MAGNOLIAS

J. G. MILLAIS

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M. MACROPHYLLA

Showing size of the leaves and flowers

MAGNOLIAS

BY

J. G. MILLAIS

AUTHOR OF 'A BREATH FROM THE VELDT,' 'THE MAMMALS OF GREAT BRITAIN AND IRELAND,' 'RHODODENDRONS' FIRST AND SECOND SERIES

WITH ILLUSTRATIONS BY R. MILLAIS
AND FROM PHOTOGRAPHS

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INTRODUCTION

In the matters of gardening knowledge and the acquisition of noble plants, of which great numbers are now available, we have advanced far beyond our predecessors. But books containing special information—both cultural and botanical—relating to individual families of excellence have always been scarce. This, therefore, is my reason for attempting to write a short history and description of the Magnolias which are—in my estimation—a family of the highest importance.

When planting a garden either small or large, the gardener who loves shrubs, and only wishes for abundant flowers at all seasons from February to October, must give first claim to Magnolias even in preference to Rhododendrons and Roses which form the other two main essentials. A plant of each hardy species and hybrid will create a garden in itself and with little care will give masses of beautiful flowers at the various seasons. Magnolias too can be planted in almost any soil if the preliminary compost is agreeable, and in this matter alone must have precedence over Rhododendrons and Roses, which are more particular in their requirements.

INTRODUCTION

Year by year the taste for the real treasures of the garden is improving, whilst values are more correctly estimated. Already experts are turning their attention to Magnolias as a first choice. A few men always lead and the rest follow, so that, unless I am much mistaken we shall soon see a big move in the planting of Magnolias throughout our islands. A plant, so easily managed, inexpensive to obtain and exhibiting in itself the very joy of spring, cannot be indefinitely ignored. You may drive in a car from London to Scotland and fail to see more than two or three Magnolias in gardens by the roadside. This is all wrong, for England in April should be as lovely as Japan in cherry time if gardeners would only wake up and put in the common Magnolias that are offered to them.

My thanks are due to Mr. Dendy for his help with an up-to-date key to the Genus Magnolia, to Prof. Wright Smith of Edinburgh for his generous assistance regarding the new Asiatic species, and to Mr. George Forrest, the famous traveller and plant collector, for his article on the new Magnolias of Western China, Tibet and the Burmese frontier.

JOHN G. MILLAIS.

HORSHAM, *October* 1926.

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(*From a drawing in colour by R. Millais*)

CHAPTER I

MAGNOLIACEAE

THE Magnolias are amongst the most ancient shrubs and trees in the world, dating back to the earliest arrival of plant life. They are included in a genus of deciduous and evergreen trees and shrubs which formed a type and its present members are mere remnants of a very extensive group of north temperate forest trees which formerly grew in Europe, Siberia, Western North America, Canada and Greenland. Hutchinson regards *M. pterocarpa* as a type almost as ancient as the Ginko. In early times it probably had a similar distribution, and fossil remains of Magnolia are common in Tertiary strata of the Northern Hemisphere. The genus was named by Linnaeus in honour of Pierre Magnol, who was a professor of medicine and director of the botanic garden at Montpellier from 1638–1715. The various species in cultivation come mainly from

two separate areas, one group occupying Eastern North America with outlying members in Mexico and Costa Rica, and the other and larger group being found in China, Japan and India, with outliers in Malaya and the Philippines.

The various species consist of evergreen or deciduous shrubs which generally possess rather stout branches ; leaves alternate and entire ; the stipules usually adnate to the petiole and inclosing the young successive leaves ; flowers solitary and terminal with the buds enclosed in a stipular spathe ; sepals, three, often petaloid ; petals 6–15 ; stamens and carpels numerous, the latter connate into a spindle and developing into a cone-like fleshy or leathery fruit with 1–2 seeded carpels ; the large, usually scarlet seeds are often suspended from the fruit by their threads. The wood is close-grained, satiny and not very durable; that of *M. hypoleuca* is much used in Japan for lacquering owing to its smooth surface. The bark and fruit of certain species is sometimes used as a tonic. Magnolias are the most beautiful of all hardy trees that can be grown in our climate. The individual flowers of certain species are also the largest of any found in the temperate regions, and the leaves of the evergreen species are also

the finest of trees hardy with us. One deciduous species *M. macrophylla* has flowers 15 in. across and leaves 30 in. long and even more; but it is somewhat tender.

Magnolias are highly ornamental, but not as popular as they should be. As Mr. Bean remarks, "No groups of exotic trees give more distinction to a garden than a complete collection of Magnolias. There is not one that is not worthy of cultivation, the early flowering or Yulan section being especially noteworthy for the brilliant effect they produce in spring." Those who are forming gardens should always give Magnolias their first consideration when planting, and put in two or three examples of all the best species and hybrids that can be procured on their own roots. In two or three years' time these plants will be well rooted and grow rapidly, though it takes several years to see them in their full beauty.

Most of the deciduous kinds are hardy as far north as Yorkshire, and some even flourish in Wales or the coldest parts of Scotland. The evergreen kinds are as a rule best accommodated with a wall, but fine species, such as *M. Delavayi* and *M. grandiflora*, do well even in the open in

all the milder parts of our islands. In North America, where the planting of Magnolias in gardens is now increasing, *M. acuminata*, *M. stellata*, and *M. kobus* will grow as far north as Boston in Massachusetts. Even the tender *M. macrophylla* will grow there, but does not seem quite so happy or flower well north of Philadelphia. Here all the Yulan hybrids grow well, and south of this many of the tender kinds will flourish. E. H. Wilson, writing in the *Garden Magazine*, March 1920, states :

" In all some 34 species and numerous varieties are recognised but only 12 species, 2 hybrids, and about half a dozen varieties have proved hardy as far north as Boston, Mass. The Japanese, with two exceptions (*M. salicifolia* and M. Watsoni) are hardy here ; likewise the American species, except the noble evergreen *M. grandiflora* and the dwarf *pyramidata*. None of the Himalayan nor the Malayan species can be grown out of doors in New England, and of the Chinese two species only. Yet these two with their numerous forms and hybrids are, with the Japanese *M. stellata*, the familiar Magnolias of our gardens.

" No other genus of hardy or half-hardy trees and shrubs can boast so many excellences as the

Magnolias. The free-flowering qualities and great beauty of blossoms and foliage are only equalled by the ease with which they may be cultivated. All grow naturally in moist, rich woods and they detest drought. They will withstand considerable hardship and abuse, but the best results are obtained when they are protected from strong winds and are planted in cool, deep soil rich in humus. An ideal place is open moist woods. A nation's finest trees should rightly be counted among its most prized national treasures; but of the countries of the world to-day, Japan alone regards ancient trees as a national treasure asset. Such they truly are, and there is no escape from the punishment nature metes out to lands whose forest growth is destroyed. In this country the price is being exacted, and in countries like China and Korea the multiple interest is so great that the land groans beneath the burden. For in addition to timber scarcity and the shortage of fuel rivers become charged with silt, break their bounds, and destroy everything within their reach—crops, villages, the inhabitants, *et alia*, when there is nothing to hold the soil on steep slopes under heavy rainfall."

MAGNOLIAS

All the North American species (except *M. grandiflora*) flower after the leaves are developed, and are of easy cultivation in our islands. *M. macrophylla* is somewhat tender and requires southern or south-western conditions. In Asia Magnolias are found in Japan and westwards to the Sikkim and Bhutan Himalayas, having their northern limit in Hokkaido and their southern in Malacca and Penang. Nearly all the northern deciduous kinds are hardy with us as well as many of the evergreen species, except those found south of the Himalayas and in tropical islands.

It is unnecessary to say much about the new Magnolias from China discovered by G. Forrest, R. Farrer and E. H. Wilson since the first-named writes fully on the Yunnan plants, whilst Wilson's are described under the names of individual species. It is an unfortunate circumstance, however, that so few of the seeds sent home by these adventurous pioneers have germinated, and this fact is due to the difficulty of finding a suitable matter in which to encase them. If they were sent in packets they became too dry, because the fertility of these seeds is evanescent. When encased in clay, as Forrest has tried, it seems to

kill them very quickly, and other methods have proved abortive. Out of hundreds of Chinese Magnolia seeds planted in greenhouses at home only a very few have germinated. Mr. L. de Rothschild, Mr. Stevenson, Col. Clarke, Capt. G. Johnston, Mr. J. C. Williams, and the late Sir George Holford, have all raised a few of the best such as *M. mollicomata*, *M. rostrata*, and *M. nitida*, *M. tsarongensis*, etc., but the successes have not been sufficient to send out any noticeable quantity of these valuable species. Seeds of *M. officinalis* are much wanted, and plants on their own roots of *M. Sargentiana*, *M. Dawsoniana* and *M. Nicholsoniana*. Fortunately *M. Wilsoni* and *M. parviflora* come well from seed, and there are a fair number of plants in gardens.

Kew has raised 10 seedlings of *M. nitida* and seedlings of the *Delavayi* group, and has also sown *Ms. nitida*, *mollicomata* and *rostrata*. Col. S. Clarke alone seems to have raised a few *M. tsarongensis*. *M. splendens* from Costa Rica is a glorified *M. grandiflora*, and undoubtedly one of the finest Magnolias in the world, but it remains for some enthusiast to introduce it to our Western gardens where it would probably thrive.

We have therefore the opportunity of culti-

vating a very large number of species and hybrids of the highest excellence both as trees and shrubs, and when we consider the duration of the flowering season, lasting from late February till the end of October, it is of highest importance to plant the genus freely since no other, except Rhododendron, will give us so long a succession of beautiful flowers without cultivation, expense or effort on our part.

King in his *Magnolaceae of British India* designates the differences of *Talauma*, *Magnolia*, *Manglietia* and *Michelia* as follows :

MAGNOLIAE

Erect trees and shrubs. *Stipules* conspicuous, convolute and embracing the leaf-buds, deciduous. *Carpels* on an elongated axis.

Carpels, when ripe, separating from the sessile carpophore and dehiscing ventrally. *Talauma.*

Carpels not separating from the carpophore, dehiscing dorsally. Carpophore usually sessile ; carpels closely packed. Fruit elongate, cylindric ; ovules 2. *Magnolia.*

Fruit ovoid ; ovules 6. *Manglietia.*

Carpophore stalked ; carpels distant. *Michelia.*

Before leaving the subject of the genus as a

whole it may be well to consider the natural groups of the various Magnolias and to consider their affinities. A certain similarity of character seems to run through the following eight groups and to show their association.

I. *pterocarpa*, *Henryi*, and perhaps *Delavayi*.

II. *Griffithii*, *Pealiana*, *javanica*, *Gustavii*, *Maingayi*, and *nitida* may also belong here.

III. *Coco*.

IV. *rostrata*, *officinalis*, *hypoleuca*, and *tripetala*. These may also be grouped with *macrophylla*, *dealbata*, *Fraseri*, and *pyramidata*.

V. *grandiflora*, *glauca*, *splendens*, *guatemalensis*, *Schiedeana*, *portoricensis*, *cubensis*, and *domingensis*.

VI. *Campbellii*, *mollicomata*, *denudata*, *Sargentiana*, *Dawsoniana*, *diva*, *liliflora*, *kobus*, *Biondii*, *salicifolia*, *aulacosperma*, *Sprengeri*, and *stellata*.

VII. *globosa*, *Wilsonii*, *Nicholsoniana*, and *parviflora*.

VIII. *acuminata*.

Propagation. There are three methods of increasing Magnolias, namely, propagation by seeds, layering and grafting.

MAGNOLIAS

The seeds of Magnolia being of an oily nature only retain their vitality for a short time. It is therefore necessary to sow them singly in pots or at most one or two in a pot as soon as possible when ready to fall from the tree or bush. The fact that germination is rare after a certain period has made it difficult to raise a stock of the beautiful new Magnolias discovered by Farrer and Forrest. Forrest tried sending these home, enclosed in clay which hardened round the seeds, but the experiment cannot be said to have been very successful. Only about one seed in every fifty germinated, and in the case of some species none at all. Even after raising these Chinese Magnolias many of them die off at six months or one year of age. Greenhouse treatment does not seem to suit them, so it is necessary to get them planted out in the open *as soon as possible*, when they should be staked and wired round to prevent rabbits getting at them. Slugs, too, attack them until the second year. A bell glass that admits air is useful in the case of a rare specimen, and will keep off spring frosts. After the second year much of the danger is over.

At present we know very little as to the proper method of hybridizing Magnolias. The well-

known hybrids, of which there are only a few, were probably from "flukes." The artificial pollenizer just had a bit of luck, and might have done the same thing five hundred times and had no success. Mr. Peter Veitch of Exeter admits he tried many times to breed *M. Campbellii* with *M. denudata* before he got a fertile fruit. Whilst Mr. E. H. Wilding, an experienced gardener, tells me he fertilized over eighty flowers of *M. salicifolia* with the pollen of other Magnolias, and did not get one fruit, whilst on the same tree Nature was quite successful on flowers he had not touched. The reason of this is that the Magnolia is a protogenitus plant, which means that the stigma matures before the stamens. Even after we know this Nature still holds some secret we do not understand, but which is not above solution by a practical botanist.

Layering is an excellent method of increasing Magnolias. I have found how very diverse the nature both of species and hybrids is in this respect. Some such as all the Yulan hybrids *M. denudata*, *M. parviflora* and the evergreens such as *M. grandiflora* and *M. Delavayi*, are quite easy to layer if you work the layers into an upright position, the young sappy growth of the

same year's growth putting sticks to them to get the shape correct. I have notched some and left others untouched, and the result is much the same.

On the other hand, I have put down as many as twelve layers of the hybrid M. Brozzoni, and out of them only one has made roots. *M. kobus* var. *borealis* and *M. salicifolia* seem difficult to layer, but I do not despair of doing so.

It is quite possible that failure in layering may be due to the fact that the young layers we put down under big plants do not get enough light and air. Unlike Rhododendrons and other shrubs, they resent dense shade, and die off without a certain amount of sun. I presume this is the case, for where large Magnolias are layered in open nurseries in large quantities as they are in the Dutch nurseries and the Channel Islands, and as I used to see them in Slocock and John Waterer's nurseries, they have practically no shade and in consequence few failures.

Grafting is another useful method of increase, and in Japan and America is much employed to get large numbers. The grafting is done in the usual manner at the side. In Japan, *M. kobus*, *M. denudata* and *M. hypoleuca* are used as stocks,

and in N. America *M. acuminata* and *M. tripetala*. It is often impossible to obtain some rare kind unless it is a grafted plant, but plants on their own roots are always better in every way. In Holland stock of *M. liliflora* or its hybrids is used.

Transplanting. Practically the only difficulty with Magnolias is to get them established after planting. The roots are thick, fibrous and fleshy, and in consequence are easily injured. Planting, therefore, is usually most successful in spring when active growth has either commenced or in the cases of hardy kinds, about to begin.

March till late April are accordingly the best times to plant. The majority of the Yulan hybrids enjoy a good loam almost as well as a mixture of leaf mould, sand and peat, which is the ideal compost for all Magnolias. The various species and hybrids like a fair degree of moisture, but once established can resist drought better than almost any shrubs. In the great drought of 1921 I did not water any of my Magnolias and did not lose one.

The matter, therefore, of establishing a Magnolia is in the preparation of the pit or large hole in which it is to be placed, and this should be selected with great care with a visualization of

the ultimate growth of the plant. When placed on lawns or as 'spot' plants a large space six to twelve feet across and four to four and a half feet deep, with the bottom broken up by a pick, should be taken out. If the soil is not completely favourable, it should be filled with good top-spit loam mixed with sand, peat and leaf mould. With such good material to root in Magnolias will even grow well in heavy and calcareous clay or chalk. The size of the pit must be governed by the vigour and habit of the species or hybrid therein placed.

It may so happen that a Magnolia after years of life in a certain spot, has to be removed. The gardener finds that he himself or his predecessors have made a bad mistake, and it is essential that it must be changed to a more favourable position. This is always a pity, and often a great risk unless it is done in the correct way. Even then the plant may die.

I have moved plants of *M. Watsoni* up to 12 and 14 feet quite successfully even when all the earth has fallen off their roots, and nearly all Magnolias can be shifted until they are 8 and 10 feet high by ordinary methods if they are kept well watered during the ensuing

summer. But this is not the correct way to move them.

The method which is almost invariably successful is to dig a broad trench round the shrub or tree about 4 to 5 feet away from the stem and 3 to 4 feet deep. Then place flat boards of wood round the part exposed and nail on iron bands. When this has been done, dig right under the whole plant until it can gradually be thrown halfway over, and nail planks on the bottom. Then treat the other side the same. If the plant to be removed is still heavy, get braces of rope round the whole.

The plant can then be levered up and a sledge placed below it when it can be pulled by a horse into its new position.

This is the method used at Kew and all the large continental nurseries when moving big shrubs and trees, and it seldom fails. A matter of importance is to see that the plant is thoroughly soaked on replanting and kept well watered during the following summer.

I have seen Magnolias thirty years old, which had been in one position for twenty-five years, thus moved successfully, and recently examined two twenty-year-old specimens in Lady Coats's

garden at Cannes, which were placed in their present position in the previous spring. They seemed to be in excellent health, and were flowering as abundantly as usual.

The rate of growth of Magnolias depends entirely on their cultivation, situation and climate. Given a deep sandy loam or a mixture of sand and peat situated in a sheltered border free from all cutting winds or the semi-shade of a wood, in parts of the British Islands where the climate is not too severe, and there is some abundance of autumn sun for wood ripening, Magnolias will grow with freedom.

In the case of species, many of which are somewhat tender in their juvenile years, it is necessary to protect them with a surround of wire since rabbits are fond of peeling off the bark, which they do not attempt once till plants have reached a certain size. In early November, it is also a good plan to place a certain amount of bracken on the roots and attach it loosely along the stem inside this cage. In a few years this can be dispensed with.

The common hybrids of the Soulangeana class need not be so protected as they are perfectly hardy, and since they already possess

M. DENUDATA

Showing how the flowers open in sunshine

fairly hard bark rabbits will not touch them as a rule.

Usually it takes a freshly planted Magnolia two years to settle in its new home, and after that, if the conditions are favourable, it grows with great rapidity and requires little attention except only pruning (in the case of certain species and hybrids already described).

Amongst species Magnolias *denudata*, *salicifolia*, *kobus* var. *borealis*, *Delavayi*, *parviflora*, *Wilsoni*, *hypoleuca* and *acuminata* are rapid growers, whilst nearly all the hybrids of *M. denudata* and *M. liliflora* make fast progress except M. gracilis and M. Soulangeana var. nigra.

The hybrid M. Watsoni is also rather slow.

Amongst species *M. glauca* is slow but regular in its growth, whilst *M. Campbellii* is fairly rapid although it takes too long to reach maturity. *M. stellata* also remains for many years quite a short twiggy shrub, but given perfect conditions I have seen it put on two feet in a season.

Although it may give him some trouble it is necessary that the gardener should obtain and plant only the best forms of certain species. There are two species to which this applies in particular. They are *M. kobus*, of which the

variety borealis is the essential plant because it grows with us with astounding freedom whereas true kobus, as originally introduced, is a slow mover. I fear it can only be obtained direct from Japan.

The other plant is the form of *M. hypoleuca* from Hokkaido (Yezzo) in Japan. This Magnolia grows with amazing vigour often 3–4 feet in a season, with us, and also has much finer leaves and flowers than the type originally introduced, as well as the forms sent out by Veitch between 1870–1910. I have seen a good many of these Veitch plants; they grow slowly and have inferior leaves and flowers, whereas the Hokkaido forms have grand leaves and flowers, often nearly pure white when developed and giving the tree a much more noble appearance when in full beauty. These Hokkaido *M. hypoleuca* keep their upright form much longer than the old type, and do not when reaching 15 or 20 feet begin to spread outwards and become round-headed. I have six plants now 30 feet high and 15 years old which are still mounting upwards at the rate of a yard a year, and expect them to make good trees in time.

With regard to the growth of the "Veitch"

form, of which there is a good specimen at Wymans, I have a note from Mr. Coomber, the head gardener, who says :

" The oldest tree of M. hypoleuca we have was planted about the year 1908. It first flowered in 1911. Seedlings were raised in 1918 and planted in the upper drive at Nymans in 1921. The parent tree is now 27 feet in height and bears flowers freely every year. From the foregoing you will notice that this bears out your suggestion that this form of M. hypoleuca slows down after it has been planted 20 years or so."

The specimen in question although in good health, looks as if it would grow no more in height. This I also noticed in the case of the original specimen (destroyed by lightning) in the late Mr. Chambers' garden at Haslemere.

CHAPTER II

MAGNOLIAS IN BRITISH GARDENS

We must not be ungrateful for Life though the lot of many is hard. Life such as it is, we make for ourselves, and it should be full of beauty and excitements. To some it is a sinister and dreadful world because too lately we have passed through a period of anger, hatred, misery and oppression. Around us are ever the suspicions of the ignorant and the awful self-satisfaction of a certain class of the wealthy. Beneath the surface too there is always a pulsating mass of unreasonable human beings sad or ferocious as the result of ignorance or the cruelties of youth and excessive labour.

But there is a way out. If we can smash down the prison door of ignorance, passion and prejudice, man can always emerge from "his dead self to better things"—Wells thinks the panacea of all human disorder is to be found in education, and to a large extent he is right. But it must

not be necessarily the education of schools but the self-education which all must and can gain after books are left far behind. Any man with brains can make money, but all cannot pass into the sunlight and the calm air of understanding unless the individual possesses a high degree of courage and respect for the things worth having.

The two greatest personal gifts of this world are Love for one's fellow creatures and a true appreciation of Nature and Art. We can all get these if we go the right way to achieve them. That is why I love the " Movies " and go there four nights a week. " Superior " people sneer at them because 50 per cent. are bad. Thirty per cent. of the Motion Pictures, too, are only fair, but the rest are wonderful and true to life. I regard the cinema as a great educational factor whose influence grows and improves with the years, and we should be grateful to men like D. W. Griffiths, who, even if often " sloppy," preaches the Gospel of " Love " in its proper sense, and to great artists like the Gishes, the Talmadges, Emil Jannings, Lon Chaney, Jackie Coogan, John Barrymore and fifty others. The public are being educated in the right way to respect what is best in life and to see

the great world which otherwise would be a closed book.

Lately I saw two queues, 200 yards long, waiting for admission to the picture houses in Dumfries, when only a few years ago most of the money so represented went to the local public houses.

The majority of these people live in drab surroundings and not in castles on a hill with the apple blossoms waving below. For a short while they exist in a happy world of Romance and forgetfulness. Surely this is the road to better things.

Since the Great War a new spirit has come to the youth of the world because it is ever resentful of accepted grooves. Especially is this the case with men of originality who have been brought up on a surfeit of the classical. Too much pounding and instruction by professors of non-elastic views creates a nausea against dogmatism which has a resultant effect in a form of mental antagonism. To original thinkers such teaching only creates rebels, and we are all rebels against the conventional. Schoolmasters and professors are not necessarily clever people because the more the special sense is developed the less the common sense.

1. M. KOBUS VAR BOREALIS
2. M. STELLATA
3. M. KOBUS
4. M. SALICIFOLIA

In the very young this revolt against accepted canons of Art finds ready acceptance because if a teacher reiterates too much that a thing *is* so, they at once begin to pull in the other direction. As a rule, youth cannot digest ancient dogmatisms, and in its immaturity of thought it is unable to grasp what is really sound in the old methods of teaching. Wherefore all forms of Bolshevistic thought and expression are embraced.

We see it to-day in music, art, literature, religion, poetry and dancing. Many of its votaries exhibit real courage as well as genius whilst the majority, having no natural gifts, merely use it as the camouflage of ignorance.

Wagner created a new school of music; Whistler and Corot were the first rebels in art, whilst Literature found its exponents in O. Henry, Kipling and Meredith, and Pavlova in dancing. All these great people exhibit genius and originality which most of their followers imitate without success. Even ragtime and jazz music have features of originality and are full of a certain rhythm of human expression in movement. But the end or heart of it all is, "Where does it lead to?" At what do we arrive and are these things in reality better than the old? Time,

which knows no fashion, alone will adjudicate what is best.

It is not therefore surprising that gardening, like many other things, has come under the harrow of reconstruction. With our heavy taxes, even people who were once well off have to consider values and especially monetary values. Formerly landowners, who knew little, thought that it was not possible to have a good garden without an army of gardeners lawn cutting, mowing, clipping, digging, playing about in greenhouses and raising acres of bedding-out plants. Now we know differently, and that a garden of continuous flowers from March to October and sufficient vegetables for any house, may be achieved by the employment of one man and a boy provided the owners will do a little light work themselves in the woodland parts of such a garden.

This statement is not an exaggeration as I hope to prove.

Twenty-five years ago, without any knowledge of gardening, I bought a small piece of land (2 acres) on a good sandy loam soil near to the little country town of Horsham. We began with a good kitchen garden, hidden by yew

hedges, and obtained our shelter from north and south-west by planting Douglas firs and Thuyas, which have now grown 50 feet high. At first an acre was planted with Laburnums, Rhododendrons, and hybrid Magnolias, but in time we have added 3 acres of shrub walks and 6 acres of woodland garden all heavily planted with the best flowering trees and shrubs hardy in Britain. The main expense has been the formation of beds for Rhododendrons which have cost a considerable sum, and the placing of 400 yards of stone-flagged paths. It must be remembered, however, that both of these cost *nothing* in upkeep once made. Weeds do not grow on the paths and the woodland beds for Rhododendrons give little or no labour to keep in order when covered with leaves. Some light work only is required in the 6 acres of Rhododendron forest in keeping the sand paths in order, and this I do myself.

That our method of gardening is fairly successful is proved by the fact that the wages bill is very small, and that many visitors come, anxious to see rare and beautiful specimens from March to August. Also there are quantities of flowers to give away.

MAGNOLIAS

No man ever gets the true satisfaction of the garden unless he takes his coat off and works there himself. All the time he is full of hope when creating new effects by planting, moving and the many little daily tasks, so that when spring comes there is reward.

Spring is ever a miracle and the heart is never so withered but that it quickens to its impulse. The grass gets greener every day, the trees burst with fresh leaves, the thrushes sing, the rain is soft and the winds seem to bear the promise of warmth, and with it all the best spring beauties are the flowers of the early Magnolias.

Let us see what we can do with them from March to August and how the pageant of beauty unfolds. These dates were taken in my garden and give the flowering in 1926. The only exception was *M. Campbellii*, which was noted elsewhere in Sussex.

March 1st to 15th. M. Campbellii—opening on the 1st, and finished by frost on the 15th. In the south-west at least a fortnight earlier.

March 10th to April 5th. M. denudata, M. stellata, M. salicifolia and *M. kobus*, var. *borealis*, late examples of the last-named being in full flower till April 20th.

1. M. ALEXANDRINA 2. M. ALBA SUPERBA 3. M. GRACILIS

April 1st to 24th. M. alba superba and white and pink vars. of M. Alexandrina, M. spectabilis, M. amabilis, M. Soulangeana in full flower.

April 10th. M. Soulangeana, var. Nigra, M. gracilis and M. Lennei opening and continuing in flower throughout May.

April 10th to May 5th. M. Brozzoni, the last of the Yulan hybrids in flower.

April 30th. Many species such as *M. parviflora*, *M. tripetala*, *M. hypoleuca*, *M. Wilsoni*, *M. Nicholsoniana*, breaking in leaf.

May 10th. *M. parviflora* and *M. Wilsoni* in full flower.

May 22nd. *M. parviflora*, *M. tripetala* and M. Watsoni in flower. The two last-named pass over by June 10th, but *M. parviflora* continues in groups of flowers until mid-July.

June 10th. *M. hypoleuca* in full flower. Flowers continue till June 30th.

July. *M. parviflora* still with 80 flowers, but over by July 15th, when *M. grandiflora* begins and continues till October.

August—September—October. *M. grandiflora.*

November. Perfect flowers of *M. grandiflora*, var. *Goliath*, until Nov. 10th.

MAGNOLIAS

Considering the size of the British Islands there are very few gardens where Magnolias are a special feature and where good old plants, even of the common hybrids, can be seen.

Just here and there we come on old gardens with some grand specimen of *M. denudata* or M. Soulangeana lighting up the landscape in spring with their abundant blossoms. Middlesex contains some fine examples at Syon and Gunnersbury, whilst the national garden at Kew possesses practically all the Magnolias hardy in the South of England, some of them fine specimens. Mr. Bean is very fond of the genus, and procures every new species and hybrid that is possible, so that in time Londoners will see what can be done in English gardens not necessarily favoured with the best climatic conditions. In Surrey there are a few gardens where Magnolias are a feature. On the green sand from Leith Hill to Haslemere they grow with vigour, and good examples are to be seen at Anstie Grange, Lythe Hill, and other gardens on the slopes above Haslemere.

In Sussex there are good collections at Leonardslee, South Lodge, Borde Hill, Comptons Brow, Nymans, Gravetye Manor, Wakehurst

MAGNOLIAS AND EARLY RHODODENDRONS. APRIL.
Comptons Brow

Place, Sheffield Park, Tilgate, High Beeches and Brook House.

In Hampshire the gardens of Exbury and Embley Park will soon be notable for their Magnolias, although the majority of the plants are still young. Whilst many old gardens in Hants and Somerset contain fine old specimens of M. grandiflora and the Yulan hybrids.

Abbotsbury in Dorset possesses several fine Magnolias of the older kinds, whilst the Garden House, Saltwood, in Kent, has some noble specimens. In the Thames Valley in Berkshire there are good collections at Langley Park and Bulstrode, and they even do well on the chalk at Henley-on-Thames in the garden planted by the late Heatley Noble. Tittenhurst has a large collection of Magnolias, and they are also well grown in the nurseries round Bagshot and Woking.

Throughout Essex and Suffolk Magnolias do well on the black soil areas, whilst in many Norfolk gardens on the fine sand they flourish especially about Norwich, East Dereham and at Framingham Manor, where there is a good collection.

In Devon there are some fine Magnolias in

Peter Veitch's gardens at Exeter and Exmouth, whilst at Plympton and Rougemont Castle there are several grand old plants.

In Cornwall Magnolias also flourish at Pengerrick, Bosahan, and Tregothnan, but the best collections are at Lanarth and the Caerhays Castle, the last-named containing all species possible in the British Islands.

In Scotland I have only seen Magnolias planting at Monreith and Logan, where there are a number of good specimens, but the general conditions of the North are either too cold or too wet without sufficient wood ripening in the autumn.

In the East of Ireland Magnolias grow well, and there are some fine plants at Kilmacurragh and other gardens near Dublin, whilst in Cork and Kerry a few fine species such as *M. Campbellii* seem to flourish. On the whole, neither Scottish nor Irish gardeners have yet grasped the possibilities of the Magnolia.

CHAPTER III

MAGNOLIAS OF YUNNAN

MAGNOLIAS are not plentiful, either in species or numbers, in W. and N.W. Yunnan. Trees or shrubs of the forests and woodlands, they are generally found in isolated groups, or as solitary specimens, in the denser thickets and forests which clothe the deep lateral gullies and rifts of the larger valleys, as those of the Mekong and Salwin, and the upper waters of the Irrawaddy in the foot-hills of the N.E. Burma frontier, where they luxuriate in the moister atmosphere of the S.W. monsoon.

Their adaptability to climatic conditions seems less than other genera of the order, as Michelia and Manglietia, members of which are abundant almost everywhere in most of the forests of the western ranges.

On the Shweli-Salwin divide and its northern extension, the N'Maikha-Salwin watershed,

Manglietia insignis is everywhere common, as also are forms, many of them very beautiful, of *Michelia manipurensis*.

Michelia champaca, with its fragrant dull-orange blooms, cultivated in many parts of the west of the province, is also indigenous in the heavier forests of the actual frontier. It is a widely branched shapely tree of 40–60 ft., with rough, light-grey bark, handsome shining dark green foliage and deliciously scented blooms.

In Yunnan quite a few species of Magnolia are cultivated, as *M. obovata*, *M. denudata*, *M. conspicua*, and *M. Delavayi*, and are seen most often as ornamental plants in the grounds surrounding many of the larger temples and guild-houses. All are decorative, and one of the most charming effects I can remember, is of an avenue of exceedingly well grown trees of *M. conspicua* in full bloom, in the grounds of one of the larger guild-houses in the city of Yungchang-fu. In Yunnan this species flowers very early in the spring. In late January or February, before even the winter frosts are gone, I have seen plants smothered in bloom. The flowers appear much before the foliage, are 6–7 inches in diameter, fragrant, and of a clear ivory-white

M. DELAVAYI

[*To face p.* 32.

in fine contrast to the drab grey of the bark. It is the "*Yulan Hua*" of the Yunnanese and Szechuanese, though generally, in those provinces that name is applied to all Magnolias and Manglietias.

So far as my knowledge goes, neither of the three first-named of those species are indigenous in Yunnan.

Magnolia Delavayi, though apparently wild in the extreme S. and S.E. of the province, where it was collected in forests around Mengtze and Yunnanfu, by Dr. A. Henry and Père Maire, I have only found twice doubtfully so! In 1917 in dense forest on the W. flank of the Tali Range, lat. 25° 40′ N., long. 100° 6′ E.; and again, during the same year, on the W. flank of the Shweli-Salwin divide, lat. 25° 30′ N., long. 98° 40′ E., both localities having approximately as heavy a rainfall as the region around Mengtze.

As cultivated in Yunnan, it is a splendid evergreen of 30, or even 40 ft., widely branched from a short stout bole. The leaves are large and leathery, on long stout petioles, dark, dull green above, with a glaucous green under surface. As a foliage plant more to be commended than

for its flowers, which, though large, 5–6 in. across, and fragrant, are cup-shaped and often hidden by the mass of leaves. In colour they are dull creamy-white, frequently tinged purplish on the exterior.

Another large-leaved evergreen species, akin to *M. Delavayi*, is *M. Henryi*, found near Szemao in the south of the province.

During fourteen years' exploration of W. and N.W. Yunnan, I have had the good fortune to discover five new species of Magnolia, four of which, Magnolias *rostrata*, *mollicomata*, *tsarongensis* and *taliensis* are deciduous, and one evergreen, *Magnolia nitida*.

Of the first four, *M. rostrata*, W. W. Smith, is by far the finest. It is a tree of from 50–80 feet in height, straight in growth, not widespread in branch, but more fastigiate in form, with a straight bole, and smooth, light-grey bark. The leaves are very large, 18 by 12 in., in exceptional specimens much more, obovate or obcordate in form, borne on long, stout petioles; the upper surface dull matt-green, under surface lighter, roughened and browned with short hairs, strongly veined, with a very prominent mid-rib.

The flowers appear some time before the foliage,

are very large, when fully expanded 6–10 in., or more across, in colour ranging from white to the purest pink, and are delicately fragrant.

My earliest collecting of *M. rostrata* was in the spring of 1904, and the material then secured, being somewhat incomplete, was determined as *M. Campbellii*. However, some years later, specimens collected in perfect flower and fruit proved it to be quite distinct from the Himalayan species.

M. rostrata was first discovered on the western flank of the Mekong Valley in lat. 28° 10′ N., at an altitude of 9–10,000 feet, forming small colonies in the opener Abies forest on that range, amidst heavy undergrowth of Cotoneasters, Daphnes, Dipeltas, Viburnums, and many of the lesser species of woodland Rhododendrons.

I shall always remember my first sight of a group of those magnificent Magnolias in full flower ! I got within a mile or so of them, from which distance the masses of pink blooms showed up distinctly, but surrounded, as the trees were, by heavy snow-drifts 10–12 feet in depth, fully a week passed before I could secure specimens, by which time the flowers were almost gone.

Since then I have discovered the species in many other areas on the Mekong-Salwin divide

and on the watershed between the Salwin and Upper Irrawaddy from lat. 28° 30′ N. to as far south as lat. 26° N., where it is found, still on the same range, in the Hpimaw district on the N.E. Burma frontier, and where it was also collected by the late Mr. R. Farrer in 1919.

Apparently there are two forms, specimens from the most northern locality differing in many minor details from those collected at its extreme southern range. In the former the leaves are longer and broader, tapering towards the base, distinctly green and roughly hirsute on the under surface, with closer venation and flowers almost constantly pure rose pink.

In specimens from the Hpimaw region, the leaves are less in length with a rounded base and longer petiole, the under surface smooth and glaucous, bluish-green, only slightly downy on the veins, the venation wider and with the flowers ranging from pure white to pink.

M. mollicomata, W. W. Smith, another deciduous species with flowers almost equalling in beauty those of M. rostrata, has a much wider distribution. First discovered in 1914 on the Kari Pass, Mekong-Yangtze divide, in lat. 27° 40′ N., at an altitude of 9000 feet, it has since been

collected on many other ranges westwards to the Burma frontier.

It is a plant of the open forests, growing singly, or two to three together, and almost always on the west flanks of those ranges, where the monsoon rainfall is greatest. Of wide-spread habit, it attains a height of 40–60 feet, the bark rough, dark grey in colour, the young shoots dull black. The leaves are large, 4–7 by $3\frac{1}{2}$–4 in., broadly elliptic, on long, rather slender, petioles ; of a dark, dull green, and more or less downy. Buds silkily tomentose, the young foliage densely tomentose on both surfaces with a glistening, silky, golden-brown down.

The flowers, produced freely before the appearance of the foliage, are fragrant, rather fleshy, pure white or ivory-white, occasionally stained deep purple on the exterior, less often flushed pink, 5–8 in. across, the petals some 4 in. in length, and always widely cup-shaped, never fully expanded as those of *M. rostrata*.

Magnolia tsarongensis, W. W. Smith. Of those mentioned this is the most northern species discovered. It was first collected on the Kiu-chiang-Salwin divide, the watershed between the Salwin and the Faron rivers, in the Tibetan province of

Tsarong, in lat. 28° 45′ N., long. 98° 18′ E., at an altitude of 10,000 feet.

It affects sunny, sheltered situations on the margins of forests and in thickets, is a shrub of 8–20 feet, branched almost from base, with a smooth, black-brown bark.

The leaves are elliptic in form, 3–6 by 2–3 in., on long petioles of 1½–2 in. The upper surface is dark matt-green ; the under surface, petioles, and young wood, densely coated with a shining, brown tomentum.

Flowers rather fleshy, ivory or creamy-white, fragrant, when fully expanded 2½–3½ in. across, pedicels and flower buds heavily matted with shining, golden down.

Though rather open in habit, a free-flowering and attractive species. Unfortunately only a very few plants are in cultivation.

Magnolia taliensis, W. W. Smith. So far, this species is only known from one area, the mountains enclosing the Tali Valley in the central west of the province. It was first found in 1910, on the eastern flank of the Tali Range, lat. 25° 40′ N., at an altitude of 7000–8000 feet, and again in 1914 and 1917 on the Ghi Shan, some 25 miles north-east of the above locality.

Growing in sunny, open situations amongst scrub and boulders in side valleys on the ranges, it is a much branched shrub of 10–18 feet, in habit somewhat resembling *M. tsarongensis*. The leaves are thin in texture and dark green in colour, oblong, with a rounded base 2–3½ by 1–2 in., with the under-surface more or less downy.

The flowers are semi-pendulous, on short pedicels, when fully expanded 3–4 in. across; slightly fleshy, ivory-white, occasionally flushed rose-purple on exterior. Not in cultivation!

Magnolia nitida, W. W. Smith, is an evergreen of 20–40 feet, and was discovered in 1917 on the Mekong-Salwin divide, on the eastern slopes of the Salwin valley, in lat. 28° 12′ N., long. 98° 18′ E., at an altitude of 10,000–11,000 feet.

Since then it has been found much further south on the same watershed, as well as on the divide between the Salwin and the Upper Irrawaddy, and also during 1924 and 1925 on the mountains of the Burma-Yunnan frontier, in lat. 25° 30′ N., long. 98° 40′.

However, though this points to a considerable range of latitude for the species, it must be remembered that the mountain ranges given as the known southern limit, are only the southern

extensions of the northern watershed of the Salwin and Irrawaddy rivers, and that all are equally subject to a very heavy rainfall during the monsoon season.

Magnolia nitida affects sheltered, yet open, situations in mixed deciduous forests and thickets usually with a very heavy scrub undergrowth, and, though much branched, is yet compact and shapely. The bark is dark, almost black, matt-brown, black on the young wood.

The leaves are thick and leathery, oblong, or narrowly ovate-oblong, 2½–3 by ¾–1 inch, on stout short petioles, dark glossy green above, lighter beneath.

The flowers are produced freely, borne on short stout pedicels, and are fragrant. In colour they range from pure white to ivory-yellow, occasionally flushed deep purple on exterior, and are slightly fleshy. When fully expanded 2½–4 in. across.

Of the five species mentioned, *Magnolias rostrata, mollicomata,* and *nitida* are now fairly well established in cultivation. Of *M. tsarongensis* there may be a few plants, whilst, so far, seed of *M. taliensis* has never been secured.

G. Forrest.

M. Campbellii
South Lodge, Sussex

CHAPTER IV

KEY TO THE SPECIES

By J. E. Dendy, The Herbarium, Kew.

The species of Magnolia fall into a number of natural groups, and while these are for the sake of convenience not delimited in the following key, the species are nevertheless arranged as far as possible according to their natural affinities. *M. pterocarpa*, which is probably the most primitive member of the genus, is therefore placed first in the sequence.

The key is based as far as is practicable upon early observed characters of the leaves and flowers, and in identifying a plant it is first of all necessary to know whether the leaves are evergreen or deciduous, and in the latter case whether the flowers are precocious or otherwise. If nothing be known of the persistence or non-persistence of the leaves, it is often possible to decide the point with a fair degree of accuracy

from their texture. The leaf-characters have been drawn up from the larger fully grown leaves, and care must be taken that mature leaves are considered, especially in the case of characters of size and hairiness. The measurements have been taken mostly from dried specimens, and dimensions may be slightly larger in the living state.

It has been found necessary in a few cases to insert the same species twice into the key. Thus *M. glauca*, which may be evergreen or deciduous, will be found in both the evergreen and deciduous groups. In the case of *M. globosa*, the typical form from the Himalaya has ovate leaves, whereas the variety *sinensis* from Western China has oblong-obovate leaves, and finds a different place in the key.

In a few species the flowers, fruits, or leaves are unknown. These have been placed next to those species to which they appear to be most closely related.

The geography of the species is included in the key, since it may prove useful if the origin of the plant is known.

Leaves evergreen.

Gynaecium sessile.

Ripe carpels long-beaked, the beak much longer than the carpel; flower-stalks closely

ringed with annular scars, at first hairy ; leaves obovate-oblong, up to 40 cm. long, very markedly becoming smaller towards the ends of the branchlets ; E. Himalaya. 1. *pterocarpa.*

Ripe carpels not or shortly beaked (unknown in 8, 10 and 11) ; flower-stalks not closely ringed ; flower-stalks stout, over 8 cm. long, curved, ringed with distant annular scars ; leaves obovate-oblong, the larger 30–65 cm. long, with a petiole over 3 cm. long ; petals oblong ; Yunnan and Siam. 2. *Henryi.*

Flower-stalks under 8 cm. long ; leaves not as above ; petioles over 4 cm. long ; leaves ovate or oblong-ovate, rounded at the base, rounded or obtuse at the top, usually over 15 cm. long and 9 cm. broad, glaucous and more or less hairy beneath ; Yunnan. 3. *Delavayi.*

Petioles under 4 cm. long ; leaves not as above ; petals ovate or obovate, narrowed at the base (unknown in 6) ; flowers open, erect, usually over 4 cm. across (unknown in 6) ; petioles mostly over 1 cm. long ; leaves silvery and pubescent beneath, more or less elliptic ; young lateral shoots growing out with the flowers ; E. North America. 4. *glauca.*

Leaves not silvery beneath ; peduncles hairy ; leaves lustrously silky-hairy beneath, ovate or ovate-elliptic ; carpels glabrous ; Porto Rico.
5. *splendens.*

Leaves glabrous or reddish-hairy beneath ; carpels yellowish hairy ; carpels few, about 14 ; leaves obovate, very obtuse or rounded and usually slightly emarginate at the tip, shortly pubescent beneath when young, glabrous at maturity ; Haiti. 6. *domingensis.*

Carpels numerous, more than 30 ; leaves ovate-elliptic, elliptic, or obovate-elliptic, reddish-hairy or sometimes glabrous beneath ; E. North America. 7. *grandiflora.*

Peduncles glabrous ; petals under 4 cm. long ; carpels 5–6 ; leaves under 9 cm. long, elliptic or ovate-elliptic ; Cuba. 8. *cubensis.*

Petals over 4 cm. long ; carpels about 20–25 ; leaves over 9 cm. long ; leaves orbicular or almost so, up to $1\frac{1}{2}$ times as long as broad ; Porto Rico.
9. *portoricensis.*

Leaves oval to elliptic, about twice as long as broad ; stamens about 30 ; leaves glabrous beneath, with up to 12 pairs of main lateral nerves interspersed with about 9 minor ones ;

venation very prominent, finely reticulate; Mexico. 10. *Schiedeana.*

Stamens about 95; leaves sparsely hairy or finally glabrous beneath, with 13–16 close pairs of main lateral nerves interspersed with scarcely any minor ones; Guatemala. 11. *guatemalensis.*

Flowers globular, often nodding, under 4 cm. across; petioles very short, under 1 cm., leaves elliptic to oblong, very acute at the base, acuminate at the tip; sepals green; peduncles glabrous, recurved; carpels glabrous; stamens up to 7 mm. long; leaves laxly reticulate; S.E. China.

12. *Coco.*

Peduncles hairy, almost straight; carpels silky-hairy; stamens over 8 mm. long; leaves closely reticulate; Hong-kong. 13. *Championii.*

Petals narrowly oblong or oblanceolate, not exceeding $1\frac{1}{2}$ cm. broad, petioles very short, under 1 cm.; leaves narrowly elliptic to narrowly obovate-oblong, acuminate at the tip. Peduncles, carpels, and flower-buds hairy; leaves glaucous beneath and hairy on the mid-rib; Malay and Sarawak. 14. *Maingayi.*

Peduncles, carpels and flower-buds glabrous; leaves green beneath and glabrous at maturity;

leaves over 18 cm. long and 5 cm. broad, pubescent beneath when young ; petioles shortly pubescent ; Java. 15. *javanica.*

Leaves under 18 cm. long and 5 cm. broad, glabrous throughout ; petioles glabrous ; Assam. 16. *Gustavii.*

Gynaecium shortly stalked ; peduncles over 3 cm. long ; petals narrowly oblong, less than $1\frac{1}{2}$ cm. broad ; leaves elliptic to obovate-oblong, over 15 cm. long, not very glossy above ; leaves over 22 cm. and 10 cm. broad, hairy on the nerves beneath, when young densely silky-hairy beneath ; E. India. 17. *Griffithii.*

Leaves under 22 cm. long and 10 cm. broad, when young puberculous beneath ; Assam. 18. *Pealiana.*

Peduncles under 1 cm. long ; petals narrowed to the base, up to 2 cm. broad ; leaves ovate-oblong, under 12 cm. long, very glossy above, glabrous ; Tibet and Yunnan. 19. *nitida.*

Leaves deciduous ; flowers appearing with or after the leaves ; leaves auriculate or deeply cordate at the base, broadest above the middle ; leaf-buds hairy ; leaves silvery beneath, over 30 cm. long ; ripe carpels not beaked ; petals

with a purplish spot within the base ; E. North America. 20. *macrophylla.*

Ripe carpels beaked ; petals unspotted ; Mexico. 21. *dealbata.*

Leaf buds glabrous ; leaves pale green or subglaucous beneath, usually under 30 cm. long ; E. North America ; leaves fiddle-shaped, broadest about $\frac{1}{3}$ of their length from the tip, very abruptly contracted to an acute tip. 22. *pyramidata.*

Leaves elongate-obovate, broadest $\frac{2}{5}$ of their length from the tip, gradually acute. 23. *Fraseri.*

Leaves acute to rounded or subcordate at the base. Leaves obovate or elongate-obovate, attenuate towards the base, mostly over 30 cm. long, with more than 20 pairs of lateral nerves ; fruit up to 10 cm. long, the carpels with spreading beaks ; leaves pale green or subglaucous beneath ; flowers with a disagreeable odour ; sepals pale green ; E. North America. 24. *tripetala.*

Fruit over 10 cm. long ; leaves glaucous and more or less hairy beneath ; flowers fragrant ; ripe carpels long-beaked, the beak incurved, over 6 mm. long ; leaves reddish-hairy on the mid-rib and nerves beneath ; Tibet and Yunnan. 25. *rostrata.*

Ripe carpels shortly beaked, the beak up to 3 mm. long; leaves pale-hairy on the mid-rib and the nerves beneath; petioles purplish, branchlets purplish when dry; fruit cylindrical somewhat pointed at the tip and attenuate at the base; Japan. 26. *hypoleuca.*

Petioles green; branchlets yellowish when dry; fruit oblong-ovoid, truncate at the tip and rounded at the base; leaves sometimes 2-lobed at the tip (var. *biloba*); China. 27. *officinalis.*

Leaves ovate, ovate-elliptic, obovate, or almost orbicular, under 30 cm. long, with fewer than 20 pairs of lateral nerves; flowers yellow or yellowish-green; leaves ovate to oblong, narrowed to an acuminate tip, usually over 15 cm. long and 10 cm. broad; E. North America.
28. *acuminata.*

Flowers white or creamy-white, sometimes pink or purple outside; leaves silvery and pubescent beneath, more or less elliptic; young lateral shoots growing out with the flowers; E. North America. 4. *glauca.*

Leaves green or rarely subglaucous beneath; peduncles very short, under 1 cm.; flowers purple outside; leaves obovate, very acute at the base,

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abruptly narrowed to an acuminate tip ; China and Japan. 43. *liliflora.*

Peduncles mostly well over 1 cm. long ; flowers white or pink outside ; leaves obtuse or rounded at the base ; leaves broadest below or at the middle, acute at the tip ; leaves small, not exceeding 6 cm. broad and 15 cm. long ; leaves densely silky-hairy beneath ; W. China. 29. *Wilsoni.*

Leaves glabrous or almost so beneath except the hairy midrib ; S.W. China. 30. *Nicholsoniana.*

Leaves large, over 8 cm. broad and usually over 15 cm. long, reddish or tawny-hairy beneath ; E. Himalaya. 31. *globosa.*

Leaves broadest above the middle, broadly oblong-obovate to almost orbicular ; petals 6 or more cm. long and 10 cm. broad ; W. China. 31. *globosa*, var. *sinensis.*

Petals under $5\frac{1}{2}$ cm. long ; leaves up to 15 cm. long and 10 cm. broad ; Korea and Japan. 32. *parviflora.*

Flowers appearing before the leaves (unknown in 33, 35, 36 and 39) ; sepals subequalling and resembling the petals (unknown in 33, 35 and

36); leaves elliptic to oblong-obovate, over 15 cm. long, with more than 12 pairs of lateral nerves; petioles and under-surface of leaves shortly and softly ashy-tomentose; Tibet and Yunnan. 33. *mollicomata.*

Petioles glabrous or almost so; under-surface of leaves glabrous or silky-hairy; E. Himalaya. 34. *Campbellii*

Leaves broadest well above the middle, mostly under 15 cm. long, with not more than 12 pairs of lateral nerves; sepals and petals 12 or more, narrowly linear-oblong, up to $1\frac{1}{2}$ cm. broad; leaves usually under 8 cm. long and 4 cm. broad, narrowly obovate, very acute at the base, glabrous; Japan. 42. *stellata.*

Sepals and petals 9 or more, over 2 cm. broad (unknown in 35 and 36); leaves over 8 cm. long and 4 cm. broad, obovate to oblong-obovate; leaves densely hairy beneath, rounded at the tip; W. China. 35. *Sargentiana.*

Leaves glabrous or hairy only on the nerves beneath, obtuse or abruptly acuminate at the tip; leaves leathery, shining and conspicuously reticulate above, glabrous beneath, usually obtuse at the tip; W. China. 36. *Dawsoniana.*

Leaves not leathery, usually dull and not conspicuously reticulate above, often hairy on the nerves beneath, abruptly acuminate at the tip ; China. Sepals and petals 9, tapering downwards to a broadish base ; flowers cup-shaped.

37. *denudata.*

Sepals and petals 12 or more, much narrowed at the base ; flowers saucer-shaped. 38. *Diva.*

Sepals 3, much smaller than and distinct from the petals (unknown in 39) ; leaves broadest below or about the middle, lanceolate to elliptic, tapering gradually towards the tip (unknown in 41) ; leaf-buds silky-hairy, shining ; leaves pale green beneath ; C. China.

39. *aulacosperma.*

Leaf-buds glabrous or slightly puberculous at the tip ; sepals equal, lanceolate ; petals 6 ; leaves more or less glaucous beneath ; branchlets slender ; Japan. 40. *salicifolia.*

Sepals very unequal, the 2 outer narrow, acute, the inner one broadly rounded ; petals 8–9 ; branchlets fairly stout ; C. China.

41. *Sprengeri.*

Leaves broadest well above the middle, narrowly obovate to oblong-obovate (unknown in 45) ;

petals 9–18, narrowly linear oblong, up to 1½ cm. broad ; leaves usually under 8 cm. long and 4 cm. broad, narrowly obovate ; Japan.

42. *stellata.*

Petals 6 or fewer, obovate to spathulate, over 1½ cm. broad ; leaves over 8 cm. long and 4 cm. broad, obovate to oblong obovate (unknown in 45) ; flowers purple outside ; petals over 6 cm. long ; China and Japan.

43. *liliflora.*

Flowers white ; petals up to 6 cm. long ; anthers much longer than the filaments ; Japan.

44. *Kobus.*

Anthers and filaments subequal ; C. China.

45. *Biondii.*

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CHAPTER V

ALPHABETICAL LIST OF MAGNOLIAS

M. ACUMINATA, L., Syst. Nat. Ed. 10, 1082 (1759); Bot. Mag. t. 2427; Sarg. Silva N. Am. 1, tt. 4–5. "Cucumber Tree." "Mountain Magnolia."

E. United States to S. Ontario.

Var. *cordata*. Sarg. Silva N. Am. 1, t. 6.

M. cordata, Mich. Bot. Reg. t. 325.

S.E. United States (S. Carolina and Alabama).

Var. *maxima*, Bean.

Var. *variegata*, Bean.

× *M. alba superba*, Hort.

= *M. denudata*, Desr., × *M. liliflora*, Desr.

× M. Alexandrina, Hort.

= *M. denudata*, Desr., × *M. liliflora*, Desr.

× M. Amabilis, Hort.

= *M. denudata*, Desr., × *M. liliflora*, Desr.

M. SOULANGEANA. Seedling variety.

× *M. André Leroy*, Hort. (Barbier).
= *M. denudata*, Desr., × *M. liliflora*, Desr.

M. angatensis, Blanco.
= *Talauma angatensis*, D. Vidal.

M. angustifolia.
= *M. grandiflora*, var. *angustifolia*, Hort.

M. anonaefolia, Salisb.
= *Michelia fuscata*, Bl.

M. atropurpurae, Hort.
= *M. liliflora*, Desr.

M. AULACOSPERMA, Rehd. et Wilson in Sarg. Pl. Wilson. 1, 396 (1913).
W. Hupeh.

M. auricularis, Salisb.
= *M. Fraseri*, Walt.

M. auriculata, Lam.
= *M. Fraseri*, Walt.

M. Baillonii, Pierre
= *Michelia Baillonii*, Finet et Gagnep.

M. BIONDII, Pampanini in Nuov. Giorn. Bot. Ital. N.S. 17, 275 (1910); and l.c. 18, t. 3.

Hupeh.

M. Blumei, Prantl.

= *Manglietia glauca*, Bl.

× *M. Brozzonii*, Hort. (Barbier)

= *M. denudata*, Desr., × *M. liliflora*, Desr.

M. Burchelliana, Hort.

= *M. glauca*, L.

M. CAMPBELLII, Hk. f. & Thoms., Fl. Ind. 1, 77 (1855); Bot. Mag. t. 6793.

Temp. Himalaya (Bhootan and Sikkim).

M. Candollii, Link

= *M. acuminata*, L.

M. Champaca, Baill.

= *Michelia Champaca*, L.

M. Championii, Benth.

= *M. Coco*, var. *Championii*, Finet et Gagnep.

Closely allied to *M. Coco*, DC.

M. citriodora, Hort.

= *M. denudata*, Desr.

M. COCO, D.C., Syst. 1, 459 (1818); Bot. Mag. t. 977.

M. pumila, Andr.

S.E. China.

Var. *Championii*, Finet et Gagnep.

M. Championii, Benth.

Hong Kong.

M. compressa, Maxim

= *Michelia compressa*, Sarg. Gard. et Forest, 6. 77, t. 13.

M. conspicua, Salisb., Garden (1888, Sept. 22).

= *M. denudata*, Desr.

Var. *purpurascens*, Maxim. (not *M. denudata*, var. *purpurascens*, Rehd. et Wilson). Possibly a hybrid.

Cultivated in Japan.

M. cordata, Michx.

= *M. acuminata*, var. *cordata*, Sarg.

M. CUBENSIS, Urb., Symb. Antill. 1. 307 (1899).

Cuba.

M. cyathiformis, Ruiz

= *M. denudata*, Desr.

M. DAWSONIANA, Rehd. et Wilson in Sarg. Pl. Wilson. 1. 397 (1913).

W. Szechuan.

M. DEALBATA, Zycc. in Abh. Akad. Muench. 2. 373 and tt. 3–4 (1837).

S. Mexico.

M. Decandolii, Savi

= *M. acuminata*, L.

M. DELAVAYI, Franch., Pl. Delavay, 33 and tt. 9–10 (1889); Bot. Mag. t. 8282.

Yunnan.

M. DENUDATA, Desr. in Lam. Encyc. Meth. Bot. 3. 675 (1791); Bot. Mag. t. 1621.

M. conspicua, Salisb.

M. precia, Correa.

M. Yulan, Desr.

Kiangsi, and cultivated throughout China and Japan.

Var. *elongata*, Rehd. et Wilson in Sarg. Pl. Wilson, 1. 402...*diva*, Stapf.

Var. *purpurascens*, Rehd. et Wilson, l.c. 401 (including synonymy)...*diva*, Stapf.

M. discolor, Vent.

= *M. liliflora*, Desr.

M. diva, Stapf.

= *M. denudata*, var. purpurescens= *M. denudata*, var. *elongata*, Rehd. et Wilson.

M. DENUDATA

The big tree at Gunnersbury

M. DOMINGENSIS, Urb. in Fedde, Rep. Sp. Nov. 13. 447 (1914).
Haiti.

M. Duperreana, Pierre
= *Talauma Duperreana*, Finet et Gagnep.

M. elliptica, Link.
= *M. grandiflora*, L.

M. elongata
= *diva*, Stapf.

M. excelsa, Wall.
= *Michelia excelsa*, Bl.

M. exoniensis, Hort.
= *M. grandiflora*, var. *exoniensis*, Hort.

M. fasciata, Vent.
= *Michelia fuscata*, Bl.

M. fatiscens, Rich.
= *Talauma Plumieri*, DC.

M. ferruginea, Hort.
= *M. grandiflora*, L.

M. Figo, DC.
= *Michelia Figo*, Spreng.

M. foetida, Sarg.
= *M. grandiflora*, L.

M. Fordiana, Hu.
= *Manglietia Fordiana*, Oliv.

M. fragrans, Salisb.
= *M. glauca*, L.

M. FRASERI, Walt., Fl. Carol. 159 and t. (1788); Bot. Mag. t. 1206; Sarg. Silva N. Am. 1. tt. 11, 12. "Fraser's Magnolia."
M. auricularis, Salisb.
M. auriculata, Lam.
S.E. United States.

M. frondosa, Salisb.
= *M. tripetala*, L.

M. fuscata, Andr.
= *Michelia fuscata*, Bl.

M. galissoniensis
= *M. grandiflora*, var. *galissoniensis*, Hort.

M. GLAUCA, L., Syst. Nat. Ed. 10, 1082 (1759); Lodd, Bot. Cab. t. 245; Sarg. Silva N. Am. 1. t. 3. "Swamp Bay." "Laurel Magnolia."

M. fragrans, Salisb.

M. longifolia, Sweet.

M. virginiana, L.

E. United States.

Var. *decidua* (deciduous).

Var. *major* Sims (larger leaves and flowers).

= *M. Thompsoniana*, Sarg.

M. glauca, Pierre

= Talauma glauca, Miq.

M. glauca, Thunb.

= *M. hypoleuca*, S. & Z.

M. GLOBOSA, Hk. f. et Thoms., Fl. Ind. 1. 77 (1855).

M. tsarongensis, W. W. Sm.

E. Himalaya.

Var. *sinensis*, Rehd. et Wilson in Sarg. Pl. Wilson. 1. 393.

W. Szechuan.

M. gloriosa

= *M. grandiflora*, var. *gloriosa*, Hort.

M. Gordoniana, Hort.
= *M. glauca*, L.

× *M. gracilis*, Salisb.
= *M. liliflora*, var. *gracilis*. Not a variety but a hybrid of *M. liliflora*, Desr., × *M., denudata*, Desr. or *M. stellata*, Maxim.

M. GRANDIFLORA, L., Syst. Nat. Ed. 10, 1802 (1759); Sarg. Silva N. Am. 1. tt. 1, 2. "Bull Bay."
M. foetida, Sarg.
S.E. United States.
Var. *angustifolia*, Hort.
Var. *ferruginea*, Sims.
Var. *gloriosa*, Hort.
Var. *Goliath*, Hort.
Var. *lanceolata*, Ait; Bot. Mag. t. 1952.
M. exoniensis, Hort.
Var. *undulata*, Hort.

× *M. grandis*, Hort.
= *M. Soulangeana*, var. *grandis*.

M. GRIFFITHII, Hk. f. et Thoms. in Hk. f. Fl. Brit. Ind. 1. 41 (1875).
Michelia Griffithii, Finet et Gagnep.
Assam and Burma.

M. GUATEMALENSIS, Donn., Sm. in Bot. Gaz. 47. 253 (1909).

Guatemala.

M. GUSTAVII, King in Ann. Bot. Gard. Calcutta, 3. 209 and t. 61 (1891).

Upper Assam.

M. Halleana, Parsons

= *M. stellata*, Maxim.

M. Hartwegii, Hort.

= *M. grandiflora*, L.

M. Hartwicus, Hort.

= *M. grandiflora*, L.

M. HENRYI, Dunn, in Journ. Linn. Soc. 35. 484 (1903).

Talauma Kerrii, Craib.

S. Yunnan and N. Siam.

M. hirsuta, Thunb.

= *M. denudata*, Desr.

M. Hoonoki, Sieb.

= *M. hypoleuca*, S. & Z.

× *M. hybrida*, Dippel

= *M. denudata*, Desr., × *M. liliflora*, Desr.

M. HYPOLEUCA, S. & Z. in Abh. Akad. Muench. 4 (2), 187 (1843); Bot. Mag. t. 8077; Gard. et Forest, 1. t. 305, f. 49.

M. obovata, Thunb. (older name).

Japan.

M. insignis, Wall.

= *Manglietia insignis*, Bl.

M. JAVANICA, Koord et Valeton in Meded. Lands, Pl. 17. 315 (1896); and in Atl. Baum. Java, 4. t. 800.

M. Pealii, Koord. et Valeton (not *M. Pealiana*, King).

Java.

M. KOBUS, DC. Syst. 1. 456 (1818); Bot. Mag. t. 8428; Sarg. Forest Fl. Jap. t. 3.

M. Thurberi, Hort.

Japan.

Var. *borealis*, Sarg. Trees and Shrubs, 2. 57.

N. Japan.

M. Kobushi, Mayr.

= *M. Kobus*, DC.

M. lanceolata, Link.

= *M. grandiflora*, var. *lanceolata*, Ait.

M. latifolia, Ait.

= *M. glauca*, L.

M. SOULANGEANA VAR NIGRA
Comptons Brow

M. Lenneana, Hort.

= × *M. Lennei*, Van Houtte ?

× *M. Lennei*, Van Houtte, Fl. des Serres, 16. t. 1693–94.

= *M. liliflora*, Desr., × *M. denudata*, Desr.

M. rustica rubra is said to be a seedling from × *M. Lennei*, var. *Van Houttei*, another, blackish-purple seedling of × *M. Lennei*.

M. LILIFLORA, Desr. in Lam. Encyc. Meth. Bot. 3. 675 (1791); Bot. Mag. t. 390.

M. discolor, Vent.

M. purpurea, Curt.

W. Hupeh, and cultivated in China and Japan.

M. liliifera, Baill.

= *M. Coco*, DC.

M. longifolia, Sweet.

= *M. glauca*, L.

M. MACROPHYLLA, Michx. Fl. Bor. Am. 1. 327 (1803); Bot. Mag. t. 2189; Sarg. Silva N. Am. 1. tt. 7, 8.

S.E. United States.

M. MAINGAYI, King in Journ. As. Soc. Bengal, 58. 369 (1890); Ann. Bot. Card. Calcutta, t. 45B.

Malay Peninsula and Borneo.

× *M. major*

= × *M. Thompsoniana*, Sarg.

M. Martinii, Leveille

probably = *Michelia*, sp.

M. maxima, Lodd

= *M. acuminata*, L.

M. meleagroides, Hort.

= *Michelia fuscata*, Bl.

M. mexicana, DC.

= *Talauma mexicana*, G. Dom.

M. Michauxiana, Hort.

= *macrophylla*, Michx.

M. MOLLICOMATA, W. W. Sm. in Not. E. Bot. Gard. Edinb. 12. 211 (1920).

Yunnan and S.E. Tibet.

M. NICHOLSONIANA, Rehd. et Wilson in Sarg. Pl. Wilson, 1. 394 (1913).

M. taliensis, W. W. Sm.

W. Szechuan and Yunnan.

× *M. Niemetzii*, Hort.

= × *M. Soulangeana*, var. *Niemetzii*.

× *M. nigra*

= × *M. Soulangeana*, var. *nigra*, Nichols.

= *M. liliflora*, Desr., × *M. denudata*, Desr. ?

M. NITIDA, W. W. Sm. in Not. R. Bot. Gard. Edinb. 12. 212 (1920).

Yunnan.

× *Norbertiana*, Hort.

= *M. denudata*, Desr., × *M. liliflora*, Desr.

M. obovata, Ait.

= *M. grandiflora*, L.

M. obovata, Thunb.

= *M. hypoleuca*, S. & Z.

M. obovata, Willd.

= M. liliflora, Desr.

M. odoratissima, Reinw.

= *Talauma Candollei*, Bl.

M. OFFICINALIS, Rehd. et Wilson in Sarg. Pl. Wilson. 1. 391 (1913).

Hupeh and Szechuan.

Var. *biloba*, Rehd. et Wilson, l.c. 392.

Kiangsi.

M. ovata, Spreng

= *Talauma ovata*, St. Hil.

M. oxoniensis

= *M. grandiflora*, var. *exoniensis*, Hort.

M. Oyama, Hort.

= *M. parviflora*, S. et Z.

M. parviflora, Bl. (not of S. et Z.)

= *Michelia fuscata*, Bl.

M. PARVIFLORA, S. et Z. in Abh. Akad. Muench. 4 (2), 187 (1843); Bot. Mag. t. 7411.

Japan and Korea.

Var. *flore semipleno*, with semi-double flowers.

Var. *Wilsonii*, Finet et Gagnep= *M. Wilsonii*, Rehd.

M. PEALIANA, King in Ann. Bot. Gard. Calcutta, 3. 210 and t. 59 (1891).

Michelia Pealiana, Finet et Gagnep.

Upper Assam.

M. Pealii, Koord. & Valeton (not *M. Pealiana*, King)

= *M. javanica*, Koord. et Valeton.

M. pensylvanica, Hort.

= *M. acuminata*, L.

M. Plumieri, Sw.

= *Talauma Plumieri*, DC.

M. PORTORICENSIS, *Bello*, in Anal. Soc. Esp. Hist. Nat. 10. 233 (1880).

Porto Rico.

M. praecox.

= *M. grandiflora*, var. *praecox*, Hort.

M. Pravertiana

= *M. grandiflora*, var. *Pravertiana*, Hort.

M. Precia, Correa

= *M. denudata*, Desr.

M. PTEROCARPA, Roxb. Pl. Coromand. 3. 62 and t. 266 (1819); Ann. Bot. Gard. Calcutta, 3. t. 53.

M. sphenocarpa, Wall.

Tropical Himalaya (Nepal eastwards to Assam).

M. pumila, Andr.
= *M. Coco*, DC.

M. punduana, Wall.
= *Michelia punduana*, Hk. f. et Thoms.

M. purpurascens.
= *M. diva*, Stapf.,
or = *M. conspicua*, var. *purpurascens*, Maxim.

M. purpurea, Curt.
= *M. liliflora*, Desr.

M. PYRAMIDATA, Pursh. Fl. Am. Sept. 2. 382 (1814).
S.E. United States (Georgia, Florida, Alabama).

M. rosea
= *M. stellata*, var. *rosea*, Hort.

M. ROSTRATA, W. W. Sm. in Not. R. Bot. Gard. Edinb. 12. 213 (1920).
Yunnan, S.E. Tibet, Upper Burma.

M. rotundifolia
= *M. grandiflora*, var. *rotundifolia*, Hort.

M. Rumphii, Spreng
= *Talauma Rumphii*, Bl.

M. rustica, Hort.

= *M. acuminata*, L.

× *M. rustica rubra*

Hybrid of *M. liliflora*, Desr., said to be a seedling from × *M. Lennei*.

M. SALICIFOLIA, Maxim. in Bull. Akad. St. Petersb. 17. 419 (1872); Bot. Mag. t. 8483.

Buergeria salicifolia, S. et Z.

Japan.

M. SARGENTIANA, Rehd. et Wilson in Sarg. Pl. Wilson. 1. 398 (1913).

W. Szechuan.

Var. *robusta*, Rehd. et Wilson, l.c. 399.

W. Szechuan.

M. SCHIEDEANA, SCHLECHT, in Bot. Zeit. (1864); 144.

S. Mexico.

M. Selloi, Spreng.

= *Talauma Sellowiana*, St. Hil.

× *M. Soulangeana*, Soul.

= *M. denudata*, Desr., × *M. liliflora*, Desr.

M. Yulan, var. *Soulangeana*, Lindl.

Var. *nigra*, Hort.

× *M. speciosa*

= × *M. Soulangeana*, var. *speciosa*, Hort.

× *M. spectabilis*, Hort.

= *M. liliflora*, Desr., × *M. denudata*, Desr.

M. sphenocarpa, Wall.

= *M. pterocarpa*, Roxb.

M. SPLENDENS, Urb., Symb. Antill. 1. 306 (1899).

Porto Rico.

M. SPRENGERI, Pampanini in Nuov. Giorn. Bot. Ital. N.S. 22, 295 (1915).

Hupeh.

M. STELLATA, Maxim. in Bull. Akad. St. Petersb. 17. 419 (1872); Bot. Mag. 6370.

M. Halleana, Parsons.

Buergenia stellata, S. et Z.

Japan.

M. stricta

= *M. grandiflora*, var. *stricta*, Hort. (close to var. *exoniensis*).

× *M. superba*, Hort.
= *M. alba superba*, Hort.

M. taliensis, W. W. Sm.
= *M. Nicholsoniana*, Rehd. et Wilson.

× *M. Thompsoniana*, Sarg.
= *M. glauca*, L., × *M. tripetala*, L.
M. glauca, var. *major*, Sims.

M. Thurberi, Hort.
= *M. Kobus*, DC.

M. tomentosa, Thunb.
= *M. Kobus*, DC.

M. TRIPETALA, L., Syst. Nat. Ed. 10, 1082 (1759); Lond. Arb. Brit. 5. 6, 1F; Sarg. Silva N. Am. 1. tt. 9, 10. "Umbrella Tree," "Elk Wood."
M. umbrella, Lam.
M. frondosa, Salisb.
E. United States.

× *M. triumphans*
= × *M. Soulangeana*, var. *triumphans*, Hort.

M. tsarongensis, W. W. Sm.
= *M. globosa*, Hk. f. et Thoms.

M. umbellata, Hort.
= *M. tripetala*, L.

M. umbrella, Lam.
= *M. tripetala*, L.

× *M. Van Houttei*, Hort.
= *M. Lennei*, var. *Van Houttei*.
Almost black-purple outside to the petals.

× *M. Veitchii*, Hort.
= *M. Campbellii*, Hk. f. et Thoms., × *M. denudata*, Desr.

M. virginiana, L.
= *M. glauca*, L.

M. Vrieseana, Baill.
= *Talauma Vrieseana*, Miq.

× *M. Watsonii*, Hk. f.
= *M. hypoleuca*, S. et Z., × *M. parviflora*, S. et Z.
Cultivated in Japan.

M. WILSONII, Rehd. in Sarg. Pl. Wilson. 1. 395 (1913).
M. parviflora, var. *Wilsonii*, Finet et Gagnep.
W. China.

M. Yulan, Desr.
= *M. denudata*, Desr.

CHAPTER VI

M. ACUMINATA

LINNAEUS.

" Cucumber Tree."

Bot. Mag. t. 2427.

A large pyramidal deciduous tree attaining in a wild state a height of 60 to 90 feet. The habit is upright with ascending spreading branches of considerable size forming a pyramidal crown. Leaves bright green, oblong, pointed, 6–10 in. long, slightly hairy below. Flowers greenish yellow, erect, cup-shaped, slightly fragrant, produced in late spring.

Fruit like a small cucumber from which it gets its name of the " Cucumber tree."

This is the tallest growing of the American deciduous Magnolias, the hardiest and quickest growing of all Magnolias introduced into this country. It came to the British Islands in 1746, but it is doubtful if any of the original importation are alive to-day. Fine specimens up to 80 feet

are to be seen in the South of England to-day, notably at Kew, Knaphill Nursery, Bagshot, Reigate and various private gardens in Surrey, Devon and Dorset.

In North America the species has proved hardy as far north as Hanover, New Hampshire, and is found in a wild state from Western New York to Ohio and southward.

This is one of the trees introduced to England by the naturalist John Bartram, who sent it in 1746 to Collinson, a London nurseryman, who flowered it first on May 20th, 1762. There appears to have been no fresh introduction till some fifty years later.

M. acuminata makes a fine lawn specimen tree in this country, but is seldom grown owing to the fact that the greenish-yellow flowers are too inconspicuous. It makes its growth late and never seems to suffer in the coldest winters. The species is seldom stocked by nurserymen, but C. Smith and Son of Guernsey usually have plants.

M. acuminata, var. *maxima*, Bean. A variety with larger leaves and flowers.

M. acuminata, var. *variegata*, Bean. A variety with variegated leaves.

M. acuminata, var. *cordata*, Sargent.

M. cordata, Michaux.

A tree 40–50 feet high. A medium-sized tree with shapely crown. Leaves broadly ovate, more or less heart-shaped at the base and hairy on the under-side. Flowers, cup-shaped, yellow, slightly scented, about 4 in. across, and having the inner petals frequently marked with reddish lines.

This rare species or variety of *M. acuminata*, as Prof. Sargent regards it, was first discovered by the French botanist and traveller, Michaux, some time between the years 1787 and 1796, when it was sent to France by himself or his son. He found it in the neighbourhood of Augusta, Georgia. For a very long time it was supposed that the species or variety had become extinct, since all plants in gardens were derived from the original French stock. However, in 1914, Mr. Louis Berkmans accidentally met with several bushes (4–6 feet high) of the plant, growing in a dry wood some eighteen miles south of Augusta, Georgia. It is to be hoped that this group and the small area where *M. macrophylla* exists, may be preserved by those in charge of the woods and forests of N. America.

M. cordata is a very attractive Magnolia when in flower, owing to the rich colour of its creamy petals. It does not, however, flower very freely even when it has attained a height of 15 feet, but as there are few examples of any size in our islands, we must reserve our judgment of it as a garden tree. Few nurserymen stock this Magnolia. Plants I have seen on the continent are usually grafted on *M. tripetala*, a stock that it does not seem to like.

When the brothers Berkmans found the small plants of cordata they mentioned the fact that they were flowering profusely. It is probable, therefore, that M. cordata will only flower well with us in the year following an exceptionally hot summer and autumn.

M. cordata, unlike *M. acuminata*, which is a fast grower in this country, progresses very slowly but puts forth a few flowers even when small. In appearance it is, however, more attractive as a garden plant. At Kew, where the soil is suitable, a tree of M. cordata fifty years old is now only 15 feet in height. It was introduced to England in 1801.

M. ALBA SUPERBA

HORT.

Hybrid. *M. denudata* × *M. liliflora* ?

It is very doubtful if this well-known Magnolia is a hybrid of the above species or merely a seedling of *M. denudata*, which it closely resembles except in habit of growth.

In time it forms a good-sized tree of some 25 feet in height, but does not spread in the lower branches after the manner of *M. denudata*, inclining rather in its new shoots, which are formed about a fortnight later than that species, to upright growth. In this it certainly shows an affinity to *M. liliflora*, and since it originated about the time of the Soulangeana hybrids, it may be one of that large group. The fine white flowers possess 9 petals, sometimes with a very faint pink tinge along the outer centre line. Each petal $3\frac{3}{4}$ in. and 2 in. at broadest part. The leaves are very similar to *M. denudata*, but are developed at the same time as the flowers, the new shoot being perpendicular and exhibiting leaves as soon as the flowers fall.

This is an attractive and very floriferous plant, and valuable, as its flowers succeed (in about ten

days to a fortnight) the early species *M. denudata*, *M. stellata*, *M. Kobus*, var. *borealis*, and *M. salicifolia*. It fills a gap, and is often at its best with typical M. Soulangeana, and is again succeeded by M. Alexandrina. Wherefore no garden can afford to omit M. alba superba from its list of choice Magnolias as it supplies a perennial feature of interest and beauty. If *M. denudata* is cut by frost M. alba superba is often in full beauty.

In Sussex M. alba superba usually comes into bloom about April 5th, but varies according to season. It lasts in flower from a fortnight to three weeks.

M. ALEXANDRINA

HORT.

Hybrid. *M. denudata* × *M. liliflora*.

Owing to the number of hybrids, all very similar and coming from one or more sources, it is very difficult to say what is true M. Alexandrina. In some the white parent predominates and in another the purple one, but the hybrid usually sent out by the Dutch and Belgian nurserymen under the name of M. Alexandrina is usually in habit somewhat similar to M. denudata with larger flowers. Flowers, nine petals 4 in. long and 2 in. at widest part, heavily

M. ALEXANDRINA

flushed rose purple and darker purple lines up to three-quarters of their length; interior of petals pure white. The leaves are developed at the same time as the flowers. The colour and size of the flowers seem to vary considerably according to season. The same plant will develop beautiful rose-flushed flowers in one year and in the next the purple will predominate. We notice the same thing in the beautiful hybrid of similar parentage, M. rusticaflore-rubro. This is probably due to exceptional fitness or the reverse.

M. Alexandrina is a hardy tree as vigorous and even more beautiful than its close relation M. Soulangeana. It develops its flowers about the same time, April 5th–April 10th, and remains in bloom for three weeks if uncut by frost. In many respects it is superior to M. Soulangeana. Equally floriferous there is shade of rose in the flowers when first developed that is very charming, and it has few rivals amongst spring flowering trees of any kind.

The largest plant I have ever seen is in the lower part of the garden at the Château Eleanore, Cannes, once the residence of Lord Brougham. It was planted by Mr. Jesse Busby, the gardener, about forty-five years ago, and is now about

35 feet in height. When I last saw it (March 1926) it was covered with at least 2000 flowers. In a few English gardens there are plants of M. Alexandrina over 20 feet, but good specimens are rare. In my garden it has reached 18 feet in the same number of years.

M. Alexandrina is one of the essential Magnolias, and two or three specimens of both the typical and the large flowering white form should be planted in every southern garden.

M. Alexandrina, var. alba.

There is another form with upright branches and larger and whiter flowers than the type. It surpasses the usual form in everything except the rose flush to the flowers ; also it comes into flower about a week later. The petals are $4\frac{1}{2}$ in. long and $2\frac{1}{2}$ in width. Outer base shaded with purple which is not noticeable at a distance, the flowers appearing to be quite white.

No doubt there are other forms intermediate between this and M. Alexandrina, but this variety is very valuable as it continues the succession of early hybrid Magnolias and links the group up with M. Lennei and M. Brozzoni.

M. AMABILIS

HORT.

= *M. denudata* × *M. liliflora.*

A seedling hybrid sent out by the Dutch and Belgian nurserymen. The general habit and flowers are like *M. denudata*, pure white, fairly large and possessing a chocolate centre.

M. ANDRÉ LEROY

Hybrid, *M. denudata* × *M. liliflora*, Hort.

A hybrid with fairly large, rosy flowers, similar to but not so good as M. Lennei. It was issued some years ago by the firm of Barbier et Cie.

M. AUGUSTIFOLIA

HORT.

= *M. grandiflora*, var. augustifolia, Lond.
= *M.* grandiflora, var. *salicifolia*, Hort.

A form of *M. grandiflora* with medium-sized flowers and lanceolate wavy leaves. Now rare in gardens.

M. AULACOSPERMA

REHDER ET WILSON.

A tree 6–12 m. high, with short spreading branches and a trunk 0.5–1 m. in circumference ; branchlets fairly slender, those of the current

year glabrous, those of the preceding year purple-blackish, sparingly lenticellate; bark of the trunk pale ashen, almost smooth; buds ovoid, yellowish-silky, shining; flower-buds ovoid, about 2 cm. long, densely covered with long, shaggy, whitish hairs. Leaves deciduous, membranous, oblong-lanceolate or ovate-lanceolate, more rarely oblanceolate-oblong, acuminate, rounded or more seldom cuneate at the base, 10–18 cm. usually 12–15 cm. long and 3.5–6.5 cm. broad, the upper surface glabrous, dark green, slightly reticulate when dry, the lower pale green, hairy along the midrib, and at the base of the lateral nerves, otherwise glabrous, reticulate; nerves 10–15 on both sides, almost straight, slightly raised above, distinctly so beneath, the midrib lightly impressed above and markedly raised beneath; petioles 6–10 mm. long, glabrous, becoming yellow. Flowers unknown. Fruit irregularly cylindric, the carpels unequal, only in part fertile; penduncle 5–6 mm. long, densely silky; carpels lenticellate, rounded, not beaked, the valves ovate, rounded, 10–12 mm. long and 8–10 mm. broad. Seeds solitary, very rarely 2, orbicular-obovoid, compressed, scarlet, 8–10 mm. long and broad, the inner testa becom-

ing blackish, broadly obcordate, almost rounded at the base, emarginate at the apex, ventrally deeply and broadly sulcate, dorsally convex.

Mr. E. H. Wilson writes: "This Magnolia is found in the Hupeh, Shansi and Shensi provinces of central China. It would appear to be the Chinese analogue of the Japanese *M. salicifolia*, that is, judging by its foliage and its fruit. The flowers are unknown. In Hupeh it is quite a rare tree, usually found in fairly open country and thin woods between 2,000 and 3,500 feet elevation. It was discovered by me in 1907, but I failed to secure seeds. It is the only Magnolia I found in China which I failed to introduce into gardens."

M. auriculata

= *M. Fraseri*, Walt.

M. BIONDII

PAMPANINI.

Magnolia Biondii, Pampanini, in Nuov. Giorn. Bot. Ital., N.S. 17, 275; and in Bull. Soc. Tosc. Ortic. Ser. 3, 15, 216. *M. obovata*, Pavolini, in Nuov. Giorn. Bot. Ital., N.S. 15, 403 (not of Thunb.).

Branches and branchlets glabrous, greyish-yellowish when dry, the older ones lenticellate,

lenticels often large, oval or circular. Leaves deciduous, unknown. Peduncles stout, very short, 0.3–0.5 cm. long, pubescent. Flower-buds ovoid, enveloped in the broad bracts, which are 3 cm. long and about 2.5 cm. broad, hirsute with long, silky, shaggy hairs.

Flowers precocious, small. Sepals 3, linear, somewhat obtuse, small, 0.8–1.1 cm. long, and about 0.2 cm. broad. Petals 5–6, white as seen in the dry state, spathulate-rotund, the outer ones 5 cm. long and about 2.5 cm. broad, the inner ones smaller, 4–4.5 cm. long and 1.8–2 cm. broad. Stamens with filaments 4 mm. long; anthers subequal to or scarcely longer than the filaments, 5 mm. long; connective shortly produced, more or less obtuse. Gynaecium slender, elongate, 1.5–2 cm. long; styles curved from the base, short, about 1 mm. long. Fruit unknown. (J. E. Dendy.)

This new species was found in China, in the province of Hupeh at Shia-men-kvu, at an altitude of about 900 m. by Silvestri in 1906.

It is related to *M. kobus*, DC., and *M. denudata*, Desr.; from the former it differs in the filaments subequalling the anthers; from *M. denudata* it is distinguished at first sight by the much smaller

M. BROZZONI

flowers with small and distinct sepals, the subequal anthers and filaments, and the very short styles curved from the base. The species is probably hardy in England, but so far has not been introduced.

M. BROZZONI

= M. Soulangeana, var. Brozzoni, Hort.
= *M. denudata* × *M. liliflora.*

Another of the large group of hybrids between *M. denudata* and *M. liliflora.* It was sent out by the firm of Barbier et Cie of Orleans about fifteen years ago.

On enquiry the firm seems to have lost the plant and to know nothing of its history. It is now rare in gardens, which is a pity, as it is certainly one of the finest hybrid Magnolias we possess, since it comes late and bears the largest flowers of any of this group.

It seems likely that this hybrid may have originated some forty years ago and that Barbier reproduced their stock from some exceptional seedling, to which they gave the foregoing name.

The habit is tall growing as well as spreading, and the leaves develop with the flowers. Flowers with six petals $5\frac{1}{2}$ in. long by 3 in. at widest, white with purple flush at outer base.

Of late years this fine hybrid has been much admired, and the fact that it is well-nigh unprocurable makes it all the more to be desired. I have two large plants which on several occasions I have endeavoured to layer, but unless the wood put down is soft and sappy it is difficult to get it to form roots. So far I have only succeeded twice, and these plants went to friends who made Magnolias a special feature of their gardens.

M. Brozzoni is one of the last of the *M. denudata* hybrids to flower, and is generally at its best from April 15th to May 1st. Its large white flowers with slightest shaded purple base made it a conspicuous feature in the garden. When wide open the flowers are 10 in. across.

M. CAMPBELLII

Hook f. et Thoms.

M. Campbellii, Hook. f. et Thoms. Fl. Ind. 77 ; King in Magnol. Brit. Ind. p. 208, pl. 52.

A large tree of pyramidal growth 80–150 feet in height ; leaves, green, elliptic, oblong or ovate, abruptly acuminate, glaucous beneath and silky pubescent when young, 5–12 in. long ; flowers sweet-scented, cup-shaped, 6–10 in. across, pink or rose-white inside, heavily shaded with crimson

M. CAMPBELLII
Leonardslee, Sussex

outside ; petals obovate 9–15 ; fruit, greenish-brown, 6–8 in. long.

Bhootan and Sikkim-Himalaya, at elevations from 8,000 to 10,000 feet. Introduced 1868.

It is very unfortunate that this magnificent species should flower at a time in the South of England when it is almost certain that the flowers will be destroyed. But it is surprising that more gardeners living in the warmer parts of Great Britain have not planted *M. Campbellii*, for its flowers are of such extraordinary beauty that once a plant has been seen at its best the beholder is enraptured that such a gem can be grown in our islands. It is probable, however, that man being selfish does not wish to plant only for his successor —certainly a narrow-minded view—because the species invariably takes from twenty-five to thirty years before it flowers. Another reason is the great difficulty of obtaining a young plant on its own roots since grafted plants are never a success. Recently, however, Mr. R. Gill of Penryn, Cornwall, who has a son in the Himalayas, has imported some seed and managed to raise a few plants, so he may be encouraged to get some more and distribute a fair stock of the species.

M. Campbellii is not by any means one of the tenderest of the Magnolias once it has got a hold and has been planted on a wall or in a very sheltered sunny spot. In fact, it grows fairly rapidly and makes its growth at a safe time, but flowering as it does in mid-February or early March, it puts forth its blooms just at the most critical period of the whole year. I have seen the splendid tree at South Lodge, Horsham, ruined for four years in succession, just as it was opening to a mass of flowers. This is most disheartening and makes the gardener wonder if it is worth while to suffer such constant heart-aches. Yet those fortunate gardeners who live in Dorset, Devon, Cornwall, Ireland and the West of Scotland can grow *M. Campbellii* with success and enjoy a sight of marvellous floral beauty that is denied to owners of colder gardens.

I shall never forget my first sight of *M. Campbellii* in flower. One day I went to see a brother officer who had been laid up from a hunting accident in Carysville Castle, Co. Cork, and there looking in at the window were the great crimson blooms of a tree I had never seen before. Of course, I got its name, and I have no doubt the specimen is now a very large one.

There are a few notable specimens of the species in Irish gardens, a good specimen being at Fota, Co. Cork. The best I have seen is at Kilmacurragh, Co. Wicklow. It was planted originally against a wall about the year 1880, but now towers above it to a height of 30 feet. Lady Moore, who visited the garden in March 1921, writes in *The Garden* (April 9th, 1921) :

" Magnolia Campbellii planted originally against a wall facing north, now towering above it, 25 ft. in height and 30 ft. across, carrying nearly a thousand flowers of the purest rose pink, paler inside, as big as a breakfast cup, the buds covered with a brown green sheath, like velvet. The stems are the same colour as those of an Ash tree ; the leaves are not yet developed. It is the most wonderful and striking plant in this garden, or, I venture to say, in any other garden in the United Kingdom to-day. The effect of such a quantity of flowers, of a pure pink without a tinge of purple, as in Magnolia conspicua, against the blue of a March sky is not easy to describe. I went back to look at it again and again : it was enchanting. I thought of all the good gardeners I know and wished they could make a pilgrimage to see it. This plant first

flowered in 1906 and has had some flowers every year since. In 1913 it was in good bloom, but never has it put forth such a splendour of bloom as this year; fortunately there has been no frost to spoil it."

Two larger specimens than this exist in the gardens of Leonardslee and South Lodge, Horsham. Each of these is about 40 feet high and is planted out as a specimen tree. It was thirty years before either of these flowered, and neither is of the finest colour. This is not the case, however, with a smaller specimen, 30 feet high, situated in a sheltered sunny walk near the house at Leonardslee. This specimen has often carried masses of flowers that have escaped the frost, and these are of superb colour—as good, in fact, as the figure given by Hooker in his original description (see photo).

There is a nice tree in Veitch's nursery at Exeter which first flowered in 1905, and another at Sidbury Manor, Sidmouth, which usually flowers annually. The best I have seen in Cornwall is at Bosahan, where in March 1921 it had 500 blooms. It is a fine tree of 40 feet and was planted in 1888. A good few other specimens of 25 feet and over are found throughout

the South-western counties. There is a fine example at Abbotsbury, Dorset, now over 40 feet high.

My old friend, the late Henry Elwes, who had seen numbers of this Magnolia in the Himalayas, told me that the flowers varied greatly in colour, many of them being quite purple on the exterior whilst only a few individual specimens possessed the wonderful rose-crimson colour. This is noticeable in all examples that have flowered in England. Seedlings are therefore a matter of luck as to their eventual excellence or otherwise. Layers are not very successful with this Magnolia ; the branch put down often dying away as is the case with many Magnolias ; whilst grafted plants —though they live—always suffer from chronic stagnation. Mr. Gill of Penryn, Cornwall, has recently raised a few seedlings from imported seed.

The man who plants *M. Campbellii* must be unselfish, full of hope and determined to live for one hundred years. It is to be feared that nearly all the old 150 feet specimens which Sir J. Hooker described in 1849 are now converted into timber ("Lal Chang"), which is said to be of good quality.

M. CHAMPIONII

BENTH.

Magnolia Championii, Benth., Fl. Hongk. 8. *M. pumila*, Andr., var. *Championii*, Finet et Gagnep in Bull. Soc. Bot. Fr. 52, mem. 4, 36. *Talauma pumila*, Champion in Hook. Journ. Bot. Kew Gard. Misc. 3. 256 (not of Blume).

A shrub or sometimes a small tree ; branchlets at first hairy, later becoming glabrous. Leaves evergreen, coriaceous, closely reticulate on both surfaces, elliptic to oblong, acute at the base, acuminate at the tip, 7–16 cm. long and 2.5–5 cm. broad, glabrous above, glabrous beneath or with a few hairs especially on the midrib ; lateral nerves about 14–18 pairs ; petioles up to 1 cm. long, glabrous or pubescent. Peduncles 1–1.5 cm. long, densely silky-hairy, nearly straight. Flowers globular, cream-coloured, very fragrant at night, about 3.5 cm. in diameter. Sepals 4. Petals 6, obovate, narrowed at the base, rounded at the tip, concave, up to 3 cm. long and 2 cm. broad. Stamens numerous, about 9 mm. long, incurved. Gynaecium about 1 cm. long ; carpels densely silky-hairy. Fruit about 4 cm. long. Seeds usually solitary, scarlet, oblong. (J. E. Dendy.)

Confined to the island of Hong-Kong; on Victoria Peak it is shrubby and rather scarce, but in the woods of the Happy Valley it is more common and forms small trees.

Closely allied to *M. Coco*, DC., which is cultivated throughout S.E. China, but differs chiefly in the more closely reticulate leaves, the silky-hairy peduncles which are not so recurved, the rather larger cream-coloured flowers, the longer stamens, and the silky-hairy carpels.

M. COCO

De Candolle.

Magnolia Coco, DC. Syst. 1. 459; and Prodr. 1. 81. *M. pumila*, Andr. Bot. Rep. 4, t. 226; Bot. Mag. 25, t. 977; De Candolle, Syst. 1. 458; and Prodr. 1. 81; Roxb. Fl. Ind. 2. 655; Finet et Gagnep in Bull. Soc. Bot. Fr. 52, mem. 4, 36; Lecomte, Fl. Gen. Cochin. 1. 36; *Liriodendron Coco*, Louraire, Fl. Cochin, 347; *Talauma pumila*, Champion in Hook. Journ. Bot. Kew Gard. Misc. 3. 256 (not of Blume).

An erect shrub 2–4 m. high, or sometimes a small tree; branchlets shining, slightly angular, glabrous. Leaves evergreen, coriaceous, elliptic

to oblong, very acute at the base, long-acuminate at the tip, 9–15 cm. long and 3–5.5 cm. broad, shining and glabrous above, paler and glabrous beneath; lateral nerves prominent on both surfaces, 10–12 pairs, venation laxly and prominently reticulate; petioles stout, transversely plicate, about 0.5–0.8 cm. long. Peduncles recurved, 1–1.5 cm. long, glabrous. Flowers nodding, globular, very fragrant at night, about 3 cm. in diameter. Sepals 3, greenish, very concave, lanceolate-oblong or obovate, obtuse at the tip, about 2 cm. long. Petals 6, fleshy, pure white, concave, obovate, narrowed at the base, obtuse at the tip, about 3 cm. long. Stamens numerous, white, slightly concave within; filaments broad, short; anthers sunk in the thick connective; connective fleshy, thick, exceeding the anther, somewhat acute at the tip. Gynaecium of few carpels; carpels slightly compressed, ovoid, glabrous, 1–2 ovulate; styles obtuse, short. Fruit about 3 cm. long; ripe carpels hard, almost woody, shortly apiculate, dehiscing by 2 valves. Seeds 1–2, scarlet, oblong. (J. E. Dendy.)

A native of Canton, and cultivated in S.E. China, Tonkin and Formosa.

It flowers in May, but is too tender for outdoor cultivation in our islands.

Vernacular name : " Du Hop " (Tonkin).

Much cultivated in flower-pots by the Chinese and Japanese on account of the oppressively fragrant flowers, which bloom towards evening, falling off next morning. It was introduced to England as long ago as 1786 by Lady Amelia Hume, who lived at Wormley, Bury, Hertfordshire.

Magnolia Coco, DC., var. *Championii*, Finet et Gagnep in Bull. Soc. Bot. Fr. 52, mem. 4, 36 ; *M. Championii*, Benth. Fl. Hongk. 8.

Differs from the type chiefly in the more closely reticulate leaves, the silky-hairy peduncles which are not so recurved, the rather larger cream-coloured flowers, and the silky-hairy carpels.

Confined to the island of Hong-Kong. In habit it is shrubby and rather scarce on Victoria Peak, but is more common and sub-arboreous in the woods of the Happy Valley.

M. CUBENSIS

URBAN.

Magnolia Cubensis, Urb. Symb. Antill. 1. 307.

A tree, very glabrous ; young branchlets very plicate-striate when dry, sparingly lenticellate.

Leaves evergreen, coriaceous, narrowly ovate or usually elliptic, rounded or very obtuse at the base, more often obscurely protracted into the petiole, very shortly and very obtusely acuminate at the tip, 6–8 cm. long and 2.5–4 cm. broad ; midrib impressed above and somewhat prominent at the tip, lateral nerves 12–15 pairs, somewhat prominent on both surfaces, venation closely reticulate ; petioles plicate when dry, not callose, very narrowly furrowed and somewhat flattened above, 1–1.8 cm. long and scarcely 1 mm. broad ; stipular sheath about 1.5 cm. long and scarcely 1 mm. broad. Peduncles about 2 cm. long. Sepals obovate-oblong, 2 cm. long. Petals white, odorous, obovate, cuneately narrowed at the base, 2.5 cm. long and 1.3 cm. broad. Anthers linear. Gynaecium ovoid, composed of 5–6 carpels ; styles curved, 2 mm. long. Fruit unknown. (J. E. Dendy.)

This species was first discovered in Cuba, in the Sierra Maestra at Grosse Roche, by Linden.

It flowers in July, and is not in cultivation in the British Islands.

Related in habit to *M. glauca*, L., which is distinguished at once by the stipular sheaths being adnate to the petiole, and the leaves

being glaucous and silky-pubescent beneath. (Urban.)

M. DAWSONIANA

REHDER ET WILSON.

Magnolia Dawsoniana, Rehder et Wilson.

A tree, 8–12 m. high, with spreading branches and a trunk 0.5–1.5 m. in circumference; branchlets somewhat stout, those of the current year glabrous, yellow-green, those of the preceding year becoming purple, smooth except for the sparse lenticels; buds elongate, sparingly silky-hairy with appressed hairs. Leaves coriaceous, obovate or elliptic obovate, obtuse or very shortly acuminate, at the base cuneate, more seldom rounded, usually oblique, 8–14 cm. long and 4.5–7 cm. broad, glabrous on both sides, the upper surface shining, reticulate when dry, the lower pale green or becoming glaucous, sometimes becoming reddish at maturity, reticulate; nerves 8–12 on both sides, slightly raised above like the midrib, distinctly raised beneath; petioles slender, often becoming purple, glabrous, 1.5–3 cm. long. Flowers unknown. Fruit terminating a branchlet which is thickened and club-shaped at the tip, cylindric, slightly recurved, about 10 cm. long and 3–3.5 cm. in diameter, with a short,

stout, glabrous peduncle ; ripe carpels numerous, moderately crowded, almost all fertile, woody, sparingly lenticellate, rounded, compressed, the valves broadly oval, about 1 cm. broad and long. Seeds usually 2 in each carpel, irregularly orbicular obovoid, compressed, golden-scarlet, 10–12 mm. long or broad, the inner testa becoming blackish, rounded at the base, truncate or rounded at the apex, ventrally very slightly sulcate or flat, dorsally convex.

Mr. E. H. Wilson sends me the following note on this species :

" This is a very rare species so far as my knowledge goes and being only known from one rather remote locality to the south-east of Tachien-lu in Western Szechuan. Its flowers are unknown. It was in fruit when I discovered the tree in October 1908. It is a tree up to 40 feet tall closely related to the Yulan but distinguished by its thick, shining, green leaves. It was introduced into cultivation in 1908 by seeds which I sent to the Arnold Arboretum. In 1910 I gathered a further supply. By the Arnold Arboretum seeds and plants were sent to Europe."

The species seems to be somewhat allied to *M. denudata*. The flowers are said to be white

and precocious, but I cannot vouch for this statement. A few small grafted planting have been sent to English gardens by Chenault, who received seeds from Wilson. It grows slowly seeming rather a "sticky" plant.

M. DEALBATA

ZUCCARINI.

Magnolia dealbata, Zucc. in Abh. Akad. Muench. 2. 373 and tt. 3 and 4; Standley in Contr. U.S. Nat. Herb. 23. 275.

A tree 4.5–5.5 m. high, with a trunk about 15 cm. in diameter; ultimate branchlets greenish, terete, almost 2 cm. in thickness, glabrous, ringed with the scars of fallen stipules. Leaves deciduous, membranous, obovate-oblong, cordate at the base with rounded lobes, obtuse or more or less cuspidate at the tip, 30–50 or more cm. long, green and glabrous above, sparingly pubescent and very silvery beneath; midrib stout, very prominent beneath, lateral nerves numerous, parallel, venation very closely reticulate; petioles somewhat thickened and flat above at the base, otherwise, terete, striately furrowed, 5–7.5 cm. long, sparingly whitish-hairy; stipules deciduous, membranous, large, pubescent, united along their

inner margin to form an ovate-oblong, somewhat acute lamina, and adhering to the petiole. Peduncles terete, 2.5 cm. long, very stout. Flower-buds enclosed in a single spathaceous bract, which is deciduous, membranous, mucronate, pubescent, reticulately veined and traversed by a midrib. Flowers appearing after the leaves, heavily, or rather, narcotically fragrant, 30–40 cm. in diameter. Sepals 3, spreading horizontally, subcoriaceous, greenish, ovate-oblong, slightly attenuate at the very base, somewhat acute at the tip, finely veined, glabrous. Petals 6, spreading horizontally, tender, uniformly yellowish-white, ovate-elliptic, somewhat acute, glabrous. Stamens very numerous, about 420–430, erect, closely appressed to each other and the gynaecium; filaments fleshy, very short, hollowed at the base, continued as a fleshy stout, linear connective and produced above the anther as a short, obtuse appendage. Gynaecium cylindric, of 80–100 carpels crowded on a stout, conical axis; carpels coriaceous, compressed, irregularly ovate-subrhombic, pubescent, 2-ovulate; styles coriaceous, linear, compressed, attenuate towards the tip, subequalling the carpel, persistent. Fruit oblong, of 80–100 density im-

bricated carpels; ripe carpels variable in shape and size, but seldom over 2.5 cm. long, irregularly ovate-rhombic, compressed, pubescent, beaked with the persistent style, dehiscing by 2 coriaceous, plano-concave valves, clothed within with a smooth, chartaceous, straw-coloured, finely striated membrane. Seeds 2, oblong, obtuse, somewhat compressed, enveloped in a fleshy, orange aril; testa hard, black? (brown when unripe). (J. E. Dendy.)

The species occurs in Southern Mexico, in Veracruz and Oaxaca districts. It was originally found in the forests near Rincou on temperate slopes at an altitude of 600–900 m.

M. dealbata flowers in February. The fruits mature the following February. Vernacular name: " Elosuchil " (Oaxaca), from the Nahuatl " elotl " (green ear of corn with husk) and " xochitl " (flower).

M. dealbata was recorded from Mexico by Sesse and Mocino in Fl. Mex. as *M. tripetala*; the true *M. tripetala*, L., is confined to the S.E. United States.

The species is related to *M. macrophylla*, Michx., from which it differs in its smaller stature, in its petals not being spotted with

purple at the base, and in its ripe carpels being beaked.

M. DELAVAYI

FRANCHET.

M. Delavayi, Franchet, Pl. Delavayi, 33 et tt. 9–10 (1889) ; Bot. Mag. t. 8282.

A wide-spreading, somewhat flat-topped evergreen tree up to 50 feet high. Leaves 10 to 14 in. long, 6 to 8 in. wide ; dull green above and glaucous beneath clothed with fine down ; stalk stout. Flowers cup-shaped, fragrant, creamy-white and evanescent, lasting only about one day, 7 to 8 in. across ; 6 petals, 4–5 in. long, $2\frac{1}{2}$ in. across. The fruit is cone-shaped and about 6 in. long.

This handsome, somewhat tender evergreen Magnolia was discovered by Wilson in Yunnan, China, and introduced by him in 1899. Previously it was found by Delavay and described by Franchet. In its native habitat it grows at elevations of 4800 to 7500 feet on mountain slopes. At Kew and north of London it is best accommodated with a high wall, but in West Sussex it will just do as a standard tree in a well-sheltered border, whilst in West Scotland, Ireland and the South-Western

M. Delavayi

[*To face p. 104.*

Counties it makes a lovely spreading tree in a sheltered wood.

The best plants I have seen are two placed close together in the high wood above the Castle at Caerhays, and they are about the finest evergreen trees in that wonderful garden. The largest of these is now 25 feet high and 74 feet round the whole spread of the tree. There is a fine plant against the wall of Gunnersbury House, near London, and several good examples in the good gardens of the South-western counties. I have also seen it growing well in S.W. Scotland. In my garden it has reached 18 feet on a wall where it flowers annually about the end of June or early July.

Like all other Magnolias it is always a mistake to estimate the flowering qualities of a "species" until the plant attains some degree of maturity. *M. Delavayi* seldom flowers until it is 12 or 14 feet high, and then puts out a few blossoms which fade and fall almost in a day. This is disappointing in a tree of such great beauty, but Mr. J. C. Williams, who is capable of estimating the qualities of this species since he possesses fairly large specimens, thinks highly of its flowering qualities, for although individual flowers may

be evanescent, yet when mature groups of flowers, following the first ones, as in the case of Magnolias *hypoleuca* and *parviflora*, are seen in quantity, then the general effect is good and may advance the garden quality of the species. We must therefore have a little patience, and one day we may think very highly of the flower qualities of a Magnolia which has few equals as an evergreen tree. The plant first flowered at Kew in 1908.

M. Delavayi layers very easily, and I have increased it in this manner. These layers take about two years to root.

Like *M. grandiflora*, another handsome evergreen, young plants are best placed in their permanent positions in April. I have little doubt that like *M. grandiflora*, it would be struck from cuttings.

M. DENUDATA

Desrouss.

M. precia, Correa.
M. conspicua, Salisb.
M. Yulan, Desr.

In a wild state in Central China this magnificent species grows into a tree up to 50 feet with wide spreading branches and trunk 8 ft. in circumference. In Europe there are a few trees imported

over a hundred years ago that have attained 30 feet in height, and more, and as some of them still show no signs of decay, they may eventually reach a size equal to those of wild specimens.

The leaves are obovate or obovate-oblong, rich green, mostly pointed and pubescent beneath when young, 4–7 in. long and 4–5 in. broad. Flowers, large, pure white, campanulate, and about 6–7 in. across ; petals and sepals almost similar, 9 in number, concave, fleshy, 3–4 in. long ; fruit brownish, 3–4 in. long, slender.

It seems a pity that this species which has been so long known in gardens as *M. conspicua*, should have to be superseded by the name *M. denudata*, which only antedates it by a short period. However, the law of priority is a good and fast one, and we must abide by it, yet like many household names it will be a long time before scientific accuracy supersedes popular nomenclature.

There is little doubt that the Yulan has been known and cultivated as a garden plant from the very earliest times in Central China (its true home), and also in Japan. The Chinese exhibited their love of culture and refinement at a very early date, for history tells us that plants

such as the Yulan and the Mountain Paeony were highly esteemed by them during the Tang Dynasty (618–907 A.D.). Chinese monks and nuns visited Japan for the purpose of proselytism from 552 A.D. until the eighth century, and took with them their favourite flowering and fruit trees such as Ginkgo, Yulan, Paeony, Quince, Tea, Peach, Plum, Cherry, Loquat, Orange, etc. The natural love of flowers and fruit trees possessed by the Japanese, Koreans and Chinese fostered the culture of such plants and soon became intimately associated with the social lives of the people. So in turn the Japanese introduced to China their Camellias and Azaleas.

It is to Marco Polo, the celebrated Venetian traveller in the latter part of the twelfth century, that we owe the first account of the Chinese Empire and who noted many of its most striking plants. Subsequently we knew little of China till the Portuguese arrived there in 1516 and the English East India Company in 1677, and these in turn told us more of the wonders of the East. In 1818 Samuel Brooke, a nurseryman, sent one Poole to China to collect plants, and other English nurserymen soon after received numerous Azaleas from China, and possibly plants of *M. denudata*.

But it was not until 1789 (introduced by Sir Joseph Bankes) that it came to England. Judging by ancient Chinese pictures *M. denudata* was always admired by the Chinese, and was often placed in conspicuous situations near houses and temples throughout South and Central China, just as *Viburnum fragrans* is used in all corners of courts in Kansu and Shensi, and *R. chartophyllum*, var. *praecox*, in the gardens of Yunnan to-day.

Even in early pictures of the fourteenth and fifteenth centuries, Chinese artists loved to figure this beautiful Magnolia, yet it was not until the end of the eighteenth century that botanists turned their attention to the study and distribution of the eastern species of flowering trees and shrubs and made these plants grow familiar to us.

Though art was in the primitive condition prior to the eighteenth century, there is little doubt that the Lily-tree was known and cultivated by the flower-loving Chinese for more than thirteen centuries. Its flower has ever been regarded as the symbol of candour and purity, and for that reason we see abundant figures of the Lily-tree on many ancient paintings, porcelains and embroideries by the best oriental artists.

Nevertheless it seems to take a very long time for the public to recognize a good thing when they see it. Just a few examples of *M. denudata* were distributed in the early part of the nineteenth century, and these we now see in their full beauty every year in old plants such as those at Gunnersbury, Syon, Woking, and the neighbourhood of London. I have not seen the large example at Gunnersbury, but that in Mr. Slocock's nursery at Woking is of great size, and though planted in 1815, still appears to be in the best of health. I have seen it twice in full flower in April, and one is only struck with surprise that every garden in the South of England does not possess such a magnificent object of beauty. The last time I examined this specimen the measurements were as follows: height, 35 feet; 35 feet across; 38 yards round spreading branches. This specimen was planted by one Donald, a nurseryman, about one hundred and ten years ago, about the same date as the large specimen at Gunnersbury. There is another of almost equal proportions at Purley in Surrey.

I think that even finer than the Woking specimen are two old trees I saw in the garden of Coombe Royal, Devonshire. These were only

put in their present position about 1850 by the late T. Luscombe, who with Mr. Mangles was one of the pioneers of good hybrid rhododendrons. He took a sheltered valley near the sea at Kingsbridge, Devon, and planted it up with masses of his own hybrids, Camellias, and many of the best evergreen and flowering trees of foreign lands likely to prove hardy in Britain.

Most unfortunately he was too modest and never realized how most of them would grow. He moved little even in his life time, but thirty years of subsequent neglect has resulted in a perfect semi-tropical jungle of shrubs and trees, 20–30 feet high, bare amongst these crowded stems and with a little sparse foliage and flowers massed at the tops. Amongst this chaos of neglect were growing two immense specimens of *M. denudata*, 30 feet high and 40 feet across, and in spite of congestion crowded with thousands of beautiful flowers. A new owner, another Luscombe, is now hacking his way to some order, and will in time, we hope, save the best specimens.

It is not possible to give any detailed list of the fine examples of *M. denudata* that exist in gardens near London, Surrey, Sussex, Kent, Devon, Dorset and Cornwall, where the species

grows with vigour in all sheltered and sunny positions. Even specimens of twenty years old are of conspicuous beauty and light up the garden at dawn and sunset with their white lamps. The species when happy grows at first nearly one foot per annum and requires little attention except a slight pruning of the side branches in July. This seems necessary in nearly all Magnolias, otherwise these branches are apt to spread over large areas and take up too much room. Also they give an untidy effect and should not be left unless the gardener wishes to grow layers. By cutting back these lower shoots and branches and keeping a free ground space, beautiful gardening effects can be created by planting bulbs, such as blue grape hyacinths, narcissus, cyclamen coum, early forget-me-nots or whatever the gardener fancies.

M. denudata grows wild throughout the central parts of China in moist woods, but in our country it does not seem to care for such situations, as in our islands moist or boggy soil in winter is unsuitable, tending to get "soggy" and ill drained. The species and, in fact, all Magnolias, seem to like best a good deep sandy loam, a rich loam or sand and peat. It will grow almost as

M. DENUDATA

The great tree at Goldsworth Nursery, Woking

well in heavy soils if when planting the pit is well broken up and good light soil added. The presence of lime, unless in quantity, seems to have little deleterious effect, and it is quite common to see fine specimens on calcareous soil or clay if they have been first planted with care. On pure chalk soils *M. denudata* will live, but does not flourish as a rule, yet there are exceptions.

The Yulan is only slightly irregular in its season of flowering. The first flowers often open in Devon and Cornwall as early as the end of February. Here in Sussex March 5th is about the usual date, and it continues in bloom until April 10th unless cut by frost. At this opening season it is usually in flower together with *M. salicifolia* and *M. stellata*, being succeeded in middle of March by *M. kobus*, var. *borealis*, and in late March and early April by the large number of hybrids between the species and *M. liliflora*, which advance in the following succession: M. alba superba (March 15th), M. Norberti (March 20th), M. Soulangeana (March 25th), M. Alexandrina (March 25th), and lastly by the finest hybrid, M. Brozzoni (May 5th). Each of these in turn lasts about three weeks under favourable conditions. M.

Soulangeana, var. nigra, and M. Lennei, both flower a little later, and in the case of the former last for another month or more.

When planting this fine species as well as other Magnolias, it is all-important that the gardener should be acquainted with their eventual size and shape. If placed in borders they should be surrounded with plants of easy removal such as rhododendrons, etc. ; but if put out on lawns in pits care should be taken to keep them well on the flanks of the aspect from the house, otherwise in time they may obstruct the view and fill up the centre of the gardening picture—always a great mistake in design.

Nothing looks better than a well-developed specimen tree of *M. denudata* properly situated in front of large dark conifers but not too near them. In such a position when in bloom the white flowers light up to perfection against such a setting. Shelter from cold and rough east and north winds is beneficial but not always essential in southern gardens. In our islands *M. denudata* grows well as far north as Derbyshire as a standard tree. It is exceptionally happy in the peaty loams of Lincolnshire, but north of this it is best accommodated with a wall. In East Scotland

it will grow on a wall, but flowers too early to be quite happy there, whilst West Scotland is, as a rule, too wet and has not sufficient sun warmth to ensure good wood ripening. In East, South and Central Ireland the species flourishes, but in the west it is too moist and sunless, though I believe it does well in Kerry.

M. denudata flourishes throughout France and Italy, but is seldom planted there in gardens. There are some good specimens in Switzerland by the Lake of Geneva. Even on the French Riviera I have seen no trees over fifteen years old, although there are specimens of the hybrids of this species and *M. liliflora* of immense size at Cannes. The Americans, too, are only very slowly awakening to the fact that flowering shrubs and trees are essentials to all good gardens south of Philadelphia, and it may be a long time before they appreciate the many splendid things they can grow with ease. Wealth, however, unless properly expended, is but a poor substitute for knowledge and good taste. They are just beginning to wake up to the fact that good pictures make a house lovely and interesting, and that these form a special feature of attraction, so in time good gardens also may become the fashion.

From Philadelphia to Louisiana and Florida, America could possess quite as good and in some cases better gardens than we do in England, and yet how many, that have any claims to charm, exist. It is true that the old families of Georgia, Virginia and Louisiana are not wealthy, but they go on in a charming somnolent ignorance of the good things that might be theirs if they would only wake up and take notice.

In North America *M. denudata* grows as far north as Boston, but is not so successful there as its more hardy hybrids. Where the species grows in the gardens of Eastern North America it forms trees of 20–25 feet high, and in time will no doubt grow to a larger size. It would certainly do well from Vancouver southwards on the west coast, but on a recent visit there I did not see any specimens.

M. denudata comes in leaf as soon as the flowers have faded and fallen. The new shoots grow rapidly, and are complete about June or July. The species enjoys hot sun in July and August, when with well ripened wood abundant flowers are formed for the following spring. Like other Magnolias the species spread its gelatinous roots fairly deep and wide to the height of the tree, so

that it fends for itself in times of drought. Except in cases of newly planted specimens it is therefore unnecessary to water Magnolias. Planting and removal conditions are the same with this species as other Magnolias.

Occasionally well-rooted young layers of *M. denudata* can be purchased in this country, and at one time Messrs. Waterer Sons and Crisp, Mr. Reuthe, the late Mr. Slocock and Smith of Guernsey used to specialize in selling specimens. Of late years I have had very satisfactory results with plants of various sizes obtained from the Dutch firms of Van Nes and M. Koster and Sons, of Boskoop. These nurserymen specialize in Magnolias, and what is of the highest importance, move all their stock every year. The result is that when placed in our gardens the young plants never look back.

Magnolia denudata, var. *elongata*, Rehder et Wilson.

A tree 12–15 m. high, with half spreading branches and a trunk 1–2 m. in circumference. Leaves glabrous, oblong-obovate, shortly and abruptly acuminate, cuneate at the base, 12–15 cm. long and 4.5–6 cm. broad. Flowers

fragrant, white. Sepals and petals oblong-obovate or spathulate-oblong, 7–9 cm. long and 2–4 cm. broad. Stamens 15–18 mm. long; filaments red, 4–6 mm. long; connective elongate at the tip, acute. Gynaecium, including the staminiferous portion, 3–3.5 cm. long; stigmas longer than in the type. Fruit as in the type.

There are three fine specimens at Kew.

M. denudata, var. purpurascens = *M. diva*, Stapf. Veitch No. 688.

The only large tree of this so-called variety is in the possession of Mr. J. C. Williams at Caerhays Castle, Cornwall, where it is growing well and will probably make a fine specimen in years to come. Mr. Williams purchased it at the Coombe Wood sale, it being the only plant of this variety raised from seed (Veitch No. 688). Wilson Expedition, 1900–1901.

The flowers are a pale bluish rosy-purple with yellowish green anthers. Petals 10–11 larger and more lanceolate than typical *M. denudata*, $3\frac{1}{2}$ in. long, $1\frac{3}{4}$ in. wide. The young wood is of a pale greenish yellow. Mr. Williams has recently raised a few examples of this fine Magnolia from seed.

Mr. E. H. Wilson writing in the *Garden Magazine* (March 1920) gives an account of the comparative abundance of the species and this variety in Central China.

"The typical white-flowered Yulan (M. denudata, more generally known as M. conspicua) was introduced by Sir Joseph Banks from China into England in 1789. It grows wild in moist woods in the central parts of China, though this fact has only recently been made known. This form, however, is rare in a wild state, and that most usually found has rosy or reddish pink flowers and is very like the M. Soulangeana of gardens.

"The coloured variety has likewise been long cultivated in China and Japan; in the latter country it is known as 'Sarass-renge" and in Japanese nursery catalogues as 'M. obovata, var. discolor'; correctly it should be M. denudata, var. purpurascens. In 1900 I introduced this variety by means of seeds collected from wild trees in central China, and these plants are now flowering in England. However, I strongly suspect that it has been growing in western gardens for a much longer period, under some other name and identity obscured.

" Both the white and coloured varieties of the Yulan are handsome trees 50 ft. tall, with a trunk 8 ft. in girth, and ascending and spreading branches. Such trees I have seen in the forest of central China laden with thousands of flowers, and the spectacle they presented will never be forgotten. In the gardens of eastern North America examples of the white Yulan from 20 to 25 feet tall are known, and it is a deservedly popular tree. In regard to this Magnolia and also the one next mentioned, a point worthy of remembrance is that they have been propagated vegetatively by layering and grafting for we know not how many centuries. This does not appear to have impaired their constitution and accounts for plants less than a yard high flowering profusely."

M. DIVA

STAPF.

MAGNOLIA DIVA, Stapf. in Bot. Mag. 152, t. 9116 ; *M. denudata*, Desr., var. *purpurascens*, Rehder et Wils. in Sarg. Pl. Wilson. 1. 401, syn. exclus., et var. *elongata*, Rehder et Wils. l.c. 402.

A tree 5–20 m. high, with a trunk up to 2 m. in circumference. Leaves deciduous, obovate or

obtriangular, usually cuneate at the base, rounded or almost truncate at the tip and abruptly and shortly acuminate, up to 15 cm. long and 10 cm. broad, glabrous above, shortly villous on the midrib or finely appressed-hairy beneath, glabrescent; lateral nerves about 10 pairs; petioles slender, 1–2.5 cm. long, glabrous. Peduncles short, stout, densely grey- or tawny-tomentose. Flower-buds ovoid, densely grey- or tawny-villous. Flowers appearing before the leaves, fragrant, white or rose outside, saucer-shaped. Sepals and petals 12, subequal, obovate, much narrowed at the base, up to 8 cm. long and 3.5 cm. broad. Stamens 1–1.5 cm. long; connective acutely appendaged. Gynaecium narrowly cylindric; carpels numerous. Fruit cylindric or contorted by abortion of some of the carpels, up to about 13 cm. long.

Found in Western Hupeh and Eastern Szechuan. The type was collected by Wilson in woods at Changyang Hsien. Veitch, No. 688.

Related to *M. Campbellii*, Hk. f. et Thoms. and *M. denudata*, Desr., differing from the former in the obovate leaves and narrower petals, and from the latter in the larger, more open flowers with 12 sepals and petals.

There is little doubt that this fine Magnolia exhibits characters that do not appear in any of the forms of *M. denudata* hitherto seen in Europe, and it seems that Dr. Stapf is correct in describing it as a new species. Whether we shall obtain other wild specimens from China similar to the Caerhays plant is a matter of conjecture. If we do so it will eventually settle the matter of its specific identity. On the other hand, Mr. E. H. Wilson in a recent letter to me, states :

"J. C. William's plant was raised from my Veitch seed number 688 which was collected in the woods south of Ichang in the autumn of 1900. This beautiful Magnolia I have always regarded as the wild type of the common Yulan-tree. Trees with white and pink blossoms grow side by side in the woods of Hupeh.

"Stapf may be correct in regarding it as a new species, but 'I have my doubts.'"

There is force in Mr. Wilson's argument, as he alone has seen numbers of this plant growing in a wild state.

"This handsome variety, which I consider *M. denudata*, var. *purpurascens*, is the common Magnolia in western Hupeh and eastern Szech'uan and is fairly plentiful in moist woods and thickets

between 1000–1800 m. altitude. The bark on the trunk and older branches is light gray, rather smooth and peels off in small irregular flakes; the branches are ascending and spreading giving the tree a pyramidal outline but commonly in the large trees they are spreading, forming a flat-topped tree. The flowers are saucer-shaped and vary from rose-red without to rose or pale pink within; the stamens and the carpels are also rose-red in colour. In early April this Magnolia with its handsome fragrant flowers is a striking object in the woodland landscape.

" A colloquial name is ' Yin-tuen shu ' and the bark like that of allied species is valued as a drug known as ' Mu-pi.' "

Also we must consider the fact that there are at Kew three large plants—all quite distinct and not closely related to the Caerhays plant—the seed of these was collected by Wilson at the same time under the same number as *M. diva*, namely No. 688. Concerning these I have the following note from Mr. W. J. Bean, who refers all to the name *M. conspicua*, var. *elongata* :

" This plant was received from Veitch's under the same Wilson number (688) as the Caerhays'

tree. It is, however, really M. conspicua, var. elongata, of which we have two other specimens. The flowers of this plant are either pure white or have merely a faint tinge of purple at the base of the petals. One of them was really very fine this spring, but of course it has not the distinction and beauty of the Caerhays' one. I quite agree with you that the latter is quite distinct from the old M. conspicua, in fact, I told Wilson as much the last time he was here—his reply was that in English gardens we do not know the true wild conspicua, only the plant that has been cultivated and developed by the Chinese during hundreds of years' cultivation."

M. DOMINGENSIS.

URBAN.

Magnolia domingensis, Urb. in Fedde, Rep. Sp. Nov. 13. 447.

A tree, 3.3–4 m. high, with spreading branches; branchlets of the current year shortly and densely villous with dirty whitish or yellowish somewhat crisped hairs, with internodes 0.7–1.2 cm. long, those of the preceding year becoming glabrous, when dry brownish, smooth, plicately striate. leaves evergreen, coriaceous or thickly so, obovate,

acute or somewhat so at the base, very obtuse or rounded and usually slightly emarginate at the tip, flat or slightly recurved at the margin, 7–11 cm. long and 4–7 cm. broad, when young shortly and softly pubescent beneath, afterwards becoming glabrous; midrib more or less impressed above, lateral nerves 10–12 pairs, diverging at an angle of about 60°, prominent on both surfaces, venation closely reticulate; petioles about 2 mm. thick, villous like the young branchiete; stipular sheath up to 2.5 cm. long, densely and shortly villous. Peduncles about 3 cm. long, gradually thickened upwards, shortly villous. Flowers unknown. Fruit when young shortly ovoid; carpels about 14, very shortly yellowish-hairy; styles revolute. (J. E. Dendy.)

This species was found in Haiti, on the road to La Barrire Couchant, at an altitude of 925 m., by Nash and Taylor.

It flowers in July, and is related to *M. portoricensis*, Bello, and *M. grandiflora*, L., which are at once distinguished; *M. portoricensis* by its glabrousness and its shortly acuminate leaves, and *M. grandiflora* by the shape of its leaves and the very numerous carpels. (Urban.)

M. FRASERI

WALTER.

Walt. Fl. Carol. 159, and t. (1788); Bot. Mag. t. 1206; Sarg. Silva N. America. 1. tt. 11, 12.

Fraser's Magnolia.

M. auricularis, Salisb.

M. auriculata, Lam.

A deciduous tree of open spreading habit, 30–40 feet high. Leaves in a cluster at ends of branches, thin in texture, smooth on both sides, obovate, pointed, and with two distinct auricles at the base, extending below the point where stalk joins blade, pale green, 8–15 in. long and half as wide; stalk 2–4 in. Flowers 8–10 in. across, strongly but harshly scented like *M. tripetala*, on new shoots in late May or June. Sepals three, oblong-obovate, green, larger than petals and deflexed. Petals six, pale yellow turning milk-white; 3–4 in. long, narrowly obovate; at first erect and then spreading. Seeds red on a rose cone 4–5 in. long.

Fraser's Magnolia, which makes a nice lawn specimen where it has room to develop, is quite hardy in this country, and grows fairly rapidly. It was first discovered by William Bartram, the

naturalist, in S. Carolina in 1776, and introduced some ten years later by John Fraser, who between 1780 and 1810 sent many American trees and shrubs to England.

The species is easily distinguished from *M. macrophylla*, which also has leaves auricled at the base, by the thinner and smaller leaves. The flowers also are quite distinct.

This is the first Magnolia to open its flowers in Massachusetts in late May, and is quite hardy at the Arnold Arboretum.

M. GLAUCA

LINNAEUS.

L. Syst. Bot. Ed. 10. 1082 (1759); Lond. Bot. Cab. t. 245; Sarg. Silva N. Am. 1. t. 3. "Swamp Bay," "Laurel Magnolia," "White Bay," "Beaver Tree."

M. fragrans, Salisb.

M. longifolia, Sweet.

M. virginiana, L.

Var. *decidua* (deciduous).

Var. major, Sims (large leaves and flowers).

= × M. Thompsoniana, Sarg.

A small somewhat gaunt tree in our islands but reaching 50 feet in its native home. Leaves

oblong or obovate, $2\frac{1}{2}$–5 in. long, less than half as wide and blunt at the apex ; shining green and smooth above and bluish white and downy beneath, especially when young. Flowers, creamy-white, globular, sweetly scented. 2–3 in. wide and produced on the leafy shoots in small batches from mid-June till September. Fruit in a bright red cone and seldom ripened with us.

This charming and hardy Magnolia, deciduous in its northern range and semi-deciduous towards the south, is a native of the Eastern United States from Massachusetts to Florida near the coast, and is often found in swampy places. In the north it extends west to Texas. It was one of the earliest introductions from N. America and probably the first Magnolia seen in our islands since *M. grandiflora* did not come till early in the eighteenth century and *M. denudata* till much later. An example of *M. glauca* was known to have been cultivated by Bishop Compton at Fulham Palace Gardens before the end of the seventeenth century.

In North America the " Swamp Bay " grows to a height of 50 feet in favourable localities such as S. Carolina, but in our islands it is not so happy and will not tolerate swampy places.

M. PARVIFLORA

M. GLAUCA

In well drained sandy loams it does best and after slow advance may reach 25 feet with a thick trunk. At Leonardslee in a damp dell there is a fine old gnarled specimen, 35 feet high and 6 feet in circumference 3 feet from the ground. Doubtless there are larger specimens than this in the south-west, but I have not seen them. Sir George Holford informs me he has recently seen a very fine specimen at Fairlawn, Kent, which is 40 feet high and 6 feet in circumference of the trunk.

M. glauca is a slow grower, but flowers regularly after it is 8 ft. in height. It seems to thrive in a wood, but will grow equally well in well drained sheltered borders where there is plenty of sun.

The first flowers appear at the end of the new shoots and continue in small patches from June to September. The species is somewhat gaunt and not so attractive as many other Magnolias owing to its stunted habit and small flowers and leaves, which are never very conspicuous. It is a Magnolia, however, that should be included in every collection, as it is so hardy and regular in its flowering habit. Wherefore it possesses a certain character of its own. Even in this country plants introduced from the northern or southern

range of the species, continue to exhibit either a deciduous or semi-deciduous habit in the same garden and do not at once state definitely whether they belong to the arctic or the temperate zone. Plants in reality are much slower in acclimatization than birds or mammals and take longer to accept new conditions, whilst others never do so.

M. glauca is generally grown from seed, its upright growth making it difficult to layer. In N. America the species flowers in May-June, but with us the main show of blossoms is usually about the third week in July.

According to Emerson the plant affords a good tonic and warm stimulant, and was formerly used with great success in cases of chronic rheumatism, intermittent fevers and fevers and ague. Wilson says that the roots yield a yellow dye.

There is a variety described by Loudon as var. longifolia which is said to possess lanceolate leaves and to continue blooming longer than the type.

M. glauca, var. *pumila*. A dwarf form, seldom exceeding 3–4 feet in height, found only in Eastern Florida.

M. GLOBOSA

HOOKER F. ET THOMSON.

Hook. f. et Thoms. Fl. Ind. 77 ; King in Magnol. Brit. Ind. p. 208, pl. 50, 1891.

A small tree ; young branches rufous-sericeous. Leaves membranous, ovate, apex acute, or rounded and mucronate ; base rounded or minutely cordate ; upper surface smooth, except the puberulous midrib ; lower surface, especially when young, glaucous and sparsely covered with straggling rufous hairs ; midrib and 8 to 10 pairs of nerves rufous-sericeous ; length 5–8 in. ; breadth 3–5 in. ; petiole 1.5–1.75 in., rufous-tomentose. Flowers, white, solitary, pedicellate, 4–5 in. in diameter ; spathoid bract purple, fugaceous ; pedicel 2.5 in. ; sepals 3, obovate. Petals 6, like the sepals but smaller. Fruit ovoid-cylindric, 2.25 in. long, carpels elongate, slightly rufose with short, recurved, deciduous beaks.

A native of Sikkim at elevations from 9,000 to 10,000 feet. To the east it extends as far as Western Yunnan.

This species has never been introduced to our islands, but might prove hardy in the milder parts.

M. GLOBOSA var. SINENSIS

Rehder et Wilson.

A shrub, 2.5–5 m. high, with slender branches ; branchlets of the current year at first silky-hairy, becoming glabrous, those of the preceding year glabrous, smooth, pale ashen or yellowish-ashen, more rarely becoming dark-coloured. Leaves deciduous, membranous, at maturity subchartaceous, broadly obovate or elliptic-obovate, more seldom elliptic-ovate, rounded at the tip and somewhat shortly acuminate, more rarely subacute, at the base rounded, sometimes truncate, very rarely broadly cuneate, 10–20 cm. long and 6–16 cm. broad, the upper surface glabrous, dark yellow-green, reticulate when dry, the lower laxly villous, more densely silky-villous at the nerves, becoming glaucous, at maturity often becoming glabrous ; nerves 10–15 on both sides, usually distinctly forked in the uppermost one-third, conspicuous above like the midrib by their yellowish colour, raised beneath, the network of nervelets slightly raised ; petioles 2.5–4 cm. long, silky villous. Flowers as in the type, appearing when the leaves are well-developed, fragrant, white with a scarlet gynaecium,

cup-shaped, 12–15 cm. in diameter; buds ovoid. Fruit oblong-cylindric, 4.5–5 cm. long, and 1.5 cm. in diameter; peduncle fairly slender, 5–6.5 cm. long, becoming glabrous; carpels beaked.

In a letter, August 1926, Mr. E. H. Wilson states:

"In regard to Magnolia globosa var. sinensis. The advent of copious material from south-western China shows clearly that this variety does not really differ from the type. It is identical with what Smith called *M. tsarongensis* which, as you say, is synonymous with *M. globosa* of Hooker f. et Thoms."

M. GRACILIS

SALISBURY.

= *M. liliflora*, var. *gracilis*.
= *M. liliflora* × M. denudata or M. stellata?

A shrub or small tree with curious descending branches that bend upwards at the ends. Leaves, obovate, somewhat similar to *M. liliflora* but not so broad, $5\frac{1}{2}$ in. long, 2 in. across, acutely pointed at the apex, bright green and smooth above and beneath. Flowers, numerous at ends of new shoots in May, compressed and upright, bending

outwards at the end of the petals; petals six, purple outside with a darker purple hue up the centre, inside white, narrowly oblong and sharp pointed, 3 in. long, ¾ in. wide; anthers forming a small purplish rose rosette in centre; fruit in a green cone, seeds red, seldom ripened.

The origin of this rare and beautiful hybrid, sent out long ago by the Belgian nurserymen and now apparently lost to cultivation, is somewhat mysterious. One parent is without doubt *M. liliflora*, since in many characters the plant bears a resemblance to that species, but what the other parent was we do not know. It may be one of the numerous seedlings from M. Lennei or it may be a new hybrid with *M. stellata* as the other parent, since the long narrow shape of the petals suggests such a theory. After searching enquiries on the continent I am not convinced that we know anything about this plant, but the strongest presumption is that it originated in the nursery of Van Houtte about forty years ago.

M. gracilis is a very rare hybrid in English gardens, and I have not seen six examples in various gardens. Some fourteen years ago I obtained two specimens from Holland, and these have grown slowly up to 9 feet but are in good

health. They flower abundantly every year from April until late May, and I consider the plant one of the most attractive of the early hybrid Magnolias. In some ways it is like a smaller form of *M. Soulangeana*, var. *nigra*, but both its flowers and habit of growth are quite distinct, the curious looped-up somewhat thin branches giving it a character of its own. Visitors to my garden always stop, admire it and ask what it is, and I am attempting to layer one plant in the hope of increasing the stock since seeds seldom ripen.

M. GRANDIFLORA

LINNAEUS.

M. foetida, Sargent.

" Laurel Magnolia," " Bull Bay."

Tall evergreen tree of pyramidal habit seldom exceeding 80 feet in height. Leaves oval to oblong, 6–10 in. long, 3–8 in. wide ; leathery, glossy dark green above, covered beneath with a thick red-brown felt ; leaf stalk 1–2 in. Flowers very large varying in size from 8–12 in. across when fully expanded ; globular, fragrant and produced in batches from June to September in N. America and from July to October in Britain. Petals thick, concave, creamy-white, broadly

obovate, and 6–7 in. long. Stamens purple; fruit oval or ovate, rusty brown and pubescent, 3–4 in. long.

This fine species is a native of the middle and southern sections of Georgia, South Carolina, Alabama, Louisiana and the upper districts of Florida. It extends west to Texas. In its native home it attains a height of 75–100 feet with large oval or lanceolate coriaceous leaves varying in their breadth. Some possess rusty red under surfaces and others are quite smooth and green. In wild plants, too, the flowers vary much in size, some reaching 12 in. in diameter when fully expanded.

In the more southern sections of its habitat specimens begin to flower as early as the latter part of April and continue till the end of June. In Southern Europe the species is at its best in June, whilst to the South of England it seldom begins to flower until the middle of July and continues in some forms to put out blooms till the end of October. I have gathered a perfect flower 12 in. across on *M. grandiflora*, var. *Goliath*, the finest of all varieties, as late as November 6th. Each flower lasts from two to four days, according to the weather, when the

M. GRANDIFLORA VAR GOLIATH

petals fall and the cone-like fruit appears. This feature increases in size until September or October when the bright coral-red seeds are detached and hang on long filaments.

To propagate this Magnolia, the seed should be gathered when ripe and placed in dry sand until the following February. It should then be placed in wet sand for a week or ten days, when the resinous cuticle can be removed by washing. Then sow seed in a box or cold frame and as plants show second leaves, put off in small pots. In July these should be repotted into larger pots, and the young plants can be planted out the following year.

M. grandiflora is an easy plant to propagate. It layers very easily, and a friend whom I induced to put in one cutting in July, struck the plant after two years. It is now in my garden.

The wood of this species is white and much used in N. America for cabinet work.

There are a large number of varieties of this fine Magnolia in cultivation. *M. grandiflora*, var. *exoniensis*, is the one usually grown, but is by no means the best as it takes many years before it flowers, whilst it bears so close a resemblance to another form (whose name I have not

discovered) which never seems to flower at all that the gardener may pass years in hope and chronic disappointment. For the home counties the two best are *M. grandiflora*, var. *lanceolata*, with underneaths of leaves rusty red brown, and *M. grandiflora*, var. *Goliath*, with smooth glossy and rounded leaves and immense flowers. The variety that is said to have the largest flowers is *M. grandiflora*, var. *gloriosa*, common in N. America but rare with us, which has flowers 14 in. across. The leaves are brown on under surface.

In the forests of S. Lousiana where the species grows wild and to its greatest height, the majority of the lower branches die and fall off with the result that the trees do not possess an attractive appearance, as the flowers are only seen in the distance far away at the tops. To see *M. grandiflora* in perfection the gardener must visit Italy, especially the neighbourhood of the lakes, where there are grand specimens, the French Riviera and the district of Bayonne in the west.

You see fine examples at Cannes in the old hotel and villa gardens that have been planted for forty years or more. There are exceptional specimens in the Château Eleanore and the avenue of the Hôtel St. Charles, where there are

six, about 40 feet high with stems like beech trees. The climate of the Riviera seems to suit this Magnolia to perfection, the foliage is glossy and dark, the trees are well clothed with leaves to the ground, they flower abundantly here from June to August, and then set ripe seed. Most of the varieties we have come from Southern French gardens.

M. grandiflora is generally treated as a wall specimen in our islands, and as such flowers splendidly in all the southern counties. As a standard tree it does well south and west of London, but is very apt to have the branches broken in heavy falls of snow. When such a disaster occurs the plant has, like most of the Magnolias, a wonderful recuperative power and will often break away again into freedom. Our English gardens would be dull without two such wonderful wall plants as *Wistaria sinensis* and *M. grandiflora*. The latter is especially valuable as it often makes a fine show with its great scented blooms when shrubs that flower are getting scarce.

The following varieties of the species are known in cultivation :

Var. angustifolia (syn. M. Hartwegii, syn. var. salicifolia), Loudon.

Leaves narrow, lanceolate and wavy, 6–8 in. long, 1½–2 in. wide, with little or no felt beneath. Seldom grown and not of much merit.

Var. *ferruginea*, Sims.

Leaves similar to type with heavily red-brown-felted undersides. Flowers abundantly produced, even on standard specimens. Perhaps the best form for general use.

Var. *gloriosa*, Hort.

A form with broad leaves and the largest flowers, said to be as much as 14 in. across when expanded, somewhat rare in England.

Var. *Goliath*, Hort.

Leaves rather short, rounded and blunt at the apex, light glossy green and smooth beneath.

Flowers very large and often produced till frost comes in November. I think this fine form was first sent out by C. Smith of Caledonia Nursery, Guernsey. I possess three large plants as standards in a sunny shrubbery, and they flower well every autumn but are occasionally broken by snow.

Var. *lanceolata*, Aiton, syn. var. *exoniensis*, Loddiges.

The "Exmouth Magnolia" is perhaps better known than any other form of *M. grandiflora*,

and thousands of plants cover the walls of houses in the neighbourhood of London, and the west. Leaves narrower than the type. Lanceolate or oval, rusty coloured beneath. Flowers similar to type. As a standard tree it is apt to be somewhat erect and fastigiate.

It is said to have originated in the garden of Sir John Colliton at Exmouth in the eighteenth century. At Exeter Mr. Peter Veitch has made it a speciality and distributed large numbers. It is said to be hardier and to flower in a younger state than other varieties, but I have not found this to be the case.

There is a variety of *M. grandiflora* which bears a close resemblance to var. *lanceolata* but possesses a glabrous pale green underside to the leaf. The reader will do well to avoid planting this form, as it never flowers or at least hardly ever. It is often sent out by nurserymen as var. *exoniensis*.

Var. *undulata*, Hort.

A variety with broad leaves which have wavy margins.

M. grandiflora is largely cultivated in Mexico where it is known as "Magnolia" and "Semiramis." According to Goyena it is also cultivated

in Nicaragua, where it is known as "Magnolia." It is known to have been in England in 1737, but was probably introduced some time before that date. It is one of the few American trees introduced to the Orient. It grows well in the public gardens at Shanghai, China, and it is freely cultivated in both nurseries and private gardens in Japan. I have seen it doing well at Cape Town, and it has been recently introduced both to Australia and New Zealand.

M. GRIFFITHII

Hooker f. et Thoms.

Hook. f. et Thoms. Fl. Ind. 1. 41; King in Magnol. Brit. Ind. pp. 209–210, pl. 48, 1891.

A large tree; young branches densely covered with deciduous, yellowish silky hairs. Leaves subcoriaceous, elliptic-oblong or elliptic, very shortly acuminate, minutely undulate; the base subacute; upper surface smooth, except the sometimes pubescent midrib; lower surface at first sericeous-tomentose, finally pubescent or glabrous, nerves 16 to 20 pairs, prominent beneath; length 9–13 in., breadth 4–5 in.; petiole 0.75 in., stout. Flowers solitary, leaf-

opposed, 3.5 in. in diameter when fully expanded; buds enveloped in a spathoid bract, which like the pedicel is covered with whitish, silky, adpressed hair; pedicel 1.5–2 in. long. Sepals 3, narrowly oblong, obtuse; petals 6, like the sepals but smaller. Gynaecium much longer than the stamens, vermicular.

Fruit 3.5–6 in. long; carpels without beaks 0.5 in. long, and nearly as broad, rugose externally. One, rarely two, seeds.

Mr. S. E. Peal furnished the first complete material from the Sibsagar district in Assam, sending it to King, who described the species more fully than Hooker. At first it was considered to be a Manglietia (which has 6 ovules), but King found it to possess only 2 ovules, which brings it within Magnolia. The habitat of this species is Assam near Sudya (Griffith); Sibsagar (S. Paul); Makum Forest (G. Mann); Sylhet (Wallich); Cachar (G. Mann). Vernacular name "Bor Gahori Soppa."

It has not been introduced to Europe.

M. GUATEMALENSIS

DONN.

Magnolia guatemalensis, Donn. Sm. in Bot. Gaz. 47. 253.

A tree, 6–8 m. high; branchlets glabrous. Leaves evergreen, uniformly coloured, elliptic, somewhat obtuse at the base, acute and usually abruptly and shortly cuspidate at the tip, 12–16 cm. long and 5.5–8.5 cm. broad, glabrous above, sparsely chestnut-hairy or finally glabrous beneath; midrib tuberculately wrinkled beneath, lateral nerves close, 13–16 pairs, interspersed with scarcely any smaller ones; petioles channelled at the apex, otherwise terete, 1.5–2 cm. long, glabrous; stipules of the unexpanded leaves 8–15 mm. long, chestnut-pubescent all over. Peduncles 3 cm. long, glabrous. Sepals thinly coriaceous, oblong, obtuse, 5-nerved, 5.8–6 cm. long and 2.1–2.2 cm. broad, at the very base 0.6–0.8 cm. broad, moistly pellucid-dotted. Petals coriaceous, snow-white, spathulate-obovate, obtuse, 6.5–7 cm. long and 2.9 cm. broad, at the very base 0.2–0.3 cm. broad, opaque, glabrous. Stamens very numerous, about 95, inserted upon an axis, 6 mm. long and 4 mm.

in diameter. Gynaecium with a fusiform axis 25 mm. long and 9 mm. in diameter at the middle; carpels about 22–24, dorsally sulcate; styles recurved, 4 mm. long. Fruit unknown. (J. E. Dendy.)

This species was found in Guatemala, in deep swamps near Tactic, in the Department of Alte Verapaz, at an altitude of 1550 m. by Von Tuerckheim.

M. GUSTAVII

KING.

Magnolia Gustavii, King in Ann. Bot. Card. Calcutta, 3. 209 and 6. 61.

A tall tree, quite glabrous; branchlets dark-coloured, slender, not lenticellate. Leaves membranous, minutely reticulate on both surfaces, oblong-oblanceolate to narrowly elliptic, much narrowed and often unequal at the base, acuminate at the tip, 12.5–17.5 cm. long and 3–4.4 cm. broad, shining above, dull and paler beneath; lateral nerves 10–14 pairs; petioles about 0.6 cm. long. Peduncles slender, 3.7–5 cm. long. Flower buds oblong-ovoid, 3 cm. long, enclosed in a coriaceous, broadly ovate, smooth, spathaceous bract. Flowers appearing after the leaves, 7.5–10

cm. in diameter. Sepals 3, membranous, oblanceolate, obtuse, up to 4.5 cm. long and about 1 cm. broad. Petals 6, coriaceous, subequalling and resembling the sepals. Stamens little more than 12.5 mm. long. Gynaecium densely imbricate; carpels sessile, smooth; styles recurved. Fruit club-shaped by abortion of lower carpels, 6.2–10 cm. long and 3.7 cm. in diameter; ripe carpels sessile, very slightly compressed, suborbicular, about 1.9 cm. long, glabrous, not beaked. (J. E. Dendy.)

First found in Upper Assam, in Makum Forest, at altitudes of 300–600 m., by Mann.

Vernacular name: "Koroki Soppa."

Approaches *Michelia Cathcartii*, Hk. f. et Thoms., very closely in many respects, notably in the leaves, which are, however, longer, more minutely reticulate, and always glabrous. The flowers are also very similar, but in *M. Gustavii* the sepals and petals are narrower and the stamens much shorter. Moreover, in *Michelia Cathcartii* the gynaecium is stalked. *M. Gustavii* occurs at low elevations (300–600 m.), whereas the Michelia is found between 1500 and 2100 m.

M. HENRYI

DUNN.

MAGNOLIA HENRYI, Dunn in Journ. Linn. Soc. 35. 484; *Talauma Kerrii*, Craib in Kew Bull. (1922), 226.

A tree, 6–8 m. high, glabrous except for a few appressed hairs on the young branchlets and lower surface of the leaves; branchlets yellowish, at first sparingly appressedly hirsute, soon becoming glabrous. Leaves evergreen, coriaceous, strongly reticulate on both surfaces when dry, obovate-oblong, broadly cuneate or rounded-cuneate at the base, obtuse or acuminate at the tip, 20–65 cm. long and 7–22 cm. broad, paler with a few appressed hairs beneath; midrib and lateral nerves prominent beneath, lateral nerves 14–20 pairs; petiole stout, thickened at the base, 3–11 cm. long. Peduncles curved, 10–12.5 cm. long, marked with distant annular scars. Flower-buds ovoid, glabrous. Sepals 3, coriaceous, oblong, 5–6.3 cm. long. Petals 5–6, white, resembling the sepals. Stamens numerous, about 14 mm. long; filaments short; connective shortly produced, obtusely triangular or subtruncate. Carpels tuberculate, glabrous. Fruit cylindric, 10–12.5 cm. long and 2.5–3.8 cm. in

diameter; ripe carpels ovoid, wrinkled, shortly beaked. (J. E. Dendy.)

Occurs in Southern Yunnan and Northern Siam. Originally discovered in Yunnan in the forest near Szemac at an altitude of 1200 m. by Henry. In Siam it was found by Kerr in evergreen forest at Doi Tiu at an altitude of 700 m.

In habit the species resembles *M. pterocarpa*, Roxb., to which it is most closely related, but differs in the shortly beaked carpels, and in the annular scars on the peduncle being distant instead of crowded.

Kerr's specimen from Siam was described by Craib in the absence of fruit as *Talauma Kerrii*, but is indistinguishable from Henry's plant, whose fruit is that of a Magnolia. Henry saw only one tree, and that was in wretched condition. This suggested to Dunn that the tree might be a sole survivor, an idea happily dispelled by Kerr's rediscovery of the species, which, if introduced, might prove hardy.

M. HYPOLEUCA

Bot. Mag. t. 8077. SIEBOLD.

A large deciduous erect-growing tree from 50–100 feet high with a trunk 6–9 feet in girth.

M. HYPOLEUCA

The leaves are large and seem to vary according to season and in individual plants. They are produced in a cluster at the end of the shoot, being leathery obovate 10–18 in. long and 9 in. wide. They taper at the base to a stalk 1–2½ in. long; glaucous green to green above, bluish white and slightly downy beneath.

The large flowers, somewhat like a water-lily in appearance, are produced in early June; 8 in. across, strongly scented, sepals and petals creamy white turning almost lemon yellow as they fade, outer petals sometimes flush with rose; stamens bright purplish red forming with the yellow-red anthers a conspicuous circular rosette, 3 in. across the centre of the flower. Fruit brilliant red, cone-shaped, 5–8 in. high.

This fine species, which in its juvenile stages has a somewhat gaunt appearance, makes in time a noble tree, and if it finds the right conditions, a sheltered sunny spot in a deep sandy loam, may in this country rival the grand specimens in the forests of Yezo in Japan, where the species often reaches 100 feet in height.

I think there must be at least two if not three varieties of this Magnolia in cultivation. I had one from Messrs. Veitch of Coombe Wood, which

possesses very dark leaves and a spreading habit. It has been twenty years in its present situation, and refuses to grow (after 18 feet) or to flower. Six other specimens I received from Japan (seed from Yezo) (4 feet high) in 1912 have grown with remarkable vigour and are now handsome trees 35 feet high which flower and grow annually. These have all the appearance of a more vigorous and beautiful race than that originally imported.

It is not too much to say that this is a Magnolia that should be in every garden because it is hardy throughout England, its flowers are of great beauty as well as size, and best of all it breaks into bloom just when we have lost the flowers of the early-flowering hybrids. Towering above Magnolias Watsoni and parviflora, in flower at the scarce season, it makes a grand specimen tree and when covered with its lovely richly scented blooms the species has few rivals amongst flowering trees. Gardeners, even the most experienced, have not yet grasped the possibilities of *Magnolia hypoleuca* when it grows well and reaches fair proportions, because good specimens of this species are at present very rare; moreover, it is a tree that is a failure when grafted, so that to ensure success it is necessary to procure it on its own

M. HYPOLEUCA
On the left M. kobus var borealis
Comptons Brow

roots. In cultivation Mr. Wilson recommends for it a semi-shaded position. This may be correct for it in the case of its native habitat, but plants in woods in this country do not seem either to grow or flower with the same vigour as they do in well sheltered sunny positions. At least that is my experience in my own garden, and when I have noticed it looking well elsewhere.

What applies to China, Japan and Florida will not do for Sussex. To try and grow in England *Magnolia macrophylla* or *Abies Menziesii* in the kind of places they grow in Louisiana and Alaska respectively means failure. So it is with most things, and we have to alter our cultural conditions to suit our curious climate.

M. hypoleuca is a tree highly valued by the Japanese owing to its light soft and smooth-grained timber almost free of knots. It is used principally in thin sheets for lacquering. The species was introduced in 1893 (Nicholson) and first flowered in Mr. Chambers' garden at Haslemere, I think in the year 1905, and at his invitation I went to see it. Shortly afterwards this tree was struck by lightning and destroyed and another, which is now a fair-sized tree, put in its place.

Kudo (writing in Jap. Journ. Bot. 2. 215) remarks :

" In Yezo forests *Magnolia hypoleuca* is one of the most beautiful trees, and in early autumn its brilliant scarlet cones of fruit standing out on the branches are particularly striking. It is widely distributed in Yezo as far north as the Southern Kuriles."

The range of the species in China does not seem to be well known, though Wilson found it there (Hupeh) and introduced plants.[1] It is possible that it overlaps and interbreeds with *M. officinalis*, to which it is very closely allied.

Wilson (Garden Mag. March, 1920) states that *M. hypoleuca* is widely distributed in the forests of Japan and that it occurs from the south to the north, where it is known under the native name of " Honoki." It is especially abundant in Hokkaido, and with *M. kobus*, var. borealis, reaches the most northern geographical limits of the family (*i.e.* Sakhalin and the Southern Kuriles). Wilson also states that in China the bark and dried flowers of the Magnolia make a highly valued tonic medicine.

[1] Wilson's plants may be *M. officinalis*.

M. JAVANICA

KOORD ET VALETON.

Magnolia Javanica, Koord et Valeton in Meded. Lands Pl. 17. 315; and in Atl. Baum. Java, 4, t. 800, Koord-Schum. Syst. Verzeichn. 1, § 1, Fam. 95, 2; *M. Pealii*, Koord et Valeton, in Meded. Lands Pl. 17. 148 (not *M. Pealiana*, King).

A tree of moderate height, branchlets dark-coloured, terete, slender, with sparse, rounded lenticels; leaf-buds terete, elongate, whitish-woolly, becoming glabrous. Leaves evergreen, coriaceous, conspicuously and very finely reticulate and decurrent into the petiole at the base, shortly epiculate at the tip, 18–20, sometimes 22 cm. long and 6–7.5 cm. broad, in the living state intensely green on both surfaces, glabrous and somewhat shining above, shortly pubescent when young and finally glabrous beneath; lateral nerves 13–17 pairs, prominent beneath; petioles short or very short, 0–1 cm. long, shortly pubescent. Peduncles 7.5 cm. long, glabrous. Flower-buds somewhat mucronate about 2.5 cm. long, glabrous. Sepals 3, subcoriaceous, oblong-elliptic. Petals 6, fleshy, narrowly oblong, acute,

the inner ones thicker and shorter. Stamens about 20, acute. Carpels about 20 in 5 rows, glabrous, on an axle 2.5 cm. long ; styles slender, deciduous. Fruit contorted, about 5 cm. long ; ripe carpels not beaked, valves coriaceous, warted, about 13 mm. long. Seeds 1–2. (J. E. Dendy.)

Known only from Western and Central Java, where isolated trees were discovered by Koorders, in lofty, shady, evergreen forest on very fertile, damp ground. Tender.

Flowers June-August. Fruits July-August.

Vernacular names : " Tjempaka-gunung," " Manglit " (the true Manglit is *Michelia velutina*, Bl., which it resembles in habit).

Related to *M. Pealiana*, King, and *M. Gustavii*, King, both from Assam. Koorders and Valeton originally referred it to *M. Pealiana* (misspelling it " Pealii "), but later decided that it stood between the two Assam species. From *M. Pealiana* it differs in the unstalked gynaecium, the shorter fruit, and the glabrous flower-buds ; from *M. Gustavii* in the larger, coriaceous leaves, which are hairy beneath when young. *M. javanica* also differs from both in the smaller flowers and longer stamens.

M. KOBUS

M. KOBUS

De Candolle.

M. kobus, DC., Syst. 1. 456 (1818) ; Bot. Mag. t. 8428 ; Sarg. Forest Fl. Jap. t. 3.

M. Thurberi, Hort.

A large deciduous tree in its native home up to 70 or 80 feet high with trunk 6 feet or more in girth ; of quick growth and pyramidal form when young, but eventually somewhat round-headed. Young branches, somewhat slender, the bark and leaves giving an aromatic scent when crushed ; winter leaf-buds downy. Leaves obovate 4–5 in. long and contracted at apex to a short point, tapering at base to a short stalk. Flowers, white, 4 in. in diameter when expanded in the sun ; petals, six, obovate ; sepals, small, soon falling off ; flower-stalk downy. Fruit first in small cone ; seeds red.

M. kobus is found throughout Central and North Japan.

In this country the true species grows very slowly and seldom flowers until it is 8–9 feet in height. In its native home it is a rapid grower, but with us it is a " sticky " plant and far inferior to the northern form var. *borealis*, which is one of

the most vigorous growers of all imported Magnolias. But in time the original species will grow to fine proportions with us. There is a grand tree[1] in a private garden at Newry, Ireland, which is said to be over 30 feet in height and which breaks into a mass of bloom every spring.[2] There is another fine tree about 20 feet high and now rounded at the top, in Mr. Williams's garden at Caerhays, and there are a few others of this size throughout the country. On the whole, however, it has seldom been imported or grown with success although most nurserymen stock it in their catalogues, whilst the Japanese frequently use it as a stock on which to graft *M. stellata*.

Mr. Bean thinks that we probably owe the introduction of this species to Maries.

M. kobus, var. *borealis*, Sarg. Trees and Shrubs, 2. 57.

This variety is a native of North Japan, and is found in the "depths of the forests or by the sides of streams, and is very showy in early spring

[1] This plant might be var. *borealis*.

[2] Planted by T. Smith in 1897. Bole at 3 ft. from ground 24 in. 36 in. at the base. The spread of branches has a circumference of 70 feet.

M. KOBUS VAR BOREALIS

with its wealth of white blossoms which appear before the leaves" (Kudo in Jap. Journ. Bot. 2. 215). As a garden plant in this country it is in every way far superior to the form originally introduced. I planted six small specimens (introduced from N. Japan) in 1912, and to-day these are now only 25 feet in height and 25 feet across and still advancing rapidly in size every year. After reaching 9 feet they flowered abundantly every year in March-April, and are certainly amongst the most successful plants I have introduced. After seeing the variety var. *borealis* one would not dream of waiting years for the true species to display itself. The flowers are much the same, but the leaves $5\frac{1}{2}$ in. by $2\frac{1}{2}$ in. are slightly larger than the type. One of my plants is now beginning to be roundheaded at the top, and doubtless will not advance greatly in height.

Unfortunately this is a very difficult plant to obtain except by introduction. Seed does not seem to ripen [1] and some twenty layers I have put down have all died. Doubtless if we had a really hot summer so hardy a plant would ripen its seeds. Those who love Magnolias and the

[1] Seed ripened well in Oct. 1926, and I have hopes of raising some young plants.

magnificent effect they give in spring should leave no stone unturned to obtain a few plants of *M. kobus*, var. *borealis*. It is as indispensable in a collection of shrubs as *M. denudata*. Its flowers, alas, are easily destroyed by frost, and as they do not arrive in consecutive groups like some early Magnolias, one night of 6° of frost may destroy the whole effect for the year.

M. kobus is evidently closely allied to *M. salicifolia*. It flowers at the same time, but its young wood and leaves when crushed do not give out so delicious a scent as the last named species.

M. LENNEI

VAN HOUTTE.

M. Lennei, Van Houtte, Fl. des Serres, 16. t. 1693-94

= *M. liliflora*, Desr., × *M. denudata*, Desr.

If trained with care a tall bush up to 35 or 40 feet high, but usually a straggling bush of many irregular branches of varying height and form. Leaves in the best form, obovate with sharp pointed apex and 19 pairs of nerves alternately broad or narrow, tapered at both ends on a stout leaf stalk 1 in. long; length 10 in.,

breadth 5½ in., rich green, smooth above and beneath. Flowers, broadly obovate, and the whole concave and spoon-shaped ; petals 4–6 in. long and 4 in. wide, rich rose-purple outside and white inside. Flowers commence in groups in April and last through May. Sometimes there is a second blooming with smaller flowers in the autumn. Fruit green and bent in a long cone. Seeds red.

M. Lennei, one of the finest and most satisfactory of all Magnolias, is said to have originated [1] in Lombardy, and is probably an accidental hybrid like M. Watsoni. It was seen by an Erfurt nurseryman named Topf in the year 1850 and by him introduced to Germany. Subsequently it was figured by Van Houtte, the Belgian nurseryman, and cultivated and distributed by him to many gardens some sixty years ago.

Of these original plants but few seem to be still in existence. In England there is a fine tree at Enys in Cornwall, and there are some large specimens, certainly forty years old, in Devon and Dorset. The largest specimen, one sent out

[1] Wilson gives the origin to Boskoop, Holland, but I do not think this is correct.

by Van Houtte sixty years ago and planted by Mr. Jesse Busby (who is still alive), in the Château Eleanore at Cannes, is the finest I have seen and measured. Its multiple main stems reach a height of nearly 40 feet, and when I saw it in flower in March 1926 it was in perfect health and beauty. There seems to be little doubt that with some slight attention these fine hybrid Magnolias may reach an age equal to that of *M. denudata*, of which there are several specimens in good health over 100 years old. This fine specimen at Cannes, however, is not the best form of M. Lennei. Its flowers are much smaller than other and younger plants noted in many gardens. Wherefore I should always advise prospective purchasers to view plants of this fine hybrid before selection as many seedlings from M. Lennei have been distributed which do not compare favourably with the best examples.

Recently in going over continental stock I have been struck by the enormous variation in plants of this hybrid as well as M. Soulangeana. Some have fine large rose-purple flowers and very big leaves, and these range between this type and others with pure white flowers (of the shape of M. Lennei) or examples with very small

M. LENNEI

and dark flowers almost like M. Soulangeana, var. nigra.

It would seem, therefore, that the Dutch and Belgian nurserymen had at some time sown seedlings (of which we know M. rustica rubra is one) which may themselves be crosses with adjacent plants, such as *M. denudata*, M. Alexandrina, M. Soulangeana, etc., and have reproduced by grafting or layering from these. Thus they have invented a second-cross race which in nearly every case is not so good as the first cross. Wherefore I think this note of warning is necessary in the case of so valuable a plant as true M. Lennei in order that the gardener may not meet with disappointment. Recently I visited a flower show in the Riviera and saw some twenty large Magnolias exhibited by a local nurseryman. These had various names tacked on to them, but the whole lot, ranging from purple to pure white, had the leaves and form of flowers of M. Lennei, and were doubtless cultivated forms from indifferent seedlings.

Some writers, judging by the size and beauty of the flowers of M. Lennei, have gone so far as to give *M. Campbellii* as one of the parents of this grand hybrid, but there seems to be no reason

for this suggestion. It is merely an exceptional cross between *M. liliflora* and *M. denudata*, whose characters it exhibits in a marked degree. One plant of M. Lennei will straggle all over the place (if you allow it to do so) like *M. liliflora*, whilst another will exhibit quite an arborescent character like *M. denudata*. Under any circumstances we have to keep a watchful eye on M. Lennei and not allow it to do exactly as it wishes. Its branches are brittle, sappy and long, and when its large leaves are weighted with rain or snow it is apt to be broken to pieces like *robinia hispida*.

Accordingly it is necessary to stake thoroughly, with good oak or creosoted posts, the main stem or stems according to habit of growth. Having given your plant firm support the side branches should be shortened back in July to within 4 to 6 feet of the main stem or stems. These in turn will break well and often in an upright manner, thus clothing the plant well in time and giving an abundance of flowering shoots for the following year. This treatment is absolutely necessary in the case of M. Lennei and its fine child M. rustica rubra, for to allow them complete freedom of growth leads both to ugliness, waste

of ground space, and eventual disaster in rough weather.

M. Lennei commences to flower in mid-April and continues to put forth batches of its grand flowers until the middle of May. It is generally at its best about May 1st, but much depends on the season. In the south of France it is in full flower about March 15th, and I have seen it in flower in Perthshire, about as far north as it will grow, in June. Except perhaps *M. Campbellii* at its best, nothing can exceed in beauty a well-grown plant of M. Lennei.

Some prefer M. rustica rubra, as in the best examples of that fine Magnolia a certain strong tint of red is seen, but in the case of M. Lennei the flowers are larger and bolder and the habit and foliage is much better. Unless care is taken M. rustica rubra is a leggy plant, ill furnished and apt to be gaunt.

M. Lennei wants careful placing and plenty of room must be given for its ultimate development. Specimens look well on a lawn or when grown as a small tree at the back of a sheltered or woodland border. The plant layers easily and can be grown from seed, but this method is not recommended. Most of the Dutch and

Belgian stock is grafted on various hardy Magnolias.

M. LILIFLORA

DESROUSS.

M. liliflora, Desr. in Lam. Encyc. Reth. Bot. 3. 675 (1791); Bot. Mag. t. 390.
M. discolor, Vent.
M. purpurea, Curt.
M. obovata, Thun.

A large deciduous bush, 8–12 feet high, with long straggling branches. Leaves ovate, oblong or obovate, 4–8 in. long, 2–5 in. wide; tapering abruptly to a point, dark glossy green above, downy beneath. Flowers with petals 4 in. long, 2 in. wide, erect, obovate, vinous purple and white outside, and white inside, seldom opening wide. There are several intermediate forms between the species and M. Soulangeana, var. nigra, which are probably hybrid seedlings. A variety known as var. *purpurea* is probably one of these as it has larger and darker flowers.

This fine and hardy Magnolia was introduced from China in 1790 by the Duke of Portland, and is a native of Central and West China. Its hardiness and floriferous qualities recommend it to the gardener, but on the whole it is not grown

to any extent as its sprawling habit and upright flowers are not so attractive as many of the species or the hybrids between this species and *M. denudata*.

It does well in the open border, but should be severely pruned and guided into some shape, otherwise it spreads in a drooping mass over a large area. On a wall when pruned and kept in shape it is better and will run up to a considerable height.

In Derbyshire I have seen a plant, over 20 feet high. The flowers develop in groups from mid-April till early June, and are welcome because they give a cheerful picture over a fairly long period. Like M. Soulangeana, var. nigra, the later flowers are accompanied by full-sized leaves.

It is a good plan to keep one or two of the main branches upright by staking ; otherwise the plant may develop into an unsightly jungle of crossing branches all heaped near the ground.

Travellers have told us little of *M. liliflora* in its native haunts.

M. MACROPHYLLA

MICHAUX.

M. macrophylla, Michx. Fl. Bor. Am. I. 327 (1803); Bot. Mag. t. 2189.

A deciduous tree from 30 to 50 feet high with open spreading branches and a trunk from 1 to 1½ feet in diameter, and 5.6 feet in circumference. Leaves the largest of all Magnolias from 15 to 36 inches long (Wilson says up to 3½ feet) and from 10 to 15 inches wide, oblong-obovate and widest in the middle, somewhat blunt at the apex, and broadly heart-shaped or auriculate at the base; bright green and smooth above, glaucous-white and finely pubescent beneath; leaf stalk 3½ in., stout, pale green. Flowers when wide open 10–15 in. across, slightly fragrant, creamy-white with a purple blotch at the base of the inner petals. Petals six, 7 in. long, 2½–3½ in. wide; centre, 3 in. long, sandy-cream with brown points; anthers, greenish-yellow. Fruit round, egg-shaped, rose-coloured, 3 in. long.

This magnificent Magnolia is now a rare tree in a wild state. Formerly it was distributed from North Carolina to middle Florida and

M. MACROPHYLLA
The tree at Claremont, Esher

westward to south-east Kentucky and south through Tennessee to mid-Alabama. Now it seems to be extinct in many of its former haunts, though it is still found in some numbers in Louisiana where it grows intermixed with *M. tripetala*, a species with which it is frequently confused.

It seems to have attained its maximum size in sheltered valleys and forest glades on the limestone of North Carolina, seldom exceeding 40 feet in height or 3 feet in trunk girth.

M. macrophylla was first discovered by the elder Michaux in the mountains of S. Carolina in the year 1759. It was introduced to Europe in 1800, but there is little doubt none of these plants have survived. In fact, as far as I have been able to ascertain, there were till recently only four good examples in Europe, though there may be some in French and Italian gardens of which I have no information.

The only large specimen in England is one growing on a wooded slope of deep sandy loam at Claremont, Esher, where it was planted during the life of the late Duchess of Albany. It is in good health, and when I last measured it (June 23rd, 1925) it was 40 feet high with wide

spreading branches. The circumference of trunk 5 feet from ground was 5 feet. Many of its leaves were 27 in. long, and the whole tree was covered with its great flowers. I measured two flowers over 15 in. across (see figure). I find the average length of leaf is 20 in.

Until recently there were two large trees of *M. macrophylla* in Italy, but now there is only one on the Isola Madre near Stresa, Lake Maggiore.

With regard to the big specimen at the Grand Hotel, Stresa, this was cut down in 1925 owing to the enlargement of the building. Concerning it, Mr. A. Moranzioni writes to me (May 1926): "Our tree of *M. macrophylla* which was recently destroyed, was imported from N. America in the year 1847. It was 25 metres high and 90 cm. in breadth. The leaves were 60 cm. and the flowers 30 cm. across. It was a magnificent tree and the only one in Italy besides the one now on the Isola Madre which was of the same size."

It is a thousand pities that this splendid specimen was removed. Any true gardener would have destroyed the Hotel.

Sir William Lawrance, who possesses a tree of about 14 feet in his garden at Dorking, showed

a flower at the R.H.S. on June 23rd, 1926. This created quite a little sensation, as few gardeners had ever seen a specimen.

I first fell in love with this Magnolia in Messrs. Veitch's nursery at Coombe Wood, where there was a delightful little tree about 20 feet high, in the open ground in 1911. Its great leaves and flowers fascinated me, and I determined to leave no stone unturned until I had obtained such a noble plant for my own garden. Every year I used to go to Veitch's to gaze upon this gem when it was in flower, and when the sale of plants in this fine garden took place Mr. Harrow kindly promised that I should have the tree when autumn moving took place. However, just before the sale I received a message from Mr. Harrow asking me if I would resign my claim to the plant in favour of Kew, which possessed no specimen. Accordingly I did so, but alas, the Magnolia never survived the move but died shortly afterwards.

M. macrophylla can easily be raised from seed, but there were no seeds in this country.[1] It seems to be very difficult if not impossible to layer,

[1] A few have been raised recently by Mr. Wilding and Mr. White of Sunningdale.

whilst grafting is a complete failure. Accordingly I tried various nurserymen in the States until at last I obtained a promise from a nurseryman in Philadelphia to send me some plants on their own roots. In two years he sent me a dozen, and I obtained twelve more in subsequent years for friends who were anxious to include it in their gardens.

Now it cannot be said with truth that all of these are a success, in fact, the majority are not. Because a plant of this species does well one year it does not follow it will do so the next. One season individual seedlings will make splendid growths, and you say to yourself now at last there is a good start. The next spring, in spite of a mild winter, nearly the whole of the previous year's growth may be dead, and the plant has to begin all over again. *M. macrophylla* is a disheartening plant in its juvenile years, but when it once reaches 10 to 15 feet it seems to achieve a certain hardihood which will carry it on with some degree of certainty to maturity. Of course, I only speak of my own experience in rather a cold part of Sussex, for the plant grows much better as we go farther west or south. Young plants in Mr. L. de Rothschild's garden at

Exbury are looking very well, and I have no doubt the species would be a certain success in Dorset, Devon and Cornwall. Nevertheless I have managed to coax one plant to grow to 14 feet, and even had two lovely flowers on it in 1923. Then a summer gale blew it down (my own fault for not attending to the stake, which was rotten), and it has taken three years to recover from that injury. Another plant of 12 feet is also growing well.

The failure to grow *M. macrophylla* successfully is not so much the fact that our winters are too cold, because the species even flourishes in the Arnold Arboretum at Boston where winters are far more severe than the worst we ever experience in England. It must be the precocious flow of sap being nipped and the whole plant discouraged just when it imagines spring has come. Be that as it may, we should not give up hope in trying to grow this wonderful tree, for if one specimen can grow to perfection at Esher in Surrey, where it is as large and in as good health as plants in Carolina, it is only a matter of time and putting in a fair number, and we shall also be successful.

M. macrophylla grows late into the autumn and

may have its sappy growths injured with November frosts, but not always. Some seasons there are no frosts at this season in the south of England, and then growths may be ripened. With such immense leaves and brittle wood the species should be planted in a very sheltered spot, in a wood but where the soil is deep and well drained and where the sun can get at the leaves and wood for a certain period during the day. Wherefore my advice—if worth anything—is to put in a number of this fine Magnolia and some day your son may either think his father a clever fellow for introducing so fine a plant or a perfect nuisance for having been the cause of bringing a crowd of visitors and gardeners, who, with a little forethought, might have had just as good a thing themselves. In fact, with the best intentions it often is just as easy to be popular as unpopular because all of us are at the mercy of the individual *ego*.

The best way to raise up stock of this Magnolia is from imported seed. If procured fresh and sown at once, the seeds germinate freely. Mr. Wilding, Mr. P. D. Williams and other experienced gardeners, have been quite successful in raising this Magnolia, which should be planted

M. MACROPHYLLA

freely in all gardens of mild temperature. It should not be placed in swampy areas but in well drained and perfectly sheltered spots where the sun shines for a considerable period during the day ; otherwise the wood will not ripen. The flowering time begins on June 20th, and individual flowers keep coming on until July 10th. One plant in my garden flowered on August 1st, 1926, but being a fairly young specimen, this was probably abnormal. In N. America it is sometimes called "The large-leaved cucumber tree."

M. MAINGAYI

KING.

Magnolia Maingayi, King in Journ. As. Soc. Beng. 58. 369 ; and in Ann. Bot. Card. Calcutta, 3. 208, and t. 458 and t. Ridley, Fl. Malay Pen. 1. 13.

A shrub or tree up to 6 m. high, young branchlets and inflorescence densely clothed with pale, shaggy hair. Leaves membranous, oblanceolate-oblong or narrowly obovate, narrowed to a rounded base, acuminate at the tip, 15–25 cm. long and 6–9 cm. broad, glabrous above, somewhat glaucous beneath and sparsely villous on the

midrib; lateral nerves 18–20 pairs; petioles about 6.8 cm. long, hairy. Peduncles short, hairy. Flower-buds ovoid, villous. Flowers appearing after the leaves. Sepals 3, oblong, obtuse. Petals about 6, yellowish-white, resembling the sepals but smaller, 2.5–4 cm. long and up to 1.3 cm. broad, glabrous. Carpels villous. Fruit cylindric, about 3.7 cm. long and 1.5 cm. in diameter; ripe carpels ovoid, about 9 mm. long, villous, not beaked. (J. E. Dendy.)

Occurs in the Malay Peninsula in dense forest up to about 1400 m. and in Borneo. The type was collected in Malacca by Maingay.

× M. Major
= *M. Thompsoniana*, Sargent.

M. Martinii, Leveille.
probably = *Michelia*, sp.

M. Maxima, Loddiges
= *M. acuminata*, L.

M. meleagroides, Hort.
= *Michelia fuscata*, Bl.

M. mexicana, DC.
= *Talauma mexicana*, G. Don.

M. Michauxiana, Hort.
= *M. macrophylla*, Michx.

M. MOLLICOMATA

W. W. Smith.

Magnolia mollicomata, W. W. Sm. in Not. R. Bot. Gard. Edinb. 12. 211. Forrest Nos. 20,319 ?, 14,466, 12,915, 18,083, 18,790.

A tree 18–24 m. high ; branchlets moderately stout, at first densely-ashy-tomentose, at length becoming glabrous ; leaf-bud narrowly ovoid, densely tawny—or ashy-tomentose. Leaves deciduous, membranous, broadly elliptic or sometimes oblong-obovate, rounded or subcordate at the base, rounded and sometimes very slightly acuminate at the tip, 14–23 cm. long and 9–14 cm. broad, dull green and glabrous above, paler and softly ashy-villous beneath with the midrib and nerves densely ashy-tomentose ; lateral nerves 10–14 pairs, prominent beneath ; petioles subterete, 2–4 cm. long, densely ashy-tomentose. Peduncles very stout, up to 2.5 cm. long, at first densely tawny-hairy. Flowers unknown. Sepals and petals (from scars) 12. Staminal axis about 1 cm. long. Fruit narrowly cylindrical, usually symmetrical but sometimes slightly contorted at the tip, up to 14 cm. long and 2.5–3.5 cm. in diameter ; ripe carpels crowded, about

13 mm. long and 10 mm. broad, with a beak up to 3 mm., marked on the outside with large lenticels. Seeds 1–2, red, ovoid, 10 mm. long and 7 mm. broad.

Found in S.E. Tibet and Yunnan.

Shows strong affinities with *M. Campbellii*, Hk. f. et Thoms., from which it differs in the ashen tomentum on the petioles and lower surface of the leaves. The flowers, when found, may prove to be precocious as in *M. Campbellii* (see notes under *M. rostrata*, W. W. Sm.).

At present there seems to be some confusion between the species and *M. rostrata*, although the two species are not closely related to one another, whilst the fruit is absolutely distinct.

Forrest's Field notes for *M. mollicomata* are as follows :

" Western China :—Mekong-Salween divide, Yunnan, in open pine forests. Lat. 28° 12′ N. Alt. 12,000 feet. Tree of 60–80 ft. Flowers pink—seen in flower in 1905, flowering May. July 1917." G. Forrest. No. 14,466.

" Kari Pass, Mekong-Yangtze divide, in open forests. Lat. 27° 40′ N. Alt. 9000 ft. Tree of 50–60 ft. Flowers ? August 1914." G. Forrest. No. 12,915.

"Shweli-Salween divide, Yunnan, in open situations in side valleys. Lat. 25° 40′ N. Alt. 8000–9000 ft. Shrub of 12–20 ft. Flowers: July 1919." G. Forrest. No. 18,083.

"S.E. Tibet:—Salween-Kiu-chiang divide. Tsarong province, in thickets. Lat. 28° 40′ N. Long. 98° 15′ E. Shrub of 20 ft. Oct. 1919." G. Forrest. No. 18,930. Also Nov. 19th. G. Forrest. No. 18,700.

A few seedlings of this fine Magnolia have been raised in this country, and some have been placed in gardens. It is probable that the species, like *M. Campbellii*, is rather tender, and will take many years before it flowers. This species, according to Forrest, is a wood-loving plant and grows into a fine tree. It is possible that the species spreads much further to the west than is generally supposed to be the case. At Kew there are leaves of a species, named by Hooker as *M. Campbellii*, which probably belong to *M. mollicomata*.

M. NICHOLSONIANA

REHDER ET WILSON.

Magnolia Nicholsoniana, Rehder et Wilson in Sarg. Pl. Wilson, 1. 394.

A shrub or small tree, 4–6 m. high, with slender branches; branchlets of the current year sparingly silky-hairy, soon becoming glabrous, those of the preceding year glabrous, smooth, ashy-yellowish, the older ones ashy-purple; terminal buds cylindric-oblong acute, reddish-hairy. Leaves deciduous, sparse, elliptic-oblong or obovate-oblong, acute or shortly acuminate, broadly cuneate or more rarely rounded at the base, 8–12 cm. long and 3–5 cm. broad,[1] the upper surface glabrous, dark green, the lower becoming glabrous, glabrous except the midrib which is densely hairy with reddish appressed hairs; nerves 10–14 on both sides, raised beneath, the veins slightly raised; petioles slender, $2\frac{1}{4}$ in. long, at first reddish-hairy, finally becoming glabrous. Flowers appearing with the leaves, fragrant, white with a red gynaecium, cup-shaped, 9–10 cm. in diameter; pendant; peduncle 3–3.5 cm. long, bearing the scar of a

[1] Usually $6\frac{1}{2}$ in. long, 5 in. across.

spathaceous bract 6–8 mm. below the sepals, laxly hairy with reddish subappressed hairs but glabrous above the scar. Sepals and petals usually 12, the outer obovate-oblong, somewhat acute, 3.5–5 cm. long and 2.2–2.5 cm. broad, those of the middle series obovate, rounded at the tip, 4–5 cm. long and 2.4–3 cm. broad, the inner elliptic-oblong, obtuse or somewhat acute, narrowed towards the base, 2.5–3.5 cm. long and 1–1.8 cm. broad. Stamens numerous, half-spreading, 9–10 mm. long; filaments red, narrower than the anthers, 1.5–2 mm. long; connective truncate or obtuse at the apex. Gynaecium red, including the staminiferous portion 2.5 cm. long; carpels few; stigmas slightly recurved at the tip, acute, 3–4 mm. long. Fruit nodding, cylindric-oblong, 4–5 cm. long; ripe carpels crowded, distinctly beaked above with a spreading or recurved beak, when open boat-shaped, the valves usually cohering at the apex and base, 10–15 mm. long and 6–8 mm. high. Seeds 1–2 in each carpel, broadly triangular-obovoid, truncate at the apex, sometimes broader than long, compressed, scarlet, 8–9 mm. long or broad, the inner testa brown, not sulcate.

Mr. E. H. Wilson sends me the following note on this species :

" This Magnolia is only known to me from the moist woodlands and thickets on and around Wa-shan, but is not very common. It is a sprawling bush from 12 to 20 feet tall and as much in breadth. It grows amongst miscellaneous broad-leafed, deciduous trees and shrubs, Rhododendrons and Silver Firs at an elevation of from 7,000 to 9,000 feet. I discovered it in June 1908, collected seeds the following autumn and successfully introduced it into cultivation in the Arnold Arboretum. From the Arnold Arboretum it was sent to Europe."

Most of the plants in English gardens are grafted plants sent out by Chenault of Orleans. They grow slowly with irregular, straight and thin shoots but seem to be fairly hardy once they get away from the ground. The first specimen that flowered in England occurred in Mr. J. Williams's garden at Hillside, Llandaff, near Cardiff, in May 1926, and he was kind enough to send me a picture of the bloom, which somewhat resembles *M. Wilsoni* but is larger. When we get plants on their own roots the species is likely to prove a valuable and attractive Magnolia.

× *M. Niemetzii*, Hort.

= M. Soulangeana, var. *Niemetzii*, one of the numerous seedlings from the cross *M. denudata* × *M. liliflora*, purplish pointed flowers in April.

Not of special value, and seldom seen except in the nurseries of Belgium.

× *M. nigra*, Hort.

= × *M. Soulangeana*, var. *nigra*, Nichols, which see.

M. NITIDA

W. W. Smith.

Magnolia nitida, W. W. Sm. in Not. R. Bot. Gard. Edinb. 12. 212; Forrest Nos. 21,616 ?, 15,058, 17,380, 26,509, 26,381.

A shrub or tree, 6–15 m. high; branches fairly slender, glabrous. Leaves evergreen, coriaceous, ovate-oblong, broadly cuneate or somewhat rounded at the base, acute or sometimes obtuse at the tip, up to 10 cm. long and 2.5–5 cm. broad, very glabrous, bright green and very glossy above, paler and shining beneath; lateral nerves usually 7–10 pairs, not conspicuous; petioles yellowish-green, 1.5–2 cm. long, glabrous, furrowed above; stipular sheath about 7 cm. long, glabrous. Peduncles stout,

under 1 cm. long, glabrous. Flowers, creamy-white, fragrant. Sepals and petals oblanceolate, obtuse, the larger broader and much narrowed to the base, up to 5 cm. long and 2 cm. broad. Staminal axis about 7 mm. long. Gynaecium shortly stalked, the stalk 6–8 mm. long. Fruit 5–7 cm. long and 2.5–3 cm. in diameter; ripe carpels 15–20, crowded, 2–2.5 cm. long and up to 1.3 cm. broad. Seeds 1–2, bright golden-red, up to 15 mm. long and 7 mm. broad, aromatic.

Found in S.E. Tibet and Yunnan (Forrest) and in N.E. Burmah (Farrer).

Quite distinct from all other species of the genus, but resembles *M. Pealiana*, King, and *M. Griffithii*, Hk. f. et Thoms., in possessing a stalked gynaecium, a character of the genus *Michelia*. In its leaves it approached *Michelia Bodinieri*, Finet et Gagnep., which those authors consider to be closely allied to *Magnolia Pealiana*.

Forrest's Field notes for this species are:

"Western China:—Makong-Salween divide, Yunnan, in open mixed forests, Lat. 28° 12′ N. Alt. 10,000–11,000 ft. Shrub or tree of 20–40 ft. In fruit, seeds bright orange-red, strongly aromatic. Nov. 1917." No. 15,069 also in Oct. 1918, No. 17,300.

A nice plant of 3 feet is growing at Caerhays Castle. The leaves appear to be close and more like *Michelia* than true Magnolia. Probably tender.

R. Farrer found *M. nitida* (No. 817) at Hpimair, N.E. Burmah, on April 10th, 1919, at an altitude of 7500 feet. He described it as "A very tall evergreen tree, with stately bare grey bole. Flowers, petals and all, intensely fragrant, creamy coloured, fading in a central purple stain along each petal. Abundant in the middle jungle amongst trees growing on the very steep declivities of very deep chines. It attains an enormous stature."

Prof. Wright Smith agrees that this species is as near a Michelia as a Magnolia.

M. NORBERTIANA

HORT.

× *M. Norbertiana*, Hort.

= *M. denudata* × *M. liliflora*, Desr.

This hybrid is common in English gardens and flowers in April. The flowers are more purple than *M. Alexandrina* and the leaves not so attractive. It is one of the numerous seedlings from the above-named cross, and is scarcely worth a place in the garden although its colour comes

between *M. Alexandrina* and *M. rustica rubra*. It is a poor grower and seldom attains a large size.

M. obovata, Ait.
= *M. grandiflora*, L.

M. obovata, Thunb.
= *M. hypoleuca*, S. et Z.

M. obovata, Wild.
= *M. liliflora*, Desr.

M. odoratissima, Reinw.
= *Talauma Candollei*, Bl.

M. OFFICINALIS

REHDER ET WILSON.

Magnolia officinalis, Rehder et Wilson in Sarg. Pl. Wilson, i. 391 (1913). Magnolia hypoleuca, Diels, in Bot. Jahrb. xxix. 311 (non Siebold et Zuccarini) (1900); Finet et Gagnepain in Bull. Soc. Bot. France, lii. Mem. iv. 37 (pro parte, non Siebold et Zuccarini) (1905); Contrib. Fl. As. Or. ii. 37 (1907); Wilson in Gard. Chron. ser. 3, xxxix. 234 (1906), excludenda descriptione fructus.

A tree 6–15 m. high, with ascending branches, a rather dense crown, and a trunk 0.3–1 m. in

circumference ; branchlets of the current year at first silky-tomentose, those of the preceding year glabrous, smooth, yellowish or pale yellow-ashen, the older ones becoming ashen, marked with few lenticels and large leaf-scars ; buds cylindric-ovoid, rather acute, about 3.5 cm. long, finely warted, somewhat tawny-villous. Leaves deciduous, crowded at the end of the branchlets, elliptic-obovate usually rounded at the tip and somewhat shortly acuminate, more rarely obtuse, narrowed towards the base and cuneate or sometimes abruptly contracted and almost rounded, 35–45 cm. long and 12–20 cm. broad, the upper surface glabrous, bright yellow-green, reticulate when dry, the lower at first densely ashy-tomentose, at length glaucous or becoming so, fairly densely villous especially at the nerves, reticulate ; nerves 20–30 on both sides, raised beneath like the midrib ; petioles subterete, 3–4 cm. long. Flowers appearing with the leaves, fragrant, white, cup-shaped, 15–20 cm. in diameter ; peduncle stout, 2–3.5 cm. long, densely silky-villous. Sepals and petals 9–12 or more, subequal, fleshy, the three outer finally reflexed, spathulate-obovate, rounded at the tip, 8–10 cm. long and 3–4 cm. broad, the inner half-erect,

oblong-spathulate or oblong, rounded at the tip, narrowed in the lowest one-third, deciduous before the outer. Stamens numerous ; filaments dilated, scarlet, 3–5 mm. long ; anthers 10–12 mm. long, introrse ; connective mucronate. Gynaecium red, including the staminiferous portion 3.5 cm. long ; carpels numerous ; stigmas acute, slightly recurved, papillose on the inside, 5–6 mm. long. Fruit 10–12 cm. long and 5.5–6 cm. in diameter, oblong-ovoid, truncate at the apex, rounded at the base, the lowest carpels abruptly contracted at the base ; ripe carpels woody, 1-seeded, the valves rectangular-rhombic, 2–2.5 cm. high and 1.2–1.5 cm. long, truncate at the outer margin, shortly beaked above with a beak 2–3 mm. long, scarcely or not beaked below. Seeds obovoid, rounded at the apex, compressed, about 12 mm. long and 10 mm. broad, the inner testa becoming blackish, ventrally slightly sulcate.

This grandly leaved Magnolia was found by Wilson about the year 1907 in Hupeh and Szechuan. At first it was considered merely a fine form of *M. hypoleuca*, which species it closely resembles. In the scale of creation we often find both amongst birds, mammals and plants

that the isolation of islands produces smaller forms of the same species ; thus since *M. hypoleuca* of Japan was first discovered, it was regarded as a species of isolated origin and only found on those islands, whereas it is in reality a break-off from the finer species *M. officinalis*, a resident of the great Chinese continent.

M. officinalis is a splendid Magnolia, and being as hardy as *M. hypoleuca*, is well suited to cultivation in England, but the plant is very rare, and I doubt if there are six in cultivation. Mr. P. D. Williams at Lanarth has a good specimen, but so far it has not flowered.

Mr. E. H. Wilson kindly sends me the following additional notes on this fine species :

" Western Hupeh : north and south of Ichang, cultivated, alt. 300–1300 m., May 11 and October 1907 (No. 652, type) ; without locality, May 1900 (Veitch Exped. No. 371) ; without locality, A. Henry (No. 5389). Szech'uan : without locality, A. Henry (No. 5389a).

This species has been confused with *M. obovata*, Thunberg (*M. hypoleuca*, Siebold et Zuccarini), and naturally enough, as the foliage of the two species is nearly identical. But with the complete

material before us it becomes obvious that they are distinct, if closely related species. The Japanese species has purplish bark; staminal and carpellary column 4 cm. or more long, acutish at the summit; the filaments 9–15 mm. long, anthers 16–18 mm. long; fruit cylindrical, 13–20 cm. long, 4.5–5.5 cm. wide, somewhat pointed at the apex and attenuate at the base; ripe carpels with long, usually slightly recurved beaks and rather thin walls. If these characters are compared with those of the Chinese species it will be seen that the differences, if few, are of relatively great importance, particularly those of the fruit, which is ovoid-oblong in the new species, truncate at the apex and rounded at the base, the lowest carpels being rounded at the base, not decurrent as in M. obovata. The different colour of the bark enables the trees to be distinguished at any season of the year. The Chinese species is in cultivation at Kew and elsewhere, and comparisons between specimens of the Japanese and Chinese trees will probably result in the discovery of other differences.

Magnolia officinalis is very commonly cultivated on the mountains of western Hupeh and Szech'uan, but we have not met with a spon-

taneous tree in the forests. This same remark would apply to many other trees of economic value (Gleditsia and Eucommia, for example), and we do not doubt that these and the Magnolia are truly natives of this region. This new Magnolia does not grow to as large a size as its Japanese relative, though the flowers and foliage are equally handsome. The Chinese designate this species the "Hou-p'o" tree, and its bark and flower-buds constitute a valued drug which is exported in quantity from central and western China to all parts of the Empire. It is for its bark and flower-buds that the tree is cultivated. The removal of the bark causes the death of the tree, and this would account for its disappearance from the forests. The bark when boiled yields an extract which is taken internally as a cure for coughs, colds, and as a tonic and stimulant during convalescence. A similar extract obtained from the flower-buds, which are called "Yu-p'o," is esteemed as a medicine for women. A picture of this tree will be found under No. 582 of the collection of Wilson's photographs, and also in his *Vegetation of Western China*, No. 308.

This is in all probability the plant referred

to as Talauma sp. ? by Franchet in Nouv. Arch. Mus. Paris, ser. 2, viii. 193 (Pl. David. ii. 11) (1886)."[1]

Magnolia officinalis, var. biloba, Rehder et Wilson, n. var. A, differs from the type in the leaves being at the tip deeply emarginate or bilobed with a sinus 2–3 cm. deep.

Kiangsi, Kiukiang, foot of ascent to Kuling, cultivated, alt. 300 m., August 2, 1907 (No. 1649; tree 10–12 m. tall).

Except in its bilobed leaves this variety differs in no particular manner from the type. It is also cultivated for the medicinal value of its bark and leaves. The peculiarity in the foliage is constant in all the trees we saw. This variety is also cultivated in the vicinity of Ningpo where it was collected a few years ago by the late Bishop Moule.

This variety grows also in the Chekiang province ; it has not been introduced into cultivation. (E. H. Wilson.)

M. ovata, Spreng.

= *Talauma ovata*, St. Hil.

[1] Introduced into cultivation by E. H. Wilson, who sent seeds to Messrs. Veitch in the autumn of 1900 from the Hupeh province and also to the Arnold Arboretum in 1907.

M. oxoniensis

= *M. grandiflora*, var. *oxoniensis*, Hort.

= *M. grandiflora*, var. *exoniensis*, Hort.

M. Oyama, Kort.

= M. parviflora, S. et Z.

M. parviflora, Bl. (not of S. et Z.)

= *Michelia fuscata*, Bl.

M. PARVIFLORA

SIEBOLD.

M. parviflora, S. et Z. in Abh. Akad. Muench. 4. (2), 187 (1843) ; Bot. Mag. t. 7411.

A small deciduous tree, up to 22 feet high, with straight slender and spreading branches. Leaves oblong or obovate oblong with the apex contracting abruptly to a point, rounded at base, dark green and smooth above, glaucous and downy beneath with 7–9 pairs of veins, length 4–6 in. ; leaf-stalk $\frac{3}{4}$–$\frac{1}{2}$ in. long, pubescent when young.

Flowers 5 in. across, very fragrant at first, cup-shaped, pure white and borne on a stalk 1–$2\frac{1}{2}$ in. long ; petals 2 in. long obovate and concave, stamens numerous forming a rich deep crimson rosette $1\frac{1}{2}$ in. across.

This charming and hardy Magnolia is a native of Japan, being most numerous from the southern part of the main island to Skikoku and Kiusiu. Professor B. Miyazawa informs me that the height of the largest trees is about 20 feet, but that the usual height is 10–15 feet. The species was first described in 1883, and introduced from Japan in 1888 (Nicholson). It is also found in the forests of Korea, where Wilson discovered it in 1908. He remarks (*Garden Mag.* March, 1920):

"A Magnolia whose beauty fascinated me in the forests of Korea is *M. parviflora*, which also grows in south Japan. Its snow-white flowers are egg-shaped in bud and bowl-shaped with infolded petals when expanded, and have scarlet stamens and long stalks. The specific name is misleading, for the flowers are from 4 to 5 inches across. It is a large bush often 20 feet high, of straggling habit, with ovate leaves from 3 to 5 inches long by 2 to 4 inches wide, and is remarkably floriferous. It delights in rocky, granite country, and is especially happy by the side of forest streams. On the Diamond Mountains, in northeast Korea, where the winter temperature is more severe than in Massachusetts, this lovely Magnolia

M. PARVIFLORA
The large plant at Comptons Brow

is a feature, and I have hopes of this Korean form being a better garden plant than the Japanese one now in cultivation. There is also in Japan a form (plena) with semi-double flowers."

This fine species is usually described as a slow-growing bush, but like so many other plants, including Magnolia, it is an erroneous description when we give this little tree the conditions it requires.

I possess only one example of *M. parviflora* in my garden, and this I put in as a small seedling, 3 feet high, in 1911. It is planted in semishade in a border of good sandy loam, well sheltered from all winds. After the first two years it began to grow, and is now 22 feet high, 60 feet in circumference, and 21 feet across. There seems to be every prospect that it will grow much larger as it is vigorous in all the top branches, wherefore we may assume that this fine Magnolia given perfect conditions, may do as well or even better in this country than it does in Japan and Korea, since the tree in question has by no means reached maturity. Every year during the hot weeks in May or the first week in June, we have an abundant crop of flowers. Mr. Bean says (*Trees and Shrubs Hardy in the*

British Isles, vol. ii. p. 72), "The flowers are not borne in one large crop, but appear a few at a time from May until August on the leafy shoots." To-day (June 2nd, 1926) I count 175 flowers as a first crop, which is rather more than "a few," and we will have successive crops of flowers all through June and July; in fact, until early August when the plant ceases to bloom.

The fact is that there are few big plants of *M. parviflora* in England, and it is not correct to describe a species until we have seen it in maturity and in the best condition. Mr. W. Cory, who is an enthusiastic admirer of the species, tells me that he has in his garden in S. Wales, a specimen about the same size as mine.

A plant of much greater circumference but not of such good shape or height is in Mr. J. C. Williams's garden at Caerhays, Cornwall. The last time I measured it (May 1926) it was 84 feet round, 24 feet across, and 12 feet high. It seems to me that it was not in very good health and that it had reached its maximum, but I hope that my view was incorrect.

Personally I prefer this fine species to the new and much admired *M. Wilsoni*, because its pure

white flowers with brilliant crimson centre stand up and look you in the face. No doubt *M. Wilsoni* is a fine species, and will be attractive when it is large and we can view from below its drooping blooms, like some glorified *Halesia tetraptera*, but in individual beauty of flower the older species is by far the most striking, and when the garden public come to know *M. parviflora* as a native tree, everyone will wish to possess it. In many gardens the species has ripened seeds, and from these it is easy to raise a stock. It is also one of the Magnolias that layers quite easily, so there is no excuse for purchasing grafted plants.

M. PEALIANA

KING.

Magnolia Pealiana, King in Ann. Bot. Gard. Calcutta, 3. 210 and t. 59. *Michelia Pealiana*, Finet et Gagnep. in Bull. Soc. Bot. Fr. 52, mem. 4, 42.

A tall tree; young branchlets rather slender, at first densely covered with pale yellow, appressed, silky hairs, but speedily becoming glabrous. Leaves thinly coriaceous, minutely and distinctly reticulate on both surfaces, oblong-elliptic, sometimes slightly obovate, shortly and

abruptly acuminate at the tip, 16–20 cm. long and 6.2–7.5 cm. broad, shining and glabrous above, at first puberculous but quickly becoming glabrous beneath; lateral nerves 15–18 pairs, prominent beneath, ascending, curving, inter-arching freely towards the margin; petioles 0.5–0.6 cm. long; stipules very narrow, about 3 cm. long, silky outside. Peduncles about 4 cm. long, up to 6 cm. long in fruit, silky-hairy. Flower-buds pointed, covered with pale yellow, appressed, silky hair. Flowers 7.5–10 cm. in diameter. Sepals 3, coriaceous, linear-oblong, subacute, about 4 cm. long and 1 cm. broad, the edges slightly undulate near the tip. Petals 6, coriaceous, resembling the sepals but smaller. Gynaecium cylindric, shortly stalked, more than twice as long as the stamens. Fruit 7.5–12.5 cm. long and about 1.9 cm. in diameter; ripe carpels about 15 mm. long and 11 mm. broad, slightly lenticellate outside, smooth and shining inside. Seeds 2. (J. E. Dendy.)

Found in Upper Assam, in Makum Forest, by Mann. Vernacular name: "Gahori Soppa."

Closely allied to *M. Griffithii*, Hk. f. et Thoms., which also has the stalked gynaecium, but distinguished by the smaller leaves, which are only

puberculous when young, whereas in *M. Griffithii* they are densely silky-hairy in the young state.

Reginald Farrer thus describes a new species of Magnolia (No. 817) in N.E. Burmah, which Prof. Wright Smith assigns to M. sp. aff. *Pealiana*, " A tall, grey-boled evergreen tree, with abundant ivory-cream flowers in April, deliciously fragrant. Hpeniaw, N.E. Burmah, alt. 8000 ft. On the fringes of forest and a complete absence of ripening heat or light in summer."

M. PORTORICENSIS

BELLO.

Magnolia Portoricensis, Bello in Anal. Soc. Esp. Hist. Nat. 10. 233 ; Urb. Symb. Antill. 1. 307.

A handsome tree, 15–25 m. high, very glabrous. Leaves evergreen, shining, dark green, coriaceous, orbicular to oval or sometimes obovate, rounded or sometimes subacute at the base, rounded or shortly and abruptly acuminate at the tip, 11–17 cm. long and 7–11 cm. broad, smooth ; lateral nerves 10–12 pairs, distant, veins scarcely conspicuous ; petioles 1.5–2.5 cm. long ; stipular sheath coriaceous, entire, oblong-conical, bisulcate, caduceus, about 8 cm. long. Peduncles

2 or more cm. long. Flowers odorous. Sepals 3, greenish, rounded, concave. Petals about 9, white, ovate, obtuse, a little larger than the sepals, 6 cm. long, the inner ones somewhat narrowed at the base. Stamens numerous; anthers sessile, introrse, linear, acute; connectives semicylindric, produced at the tip. Gynaecium ovoid, pubescent; carpels 20–25, 2-ovulate; styles linear, recurved, flabrous. Fruit ovoid or ellipsoid; ripe carpels dehiscing at the outer face by 2 valves, the valves then bent back, free only at the angular apex. Seeds 1–2. (J. E. Dendy.)

This species was found in Portorico, in primaeval forests on the mountains of the interior (Montosa, etc.) by Bello, Sintenis and Stahl.

Flowers May and June. Fruits September.

Vernacular name: "Mauricio," "Burro."

"Very similar in habit to *Talauma Plumieri*, DC. from Cuba and the Caribbean Islands, but besides the indehiscent carpels, the latter is easily distinguished in the vegetative state by the petioles, which are flattened above up to the middle or almost to the tip and callously thickened at the margin." (J. E. Dendy.)

M. praecox

= *M. grandiflora*, var. *praecox*, Hort.

M. Pravertiana

= *M. grandiflora*, var. *Pravertiana*, Hort.

M. precia, Correa.

= *M. denudata*, Desr.

M. PTEROCARPA

ROXBURGH.

Magnolia pterocarpa, Roxb. Pl. Corom. 3. 62 and t. 266 ; King in Ann. Bot. Gard. Calcutta, 3. 207 and t. 53. *M. sphenocarpa*, Wall. ex. Hk. f. et Thoms. Fl. Ind. 78 ; Hk. f. Fl. Br. Ind. 1. 41. *Liriodendron grandiflorum*, Roxb. Fl. Ind. 2. 653. *Talauma Roxburghii*, G. Don, Gen. Syst. 1. 85. *Michelia macrophylla*, D. Don, Prodr. Fl. Nep. 226.

A large tree, young parts appressedly tawny-pilose, all parts finally glabrous ; branches closely tuberculate, branchlets annulated. Leaves evergreen, coriaceous, conspicuously reticulate when dry, obovate-oblong, much narrowed to an acute base, narrowed to a rather obtuse tip or rounded,

shining and finally glabrous above, rather dull and darker and finally glabrous beneath, 20–40 cm. long and 11–15 cm. broad, markedly becoming smaller towards the ends of the branchlets; lateral nerves 12–20 pairs, prominent beneath; petioles 2.5–5 cm. long, thickened at the base; stipules narrowly convolute, about 7.5 cm. long. Peduncles stout, 3.7–5 cm. long (longer in fruit), tawny-pubescent or becoming glabrous, closely ringed with annular scars. Flower-buds ovoid rotund, ashy-puberculous, enveloped in a coriaceous, rounded, concave spathaceous bract. Flowers fragrant, about 8.8 cm. in diameter when expanded (but rarely expanding). Sepals 3, coriaceous, green outside, white inside, broadly oval or obovate, concave, about 4 cm. long, caducous. Petals 6, thick, fleshy, white, resembling the sepals but broader. Gynaecium conical, of numerous imbricated carpels with compressed beaks. Fruit oblong-conical, 12.5–17.5 cm. long and 3.7–6.3 cm. in diameter; ripe carpels narrowly ovoid, 1.5 cm. long, rugose, with long, spreading coriaceous, lanceolate, spical beaks almost twice as long as themselves. Seeds 1 or 2; testa orange. (J. E. Dendy.)

Occurs in tropical Himalayas, in forests at low elevations from Nepal eastwards (Assam Range, Khasin and Chittagong Hills).

Vernacular names: "Boramthuri Soppa," "Doolee Champa" (Silhet).

Hutchinson considers this species as possibly the most primitive of all flowering plants, on account of the peculiar peduncle.

Dried specimens, both in leaf and flower, much resemble the much commoner *Talauma Hodgsonii*, Hk. f. et Thoms.

M. pumila, Andr.
= *M. Coco*, DC.

M. punduana, Wall
= *Michelia pundiiana*, Hk. f. et Thoms.

M. purpurascens
= *M. diva*, Stapf.
= *M. conspicua*, var. purpurascens, Maxim.

M. purpurea, Curt.
= *M. liliflora*, Desr.

M. PYRAMIDATA

PURSH.

M. pyramidata, Pursh. Fl. Am. Sept. 2. 382 (1814).

A slender tree with ascending branches and smooth bark, grows to 30 feet high. Leaves, obovate-spatulate and cordate-auriculate at the base, acute at the point and glaucescent beneath ; 8 in. long, 4 in. broad. Flowers very similar to *M. Fraseri*, but smaller, $3\frac{1}{2}$–5 in. across), sepals shorter than the petals ; petals 6–9 oblong-obovate, gradually narrowed towards the base ; fruit oblong bright rose, 2–$2\frac{1}{2}$ in. long.

This species was originally discovered by William Bartram in Georgia, on the banks of the Altamaha River. It was recognised by him as a new species, but afterwards was for long confused with *M. Fraseri.* The two species are closely allied, but the latter is a mountain plant whilst *M. pyramidata* is a native of the low-lying regions of Georgia to Florida and Alabama.

M. pyramidata was introduced early in the nineteenth century to Europe and was in cultivation in Messrs. Loddige's nursery at Hackney, about the year 1837. The late G. Nicholson saw

it in the Trianon Gardens in 1887, and Mr. Bean thinks it may survive in some old gardens in the warmer parts of the country. It is considered to be more tender than *M. Fraseri*.

M. rosea

= *M. stellata*, var. *rosea*, Hort.

M. ROSTRATA

W. W. Smith.

MAGNOLIA ROSTRATA, W. W. Sm. in Not. R. Bot. Gard. Edinb. 12. 213, emend. Forrest, Nos. 19,985, 21,644, 15,052, 17,301, 16,403.

A tree, 12–24 m. high, leaf-buds narrowly cylindric, narrowed to the tip, about 5 cm. long, glabrous. Leaves deciduous, crowded at the ends of the branchlets, thinly papery when dry, broadly obovate, narrowed towards a rounded base, very broadly rounded at the tip with the acumen usually obsolete, up to 44 cm. long and 28 cm. broad, bright green and at maturity glabrous above, glaucous beneath and somewhat densely tawny or ferrugineous-hairy on the mid-rib and nerves with scattered hairs everywhere; lateral nerves about 30 pairs, raised beneath like

the midrib, venation conspicuously reticulate on both surfaces ; petioles stout, up to 4 cm. long, soon becoming glabrous. Peduncles stout, about 2 cm. long, glabrous in fruit. Flowers unknown. Fruit cylindric, narrowed to the tip, almost rounded at the base, 11–14 cm. long and up to 4 cm. in diameter ; ripe carpels boat-shaped, after dehiscence about 10 cm. long and 5–6 mm. broad, prominently beaked, the beak 6–8 mm. long, incurved above. Seeds 1–2, much compressed, about 7 mm. long and 5 mm. broad. (J. E. Dendy.)

Found in S.E. Tibet, Yunnan and N.E. Burma.

In the above description only the leafy and fruiting specimens, to which the name "*rostrata*" obviously applies, have been included. These specimens represent a species closely allied to the non-precocious *M. officinalis*, Rehder et Wilson, and *M. hypoleuca*, S. et Z. The leafless precocious-flowered specimens included in W. W. Smith's original description of *M. rostrata* appear to belong to a species closely related to the precocious-flowered *M. Campbellii*, Hk. f. et Thoms., as Farrer thought, and in this case the original *M. rostrata* is a mixture of two species belonging to quite different groups of the genus.

This conclusion is supported by the facts that (1) the narrowly cylindric gynaecium of the flowering specimens matches that of *M. Campbellii* and could hardly develop into the stout fruit of the fruiting specimens, which is of the *hypoleuca*-type and certainly the product of a much stouter gynaecium ; and (2) the leaf-buds on the fruiting specimens are quite glabrous, while those of the flowering examples are densely tawny-silky. In addition, the form of the branchlets in the two sets of specimens is quite different.

The flowers of the flowering specimens are of the type which might feasibly be possessed by *M. mollicomata*, W. W. Sm., a species closely allied to *M. Campbellii*, and whose flowers are unknown. *M. mollicomata* was described along with *M. rostrata* and from the same region. (See Forrest notes.)

A certain number of seedlings of *M. rostrata* has been raised by gardeners in our islands. I have only seen one specimen as yet placed in the open garden, and that is at Caerhays Castle. The plant is 5 feet high, and on May 1st was making its new leaves which were 1 5½ in. long, 9 in. across with a leaf-stalk of 4 inches. Dried leaves show a size of 21½ in. by 12 in., so the species must be

almost as fine in leaf as *M. macrophylla*, whilst its flowers, which are developed in May, are, according to Forrest, equally splendid, being fleshy, very large and of a bright rosy-pink.[1] The tree is of noble appearance, being up to 80 feet in height, so that we have little hesitation in saying that if it will take kindly to our island conditions *M. rostrata* will be the finest addition to our collection of magnolias discovered in recent times. Since the majority of the deciduous magnolias are hardy, we can indulge in some optimism.

Forrest seems certain that in the following field notes the plants described were true *M. rostrata* :

"Western China :—Mekong-Salween divide, Yunnan in open mixed forests. Lat. 28° 12′ N. Alt. 11,000–12,000 ft. Tree of 60–70 ft. Flowers ? Said to be large, white flushed rose ? In fruit. Nov. 1917." G. Forrest. No. 15,052. Also Oct. 1918. In fruit. G. Forrest. No. 17,301.

"Sie-la Pass, Mekong-Salween divide, Yunnan, in mixed forest. Lat. 28° N. Alt. 10,000–11,000 ft. Tree of 40–80 ft. Flowers rose-pink, fleshy. May 1915." G. Forrest. No. 16,403.

[1] This is borne out by the dried specimens I saw at Edinburgh.

In the subsequent examination of dried specimens now at Edinburgh, Forrest when examining the material with Prof. W. W. Smith was "quite clear" that other specimens of a precocious Magnolia are referable to that species and are conspecific, namely :

"Schweli-Salween divide, Yunnan, in mixed and pine forests. Lat. 25° 30′ N. Alt. 10,000 ft. Tree of 60–80 ft. Flowers precocious, bright rose-pink. April 1915." G. Forrest. No. 11,860.

"Mekong-Salween divide. Yunnan, in open situations. Lat. 29° N. Alt. 7000 ft. Shrub of 20 ft. Flowers fragrant, fleshy, creamy-yellow. April 1918." G. Forrest. No. 16,388.

"S.E. Tibet: Mekong-Salween divide, in pine and mixed forests. Lat. 28° 15′ N. Alt. 10,000–11,000 ft. Tree of 30–60 ft. Flowers rose-pink. Flowers appearing before the foliage. June 1904." G. Forrest. No. 140. Recorded in Notes R.B.F., vii. (1912), 15, as *M. conspicua*, Salisb.

"N.W. Yunnan, 1907." Monbeig, No. 11.

"Eastern flank of the N'Maikha-Salween divide, Yunnan, in mixed thickets and forests. Lat. 26° 20′ N. Alt. 8000–9000 ft. Shrub or tree of 30–40 ft. Flowers creamy-white, flushed

purplish exterior, fragrant. May 1919." G. Forrest. No. 17,868.

"N'Maikha-Salween divide. Lat. 26° 30′. Tree of 60–80 ft. June 1919." G. Forrest. No. 18,246.

"Upper Burma.—High glens above Hpimaw, 9,000–10,000 ft. Abounds in the higher jungle glades going up to Hpimaw Pass and down on the other side, in China. No two trees seem to bear flowers of the same shade and the pure whites are even more beautiful than the rest. Beginning to pass over by April 11th, though still superb. April 11th, 1919." R. Farrer. No. 816.

[At first Farrer did not know what to make of this fine Magnolia (No. 816). Evans attributed it to *M. denudata*, but later Farrer found it again and saw that the species was a distinct one (No. 1011) with leaves and flowers different from *M. denudata*. The comparison was set at rest by Forrest, who in Nov. 1919 collected the leaves and fruit of the same plant in the same locality. The fruit of *M. rostrata* is an absolute character and distinct from all other species.]

"N.E. Upper Burma. Nov. 1919." G. Forrest. No. 18,751.

MAGNOLIAS

The three following Magnolias discovered by R. Farrer in the expedition to N.E. Burmah, 1919, are now attributed to *M. rostrata*. Seeds of these have been raised by Mr. L. de Rothschild.

816. *M. Species.* "A tidy tree, deciduous, of 20–30 ft., with beautiful bronzy foliage in the young plants; the flowers appear before this, in April, while frosts and sleet still abound over the upper Alpine woodland, to which, in a rigid zone from 9,500–10,000 (ft.), it is confined, and are literally as big as 'tay-kettles,' very fragrant and solid and abundant, in every shade from pure white to deep and rather magenta rose. It ought certainly to be hardy and resistent. This lot of seed was collected from a particularly beautiful rose-pink form, not only of the deepest tone but of the clearest colour and largest size."

816A. *M. Species.* "The same but from a tree with pure white blossoms of enormous size. The colour of the cones varies with that of the flowers; in the which form it is green and deepens to crimson in the pinkest."

No. 1011. *M. Species.* "A tall tree, deciduous with gigantic foliage and thick cream-white flowers in May-June. Lower Alpine forest at 8–9,000 [ft.]."

Recently Prof. Wright Smith showed me at Edinburgh dried specimens of Forrest's No. 27,711, a plant collected on the hills near Hpimaw, N.E. Upper Burmah, Nov. 1925 (in fruit). This specimen possesses leaves larger and lighter than the type. It is also pale green at the back instead of glaucescent. Prof. W. Smith now refers this to *M. rostrata*, var. *viridescens*.

Nearly all the Magnolias of Western China are woodland species, but Forrest informs me that this species prefers open situations.

M. rotundifolia
= *M. grandiflora*, var. *rotundifolia*, Hort.

M. Rumphii Spreng
= *Talauma Rumphii*, Bl.

M. rustica, Hort.
= *M. acuminata*, L.

M. RUSTICA RUBRA HORT.

M. Soulangeana, var. *rustica*, Hort.

A seedling from *M. Lennei* = *M. denudata* × *M. liliflora*.

M. rustica flore rubro, Hort.

A tall wide-headed bush up to 20 feet with straggling branches. Leaves almost oval, with

sharp pointed apex. At the base narrowing to a leaf stalk of one inch; $8\frac{1}{2}$ in. long, $5\frac{1}{2}$ in. across. Flowers cup-shaped, 6 in. across when expanded, rich rosy-red. Stamens and fruit similar to *M. Lennei* but smaller.

This is a very beautiful and easily-grown Magnolia, but is difficult to obtain in its true form since numerous seedlings, all more or less purple, are sent out by continental nurserymen under its name. Gardeners are familiar with its appearance in Mr. Moon's beautiful plate in "Flora and Sylva" (Robinson). The artist perhaps was somewhat flattering in his picture of the flowers. At any rate seen at its best it is nearly as good as Mr. Moon's figure, and if the correct variety is obtained with its rich rosy red flowers, it is one of the finest Magnolias we possess. How large it will grow I am unaware, as I have never seen a very old plant. It has reached 15 feet in my garden, and is still growing rapidly, but requires July side pruning and regular staking to keep it in good shape.

M. rustica rubra is a chance seedling from the beautiful M. Lennei, and is said to have originated in Belgium.

Its flowers are not so large as M. Lennei, but

possess a quality of colour somewhat similar to but not so fine as *M. Campbellii*. Such a comparison may be granted when we see it at its best, for it is a Magnolia that charms all beholders and holds its own in the flower garden amongst its finest features.

The plant layers easily, so there is no excuse for not obtaining it in its true form. But like a great many other Magnolias, it is advisable to purchase in Holland or Belgium when plants are in flower, and no mistakes can be made.

M. SALICIFOLIA

MAXIMOWICZ.

M. salicifolia, Maxim. in Bull. Akad. St. Petersb. 7. 419 (1874); Bot. Mag. t. 8483.

A slender, pyramidal, evenly branched deciduous tree said to be from 15 to 20 feet high in a wild state, but probably larger under cultivation; trunk 1 foot or more in girth; young shoots slender, smooth in the first year and slightly warted in the second; young leaf-buds smooth. Leaves narrowly oval to lanceolate, tapered at both ends and pointed at the apex; 2–4 in. long, $\frac{3}{4}$–$1\frac{1}{2}$ wide; dull green and smooth above, slightly glaucous and covered with fine down beneath; stalk

M. SALICIFOLIA VAR FASTIGIATA
Tilgate, Sussex

slender, $\frac{1}{4}$–$\frac{5}{8}$ in. long. Flowers, 3–4 in. across, very similar to but longer in the petal than M. kobus; petals six, pure white, the three outer 2–2$\frac{1}{2}$ in. long, $\frac{1}{2}$ in. wide, oblong and pointed; the three inner ones shorter and wider, slightly obovate; sepals short, lanceolate and soon falling; flower stalks smooth; flower-buds hairy. Fruit rosy pink, 2–3 in. long. Seeds scarlet. The bark or young shoots when crushed give off a charming scent like that of Lippia citriodora (Lemon-scented verbena).

M. salicifolia, var. *fasciata*. This is by far the commonest form seen in British gardens and differs from the foregoing in its habit of growth. In this variety the habit is close, upright and fasciated. It gives the whole tree a bunchy somewhat unattractive appearance. The colour of the bark is darker.

I am not aware whether Maximowicz described his type specimen from the fasciated or the wide branched form of this beautiful Magnolia, but the latter is by far the more beautiful of the two, and should be the one that gardeners ought to plant. Unfortunately it is a rare plant, and difficult to obtain unless identified in the nursery.

M. salicifolia is a native of Japan and is chiefly found in the Mount Hakkoda region at an elevation of 2000 to 3000 feet. It was introduced to this country in 1906, and promises to be a desirable acquisition to our list of garden Magnolias, being quite hardy, and when once established flowering freely on its naked shoots in the month of April. In early seasons, such as 1926, we had it in full flower on March 25th. It first flowered at Kew in 1911 and subsequently in many gardens since that date. The species is evidently closely allied to *M. kobus*, and flowers at the same time. It grows more quickly than that species, but not so rapidly as the northern variety var. *borealis*, which seems to surpass all eastern Magnolias in the length of its annual shoots in this country. The flowers of *M. salicifolia* being thin and tender are easily injured by frost so that in the cold areas we cannot always expect to see their beauty.

M. salicifolia layers easily, and can be raised from seeds. It likes much the same soil and conditions of placing as other southern Magnolias.

M. SALICIFOLIA

M. SARGENTIANA

REHDER ET WILSON.

M. SARGENTIANA, Rehder et Wilson, in Sarg. Pl. Wilson. 1. 398 (1913).

A tree 10–25 m. high, with a densely-branched shady crown, half-spreading primary branches, spreading secondary branches, and a trunk 1–2 m. in circumference ; branchlets stout, those of the current year green-yellow, glabrous, sparingly lenticellate, those of the preceding year yellowish or ashy-yellowish, the older ones becoming ashen ; buds elongate, oblong-ovoid, obtuse, villous or becoming glabrous ; flower-buds ovoid, acute, 3.5–4 cm. long, yellowish-villous. Leaves deciduous, subcoriaceous, obovate, or more rarely oblong-obovate, at the tip rounded, emarginate or very shortly cuspidate, at the base narrowly or broadly cuneate and often oblique, 10–17 cm. long and 6–10 cm. broad, the upper surface glabrous, dark green, somewhat shining, distinctly reticulate when dry, the lower pale green, densely ashy-villous, reticulate ; midrib impressed above, raised and glabrous or becoming so beneath ; nerves 7–12 on both sides, diverging at a very acute angle, almost straight, scarcely

prominent above, raised beneath; petioles slender, subterete, 2–4.5 cm. long, glabrous. Flowers unknown, probably appearing before the leaves. Fruit cylindric, 10–14 cm. long and 2.5–3 cm. in diameter, usually tortuous, flesh-coloured before maturity; peduncle stout, 10–20 mm. long and 7–10 mm. in diameter, glabrous or shaggy; carpels numerous, crowded, in part sterile, woody, finely warted, the valves 8–10 mm. high and 10–15 mm. long, convex or rounded on the outer margin, usually shortly beaked above, mostly rounded below, often cohering on both sides. Seeds 1–2, in each carpel, irregularly orbicular-obovoid, compressed, scarlet, 10–12 mm. long or broad, the inner testa dusky-black or black-ashen, broadly obovoid, somewhat acute or almost rounded at the base, truncate or slightly emarginate at the apex, compressed, ventrally slightly sulcate or almost flat, dorsally convex.

A native of W. Szechuan, discovered by E. H. Wilson.

Most of the plants are grafted (by Chenault) which are in cultivation in our islands. The species, like *M. Campbellii*, to which it is somewhat closely related, is tender and does best in the south-west. Probably many years will elapse

before it flowers in our islands. There is a plant of 12 feet in Miss Ellen Willmott's garden at Warley Place, Great Warley, Essex, and another of the same size in Mr. J. E. Williams's garden at Hillside, Llandaff, S. Wales.

Magnolia Sargentiana, var. *robusta*, Rehder et Wilson.

Differs from the type in the leaves being longer and narrower, oblong-obovate, 14–21 cm. long and 6–8.5 cm. broad, and in the fruit being larger, 12–18 cm. long, the carpels 15–18 mm. long, shortly beaked on both sides. Not in cultivation. Referring to the true species Mr. E. H. Wilson sends me the following note :

"This Magnolia is not uncommon in thickets and moist woods on and to the west of Wa-shan between elevations of 5,000 and 6,500 feet, where it was discovered by me in the autumn of 1908 and introduced into cultivation by seeds sent to the Arnold Arboretum that year. The Arnold Arboretum afterwards distributed seeds and plants in Europe and elsewhere. This Magnolia grows to a greater size than any other Chinese Magnolia, and is one of the noblest of its family. I have a vivid recollection of seeing

in June 1903 at Yin-kou, a hamlet 6 miles west of Wa-shan, a tree of this species which was more than 80 feet tall, with a trunk 10 feet in girth, 6 feet from the ground, and clean for 16 feet where the branches commenced. The branches were very numerous, wide-spreading, forming a massive head, flattened oval in contour. In 1908 a special journey for the purpose of photographing this tree was undertaken, but it had been cut down. This was the largest specimen I ever met with, but examples 45–60 feet tall, 6–8 feet in girth are (or were in 1908) fairly common west of Wa-shan. The Chinese informed us that the flowers were rosy-red to rose-pink in colour and about 8 inches across. From the size of the peduncles and of the scars left by the fallen sepals and petals there is good reason to believe that the size of the flowers must be very large ; and undoubtedly this new Magnolia vies with *M. Campbellii*, Hooker et Thomson, in beauty.

" In China and for that matter in Japan and Korea also, Magnolias are found in moist woods growing in association with broad-leafed, deciduous trees among which coniferous trees are scattered. They love a cool soil rich in woodland humus."

M. SCHIEDEANA

SCHLECHT.

Magnolia Schiedeana, Schlecht, in Bot. Zeit. (1864), 144 ; Standley in Contr. U.S. Nat. Herb. 23. 275.

A large tree ; branches distantly or closely ringed with the scars of the fallen stipules ; young branchlets furrowed when dry, glabrous. Leaves evergreen, oval to elliptic, about twice as long as broad, rounded to acute at the base, acute at the tip, 12–17 cm. long, glabrous ; main lateral nerves up to 12 pairs interspersed with about 9 smaller ones, venation very prominent and finely reticulate ; petioles flat above at the base, furrowed above, about 2.5 cm. long, glabrous, granulate, narrowly bordered by the decurrent leaf-margin ; stipules finely granulate, at first densely hairy, the hairs rapidly deciduous. Peduncles fairly uniformly cylindrical, 2.5–3.5 cm. long, glabrous granulate, equalling or exceeding the glabrous bract. Flower-buds enclosed in a single spathaceous bract which is broadly ovate, shortly mucronate, slightly keeled towards the tip, about 4 cm. long, granulate, perhaps hairy when young. Flowers creamy-white.

Sepals 3. Petals 6, about 6 cm. long. Stamens about 30, inserted upon an axis about 2 mm. long. Gynaecium stoutish, cylindrical, 20–23 mm. long ; carpels about 20, tuberculate, glabrous ; styles recurved ; Fruit unknown. (J. E. Dendy.)

The species which flowers in June occurs in Southern Mexico, from Veracruz to Tepic and Sinaloa. It was originally found by Schiede in 1829 between San Salvador and Jalapa.

Vernacular name : " Corpus " (Tepic).

Rose reports that a decoction of the flowers is used in Tepic as a remedy for scorpion-stings.

M. Selloi, Strang

= *Talauma Sellowiana*, St. Hil.

M. SOULANGEANA, Soulange-Bodin.

M. Yulan, var. *Soulangeana*, Lindley, Bot. Reg. t. 1164.

= *M. denudata*, Desr., × *M. liliflora*, Desr.

The habit of this small tree is somewhat similar to *M. denudata*, but more spreading and inclined to break into large side branches like *M. liliflora*.

In old specimens it attains a height of 20 to 30 feet if side branches are pruned. Leaves

M. Soulangeana

4–7 in. long, narrower than Yulan and more tapering at the apex, downy beneath and 3–4 in. wide.

Abundant flowers in April continuing for a month. Petals 6, white inside and more or less stained with purple outside, varying from $3\frac{1}{2}$–6 in. in length and 2–3 in. wide. So many forms and seedlings of this hybrid have been issued that flowers are irregular both in size and colour.

This very popular hybrid is perhaps the hardiest and most floriferous of all the crosses between *M. denudata* and *M. liliflora*. There are hundreds in English gardens scattered all over the Home Counties and the south-west.

The original hybrid was raised in the garden of Chevalier Soulange Bodin, an officer of the French army, at Fromont near Paris, by using the seed of *M. denudata* and the pollen of *M. liliflora*. The first plant flowered in 1826. After the peace of 1814 Soulange Bodin devoted himself to gardening and was the founder of the body we now know as the National Horticultural Society of France. His remarks on gardening (*Gardeners' Magazine*, 1819) are of interest to us to-day. He says :

"It is to this that I cheerfully devote the

remainder of my life. It must be confessed that for the last thirty years great obstacles have presented themselves to the simple care which the earth demands. I shall not retrace the sad picture of the past—alike by the beaters and the beaten, the statues of Flora and Pomona were quickly thrown down and substituted by that of Bellona. The Germans have encamped in my garden. I have encamped in the gardens of the Germans; and it was with sword in hand that I visited the botanical collection of Schönbrunn (Vienna), Schauenburg (near Minden), Stuttgard and Petrowski (Moscow). I have said of others as they have said of me: *Barbarus per segetes*! It had doubtless been better for both parties to have staid at home and planted their Cabbages. We are returned there, and the rising taste for gardening becomes one of the most agreeable guarantees of the repose of the world."

A few years later the entire stock of these hybrids is said to have been purchased for a large sum by a nurseryman in the neighbourhood of London and many plants distributed. This statement is either incorrect or the Belgian nurseryman, who like the Japanese, also undoubtedly

made a similar hybrid, created fresh crosses of their own. It is certain, however, that examples of this cross, which also included plants of M. Lennei and all the others named hybrids, such as alba superba and Alexandrina, were distributed by the firm of Van Houtte in Belgium both to England, France and Italy. Mr. Jesse Busby, who planted the first Magnolias in the garden of the Château Eleanore at Cannes for the late Lord Brougham, told me that he obtained his plants from Van Houtte in 1870. The examples in this garden of M. Lennei, M. Alexandrina and M. Soulangeana are probably the tallest in Europe though not the largest in circumference.

The specimen of M. Soulangeana at Holmbush (Col. Clifton Brown, M.P.) measures 46 yards round and 14 yards across the outspread branches ; trunk 5 feet 6 in. 2 feet from ground ; height, 30 feet. It is the largest I have seen in Sussex or elsewhere in England, but there may be others quite as big in other gardens. There are some fine ones almost equal in size at Coolhurst (Sussez) and Westonbirt (Gloucestershire), whilst old gardens in Somerset, Dorset, Devon and Cornwall contain noble specimens that must have been planted for at least seventy years.

Once established M. Soulangeana grows with rapidity and soon makes a wide spreading tree. Specimens in my garden for fifteen years are 20 feet high and 42 feet in the circumference of the branches. They flower abundantly every April, and the groups of flowers last a month. Even if frost catches the tree when in bloom, another batch is pushing on to hide the havoc and restore the beauty. Two or three big plants of M. Soulangeana will gay up any garden in spring, and as specimens seven or eight years old already set with flowers can be purchased at a cheap rate from Holland, where they are moved annually to ensure safe removal, there is no excuse to omit this splendid feature from the humblest garden.

The cultivation of this hybrid is very easy. It asks for nothing but a fairly good light soil but will grow in heavy loam, chalk or clay if the pit is properly prepared. A space with a diameter of 15 or 20 feet should be allowed for eventual development, whilst at first to cover bareness the plant can be surrounded by rhododendrons or plants of easy removal. It layers easily, and rooted plants are frequently used as a stock for *M. denudata*.

M. SOULANGEANA VAR NIGRA

The number of hybrids of similar origin to M. Soulangeana is considerable. Some are quite as good and others inferior, and again there are forms cultivated that are not worth growing. The best of these, such as M. Lennei, M. alba superba, M. Alexandrina, M. spectabilis and M. Brozzonii, are described separately and worth cultivation, whilst M. cyatheformis, M. grandis, M. triumphans, M. Hammondii (with narrow petals), *M. Norberti*, and several others whose names only are given, are not of such quality as to deserve attention. Two important hybrids of the same cross M. gracilis (described elsewhere and quite distinct and beautiful) and M. Soulangeana, var. nigra, merit inclusion in the most select collection.

M. Soulangeana, var. *nigra*, Veitch.

A close shrubby bush up to 10 feet in height and as much across. In general appearance like *M. liliflora* but more close in habit and better furnished with leaves which are broader and longer, 6½ in. by 4 in., as well as a darker green in colour. The flowers in bud state are pointed, and when fully developed 5½ in. across, but many small flowers are put forth as well as large ones and follow one another in succession

for two months ; colour outside a rich venous purple, inside whitish. Fruit and seeds similar to *M. liliflora*.

The exact origin of this handsome and long flowering Magnolia is unknown, although one parent is undoubtedly *M. liliflora*. The other may be *M. denudata*, var. *purpurascens*, the purple variety of Yulan (from China) which occurs in a few Japanese gardens, for it is difficult to believe that so dark flowered a hybrid could have originated from true *M. denudata* and *M. liliflora*, since the flowers and leaves are much darker than is likely to be produced from such parents.

There is little doubt that this fine hybrid originated in some Japanese nursery, since John Gould Veitch introduced it from Japan in 1861. It has been much cultivated by the Dutch and Belgian nurserymen both from its own layers and by grafting on M. Soulangeana stock. M. gracilis, a rare Magnolia hybrid, has flowers much smaller and even more pointed but very dark, and may be a seedling from M. Soulangeana, var. nigra, but is more likely to be of another origin as its leaves and habit are quite distinct.

M. Soulangeana, var. nigra, is an excellent Magnolia for the garden. Firstly because of its abundant flowers of a remarkable colour, and secondly because it continues to flower longer than any of the Yulan hybrids. It begins quietly with a fair show of flowers at the end of April, and these increase in numbers in successive groups throughout May till the middle of June, when the plant gradually ceases to flower. Good upright growth then commences in July, and the bush requires little or no side pruning to keep it in good shape and encourage the leaders. The hybrid seems to be perfectly hardy, but does not possess the vigour or abundant flower and growth of M. Soulangeana, yet it is a first class Magnolia and should be planted in every garden.

I have not seen large specimens of this fine Magnolia in any garden. It grows very slowly at Kew. Mr. Bean, who visited my garden recently, seemed surprised at the growth of our plants which are now 9 feet high by 12 feet across and putting on about 2 feet every year though only planted twelve years ago. Our conditions in Sussex are good but by no means exceptional so we may yet see M. Soulangeana, var. nigra, grow to noble proportions.

It may be mentioned that in the Belgian nurseries the stock seedlings range in colour and shape from the dark M. Soulangeana, var. nigra, right through M. Lennei up to the pure whites of almost true M. denudata. Many of these are named and others not. The shapes of the flowers, too, vary from sharply pointed blooms, through the blunt goose-egg Lennei forms up to the cup-shaped Yulan character. I have even seen pure white M. Lennei forms which are so beautiful as to deserve a name. Those who love Magnolias will do well to visit the Dutch and Belgian nurseries at Boskoop and Ghent, etc., in flowering time, and make their own selection. Their season is later than ours, and May is a good date.

M. SPECIOSA

HORT.

=*M. Soulangeana*, var. *speciosa*.

One of the numerous seedling forms of the hybrid *M. denudata* and *M. liliflora* with rather small leaves and nearly white flowers. An abundant bloomer and quite hardy. April.

M. SPECTABILIS

M. SPECTABILIS

HORT.

= *M. liliflora*, Desr., × *M. denudata*, Desr.

A really fine white flowered variety that blooms till the middle of May. Flowers large but not so fine as M. Brozzonii, to which it is closely related.

M. SPHENOCARPA

WALL.

= *M. pterocarpa*, Roxb.

M. SPLENDENS

URBAN.

Magnolia splendens, Urb. Symb. Antill. 1. 306.

A very handsome tree, 20–25 or more m. high; branches brown, terete, smooth, very sparsely lenticellate, with internodes 1.5–2 cm. long, the young branchlets very densely and appressedly silky-hairy at the tip. Leaves evergreen, coriaceous, ovate or ovate-elliptic, rounded or obtuse at the base, obtusely acuminate at the tip, 10–15 cm. long and 6–8.5 cm. broad, glabrous and glossy above, very lustrously silky-hairy beneath; midrib impressed above, lateral

nerves 10–16 pairs, somewhat prominent on both surfaces, venation closely reticulate; petioles subterete, very narrowly furrowed above, not callose, 1.5–3 cm. long and about 1.5 mm. thick, silky-hairy; stipular sheath up to 9 cm. long, silky-tomentose, finally separating into 2 segments which are linear-subulate, 6 mm. broad, glabrous and granulate-punctate within.

Peduncles 1.5–2 cm. long. Sepals 3, green obovate-oblong or obovate, 3–3.5 cm. long and 1.5–2.5 cm. broad. Petals 8, white, 4–4.5 cm. long, the larger ones obovate up to 3 cm. broad. Filaments stout, 1.5–3 mm. long; anthers linear, 10–12 mm. long; connectives produced setaceously up to 5 mm. Carpels with spirally incurved styles. Fruit ovoid, 3–3.5 cm. long and 2 cm. thick; ripe carpels about 17, green, elliptic or oblong; 12–15 mm. long and 6–7 mm. broad, granulate. Seeds usually 2, flesh-coloured, triangular, about 7 mm. long. (J. E. Dendy.)

M. splendens was found in Portorico, in primeval forests on Mt. Jimenes in the Sierra de Luquillo and at Los Ranchones in the Sierra de Naguabo, by Eggers and Sintenis.

It flowers from June to August and fruits in October.

Vernacular names: "Sabino" or "Laurel Sabino." One of the most beautiful of trees, but unfortunately too tender for cultivation in our islands. The leaves are used by the natives like those of *Laurus nobilis*, L., as a condiment.

M. SPRENGERI

PAMPANINI.

Magnolia Sprengeri, Pampanini, in Nuov. Giorn. Bot. Ital. N.S. 22. 295.

Branchlets glabrous, with short internodes 0.8–1.5 cm. long and about 0.4 cm. in diameter, bark thick as seen in the dry state, with sparse, oval lenticels; leaf-buds glabrous or slightly puperculous at the tip. Leaves deciduous, unknown. Peduncles very short, about 0.3 cm. long, glabrous. Flower-buds hirsute with long, silky, shaggy hairs. Flowers precocious. Sepals 3, very unequal, about 3 cm. long, the two outer triangular acuminate, the inner one larger and broadly rounded. Petals 8–9, oblong-spathulate, rounded, the outer ones 4 cm. long and 1.5–2 broad, the others about 6 cm. long and about 2 cm. broad. Stamens with very short filaments 3.5 mm. long; anthers 11 mm. long;

connective produced, straight, acuminate, 0.7 mm. long. Gynaecium slender, little exceeding the stamens, 1.5–2 cm. long; styles curved only in the upper part, 3 mm. long. (J. A. Dendy.)

This new species was found in China, in the province of Hupeh at U-tan-shian and Zan-lan-shian, by Silvestri in 1912–1913.

It is related to *M. salicifolia*, Maxim., and *M. aulacosperma*, Rehder et Wilson. *M. salicifolia* differs in having six petals, equal narrow lanceolate sepals, and much more slender branchlets with internodes 1–1.5 cm. long. *M. aulacosperma*, whose flowers are unknown, is also distinguished by the more slender branchlets and by the shining yellowish-silky leaf-buds.

M. STELLATA

Maximowicz.

M. stellata, Maxim. in Bull. Akad. Petersb. 17. 419 (1872).

M. Halleana, Hort., Bot. Mag. t. 6370.

Hall's Magnolia. The Star Magnolia.

A much-branched deciduous shrub of compact habit growing to 15 feet high and as broad; bark when young aromatic and at first silky-hairy;

M. STELLATA

Nymans, Sussex

winter buds shaggy. Leaves long narrow-oblong or obovate, tapering at the base to a short stalk, 2½–4 in. long, 2 in. wide. Flowers produced on the naked shoots in late March or early April, pure white; petals 12–18, being more numerous than any other Magnolia; 1½–2 in. long, narrowly oblong, at first spreading and then reflexed.

M. stellata is a native of Japan and is common in the woods round the base of Mt. Fujiyama. It was introduced to England about the year 1877, but was long before this cultivated in the gardens of Japan.

For small gardens this is perhaps the most popular of all magnolias, as it does not take up much space and flowers abundantly even in a young state. At first it grows slowly, but after reaching five feet seems to put on longer shoots annually. In sheltered gardens where the soil is a mixture of sand and peat, it grows with vigour, and in the south-east of England and counties south of London, there are many large examples of this Magnolia over 12 feet high. There is a large specimen in Miss Jekyl's garden at Munstead, Surrey, and a still bigger one which I saw some fifteen years ago at Abbotsbury,

Dorset. This plant must now be one of the largest in England.

Perhaps the finest group, which numbers 12 plants, unfortunately placed too close together, is at Nymans, Handcross, Sussex, where the average height is 10 feet, and the tallest examples over 12 feet. A specimen at the Castle at Caerhays, Cornwall, is 15 feet high by 15 feet across, and must be about the limit in stature which this Magnolia grows.

Like all the early flowering Magnolias, *M. stellata* may suffer by having its first flowers damaged by frost. Its petals being thin, are easily blackened, and the bush made unsightly, but as a rule there is another crop of flowers ready to develop and wipe out this misfortune. *M. stellata* can be raised from layers, but plants sent from Holland and Japan are usually grafted. It is a species of such neat round shape when given room for development that no pruning is necessary.

A charming effect can be created in spring by planting the grape hyacinth (*muscari comosum*, var. *Heavenly Blue*) in a wide group beneath and round this charming Magnolia as the two flower at the same time.

America owes the introduction of this fine shrub to Dr. George R. Hall, who brought it from Japan in 1862 and gave it to Mr. S. B. Parsons, Flushing, Long Island, N.Y. In the States it was distributed as *M. Halleana.*

This is a pale pink form of the species, sometimes known as var. *rosea*, which is very attractive.

M. TALIENSIS

W. W. Smith.

MAGNOLIA TALIENSIS, W. W. Sm. in Not. R. Bot. Gard. Edinb. 8. 341.

A shrub or tree, 3–7 m. high ; branchlets reddish, at first sparingly tawny-hairy, soon becoming glabrous. Leaves (only young ones present) deciduous, thinly membranous, oblong to ovate-oblong, rounded at the base, subacute at the tip, 5–9 cm. long and 2–4 cm. broad, glabrous above except the hairy midrib, paler and more or less sparingly tawny-hairy beneath, more densely so on the midrib ; lateral nerves up to 12 pairs, obscure above, raised beneath. Peduncles 1–1.5 cm. long, tawny-hairy, curved. Flowers appearing after the leaves, somewhat nodding, white or cream-coloured, 8–9 cm. in

diameter. Sepals 3, ovate, obtuse, up to 3 cm. long. Petals 6, obovate-oblong, up to 4 cm. long. Stamens numerous; filaments 2 mm. long; anthers 7 mm. long. Immature carpels 2-seeded, glabrous, beaked. (J. E. Dendy.)

Found in Yunnan by G. Forrest.

This plant is merely a young condition of *M. Nicholsoniana*, Rehder et Wilson, and cannot be retained as a distinct species.

M. THOMPSONIANA

SARGENT.

M. glauca, var. major, S.; Bot. Mag. t. 2164.
=M. glauca, L., × *M. tripetala*, L.

A very loosely branched shrub or small tree up to 20 feet high, producing long ungainly branches every season. Leaves 4–10 in. long, glaucous beneath, and somewhat similar to *M. glauca*, but longer and broader, rich green above. Flowers creamy white, loose and midway the size and shape between the two parents. Petals 3–4 in. long, the whole flower being only slightly open. Fruit and seed not seen.

A chance seedling from *M. glauca* found by Mr. Thompson in his nursery at Mile End in

M. Thompsoniana

the year 1808. He distributed it, although none of the original shrubs seem to be alive in gardens to-day if we except the fine specimen plant 20 feet high and 30 feet across in the Garden House, Saltwood, Kent, which may be one of the early examples sent out. This fine specimen, which I saw in full flower some years ago, converted me to think highly of this Magnolia, as previously the hybrid did not seem of any special merit. Like M. Watsoni, it is a plant of high value in the garden when it grows to ample proportions. It must be kept in good shape by judicious side pruning in July. The plant flowers in a young state, and each year puts forth more and more flowers until it becomes an object of great beauty at a time of year when flowers are scarce. M. Thompsoniana is easy to layer. It is quite hardy in nearly all parts of our islands.

M. Thurberi, Hort.
= M. kobus, DC.

M. Tomentosa, Thunb.
= M. kobus, DC.

M. TRIPETALA

LINNAEUS.

M. tripetala, Linn. Syst. Nat. Ed. 10. 1082 (1759). *M. Umbrella*, Lamarck. *M. frondosa*, Salisb.

"The Umbrella Tree."

An upright tree with fairly wide-spreading branches, seldom exceeding 40 feet in height. Leaves 12 to 20 in. long, 6 to 12 in. wide; broadly oblanceolate, acute and tapered at both ends, pubescent beneath when young, strongly ribbed; leaf-stalks 1 to 2 inches. Petals six to nine, creamy-white 4 to 5 in. long, 2 in. wide. Flowers produced in May or June and strongly and disagreeably scented. Fruit 4 in. long, cone-shaped, rosy-red, freely produced; seeds scarlet.

The "Umbrella tree" is a native of Eastern North America, and grows well from York and Lancaster counties, Pennsylvania and along the Alleghanies south to Virginia and Kentucky. It is an old denizen of British gardens, having been introduced in 1752 and was first flowered by Collinson, May 24th, 1760. The species is quite hardy, and it grows as well in the midlands

as in southern gardens. In fact, the best specimen I have seen is at Patshull, Lord Dartmouth's home on the borders of Staffordshire. It is nearly 35 feet high. Mr. Bean mentions that the best he has seen is one in the gardens at Sandon Hall, Weston, Stafford, which has a main trunk of 9 ft. 9 in. in girth near the ground and is about 25 feet high and through. Two plants in my garden, fifteen years old, are 20 feet high. *M. tripetala* flowers very freely after it has attained a height of 12 feet. The flowers come in small groups from May to June, and are very attractive but disagreeable and pungent in smell. The tree, too, is very beautiful when in fruit later in the season.

This species is often sold by nurserymen for the more beautiful and rarer *M. macrophylla*. The difference of the two species is, however, easy of recognition by the leaves. The base of the *M. tripetala* leaf is tapered to the stalk, whereas that of *M. macrophylla* is auriculated (eared). In North America *M. tripetala* is often used as a stock for grafting.

M. TSARONGENSIS

W. W. SMITH.

Magnolia tsarongensis, W. W. Smith, in Not. R. Bot. Gard. Edinb. 12. 215; Forrest Nos. 18,870, 18,512, 18,959.

= *M. globosa*, Hk. f. et Thoms.

A shrub, 3–6 m. high: branchlets moderately stout, at first very densely ferrugineous-tomentose, later becoming glabrous; leaf-buds narrowly oblong, 2–3 cm. long, ferrugineous tomentose; leaves deciduous, membranous when dry, broadly elliptic to ovate, rounded or sometimes subcordate at the base, shortly apiculate at the tip, the larger 17–26 cm. long and 7–13 cm. broad, dark green above and finely tomentose on the midrib and nerves with scattered deciduous hairs elsewhere, densely ferrugineous-tomentose beneath on the midrib and nerves with numerous paler hairs elsewhere; lateral nerves about 12 pairs, raised beneath like the midrib; petioles 3–8 cm. long, densely ferrugineous-tomentose, channelled above; stipules long-persistent, oblong, convolute, 3–7 cm. long and about 0.8 cm. broad, densely ferrugineous-tomentose, at first adnate to the petiole. Peduncles up to 6 cm. long and

0.2-0.4 cm. thick, densely tawny-tomentose. Flowers appearing after the leaves, yellowish-white, fragrant, up to 6.5 cm. long. Sepals and petals 9, sub-equal, more or less obovate, rounded at both ends, about 3.5 cm. broad. Stamens numerous; filaments slightly dilated, 2–3 mm. long; anthers retuse at the tip, 11–13 mm. long; connective not mucronate. Gynaecium including the staminiferous portion slightly exceeding 2.5 cm. long, scarcely 1 cm. broad at the middle, glabrous; carpels numerous; styles acute, about 4 mm. long, slightly recurved. Fruit oblong, symmetrical, up to 7 cm. long and 3 cm. in diameter; ripe carpels about 30 up to 2 cm. long, distinctly beaked. Seeds 1–2. (J. E. Dendy.)

Found in S.E. Tibet and Yunnan.

This plant is conspecific with *M. globosa*, Hk. f. et Thoms. from the E. Himalaya, the somewhat greater degree of hairiness in *M. tsarongensis* not being sufficient to justify its retention as a distinct species.

Very few seeds of this Magnolia, sent home by Forrest, have germinated in this country, though Col. S. Clarke raised four examples from seed kindly given to me by Mr. Cory. Prof. W. W.

Smith considers the species closely allied to *M. mollicomata*, W. W. Sm.

Forrest's field notes are :

" S.E. Tibet.—Salween-Taron (Kiu-Chiang) divide, Yunnan, in thickets and on the margins of thickets. Lat. 28° 40′ N. Alt. ? Shrub of 10–20 ft. Flowers fragrant, creamy-white. July 1919." G. Forrest. Nos. 18,870, 18,512.

" Salween-Kiu-Chiang divide. Lat. 28° 40′ N. Long. 98° 15′ E. Oct. 1919." G. Forrest. No. 18,959 (duplicate in fruit of No. 18,870).

M. VAN HOUTTEI

HORT.

= *M. liliflora*, Desr., × *M. denudata*, Desr.

Probably a seedling from *M. Lennei* which it resembles in leaf character, but the flowers are smaller and almost black-purple on the outside. A rare hybrid seldom seen in English gardens, but still cultivated in Belgium. There are some fine specimen plants at Leonardslee, Sussex. Flowers in early May.

M. VEITCHII

HORT (W. J. BEAN).

M. Veitchii, W. J. Bean in Journ. Royal Hort. Soc. April, 1920

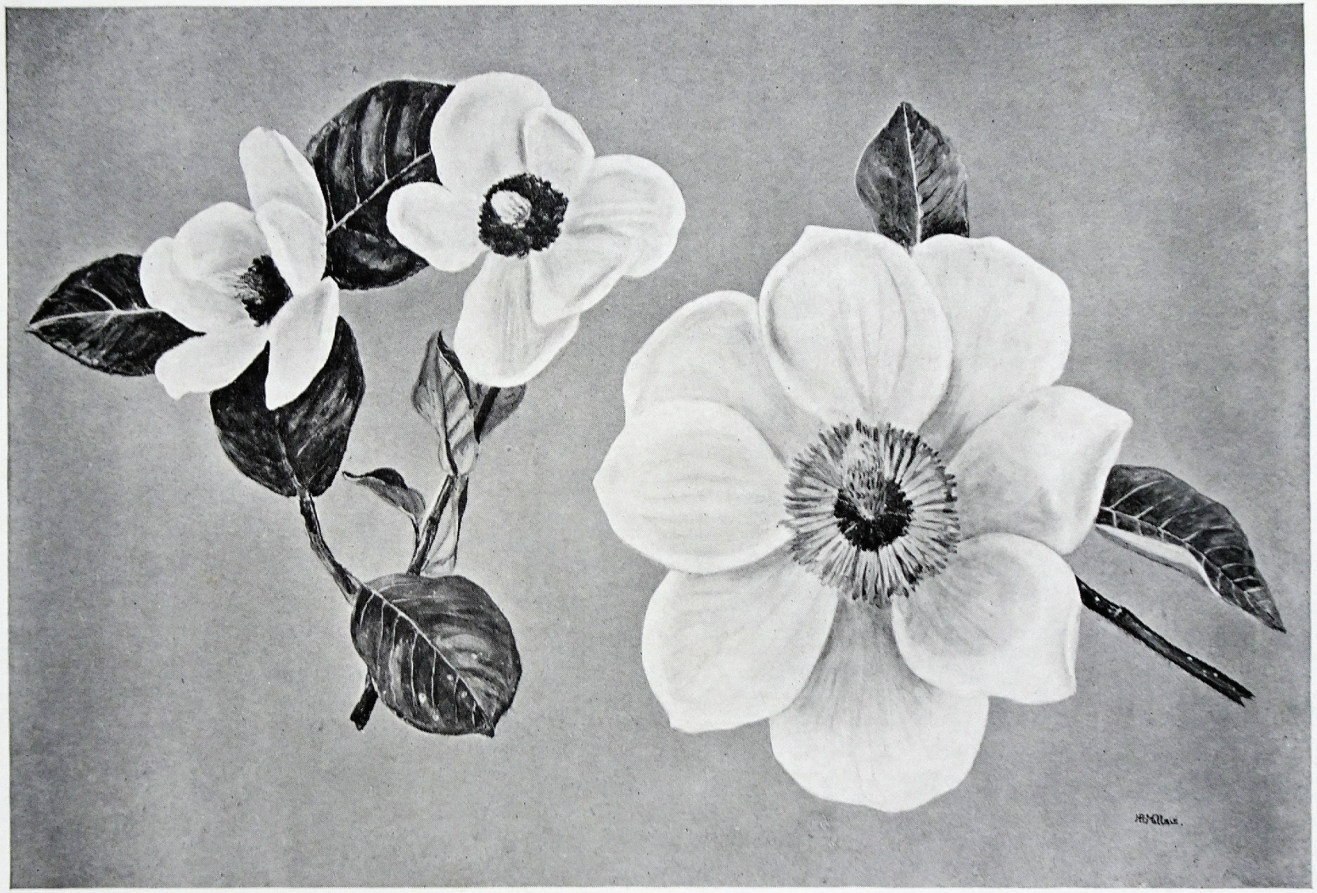
= *M. denudata*, Desr., × *M. Campbelli*, Hk. f. et Thoms.

"A deciduous tree which will no doubt grow ultimately to a height of 30 to 40 feet; young wood purplish, clothed at first with appressed grey hairs, becoming brown the second year. Leaves obovate, mostly rounded at the base and terminated by a short abrupt point; they vary considerably in size, the largest being 10 inches to 12 inches long and 5 inches to 6 inches wide, the smallest with about half those dimensions; dark green at maturity but purplish (especially beneath) when young; the midrib and chief nerves clothed with grey down; leaf stalk $\frac{3}{4}$ inch to 1 inch long and downy. Flowers solitary at the end of the naked twigs each measuring 6 inches long; petals nine, $1\frac{1}{2}$ inches to 2 inches wide, rounded and broadest near the apex, tapering towards the base. The colour is a lovely blush pink.[1]

[1] Also white or purple and white. J. G. M.

" From this description it will be seen that this hybrid is intermediate in several respects between the parents. In size of leaf it has inherited the fine dimensions of *M. Campbelli* and a good deal of its pubescent character, but in shape and firmness of texture it favours the Yulan more closely. The entire flower and the individual petals are intermediate between those of the parents in size, and the pure whiteness of the Yulan has diluted the colour derived from *M. Campbelli*. Like so many hybrids, *M. Veitchii* possesses great constitutional vigour. The raiser is to be congratulated on obtaining a fine addition to a group of flowering trees and shrubs. It ought to be perfectly hardy over the southern half of England, and in all the western counties." (W. J. Bean.)

This hybrid was raised by Mr. Peter Veitch at Exeter in 1907 by using the pollen of *M. Campbellii* on *M. denudata* (forced into bloom). Seven ripe seeds were sown, of which five germinated. The first flowers appeared on these hybrids in 1917. Four of the plants carried creamy-white flowers, 5 or 6 in. long, and sweet scented. In some examples the foliage resembled *M. Campbellii*, whilst in others it is intermediate.



M. PARVIFLORA

M. WATSONI

In one example the flowers were quite distinct in colour, being a pale purplish rose. This plant I have seen in Mr. Lionel de Rothschild's garden at Exbury, where it is growing rapidly. I have two examples of this cross at Compton's Brow, but their flowers are white and of no particular merit. Flowers in April.

M. virginiana, L.
= *M. glauca*, L.

M. Vrieseana, Baill.
= *Talauma Vrieseana*, Mig.

M. WATSONI

HOOKER FIL.

Bot. Mag. t. 7157.

A deciduous small tree of stiff habit often branching at the base. Leaves obovate, leathery with 10–15 pairs of nerves; 6–8 in. long, tapering at the base to a stalk 1 in. in length; apex blunt, dark green above and glaucous and slightly hairy beneath. Flowers, highly scented like pineapple. Petals ivory white, concave, 6 in number, sometimes slightly tinted rose outside; stamens rich rose crimson forming a large rosette 2 in. across the cone centre.

This beautiful Magnolia is probably a natural hybrid of *M. hypoleuca* × *M. parviflora*, as it bears all the main characters of both species. It has not been found in a wild state either in Korea or Japan, from which country it first came as an exhibition plant to the Paris Exposition of 1889. M. Watsoni soon got the reputation of being tender and difficult to grow owing to the fact that all plants subsequently imported to Europe were grafted. As a grafted plant it is a failure, but on its own roots it is easy to grow and after the first few years makes rapid growth. In ten years four plants are now 12 feet high, and are rapidly progressing both in the length of annual shoots and the quantity of flowers. In Oxfordshire and Devonshire plants have reached over 20 feet so that in time we will probably be able to include this fine hybrid amongst our best Magnolias. Even if its habit is rather gaunt and straggling, the large flowers are so beautiful and striking that even for cut flowers it is well worth growing.

M. Watsoni flowers at the same time as *M. hypoleuca* and *M. parviflora*, that is, it commences to open its rounded flower buds the first week in June, and eventually as it reaches good propor-

tions, it displays further groups of flowers throughout June and July.

M. Watsoni seldom sets seed but can be increased by layers which, however, take a long time to root. It seems to be hardy and grows well from the south of England to Derbyshire, where I have seen it doing well on a wall. A well-sheltered spot in a good sandy loam soil where a fair amount of midday sun reaches it seems to suit the plant admirably. Plenty of room must be given to M. Watsoni as well as to *M. parviflora*, as any subsequent moving when plants are big seems to be dangerous to their well-being, but I have moved two specimens of M. Watsoni 10 feet high, with complete success, by adopting the French method as described in cultural notes.

M. WILSONII

REHDER.

M. Wilsonii, Rehder in Sarg. Plant. Wilson. 1. 395 (1913).

A spreading shrub about 3 m. high, or more rarely a small tree up to 8 m. high, with slender branches ; branchlets slender, those of the current

year reddish—or ashy-villous, those of the preceding year glabrous, purple-brown, marked with sparse lenticels; terminal buds narrowly oblong,. 1.5–2 cm. long, densely reddish-hairy. Leaves deciduous, sparse, elliptic-lanceolate, more seldom elliptic-ovate or elliptic-oblong, acute or shortly acuminate, at the base rounded or slightly subcordate, more rarely broadly cuneate, 7–15 cm., usually 9–12 cm. long and 2.5–6 cm. usually 3.5–5 cm. broad, the upper surface glabrous, dark green, slightly reticulate when dry, the lower densely shaggy-tomentose with long, silky, subappressed, ashy-yellowish hairs which are reddish at the midrib; nerves 10–12 on both sides, raised beneath like the midrib; petioles 1–4 cm. long, densely reddish-hairy. Flowers appearing with the leaves, fragrant, white with red stamens and gynaecium, cup-shaped, 10–12 cm. in diameter; buds ovoid, acute, sparingly tawny-villous, becoming glabrous; peduncle 2–2.5 cm. long, bearing the scar of a spathaceous bract about the middle, tawny-villous. Sepals and petals usually 9, half-spreading, 5–6 cm. long and 2–4.5 cm. broad, the outer elliptic, acute or obtuse, the inner obovate, rounded at the tip. Stamens numerous,

half-spreading 10–12 mm. long ; filaments very short, red, 1.5–2 mm. long ; connective rounded at the apex, usually somewhat mucronate. Gynaecium red, including the staminiferous portion about 2.5 cm. long ; carpels not very numerous ; stigmas half-spreading, 3-4 mm. long. Fruit nodding, oblong-cylindric, obtuse, 6–7 cm. long and 2–2.4 cm. in diameter, purple ; ripe carpels crowded, when open boat-shaped, the valves usually cohering at the apex and base, 10–15 mm. long and about 8 mm. high, distinctly beaked above. Seeds 1–2, irregularly very broadly obovoid, sometimes broader than long, compressed, scarlet, 7–8 mm. long or broad, the inner testa grey-brown not sulcate, somewhat acuminate at the base.

Mr. E. H. Wilson kindly sends me the following note on this species in its native habitat :

" This Magnolia is quite a common shrub in the woods of eastern Szechuan, especially to the immediate south-east of the town of Tachien-lu. It is found at elevations between 7,000 and 8,500 feet on the edges of woods, in thickets and more especially alongside mountain streams, growing with moist deciduous trees and shrubs, Rhododendrons, Silver Fir, Spruce and Hemlock

Fir. Usually it is a straggling bush anywhere from 10 to 15 feet tall and as much through. In late May and early June it is conspicuous with its saucer-shaped, fragrant, pure white flowers in which nestle bright red stamens and carpels. It was discovered by me in the summer of 1904 and introduced into English gardens by seeds which I sent to Messrs. Veitch in the autumn of that year. In October of 1908 I sent a quantity of seeds to the Arnold Arboretum which were widely distributed. Both *M. Wilsonii* and *M. Nicholsoniana* belong to the section represented in gardens by the well-known *M. parviflora*. Neither are hardy in the Arnold Arboretum."

This species of Magnolia is one of the best introductions we have had from China of recent years. It is quite hardy over the whole of Central and Southern England, and is, moreover, a vigorous grower, although its young shoots are not robust. Fortunately it comes freely from seed ripened in our islands, and there will soon be a good stock for distribution. After the second year young plants in favourable soil will grow as much as 3 feet in one season, though it is likely that after a few years this rate of progress will slow down as it does in *M. parviflora*. Wilson

speaks of it as a small tree only 18 feet high, and that height it seems certain to achieve in this country. It flowers in quite a young state, and when it reaches a certain maturity, should be a great ornament to our gardens if it gives, as seems likely, a continuance of blooms over a long period as is the case with *M. parviflora*. The lovely pendant flowers when borne in masses, should exhibit a sight similar to a glorified *Halesia tetraptera*; so we can look forward to a time when *Magnolia Wilsoni* will be one of the treasures of English gardens.

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