while others, like "*Lenneana*," approach *M. liliflora*. It is to be noted that the so-called *M. Soulangiana* var. *nigra* is not a hybrid but a form of *M. liliflora*.

Two other hybrids, both intra-sectional and between species of the Section *Buergeria*, are recorded. One is *M.* × *Loebneri* (*M. Kobus* × *stellata*) while the other is *M.* × *Proctoriana* (*M. salicifolia* × *stellata*). Both apparently show the influence of *M. stellata* in the multiplication of the inner tepals to as many as twelve.

MANGLIETIA

Manglietia is an Asiatic genus of about twenty-five species, very closely allied to *Magnolia* from which it differs technically in the greater number of ovules in the carpels. The range of the genus extends from the eastern Himalaya across southern China, and southwards through Siam and Indo-China to Malaysia where the southern limit is in Java. It is not known to reach Japan or Formosa. Most of the species are tropical or of tropical type and the geographical distribution suggests that only five species are of interest to gardeners. Three of these, *M. insignis*, *M. Hookeri* and *M. Forrestii*, have been introduced into cultivation by FORREST, but the only one which can be regarded as at all hardy is *M. insignis*. This is a widely distributed species extending from the Himalaya eastwards into south-central China and north-western Tongking. WALLICH, who originally described the species from Nepal,* remarked that "It is scarcely possible to contemplate a more magnificent object than this noble tree exhibits, both when it is covered with flowers and in fruit . . . the accumulated fragrance of the innumerable blossoms, with which this tree is covered at one and the same time, extends to a great distance." This is no mean eulogy from a man who saw very many fine plants in his time, and it is to be hoped that the species will live up to it in cultivation; so far, however, it has not flowered in gardens. The other two species of *Manglietia* which have been introduced into cultivation are *M. Hookeri* (from Upper Burma and western Yunnan) and *M. Forrestii* (from western and southern Yunnan). There are two species of the genus, not yet introduced, which may have possibilities as garden

* Wall., Tent. Fl. Napal. Ill.: 3, t. 1 (1824). He referred the species to *Magnolia*.

plants, namely *M. szechuanica* (from western Szechwan) and *M. Duclouxii* (from north-eastern Yunnan). All these species of *Manglietia* are evergreen trees, showing great uniformity in both vegetative and floral structure.

MICHELIA

Michelia differs from *Magnolia* and *Manglietia* primarily in having axillary flowers, and another important character lies in the gynoecium which is always stalked. This is a large genus of about forty-five species, confined to Asia and predominantly tropical. Its geographical range extends from India and Ceylon eastwards through southern China to Japan, and southwards through Siam and Indo-China to Malaysia with the southern limit in Java. The leaves are evergreen, and as the flowers are borne in the leaf-axils instead of only at the ends of the branchlets as in *Magnolia* they are produced more profusely than in that genus, though on the average their size is much smaller.

Michelia Champaca, the type of the genus, is a well-known cultivated tree in the tropics with highly scented yellow flowers. It was introduced into Britain as long ago as 1779 but is not hardy; its distribution as a wild plant extends from India to Indo-China. Another non-hardy species, *M. Figo* (formerly known as *Magnolia fuscata*), was introduced into Britain in 1796. This species is native of south-eastern China and is widely cultivated in warm countries.

Of the species which may be considered hardy in cultivation the finest is *Michelia Doltsopa*, in which the white or yellowish flowers are of fair size and are at first enclosed in beautifully rufous-tomentose spathaceous bracts. Its geographical range extends from Nepal to western Yunnan. An allied species of similar distribution is *M. velutina* (*M. lanuginosa*), in which the leaves are densely hairy beneath. This species was introduced to Kew from Sikkim about 1855 and flowered in the Temperate House in 1875; I have no record of its being grown out of doors. *M. compressa*, a native of Japan and Formosa, is the hardiest species of *Michelia* in cultivation, but its flowers are disappointingly small. It was introduced into Britain in 1894.

The remaining species of *Michelia* are, as already indicated, chiefly tropical; but there are a few which, judged from their temperate distribution, might prove hardy if introduced. In Yunnan, for example, there are *M. microtricha*, an ally of *M. Doltsopa*, and *M. yunnanensis*, which is allied to *M. Figo*; while in Szechwan are *M. Wilsoni* and *M. szechuanica*, both of which belong to the same group as *M. Doltsopa*. At present the horticultural merit of these plants is a matter only for speculation.

DISCUSSION

The Chairman (prior to reading paper). Ladies and Gentlemen, we are to have the privilege this morning of hearing a lecture from MR. DANDY on "A Survey of the Genus *Magnolia* together with *Manglietia* and *Michelia*." He will be dealing very largely with the classification and nomenclature, and I hope there will be a lively discussion afterwards.

Before I call upon him to speak, I should like to say a word or two about classification in general. We are apt sometimes to overlook the fact that all classifications must necessarily be artificial, because in a sense one is trying to present in a two-dimensional and clear form what is really more accurately described as a three-dimensional tangle. Every classification suffers from certain defects. That is inevitable, if you think of what it attempts to portray. Most classifications aim, as far as possible, at presenting a summary of human knowledge with regard to the resemblances and differences of the organisms concerned. They also aim, to a greater or less extent, at representing the affinities that may be inferred from these resemblances and differences, and sometimes they even go into the realms of speculation, and it is speculation, let us remember, regarding phylogeny. But it is important, if we are to understand the significance of any classifications, to realize that these different aims are not necessarily compatible and sometimes essentially incompatible.

So I commend to you the task which MR. DANDY has had to undertake with regard to *Magnolia* against this background. All classifications have the defects of their virtues, and the best of them have the virtues of their defects. Now, MR. DANDY has had the task of dealing with a group of organisms which present many difficulties. I leave you to judge how far he has succeeded but I hope you will bear in mind the general principles that I have only quite briefly adumbrated in considering your attitude towards this or any other system of classification.

THE CHAIRMAN. The subject of MR. DANDY'S paper is now open for discussion. We have various Magnolia experts here and I should like to hear any comments that any member of the audience would like to make.

A MEMBER. Can MR. DANDY tell us what the plant we saw growing in Cornwall under the name of *Michelia floribunda* really is called.

MR. DANDY. I did not go to Cornwall, but I think you are referring to the plant MR. JOHNSTONE brought up here yester-

day. In 1927 I published a note on the close relationship of *M. floribunda* to *M. Doltsopa*. The position is that *M. Doltsopa* extends from Nepal eastwards to the mountain-ranges of western Yunnan, and that a closely allied species called *M. floribunda* extends from the south-east and overlaps *M. Doltsopa* in Upper Burma and western Yunnan. Away from this common area the two species are perfectly distinct morphologically but within it they approach each other very closely and specimens, such as some of those collected by FORREST, are often difficult to name, appearing intermediate in characters. I suggested in 1927 that hybridization may occur in this area. With regard to the plant MR. JOHNSTONE has brought here, I have not had time to study it in comparison with FORREST's herbarium specimens. I asked him what its Forrest number was because I have made identifications of all the Forrest numbers and might name his plant that way. He said he would try to find out. If he cannot do that, I hope to get material from him and compare it with the series we have in the herbarium. From the look of the plant, I think it is more likely to be a form of *M. Doltsopa* than of *M. floribunda*.

MR. JOHNSTONE. Which does MR. DANDY consider the oldest, *Magnolia*, *Manglietia* or *Michelia*?

MR. DANDY. From the evolutionary point of view, I think that *Michelia*, in which the flowers are on abbreviated axillary branchlets, is a derived type. I think the terminal-flowered types such as *Magnolia* are more primitive. Of the terminal-flowered types I think *Talauma* is a derived type: its fruit structure is advanced and unique in the flowering plants. I think that reduces the question of the oldest genus to an issue between *Manglietia* and *Magnolia*, and there I have no strong opinion. There are botanists who think that numerous ovules in the carpel, as in *Manglietia*, are necessarily a primitive character, but there is not general agreement about this. At present, I list *Manglietia* as genus No. 1 in the family, because one has to make a choice one way or the other, and I think on the whole that *Manglietia* is the most primitive genus with *Magnolia* second. Of course there is something to be said for uniting *Manglietia* with *Magnolia*, in which case the aggregate *Magnolia* would be considered the most primitive genus in the family.

MR. JOHNSTONE. One other question: MR. DANDY referred to *Magnolia* × *highdownensis* as being a hybrid. Is there any real reason why it should not be considered an intermediate

species? I know at Caerhays there is a whole set of the same plants which show no variation whatever.

MR. DANDY. I have considered this possibility, but the fact is that, knowing the way specific characters run in the Section *Oyama*, I do not see what I would call distinct specific characters in the plant. On the other hand, it does combine the characters of *M. sinensis* and *M. Wilsoni*. Further, among all the Magnolias collected in west China and elsewhere there is no wild plant corresponding to *M.* × *highdownensis*, and as the Magnolias cultivated from west China were nearly all introduced by FORREST and WILSON it is very unlikely that we should have received seed-numbers without corresponding herbarium specimens. These collectors were very careful about that sort of thing.

MR. JOHNSTONE. But it comes true from seed.

MR. DANDY. I have seen that stated, but I do not know what exactly it means. Unless the propagation from seed is done experimentally under controlled conditions one cannot be sure what "coming true" means. There are numerous carpels in each flower, and two ovules in each carpel, and one does not know what selection of seed has been made. Also some of the carpels may be abortive so that only a proportion produce seeds. The best way to tackle this problem and settle it once for all would be to make a deliberate cross of the species and see what results.

MR. JOHNSTONE. I have done that, and, although I admit the bumble bee may have butted in and upset my calculations, the results were typical of *M.* × *highdownensis*.

MR. DANDY. I did not mean that. I would cross *M. sinensis* and *M. Wilsoni* to see what would result. I suggest that would be the best experiment to make, and we should all be very interested in the result.

MR. JOHNSTONE. That is a ten years' sentence for somebody, isn't it?

MR. DANDY. Yes, but we cannot hurry these things. These plants will not grow and flower quicker.

THE CHAIRMAN. If there are no other comments or questions we will bring this Session to a close. I would like to point out that all lectures have, or should have, two objectives: one, the imparting of information, the other, the stimulation of thought. The latter, of course, is always by far the more important. I think you will agree with me that MR. DANDY'S lecture has done both. He has told us a number of interesting

Photo, J. E. Downward

FIG. 37—*Camellia japonica* var. Probably *C. japonica* 'Althaeiflora,' A.M. March 7, 1950. Shown by Sir Giles Loder, Bt.

Photos, J. E. Downward

FIG. 38—Camellia 'Lady Clare' at Leonardslee, Sussex

FIG. 39—*Magnolia Campbellii* at Leonardslee, Sussex

things about the genus Magnolia, and, from the few questions we have had, I think it is obvious that he has stimulated thought, and I think those who read his paper will find therein still more stimulation.

Therefore I would ask you to accord him a hearty vote of thanks for his lecture and the very solid work which that lecture represents.

The vote of thanks to MR. DANDY, proposed from the Chair, was carried with acclamation.

CAMELLIA SPECIES

J. R. SEALY, B.Sc., F.L.S.

(SIR GILES LODER, BART., *in the Chair*)

WHEN LORD ABERCONWAY opened our proceedings yesterday afternoon, he mentioned that a Conference such as this should take account of the botany as well as the horticulture of the genera under discussion. This morning MR. DANDY gave us an account of the genus Magnolia and its allies, and thus provided the botanical background for this Conference so far as that genus is concerned. This afternoon it is my task to round off our proceedings by saying something about the botany of Camellia.

The genus is a fairly large one, comprising at present some 65–70 species. It is confined to western Asia with the majority of the species in the warmer parts of China and Indo-China. Further exploration of this vast area will, almost certainly, bring to light more species later on. The plants are all evergreens, mostly shrubs or small trees up to about 30 feet high, but one or two species form larger trees, for example *C. reticulata*, which may attain 50 feet. As one would expect there is considerable variation in vegetative characters, but there is even greater diversity in floral structure, so much in fact that extreme forms have been ranked as distinct genera. The 12 or 13 species in cultivation in this country give some idea of the range of the forms, but by no means cover it all, and there are distinct groups of species not represented in cultivation.

The genus belongs to the family *Theaceae*—better known to some of us as *Ternstroemiaceae*—and within that family it is placed in the tribe *Gordonieae*. Before dealing with the species of *Camellia* it may be as well to see how the genus is distinguished from the other genera of *Gordonieae*. I may say straight away that the principal generic characters are those of the fruits and seeds. Some genera are easily recognizable on floral characters, but some show much the same range of variation, and then fruits and seeds are the only reliable criteria.

The first genus to be considered is *Stuartia* of which *S. pentagyna* (Bot. Mag. t. 3918), *S. malachodendron* (Bot. Mag. t. 8145) both from eastern North America and *S. pseudocamellia* (Bot. Mag. t. 7045 and N.S. t. 20) from Japan and Korea are examples. The fruits may be rounded or conical, and split up completely from the apex into 5 valves, no axis being left standing in the middle. This is important since all the other genera with dehiscent fruits have such a central axis, or *columella* as it is called. The seeds are small, compressed or flattened, and winged.

Next there is *Gordonia*, a most variable genus, of which *G. lasianthus* (Bot. Mag. t. 668) from eastern North America and *G. anomala* (Bot. Mag. t. 2047) from Asia are widely differing examples. The fruit is a more or less cylindrical capsule splitting deeply into 5 valves leaving the axis, or *columella*, in the centre, while the seeds have a prominent wing and resemble those of firs and spruces.

Very close to *Gordonia* is *Laplacea* from South America, e.g. *L. semiserrata* (Bot. Mag. t. 4129). The fruits and seeds are very similar to those of *Gordonia*.

Next an Asiatic genus, *Schima*—for example *S. argentea* (Bot. Mag. t. 9558)—which has characteristic depressed globose woody capsules borne on long stalks, and splitting about halfway into 5 valves with a columella in the middle, the seeds are small, flattened and winged.

Very near *Schima* is the genus *Franklinia*, with only one species *F. alatamaha* (see Addisonia t. 583), from eastern North America. This has a spherical woody capsule splitting into 5 valves from the top, but also splitting up the middle of each valve from the base; there is a columella, the fruit is very shortly stalked and long persistent. The seeds are flattened and somewhat winged.

The next genus, *Pyrenaria*, is something of an anomaly in the tribe inasmuch as the fruits are fleshy and indehiscent, while the seeds are fairly large, and compressed.

We come now to what is perhaps the nearest ally of *Camellia*, namely the genus *Tutcheria*—see *T. spectabilis* (*Journ. Roy. Hort. Soc.*, 1949, Fig. 81)—which has flowers very similar to those of Camellias. The fruit, however, splits up completely into 3–5 valves which soon fall apart, and though there is a columella it generally remains attached to one of the valves and falls off with it. The seeds are fairly large and compressed.

And now to *Camellia* itself. With regard to the wide range of plants included in the genus, I need only remind you of the sharp contrast between such species as *C. japonica* and *C. reticulata* (of which the old original semi-double form has the largest flowers in the genus) on the one hand and species like *C. cuspidata* with its small white flowers on short bracteolate stalks, or the tea-plant, *Camellia sinensis*, which has white, sometimes rose-flushed, flowers borne on stalks from which the 2 or 3 bracteoles have long since fallen. The fruit splits from the apex into 3 valves (4 or 5 if the gynoecium is of 4 or 5 carpels and all the cells develop) leaving a columella in the centre, the valves remaining attached at the base. The seeds are globose, semi-globose, or rounded on the back and wedge-shaped in front.

There is great variation in the fruits—some, for example those of *C. japonica* and *C. reticulata*, are notably thick-walled, but others have thin walls. These thin-walled fruits are commonly unilocular and one-seeded. The ovary from which such a fruit developed was three-celled, but two of the cells aborted and the fruit is therefore one-celled. The fruit may be two-celled or three-celled, but generally it is one-celled. Each cell contains 1 or 2 seeds. At first glance it would appear that there is no columella in the one-celled fruits. In fact there is one, but it is very thin and it gets pushed to one side when only one cell is fertile and, when the fruit dehisces, it remains attached to the part of the wall against which it was compressed. In *Camellia sinensis* the fruit may be one-celled or two-celled, but typically it is manifestly three-celled—tricoccate as we say—and when it dehisces you see a nice columella in the centre. The seeds of the thin-walled fruits are just like those of the thick-walled fruits.

Before we deal with the species, it will be as well to say something about the structure of the flowers in *Camellia* and of the variation found in the genus. It is convenient to start with the corollas and stamens. All species of *Camellia* have numerous stamens—the number varies from about 20 to over 100—and the filaments of the outer are always united for at least a short distance from the base. To this united part of the stamens the petals are attached, either lightly or firmly, they number from 5 to 12. The stamens may be united for only 2–3 mm. at the base (e.g. *C. Sasanqua* and *C. yunnanensis*), about half-way (*C. fraterna*) over three-quarters their length (*C. elongata*), or they may even be completely united (*C. lanceolata*)—or they may be very short, and highly but irregularly united as in *C. Grijsii*.

Next the gynoecium. This is composed of 3, 4, or 5 carpels united to form a three-, four-, or five-celled ovary either with a single style, or with the 3, 4, or 5 styles remaining free. The ovary and styles may be hairy or glabrous, and there is very great variation in size. The single style is very shortly to quite deeply divided at the apex into 3 (or 4 or 5) arms.

We turn now to the pedicel, bracteoles, and calyx. All *Camellia* flowers are stalked—pedicellate is the botanical term—and with rare exceptions they have 2 or more, generally 4 or 5 bracteoles, in addition to the 5 sepals. There is very great variation in these characters, and the species can be divided into two sets by means of them. The first set comprises the species whose flowers are more or less clearly pedicellate, and whose bracteoles (when present) can be differentiated from the sepals; both bracteoles and sepals are persistent in fruit. Within this set there is still a very wide range of variation: thus there are species

(e.g. *C. Petalotii*) with a massive multi-bracteolate pedicel and large sepals, species with a naked pedicel and 4–5 sepals (as *C. corallina*), two species with a well-marked pedicel carrying only the scars of the 2 or 3 caducous bracteoles (*C. sinensis* and *C. taliensis*) while most of the other species show all stages between *C. elongata* with its long slender pedicel, 4 or 5 small bracteoles and a shallowly lobed cupular calyx and *C. Forrestii* in which the pedicel is very short, the calyx cupular and the bracteoles 2 or 3. Contrasting with these more or less obviously pedicellated species are those of the second set, which appear at first sight to have no pedicel. Not only does the flower appear to be sessile, but the bracteoles and sepals are not clearly distinguishable as such and form a single series of overlapping scales which may be shed as the corolla expands (e.g. *C. Sasanqua*), or persist to anthesis and fall afterwards (e.g. *C. japonica, C. reticulata*) or which may be persistent in fruit (*C. hongkongensis*). The bracteoles and sepals are, in fact, similar in nature and function to the scales which protect vegetative buds, and so for them I use the term *perule* (*perula—ae*). In species where the perules are caducous or deciduous it becomes obvious, when the perules have fallen, that there is a very short, much scarred pedicel, and the same is found to be true for species in which the perules are persistent. These differences in pedicel, bracteoles and calyx, seem to be of considerable importance in the genus, and indicate, I think, the primary line of division, especially as there is correlation between the type of pedicel and the type of fruit. We have already seen the range of variation in the fruits, and it may now be noted that the thick-walled fruits are produced by perulate flowers whereas the fruits of pedicellate species are generally thin-walled, and commonly unilocular and one-seeded. The contrast between a species with a thin-walled fruit reduced to a single loculus and borne on a pedicel with persistent bracteoles and sepals, and a species with a thick-walled three-celled fruit carried on a short naked scarred pedicel, is very striking and must be of significance in the history of the development of the genus.

There is just one more point to which I want to refer and that is the way the flowers are borne. At a casual glance one might say that the flowers are either terminal on the shoots or axillary to the leaves. In point of fact they are axillary, but not, as a rule, to the leaves, for they are normally borne either in the axils of the lowermost scales (perules) of the vegetative bud which is found in the axil of each leaf, or in the axils of the lowermost scales of the vegetative bud which terminates each shoot. This can be easily seen in *C. sinensis*, where commonly

two flowers arise from one vegetative bud. Sometimes there are more than two flowers and then it is usually obvious that the vegetative bud has grown out into a short shoot.

To turn now to the groups of species. The majority of *Camellia* species can be referred to one or other of ten groups, some of which have been dignified with section names, and some of them at one time treated as distinct genera. The remaining species either link on loosely to one of these groups or else occupy more or less isolated positions in the genus. I cannot, of course, hope to give an account of all the species, so I propose to say something about each group in turn, and to mention examples of the species included in them.

We may conveniently start with the group to which *C. sinensis* belongs. There is, in truth, only one other species, *C. taliensis* (which, like *C. sinensis*, is in cultivation), but these two species are so different from their congeners that they really do form a distinct group. The characters are: the pedicel naked at anthesis except for the scars of the 2–3 caducous bracteoles, 5 sepals persistent in fruit, stamens free above the basal 2–3 mm., hairy ovary, and single style more or less deeply divided into 3 or 4 or 5 arms. An interesting feature is that sometimes after flowering the style may become divided right to the base. From *C. sinensis*, *C. taliensis* is chiefly distinguished by its larger flowers with more numerous and more spreading petals, and by the gynoecium composed of 4 or 5, not 3, carpels.

From the *sinensis* group we can turn to the group to which *C. cuspidata* belongs, the section *Theopsis*. This is characterized by the small or rather small usually white flowers borne on bracteolate pedicels of varying lengths, the bracteoles like the 5 sepals being persistent in fruit; the stamens are variously united, there is a single style more or less deeply divided at the top, and, with two or three exceptions, the whole gynoecium is glabrous; the fruits are thin-walled and commonly unilocular and one-seeded. There are about 23 species in the section, and they show considerable variation in floral characters, notably in the pedicels, bracteoles and calyx. Thus *C. crassipes* has a short stout pedicel, only 2 bracteoles, a cupular calyx, and stamens free to the basal 2–3 mm.; in *C. Rosthorniana* the short pedicel is widened upwards to the calyx and bears 4 bracteoles while the stamens are united about one-third their length. *C. Tsaii*, which is in cultivation under FORREST No. 25252 and comes from Yunnan, has a longer pedicel, 4–5 bracteoles, a shallowly cupular calyx and stamens united half their length. In all these species and their allies the bracteoles and calyx are glabrous or very slightly hairy, but in *C. fraterna* and its allies the bracteoles

and calyx are very conspicuously hairy. *C. fraterna* itself is said to have pink-flushed flowers, and as they are 1–1½ inches across and borne very freely, the species would be well worth a trial in cultivation. It comes from the eastern provinces of China—Kiangsu, Anhwei, Chekiang, Kiangsi and Fukien—and might possibly be a little tender. *C. cuspidata* is, of course, well known in cultivation, but there is a variety, var. *grandiflora*, with flowers twice the size of the normal form, and this seems a most desirable plant to have in cultivation. It was described from specimens collected by the late DR. HANDEL-MAZZETTI in Hunan. All the species mentioned so far have relatively short stout pedicels, but other members of sect. *Theopsis* have longer and slenderer pedicels. Among them is a plant from Hupeh whose taxonomic position has long been uncertain, and which may have to rank as a distinct species. In leaves and corollas it is very like *C. fraterna*, but the pedicel bracteoles and calyx have a quite different appearance. Like *C. fraterna* the flowers are of fair size and freely produced, and since the plant comes from Hupeh it should be hardy in this country. Another species with fair-sized flowers borne very freely is *C. euryoides*, which was in cultivation a hundred years ago, but has long since been lost. It comes from the provinces of Fukien and Kwangtung, in south-eastern China, and would probably be tender in this country. Two other species of sect. *Theopsis* call for mention because they have the stamens sparsely and finely hairy, whereas normally the stamens are glabrous. The species are *C. Tsofuii* from Szechuan, and *C. nokoensis* from Formosa. The majority of species of *Camellia* have glabrous stamens, but there is a small section, *Camelliopsis*, with which we shall deal later on, characterized by the stamens being densely villose; and in addition there are a few species with hairy stamens which do not belong to sect. *Camelliopsis*. *C. Tsofuii* and *C. nokoensis* are examples, for on technical characters they are nearly allied to *C. euryoides* and, like it, must be referred to sect. *Theopsis*. Finally of this sect. *Theopsis* I should like to mention the most aptly named *C. elongata*. All parts of the plant are elongated—leaves, pedicels, petals, fruits and even the seeds, while the outer stamens are united almost their whole length to form an elongated tube. In view of what has been said about the hairiness of the stamens, it is of interest to note that while the outer stamens of *C. elongata* are glabrous, the partially free inner stamens and the free innermost stamens have hairy filaments.

Closely related to section *Theopsis* and differing chiefly by the stamens being densely villose and the whole gynoecium densely hairy, is section *Camelliopsis* to which I have already referred,

and to which *Camellia salicifolia* belongs. This species is in cultivation. It is a native of Hong Kong and therefore tender, and it is easily recognized by its acuminate bracteoles and sepals. There are five more species in sect. *Camelliopsis*, four of them found in south China and the fifth (*C. caudata*) distributed from Bhutan and Assam to south China and Formosa.

We turn now to a group of six species, some of them imperfectly known, which have large leaves and relatively large flowers borne on stout bracteolate pedicels; the sepals are large, and like the bracteoles persistent in fruit, the stamens are strongly united to form a fleshy cup; there are 3 or 5 styles, which like the ovary, may be glabrous as in *C. amplexicaulis* or hairy as in *C. flava*. Though evidently handsome plants—*C. amplexicaulis* is said to be grown in temple gardens for its beautiful flowers—they are not likely to be hardy here as they all come from Indo-China.

Next to these may be placed two species from Szechuan, *C. szechuanica* and *C. tuberculata*, both of which would probably be hardy in this country. Like the previous group, they have fairly large corollas with the stamens high united into a fleshy tube, and 3–5 styles; also the bracteoles and sepals are persistent in fruit. The pedicel is very short, however, and the bracteoles and sepals are not clearly distinguishable as such, but rather form a single series of bud-scales (perules).

From these we pass to another group of species with 3–5 styles and bracteoles and sepals forming a single series of perules, but having the stamens united only for a very short distance at the base. The perules may be persistent in fruit, or may fall after flowering. It is a heterogeneous group and the flowers vary greatly in size. Two of the species, however, have handsome white flowers and should be of considerable horticultural merit. Of these *C. yunnanensis* is widely distributed in the mountains of north-western Yunnan and may be hardy in this country, the flowers, 2–3 inches across, are produced very freely, and from the herbarium material the species has every appearance of being an excellent garden plant. Its ally, *C. Henryana*, also has large white flowers, but comes from southern Yunnan and may not be hardy except in the mildest parts of the British Isles. It has larger leaves than *C. yunnanensis*, and also differs in having 3, instead of 5, styles. An interesting feature is that some plants have the ovary glabrous, but in others the ovary is hairy.

There is one other species with 3 styles, which I have not included in the groups we have just considered because it seems more properly to belong to a group with single styles. The

species is *C. hongkongensis* which is in cultivation and which is so like the *japonica* group in its perules, high united stamens, and thick-walled fruits, that I think it should be referred there despite its 3 styles and perules persistent in fruit. All the species of the *japonica* group have large flowers with the stamens high united into a fleshy tube, bracteoles and sepals forming a single series of perules persisting after the corolla has fallen but deciduous in fruit, and a single trifid style. The group contains *C. japonica*, *C. saluenensis* and *C. reticulata*, all well-known in cultivation, *C. Pitardii*, *C. Edithae* characterized by its ovate acuminate leaves, acuminate perules and peculiar gynoecium, and two other species, *C. lapidea* and *C. Mairei*, both of which have pilose stamens, in contrast to the rest of the species where the stamens are glabrous. *C. japonica*, as its name implies, comes from Japan, but it is also indigenous in Korea; *C. Edithae* is from south-east China (Fukien and Kwangtung) and would almost certainly be tender in this country. The rest come from south-west China and those that have not yet been introduced into cultivation in this country merit a trial. The Szechuan forms of *C. Pitardii* should certainly be quite hardy; its var. *yunnanica* may already be represented in our gardens among the plants raised from FORREST'S seeds. This var. *yunnanica* is the common Camellia all over Yunnan except the high mountains of the north-west and its precise taxonomic position is still doubtful. It seems to stand between *C. Pitardii* and *C. saluenensis* and may have to be accepted as a distinct species.

Resembling the *japonica* group in the perulate flower is the small group of species represented in cultivation by *C. oleifera* and *C. Sasanqua*. The flowers of this group are, in the wild plants, smaller than those of the *japonica* group, and their chief characteristic is that the perules fall off as the corolla expands. The petals are also lightly attached to the stamens and tend to fall off individually. The stamens are variously united, usually free to the basal 2–3 mm. but highly and irregularly united in *C. Grijsii*. This species comes from Fukien and Hupeh, and plants from the latter province may be expected to be hardy—WILSON'S specimens show that they are very floriferous and the species would be worth introducing. In all the species of this group the ovary is hairy, but there may be 3 styles or a single trifid style, both conditions occurring in a single species. As there is some uncertainty about the identity of *C. oleifera* and *C. Sasanqua* in gardens, perhaps I should say something about them. First of all the plants usually grown under these names are not typical of the species as known in the wild—any more than most of the cultivated forms of *C. japonica* are typical of

the wild plant. *C. Sasanqua*, as found wild in Japan, has thinly leathery small leaves mostly 3–5 cm. long and 1·3–2 cm. wide with crenulate margins, the flowers are rather small, single and white, the stamens are wide-spreading and the perules are glabrous or finely pubescent near the apex. *C. oleifera* apparently grows wild in various parts of China, where, however, it is very widely cultivated for an esculent oil obtained from the seeds. In the typical state it has, compared with *C. Sasanqua*, much thicker rigidly coriaceous leaves, which are larger, 4·5–7 cm. long and 2–3 cm. wide, and serrulate; the flowers are larger, the stamens form a compact boss, and the perules are densely silky-villose. As might be expected with a widely cultivated plant, it is very variable, but even so the Chinese material can always be distinguished from the wild *C. Sasanqua*. Unfortunately for the taxonomic botanist the latter species has long been cultivated in Japan, where it is a most popular plant, and some of the cultivated forms are not so very different from some forms of *C. oleifera*. As to the latter, we have plants at Kew raised from seeds received from China in 1935, and these are clearly different from everything we grow as *C. Sasanqua*. There are, however, plants in cultivation as *C. oleifera* which might be an anomalous form of that species or of *C. Sasanqua*. I just don't know what they are. So much for the *oleifera-Sasanqua* group.

Next comes a small group of no horticultural interest, but very distinct botanically. This is the section *Calpandria*—sometime a distinct genus—which has very small flowers with the outer stamens united their whole length into a fleshy tube. The flower has a very short pedicel which may be covered by the perules, or the latter may be aggregated at the top to form a cupular involucre leaving a short length of bare pedicel below. The ovary is hairy as also is the stout scarcely divided style. There are only two or three species in the group, one in Siam, one widespread throughout Indonesia from Java to the Philippines, and the third—if it be distinct—confined to the Philippines.

Lastly there is a small group of as yet little-known plants which have small flowers, short cylindrical pedicels, 4–5 sepals forming a cupular calyx, and either no bracteoles or 1 or 2 bracteoles close to the sepals, the petals and stamens, where known, are united only at the base, and there are usually 3 styles. All the species are from Indo-China and with one exception are not likely to be of any horticultural value. The exception is *C. coral-lina* which is said to have coral-red flowers—whence the name—which the herbarium specimens show are borne in very great abundance. It might well be a good plant for a warm house.

That, Mr. Chairman, brings me to the end of this account of

the species of *Camellia*. I hope it has not been without interest, despite the strongly botanical flavour, and that it has shown that there are still a few species of the genus which the more discriminating lovers of plants may be glad to add to their collections. I need hardly remind you of the large number of our garden plants that have come to us from China. Even so, there are still many more Chinese plants worthy of introduction, and we must all hope that the day is not far off when China will again be settled and at peace, and when it will again be possible to obtain more of her plants to enrich our gardens. Among them we shall look forward not least to seeing more species of *Camellia*.

DISCUSSION

The Chairman (prior to the lecture). We have MR. SEALY now to give us a talk on Camellia species. You have heard MR. HILLIER'S talk this morning, you have seen, or will see, for yourselves in the hall below that *C. japonica* has been exploited in all its forms, but the crossing of the various species has only really just been touched upon. *C. Williamsii* is the most successful, of course, as the result of a cross. 'Cornish Snow' is the result of another two species successfully crossed. I think with those two examples in mind, MR. SEALY'S talk on Camellia species will probably give you some idea as to possible hybrid crosses.

Mr. Hillier. I should like to say that *C. Sasanqua*, the named varieties of it which we have, has by and large, fairly thick leaves. But we have also received Chinese seed of *C. oleifera*; it has thick leaves, akin to *C. Sasanqua*, but has very small flowers, which is the reverse of what you told us.

Mr. Sealy. You remember I said that *C. oleifera* was grown all over China for its seeds. There is bound to be variation. There was a plant in cultivation, in 1812, with a small white flower which came from China and was presumably a form of *C. oleifera*. It is an exception. You may have got that flower again. The *C. oleifera* we are growing now at Kew is much more like true *C. oleifera*. If asked, I would say I frankly do not know what the forms of *C. Sasanqua*, that you have, really are. Not only their flowers, but also their leaves are enlarged. The *C. Sasanqua*, as grown in cultivation, I should put down as a cultigen. There is something that should be cleared up about *C. Sasanqua*. In Japan there are two species 'Tsubakki' and 'Sazankwa' and the one grown mostly is not the 'Tsubakki' which is *C. japonica* but the other which is *C. Sasanqua*. Now, after a plant has been cultivated, as that has been, for centuries, it is a long way off its parent, and I do not know what to say about it; whether any hybridization has gone on, I do not know. All I know is that

some plants of *C. Sasanqua* raised from seed are more or less like the wild species, but the others are not. Speaking as a botanist I would say that in this respect *C. Sasanqua* is just like *C. japonica*: you rarely see in your cultivated plants the typical leaves of *C. japonica* like those of the herbarium specimens of the wild species—cultivation has done something to them; and it has done something to *C. Sasanqua* too. You will say it has improved it. From the point of view of the botanist, no.

Mr. Hanger. While touring in Cornwall I was surprised to see that the species *C. saluenensis* and also the wild form of *C. reticulata* varied so much. Can MR. SEALY tell us if in its wild state it varies as much as in its cultivated state?

Mr. Sealy. Yes, it does. All plants do in their wild state. It is a thing I have been trying to hammer home to gardeners (and botanists) for years. All plants vary. If you go into a wood of Bluebells and really try to pick out as many variants as you can, you will be surprised what you get. All plants vary, and these Camellias not least. You have to be careful when you are in these Cornish gardens, because they no longer raise plants, you know: they just go round and dig them up! Seedling Camellias turn up all over the place, even in MR. JOHNSTONE'S wall! All these Cornish gardeners do is to go and dig these things up, stick them in nursery rows, see which are good, and keep them. The pollination is done by the bees. So the plants which are raised in the gardens may well be hybrids.

But the plants raised from wild-collected seeds are most instructive. MR. JOHNSTONE has a whole side of what he calls his "Camelliarium" in which he is growing the plants raised from FORREST'S seeds. It is an object lesson. It saved me from going to China to see them! In *C. saluenensis* you get variation in size and colour of the flowers, and to some extent in the leaves. *C. saluenensis* varies less in its leaves, however, than *C. reticulata.* We once knew this species by its dull, reticulate, flat leaves, and it was a shock to see the dark green, curved leaves of plants which have been raised from FORREST'S seeds. The flowers are perfectly good *C. reticulata.* I am talking now of certain forms raised from FORREST'S seeds which appear to represent wild plants, but I strongly suspect that some of FORREST'S plants are from seeds which have come from temple gardens or Chinese nurseries. At Caerhays there is, or was, one *C. reticulata* which has tiny little flowers. You may have seen MR. JOHNSTONE'S *C. japonica* var. *variegata* which has quite a small red flower. This *C. reticulata* has smaller-size flowers. I collected some specimens for the Kew Herbarium because the plant was going to be thrown out as it was no good as a garden plant, but it is

very interesting botanically. That is the sort of variation that might appear in cultivated plants, and, as you saw from MR. YÜ'S pictures yesterday, in cultivation in Yunnan *C. reticulata* is very variable. In the wild plants you must still expect variation and among the wild material collected by FORREST we have specimens which match the curved, dark green, almost oval leaves of some of the newer forms of *C. reticulata*, and others which match the old, dull, more reticulate form.

Dr. Hume. In relation to the matter of variations in *C. saluenensis*, I may add to what MR. SEALY has said that, as I have seen the plants grown in Cornwall from FORREST seed, exactly the same variations are shown in the plants as are apparent, in so far as one can compare them, in the herbarium material that FORREST collected, presumably, and in all probability from trees growing wild. I think you could go through the collections at Caerhays Castle and at Trewithen and closely duplicate the herbarium specimens secured by FORREST in Yunnan.

I may say, too, in regard to *C. Sasanqua*, we esteem the species very highly in America because it gives flowers at a season of the year when our gardens are rather scant of flowers. That season is from about 1st October until Christmas, when the flowering of *C. Sasanqua* is through.

Now there are some differences or peculiarities in plants that botanists do not get because they work so often with dry herbarium material. I do not believe that anybody could fool me on *C. Sasanqua*, as it grows with us. You might blindfold me and put a flower under my nose, and I could tell you whether it was a *Sasanqua* or not. I think I would not miss it. It is a very delightfully scented flower at a distance, but if you put your nose into it, then you get something of the same odour that you get from musty hay.

Now, in the matter of variation in *C. Sasanqua* or other Camellias, MR. SEALY is quite correct that the cultivated forms have varied in certain directions from the wild forms, but basically the characteristics are the same, leaving out the matter of size. We have grown many forms of *C. Sasanqua* from seed imported from Japan where I believe even to this day the species can be found as a wild plant. Among these seedlings there have appeared many small flowered plants with small leaves that I take it are not essentially different from wild forms. Among cultivated plants there are many that produce flowers quite four inches across the spread of the petals and running through much the same gamut of forms as are found in *C. japonica*. The flowers are not lasting, they are very fugitive

as compared with those of *C. japonica* but they give a mass bloom in gardens over a period of several months at the beginning of the Camellia season. Many of the varieties have been secured from seed imported from Japan. There are other varieties introduced from Japan and still others grown from domestic seed. Although there are upwards of 100 named sorts, I have not seen them all but am fairly well acquainted with forty or fifty. They constitute a very interesting group and definitely hardier or more winter resistant than the *C. japonica.*

In closing I wish to commend MR. SEALY for the very excellent botanical work he has done with the whole Camellia genus and I hope that what he has given us here to-day may shortly appear in print in greater detail.

The Chairman. Thank you very much. It has been a most interesting discussion. We have certainly heard how *C. Sasanqua,* amongst others, can almost equal *C. japonica* in its variation.

Mr. Hanger. We are often asked at Wisley how it is that *C. Sasanqua* does not flower. I believe that is answerable inasmuch that the early importations to this country were a bad flowering form, whereas in the last few years from Japan we have had a lot of garden hybrids which are very free flowering.

I know the President thinks poorly of *C. Sasanqua,* simply because he has a very poor-flowering form. I think there are two forms: one, the old importation, which does not flower, and the later garden hybrids which are very free flowering.

The Chairman. Thank you. That certainly is a reason why *C. Sasanqua* was rather under a cloud in olden days.

Now I think we should like to thank MR. SEALY very much for his interesting talk in the usual way.

(The vote of thanks to MR. SEALY proposed from the Chair was carried with acclamation.)

THE CAMELLIA AND MAGNOLIA TOUR 1950

PATRICK M. SYNGE

FOLLOWING the success of the Rhododendron Tour the previous year it was decided to hold this year a six-day tour of gardens in Cornwall, specially notable for their collections of Camellias and Magnolias. The tour was held prior to the Conference and a party, fifty strong, left Paddington for Falmouth on Saturday, March 25, under the kindly guidance of DR. ST. LUKE of MESSRS. THOMAS COOK AND SONS. We stayed comfortably at the Falmouth and Bay hotels and paid visits by motor coach each day to various gardens in Cornwall. A special visit was made to the Truro Show, which the Committee had kindly arranged earlier than usual on our behalf, and we all appreciated the special effort which the Committee, under the chairmanship of MR. GEORGE JOHNSTONE, and exhibitors had made to provide us with a feast of unusual richness.

The weather was kind to us during the whole of our stay, being for the most part sunny and mild and we saw the gardens under the best possible conditions. Few of us can have realized before the phenomenal richness of the collections and the magnificence as well as the enormous size of many of the specimens. To those of us who garden in less favoured counties, it was an unforgettable experience and time upon time we emerged suddenly from a glade to find the kind of floral spectacle which previously had only been a gardener's dream. The care and art with which many of the plants had been placed, as well as the high standard of cultivation in many of the gardens, combined with a natural woodland effect, made one think few of these plants could have been finer or seen to better advantage in their natural habitats in China or the Himalayas.

It had been a mild winter, even for Cornwall, and the party were particularly lucky in seeing the plants completely undamaged by any frost. The *japonica* and *reticulata* Camellias were probably at their best during this week, although their season of display must have been very long. Many of the Magnolias were also laden with flower, although some species of the Yulan section had probably been at their best the week before when the writer had been greatly privileged in having a pre-view of some of the gardens.

Much interest was aroused in the innumerable variants of *C. japonica*, many grown into enormous plants and often dating

back eighty to a hundred years. Beyond a few known varieties great difficulty was experienced in giving a varietal name to many of the plants seen. In this the party was very greatly helped by PROFESSOR and MRS. E. G. WATERHOUSE of Sydney, Australia, who have made a special study of the varieties in Australia as well as the old literature and plates of Camellias. We were also privileged to have with us MR. and MRS. RALPH PEER of Los Angeles, who have not only made a special collection of the American varieties of *C. japonica* but have also visited China, Japan and other parts of the world in quest of Camellias. While undoubtedly a further study of the main varieties is very much needed, many members of the party should take comfort in the fact that a number of the Camellias seen were in all probability chance seedlings grown on at these gardens or even sports which had arisen on other bushes and then been propagated separately. In many cases they had probably never had a name and, while undeniably magnificent in the great plants we saw loaded with flower, would generally not be considered worthy of naming or propagating when compared with present-day varieties.

The party were also fortunate in having the advice and guidance of such well-known authorities as LADY MOORE of Dublin, MR. JAMES COMBER of Nymans, MR. HAROLD HILLIER of Winchester, MR. A. G. L. HELLYER, MR. F. HANGER and many others. Our greatest debt, however, is to the owners of these magnificent gardens who not only gave us the great privilege of seeing the treasures they contain but also conducted parties round and answered so many questions with great patience and kindness. We hope that they were, in some measure, rewarded by the obvious enjoyment, interest and appreciation of the party.

On the Sunday morning after arrival, many members of the party attended service at Truro Cathedral at which THE BISHOP OF TRURO preached a special sermon.

TREWITHEN

After lunch in Truro the party proceeded to Trewithen near Grampound Road where MR. and MRS. GEORGE JOHNSTONE guided members round this garden, so rich in rare and lovely plants. The main feature is a skilfully laid out lawn over 200 yards in length, curving away from the house and planted in undulating bays with interesting trees and shrubs, a method of arrangement which combines labour-saving with good display. Our attention was immediately drawn to a magnificent tree of *Magnolia mollicomata* in full flower, flanked by an enormous

Photo, P. M. Parkemore of J. Horace McFarland Company

Photo, P. M. Synge

THE CAMELLIA AND MAGNOLIA TOUR

FIGS. 40 and 41—*Camellia Williamsii* var. 'Donation' at Trewithen (See p. 98)

Photo, J. E. Downward

FIG. 42—*Magnolia Soulangiana* at Kew

FIG. 43—*Magnolia Delavayi* at Caerhays Castle (See p. 104)

dome-shaped bush of the pale yellow *Corylopsis platypetala*, a very beautiful combination. Although over 30 feet in height, the Magnolia was well shaped and bore hundreds of the large pale blush-pink flowers from the top right down to eye level. Each flower retained the central tepals upright in a cup round the stamens and stigma while the outer petals opened into a flat halo around them. After a few days in flower, however, these central tepals will also open flat as well. MR. C. WILLIAMS has pointed out that *M. Delavayi* has the same habit. Although I am well aware that some botanical authorities consider that *M. mollicomata* is not sufficiently distinct from *M. Campbellii* to justify separate specific or varietal rank, it appears that there are undoubted differences in the behaviour of the plants as grown in our gardens and for that reason I propose to retain the use of the separate specific epithet in these notes. We were informed that *M. mollicomata* has flowered in Cornwall in ten years from seed, while no *M. Campbellii* has been known to flower nearly so early. It is probable also that *M. mollicomata*, opening slightly later than *M. Campbellii*, is rather less susceptible to frost in the bud stage. While it is impossible to assess the relative beauty of two such lovely flowers and the specimens of *M. Campbellii*, that we saw, were almost over, the difference in shade of colour is one that most sensitive gardeners will observe, that of *M. Campbellii* being a warmer pink while *M. mollicomata* flower is generally a paler blush-pink colour with just a suggestion of colder lilac at the base, a colour sequence which becomes more apparent in the deeper purple forms mentioned subsequently.

Proceeding to the right, behind the lawn, the party saw some interesting Camellias against an old wall. There was a fine specimen of the white flowered *C.* 'Cornish Snow' (*C. saluenensis* × *C. cuspidata*), while further on was a small and much protected plant of the rare and tender *C. hongkongensis* and also an interesting Camellia with a large deep pink single flower and a rather broad, slightly reticulate leaf. It was suggested that this might be *C. Pittardi*. A small flowering single red Camellia with unusual variegated foliage also attracted attention and MR. JOHNSTONE told us that it had been bought from MESSRS. CHENAULT as long ago as 1913. It had now only reached a height of 4 feet although it was as much or slightly more through. Interesting Rhododendrons noted against the wall were the tender yellow Bodnant hybrid between *R. burmanicum* and *R. chrysanthum* and the pink *R. spiciferum*.

One of the finest sights of the whole tour was the great plant of *R. Macabeanum* at Trewithen. It was magnificent, covered with huge trusses of flowers of a good yellow, contrasting with

the big and dark green leaves. Surely this is one of the finest Rhododendrons ever introduced. The plant measured 25 feet across by 18 feet high. Close by was a large plant of *R.* 'Alix' with glowing red flowers, lit up as the sun shone through them. A rather tender hybrid raised at Exbury, it appears to have inherited this brilliant colour from one of its parents, *R. Hookeri*. It was backed by an enormous tree of *Drimys Winteri*; we saw very fine specimens of this wherever we went among the Cornish gardens, where with the Laurel it provides useful windbreaks. One of the lessons we learnt in Cornwall was the attractiveness of the ordinary Laurel in these milder counties where it is allowed to grow and flower freely.

Continuing our walk along a path parallel to the lawn we emerged suddenly on to a great bank of Camellias in another glade. Here were *C. Williamsii* var. 'J. C. Williams,' seedlings of *C. saluenensis* and *C. reticulata*, the single wild form. Here also were two bushes, flowering very freely, of *C. Williamsii* var. 'Donation,' a very fine plant which we did not see elsewhere on the tour. This plant has large semi-double flowers 4–5 inches in diameter and of a pleasant soft rose colour. It was raised at Borde Hill by the late COLONEL STEPHENSON R. CLARKE, C.B., The parentage is *C. saluenensis* and *C. japonica* 'Donckelari.' (Figs. 40 and 41.)

The party were greatly interested in the variation among the seedlings of *C. reticulata*; of which there was a large collection at Trewithen, and two large bushes over 10 feet high flowering freely at the edge of the lawn were noted as some of the finest plants seen during the tour. Many of these bore leaves considerably broader than those of the semi-double *C. reticulata*, while the colour of the flowers varied from pale blush-pink to quite a deep pink, almost a crimson in one case. An outstanding salmon-pink form markedly veined and with widely expanded flowers was specially admired. (Fig. 49.)

Emerging again on to the lawn, we were able to see large trees in flower of *Magnolia Dawsoniana* and *M. Sargentiana* and to compare their flowers, a question which MR. JOHNSTONE has already discussed in his paper given at the Conference. A beautiful bush of *M. stellata*, lit by the sun against a dark background, was a fine sight at the edge of the lawn, while on the opposite side was an enormous *M. Soulangiana rustica rubra* just coming into flower. Those interested in rare and unusual plants also noted a fine tree of *M. nitida*, 15 feet in height, with its beautiful shining evergreen foliage, a large *M. rostrata* just beginning to unfold its vast leaves, *Rehderodendron macrocarpum*, a flowering tree of *Euptelea Franchetiana* and a big tree of *Prunus*

campanulata in full bloom. Unfortunately there was no time to visit the collection of seedling Daffodils, but MRS. JOHNSTONE very kindly showed parties over the beautiful house, which was built in 1723. This was a privilege much appreciated by members of the party.

SCORRIER HOUSE

From Trewithen the party proceeded to Scorrier House, the property of MRS. F. WILLIAMS, who, together with her son, kindly received us and conducted us round the garden. Here we saw a very large collection of the old varieties of *Camellia japonica*, growing against the long walls of the garden. MRS. WILLIAMS told us that some of these were as much as 130 years old and the majority over 70 years; certainly they were enormous specimens, overtopping their walls and covered with flower. In a cold greenhouse we also admired a very magnificent plant of a crimson double Camellia, probably *C. japonica* 'Chandleri', with very large flowers. Other varieties of *C. japonica* noted against the wall were 'elegans,' *alba plena* and the pale blush 'Countess of Orkney.' The party were also interested in the very fine Conifers, many of which were species rarely seen; particularly notable was a very large specimen of *Podocarpus nubigena*, 60 feet high. This plant was said to have been a gift from the plant collector WILLIAM LOBB, who worked in this garden as a boy over a hundred years ago. Scorrier House had one of the oldest gardens we saw.

TREGOTHNAN

The following morning VISCOUNTESS FALMOUTH very kindly conducted the party round much of this great estate with its wonderful situation and views down to the sea. Against the house we noted a fine large double white variety of *Camellia japonica*, *Magnolia stellata*, thick with flower, and a good specimen of that sweet-smelling climber *Stauntonia latifolia*. Arching over the walk was an enormous deep crimson *Rhododendron arboreum* in full flower while many of the party paused at a very large bush of the sweetly scented *Osmanthus Delavayi*. Beside the walk were many old varieties of *Camellia japonica*. PROFESSOR WATERHOUSE pointed out to us a big plant of the pale variety 'Jubilee.' The grounds everywhere seemed full of Primroses which added to our delights. Passing very old specimens of *Cupressus macrocarpa*, allowed to grow naturally as many-stemmed trees, we turned down towards the sea, through a glade of old tree ferns, shaded by tall Pines. From there we emerged into a veritable grove of *Camellia*

japonica varieties growing more in the open than most of those we had seen previously. They all showed the magnificent way in which this estate is being kept and were compact, dome-shaped bushes, many 10 or more feet in height and nearly all covered with flower. Several had been cut back to prevent the plants growing together and had sprouted freely. PROFESSOR WATERHOUSE was able to identify for us a good double white as *C. japonica* 'Welbanksiana' and an attractive single deep pink as 'Lady de Saumerez,' a sport from 'tricolor' an old white and pink variety. Others were 'Rose la reine,' a double white 'Maria Theresa' a small flowering pale blush-pink, 'elegans' still one of the best semi-double pinks, *alba plena* and 'General Mangaldo.' VISCOUNTESS FALMOUTH told us that there were no exact records of the age of these Camellias but that they were probably 90 to 100 years old and had been moved into their present situation about 50 years ago. On our way back from the Camellia valley we passed a very large loose-growing tree of *C. reticulata semi-plena*, which was estimated to be 22 feet high and 25 feet across.

HELIGAN

In the afternoon the party visited Heligan where COMMANDER and MRS. H. H. THOMAS very kindly showed members some of the notable plants. After a pause on the lawn by the house to admire the beautiful view down the valley to the sea by Mevagissey, the party wandered into the woodland garden. Beside the house were some very fine old specimens of *Camellia japonica* which had luxuriated and were flowering very freely in this protected situation. We particularly noted a wide spreading bush of a double bright crimson variety, possibly 'Althaeiflora' or 'Blackburniana.' There was also a double pink which PROFESSOR WATERHOUSE identified as 'Sacco Vera' and a large double white, possibly 'Il Trementi.'

Other features of the garden were the enormous plants of *Rhododendron arboreum* as well as many other Rhododendrons including *R. sino-grande*. *Cornus capitata* was represented by a large old tree while among the Magnolias we noticed a free-flowering *Magnolia denudata* and a large *M. Campbellii* with a few flowers still remaining. We also noted a bush of the small white *Camellia cuspidata* flowering very freely. The most exciting specimen, however, was the enormous plant of *C. reticulata semi-plena* against a wall of the old walled garden. It was 36 feet in width and about 25 feet high, topping the wall by several feet. It was noticeable that it was flowering most freely

where the branches were spread along the top of the wall in full exposure to the sunlight and COMMANDER THOMAS told us that a few years previously it had been trimmed several feet back to the wall height. Unfortunately there are no records as to when it was planted, but it was certainly the largest that we saw in any Cornish garden. At its foot on the shady side of the wall grew a flourishing colony of *Philesia buxifolia.*

TRURO SHOW

Tuesday was a red-letter day for the party with visits to the Truro Show in the morning and to Caerhays Castle in the afternoon.

Certainly the Show was a rich feast of choice flowers, including many Magnolias and Camellias in excellent condition, such as are very rarely indeed seen at the London Shows. The large Drill Hall was completely filled with groups of trees and shrubs and Daffodils, as well as the Competition Classes for Camellias, Magnolias and Rhododendrons, while a separate marquee was filled with the Competition Classes for Daffodils and other flowers as well as further groups. The Daffodils, which were very fine indeed, will be described in a separate report in the *Daffodil Year Book.*

Among the groups of flowering shrubs the exhibit of MR. CHARLES WILLIAMS, M.P., from Caerhays Castle was pre-eminent. The Committee awarded a large Gold Medal for this exhibit and made special mention of the fine vases of *Michelia Doltsopa.* The beautiful creamy-white flowers of this evergreen relation o the Magnolias were very freely produced and were in excellent condition. In the afternoon the party saw the trees from which these vases had been taken. It is one of GEORGE FORREST'S introductions from Yunnan, and unfortunately is a very tender plant outside Cornwall and the milder counties. (Figs. 45 and 47.)

Among the Magnolias in this group we particularly noticed the enormous Water-Lily-like flowers of *Magnolia Sargentiana robusta* and the pale but beautifully formed flowers of *M. mollicomata.* I measured one of the flowers of the former on a young tree at Caerhays and it was 12 inches in diameter, while the tepals are so broad and full that they overlap and some might even describe the flower as a semi-double.

Among the Camellias, *C. Williamsii* var. 'J. C. Williams' was particularly noticeable. There were also many very interesting Rhododendrons in this exhibit, so closely packed with good things, and I particularly noticed *R. sino-grande,* a fine *sutchuenense* hybrid, 'Blue Tit,' 'Red Admiral,' a fine hybrid from *R.*

Fortunei 'Mrs. Butler' and a blood-red *R. arboreum, calophytum, floccigerum* and *russatum*, as well as a good scarlet hybrid derived from *R. repens*. An expert judge remarked to me that in this group among the Rhododendrons he did not see a single pip out of a truss.

MESSRS. VEITCH of Exeter staged a large group in which Magnolias and Camellias were prominent; especially noticeable were the typical pink form of *Magnolia Veitchii* and a sister seedling of this Magnolia which I had not seen before. This has flowers of approximately the same size as *Veitchii*, but they are whiter. (Fig. 33.) It has been named 'Isca' after the town of Exeter. Other Magnolias in the group included a fine *M. denudata*, described as purple-eye variety, *M. salicifolia* and *M. Soulangiana rustica rubra*, *M. Kobus* and *M. Soulangiana* 'Alexandrina.' Among the Camellias were good *reticulata semiplena*, 'Devonia' single white and 'Magnoliaeflora,' 'Peach Blossom,' a fine shell-pink slightly deeper in colour than the usual blooms of 'Magnoliaeflora.'

An interesting mixed group was staged by MESSRS. TRESEDER of Truro in which several Camellias were shown in good condition as well as *M. Soulangiana* and *M. Soulangiana Lennei*. A feature of this exhibit, to which a Silver Gilt medal was awarded, was an unusually good blue form of *Teucrium fruticans*.

In the Class for Magnolias the first prize was won by a wonderful deep fuchsine-purple bloom of the Magnolia collected by FORREST in Yunnan under the number F. 25655 and exhibited by MR. MICHAEL WILLIAMS of Lanarth, St. Keverne. This is the flower to which a First Class Certificate was given by the R.H.S. under the name *Magnolia mollicomata* 'Lanarth,' and its systematic position is discussed in MR. GEORGE JOHNSTONE'S article. The flower was in perfect condition and measured 7 inches in diameter. The outer tepals were broad and very smooth (I use the word in the sense used by Daffodil growers) while the inner ones formed a dome-shaped boss in the centre around the stamens and stigma. We were informed that the flowers on the tree were now over and this bloom had been kept in cold storage for the show. Certainly it did not appear to have suffered in any way. It is a plant absolutely unique in colour among the large flowering Magnolias of the Yulan section. (Fig. 35.)

The second prize went to a very lovely bloom of a pale blush-pink form of *M. mollicomata*, exhibited by COL. A. T. HOLMAN of Chyverton, Truro, while the third prize was given to *M. Sargentiana robusta* from MR. CHARLES WILLIAMS, M.P., of Caerhays Castle. It was a very large bloom but just past its best.

There were two Classes for *Camellia reticulata* and in each case the main prizes were given to the *semi-plena* varieties. It seemed that two forms were represented, one tighter and more compact and less wavy than the other and both these are represented in plates in the older Botanical Magazines. For single blooms the first prize went to a very fine specimen of the larger size and more open form with undulating petals shown by MR. C. WILLIAMS, M.P., while the second prize was given to a very beautiful specimen of the tighter form from MR. M. P. WILLIAMS of Lanarth. Notable in this Class also were the lovely single-flowered seedlings of *C. reticulata* grown at Trewithen from seed collected by GEORGE FORREST. This was particularly fine among the sprays where it was awarded a third prize, the first prize being given to a very floriferous spray of the semi-double form from Caerhays Castle. I had certainly never seen finer specimens of *C. reticulata* than those I saw in this Show and during our visits to Cornish gardens.

Among the Classes for varieties of *Camellia japonica*, many fine flowers were seen. These Classes suffered as did the similar Classes in London the week later, from uncertainty over the naming of the varieties and many flowers were exhibited without name. In Class 13, for sprays, the first prize was awarded to MRS. ETHEL NEALE of Polgwynne, Feoch, for a magnificent spray of *C. japonica* 'Elegans.' This fine pink semi-double variety which was raised by CHANDLER, the nurseryman at Vauxhall, is quite distinct from the variety 'Chandleri,' a large almost completely double crimson and should be known as 'Elegans' of Chandler rather than 'Chandleri elegans,' a name often affixed to it. 'Lady Clare' was seen in very good condition in Class 9 and received the first prize. It was also shown by MRS. NEALE.

In Class 10 for three single Camellias the first prize was awarded to MR. C. WILLIAMS, M.P., of Caerhays Castle for a very fine shell-pink seedling of *C. saluenensis* and the two *C. japonica* varieties 'Kimberley' and 'White Flora.' MR. W. ARNOLD FORSTER of Eagles' Nest, Zennor, was second with 'Jupiter' and 'Sylva' a considerable achievement considering the exposed situation of his garden. MR. M. P. WILLIAMS showed in this class a pale but very attractive *saluenensis* seedling. In the class for doubles the first prize was awarded to Tremough Convent, Penryn (gardener MR. WINN), for three fine unnamed specimens and the second prize to MR. C. WILLIAMS, M.P., for a fine deep crimson 'Mathotiana' and two others. In this class THE BISHOP OF TRURO won the third prize for three double white flowers.

Among the Rhododendrons the specimens of *R. Macabeanum*

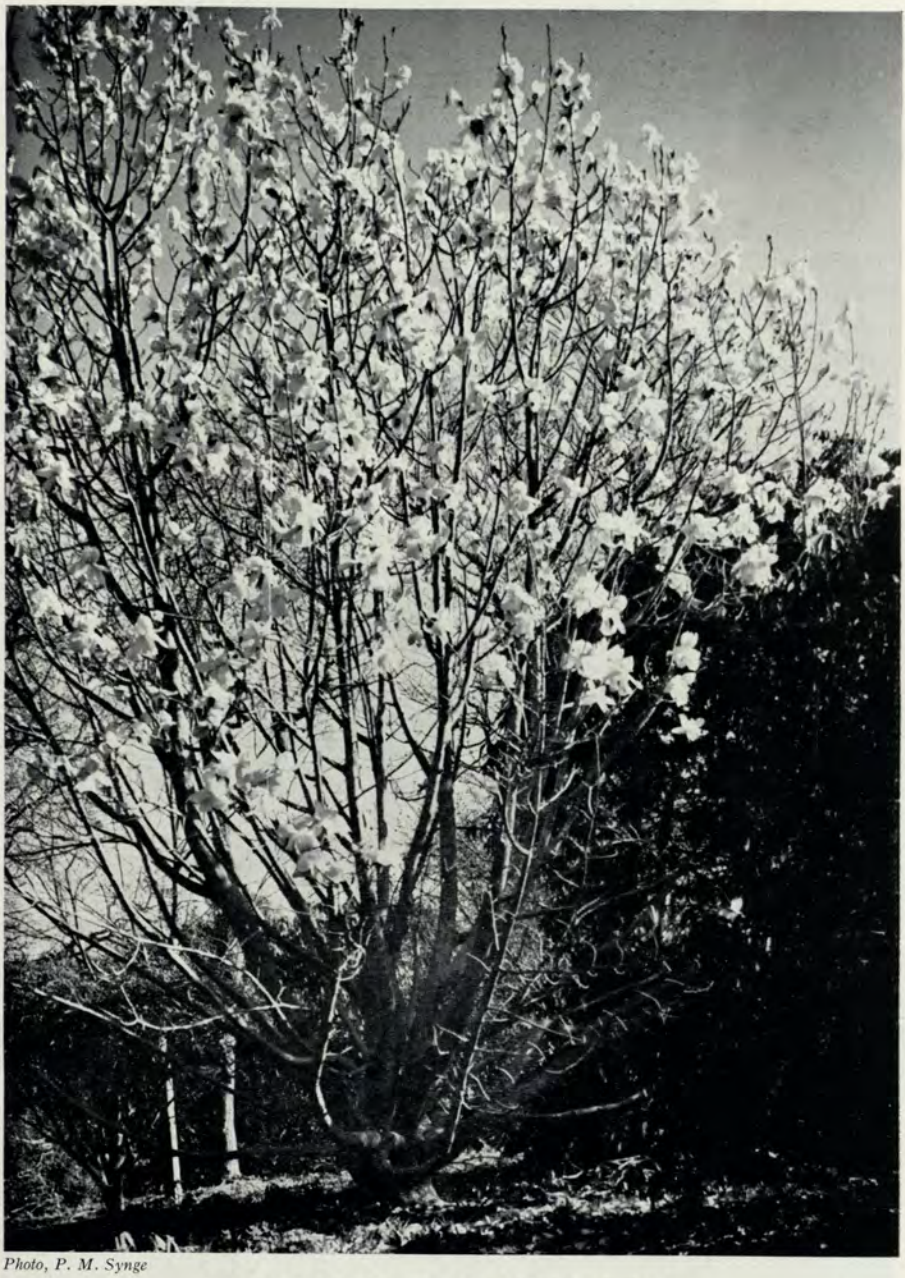
and *R. sino-grande* were very outstanding, particularly the former. While the differences between these species are generally very apparent on the tree in the habit of growth, we saw at this Show several very deep yellow forms of *R. sino-grande*, raised from seed collected by G. FORREST under the number F. 20387 which corresponded very closely both in flower and foliage with the specimens shown of *R. Macabeanum* raised from KINGDON-WARD'S seed under the number K.W. 7724. Both of these had red stigmas. On the other hand the specimens of *R. sino-grande* raised from KINGDON-WARD'S seed, K.W. 6261A were, very different, having very pale cream coloured flowers, almost white, a looser truss and a pale green stigma as well as a long rather narrow leaf. Many other Rhododendrons were also shown in magnificent condition. I particularly noticed a very fine spray of *R. calophytum* shown by VISCOUNTESS FALMOUTH from Tregothnan, while a big vase of *R. Barclayi* was shown by MR. W. TRENCH FOX of Penjerrick where it was originally raised.

CAERHAYS CASTLE

Here has been gathered together a unique collection of Camellias, Magnolias and Rhododendrons, and the woodland garden, placed towards the top and on the slope of a hill looking down a small valley, has been planted with such skill that specimens have been grown of a magnificence probably unparalleled in other gardens or in their country of origin. One bend of this slope faces north. The garden was made by the late MR. J. C. WILLIAMS and is splendidly maintained now by his son, MR. C. WILLIAMS, M.P. MR. and MRS. WILLIAMS and MR. MICHAEL their head gardener kindly showed parties round.

Vast trees of *Magnolia Veitchii* up to 60 feet have provided light overhead cover in places, while as windbreaks hedges of Laurels and single trees of *Pinus insignis* (*radiata*) have been planted. Very large plants of the evergreen *Magnolia Delavayi* form some of the finest evergreens in the garden, several trees being 40 feet in height. The whole is planned as a light woodland garden on a hillside where one emerges into more open glades and clearings and there the finest Magnolias and Camellias have grown to a great size.

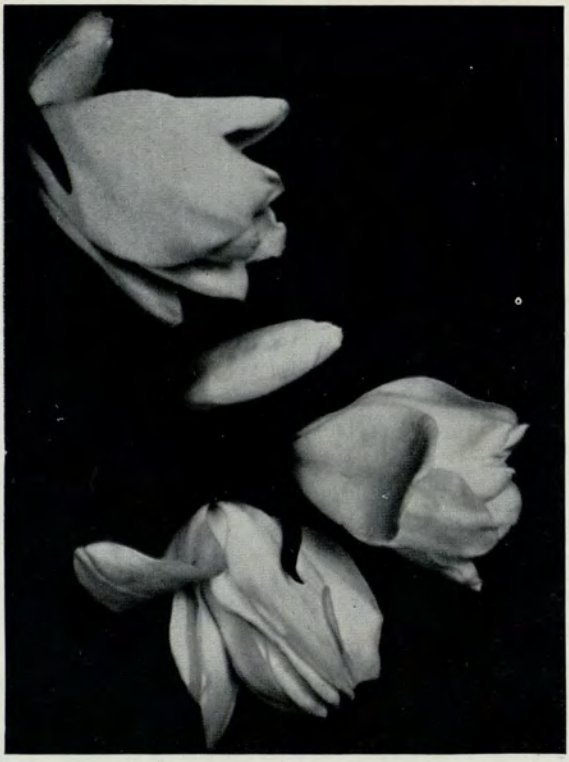
Along the front wall below the Castle, in a very exposed position, *M. Delavayi* has now grown above the full height of the grey stone wall, while the plants have joined up to make a solid deep green wall of their own. It was, of course, much too early for any flower on this species. (Fig. 43.) Round the archway and against the grey stone walls of the Castle a number of



Photo, P. M. Synge

THE CAMELLIA AND MAGNOLIA TOUR

FIG. 44—*Magnolia mollicomata* at Caerhays Castle (See p. 107)

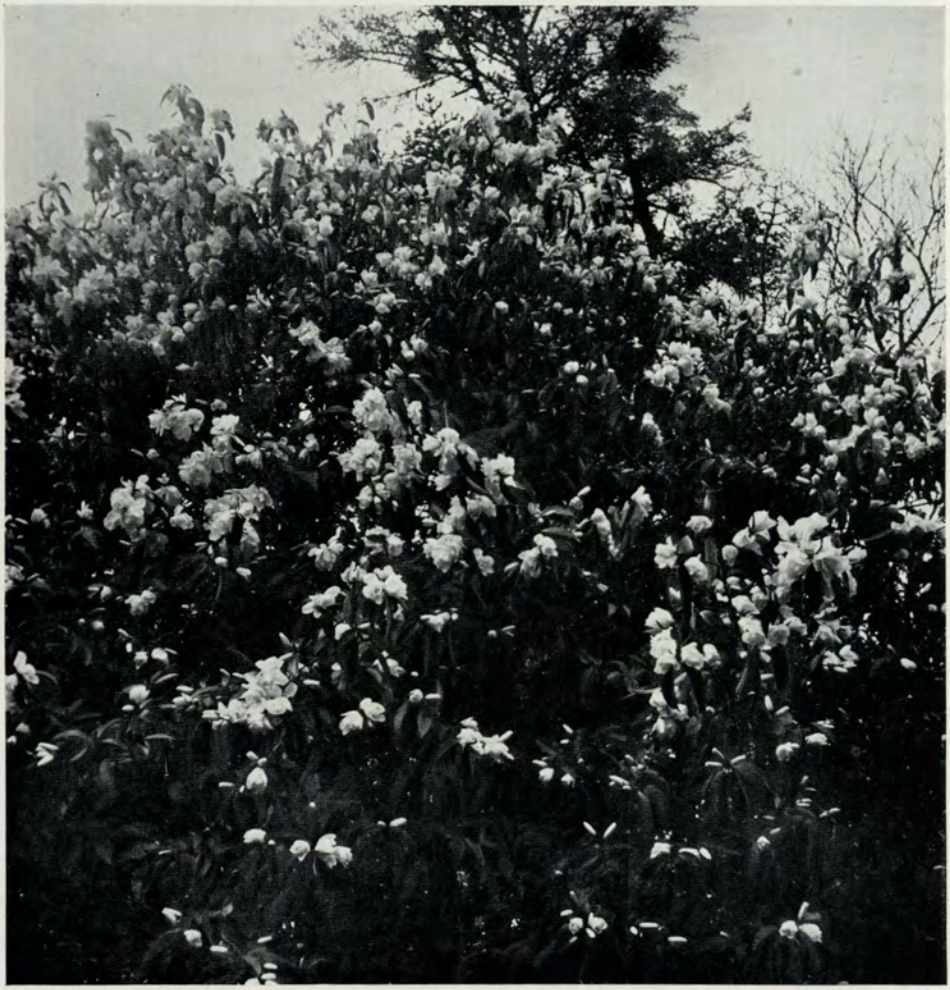


THE CAMELLIA AND MAGNOLIA TOUR—TRURO SHOW

FIG. 45—*Michelia Doltsopa* from Caerhays Castle, exhibited at the Truro Show (See p. 101)

Photos, P. M. Synge

FIG. 46—*Magnolia mollicomata* at Caerhays Castle (See p. 107)



Photo, 'Gardening Illustrated'

THE CAMELLIA AND MAGNOLIA TOUR

FIG. 47—*Michelia Doltsopa* at Caerhays Castle, March 1950 (See pp. 101 and 107)

Photo, P. M. Synge

THE CAMELLIA AND MAGNOLIA TOUR

FIG. 48—*Magnolia Dawsoniana* at Caerhays Castle (See p. 107)

Camellias were flowering freely and we noticed the deep red semi-double flowers of the variety shown from Leonardslee as *C. japonica* 'anemonaeflora,' a few weeks previously.

Mounting the hill past a large clump of attractive *Cyclamineus* hybrid Daffodils raised at Caerhays, we came to the original bushes of *Camellia Williamsii* var. 'J. C. Williams,' now thickets 10 feet in height. After a mild winter these shrubs with their very long flowering season were now past their best flowering but even so they were still bright with buds and flowers. It is unnecessary for me to praise this shrub further in view of the honours which have been conferred on it. Later we saw the original bushes of *C. Williamsii* 'Mary Christian' and 'St. Ewe,' both of which have deeper coloured flowers. 'St. Ewe,' though past its best, was still loaded with flowers of a glowing warmth of colour, most decorative in effect. This flower seems to be practically without any tinge of blueness in its colour. Another lovely plant of this series, which we also saw, was *C. Williamsii* var. 'Michael,' named after MR. MICHAEL the head gardener at Caerhays, with large open flowers of a paler tint than any of the others. There were seedlings both of these hybrids and of *C. saluenensis* coming up freely throughout the woods and we were shown small nursery plantations in which they had been collected and lined out. It is undoubtedly a plant of superlative garden value.

Another most interesting Camellia which we soon passed was *C. reticulata* 'Mary Williams,' a single wild *reticulata* with flowers 4½ inches across and of a clear deep pink. (Fig. 17.) This was a very beautiful plant and, as a specially selected seedling of the wild *reticulata*, is deserving of wide planting in gardens in the milder counties. Throughout the woodland also we found large plants of *C. japonica* varieties and I particularly noticed the two very fine whites, *alba grandiflora*, one of the largest semi-doubles, and 'Mathotiana alba' an old full double of almost perfect imbricated form. Among the pink and reds there were 'Lady Clare' and 'Adolphe Audusson,' both flowering very freely; of their type there are few more magnificent varieties.

Among many other Camellias we saw the delightful 'Cornish Snow' (*cuspidata* × *saluenensis*) raised at Caerhays, an excellent plant with a good upright habit producing long sprays laden with flowers, and a most interesting Camellia with small white flowers and a delicate scent raised from seed collected by G. FORREST under the number 25252. MR. SEALY has told me that this is *C. Tsaii*. It was almost like a small-flowering Philadelphus in appearance and obviously a very attractive plant, with its arching branches laden with flower. It is close to *C. cuspidata*.

We also saw a very fine plant of the semi-double *C. reticulata* garden form against a wall.

The shade cover in this part was provided by great trees of *Magnolia Veitchii*, perhaps 60 feet in height and covered with flower bud, though so far overhead that it was difficult to realize the display. There were both the pink and the whiter forms and we were told that they were no more than 40 years old, so rapid is growth, combined with hybrid vigour, in these protected and sheltered Cornish gardens. A very large tree of *M. Campbellii* was also seen in this area of the garden, but unfortunately there was little flower on it still remaining. However, we were lucky in seeing the pure white *M. Campbellii alba* in flower for the first time since 1939, when it flowered and was then cut down to the ground by a particularly severe frost. Two trunks 20 feet in height have now grown up and were flowering. The flowers were of large size, pure white and of very beautiful form. We did not see another plant of this white *Campbellii* anywhere else in Cornwall. MR. WILLIAMS told us that it had been grown from a seed sent from India. An interesting plant was a young *M. Campbellii alba* which had grown from a large piece, almost a log, 4 inches in diameter, which had been broken off and been plunged in the ground as a large cutting. Nine inches of a piece 2 feet 6 inches in length had been inserted in the ground and a shoot 11 feet in height had grown from it in three years. This, however, is treatment unlikely to be successful in other counties.

One of the most beautiful of all the Magnolias was the large tree of *M. Sprengeri diva* with deep pink flowers on branches sweeping right down to the ground. We were lucky in seeing it against a deep blue sky. The tree was approximately 40 feet in height and as much in diameter, while the flowers were of a richer, deeper pink than we saw in any other species, although not quite so large as those of *Campbellii* or *Sargentiana robusta.*

This latter Magnolia was also in full flower and I was particularly interested in a young tree only about ten years old and flowering for the first time. The tepals are very wide and overlap, giving the enormous flowers something of the appearance of a great Water Lily, as they bend downwards and hang facing towards the ground. We measured one which was 12 inches in diameter and was the largest Magnolia flower we saw in Cornwall. The flowers are nearly white on the inside but suffused with a faint pink spreading from the base, while the outer side of the tepals has more colour. This young tree was a seedling from a much larger tree which we saw also. This was a most magnificent sight and covered in flower, although the individual flowers were

not quite so large as in its seedling. Its spread was 33 feet and its height 23 feet (measured by clinometer). MR. WILLIAMS told us that he carefully mulches each tree with its own leaves and broken branches and other leaves within the circumference of the branches and since the roots are brittle as are also the branches, he tries to disturb them as little as possible by refraining from treading close to the base of the tree. Many of the finest specimens were carefully protected by wiring round the trunks.

Magnolia Dawsoniana was a sight hardly less magnificent and a large tree was literally covered with flowers. The tepals of this species are much narrower and the white flowers are suffused with purple spreading from the base. (Fig. 48.)

An enormous and very magnificent tree of *M. mollicomata* was also in full flower and gave us one of the finest spectacles of the whole garden. We were told that it had been in flower for over a week although by now the flowers were beginning to fade slightly and were now a pale blush-pink, almost white. It was estimated that this tree bore three thousand flowers. Every short growth seemed to have a flower and always the inner tepals remained upright while the outer ones fell away to form a saucer-shaped halo. MR. WILLIAMS told us that he considered this Magnolia the toughest of all the large pink species. It was 35 feet in diameter of spread and 29 feet in height according to our clinometer, a very shapely tree. (Figs. 44 and 46.)

Other Magnolias which we saw in full flower included large trees of *M. salicifolia* and *M. Kobus*, both laden with flower. The *Kobus* we estimated at 35 feet and it was literally weighed down and looked as if it might break from the great number of its creamy-white flowers. With the sun shining on it in a woodland glade it was one of the spectacles that we will not quickly forget. It is a slightly stouter plant than *M. salicifolia* and lacks something of the delicate grace and charm of this species but makes up for it in abundance of flower.

Among the evergreens *Michelia Doltsopa* commanded great admiration. There were several enormous dome-shaped bushes covered with the creamy-white flowers and scented so beautifully. These were raised from seed collected by GEORGE FORREST and unfortunately it is still a very rare plant and we were told a tender one, even in Cornwall. (Fig. 47.) Certainly its garden value here was great and we were told that it had a long flowering period while the long buds sheathed in a golden-brown fur are also most attractive. The evergreen *Magnolia nitida* was here thirty years old and 22 feet in height, a lovely plant with its brilliantly shining foliage, and deep brown flower buds. We were

told, however, that it was wind tender and that the bark split in more exposed situations. We also saw fine trees of *M. rostrata* just breaking into leaf, *M. Fraseri* and *M. Soulangiana speciosa.*

Among the many Rhododendrons we noticed the rare *R. stamineum* in bloom and also the delightful little yellow flowering hybrid 'Golden Oriole' (*moupinense* × *sulfureum*) which I had noticed especially when it was shown in February three years ago and had received an Award of Merit.

After a long and most enjoyable afternoon spent in the woods MRS. WILLIAMS very kindly entertained the party to tea in the Castle and the party returned to Falmouth after a day which few will quickly forget.

LANARTH

On the Wednesday morning the party drove southwards towards the Lizard and visited this lovely garden near St. Keverne, planted by the late MR. P. D. WILLIAMS and now tended by his son MR. MICHAEL WILLIAMS who kindly guided the party round. Here growth has been particularly luxuriant, even by Cornish standards, and we saw enormous specimens of many very rare plants.

Perhaps to many of us the most interesting tree in the garden was the Magnolia collected by FORREST under the number F. 25655, whose flower we had seen at Truro on the previous day in such excellent condition. It was 25 years old and had assumed a fastigiate habit, having a spread of only 20 feet but a height of 32 feet (measured by clinometer). MR. WILLIAMS had moved very large specimens of both *Magnolia rostrata* and *M. Dawsoniana* to leave a clear space around this tree which now stood at the base of a small slope against a good green background. These two Magnolias had been cut back very severely after moving but had survived and were now growing again. Unfortunately all the flowers of F. 25655 were over but we were told that it had carried about 250. The tree had a beautiful ashen-grey trunk. (Fig. 36.)

Among other Magnolias we saw a fine plant of the paler, but also fastigiate form of *M. mollicomata* which was still flowering freely although a little past its best. *M. Dawsoniana* and *M. Kobus* were both literally encased with the blooms, which made up for the lack of the superlative form of the individual flower that is found in some of the other species. We also saw a large *M. nitida*, one of the finest we saw in Cornwall, an enormous though still bare *M. obovata*, a large Michelia, probably *M. Doltsopa*, and also a fine specimen of that very rare and tender plant *Manglietia Hookeri*. Although 25 feet or so in height, this plant

had not yet flowered, but some members of the party were optimistic that they could detect flowering buds for this year.

Among the Camellias were many very fine plants ranging from a large flowering specimen of *C. reticulata semi-plena* by the house to numerous *C. japonica* in the woodland. Unfortunately we were able to identify only a few with any degree of certainty.

Among the other interesting plants were numerous fine Rhododendrons including the lovely *R. Albrechtii* flowering on its bare twigs, a hedge of *R. racemosum* and a very tall *R. sinogrande* overtopping a high mass of other Rhododendrons. A large specimen of *Pyrus megalocarpa* with whitish clusters of flower on the bare branches was a plant which defeated most of the experts, while the young coppery-plum coloured growth of an enormous *Photinia serrulata* provided one of the most colourful spectacles in the garden. Here also were vast specimens of *Drimys Winteri*, flowering freely, and numerous Nothofagus, Pittosporum, Quercus and Acer which the party regretfully had to leave unexamined for want of time. A grove of *Myrtus Luma* seeding freely was an attractive sight with the sun shining on the rust-coloured stems, while the Corylopsis were also very lovely. These are plants all too rarely seen in gardens of the home counties, yet several species at least should grow satisfactorily.

Among the Conifers the beautiful deep green weeping specimen of *Chamaecyparis Lawsoniana* var. *intertexta* at the edge of the lawn by the house was pre-eminent and I do not remember having seen a similar specimen anywhere else. Others we noted were a dome-shaped *Cupressus cashmeriana* at least 20 feet in height, a large *Juniperus Coxii*, the Coffin Juniper of Northern Burma, again appropriately with pendent branches, *Picea spinulosa* (*morindoides*) and *P. polita*, both grown to a great size, as was also *Taiwania cryptomerioides*, another Coffin tree.

TREWIDDEN

After lunch at Penzance the coaches climbed onto the higher ground above the coast where Trewidden is situated. It is a most attractive estate belonging to MRS. CHARLES WILLIAMS, who had kindly come from Caerhays for the afternoon to show us round. Here we seemed to get our first breath of really fresh air in the Cornish gardens, but the plants did not seem any the worse for it. In fact, we saw here the two most free-flowering specimens of *C. reticulata semi-plena* that we saw in any garden. They were not quite so large as the Heligan plant but carried

much more flower. Growing against a grey wall in a fully exposed position, one facing south, the other east, they were covered with flower from the top of the 15-foot wall to the base, while each must have been 20 feet in length. Near we also saw a very large tree of the lovely dark red imbricated double *C. japonica* called 'Mathotiana rubra,' an old variety but still one of the finest.

The finest Magnolia in the garden was an enormous *M. Veitchii* which, planted in an open situation, had developed a number of stems branching from the base and so presented the greatest spectacle of this species which we saw. It was a good pink form, full of flower and had a span of 51 feet, while its height was 33 feet (measured by a clinometer).

A large *M. Campbellii*, fully in the open, had also been allowed to branch thus from the base, and showed great advantages in this habit of growth where there is sufficient space. It had a 36-foot span and a trunk larger by about 6 inches than I could reach round. Its flowers showed it to be a good deep pink form.

Another feature of this garden which delighted the party was a hollow, made from an old tin mine where a land mine had fallen in the recent war. This had been planted with tree ferns, the largest of which were now about 40 years old. We were pleased to see also a young plant of *M. Sargentiana robusta* most aptly placed in the hollow so that when it is a large tree the flowers will be borne at eye level for those on the path at the edge of the hollow.

A grove of varieties of *Camellia japonica*, an enormous *Pinus radiata* with a small seedling of the same species growing out of the trunk, many pink and white Erythroniums, hundreds of *Nerine Bowdeni* in the kitchen garden, and a large *Podocarpus chilensis* as well as specimens of the incomparable *Magnolia denudata* and *M. rostrata*, were other features of this garden which will be long remembered.

TRENGWAINTON

From Trewidden the party proceeded to the neighbouring estate of Trengwainton, the property of COLONEL E. H. BOLITHO, D.S.O., the Lord Lieutenant of Cornwall. COLONEL BOLITHO jocularly organized the party into three groups and caused them to move off with military precision in different directions, one embussing again to the far end of the drive. MR. W. ARNOLD-FORSTER, the author of that fine work *Trees and Shrubs for the Milder Counties*, kindly conducted one party and there were many interesting things to see. Among the Magnolias we

noticed a fine plant of *M. Sargentiana robusta* twenty years old and spreading very widely while in an old walled garden which had been planted with very choice shrubs and trees, a most interesting form of *M. mollicomata* was flowering for the first time. This had deep-coloured, almost purple flowers, intermediate between those of the more commonly seen pale blush-pink *M. mollicomata* and the deep fuchsine purple Lanarth plant F. 25655. As such it may form a link between the two and a help in the elucidation of the systematic position of the Lanarth plant. Another fine specimen here was *M. macrophylla*, 10 feet in height.

In this old walled garden were a wealth of fine Camellias including a specimen of *C. reticulata semi-plena* with a variegated leaf and a mass of flower, *C. japonica alba plena*, a very old plant which we were told dated from 1820 or 1830. Here also was *Manglietia insignis*, a very rare plant, bearing a few flowers, while against a wall was the Rhododendron 'Laerdal' which had been illustrated in the 1949 *Rhododendron Year Book* but was not yet in flower. LADY MOORE pointed out to us an unusual rarity in a small plant of *Dodonaea viscosa* with very deep purple foliage while next to it was the brilliant blue form of *Teucrium azureum* collected by MR. COLLINGWOOD INGRAM. Here also were *Luculia gratissima* and the yellow *Erica Pageana*. The whole drive has been planted with choice shrubs while in the woodland beside it we saw many very choice Rhododendrons. A lovely natural piece of planting was a glade of tree ferns leaning over a little stream, alongside which flowered the white Snowflake *Leucojum aestivum*, while a mass of Hydrangeas showed promise of flowering freely later. Among the Rhododendrons I particularly noticed lovely clumps of *R. Johnstoneanum*, bearing very graceful open trusses of cream-coloured flowers, each with a deeper yellow base. This was a plant I had not seen before and it gave me particular pleasure. Another very beautiful and interesting Rhododendron was *R. lanigerum*, a 10-foot specimen covered with tight trusses of pink flowers. This plant received an Award of Merit last year when shown by COLONEL BOLITHO. The specimens of *R. Macabeanum* were also particularly fine and were flowering freely. We were also shown the drastic pruning of Rhododendrons which has been developed in this garden more successfully than in any other garden I had seen. COLONEL BOLITHO told us that every third or fourth year he cut down such species as *R. Griersonianum* and hybrids such as *R.* 'Fusilier,' to within a few feet of the ground and that they spring up again as a thicket of short growths. We were shown a planting of *R. Griersonianum* which had been treated in this way and had

developed into a thick mass of short growths about 3 feet in height and covered with flower bud as had also *R.* 'Fusilier,' a hybrid grown here abundantly and showing the most healthy, almost blue-green, foliage which must contrast well with the scarlet flowers. The effect in the case of *R. Griersonianum* is illustrated in MR. ARNOLD FORSTER'S book and is certainly very different from the straggly plants of this species usually seen. It must present a wonderful spectacle when in flower. Whether a similar technique could be used in gardens outside the milder counties is doubtful and one fears to lose some of the graceful shape of many of the best Rhododendrons.

And so our tour ended with a very special vote of thanks to COLONEL BOLITHO for a most interesting afternoon.

Photo, J. E. Downward

FIG. 49—*Camellia reticulata* 'Trewithen Pink', A.M. April 4, 1950. Shown by Mr. George H. Johnstone, O.B.E. (See p. 98)

Photo, J. E. Downward

FIG. 50—*Magnolia Kobus* at Bodnant

THE CAMELLIA AND MAGNOLIA TOUR

NYMANS

J. WILSON

THE party which travelled by two coaches from Victoria to Handcross on the morning of March 31st were favoured with spring-like weather for their journey through the pleasant Surrey and Sussex villages, where one caught glimpses of Magnolias and much Forsythia before entering the delightful grounds of Nymans, where we were met by a smaller gathering of about thirty strong who had travelled independently. Several well-known overseas enthusiasts were present in addition to many of our own countrymen.

No time was lost in starting the tour, which was led by that veteran gardener MR. J. COMBER, V.M.H., who has the unique record of planting a garden and seeing it reach full maturity.

MR. COMBER'S first objective was the broad expanse of wild Daffodils which literally covered the slope of a meadow on the eastern side of the garden.

We then proceeded to the fine collection of Conifers which is one of the most extensive in this country. MR. COMBER proudly pointed to a fine *Abies grandis* about 90 feet high, which he planted in 1898 when it was no more than 2. Amongst many other interesting specimens was *Cupressus Lawsoniana Wissellii* in flower, which formed a short avenue to the small temple from which a fine view of Crowborough Heights is possible. Mention should also be made of *Picea Breweriana* ten years from planting, also the rare *Athrotaxis selaginoides.*

Passing from the Pinetum we came to the object of our visit, Camellias and Magnolias, and no one could be disappointed; never could we expect to find them in better condition. The previous weather had been so kind and the time of the visit so well chosen. The writer has never seen the foliage of Camellias so luscious and healthy; the conditions at Nymans appear to be ideal for these subjects.

First we saw a fine group of *Magnolia stellata* about 20 yards in length and half that distance through, the shrubs reaching a height of 15 feet or thereabouts; we understand this group was planted in 1913. One is so accustomed to seeing this Magnolia as odd specimens and less than half the above mentioned height.

Mention should be made of a fine group of *Rhododendron lutescens* in full flower close by.

At the entrance to the garden partly surrounded by walls we found Camellia 'Donckelari' completely covered with deep red

flowers (which are occasionally splashed with white). Once inside this somewhat sheltered part we saw *Magnolia Kobus* about 30 feet high smothered with its pure white flowers, *M. salicifolia*, a pyramidal tree slightly taller than *Kobus* and equally floriferous, also a fine specimen of *M.* × *Veitchii*.

Of the pink-flowered Magnolias a fine tree of *M. Campbellii* about 40 feet high, covered with its globular rose-pink flowers, was undoubtedly the show piece at this point. A smaller tree of *M. Sargentiana* growing close by was not flowering quite so profusely.

Before leaving this part of the garden mention should be made of the group containing *M. Soulangiana* hybrids, also *M. stellata rosea*, a shapely bush about 6 feet high.

A fine specimen tree of *M. Dawsoniana* about 10 feet in height was not yet in bloom. Others noted in a similar condition were *M. rustica rubra*, *M. globosa* and *M. Wilsoni*, also large specimens of *M. officinalis* and *M. Watsoni*. Undoubtedly there were many others, which the writer overlooked, both blooming and still to flower.

Intermingled with the above mentioned Magnolias and many other interesting subjects were large beds of Camellias, one containing unnamed seedlings raised at Nymans, and others in which such varieties as 'Apple Blossom,' 'Lady Clare,' 'alba simplex,' 'Magnoliaeflora' etc. were represented.

We now proceeded towards the mansion (which, unfortunately, was partly destroyed by fire in 1947) where the more tender Camellias find ideal positions on the walls of the house and those of a small enclosed garden.

Amongst these *C. saluenensis*, *C. Williamsii* var. 'J. C. Williams,' *C. reticulata* (garden form) also the well-known variety 'Adolph Audusson' are represented.

Walking across the lawn in the direction of the glasshouses MR. COMBER pointed to two beds of Azaleas which he estimated to be over one hundred years old, the nucleus of the garden we find to-day.

A little further along we saw a very fine specimen of *Magnolia denudata* in full flower, well framed between the two evergreens, *Eucryphia nymansensis* and an evergreen Oak; although one of the more commonplace Magnolias, the size and floriferousness added to its setting, made it, in my opinion, one of the show pieces of the garden.

MR. COMBER then led the party through the vegetable garden across the main road to what is known as the "nursery," but in reality is an extension of the garden with a western slope. Here we encountered *M. Lennei* about 12 feet high in full flower.

Amongst the many other interesting items was a fine group of the large leaved *Rhododendron Macabeanum* literally smothered in its short bell-like lemon flowers.

Although the prime object of our visit was Camellias and Magnolias, there were many other interesting items in flower which attracted our attention. Amongst these a good form of *Clematis Armandii* growing on various walls, also the Nymans form of *Skimmia japonica* in full flower and carrying the large scarlet fruits of the past season. *Oreodaphne californica* (*Umbellularia californica*) a large tree having Mimosa-like flowers, and various specimens of *Parrotia persica* between 30 to 40 feet high also drew our attention.

A fine specimen bush of *Viburnum macrocephalum*, also an outstanding group of *Enkianthus japonicus*, smothered in its white bell-shaped flowers caught our eye.

Although it had not attracted our attention MR. COMBER pointed to a specimen of *Meliosma Veitchii* 30 feet high, which he informed us was one of the three to be found growing in this country.

We cannot pass without mention of the fine specimens of *Eucryphia nymansensis* which are to be found growing so happily in various parts of the garden, especially so in the Pinetum.

However, our most interesting survey came to an end by the party returning to its starting point where we were joined by our host who had so kindly allowed us to see the treasures of his garden.

Before parting PROFESSOR WATERHOUSE in a short but well expressed speech thanked him for the opportunity afforded, and MR. COMBER, who had proved such an excellent guide.

BORDE HILL

After lunch the party journeyed to Borde Hill, the residence of COLONEL R. S. CLARKE, M.P., who, unfortunately, was indisposed; in his absence we were welcomed by MRS. CLARKE, who so ably deputized for him. MRS. CLARKE and the Head Gardener, MR. FLEMING, who has had charge of the garden for many years, conducted our party around these spacious grounds.

From our meeting place on the north side of the house we had a splendid view of the distant landscape; at this point the parkland falls gently to the Ouse and then rises again steadily to the Balcombe Ridge. To the north-east a glimpse of Ashdown Forest can be seen.

Commencing our tour of these grounds, on the south side of the mansion we came to an enormous well-developed specimen of *Magnolia Soulangiana* covered with perfect flowers; we understand this particular specimen was transferred by the father of the present owner from his garden at Croydon Lodge in 1895.

A little further along, also on the south side of the house, a good specimen of *M. grandiflora* ('Goliath' form), also *Michelia compressa* about 15 feet high, were encountered.

Amongst the veteran Camellias to be found on the south and east walls of the house is *C. japonica nigra*, an outstanding dark flowered variety, also an unusual white variety named 'Mrs. Sander,' possessing the peculiarity that the flowers, when fully developed, are only half expanded.

We then passed to a small enclosed garden on the east side of the mansion, and it was here that we came in contact with C. 'Salutation' (*C. saluenensis* × *reticulata*, garden form), growing on the north wall; its enormous semi-double pale pink flowers have attractive undulating petals. The variety in question was raised in this garden and received an Award of Merit in 1936. PROFESSOR WATERHOUSE was in raptures over this particular Camellia, and expressed the opinion that it alone was worth travelling a long way to see.

A nearby bed contained four bushes about 6 feet in height of the lovely Camellia 'Donation,' bearing many large semi-double flowers of a pleasant soft rose colour, the petals in some instances being entire, in others slightly notched at the tips.

Camellia 'Donation' was also raised in this garden by crossing *C. saluenensis* with C. 'Donckelari' and received an Award of Merit in 1941.

The double white *C. grandiflora alba* growing in the angle of the wall with a north-west aspect calls for comment. Other Camellias noticed in this particular compound were *C. saluenensis*, *C. cuspidata* studded with small starry flowers growing as a bush about 8 feet high. Nearby was a bush of C. 'Cornish Snow' (*C. cuspidata* × *saluenensis*) with flowers slightly larger than *cuspidata*.

The party then proceeded towards the walled kitchen garden to inspect the rich collection of shrubs which have been planted on the outsides of these walls. On the way through the woodland many fine specimen Magnolias were encountered, including a tree of *M. Sargentiana* about 30 feet high in full flower. Nearby a tree of *M. Dawsoniana* of similar height was flowering for the first time, but rather sparsely. It was noted that portions of this tree had been subjected to bark-ringing for the purpose of inducing it to flower.

Two excellent specimens of *M. Kobus* were also in full flower. *M. denudata*, *M. salicifolia*, and *M. Soulangiana rustica rubra* were also represented. We also saw a fine specimen of *M. stellata*, which was rather more advanced than those encountered at Nymans earlier in the day, and *M. stellata rosea*, which the writer considered a deeper shade than the Nymans specimen.

While proceeding around the outskirts of the kitchen garden we passed a large specimen of *M. Campbelli* growing in a rather thickly wooded part, but this specimen was not so well flowered, nor as advanced as its counterpart at Nymans.

Mention should here be made of the fine specimen Magnolias which were still to flower such as *M. Sprengeri* 25 feet high, *M. mollicomata* 15 feet, *M. tripetala* 35 feet, also *M. Thomsoniana* (*M. tripetala* × *M. virginiana*) and several others.

Growing on the wall, but towering above it on the east side of the kitchen garden is *M. Delavayi* with its enormous evergreen leaves.

The party then proceeded to the north side of the mansion and crossing the carriage drive passed through a gate in the low sandstone wall to a smaller garden with a north aspect, where we came across a large specimen of *M. Fraseri* studded with flower buds just on the point of opening. While in this garden MR. FLEMING drew our attention to the rare Tasmanian plant *Richea scoparia* (Award of Merit 1942).

After inspecting the Dell garden on the west side of the house the party proceeded by coach and car to the distant "Gorse Wood" in which we found many items of interest including *M. Loebneri* (*stellata* × *Kobus*) a mass of flowers resembling *M. Kobus*.

A little further along we encountered a short avenue of Camellias in which C. 'Adolphe Audusson,' C. 'elegans,' C. 'Donckelari,' C. 'Eugene Lize,' C. 'Paolina Guichard' and others were represented.

This brought our tour to an end and COLONEL SAVILL expressed to MRS. CLARKE and MR. FLEMING the party's gratitude for the privilege of being allowed to inspect such fine specimen Camellias and Magnolias, as well as many other interesting subjects which were noted on our way round this attractive garden.

THE CAMELLIA AND MAGNOLIA SHOW
April 3 and 4, 1950

PATRICK M. SYNGE

MAGNOLIAS and Camellias formed the special feature of the Fortnightly Show held in conjunction with the Conference on these two genera. It was a spectacular display of plants, which are far from easy to bring to a show in good condition and then to stage effectively and naturally. Many fine and unusual specimens were exhibited, showing the floral magnificence as well as the wide range of these flowers. Although possibly a little late for the best of the Cornish Magnolia season, the date chosen gave an opportunity for the Sussex and Surrey gardens to show some of their best flowers and the Show was notable for good exhibits both from these gardens and from Bodnant in N. Wales.

GROUPS

Four Gold Medals were awarded for these. In the centre of the hall, MESSRS L. R. RUSSELL, LTD., of Windlesham staged a very fine group which specially attracted attention for the very well-balanced and restrained arrangement of the group, which was dominated by a large plant of *M. Soulangiana* in the centre and was built up evenly round this from the four corners, at each of which stood a specimen Camellia. The centre plant must have been one of the largest Magnolias ever to have been exhibited in the hall. Other Magnolias in this group included *M. Soulangiana Lennei* and *M. Kobus*, the latter still in bud. The sides of the exhibit were formed chiefly by low but well flowered plants of Camellias and Kurume Azaleas. (Fig. 52.)

MESSRS. HILLIER AND SONS of Winchester were also awarded a Gold Medal for a group which consisted entirely of Magnolias and Camellias. Among the Magnolias were several of the finest forms of *Soulangiana*, notably *Brozzoni*, *rustica rubra* and *Lennei*. *M. Brozzonii* is one of the largest flowered of this group and the flowers have very little purple colour at the base, being almost pure white and rather more elongated and less globular than those of some other forms. Some competent authorities assess it as the finest of all the white *Soulangiana* forms. Among the rare plants to be seen lurking in this group were *Michelia fuscata* and *M. Doltsopa*. There were many fine Camellias, notably two attractive selected *saluenensis* forms, one pale pink

the other a deeper colour, in addition to *Camellia Williamsii* var. 'J. C. Williams.' Among the varieties of *C. japonica*, there was a large tree of *alba simplex* in the centre, while others included 'Nagasaki,' 'elegans,' 'Adolphe Audusson,' 'Jupiter' and *Mathotiana rubra.*

R. C. NOTCUTT, LTD., of Woodbridge received the same award for a fine group of flowering shrubs which contained a number of Magnolias and Camellias. One of the most interesting plants was a very lovely white form of *M. Soulangiana Lennei.* The flower retained the beautiful globular shape of *Lennei* but was a pure creamy-white in colour without any purple coloration. Among other forms of *Soulangiana* exhibited 'amabilis' and *rustica rubra* were good and combined well with the Maples, Roses and flowering Cherries which made up the remainder of the group.

The main feature of SIR GILES LODER'S lovely Gold Medal group was a very large branch of *Magnolia denudata*, held most ingeniously in its natural position and showing the flowers upright as they grow. Another attractive Magnolia in this group was *M. stellata rosea* in which the pale pink flowers mingled with the grey lichen with which the branches were thickly covered. There was here a very large collection of Camellias in vases and SIR GILES and LADY LODER had made a special effort to affix names to as many as possible. These included *reticulata semiplena*, *japonica alba simplex*, 'Prince Tessa' a double white variety, *Mathotiana rubra* and *Mathotiana rosea*, 'Adolphe Audusson' and 'Lady Audrey Buller.' (Fig. 53.)

The group of very large Magnolia sprays exhibited by LORD ABERCONWAY and the NATIONAL TRUST from the Gardens at Bodnant contained many good species and was awarded a Silver-Gilt Flora Medal. Particularly fine were the very lovely sprays of *M. denudata.* I have never seen specimens of this flowering more freely. The centre of the group was formed by large branches of *M. Sargentiana robusta* and *Michelia Doltsopa* and it is probable that we have never seen at Vincent Square before such fine or such large exhibits of these two magnificent plants. The Water-Lily form and the semi-pendulous habit of the flowers of *Sargentiana robusta* were well shown in this exhibit as well as the great freedom of flowering and size of the individual flower.

Large sprays of *M. salicifolia* reminded us of the delicate grace and charm of this species, perhaps when mature, one of the most free-flowering of all Magnolias. Other notable Magnolias shown in this group were *Sprengeri diva*, a rather paler form than the Caerhays plant, but still very beautiful, *mollicomata*, *Dawsoniana*, *Soulangiana Brozzoni* and *stellata rosea.* (Fig. 54.)

A Silver Gilt Banksian Medal was awarded to the Director of the Royal Botanic Gardens, Kew, for a large group of *Camellia japonica* varieties dominated by a small tree of the fine old variety *Mathotiana rubra.* Notable also were the shell-pink 'Fleur de Pêche,' *Mathotiana rosea,* 'Marquise d'Exeter' and 'elegans.'

The same award was given to E. DE ROTHSCHILD, ESQ., of Exbury for an interesting group of Magnolias and Camellias which included in very good condition the lovely warm pink blooms of *Magnolia Campbellii,* illustrated in this report (Fig. 27). Among the Camellias, I particularly noticed in the front of the group, was a very charming small-flowered terracotta-coloured variety whose parentage was given as *Williamsii* var. 'J. C. Williams' × 'Inchmery.' Others included the fine single red 'Apollo' and the single 'White Swan' a variety which is grown so well in the temperate house at Wisley.

THE COMMISSIONERS OF CROWN LANDS, Windsor Great Park, staged a group of large sprays of Magnolias interspersed with Camellias. The fresh yellow-green of the young leaves of *Acer platanoides* were used very effectively to contrast with the sprays of the white *M. salicifolia* and *M. Soulangiana alba superba.* Among the Camellias was the rare 'Cornish Snow,' a delightful hybrid between *C. saluenensis* and *C. cuspidata.*

THE COMMISSIONERS OF CROWN LANDS also showed a most interesting little exhibit of methods of propagating Camellias and Magnolias. This was particularly appreciated by many Fellows and should be of great help to them. All the examples were raised in heated frames inside a propagating house. We were shown Camellias raised from cuttings in the first, second and third year. (Fig. 55.) In the later stage they made good bushy flowering plants 2 feet in height. Methods of grafting were also shown including veneer-grafting, cleft-grafting and side-grafting. Seedlings were also shown of *M. Wilsoni* and these were obviously germinating very freely as were also seedlings of *C. saluenensis* sown on November 11, 1949, and 4 inches high in April 1950. A very unusual plant in this exhibit was a young *C. reticulata* grown from a cutting taken in August 1949. This species is notoriously difficult to raise in this way and the plants are generally propagated by inarched-grafting.

Among other groups which included Magnolias and Camellias were those of SIR HENRY PRICE of Wakehurst, Ardingly, which included fine sprays of *M. Campbellii* and *M. Dawsoniana* and many Camellias, THE SUNNINGDALE NURSERIES with a large tree of *M. stellata,* MESSRS. SALE AND SON of Wokingham, who had nice plants of *C. reticulata semi-plena,* MRS. MOSENTHAL of Titten-

Photos, J. E. Downward

FIG. 51—*Camellia japonica* 'Magnoliaeflora' at Bodnant

FIG. 52—Exhibit from Messrs. L. R. Russell Ltd., for which a Gold Medal was awarded (See p. 118)

THE CAMELLIA AND MAGNOLIA SHOW

Photo, J. E. Downward

THE CAMELLIA AND MAGNOLIA SHOW

FIG. 53—Exhibit by Sir Giles Loder, Bt., of Leonardslee, Sussex, for which a Gold Medal was awarded (See p. 119)

Photo, J. E. Downward

THE CAMELLIA AND MAGNOLIA SHOW

FIG. 54—Exhibit from Lord Aberconway and the National Trust, Bodnant (See p. 119)

Photo, J. E. Downward

THE CAMELLIA AND MAGNOLIA SHOW

FIG. 55—Camellia propagation from the exhibit from Windsor Great Park. Camellias grown from cuttings rooted between July to August respectively 1948, 1947 and 1946 (See p. 120)

hurst who had a good exhibit of *M. stellata rosea*, together with a number of older Camellias such as *alba grandiflora*, *Mathotiana rubra* and *elegans*.

MESSRS. HASKINS BROS., LTD. of Bournemouth were awarded a Silver Banksian Medal for a group of Camellias, which included *reticulata semi-plena*, 'Lady Clare,' 'Magnoliaeflora' and other varieties of *japonica*. Part of this exhibit consisted of a small bed surfaced with peat moss against the dark brown of which had been placed blooms of red Camellias such as 'Donckelari.'

MESSRS. VEITCH of Exeter made specimens of *M. Veitchii* the centre of their exhibit while other Magnolias in the group included *Kobus*, *Soulangiana Brozzoni*, *Soulangiana Alexandrina* and *salicifolia*. They also had varieties of *C. japonica*. MESSRS. WATERER SONS AND CRISP LTD., staged a large group in which the predominating interest was the flowering Cherries but there were also a number of Magnolias and Camellias including the beautiful single white *C. japonica* 'Devonia.'

There was a small exhibit from the R.H.S. Gardens at Wisley, to show some named varieties of *C. japonica* and *C. Williamsii*, but unfortunately the main bulk of the large Camellia collection at Wisley had finished flowering before the Show. In this exhibit there were three vases illustrating the frequency of sporting. These were all picked from the *same* plant, a small flowered double variety; one showed self-coloured pink flowers, one pale blush-coloured pink flowers with deeper pink venation and one white flowers with very slight pink markings. This was staged to show some of the difficulties of nomenclature among the variants of *C. japonica*.

COMPETITIVE CLASSES

The Classes for individual blooms of *C. japonica* were well filled, but unfortunately among them were very many unnamed flowers while the Judges had certainly been lenient over some blooms out of their correct classes. The flowers were displayed in small vases embedded in moss up to their mouths, so that the blooms and any surrounding leaves appeared to rest on a bed of moss, although the stems were in water. This showed off the individual flowers very well. Among many fine flowers I particularly noticed in Class 1 a very fine specimen of *elegans* which measured 5 inches in diameter and came from the garden of MR. C. ARMYTAGE-MOORE at Cranleigh, Surrey, and this won first prize in this class. MR. D. F. LENEY of Haslemere was a very successful exhibitor in these classes and among his flowers was a very lovely shell-pink completely regular double, unnamed but

probably *Mathotiana rosea*. LORD ABERCONWAY and the NATIONAL TRUST, SIR GILES LODER, BT., MISS E. GODMAN, DR. M. AMSLER, W. HUTCHINSON, ESQ., and MESSRS. L. R. RUSSELL were also successful exhibitors in these classes. In Class 8 for semi-double varieties some particularly beautiful specimens of 'Lady Clare' were shown.

In Class 13 for the wild form of *Camellia reticulata*, all three prizes were awarded to MR. G. H. JOHNSTONE, O.B.E., for some very lovely flowers. An Award of Merit was also given to MR. JOHNSTONE'S single *reticulata* seedling called 'Trewithen Pink.' One of these forms was 5 inches in diameter. This was the only Camellia or Magnolia to receive this award in the Show. In Class 14 for the garden varieties of *C. reticulata*, LORD ABERCONWAY and the NATIONAL TRUST won first prize with a magnificent bloom 5 inches in diameter. SIR GILES LODER was second with a slightly smaller flower of more compact form and the two forms at present in cultivation were represented by the first and second winning blooms.

In Class 15 for *C. saluenensis* there was great variety in colouring from forms almost spinel-pink to forms almost white. A very lovely shell-pink form from LORD ABERCONWAY won first prize.

In Class 20 for any Camellia hybrid not named in previous classes the first prize was awarded to DR. LANE ROBERTS of Mill House, Welwyn for a very fine deep red *C. japonica* named 'Effendee.' It was close to *C.* 'Donckelari.' COLONEL STEPHENSON CLARKE, M.P., of Borde Hill, Haywards Heath was second with 'Salutation' that very interesting hybrid raised between *C. saluenensis* and *C. reticulata*. It was a semi-double pale blush-pink bloom about $4\frac{3}{4}$ inches in diameter and having slightly waved petals. This was the only interspecific hybrid shown in this class. MRS. CARLYON of Tregrehan, Par, Cornwall, was third with a very large and fine bloom of *C. japonica splendens*, a double deep-crimson variety. In the classes for sprays of Camellias some very lovely and free-flowering branches were exhibited. These sprays were limited to a height of 15 inches from the top of the vase.

MAGNOLIAS

Although the sprays of Magnolias were limited to 18 inches from the top of the vase and had to bear at least one open bloom, there were a number of fine exhibits in these difficult classes. SIR HENRY PRICE of Wakehurst won first prize in Class 35 for his spray of *M. Campbellii*. In Class 36 for sprays of *M. denudata*, LORD ABERCONWAY won first prize with a very free-flowering form of almost perfect poise and shape.

There were no entries for the spray of *M. Sargentiana*, but in Class 42 some very beautiful flowers of *M. Sargentiana robusta* were shown, the first prize being awarded to COLONEL R. S. CLARKE and the second to LORD ABERCONWAY. This must be a particularly difficult plant to bring to a show in good condition.

Appropriately MESSRS. R. VEITCH & SON, LTD., won first prize for a spray of *M.* × *Veitchii*, the magnificent plant raised at their Exeter nurseries. A photograph of the original tree there is shown. (Fig. 33.) In the class for any other Magnolias, SIR HENRY PRICE won first prize with a lovely spray in good condition of *M. Dawsoniana*, while second and third prizes were also given for sprays of the same species exhibited by COLONEL THE LORD DIGBY and LORD ABERCONWAY.

In Class 55 for any pink Magnolia where a spray of 24 inches height was allowed, LORD ABERCONWAY was first with *M. Sargentiana robusta*, a plant which needs the extra size to show it to best advantage.

A small exhibit of appropriate books from the Library, including some of the older Camellia books with such sumptuous coloured plates was staged by the Librarian and attracted much interest, but this is described in the next article.

SOME BOOKS ON CAMELLIAS

WILLIAM T. STEARN

THE Lindley Library, which is also the Library of the Royal Horticultural Society at Vincent Square, Westminster, has come to possess, thanks to wise purchases by the Society and munificent gifts and bequests by Fellows and others, the largest and most comprehensive collection of books on horticulture in Britain. Among these are the standard works on Camellias. They can be consulted in the Library at all times when it is open, but in order to bring them to the notice of Camellia enthusiasts and flower lovers, who might otherwise have remained unaware of the existence of such finely produced books, a special exhibit was arranged in the New Hall on the occasion of the Camellia and Magnolia Conference. These books are not only beautiful and interesting in themselves; they provide a basis for the revision and standardization of the names of some of the innumerable garden varieties of *Camellia japonica*. No other species has had so many splendidly illustrated works devoted to the portrayal and description of its cultivated forms. These reached their maximum popularity between 1825 and 1870, during which period seedlings were raised on a large scale in Europe and nearly a thousand names were proposed for them. Many of the plants concerned became widely distributed; their vegetative descendants survive here and there in Australia, Belgium, Britain, the Channel Islands, France, Italy, New Zealand and the United States. It is thus fortunate that the old literature relating to them gives such unusually full information, since in most instances the original labels on the plants have now been lost and the names forgotten. The original name of a garden-raised variety should, however, be used when it can be ascertained with certainty, unless there are good reasons for its rejection. In view, therefore, of the revived interest in Camellias and the growing need to clarify their nomenclature the works listed below have ceased to have simply an æsthetic and historic interest and merit study from the nomenclative standpoint as well.

The following list is far from being a complete bibliography of Camellia literature; for a more comprehensive account, reference should be made to Chapter XXIII of Hume's *Camellias in America* (1946).

KAEMPFER, E., 1712. *Amoenitatum exoticarum politico-physico-medicarum Fasciculi V.* 8vo. Lemgo (H. W. Meyer). Engelbert Kaempfer (1651–1716), a German doctor in the employ of the Dutch East India Company, visited Japan in 1690–92

and published many years afterwards a summary of his observations on Japanese plants; these form the Fasciculus V of his *Amoenitates exoticae.* Among the plants conspicuous for their showy flowers he described and figured the 'Tsubakki,' i.e. *Camellia japonica*, in many varieties, and the 'Sasanqua,' i.e. *C. Sasanqua.* One chapter he devoted entirely to the tea plant 'Tsja' (*C. sinensis*) called by him *Thea, frutex folio Cerasi, flore Rosae sylvestris,* etc. and well illustrated from his own drawings, the originals of which are at the British Museum, Bloomsbury, London. For a short biography of Kaempfer, see Royal Hort. Soc. *Lily Year Book*, **12** (for 1948) 65–70 (1949).

LINNAEUS, C., 1753. *Species Plantarum.* 2 vols. Stockholm (L. Salvius).

In this work, the starting point of modern botanical nomenclature, Linnaeus gave the name *Thea sinensis* (vol. **1**, p. 515; May 1753) to the tea plant now called *Camellia sinensis* and the name *Camellia japonica* (vol. **2**, p. 698; August 1753) to Kaempfer's 'Tsubakki,' which is thus typified by Kaempfer's plate (*Amoen.* t. 851). Under the *International Rules of Botanical Nomenclature* as modified at Amsterdam in 1935 the two volumes of Linnaeus, *Species Plantarum*, are treated as having been published simultaneously in May 1753; otherwise the name *Thea* would have priority over *Camellia* whereas now the combined genus bears the name *Camellia.*

SHIMADA, MITSUFUSA (pen-name YONAN SI), 1755. *Kai-Ki.* [A collection of flowering plants: trees and shrubs]. Tokyo.

An important early Japanese botanical work with woodcut illustrations, those of shrubs said to have been drawn by Ono Ranzan. The illustration shown portrayed *Camellia Sasanqua.* A translation of the Japanese text into French by L. Savatier was published in 1873 with the title *Livres Kwa-wi.*

LETTSOM, J. C., 1799. *The Natural History of the Tea-tree, with Observations on the medical Qualities of Tea, and on the Effects of Tea-drinking.* 2nd ed. 4 coloured plates, 1 uncoloured. 4to. London (C. Dilly).

The first edition appeared in 1772. The excellent detailed plates of Green Tea (*Camellia sinensis* var.), Bohea Tea, *Olea fragrans* (i.e., *Osmanthus fragrans*) and *Camellia Sesanqua* (i.e. *C. Sasanqua*) are by J. S. Miller. John Cloakley Lettsom (1744–1815), a successful Quaker physician, based this work on a Latin thesis whereby he had gained his doctor's degree from the University of Leiden in 1769. The plate of Green Tea was made from a plant at Sion House, the property of the Duke of Northumberland,

which was "the first that ever flowered in Europe." Lettsom concluded that, "except as a medicine, or after great fatigue, large quantities [of tea] are seldom beneficial, nor should it ever be drank very hot . . . if it be allowed sometimes as a treat, the children should at the same time be informed, that the constant use of it would be injurious to their health, strength and constitution in general." A biography of Lettsom by J. J. Abraham was published in 1933.

CURTIS, S., 1819. *A Monograph on the Genus Camellia from original Drawings by* CLARA MARIA POPE. 5 coloured plates. Folio. London (J. & A. Arch).

The first book devoted solely to Camellias, this finely produced work measures 28 inches by 23 inches and is remarkable for Mrs. Pope's coloured plates illustrating eleven varieties.

The author Samuel Curtis (1779–1860), nurseryman at Walworth, Surrey, later at Glazenwood, Essex, was first cousin to William Curtis, founder of *The Botanical Magazine*, whose daughter he married. For a short biography, see *Journ. Roy. Hort. Soc.* **58**, 324–328 (1938). Mrs. Pope (*d.* 1838) began her artistic career as a painter of miniatures but ended by specializing in large-scale paintings of flowers.

CHANDLER AND BUCKINGHAM, 1825. *Camellia Britannica, introduced by* CHANDLER AND BUCKINGHAM *of Vauxhall.* 8 coloured plates. 4to. London (Sherwood etc.; J. & A. Arch; Hatchard).

This work deals with seven varieties, the plates being drawn by Alfred Chandler, the text written by Edward Bourne Buckingham. "The Camellias, here designated English Camellias, were raised with a number of others of less beauty, principally from the Anemone Flowered or Warrata'h Camellia, fertilized by Pollen from as many sorts as possible. The seed, which ripened in the autumn of 1819, was sown as soon as gathered . . . this spring, 1825, nearly the whole bloomed, and furnished the Specimens now pourtrayed." Buckingham stated further that "in giving to each a distinctive appellation I considered it an act of mercy to adopt such names only as are easily pronounced." Apparently Chandler and Buckingham raised several hundred seedlings.

Their nursery was established at Vauxhall early in the 19th century under the name of Napier and Chandler, then became Chandler and Buckingham, and finally Chandler and Sons, which it remained until 1858. During the Camellia season it was one of the sights of London. Chandler's son Alfred (1804–96) early showed skill as a floral artist and in time succeeded him as a nurseryman.

BOOTH, W. B., 1830–37. *Illustrations and Descriptions of the Plants which compose the Natural Order Camellieæ and of the Varieties of Camellia japonica, cultivated in the Gardens of Great Britain, the Drawings by* ALFRED CHANDLER. 2 vols. (Vol. 2 never completed). 44 coloured plates. 4to. London (J. & A. Arch).

This work, which has fine coloured plates, was published in parts: Vol. 1 parts 1–6 containing plates 1–24 in 1830, parts 7–10, plates 25–40, pp. 41–48, in 1831; Vol. 2 part 1, plates 41–44 in 1837. It was issued in three states, i.e. with uncoloured plates, coloured plates and more highly finished coloured plates on larger paper. William Beattie Booth (*c.* 1804–74), the author of the text, was a Scots gardener from 1824 to 1830 employed in the Horticultural Society's garden at Chiswick, from 1830 to 1858 head gardener at Carclew, Penryn and from 1858 onwards assistant Secretary of the Horticultural Society. He possessed considerable ability and was described at his death in 1874 as "one of the most refined and talented of the gardeners of the present age . . . one who was endowed with intellectual qualities of no common order." The plates were done by Alfred Chandler (1804–1896), son of the Vauxhall nurseryman Chandler. The publication of the first two parts led Loudon to remark in his *Gardener's Magazine*, **6**, 291 (June 1830) "it is highly creditable to the gardening profession that here should be found two young men, the one an assistant in his father's nursery, and the other with no pretensions beyond those of a good gardener . . . capable of producing such a work."

BERLÈSE, L., 1840. *Monographie du Genre Camellia et Traité complet sur sa Culture, sa Description et sa Classification.* 2nd ed. 4 coloured plates. 8vo. Paris (Bouchard-Huzard).

The first edition of this work was published in 1837 at Paris. The next year Henry A. S. Dearborn translated it from French into English and his translation entitled *Monography of the Genus Camellia, or an Essay on its Culture, Description and Classification* was published at Boston, Massachusetts, by Joseph Breck and Company. A reprint (1947) of this translation has been published by E. A. McIlhenny, Avery Island, Louisiana. According to Berlèse, the first edition was also translated into German and Russian. The first edition (1837) has 282 entries. The second edition (1840) has 508 entries, but these include synonyms. The third edition (1845) has 704 entries. One of the last entries is a description of an Italian-raised variety which Berlèse named *Campo-Molendina rubra* after "un village modeste" Campo-Molino, near Treviso, north Italy, where he was born in 1784. He died at Santa Rosa, Italy, in 1863.

BERLÈSE, L., 1841–43. *Iconographie du Genre Camellia ou Description et Figures des Camellias les plus beaux et les plus rares peints d'après Nature par* J. J. JUNG. 3 vols. Coloured plates. 4to. Paris (H. Cousin).

The most sumptuous work devoted to Camellias. Vol. 1 (1841) has plates 1–100, Vol. 2 (1843) plates 101–200, Vol. 3 (1843) plates 201–300.

COLLA, L., 1843. *Camelliografia ossia Tentativo di una nuova Disposizione naturale delle Varietà della Camellia del Giappone e loro Descrizione.* 2 coloûred plates. 8vo. Torino (C. Pomba).

According to Hume, this rare little work describes 106 varieties. It was limited to 250 copies. Luigi Colla (1766–1848) was Professor of Botany at Turin.

VERSCHAFFELT, ALEXANDRE, AND OTHERS, 1848–60. *Nouvelle Iconographie des Camellias.* 13 vols. Coloured plates. 8vo. Ghent (A. van Geert, later Verschaffelt).

This work illustrates 623 varieties. It was begun by Alexandre Verschaffelt (*d.* 1850) of Ghent, Belgium, and continued by his son Ambroise Verschaffelt and his grandson Ambroise Verschaffelt fils. It figures and describes the Camellias assessed as the most rare, the most beautiful and the most modern during the period 1848 to 1860. The Verschaffelts considered the double forms as alone worthy of illustration and, unlike Berlèse, omitted all single and semi-double forms. The text was translated into English by E. A. McIlhenny and published in 1945 under the title *New Iconography of the Camellias.*

BERLÈSE, L., 1849. Description de variétés nouvelles de Camellia. *Annales de la Société Centrale d'Horticulture de France.* **40.** 74–83, 128–33, 224–31, 272–81, 306–14. Paris.

These articles descriptive of 151 varieties supplement Berlèse's earlier publications and conclude his work on Camellias.

HISHUI, SUGIURA, 1931–34. *Hishui Hyakku-fu* [one hundred flowers painted by Hishui]. Coloured plates. Folio. Tokyo.

Possibly the most beautiful Japanese work devoted to the illustration of flowers. The plate shown depicted *Camellia Sasanqua.*

HUME, H. H., 1946. *Camellias in America.* 49 coloured plates. 8vo. Harrisburg, Pennsylvania (J. Horace McFarland Co.).

The largest modern book on Camellias, dealing chiefly with varieties of *C. japonica* and *C. Sasanqua.*

WATERHOUSE, E. G., 1947. *Camellia Quest.* 4 coloured plates, 6 monochrome. 4to. Sydney (Ure Smith).

The first Australian book on Camellias, dealing primarily with Australian-raised varieties. Only 500 copies were printed.

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