PREFACE

THE author is in charge of the trees and shrubs in the Royal Botanic Gardens, Kew, and for this reason, if for no other, he has unrivalled qualifications for writing a really practical and comprehensive work embodying the latest horticultural practice. This he has done, covering concisely, yet in the minutest detail, every phase of arboriculture. Indeed, he has produced a book that will be of inestimable value to gardeners, whether tyros or old hands.

It is safe to say that never before has such interest been taken in flowering and ornamental trees and shrubs, for in every part of the country more and more people are buying their own houses and gardens, and, being owners of the land, they naturally wish to have a representative selection of lovely trees and shrubs that will be a life-long source of pleasure and interest. The possessor of even the smallest plot will want a tree or two, in addition to a collection of flowering shrubs, while in a large garden it is possible to have a wide and varied assortment of beautiful subjects.

More and more people are coming to realise that, save for the first outlay—an expenditure few will grudge when one remembers that the plants will last a life-time—trees and shrubs require the minimum of labour, and their cultivation costs much less than any of the other forms of gardening. This is, perhaps, the reason for the flood of ornamental and flowering trees and shrubs that is now being poured out by nurserymen.

Many people with rather larger gardens than they have been used to in the past have found that the work of keeping a large flower garden in order is quite beyond them, and they are, therefore, laying out large sections of their ground with trees and shrubs that in the future will give them interest and beauty the whole year through, with but little call for labour or expense.

Far too frequently do we still find gardens rendered dull and monotonous by the inclusion of a mass of common and uninteresting shrubs, such as, for example, the Privet, the Laurel, or the Aucuba, when by a little care and study in advance, and by hardly any extra expense, the place could be made bright and interesting throughout every month of the year, merely by the inclusion of a few of the wonderful new species and varieties of ornamental and flowering trees and
shrubs now available from most nurserymen. Just as a single instance take some of the varieties of the Japanese Cherry, which furnish such a wealth of bloom in early spring.

But the numerous importations of new species and varieties from China and Tibet, in particular, and the latest products of hybridisation have rendered the number of lovely trees and shrubs from which to choose, practically speaking, inexhaustible. And by very reason of this wide choice, the making of a really good and representative collection becomes an extremely difficult matter, for most gardens have room only for a very small proportion of the almost limitless number of species, varieties, and hybrids available. A book that is a really practical and helpful guide to a selection of the best of the modern trees and shrubs, whether desired for their blossom, berries or foliage, therefore becomes a necessity.

It may, for example, be necessary to make a representative selection for a tiny plot, for an estate of many acres, for a town garden, for a locality by the seaside, or, perhaps, for planting in the south-western counties of the British Isles, to give but a small idea of the difficulties of selection, for plants suitable to one situation, would possibly be useless for another. Or, again, it may be desired, perhaps, to choose subjects specially suited to a given locality or soil, we may need plants that will thrive in the sun, in the shade, by the water’s edge, on a dry, sandy bank, in a bleak, windswept situation, or, maybe, in sandy, gravelly, chalky or even peaty soil. In addition, it may be that plants are required to form hedges, for growing as climbers on walls, for the rock garden, or for forcing in the greenhouse. It is to meet such varied needs as these that the present book has been written, and the Publishers are confident that it fulfils the long-felt want for a really practical, reliable and up-to-date book on this subject.

Every effort has been made to describe as clearly, but as concisely, as possible the best of the newest and most desirable species and varieties. Details are given as to the average height to which they will grow, the colour and period of their blossoms and berries, and the nature and tints of the foliage, so that the reader may get some idea of the appearance, characteristics, habits, and cultural requirements of the plants he or she intends to purchase; a matter usually very difficult from the growers’ catalogues alone.

But this descriptive matter is, perhaps, the least important part of the volume, for the author’s aim has been to make it an essentially practical handbook, covering every phase of the culture of garden trees and shrubs. In simple and non-technical language, devoid as far as possible of botanical
PREFACE

terms, he shows how each particular species or variety should be arranged in the borders, and in the greatest detail he describes the actual planting and cultivation, the time and methods of pruning and propagating, also the diseases and pests to which particular species are most prone, indicating— at the same time the localities and soils most suitable to each plant.

SHRUBS AND TREES FOR THE GARDEN is essentially a work of reference, and for this reason it has been arranged in as handy a form as possible, so that the information imparted shall be quickly and easily accessible. A complete index has been added, popular and botanical names have been carefully cross-referenced, the work has, as far as possible, been arranged alphabetically, and much of the matter is in the form of lists and tables. In addition, the wealth of colour plates and photographs will be found of the very greatest assistance in the identification of the various species and varieties, some hundreds of which are mentioned.

When the cost even of only a moderately large selection of trees and shrubs is borne in mind, and when one considers the annoyance of finding after a few years that they are, through size, habit of growth or nature, possibly unsuitable to their position, it will be realised that the comparatively small sum spent on a book that will really assist in the selection, planting and maintenance of the trees and shrubs in a garden is money well invested.

Because of its simple language, this work will solve the many questions likely to puzzle amateurs, and by very reason of its scope, accuracy and authoritativeness, it cannot fail to form a standard work of reference for the expert.
In a comprehensive book such as this, the aim of which is to be of equal service to the owner of a garden on the bleak East Coast and to the happy possessor of a sheltered garden in Cornwall or South Devon, it will be readily understood that while the descriptions and characteristics may apply in a general way, details of height, season of flowering, and even the habit of a shrub or tree must obviously vary to some small degree when the plants are growing under widely-differing conditions.

Again, it is by no means an easy matter to estimate the distance apart that the various trees and shrubs should be planted. The general tendency is to put them too close together, and this must be carefully avoided. Six feet apart may be taken as a fair average. The smaller-growing plants, like Dabaecia polifolia, Gaultheria Shallon and Ruscus aculeatus, for example, may be set from 1 to 3 feet apart, medium growers, like many of the Barberries, Brooms and Cytisuses, some 3 to 4 feet apart, stronger growers, like many of the Buddleias, need 8 to 10 feet between them, while with still larger shrubs and moderate-sized trees, the space should be anything from 10 to 20 feet. Large trees, naturally, require even more room. The size the plant will eventually attain must be taken as a guide to the room it will require, and to help the reader with his planting schemes, great pains have been taken to indicate the ultimate size of the species and varieties recommended. Small plants in shrubberies and those used for forming hedges and screens are usually put in fairly close together, some of them being transplanted as they develop.

Under the heading of propagation all the generally-practised methods of increase are described in detail. But this need not deter the enthusiast from experimenting in other directions, should occasion offer or demand. For example, it is possible by one means or another to root cuttings of practically every hardy shrub and tree. I have rooted cuttings of the common Horse Chestnut, Æsculus Hippocastanum, though the young plants never attained sufficient vigour to develop beyond stunted bushes. Likewise, if the parent plant is suitably branched and positioned, layering provides a simple means of increasing shrubs and trees, but with many subjects it is seldom or never practised, because easier and quicker means of increase are readily available.

The alphabetical list describes and gives the detailed culture of a very comprehensive list of genera of shrubs and trees that it is possible to cultivate out-of-doors in the British Isles, but because of the limits of the book, it has only been found possible to enumerate a few of the most distinct and useful species, varieties and hybrids in the larger genera. The names in this section preceded by an asterisk indicate those most suitable for cultivation in small gardens or represent the best in the respective genera when only a limited selection can be accommodated.

Arthur Osborn
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THE EMPLOYMENT AND ARRANGEMENT OF SHRUBS AND TREES

CHAPTER I

A tree is, perhaps, best described as a woody plant which rises from the ground with a single distinct stem or trunk. Shrubs have been described as bushy trees, that is to say, they are plants of varying sizes, usually less than that of most trees, and with woody, branching stems. The distinction is purely artificial, but it has conveniences.

It was not unusual in pre-war days to see shrubs and trees used merely as fill-gaps, and planted in crowded masses where no individual had room for proper development or for the exhibition of its natural grace and form. Consequently the shrubbery was, or is, too often a mere shapeless green mass, devoid alike of grace and interest. But to-day there are very obvious evidences of an increasing interest in the cultivation of shrubs and trees, especially those attractive and showy in flower and fruit.

In almost every garden, shrubs and trees might be made an important feature. As individual plants, often of considerable beauty, as providers of shade, as interesting and attractive backgrounds for smaller plants, as instruments for the division of the garden into its several parts, and as providers of interest and colour during the winter months when outdoor flowers are scarce, shrubs and trees can be utilised to serve purposes the importance of which it is difficult to overrate. The variety which is now available of flowering and of evergreen shrubs and trees is very great.

If shrubs and trees are to give satisfaction, careful forethought and attention are essential. Instead of having to consider the effect to be achieved only in the following year or so, as in the case of most other plants, it is necessary to look ahead and picture what the shrubs and trees will be like in a few years' time, or when fully developed. It is, of course, possible to move shrubs and trees, even when fairly
EMPLOYMENT AND ARRANGEMENT

large, but the operation entails considerable labour and expense, and careful planning and planting in the first instance will reduce this to a minimum. Don't, on any account, buy up a lot of common trees and shrubs because they are offered cheaply, for when they arrive, you will probably have to ask yourself "Where shall I put this, and this?"

The first essential is to draw up some sort of plan, and to work out on paper your exact requirements, picturing to yourself what particular shrubs and trees will be really suitable to the situations available. Decide on the most satisfactory spots for a patch of winter colour, where to put the early spring flowerers, and so on. Then, from notes made when visiting gardens and parks, and when seeing the shrubs and trees growing, or by studying the lists given elsewhere, growers' catalogues, and the alphabetical section in the body of this book, select your fancy. Having made your choice, examine the situations carefully, and see that they are suitable as regards soil, aspect, space available, and other conditions; if they are not, make them so (see subsequent chapters on soils and manures).

Arrangement of Shrubs and Trees

The arrangement of shrubs and trees naturally varies according to the purpose which they are to fulfil. If they are to serve as individual specimens on a lawn, clearly, no "arrangement" is required. When planted in groups, it is usually desirable that several plants of a kind shall be placed together, though even here full space should be allowed for each individual to develop. This grouping together of, say, three to half-a-dozen specimens is not only more effective than scattering single plants about indiscriminately, but it makes it easier to give each group of plants the special soil in which they thrive best, and in the case of certain berry-bearing subjects with self-sterile or uni-sexual flowers, it is essential if berries are desired. (For soils suitable to each species, see the Alphabetical List of Flowering Shrubs and Trees, chapter XXXV.) The fact that we can have a continued sequence of bloom from flowering shrubs all through the year, provided they are carefully selected, is often overlooked. It is necessary, therefore, to select shrubs
 ARRANGEMENT OF SHRUBS

not only for the colour of their flowers, their suitability for their situation, but also for the time of year at which they flower. (See chapter XXXV) Care must be taken that specimens whose colours clash and which bloom simultaneously are not placed together. Associate shrubs whose blooms harmonise in colour and time of flowering, and allow the blooms of the specimens in flower to be set off and enhanced by the foliage of shrubs whose flowers are over or still to come.

Amongst the early-flowering shrubs and trees, the Witch Hazels, the Almonds, the Magnolias, Rhododendron præcox, the Heaths, Flowering Currents, Flowering Cherries, Forsythias and Amelanchiers are especially valuable. Following these we have the Crabs, evergreen Ceanothuses, Kerrias, Spireas, Lilacs, Laburnums, Brooms, Azaleas and the greater part of the large-leaved evergreen Rhododendrons, succeeded by the Thorns and Mock Oranges, and continuing with Buddleja variabilis, the deciduous Ceanothuses, and Escallomos. From September to October come the Late-flowering Clematis, the Heaths, Hibiscus, Veronicas, etc; while later still we have Fatsia japonica and Hamamelis virginica. For mid-winter effects, Chimonanthus fragrans, Erica carnea, Jasminum nudiflorum, Loniceras Stanishii and fragrantissima, Rhododendron Nobleaneum, and Viburnum Tinus are always useful. Exceptionally valuable are the berry-bearing shrubs, of which there are a great number, so are shrubs and trees with coloured and variegated foliage. Those plants, too, whose leaves assume gorgeous tints in autumn must also be borne in mind when the shrub border is being planned. (See chapters VIII, and IX)

Certain general rules are applicable to the cultivation of almost all shrubs and trees, as indeed of other plants. In the first place, the ground should, in advance, be deeply dug or trenched to a depth of 2 feet, and for most shrubs and trees enriched with well-rotted old manure and leaf-mould. When planting, sufficient space should be allowed to each individual plant for the free and full development of its own peculiar habit of growth. It may be, and often is, desirable to plant temporarily shrubs and herbaceous flowers between the permanent shrubs and trees, removing them from time to time as the permanent occupants increase in size. The turf
PURCHASING AND PLANTING

within a radius of 3 to 4 feet round bushes and trees planted on lawns should be permanently removed so that the earth may be cultivated, kept free of weeds, and exposed to the air.

As soon as the work of preparation of the sites is well in hand, the plants should be ordered from the grower.

Purchasing Trees and Shrubs

A few words of advice on the actual purchasing of shrubs and trees will not prove out of place. This may not seem a very important point at first glance, but, really, it is of vital interest. Don't rush matters! Having planned your garden or decided upon alterations and additions, make up your mind definitely what shrubs and trees you wish to acquire, and see that the soil and site are suitable, or make it so. If you are not sure on any of these points after consulting your gardening books, the grower will usually supply any information desired on the subject. Next, remember that all reputable growers, and it is always wise to purchase your plants direct from a reliable nursery, have a very busy time at planting and transplanting time, give them, therefore, due notice if you wish your plants to arrive at the correct time for putting in. Order the best that you can afford, and remember that, with care and attention, they may last a lifetime. Young and small plants are invariably the easiest to establish. Have the sites all ready, and get the plants in as soon after their arrival as possible, so that the roots are out of the ground for only a short period, they are then less likely to be injured. Never buy common and uninteresting plants because they happen to be offered cheap. Space is invariably valuable, and every bit of it deserves special consideration in view of the fact that shrubs and trees, once planted, usually remain for years. Should the plants, owing to delay in delivery, arrive with their roots at all dry, they should be immersed in water for several hours before planting. Never leave the roots exposed to a keen, drying wind while the holes are being dug, if this is done, they are bound to suffer.

Planting

The actual planting of the shrubs and trees, too, requires a deal of care and attention to detail, and later in the book a
special chapter has been devoted to this all-important operation. When planting shrubs and trees as backgrounds to borders, too great a regularity is usually to be avoided, and they should not present a straight, forbidding line. Rather should they afford projections and bays, now pressing out into the border, now forming recesses in which vigorous plants from the border may find welcome shade and shelter. Of course, where a definite hedge is required, something will have to be sacrificed to the necessity of continuity and much of the beauty of individual plants must be given up to the utility which is the hedge’s primary function.

In almost all shrub plantings, bulbs should not be forgotten, especially when the shrubs are first planted. Few sights are more beautiful than bulbous plants sending up their leaves and stems and flowers amidst groups of deciduous shrubs. Snowdrops, crocuses and scillas in spring, and lilies in summer and autumn, planted in irregular groups in this manner, produce an effect altogether more pleasing than any yielded when they are planted in formal beds or borders. And this applies to the whole of decorative gardening. Whilst individual plants and the beauty of individual plants should always form the units in our gardening calculations, yet it is in the relation of these units that the true gardener shows his skill, and gardening reaches its highest point.

No decorative gardening can be considered satisfactory in which the beauty and grace and interest of the individual plant is sacrificed to some vague general “effect,” but, on the other hand, a mere collection of perfectly grown specimen plants, however individually beautiful, is, unless there be harmony and a sort of over-ruling unity, no garden, but a sort of living museum.

Shaping and Pruning

The careful shaping and pruning of young shrubs and trees is a most important detail if the plants are to grow as they should, and it is much more vital in the first few years of the life of a tree to prune for formation rather than for bloom. I would advise the reader to make a careful study of the chapter which I have devoted entirely to the process of pruning.
EMPLOYMENT AND ARRANGEMENT

During the summer the soil round the shrubs and trees should be kept well hoed, and should be lightly forked over each winter, and where a shrub or tree is seen to be doing badly or to be exhausted, new soil and, if thought desirable, well-decayed manure should be thoroughly worked into the ground round the roots.

A glance at the alphabetical section in the body of the book, in which the descriptions and the detailed cultural requirements of a very large number of species and varieties of trees and shrubs will be found, will show the reader that he or she has a vast wealth of plants from which to choose; plants very diverse in colour, shape, size, and time of blooming. A careful study of this section will enable one to select the specimens most suitable to his or her requirements.

**FIG I — SUGGESTED PLANTING SCHEME FOR BORDERS ROUND A HOUSE**


**NOTE** — The dotted lines join groups of shrubs of the same species or variety. They are better planted in this way rather than as single specimens.
DECIDUOUS SHRUBS AND TREES

CHAPTER II

It is but necessary to name the large-leaved Rhododendrons and Holly to remind us that many evergreen shrubs have a great beauty of flower and fruit as well as of foliage. But it is, on the whole, to the great class of deciduous shrubs that we mainly look for grace and beauty and fragrance of flower. One of the earliest to flower of deciduous shrubs and trees is the *Hamamelis*, or Wych Hazel. The old species, *Hamamelis virginica*, though interesting enough, is certainly not the most showy. The finest Wych Hazel is undoubtedly *H. mollis*, which reaches a height of 8 to 10 feet, the whole plant being, in good seasons, studded with clusters of beautiful rich golden-yellow flowers. December is barely out when the curious spider-like flowers with their yellow petals and dark red calices appear on their leafless stems. The Wych Hazels are hardy, and easy to grow anywhere, and their leaves take on a rich colour in autumn. At about the same time appear the fragrant brownish-yellow flowers of the Winter-sweet, *Chimonanthus fragrans*. The little bell-shaped flowers generally grow thickly along leafless shoots, and are curiously marked with purple. Because of its very early flowering, this shrub may be given the protection of a wall facing south or west. Much protection against severe frost can also be given by branches of evergreens or bracken carefully and firmly tied to stakes so as to form a protective screen. *Chimonanthus*, and this applies to all winter-flowering plants, should not be pruned in spring or summer or autumn, but in late winter, immediately the flowering is over.

Probaby the best known of all the winter-flowering shrubs is the Winter Jasmine, *Jasminum nudiflorum*, which bears its yellow flowers on walls or over old tree stumps often from December to February. In March the strongest shoots that have flowered during the current season should be
DECIDUOUS SHRUBS AND TREES

tied in, and the others should be severely shortened. From the shoots thus tied in and from the pruned growths new shoots will arise, on which the next year's flowers will be borne, and these new shoots should be left untouched until after the flowering season.

In January, when planted in favourable situations, appear the handsome scarlet flowers of *Cydonia japonica*, the Japanese Quince. These flowers, which continue to be produced for several months, are followed by very fragrant green fruits. The earlier flowers are best produced when the plant is grown against a wall, though the *Cydonia* is an excellent plant for covering trellis or bank. It does well in towns. There are white, salmon-red and pink varieties, but the species *C japonica*, *C Mauler* and the *Knaphill Scarlet* variety are the best and most attractive kinds to grow.

In February and March the yellow jasmine-like flowers of *Forsythia suspensa*, the variety *spectabilis*, and others begin to show themselves. These plants like full exposure to sunlight, though they do very well in towns. They should be cut back freely after flowering. About the same time appear the fragrant blooms of the *Corylopsis*, arranged in catkins not unlike hops. They are somewhat tender, and should be grown only in mild localities and in sheltered situations. *C spicata*, *C Goteana* and *C Willmottiae* are the kinds best worth growing.

From December to March the Winter-flowing Honeysuckles, *Lonicera Stanislihu* and *L fragrantissima*, develop their fragrant blossoms. They are pale creamy-white in colour. These shrubs are easy to grow, but require a little protection in cold or exposed districts.

In March, or sometimes in February, the flowers of the Common Almond, *Prunus Amygdalus*, show themselves. The delicate pink flowers of the Almond, which flourishes in town and suburban gardens, are generally, among flowering trees, the first harbingers of spring.

Spring is the season when deciduous shrubs yield their greatest harvest of blossom. There is the whole race of *Spiraes*, beginning with *S Thunbergii* during a mild February, but more often in March, and followed by *S arguta*, *S bracteata*, *S prunifolia flore pleno*, *S japonica Anthony Waterer*, *S. Lindleyana* and *S Menziesii triumphans.*
DECIDUOUS SHRUBS AND TREES

In May and June appear the fragrant reddish-purple flowers of the Carolina Allspice, *Calycanthus floridus*, and which likes partial shade and abundance of moisture at the roots. Another species is *C. occidentalis*, the California Allspice, which is more hardy and of larger growth. Its maroon flowers appear in May and June.

Through spring and summer the various Brooms afford a continuous supply of colour and interest. In April the large golden-yellow flowers of the dwarf-growing *Cytisus Ardonii* and *C. Beann*, with the cream flowers of *C. kewensis*, show themselves in the axils of the leaves. The common English Broom, *C. scoparius*, with its bright yellow flowers from April to July is well worth growing. In April, also, appear the pale yellow flowers of the slender-growing *C. praecox*; the ruddy bronze and yellow blossoms of *C. scoparius Andreanus*, the purple flowers of *C. Dallimorei*, the rich crimson blooms of *C. Dorothy Walpole* and the dark red and yellow streaked flowers of *C. Donard Seedling*. The white Portugal Broom, *C. albus*, also bears its profusion of small white flowers in May. All the family of Brooms grow easily in light soil, preferably sandy in character.

The Daphnes are a small family, but they include some very useful members, amongst them the Mezereon, which is one of the earliest of our flowering shrubs. From January to March it shows its sweet-scented, purplish-red flowers, which give place later to pretty red berries. This is the common kind. There are varieties of it, also valuable, among them *D. Mezereum grandiflora*, syn *autumnalis*, with purplish-red flowers in the autumn and winter, and *flore albo*, with white flowers and golden-yellow fruits. There is also a very pretty Japanese Daphne, *D. Genkwa*, which has lilac flowers in clusters, which are borne on the bare branches in early May before the leaves appear. All the Daphnes are fragrant, the only English native species, *D. pontica*, bearing clusters of small greenish-yellow, sweetly-scented flowers in early April or even earlier in mild seasons.

The Flowering Currants are almost too well known to need description, and their fine colour and good, bushy growth make them very useful in the garden. There are many varieties of this *Ribes* family, among the best of them being King
Edward VII, a variety of the old *R. sanguneum*, with its drooping racemes of rosy-red flowers. There is a white, or nearly white, variety and several other shades of colour with which this may be grouped with good effect, while the double kind, although its flowers are coarsened by doubling, as is nearly always the case, flowers later than those previously mentioned, thus prolonging the flowering season.

When we come to the months of late spring and early summer, our only trouble is that of selection among the hundreds of lovely flowering shrubs given us to choose from. Hardy *Azaleas* grown in moderately large clumps give glorious masses of colour in May and June. A dense hedge as a background will serve to protect the flowers and to enhance the beauty of the many delicate shades of yellow, orange and red Azaleas love lime-free, sandy loam with plenty of leaf-mould and peat, if available. At this season, too, the *Deutzias* are in bloom. *D discolor, D longifolia* and *D scabra* are good species. The *Laburnums* are too well known to need description, but should not be overlooked when planning the garden. Two old favourites we must have, the true *Syringas*, commonly known as the *Lilacs*, and the family usually, but wrongly, called *Syringas*, really *Philadelphus*, the Mock Oranges. The Lilacs may be roughly divided into three kinds, the Common, the Persian, and the species, several recent additions being the beautiful Chinese Wild Lilacs. The best of the white lilacs is, perhaps, *Mont Blanc*, whilst of the coloured, if only one is chosen, should be selected *Souvenir de L. Spath*, one of the most richly-coloured of all. The double kinds have the advantage of lasting longer than the single, but this does not compensate for their loss of grace. The small Persian Lilac is one which should be grown, as it is very distinct in habit from most of the others, and makes a small and compact bush. Its flowers are a deep lavender in colour, and there is a white variety, *alba*. Both produce their flowers in May in small clusters. All the Lilacs should be grown on their own roots, for if grown on the privet, the union is often short-lived, while when grafted on seedlings of the Common Lilac, it is very difficult to distinguish between suckers from the stock and growths of the scion. The Mock Oranges need a good supply of sunshine, and without it will
DECIDUOUS SHRUBS AND TREES

only produce a very poor show of bloom. They make beautiful groups on grass and in shrub borders, planted with plenty of room for the full development of each plant. There are many varieties, all beautiful, the one commonly grown in gardens being *P. coronarius*, but in small collections of shrubs one or two of the hybrids, notably, *Virginal* and *Vose* Lactée should be preferred. The flowers of many are sweetly and strongly scented, so that when in full bloom, they perfume the air for some distance, and are almost too strong for indoor use. A well-grown bush of Philadelphus in full bloom is one of the most beautiful of garden sights.

All through the early summer, the flowering trees and shrubs fill our gardens with beauty, the Plums, the Cherries and the many beautiful varieties of Thorn Lilac and Mock Orange, the Snowballs, Crab Apples and Rhododendrons follow each other in succession, while earlier, in late April and May, the Magnolias give us their lovely lily-white blooms. From July to October *Buddleia variabilis*, with its long spikes of bright lilac bloom, will be a valued addition to any garden, so will be the numerous named varieties of *Ceanothus*, also *Hydrangea paniculata grandiflora* Choisyia ternata, the *Mexican Orange-flower*, which bears scented white flowers from May to September, is a shrub that no garden lover living in a not too cold district can afford to overlook.

FIG 2—PLANTING PLAN FOR A SHRUB BORDER


Note—The dotted lines join groups of shrubs of the same species or variety. They are better planted in this way rather than as single specimens.
A really good and representative selection of the best deciduous flowering shrubs should include most of the following:

- Abelia grandiflora (Evergreen in mild winters)
- Aegle sepunana
- Aesculus parviflora
- Amelanchier vulgaris, etc.
- Atraphaxis Billarderi
- Berberis aggregata
- Berberis aggregata Pratii
- Berberis concinna
- Berberis dictyophylla
- Berberis polyantha
- Berberis vulgaris
- Buddleia vanabills var magnifica
- Ceanothus Gloire de Versailles
- Ceanothus Marie Simon
- Chionanthus virginicus
- Clerodendron Fargesii
- Clethra alnifolia
- Cotoneaster frigidus
- Cotoneaster multiflora
- Cytisus japonica
- Cytisus albus
- Cytisus Beauv
- Cytisus Dorothy Walpole
- Cytisus kewensis
- Cytisus scoparius
- Cytisus scoparius var Andreaeus
- Daphne mezereum
- Deutzia discolor grandiflora
- Deutzia longifolia Veitchii
- Deutzia Conquete
- Deutzia Eva Rathke
- Enkianthus campanulatus
- Eucryphia pinnatifolia
- Exochorda macrantha
- Fothergilla major
- Fuchsia Riccartoni
- Genista cinerea
- Genista hispanica
- Hibiscus syriacus var coeleste
- Hydrangea paniculata grandiflora
- Hypericum patulum Henryi
- Indigofera Geraniiana, etc
- Itea virginica
- Kerria japonica flore pleno
- Kolkwitzia amabilis
- Leycesteria formosa
- Lonicera Maackii var podocarpa
- Lonicera tartarica
- Magnolia Lennei
- Magnolia parviflora
- Magnolia salicifolia
- Magnolia soulangeana
- Magnolia stellata
- Magnolia stellata rosea
- Magnolia Wilsonii
- Philadelphus Lennei erectus
- Philadelphus microphyllus
- Philadelphus Virginian
- Philadelphus Voie Lactée
- Photinia villosa
- Potentilla fruticosa
- Prunus Amygdalus nana
- Prunus sinensis flore albo pleno
- Prunus sinensis flore roseo pleno
- Prunus triloba flore pleno
- Ribes aureum
- Ribes Gordonianum
- Ribes sanguineum var King Edward VII
- Rosa Hugonis
- Rosa Moyesii
- Rosa rugosa
- Rosa setipoda
- Rubus delicosus
- Rubus ulmifolius bellidiflorus
- Sophora virginiana
- Spartium juncorum
- Spiraea arguta
- Spiraea bracteata
- Spiraea japonica Anthony Waterer
- Spiraea Lindleyana
- Spiraea prunifolia flore pleno
- Spiraea Van Houttei
- Staphylea colchica
- Syringa vulgaris Condorcet
- Syringa vulgaris Mont Blanc
- Syringa vulgaris President Grey
- Syringa vulgaris Souvenir de Louis Spath
- Tamarix pentandra
- Viburnum Carlesii
- Viburnum Opulus sterile
- Viburnum tomentosum plicatum.

Rhododendrons, including Azaleas, are excluded, as lists of the best varieties are given on pages 492 to 498.

Note — For cultural details, height, colour of flowers, particulars of foliage, propagation, etc., see Alphabetical List of Shrubs and Trees, Chapter XXXV.
A SELECTION OF DECIDUOUS TREES

No less important, and in many cases even more striking than the deciduous shrubs, are a number of the lovely deciduous trees, with their ornamental foliage, rich autumnal tints, and attractive berries, fruits, seed cases, and beautiful flowers. Many of them make fine specimens to be planted singly on lawns or in avenues. For these purposes the weeping and variegated varieties are exceptionally attractive. The mere mention of such glorious groups as the Horse Chestnuts, the Flowering Cherries, the Flowering Crabs, the Thorns, the Acacias and the Almonds is sufficient to conjure up visions of exceptional beauty, and a glance at the list given below will quickly convince the reader of the importance of this class.

* Acer dasyacarpum (Silver Maple)
* Acer griseum (Chinese Maple)
* Acer Negundo albo variegatum
* Acer platanoides (Norway Maple)
* Acer Pseudo-platanus var. sycamore
* Acer rubrum (Scarlet Maple)
† Esculus carnea (Red Horse Chestnut)
† Esculus Hippocastanum (Horse Chestnut)
* Esculus Indica (Indian Horse Chestnut)
† Esculus Pavia (Red Buckeye)
* Alnus glutinosa and vars (Alder)
† Amelanchier laevis (June Berry)
* Betula verrucosa and vars (Silver Birch)
* Carpinus Betulus and vars (Hornbeam)
° Castanea sativa (Sweet Chestnut)
* Catalpa bignonioides (Indian Bean Tree)
° Cercis siliquastrum (Judas Tree)
° Corylus Columna (Constantinople Nut)
† Crateagus mespilus grandiflora
† Crateagus Carrierei
† Crateagus coccinea (Scarlet Haw)
† Crateagus cordata (Washington Thorn)
† Crateagus Crus galli (Cockspur Thorn)
† Crateagus orientalis
† Crateagus Oxyacantha oxyacanthoides
† Crateagus Oxyacantha o flore albo pleno (Double White May)
† Crateagus Oxyacantha o flore coccineo pleno (Double Red May)
† Crateagus Oxyacantha o flore purpureo (Single Scarlet May)
† Crateagus prunifolia
* Davidsonia Vilmoriniana (Chinese Dove Tree)
* Fagus sylvatica (Beech)
* Fagus sylvatica cuprea (Copper Beech)
* Fagus sylvatica purpurea (Purple Beech)
* Fraxinus americana (American Ash)
* Fraxinus excelsior (Ash)
* Halesia carolina (Silver Bell or Snow-drop Tree)
° Juglans regia (Walnut)
° Juglans nigra (American Walnut)
° Laburnum alpinum (Scotch Laburnum)
° Laburnum Watereri (Waterer's Hybrid Laburnum)
° Liquidambar styraciflua (Sweet Gum)
° Lithodendron Tulipifera (Tulip Tree)
* Morus nigra (Black Mulberry)
° Nothofagus obliqua (Southern Beech)
° Nyssa sylvatica (Tupelo Tree)
° Parrotia persica
° Paulownia imperialis
° Platanus acerifolia (London Plane)
° Populus canescens (Poplar)
° Populus trichocarpa
† Prunus Amygdalus (Almond)
† Prunus Avium flore pleno (Double White Cherry)
† Prunus cerasifera Pissardii (Purple leaved Plum)
† Prunus Padus Watereri (Bird Cherry)
† Prunus Persica flore roseo pleno
† Prunus serrulata (Double White Japanese Cherry)
† Prunus serrulata var. fugenzo (Veitch's Cherry)
† Prunus serrulata var. Sekyama (Hisakura Cherry)
† Prunus subhirtella
* Pyrus Acaulis caucasia (Wing Nut)
° Pyrus Aria (White Beam)
° Pyrus Aucuparia (Mountain Ash)
° Pyrus baccata (Flowering Crab)
° Pyrus communis (The Pear)
° Pyrus Eleyi
° Pyrus floribunda
° Pyrus purpurea
° Pyrus Scheideckeri
° Pyrus Sorbus (Service Tree)
° Pyrus spectabilis
° Pyrus spectabilis var. Kaido
* Quercus Cerris (Turkey Oak)
* Quercus cocinea (Scarlet Oak)
* Quercus pedunculata (Common Oak)
° Quercus rubra (Red Oak)
° Robinia Pseudacacia
° Salix babylonica (Willow)
° Salix Salamoni (Hybrid Willow)
¢ Tilia euchlora (Lime)
\ Tilia petiolaris
¢ Tilia platyphylls
° Ulmus campestris "Louis Van Houtte" (Golden Elm)
° Ulmus montana (Wych Elm)
° Ulmus montana var. pendula (Weeping Wych Elm)
° Ulmus stricta Wheatleyi (Guernsey Elm)
° Zelkova crenata

Note — For cultural details, and for particulars of foliage, height and suitable situations, see Alphabetical List of Shrubs and Trees, Chapter XXXV

* Large Specimen Trees † Flowering Trees of moderate size
EVERGREENS

CHAPTER III

In this chapter the broad-leaved evergreens are dealt with and not conifers, which are treated in the following section. This large group of broad-leaved evergreens is of the greatest value to all who desire to maintain throughout the year the best effects as regards colour and form in the borders. Frequently shrubberies are made drab and dreary because common evergreens, like the Aucuba and Laurel, are planted to excess, and many of the lovely flowering species, the Berbers, Rhododendrons and Escallonias, for example, are sadly neglected. In addition to their value in the garden because they retain their foliage and afford valuable variety in colour and shape in winter, when deciduous plants are bare, many possess great floral beauty at a time when bloom is scarce, others carry brightly-coloured berries or fruits. In the British Isles only a few evergreens, except the conifers, grow sufficiently large to be classed as trees; they are mostly of shrubby growth. Many evergreens, too, will flourish under the shade of trees, where most deciduous shrubs would not thrive (see list, page 67).

It may be as well to remind the reader that many evergreens, and here I include conifers especially, are not suitable subjects for town gardens, for the smuts and dust clog the pores of the leaves, which are not renewed annually, as are those of deciduous shrubs. A few, however, can be planted in towns, though they will thrive better if, in the absence of rain, their foliage is periodically syringed or washed with the hose to remove the coating of soot (see list of Trees and Shrubs for the Town Garden, page 118).

Evergreens may be transplanted both earlier and later than deciduous subjects, but never must they be removed at the dead of winter, when their vitality is at the lowest. The best times for planting are during April and up to the middle of
EVERGREENS

May, and from the beginning of October to the middle of November. Whether to plant in spring or autumn depends largely on the ground, with light soil, autumn planting has its advantages, but in a heavy, cold clay, spring planting will be preferable. In light land spring planting is likely to prove unfortunate, should the early summer months be dry. The roots of evergreens are, in most cases, more fibrous in nature than those of deciduous plants; considerably more care is, therefore, necessary in planting. The best results follow the transplanting of evergreens with good "balls" of soil holding the roots. If this is not possible, it is essential to spread the roots out well and to shake fine soil among the fibres, the plant being at the same time shaken periodically to allow the mould to trickle in among the roots and become more or less firm. Planting should not be done when the "balls" are dry. If in this condition, soak them in water for two or three hours, drain and then plant (See also Planting, page 149)

Evergreens are propagated chiefly from seeds, from cuttings and by layering. These methods are described in detail in the chapter on Propagation, page 172. In the case of cuttings, we may mention here that these can be struck at three seasons. In summer soft-wooded cuttings of young shoots from one to three inches in length can be inserted in a frame, slight bottom heat being used, if available. These soft cuttings need only be just long enough to enable them to be set firmly in the soil. Where the shrubs to be propagated do not produce adequate young wood in the spring, young semi-matured shoots may be inserted on a sheltered north border in July, being covered with a handlight or bell glass. The third season at which cuttings can be taken is in the autumn, when firm matured shoots, with a "heel" or taken at a joint, can be removed from the one or two-year-old wood. The foliage from the lower part of the stems should be trimmed off, for it is unwise to leave too many leaves on autumn-struck cuttings, as this encourages "damping-off", a few leaves must, however, be allowed to remain at the top. These cuttings are best inserted in a cold frame or under a handlight.

The list on page 32 is indicative of the wide choice available. (See also the chapter on Conifers)
SOME OF THE BEST EVERGREEN TREES AND SHRUBS

Evergreen Trees
(Excluding Conifers)

Arbutus Andrachne
Arbutus andrachnoides
Arbutus Menziesii
Arbutus Unedo
Ceanothus thyrsiflorus
Castanopsis chrysophylla
Ilex Aquifolium varieties
Ilex dyptera
Ilex opaca
Laurus nobilis

* Magnolia Delavayi
  Magnolia grandiflora
* Nothofagus betuloides
* Nothofagus Cunninghamii
  Quercus densiflora
  Quercus Ilex and varieties
  Quercus Lusoomeana
  Quercus Suber
  Trachycarpus excelsus
  Umbellularia californica.

Evergreen Shrubs

Andromeda (various)
Arctostaphylos Manzanita
Arctostaphylos Uva-ursi
Arundinaria (various)
Aucuba japonica
Azara microphylla
Bambusa (various)
Berberis Darwinii
Berberis Gagnepainii
Berberis stenophylla vars.
Berberis Hookeri
Bruckenthalia spiculifolia
Buxus sempervirens vars.
Calluna vulgaris vars.
* Camellia japonica vars.
* Carpenteria californica
Cassinia fulvida
Ceanothus dentatus
Ceanothus floribundus
Ceanothus rigidus
Ceanothus Veitchianus
Choisya ternata
Cistus cyprius and laurifolius
Cistus Lortei
* Corokia Cotoneaster
Cotoneaster buxifolia
Cotoneaster Franchetii
Cotoneaster Henryana
Cotoneaster microphylla
Cotoneaster serotina
Cotoneaster salicifolia
Cotoneaster turbinata
Daphne Cneorum
Daphniphyllum macropodum
Elaegnus pungens
* Embothrium coccineum
Empetrum nigrum
Erica alpina, arborea and lusitanica
Erica mediterranea
Erica vagans and vars.
Escallonia langeyensis
Escallonia macrantha
Escallonia rubra
Eucryphia pinnatifolia
Euonymus japonicus vars.
Fatsia japonica
Garrya elliptica

Gaultheria Shallon
Hedera Helix arborea
Helianthemum (various)
Hypericum calycinum
Ilex cornuta
Ilex crenata
Ilex Perneyi
Kalmia latifolia
Lavandula spica
Leiophyllum buxifolium
* Leptospermum scoparium
Leucothoe Catesbaei
Ligustrum lucidum
Lonicera nitida and pileata
Mahonia Aquifolium
Mahonia japonica
Olearia Haastii
Osmanthus Aquifolium
Osmanthus Delavayi
Osmanthus Fortunei
Parasyminga sempervirens
Pernettya mucronata
Philipea decora
Philipea latifolia
Phyllostachys (various)
Pieris floribunda
Pieris japonica
Prunus Laurocerasus (Cherry Laurel)
Prunus lusitanicus (Portugal Laurel)
Pyracantha coccinea and var. Lalandei
Pyracantha Gibbii
Pyracantha Rogersiana
Quercus acuta
Quercus coccifera
Quercus cuspidata
Quercus glabra
Quercus phillyræoides
Rhamnus alaternus
Rhododendrons (many species and vars.)
Rosmarinus officinalis (Rosemary)
Santolina Chamaecyparissus
Veronica Traversii
Viburnum Davidii
Viburnum rhytidophyllum
Viburnum Tinus
Vinca major and minor
Yucca gloriosa and recurvifolia.

* Denotes half-hardy subjects.

Note.—For varieties, cultural details, height, particulars of foliage and flowers and suitable situation, see Alphabetical List of Shrubs and Trees, Chapter XXXV.
PLATE 1
Abutilon vitifolium
PLATE 2
Above, Berberis polyantha and, left, Berberis wilsonae
CONIFERS

CHAPTER IV

CONIFERS are all handsome and attractive trees, mostly evergreen, and forming one of the most beautiful groups in the vegetable kingdom. Their seeds are borne in cones, or woody bracts, hence the name “conifer” or cone-bearer. No class of evergreen trees provides such variety and interest in size, form, colour, growth, or even leaf texture. The only deciduous genera are the Larix (Larch), Pseudolarix (Golden Larch), the Taxodium (Deciduous Cypress) and the Ginkgo biloba (The Maidenhair Tree). Conifers make excellent subjects for ornamental planting as single specimens on the lawn, for avenues and for grouping, for they are mostly symmetrical and trim in growth. When planting in groups, species whose native countries furnish climatic conditions and soils of a similar nature should be kept together, and even when grouped in this manner the trees should be placed from 12 to 25 feet or more apart according to their vigour, so that the beauty of their form and character of growth may be preserved. If planted too closely together, branches will brush, and ugly bare patches will eventuate. The individual conifers composing the groups need not all be of the same species or even of the same genus, but they should harmonise the one with the other as regards growth, form, colour, and cultural and climatic requirements. Groups should be large, but must not be overdone, or a sombre or depressing effect will ensue. The groups will generally be interspersed with clumps or groups of deciduous subjects, for whose brighter green and delicately-tinted flowers they will provide an ideal setting. Not only are the majority of conifers very beautiful in form but nearly all species have numerous varieties with coloured foliage—silver, blue, gold, etc. This applies especially to the Cupressus family, very rich in these varietal colours and forms. There are also many varieties with silver and golden variegations.
CONIFERS

(see lists on pages 55 and 56). In addition to these permanent colourations, there are several conifers whose foliage takes on gorgeous autumn hues. Among these are Cryptomeria japonica elegans (Bronze-red) and Taxodium distichum (Bronze). In summer the foliage of both these trees is green (see also list page 58). All these, if planted with forethought, are very effective when grown among the green-foliaged conifers.

Mention must also be made of the weeping forms, these are invaluable for specimen planting, especially on lawns. Examples of these are Cupressus Lawsomana gracilis pendula, Thuya nootkatensis pendula and Taxus baccata pendula. In recent years, such men as Forrest and Wilson have introduced many new and beautiful forms, mostly from China, Korea and Tibet, so that the reader will find a very wide and varied group from which to make selections.

Among the conifers are found all but a few of our hardy evergreen trees. Many of them make large trees, but some are of rather slow growth and, in Britain at least, attain to but moderate stature or are even of shrubby nature. The dwarf species are invaluable for planting in the rock garden. (See list page 36.)

The Juniper, the Scotch Fir and the Yew are our only native conifers, but fully 90 per cent of the known conifers can be cultivated outside somewhere in the British Isles. If the climate is suitable, nearly all adapt themselves readily to poor, shallow soil, but many (a list of those that will tolerate chalk is included on page 70) fail on chalk, unless it is covered by 2 or more feet of loam; neither are they happy on badly-drained soils. Gravelly and stony soils are tolerated by the class as a whole. The majority of conifers thrive in a moderately light, rich loam, which should be well drained and deep; they are best planted in their permanent positions when fairly small, that is to say, under 3 feet in height. The most suitable months for planting are April or early May, and September and October. If spring planted, and the early summer is dry, the young plants should be liberally watered and syringed overhead every evening on hot days.

There are several species that are somewhat tender, and others that put forth their young shoots too early in the season to stand our British climate; these are apt to have their
CONIFERS

young shoots frosted off in April or early May, unless they are protected by larger shrubs or trees on their eastern side, in order that they shall have time to thaw out gradually before the rays of the morning sun can do any damage. Conifers are even less suitable than the broad-leaved evergreens for growing in towns, and the remarks in this connection in the previous chapter on evergreens apply with even greater force here. Except for a few notable exceptions, conifers are not adaptable to seaside planting. Some of those suitable for this purpose are shown in the list on page 73.

Conifers are usually raised from seed, which should be sown thinly in pans in a frame during early spring, the seeds being only just covered with very fine sandy soil. The following spring the seedlings should be set out in the nursery garden some 6 to 10 inches apart. Certain varietal forms will not come true from seeds and are best propagated by cuttings, failing which, they must be grafted on young "stocks" of the species, so must those where cuttings cannot be struck. But except for these instances, conifers should not be grafted. Full details of the best methods of propagating the individual species will be found under the paragraphs devoted to them in the alphabetically arranged section on the various trees and shrubs, chapter XXXV.

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**FIG 3 — SUGGESTED PLANTING PLAN FOR A SHRUB BED BY THE SIDE OF A PATH**

1 Berberis Gagnepainii 2 Halesia carolina 3 Ceanothus Marie Simon 4 Cytisus scoparius 5 Viburnum Titus 6 Prunus Amygdalus (Standard) 7 Cactus cypnus 8 Spiraea Van Houttu 9 Leycesteria formosa 10 Pyrus Schiedeckert (Bush) 11 Genista hispanica

**Note** — The dotted lines join groups of shrubs of the same species or variety. They are better planted in this way rather than as single specimens.
SOME GOOD CONIFERS FOR THE PLEASURE GROUNDS

For cultural details, height, particulars of foliage, suitable situations, propagation, see Alphabetical List of Shrubs and Trees, Chapter XXXV

Abies brachyphylla
Abies grandis
Abies nobilis
Abies pectinata
Araucaria imbricata (Monkey Puzzle)
Cedrus atlantica (Atlas Cedar) var aurea and glauca
Cedrus Deodara (Deodar)
Cedrus Libani (Cedar of Lebanon)
Cephalotaxus drupacea
Cryptomeria japonica var elegans, and Lobbin
Cunninghamia chinsensis
Cupressus Lawsoniana and var (Lawson Cypress)
Cupressus macrocarpa
Cupressus pisifera and var
Cupressus obtusa var
Cupressus Lawsoniana nana
Juniperus communis and var
Juniperus chinsensis and var
Juniperus virginiana and var
*Larix europea
Larix leptolepis
Larix occidentalis
Libocedrus decurrens
Picea excelsa and var (Spruce)
Picea Morndla (Himalayan Spruce)
Picea Omorika
Picea pungens and var glauca
Picea sitchensis
Pinus excelsa
Pinus Laricio (Corsican Pine) and var nigricans
Pinus montana
Pinus sylvestris (Scotch Fir)
*Pseudolarix Fortunei
Pseudotsuga Douglasii (Douglas Fir)
Seiadopitys verticillata
Sequoia gigantea (Wellingtonia)
Sequoia sempervirens
*Taxodium distichum (Deciduous Cypress)
Taxus baccata (Yew)
Taxus b adpressa
Taxus b aurea
Taxus b Dovastonl
Taxus b pendula
Taxus b fastigiata (Irish Yew)
Thuja dolobrata
Thuya plicata
Thuya occidentalis and var
(American Arbor-Vitae)
Thuya orientalis and var
Tsuga Albertiana
Tsuga canadensis and var (Hemlock Spruce)
Tsuga Pattoniana.

*Denotes deciduous species

CONIFERS (DWARF) FOR THE ROCK GARDEN

(See also page 104)

Abies balsamea var hudsonia
Abies nobilis glauca prostrata
Cedrus Deodara var pendula
Cedrus Libani nana
Cryptomeria japonica nana
Cupressus Lawsoniana Fletcher, minima and nana
Cupressus obtusa nana, nana aurea, pygmæa, tetragona aurea, tetragona minima
Cupressus pisifera var ericoides, nana, plumosa aurea compacta, plumosa aurea nana, squarrosea pygmæa
Cupressus thyoides var nana
Juniperus chinensis globosa
Juniperus communis compressa
Juniperus c echiniformis
Juniperus c hibernica
Juniperus Sabina

Note—Although they are not cone bearing, it is usual to include the Taxus (Yew), Ginkgo and Cephalotaxus in or with the Conifer family

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FLOWERING TREES AND SHRUBS

CHAPTER V

Hardy flowering shrubs and trees, which are now receiving ever increasing attention, form one of the most beautiful families of plants for the pleasure grounds and garden. Their variety in colour, habit of growth, form, size and period of bloom seem almost infinite. New species, chiefly from China, Korea and Thibet, and the product of the hybridist’s skill, are continually being introduced, and furnish us with a choice that is almost bewildering. Besides such well-known plants as the Azaleas, Barberries, Brooms, Buddleias, Ceanothuses, Castuses, Cotoneasters, Diervillas, Escallonias, Flowering Cherries and Crabs, Kalmias, Lilacs, Rhododendrons, Veronicas and Viburnums, there is a whole host of delightful but less-known subjects. (See lists, pages 39-44.)

The very wealth of selection makes the planning and planting of a shrub border all the more difficult. The size of the garden, its locality, the soil and climate, all must be considered. In a large garden it is possible to plant in bold masses varying from three to seven or more plants of the same species or variety and colour, in a group, but in a relatively small piece of ground this is impossible, and it is here generally better to plant single specimens of choice and favourite shrubs. Where there is ample room, however, the planting of single specimens is not satisfactory and produces a “spotty” effect, save, occasionally, where an exceptionally fine specimen is planted singly so that full effect may be given to its flowering sprays. As to locality and climate, see what is thriving in other gardens in the neighbourhood, and plant species with similar requirements; it is useless to expect semi-hardy plants, that with the protection of a wall will just manage to grow in the south-west, to do well, say, in the north of England. Remember, too, that some shrubs like to grow in full sun, others in semi-
FLOWERING TREES AND SHRUBS

shelter; while some again, prefer the shade. Where time and money are not an object, the soil can be made to suit the plant, but this is not often possible, and, as a rule, it is necessary to plant shrubs that will suit the soil. For details as to the preparation of the ground and planting, see chapter XXVI.

Never mass together flowering shrubs that are of entirely different character and habit of growth, let the groups be well-balanced, and endeavour to make them harmonise, not only in colour, but in character, habit of growth, and form. Rhododendrons, Azaleas and Heaths usually look well grouped together, whatever their colour. Among the deciduous flowering shrubs may be placed darker-leaved evergreens to set off their brighter leaves and flowers; and to help form a screen at the back of the border may be planted a shelter or screen of tall deciduous trees, evergreens and conifers, and among the shrubs may be set smaller-growing conifers and standard flowering trees, such as the Japanese Cherries, the Flowering Crabs, Almonds and Laburnums. Round these, as ground plants, in the form of a triangle can be set such plants as the dwarf Barberries, dwarf Cotoneasters and Hypercums, also Heaths and some of the smaller ericaceous plants where leaf-soil or peat is available. The stronger-growing species, such as the Buddleias, Guelder Roses and Lilacs, should be set from 10 to 12 feet apart, and those of medium growth, Barberries and Brooms, for example, 4 or 5 feet. Above all, avoid planting in even rows or in groups similar in size. Remember that the shrubs will take some years to reach their full size, and endeavour to visualise the shrub-border when its inmates are fully grown. In order to allow for extension, either plant the young shrubs closer together, with the intention of removing the "fill-ups" when the border becomes over crowded, or plant the shrubs at the correct distance, and fill the spaces with herbaceous plants, to be taken out as the shrubs gradually extend. When first planted some of the less spreading and more upright-growing herbaceous perennials, such as Foxgloves, Irises, Kniphofias, Lilies, Montbretias, Verbascums and Veronicas, and especially the spring-flowering bulbs, may be planted among the shrubs at the front of the border. It is, however, very difficult to lay down any hard and fast rules for the arrangement of flowering shrubs, because these vary.
FLOWERING TREES AND SHRUBS

greatly in character, and can be employed in very diverse situations.

In the actual grouping of the colours, it is necessary to associate specimens whose colours harmonise or contrast. If desired, all the plants in a group can be chosen so that they all flower together and so provide a large patch of colour, this is, perhaps, the better method. Alternatively, it can be so arranged that a few specimens in a group shall flower together, the remainder preceding or following them in succession, continuity of bloom can thus be had over a long period. In the latter method, even plants the colour of whose blooms would clash, may be neighbours, for it can be arranged that they will be kinds that will not flower at the same time. To effect this, however, a knowledge of both the colour of the blooms and the period of flowering is essential. To assist the reader in this respect, I have classified the most popular and useful flowering shrubs, not only under the colour of their blooms but also in accordance with the period at which they are in flower. See also chapters VI and VII.

For the height of the individual shrubs, the best soil, the most suitable positions, and other cultural details, see the paragraphs devoted to the particular genus in chapter XXXV.

A SELECTION OF SHRUBS AND TREES ARRANGED ACCORDING TO THE COLOUR OF THEIR FLOWERS AND THEIR TIME OF BLOOMING.

SHRUBS AND TREES WITH WHITE FLOWERS

Note.—For cultural requirements, heights, suitable situations, soil and propagation, see Alphabetical List of Shrubs and Trees, Chapter XXXV.

January to March

| Arctostaphylos Manzanita [White Tinted] (Feb - Mch) | Pears floribunda (Apl - May) |
| Cydonia japonica nivalis (Jan - Mch) | Pears japonica (Mch - Apl) |
| Daphne mezereum album (Jan - Mch) | Prunus Armeniaca albo fl pl (Mch) |
| Erica arborea (Feb - Apl) | Prunus Amygdalus alba (Feb - Mch) |
| Erica austrais var. Robert (Mch) | Prunus cerasifera (Feb - Mch) |
| Erica carnea alba (Jan - Apl) | Prunus Davidiana alba (Feb - Mch) |
| Erica lusitanica (Feb - Apl) | Prunus tomentosa (Mch) |
| Erica mediterranea alba (Mch) | Prunus Persica albo pleno (Mch - Apl) |
| Lonicera fragrantissima (Dec - Mch) | Rhododendron moupinense (Jan - Mch) |
| Lonicera Standishii (Dec - Mch) | Rhododendron Nobelanium album (Feb - Mch) |
| Magnolia conspicua (Mch - Apl) | Sorbus Thunbergii (Mch) |
| Magnolia stellata (Mch - Apl) | Viburnum Tinus (Dec - Mch) |
| Nuttallia cerasiformis (Feb - Mch) | Viburnum fragrans (Pink-tinted) |
SHRUBS AND TREES WITH WHITE FLOWERS—(continued).

April to June

Abelia triflora (Rosy-white) (June)
Aegle sepatia (Apr or May)
Aesculus Hippocastanum (May-June)
Amelanchier alnifolia (Apr-May)
Amelanchier canadensis (Apr-May)
Amelanchier laveis (Apr May)
Chionanthus virginicu (June)
Choisya ternata (May Sept)
Cistus laurifolius, etc (June)
Cotoneaster frigidus (May)
Crataegus Oxyacantha, etc (May)
Cytisus albus (May)
Davidia Involucrata (May)
Deutzia magnifica, etc (May June)
Diervilia Mont Blanc (May-June)
Diervilia nivea (May-June)
Enkianthus japonicus (Apr May)
Erica arborea alpina (Apr-June)
Escallonia Philippiana (June)
Exochorda grandiflora (May June)
Exochorda macrantha (May June)
Gaultheria Vetchiana (June Aug)
Halesia coromobo (May)
Helianthemum vulgaris The Bride and albo pleno (June)
Jamesia americana (May)
Kalina latifolia (June)
Ledum Jatifolium (Apr June)
Leophostylum buxifolium (May-June)
Lupinus arboreus “Snow Queen” (June)
Magnolia conspicua (Mch Apl)

July to September

Abelia grandiflora (June-Nov)
Aesculus parviflora (July-Aug)
Aralia chinense (Aug-Sept)
Calluna vulgaris, var alba (July-Sept)
Catalpa bignonioides (July Aug)
Catalpa speciosa (July)
Chionanthus virginicu (June-July)
Choisya ternata (May-Sept)
Clethra alnifolia (July-Sept)
Daphne pohfolia alba (June-Oct)
Erica vagans alba (July Sept)
Escallonia montevdendris (Sept)
Euonymus pinnatifolia (Aug)
Gaultheria Vetchiana (June-Aug)
Hibiscus syriacus tosus albus (Aug-Oct)
Hydrangea arborescens grandiflora (July-Sept)
Hydrangea paniculata and var grandiflora (Aug-Sept)

October to December

Arbutus andrachnoides (Winter)
Crataegus monogyna praecox (Oct Mch)
Fatia japonica (Oct-Nov)
Osmanthus Aquifolium (Aug-Oct)

Magnolia stellata (Mch -Apl)
Magnolia parviflora (May-Aug)
Philadelphus coronarius (May-July)
Philadelphus Lemoinei euritcus (May July)
Philadelphus microphyllus (May-July)
Philadelphus Virginl, etc (May-July)
Potentilla fruticosa Vetchiu (May Sept)
Prunus acada semperflorens (Apr and June to Sept)
Prunus Avium fl pl (May)
Prunus Padus Watereri (Apr-May)
Prunus serrulata (May)
Pterostyra,x hispidum (June-July)
Pyraeantha [various] (May -June)
Pyrus Aucuparia (Apr May)
Pyrus sikkimensis (May)
Pyrus communis (Apr)
Pyrus salicifolia (Apr)
Rhododendrons [various] (Apr-June)
Ribes sanguineum albidum (Apr)
Skimmia japonica (Apr)
Spira arguta, etc (Apr-May)
Staphylea colchica (May-June)
Styrax japonicus (June July)
Syringa (Lilac), Marie Legraye, Madame Lemoie, etc (Apr-June)
Veronica buxifolia (June-Aug)
Viburnum Opulus sterile (June)
Viburnum tomentosum plicatum (May-June)
Zenoba speciosa (June Aug).

Prunus subhirtella autumnalis (Winter)
Viburnum fragrans [Tinted Flowers] (Winter)
Viburnum Tinus (Winter).
SHRUBS AND TREES WITH CREAM, YELLOW AND ORANGE FLOWERS

January to March

Azara microphylla, Pale Yellow (Feb)
Berbers japonica, and var. Bealei, Yellow (Feb, Mch)
Chimonanthus fragrans, Pale Yellow (Dec, Mch)
Corpus Mas, Yellow (Feb)
Corylopsis spicata, Yellow (Feb, Apr)
Forsythia suspensa, etc., Yellow (June)
Hamamelis japonica, Yellow (Dec, Mch)
Hamamelis mollis, Yellow (Dec, Mch)
Jasminum nudiflorum, Yellow (Nov, Feb)
Mahonia Aquifolium, Yellow (Feb, Apr)
Salix cinerea Medemi, Pale Yellow (Feb, Mch)
Stachyurus chinensis, Pale Yellow (Feb, Apr)
Stachyurus praecox, Pale Yellow (Feb, Apr)
Ulex europaeus fl pl, Golden-yellow (Mch-June)

April to June

Berbers Darwinii, Golden yellow (Apr-May)
Berbers dictyophylla, Yellow (May)
Berbers stenophylla, Golden yellow (Apr-May)
Berbers Hookeri, Golden yellow (Apr)
Buddleia globosa, Orange (May-June)
Caragana arborescens, Yellow (Apr-May)
Colutea arborescens, Yellow (June)
Corokia Cotoneaster, Yellow (May)
Coronilla Emerus, Yellow (May-Sept)
Corylopsis Willmottiae, Greenish yellow (Apr)
Cytisus Ardonii, Deep Yellow (May-June)
Cytisus scoparius, Yellow (May-June)
Cytisus scoparius Andreanus, Ruddy Bronze (May-June)
Cytisus praecox, Sulphur Yellow (April)
Forsythia suspensa, etc., Golden-yellow (Apr)
Genista hispanica, Golden-yellow (May-June)
Helianthemum vulgare, Orange and Yellow (June-July)
Kerria japonica, and var fl pl, Golden-yellow (Apr-May)
Laburnum vulgare, Yellow (May-June)
Lupinus arboreus, Yellow (June)
Piptanthus nepalensis, Bright Yellow (May-June)
Rhododendron (Azaleas) [in variety] (May)
Rhododendron Broughtonii aureum (June)
Rhododendron Smithii aureum (June)
Ribes aureum, Yellow (Apr-May)
Rosa Hugonis, Yellow (May, June)
Santolina Chamaecyparissus, Yellow (June-Aug)
Ulex europaeus fl pl, Bright Golden yellow (March, June)

July to September

Arbutus Unedo, Creamy pink (Sept-Nov)
Casimira fulvida, Creamy-white, Yellow Stannens (July-Sept)
Colutea arborescens, Yellow (June-Aug)
Coronilla Emerus, Yellow (May-Sept)
Cytisus nigricans, Yellow (July-Aug)
Genista atroaurea, Golden (July-Aug)
Genista cinerea, Yellow (June-July)
Genista tintoria fl pl, Yellow (July-Aug)
Genista virgata, Yellow (June-July)
Hypericum [various], Yellow (July-Sept)
Lonicera japonica aurea reticulata, Yellow (June-Aug)
Lonicera japonica Halliana, Creamy-yellow (June-Aug)
Phlomis fruticoså, Yellow (July-Sept)
Potentilla fruticosa, Yellow (May-Aug)
Santolina Chamaecyparissus, Yellow (June-Aug)
Spartium junceum, Yellow (June-Sept)

October to December

Arbutus Unedo, Creamy pink (Sept-Nov)
Chimonanthus fragrans, Pale Yellow (Dec, March)
Hamamelis mollis, Golden-yellow (Dec, Mch)
Jasminum nudiflorum, Yellow (Nov-Feb)
SHRUBS AND TREES WITH RED OR PINK FLOWERS

January to March

Cydonia japonica, Red (Feb - Mch)
Daphne Mezereum, Purplish red (Jan - Mch)
Erica carnea, Rosy pink (Nov - Apl)
Erica darleyensis, Red (Nov - Apl)
Parrotia Persica, Red (Jan - Mch)
Prunus Amygdalus, Rosy pink (Feb - Mch)
Prunus Davidiana, Pink (Feb - Mch)
Prunus Persica rosea fl pl, Pink (Mch)
Prunus Persica rubra fl pl, Red (Mch)
Rhododendron arboreum, Red (Mch)
Rhododendron mucronatum, Rosy-purple (Jan - Feb)
Rhododendron Nobleanium, Rosy-scarlet (Jan - Feb)
Rhododendron Rosa Mundi, Pale Pink (Jan - Mch)

April to June

Æsculus carnea, Deep Red (May - June)
Andromeda polifolia, Pink, (May - June)
Bryanthus empetriflorus, Rosy purple (May - June)
Calycanthus floridus, Reddish purple (June - July)
Cercus silquastrum, Rosy lilac (May)
Cistus purpureus, Reddish purple with Crimson D blotch (June - July)
Crataegus Oxyacantha var., Pink or Scarlet (May)
Cydonia japonica, Orange red or Crimson (Mch - June)
Cytisus purpureus, Rose purple (May - June)
Daphne Cneorum, Purple pink (May Aug)
Deutzia longifolia and var Veitchii, Purple rose (May - June)
Diervilla, Pink or Red (May - June)
Erica Tetralix, Rose (June Sept)
Escallonia macrantha, Rosy crimson (June)
Grevillea rosmarinifolia, Rosy red (May - June)
Kalmia angustifolia, Rosy-red (June)
Prunus triloba fl pl, Rosy pink (Apl)
Prunus serrulata Sekiya, Rosy-pink (Apl - May)
Pyrus (various), Pink or Red (Apl - May)
Rhododendron (various), Pink red (Apl - June)
Ribes sanguneeum, Rosy red (Apl)
Ribes fuchsioides (syn speciosum), Crimson (June)
Robinia hispida, Rich Pink (June - July)
Spiræa bella, Rose (June)
Syringa (Lilac) Charles Joly, Dark Red, Double, (May)
Syringa (Lilac) Pasteur, Claret red, Single, (May)
Syringa (Lilac) Reaumur, Crimson, Single, (May)
Syringa (Lilac) Souv de L Spath, Wine-crimson, Single, (May)
Viburnum Carlesii, Pale Pink (Apl - May)

July to September

Æsculus Pavia, Rich Crimson (June - July)
Calluna vulgaris Alportii, Deep Crimson (July Sept)
Calycanthus furtivus, Chocolate purple (July Sept)
Calycanthus occidentalis, Maroon (May July)
Ceanothus Marie Simon, Rose (July-Oct)
Daboecia polifolia, Rosy purple (June Oct)
Diervilla Eva Rathke, Crimson purple (May-July)
Erica Tetralix, Rose (June Sept)
Fuchsia macrostemma, Scarlet (July-Sept)
Hibiscus syriacus, vars, Pink or Red (Aug Oct)
Hydrangea Thunbergii, Flecked Pink and Red (Aug)
Rubus ulmifolius bellidiflorus, Pink, Double, (July-Aug)
Spiræa (various), Pink (July-Sept)
Tamarrx pentandra, Rose pink (July-Sept)
Veronica speciosa varieties, Pink or Red (July-Sept)

October to December

Arbutus Unedo var rubra, Rosy-crimson (Oct Nov)
Daphne Mezereum grandiflora, Purplish-red (Oct - Feb)
Erica carnea, vars, Rosy-pink (Nov - Apl)
Erica darleyensis, Rosy red (Nov Apl)
Rhododendron Nobleanium, Rosy-scarlet (Nov Dec)
SHRUBS AND TREES WITH PURPLE, LILAC AND MAUVE FLOWERS

January to March

Daphne mezereum, **Pale Purple** (Jan-Mch)
Erica mediterranea, **Rosy-red** (Mch)
Rhododendron **praecox**, **Rosy-lilac** (Feb-Mch)

April to June

Cercis silhquastrum, **Rosy lilac** (May)
Cistus, **Silver Pink** (Lilac-pink) (June July)
Cyrtisus purpureus, **Rose purple** (May-June)
Daphne Cneorum, **Purple-pink** (May-Aug)
Erica mediterranea, **Rosy-red** (Mch-May)
Kalma glauca, **Purplish-rose** (Apr-May)
Magnolia Soulangiana, **Purple and White** (Apr-May)
Magnolia Lemeni, **Rosy-purple** (May)
Magnolia obovata, **Purple** (May-June)
Ononis fruticosa, **Purple pink** (May Aug)
Rhododendrons (various), **Purple, Lilac, Mauve** (Apr-June)
Rosa Novesii, **Livid Dark Red** (June)
Rosa setipoda, **Purplish rose** (June July)
Rosmarinus officinalis, **Pale Lilac** (Apr-May)
Syringa (Lilac) persica, **Mauve** (May)
Syringa (Lilac) Condorcet, **Lavender, Double**
Syringa (Lilac) President Grevy, **Lilac, Double**
Syringa (Lilac) Mde Francisque Morel, **Violaceous Pink, Single**
Syringa (Lilac) Charles X, **Purplish-lilac, Single**

July to September

Buddleia variabilis, **Lilac** (July-Oct)
Calluna vulgaris var. aurea, **Purple** (July Oct)
Daboecia polifolia, **Rosy purple** (June Oct)
Erica vagans, **Rosy purple** (July Oct)
Fuchsia (various), **Purple and Red** (July-Sept)
Hedysarum multijugum, **Purple red** (June-Sept)
Ononis fruticosa, **Purple pink** (May-Aug)
Veronica elliptica var " Autumn Glory " **Deep Violet** (July Oct).

SHRUBS AND TREES WITH BLUE FLOWERS

April to June

Ceanthhus dentatus, **Blue** (Apr-June)
Ceanthhus floribundus, **Blue** (Apr-June)
Ceanthhus nigricans, **Purple blue** (Apr-June)
Ceanthhus thyrsiflorus, **Pale Blue** (Apr-June)
Ceanthhus Veitchianus, **Bright Blue** (Apr-June)
Rhododendron Augustannus, **Shades of Blue** (Apr-June)
Rhododendron hippophaeoides, **Lavender-blue** (Apr-May)
Rhododendron impedum, **Lavender-blue, Mauve or Purplish-blue** (May)
Rhododendron sullivantii, **Lavender-blue** (May)
Vinca major, **Purplish-blue** (June-Sept)
Vinca minor, **Purplish-blue** (June-Sept)

July to October

Abutilon vitifolium, **Pale Purplish blue** (Aug-Nov)
Caryopteris Mastacanthus, **Pale Blue** (Sept-Oct)
Caryopteris tanguitea, **Purple-blue** (Sept-Oct)
Ceanthhus Glorie de Versailles, **Lavender** (July Sept)
Ceanthhus Henri Defosse, **Dark Blue** (July Sept)
Ceanthhus Indigo, **Blue** (July-Sept)
Hibiscus syriacus Coeleste, **Light Blue** (Aug-Oct)
Lavandula spica, **Blue** (July-Aug)
Lavandula vera, **Blue** (July-Aug)
Veronica Andersonii, **Blue** (July Sept)
Veronica elliptica var Autumn Glory, **Violet** (July Oct)
Veronica speciosa, **Blue** (July-Sept)
Veronica Veitchii, **Purple** (July Sept)
Vinca (various), **Blue** (June Sept).

43
Arbutus Andrachne, White (Mch - Apl)
Azara microphylla, Pale Yellow
(Feb - Mch)
Berberis japonica, Yellow (Feb - Mch)
Chimonanthus fragrans, Yellow and Purple (Dec Mch)
Cornus Mas, Yellow (Feb)
Corlylopsis spicata, Yellow (Feb - Apl)
Cyclolanta japonica, White-red, etc
(Jan - Mch)
Daphne Mezereum, Purplish-red
(Jan - Mch)
Erica carnea, var. alba, James Backhouse, King George, Vivell, White-red
(Mch - Apl)
Erica darleyensis, Rosy (Nov - Apl)
Forsythia suspensa, etc, Yellow
(Mch - Apl)
Garrya elliptica, Subery-yellow or Greenish white (Nov - Mch)
Hamamelis japonica, Yellow (Dec Mch)
Hamamelis mollis, Golden-yellow
(Dec - Mch)
Lonicera fragrantissima, Creamy white
(Dec Mch)
Lonicera Standidhu, Creamy-white
(Dec - Mch)
Maboua Aquifolium, Golden-yellow
(Mch - Apl)
Parrotia persica, Red (Jan - Mch)
Persis floribunda, White (Mch - Apl)
Persis japonica, White (Mch Apl)
Prunus Amygdalus, Rosy pink
(Feb - Mch)
Prunus triloba fl pl, Rosy pink
(Mch - Apl)
Prunus Mume albo fl pl, White
(Feb - Mch)
Prunus tomentosa, White, tinged Rose
(Feb - Mch)
Prunus subhirtella autumnalis, White
(Nov - Apl)
Prunus Davldiana, Red (Feb - Mch)
Rhododendron arboreum, Red
(Jan - Mch)
Rhododendron Christmas Cheer, Pale Rose
(Jan - Mch)
Rhododendron duuricum, Rosy-purple
(Jan - Mch)
Rhododendron moulpuense, White [Red Spots] (Jan - Mch)
Rhododendron mucronulatum, Rosy-purple
(Jan Feb)
Rhododendron Noble neum, Rosy-scarlet
(Jan - Feb)
Rhododendron parvifolium, Rosy purple
(Jan - Mch)
Rhododendron precox, Rosy-ilac
(Jan - Mch)
Rhododendron Rosa Mundu, Pale Rose
(Jan - Mch)
Sax Capreia, Yellow (Mch - Apl)
Sax cinerea var. Medunus, Yellow
(Mch - Apl)
Spirea Thunbergiu, White (Mch)
Stachyurus chinensis, Greenish-yellow
(Feb Apl)
Stachyurus precox, Greenish-yellow
(Feb Apl)
Viburnum fragrans, Pink tinted white
(Nov - Mch)
Viburnum grandiflorum, Citron
(Feb - Mch)
Viburnum Tinus, White (Nov - Mch).

For cultural details, height, particulars of foliage, suitable soil and situation, propagation, see Alphabetical List of Shrubs and Trees, Chapter XXXV.
FROM November to February the average garden is usually extremely dull and uninteresting. We one and all take great pains to provide a fine show of colour from early spring until late summer or early autumn, but for some unaccountable reason, there is an inclination to overlook entirely the winter months, the very time when a little colour would be so welcome.

And the overlooking of this period is all the more strange because this colour is easily obtainable if a careful selection of shrubs and trees is made.

Evergreens planted among deciduous shrubs relieve the drabness of bare branches, especially those with variegated foliage, notably some of the *Euonymus*, the *Elaeagnus* and the *Holly*. These produce a cheerful effect, but they must not be planted to excess, or the garden will assume an unnatural and anything but restful appearance.

Plants with coloured bark and berries will brighten the garden considerably, so will some of the shrubs that bear catkins in winter and early spring, and separate chapters are devoted to these types. But it is quite possible, too, to have no mean quantity of actual bloom even in December, if such subjects as *Chimonanthus fragrans*, *Erica carnea*, *Garrya elliptica* and *Viburnum Tinus* are included in the planting scheme. The list that follows is evidence that the reader who wishes to plant a few winter-flowering shrubs has anything but a meagre selection, and I advise everyone, when planning a shrub border, to give these valuable plants the positions they undoubtedly merit.
### A FEW WINTER-FLOWERING TREES AND SHRUBS

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Height</th>
<th>Colour of Flowers</th>
<th>Period of Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbutus andrachnoides</td>
<td>15-30 ft</td>
<td>White</td>
<td>Winter Bloom</td>
</tr>
<tr>
<td>Berberis japonica</td>
<td>10 ft</td>
<td>Yellow</td>
<td>Feb-Mar</td>
</tr>
<tr>
<td>Chimonanthus fragrans grandiflorus</td>
<td>10-15 ft</td>
<td>Brownish-yellow</td>
<td>Dec-Mar</td>
</tr>
<tr>
<td>Clematis paniculata</td>
<td>Clumber</td>
<td>Cream</td>
<td>Feb-May</td>
</tr>
<tr>
<td>Cornus Mas</td>
<td>10-25 ft</td>
<td>Yellow</td>
<td>Feb-May</td>
</tr>
<tr>
<td>Corylopsis specata</td>
<td>3-6 ft</td>
<td>Yellow</td>
<td>Feb-May</td>
</tr>
<tr>
<td>Crataegus monogyna var praecox</td>
<td>15-25 ft</td>
<td>White</td>
<td>Oct-Mar</td>
</tr>
<tr>
<td>Cydonia japonica var</td>
<td>4-9 ft</td>
<td>White, Yellow, Rose pink or Red</td>
<td>Feb-Mar</td>
</tr>
<tr>
<td>Daphne mezereum</td>
<td>3-4 ft</td>
<td>Purplish-red</td>
<td>Oct-Feb</td>
</tr>
<tr>
<td>Elaeagnus latifolia</td>
<td>15-20 ft</td>
<td>Cream or Silvery white</td>
<td>Oct-Nov</td>
</tr>
<tr>
<td>Elaeagnus macrophylla</td>
<td>6-10 ft</td>
<td>Silver</td>
<td>Oct-Nov</td>
</tr>
<tr>
<td>Elaeagnus pungens</td>
<td>10-15 ft</td>
<td>Silvery-white</td>
<td>Oct-Nov</td>
</tr>
<tr>
<td>Erica carnea var</td>
<td>1-1.5 ft</td>
<td>Rosy pink or White</td>
<td>Jan-Mar</td>
</tr>
<tr>
<td>Erica darleyana</td>
<td>1-2 ft</td>
<td>Rosy-red</td>
<td>Nov-Mar</td>
</tr>
<tr>
<td>Coralis elliptica</td>
<td>10-12 ft</td>
<td>Silvery yellow, or Greensh-white</td>
<td>Nov-Mar</td>
</tr>
<tr>
<td>Hamamelis japonica</td>
<td>8-15 ft</td>
<td>Yellow</td>
<td>Dec-Mar</td>
</tr>
<tr>
<td>Hamamelis mollis</td>
<td>8-10 ft</td>
<td>Golden-yellow</td>
<td>Dec-Mar</td>
</tr>
<tr>
<td>Jasminum nudiflorum</td>
<td>Clumber</td>
<td>Yellow</td>
<td>Nov-Feb</td>
</tr>
<tr>
<td>Lonicera standishii</td>
<td>5-6 ft</td>
<td>White</td>
<td>Dec-Mar</td>
</tr>
<tr>
<td>Lonicera fragrantissima</td>
<td>5-6 ft</td>
<td>White</td>
<td>Dec-Mar</td>
</tr>
<tr>
<td>Prunus subhirtella utamalis</td>
<td>15-25 ft</td>
<td>Pink tinted White</td>
<td>Oct-Mar</td>
</tr>
<tr>
<td>Rhododendron Christ-mas Cheer</td>
<td>3-4 ft</td>
<td>Pale Rose</td>
<td>Jan-Mar</td>
</tr>
<tr>
<td>&quot;macronutatum&quot;</td>
<td>4-6 ft</td>
<td>Rose-purple</td>
<td>Jan-Feb</td>
</tr>
<tr>
<td>&quot;Nobleanum&quot;</td>
<td>8-12 ft</td>
<td>Rose scarlet</td>
<td>Jan-Mar</td>
</tr>
<tr>
<td>&quot;Rosa Mundi&quot;</td>
<td>4-5 ft</td>
<td>Pale Rose</td>
<td>Jan-Mar</td>
</tr>
<tr>
<td>&quot;praecox, etc&quot;</td>
<td>4-6 ft</td>
<td>Rose lilac</td>
<td>Feb-Mar</td>
</tr>
<tr>
<td>Ulex nanus</td>
<td>18 in</td>
<td>Yellow</td>
<td>Aug-Nov</td>
</tr>
<tr>
<td>Viburnum Tinus (Laurustinus)</td>
<td>8 ft</td>
<td>White</td>
<td>Nov-Mar</td>
</tr>
<tr>
<td>Viburnum fragrans</td>
<td>6 ft</td>
<td>Pink, tinted White</td>
<td>Nov-Mar</td>
</tr>
<tr>
<td>Viburnum grandiflorum</td>
<td>4-5 ft</td>
<td>Citron</td>
<td>Feb-Mar</td>
</tr>
</tbody>
</table>

**Note:** In the case of all these winter flowering shrubs, the period of blooming is influenced considerably by the severity of the weather.

For cultural details, propagation, suitable situations, and particulars of foliage, see *Alphabetical List of Shrubs and Trees*, Chapter XXXV.
COLOUR ALL THE YEAR

CHAPTER VII

As mentioned in a previous chapter, it is not a difficult matter to break up the monotonous aspect of the garden in winter, and by the inclusion of suitable subjects it is possible to introduce colour even in mid-winter. In the same way, by means of a careful selection and arrangement of shrubs and trees, our gardens need never lack interest. For winter colour we are dependant upon a somewhat limited selection of trees and shrubs that flower between November and the end of February, also upon fruiting and berry-bearing shrubs, specimens with coloured bark and stems, evergreens, including some with variegations in colour, and upon those plants that produce catkins in winter and early spring (See lists, pages 63 and 64.) In spring, summer and autumn, however, the choice is considerably greater, not only as regards flowering subjects but also in the case of deciduous plants with coloured and variegated foliage, see lists, page 55 and 56.

Most flowering trees and shrubs carry their bloom during four months of the year, namely between early March and the end of June, and for this very reason shrub borders are, as a rule, full of interest during these months, but with the approach of July bloom becomes conspicuous by its absence, and the green foliage is the predominating feature. There is but little need for this, for there is no dearth of shrubs and trees that carry bloom during the months of July, August and September, and with a little forethought it is quite possible to arrange for a succession of bloom throughout the year.

With a view to aiding the reader in making a selection, I have compiled the following lists showing the colours, heights, and blooming periods of some of the best shrubs and trees in cultivation. In Chapter V, on Flowering Trees and Shrubs, will be found much useful matter in connection with the arrangement of the specimens, in relation to their colour, height and period of bloom.
I would again remind the reader who is endeavouring to ensure colour in the borders throughout the year, that, in addition to the flowering trees and shrubs, one can draw upon those with coloured and variegated foliage (chapter VIII), those assuming autumn tints (chapter VIII), those with coloured stems and bark (chapter VIII), the fruiting and berry-bearing subjects (chapter IX), those producing catkins (chapter X), and lastly, but one of the most valuable groups, the evergreens and their variegated forms (chapter III).

### A Calendar of Bloom

*(See also Lists, pages 37-44.)*

For cultural details, propagation, suitable soil and situation, etc., *see* Alphabetical List of Shrubs and Trees, Chapter XXXV.

#### December and January

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chimonanthus fragrans</td>
<td>Deciduous</td>
<td>Pale Brownish-yellow, stained Purple</td>
<td>6-8 ft.</td>
</tr>
<tr>
<td>Clematis cirrhosa</td>
<td>Evergreen</td>
<td>Creamy-white</td>
<td>Climber</td>
</tr>
<tr>
<td>Daphne Mezereum</td>
<td>Deciduous</td>
<td>Purplish-red</td>
<td>3-4 ft.</td>
</tr>
<tr>
<td>Erica carnea</td>
<td>Evergreen</td>
<td>Rosy-pink</td>
<td>1-2 &quot;</td>
</tr>
<tr>
<td>Erica carnea alba</td>
<td>Evergreen</td>
<td>White</td>
<td>1-2 &quot;</td>
</tr>
<tr>
<td>Erica darleyensis</td>
<td>Evergreen</td>
<td>Rosy-red</td>
<td>1-2 &quot;</td>
</tr>
<tr>
<td>Garrya elliptica</td>
<td>Evergreen</td>
<td>Silvery-yellow or Greenish-white</td>
<td>10-12 &quot;</td>
</tr>
<tr>
<td>Hamamelis mollis</td>
<td>Deciduous</td>
<td>Golden-yellow</td>
<td>8-10 &quot;</td>
</tr>
<tr>
<td>Jasminum nudiflorum</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6-10 &quot;</td>
</tr>
<tr>
<td>Lonicera fragrantissima</td>
<td>Deciduous</td>
<td>Creamy-white</td>
<td>5-6 &quot;</td>
</tr>
<tr>
<td>Lonicera Standishii</td>
<td>Deciduous</td>
<td>Creamy-white</td>
<td>5-6 &quot;</td>
</tr>
<tr>
<td>Rhododendron various</td>
<td>Evergreen</td>
<td>Red, Rosy-purple, Pale-pink, White</td>
<td>1-2 &quot;</td>
</tr>
<tr>
<td>Viburnum Tinus</td>
<td>Evergreen</td>
<td>White or Pink-tinted</td>
<td>8 &quot;</td>
</tr>
</tbody>
</table>

*(See also Autumn-tinted Foliage, page 58, and Berry-bearing Shrubs, page 61).*

#### February and March

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azara microphylla</td>
<td>Evergreen</td>
<td>Pale Yellow</td>
<td>6-10 ft.</td>
</tr>
<tr>
<td>Berberis japonica</td>
<td>Evergreen</td>
<td>Yellow</td>
<td>10 &quot;</td>
</tr>
<tr>
<td>Chimonanthus fragrans</td>
<td>Deciduous</td>
<td>Pale Brownish-yellow, stained Purple</td>
<td>6-8 &quot;</td>
</tr>
<tr>
<td>Clematis calycina</td>
<td>Evergreen</td>
<td>Yellowish-white, stained Purple</td>
<td>Climber</td>
</tr>
<tr>
<td>Cornus Mas</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>10-25 ft.</td>
</tr>
<tr>
<td>Corylopsis pauciflora</td>
<td>Deciduous</td>
<td>Primrose-yellow</td>
<td>3-4 &quot;</td>
</tr>
</tbody>
</table>
Right, Berberis telomaica

Below, Berberis aggregata prattii
Above, *Cotoneaster salicifolia*

Right, *Cotoneaster conspicua*
### Tree or Shrub

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corylopsis spicata</td>
<td>Deciduous</td>
<td>Primrose-yellow</td>
<td>5-6 ft.</td>
</tr>
<tr>
<td>Cydonia japonica</td>
<td>Deciduous</td>
<td>Scarlet, Pink, Yellow, or White</td>
<td>4-9 ft.</td>
</tr>
<tr>
<td>Daphne Mezereum</td>
<td>Deciduous</td>
<td>Purplish-red</td>
<td>3-4 ft.</td>
</tr>
<tr>
<td>Erica carnea</td>
<td>Evergreen</td>
<td>Rosy-pink and White</td>
<td>1-2 ft.</td>
</tr>
<tr>
<td>Erica darleyensis</td>
<td>Evergreen</td>
<td>Rosy-red</td>
<td>1-2 ft.</td>
</tr>
<tr>
<td>Forsythia suspensa and vars.</td>
<td>Deciduous</td>
<td>Golden-yellow</td>
<td>4-12 ft.</td>
</tr>
<tr>
<td>Garrya elliptica</td>
<td>Evergreen</td>
<td>Silvery-yellow or Greenish-white</td>
<td>10-12 ft.</td>
</tr>
<tr>
<td>Hamamelis japonica and var. arborea</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>15-20 ft.</td>
</tr>
<tr>
<td>Hamamelis japonica Zuccariniana</td>
<td>Deciduous</td>
<td>Lemon-yellow</td>
<td>3-6 ft.</td>
</tr>
<tr>
<td>Lonicera fragrantissima and Standishii</td>
<td>Deciduous</td>
<td>Creamy-white</td>
<td>5-6 ft.</td>
</tr>
<tr>
<td>Magnolia stellata</td>
<td>Deciduous</td>
<td>White</td>
<td>10-12 ft.</td>
</tr>
<tr>
<td>Mahonia Aquifolium</td>
<td>Evergreen</td>
<td>Golden-yellow</td>
<td>4-6 ft.</td>
</tr>
<tr>
<td>Nuttallia cerasiformis</td>
<td>Deciduous</td>
<td>White</td>
<td>5-9 ft.</td>
</tr>
<tr>
<td>Parrotia Persica</td>
<td>Deciduous</td>
<td>Red</td>
<td>20-40 ft.</td>
</tr>
<tr>
<td>Prunus cerasifera</td>
<td>Deciduous</td>
<td>White or Rose-tinted</td>
<td>20-30 ft.</td>
</tr>
<tr>
<td>Prunus Amygdalus</td>
<td>Deciduous</td>
<td>Rosy-pink</td>
<td>10-25 ft.</td>
</tr>
<tr>
<td>Rhododendron (some vars.)</td>
<td>Evergreen</td>
<td>Reddish-white, etc.</td>
<td>1-18 ft.</td>
</tr>
<tr>
<td>Spiraea Thunbergii</td>
<td>Deciduous</td>
<td>White</td>
<td>3'-4½' ft.</td>
</tr>
<tr>
<td>Stachyurus chinensis</td>
<td>Deciduous</td>
<td>Greenish-yellow</td>
<td>5-7 ft.</td>
</tr>
<tr>
<td>Stachyurus praecox</td>
<td>Deciduous</td>
<td>Greenish-yellow</td>
<td>4-5 ft.</td>
</tr>
<tr>
<td>Sycomopsis sinensis</td>
<td>Evergreen</td>
<td>Red Bracts and Yellow Stamens</td>
<td>6-15 ft.</td>
</tr>
<tr>
<td>Ulex europaeus fl. pl.</td>
<td>Evergreen</td>
<td>Golden</td>
<td>3-5 ft.</td>
</tr>
<tr>
<td>Viburnum fragrans</td>
<td>Deciduous</td>
<td>Pink or White</td>
<td>6 ft.</td>
</tr>
</tbody>
</table>

### April

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aegle sepiaria</td>
<td>Deciduous</td>
<td>White</td>
<td>8-10 ft.</td>
</tr>
<tr>
<td>Amelanchier (various)</td>
<td>Deciduous</td>
<td>White</td>
<td>6-30 ft.</td>
</tr>
<tr>
<td>Berberis Darwinii</td>
<td>Evergreen</td>
<td>Golden-yellow</td>
<td>8-12 ft.</td>
</tr>
<tr>
<td>Ceanothus rigidus, etc.</td>
<td>Evergreen</td>
<td>Purplish-blue</td>
<td>12-20 ft.</td>
</tr>
<tr>
<td>Corylopsis Veitchiana</td>
<td>Deciduous</td>
<td>Primrose-yellow</td>
<td>5-6 ft.</td>
</tr>
<tr>
<td>Cydonia japonica and var.</td>
<td>Evergreen</td>
<td>Scarlet, Pink, Yellow, or White</td>
<td>4-3½ ft.</td>
</tr>
<tr>
<td>Cytisus praecox</td>
<td>Deciduous</td>
<td>Sulphur Yellow</td>
<td>6 ft.</td>
</tr>
<tr>
<td>Erica (various) (bils)</td>
<td>Evergreen</td>
<td>Various</td>
<td>1-6 ft.</td>
</tr>
<tr>
<td>Forsythia intermedia spectabilis</td>
<td>Deciduous</td>
<td>Golden-yellow</td>
<td>8 ft.</td>
</tr>
<tr>
<td>Kerria japonica fl. pl.</td>
<td>Deciduous</td>
<td>Golden-yellow</td>
<td>6-12 ft.</td>
</tr>
<tr>
<td>Magnolia (various)</td>
<td>Evergreen</td>
<td>Pink to White</td>
<td>4-30 ft.</td>
</tr>
<tr>
<td>Osmanthus Delavayi</td>
<td>Deciduous</td>
<td>White</td>
<td>4-6 ft.</td>
</tr>
<tr>
<td>Parrotia persica</td>
<td>Evergreen</td>
<td>Red</td>
<td>20-40 ft.</td>
</tr>
<tr>
<td>Pieris floribunda</td>
<td>Evergreen</td>
<td>White</td>
<td>4-6 ft.</td>
</tr>
<tr>
<td>Pieris japonica</td>
<td>Deciduous</td>
<td>White</td>
<td>4-10 ft.</td>
</tr>
<tr>
<td>Prunus cerasifera Pissardii</td>
<td>Deciduous</td>
<td>Blush-pink</td>
<td>20-30 ft.</td>
</tr>
<tr>
<td>Pyrus Malus (various)</td>
<td>Deciduous</td>
<td>Red to White</td>
<td>10-30 ft.</td>
</tr>
<tr>
<td>Rhododendrons (numerous)</td>
<td>Evergreen</td>
<td>Varied Colours</td>
<td>1-18 ft.</td>
</tr>
<tr>
<td>Ribes sanguineum vars.</td>
<td>Deciduous</td>
<td>Red, Pink, Rose, White</td>
<td>2-8 ft.</td>
</tr>
<tr>
<td>Spiraea arguta</td>
<td>Deciduous</td>
<td>White</td>
<td>6-8 ft.</td>
</tr>
<tr>
<td>Ulex europaeus fl. pl.</td>
<td>Evergreen</td>
<td>Golden</td>
<td>1½-5 ft.</td>
</tr>
<tr>
<td>Viburnum Carlesii</td>
<td>Deciduous</td>
<td>Pinkish-white</td>
<td>3-4 ft.</td>
</tr>
</tbody>
</table>
## A CALENDAR OF BLOOM—(continued)

### May

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aesculus carnea</em></td>
<td>Deciduous</td>
<td>Red</td>
<td>20-50 ft</td>
</tr>
<tr>
<td><em>Aesculus Hippocastanum</em></td>
<td>Deciduous</td>
<td>White, Yellow Blotches</td>
<td>10-100 ft</td>
</tr>
<tr>
<td><em>Berberis ductyophylla</em></td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6-8</td>
</tr>
<tr>
<td><em>Berberis styenophylla</em></td>
<td>Evergreen</td>
<td>Yellow</td>
<td>6-10</td>
</tr>
<tr>
<td><em>Berberis vulgaris</em></td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6-15</td>
</tr>
<tr>
<td><em>Buddleia globosa</em></td>
<td>Semi evergreen</td>
<td>Orange</td>
<td>8-15</td>
</tr>
<tr>
<td><em>Ceanothus dentatus</em></td>
<td>Evergreen</td>
<td>Blue, Lilac</td>
<td>12-20</td>
</tr>
<tr>
<td><em>Cercis siliquastrum</em></td>
<td>Deciduous</td>
<td>Rosy-lilac</td>
<td>15-25</td>
</tr>
<tr>
<td><em>Choisyta ternata</em></td>
<td>Evergreen</td>
<td>White, with Gold Stamens</td>
<td>6-10</td>
</tr>
<tr>
<td><em>Cornus Cotoneaster</em></td>
<td>Evergreen</td>
<td>Yellow</td>
<td>3- 8</td>
</tr>
<tr>
<td><em>Coronna glauca</em></td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6- 8</td>
</tr>
<tr>
<td><em>Cotoneaster multiflora</em></td>
<td>Deciduous</td>
<td>White</td>
<td>5-10</td>
</tr>
<tr>
<td><em>Crataegus (various)</em></td>
<td>Deciduous</td>
<td>Bronze, Yellow, etc</td>
<td>3-10</td>
</tr>
<tr>
<td><em>Daphne (various)</em></td>
<td>Deciduous and Evergreen</td>
<td>Various</td>
<td>4- 4</td>
</tr>
<tr>
<td><em>Deutzia (various)</em></td>
<td>Deciduous</td>
<td>White, Rose or Purple</td>
<td>3-12</td>
</tr>
<tr>
<td><em>Dierilla (various)</em></td>
<td>Deciduous</td>
<td>White, Pink, Rose-crimson</td>
<td>4- 6</td>
</tr>
<tr>
<td><em>Erica (various)</em></td>
<td>Evergreen</td>
<td>Various</td>
<td>1- 6</td>
</tr>
<tr>
<td><em>Fraxinus ornus</em></td>
<td>Deciduous</td>
<td>Creamy-white</td>
<td>25-50</td>
</tr>
<tr>
<td><em>Genista hispanica</em></td>
<td>Deciduous</td>
<td>Golden yellow</td>
<td>1- 3</td>
</tr>
<tr>
<td><em>Halesia carolina</em></td>
<td>Deciduous</td>
<td>White</td>
<td>10-30</td>
</tr>
<tr>
<td><em>Kalmia glauca</em></td>
<td>Evergreen</td>
<td>Purplish rose</td>
<td>2</td>
</tr>
<tr>
<td><em>Laburnum alpinum</em></td>
<td>Deciduous</td>
<td>Yellow</td>
<td>20-30</td>
</tr>
<tr>
<td><em>Laburnum vulgare</em></td>
<td>Deciduous</td>
<td>Pink to White</td>
<td>15-30</td>
</tr>
<tr>
<td><em>Magnolia (various)</em></td>
<td>Deciduous and Evergreen</td>
<td>Various</td>
<td>4-30</td>
</tr>
<tr>
<td><em>Rhododendrons (including Azaleas)</em></td>
<td>Deciduous</td>
<td>Various</td>
<td>1-18</td>
</tr>
<tr>
<td><em>Spurza prunifolia fl pl</em></td>
<td>Evergreen</td>
<td>White</td>
<td>6- 8</td>
</tr>
<tr>
<td><em>Syringa (Lilacs)</em></td>
<td>Deciduous</td>
<td>Various</td>
<td>5-25</td>
</tr>
<tr>
<td><em>Ulex europaeus fl pl</em></td>
<td>Evergreen</td>
<td>Golden</td>
<td>3- 5</td>
</tr>
</tbody>
</table>

### June

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Andromeda polifolia</em></td>
<td>Evergreen</td>
<td>Pink</td>
<td>1- 2 ft</td>
</tr>
<tr>
<td><em>Berberis polyantha</em></td>
<td>Deciduous</td>
<td>Yellow</td>
<td>5- 9</td>
</tr>
<tr>
<td><em>Calycanthus floridus</em></td>
<td>Deciduous</td>
<td>Purple red</td>
<td>5- 6</td>
</tr>
<tr>
<td><em>Carpenteria californica</em></td>
<td>Evergreen</td>
<td>White</td>
<td>8-10</td>
</tr>
<tr>
<td><em>Cistus (various)</em></td>
<td>Evergreen</td>
<td>Red, White, etc</td>
<td>2- 8</td>
</tr>
<tr>
<td><em>Clematis (various)</em></td>
<td>Deciduous and Evergreen</td>
<td>Various</td>
<td>5-20</td>
</tr>
<tr>
<td><em>Cornus Emerus</em></td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6- 8</td>
</tr>
<tr>
<td><em>Crataegus (various)</em></td>
<td>Deciduous</td>
<td>White, Pink and Scarlet</td>
<td>15-25</td>
</tr>
<tr>
<td><em>Daphne alpina</em></td>
<td>Evergreen</td>
<td>White</td>
<td>3-11</td>
</tr>
<tr>
<td><em>Deutzia (various)</em></td>
<td>Deciduous</td>
<td>White, Rose or Purple</td>
<td>3-12</td>
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</tbody>
</table>
### A CALENDAR OF BLOOM—(continued).

#### June—(continued)

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicrvenilla (various)</td>
<td>Deciduous</td>
<td>White, Pink, Rose-crimson</td>
<td>4-6 ft</td>
</tr>
<tr>
<td>Gerstera (various)</td>
<td>Deciduous</td>
<td>Golden yellow</td>
<td>1-20</td>
</tr>
<tr>
<td>Jasminum officinale</td>
<td>Semi evergreen</td>
<td>White</td>
<td>Climber</td>
</tr>
<tr>
<td>Kalmia latifolia</td>
<td>Evergreen</td>
<td>Rose and White</td>
<td>8-15 ft</td>
</tr>
<tr>
<td>Rhododendrons (various, including Azaleas)</td>
<td>Deciduous and Evergreen</td>
<td>White</td>
<td>3-15 ft</td>
</tr>
<tr>
<td>Rosa (various species)</td>
<td>Deciduous</td>
<td>Red to White</td>
<td>1-18</td>
</tr>
<tr>
<td>Spiraea (various)</td>
<td>Various</td>
<td></td>
<td>1-10</td>
</tr>
<tr>
<td>Viburnum Opulus sterile</td>
<td>Deciduous</td>
<td></td>
<td>1-30</td>
</tr>
<tr>
<td>Viburnum tomentosum pictatum</td>
<td>Deciduous</td>
<td></td>
<td>8-12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-10</td>
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</table>

#### July

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abelia grandiflora</td>
<td>Evergreen</td>
<td>Pink to White</td>
<td>3-6 ft</td>
</tr>
<tr>
<td>Aesculus californica</td>
<td>Deciduous</td>
<td>White, tinted Pink</td>
<td>10-20</td>
</tr>
<tr>
<td>Aesculus indica</td>
<td>Deciduous</td>
<td>White, blotted Red and Yellow</td>
<td>70-80</td>
</tr>
<tr>
<td>Amorpha canescens</td>
<td>Deciduous</td>
<td>Purple</td>
<td>2-3</td>
</tr>
<tr>
<td>Berberidopsis corallina</td>
<td>Evergreen</td>
<td>Coral red</td>
<td>10-20</td>
</tr>
<tr>
<td>Calluna vulgaris vars</td>
<td>Evergreen</td>
<td>Crimson to White</td>
<td>1-2</td>
</tr>
<tr>
<td>Carcenderia californica</td>
<td>Evergreen</td>
<td>White</td>
<td>8-10</td>
</tr>
<tr>
<td>Cassia fulvida</td>
<td>Evergreen</td>
<td>White, with Yellow Stamens</td>
<td>3-6</td>
</tr>
<tr>
<td>Catalpa bignonoides</td>
<td>Deciduous</td>
<td>White, spotted Purple and Yellow</td>
<td>30-50</td>
</tr>
<tr>
<td>Catalpa speciosa</td>
<td>Deciduous</td>
<td>White, Yellow Blotches</td>
<td>30-100</td>
</tr>
<tr>
<td>Ceanothus Gloire de Versailles</td>
<td>Deciduous</td>
<td>Lavender</td>
<td>4-5</td>
</tr>
<tr>
<td>Chionanthus virginica</td>
<td>Evergreen</td>
<td>White</td>
<td>10-12</td>
</tr>
<tr>
<td>Cistus (various)</td>
<td>Deciduous</td>
<td>Red, White, etc</td>
<td>2-8</td>
</tr>
<tr>
<td>Colutea cruenta</td>
<td>Deciduous</td>
<td>Red and Yellow</td>
<td>6-8</td>
</tr>
<tr>
<td>Coronilla Emerus</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6-8</td>
</tr>
<tr>
<td>Cytisus nigricans</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>4-5</td>
</tr>
<tr>
<td>Daphneæa pohfæla</td>
<td>Evergreen</td>
<td>Rosy purple</td>
<td>1-2</td>
</tr>
<tr>
<td>Erica ciliaris</td>
<td>Evergreen</td>
<td>Rosy red</td>
<td>1-1</td>
</tr>
<tr>
<td>Lavandula spica</td>
<td>Evergreen</td>
<td>White</td>
<td>4-5</td>
</tr>
<tr>
<td>Oleaæa Hæastu</td>
<td>Evergreen</td>
<td>Mauve to White</td>
<td>3-5</td>
</tr>
<tr>
<td>Philadelphus (various)</td>
<td>Deciduous</td>
<td>White</td>
<td>4-5</td>
</tr>
<tr>
<td>Potentilla (various)</td>
<td>Deciduous</td>
<td>White or Yellow</td>
<td>1-4</td>
</tr>
<tr>
<td>Robinia hispida</td>
<td>Deciduous</td>
<td>Pink</td>
<td>8-9</td>
</tr>
<tr>
<td>Romneæa Coulten</td>
<td>Deciduous</td>
<td>White, with Golden yellow Centres</td>
<td>5-8</td>
</tr>
<tr>
<td>Senecæo compactus</td>
<td>Evergreen</td>
<td>Yellow</td>
<td>2-3</td>
</tr>
<tr>
<td>Sparræa junceæum</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>8-10</td>
</tr>
<tr>
<td>Sparræa canescens</td>
<td>Deciduous</td>
<td>White</td>
<td>6-9</td>
</tr>
<tr>
<td>Sparræa discolor</td>
<td>Deciduous</td>
<td>Creamy white</td>
<td>10-15</td>
</tr>
<tr>
<td>Sparræa Douglasii</td>
<td>Deciduous</td>
<td>Purplish rose</td>
<td>5-6</td>
</tr>
<tr>
<td>Veronica Traversii</td>
<td>Evergreen</td>
<td>White</td>
<td>Up to 5 ft</td>
</tr>
<tr>
<td>Yuccæa filæentæosa</td>
<td>Evergreen</td>
<td>Creamy-white</td>
<td>3-6</td>
</tr>
<tr>
<td>Zenœæia speciæosa</td>
<td>Semi evergreen</td>
<td>White</td>
<td>3-5</td>
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</tbody>
</table>
A CALENDAR OF BLOOM—(continued).

August

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abelia grandiflora</td>
<td>Evergreen</td>
<td>Pink to White</td>
<td>3-6 ft</td>
</tr>
<tr>
<td>Aloysia citriodora</td>
<td>Deciduous</td>
<td>Purple</td>
<td>10 ft</td>
</tr>
<tr>
<td>Buddleia variabilis vars</td>
<td>Deciduous</td>
<td>Lilac</td>
<td>10-20 ft</td>
</tr>
<tr>
<td>Cassinia fulvida</td>
<td>Evergreen</td>
<td>White, with Yellow Stamens</td>
<td>3-6 ft</td>
</tr>
<tr>
<td>Catalpa bignoniodes</td>
<td>Deciduous</td>
<td>White, spotted Purple, Yellow Blotch</td>
<td>30-50 ft</td>
</tr>
<tr>
<td>Ceanothus (various)</td>
<td>Deciduous</td>
<td>Blue, Rose, etc</td>
<td>3-8 ft</td>
</tr>
<tr>
<td>Ceratostigma Willmottianum</td>
<td>Deciduous</td>
<td>Blue</td>
<td>2-4 ft</td>
</tr>
<tr>
<td>Choisyia ternata</td>
<td>Evergreen</td>
<td>White, with Gold Stamens</td>
<td>6-10 ft</td>
</tr>
<tr>
<td>Clerodendron Fargesii</td>
<td>Deciduous</td>
<td>White and Green</td>
<td>3-12 ft</td>
</tr>
<tr>
<td>Cornilla Emerus</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>6-8 ft</td>
</tr>
<tr>
<td>Cytisus nigricans</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>3-4 ft</td>
</tr>
<tr>
<td>Daphne polifolia vars</td>
<td>Evergreen</td>
<td>Rosy purple</td>
<td>1-2 ft</td>
</tr>
<tr>
<td>Erica (various)</td>
<td>Evergreen</td>
<td>Red, Pink, White</td>
<td>1-10 ft</td>
</tr>
<tr>
<td>Escallonia (various)</td>
<td>Evergreen</td>
<td>Red, Pink, White</td>
<td>6-18 ft</td>
</tr>
<tr>
<td>Fuchsia (various)</td>
<td>Deciduous</td>
<td>Purple and Red</td>
<td>5-7 ft</td>
</tr>
<tr>
<td>Hibiscus syriacus vars</td>
<td>Deciduous</td>
<td>Purple, Red, White, Pink or Blue</td>
<td>7-10 ft</td>
</tr>
<tr>
<td>Hydrangea pumilata and var grandiflora</td>
<td>Deciduous</td>
<td>Creamy-white</td>
<td>3-6 ft</td>
</tr>
<tr>
<td>Hypericum (various)</td>
<td>Deciduous and Evergreen</td>
<td>Yellow</td>
<td>3 ins to 6 ft</td>
</tr>
<tr>
<td>Lavandula spica</td>
<td>Evergreen</td>
<td>Mauve to White</td>
<td>2-4 ft</td>
</tr>
<tr>
<td>Leycesteria formosa</td>
<td>Deciduous</td>
<td>Purple and White</td>
<td>4-8 ft</td>
</tr>
<tr>
<td>Lonicerà Periclymenum serotina</td>
<td>Deciduous</td>
<td>Creamy-yellow and Purple Clematis</td>
<td></td>
</tr>
<tr>
<td>Magnolia grandiflora</td>
<td>Evergreen</td>
<td>Blue</td>
<td>up to 50 ft</td>
</tr>
<tr>
<td>Passiflora carnea</td>
<td>Deciduous</td>
<td>Creamy-white</td>
<td>10-25 ft</td>
</tr>
<tr>
<td>Spirea japonica Anthony Waterer</td>
<td>Deciduous</td>
<td>Crimson</td>
<td>2-2½ ft</td>
</tr>
<tr>
<td>Spirea Margarita</td>
<td>Deciduous</td>
<td>Pink</td>
<td>4 ft</td>
</tr>
<tr>
<td>Yucca gloriosa</td>
<td>Evergreen</td>
<td>Greenish-white</td>
<td>6-9 ft</td>
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</tbody>
</table>

September to October

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abelia grandiflora</td>
<td>Evergreen</td>
<td>White, tinted Pink</td>
<td>3-6 ft</td>
</tr>
<tr>
<td>Aralia chinensis</td>
<td>Deciduous</td>
<td>Creamy white</td>
<td>10-15 ft</td>
</tr>
<tr>
<td>Arbutus Unedo</td>
<td>Evergreen</td>
<td>Creamy-pink</td>
<td>10-30 ft</td>
</tr>
<tr>
<td>Buddleia variabilis vars</td>
<td>Deciduous</td>
<td>Lilac</td>
<td>10-20 ft</td>
</tr>
<tr>
<td>Caryopteris Mastacanthus</td>
<td>Deciduous</td>
<td>Pale Blue</td>
<td>3-5 ft</td>
</tr>
<tr>
<td>Caryopteris tanguetica</td>
<td>Deciduous</td>
<td>Purple blue</td>
<td>3-5 ft</td>
</tr>
<tr>
<td>Ceanothus hybrid vars</td>
<td>Deciduous</td>
<td>Red, Blue, etc</td>
<td>3-8 ft</td>
</tr>
<tr>
<td>Ceratostigma Willmottianum</td>
<td>Deciduous</td>
<td>Blue</td>
<td>2-4 ft</td>
</tr>
<tr>
<td>Clematis (various)</td>
<td>Deciduous</td>
<td>Various</td>
<td>5-20 ft</td>
</tr>
<tr>
<td>Clethra alnifolia</td>
<td>Deciduous</td>
<td>White</td>
<td>5-8 ft</td>
</tr>
</tbody>
</table>
A CALENDAR OF BLOOM—(continued).
September to October—(continued).

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elsholtzia Stauntonii</td>
<td>Deciduous</td>
<td>Purple, White, etc</td>
<td>4-5 ft</td>
</tr>
<tr>
<td>Erica (various)</td>
<td>Evergreen</td>
<td>Red, Pink, White</td>
<td>6-18 ft</td>
</tr>
<tr>
<td>Escallonia (various)</td>
<td>Evergreen</td>
<td>Creamy white</td>
<td>8-12 ft</td>
</tr>
<tr>
<td>Fatsia japonica</td>
<td>Evergreen</td>
<td>Purple and Red</td>
<td>5-7 ft</td>
</tr>
<tr>
<td>Fuchsia (various)</td>
<td>Deciduous</td>
<td>Purple, Red, White, Pink or Blue</td>
<td>7-10 ft</td>
</tr>
<tr>
<td>Hibiscus syriacus vars</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>3ins to 5 ft</td>
</tr>
<tr>
<td>Hydrangea (various)</td>
<td>Evergreen</td>
<td>Rosy-purple</td>
<td>3-6 ft</td>
</tr>
<tr>
<td>Indigofera Gerardiana</td>
<td>Deciduous</td>
<td>White</td>
<td>5-10 ft</td>
</tr>
<tr>
<td>Ligustrum lucidum</td>
<td>Evergreen</td>
<td>White</td>
<td>8-10 ft</td>
</tr>
<tr>
<td>Ligustrum Quihoui</td>
<td>Deciduous</td>
<td>Creamy yellow</td>
<td>Climber</td>
</tr>
<tr>
<td>Lonicer a Pennycotum serotina</td>
<td>Deciduous</td>
<td>Purple</td>
<td></td>
</tr>
<tr>
<td>Osmanthus Aquifolium</td>
<td>Evergreen</td>
<td>White</td>
<td>4-10 ft</td>
</tr>
<tr>
<td>Perovskia atriplicifolia</td>
<td>Deciduous</td>
<td>Violet blue</td>
<td>3-5 ft</td>
</tr>
<tr>
<td>Romneya Coulter</td>
<td>Deciduous</td>
<td>White, with Golden-yellow Centres</td>
<td>5-7 or 8 ft</td>
</tr>
<tr>
<td>Sophora japonica</td>
<td>Deciduous</td>
<td>Creamy white</td>
<td>50-80 ft</td>
</tr>
<tr>
<td>Veronica speciosa vars</td>
<td>Evergreen</td>
<td>Purple, Blue, etc</td>
<td>2-4 ft</td>
</tr>
<tr>
<td>Veronica elliptica var Autumn Glory</td>
<td>Evergreen</td>
<td>Deep Violet</td>
<td>11-2 ft</td>
</tr>
<tr>
<td>Vitex Agnus castus</td>
<td>Deciduous</td>
<td>Mauve</td>
<td>6-10 ft</td>
</tr>
</tbody>
</table>

November and December

<table>
<thead>
<tr>
<th>Tree or Shrub</th>
<th>Deciduous or Evergreen</th>
<th>Colour of Flowers</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbutus Unedo var</td>
<td>Evergreen</td>
<td>White or Pink and Rose-tinted</td>
<td>10-30 ft</td>
</tr>
<tr>
<td>Daphne Mezereum grandiflora</td>
<td>Deciduous</td>
<td>Purplish red</td>
<td>3-4 ft</td>
</tr>
<tr>
<td>Elaeagnus glabra</td>
<td>Evergreen</td>
<td>White</td>
<td>15-20 ft</td>
</tr>
<tr>
<td>Elaeagnus macrophylla</td>
<td>Evergreen</td>
<td>Silvery, Scaly Fruits</td>
<td>6-10 ft</td>
</tr>
<tr>
<td>Elaeagnus pungens</td>
<td>Evergreen</td>
<td>Silvery-white</td>
<td>10-15 ft</td>
</tr>
<tr>
<td>Erica darlensis</td>
<td>Evergreen</td>
<td>Rosy</td>
<td>1-2 ft</td>
</tr>
<tr>
<td>Fatsia japonica</td>
<td>Evergreen</td>
<td>Creamy white Flowers</td>
<td>5-12 ft</td>
</tr>
<tr>
<td>Garrya elliptica</td>
<td>Evergreen</td>
<td>Yellow or Greenish-white Flowers</td>
<td>10-12 ft</td>
</tr>
<tr>
<td>Jasminum nudiflorum</td>
<td>Deciduous</td>
<td>Yellow</td>
<td>Climber</td>
</tr>
<tr>
<td>Prunus subhirtella autumnalis</td>
<td>Deciduous</td>
<td>White, pink tinted</td>
<td>15-25 ft</td>
</tr>
<tr>
<td>Viburnum Tinus</td>
<td>Evergreen</td>
<td>White</td>
<td>6-10 ft</td>
</tr>
</tbody>
</table>

See also Shrubs or Trees with coloured and variegated Foliage, Shrubs and Trees with coloured Berries and Fruits, also those with coloured Bark and Stems

For cultural details, propagation, suitable soil and situation, etc, see Alphabetical List of Shrubs and Trees, Chapter XXXV

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CHAPTER VIII

TREES and shrubs with coloured and variegated foliage are of undoubted value when planted with due forethought and in moderation, for they add a touch of brightness to the garden, especially in dull weather and in autumn and winter, when flowers and colour are at a premium. I would reiterate that these subjects, especially those with variegated foliage, should not be planted too plentifully, and save for large trees, which themselves make a sufficiently large mass of colour, should not be dotted about singly among other shrubs, or a distinctly unpleasant, spotty and unrestful effect will be produced. Plant them together in groups, and don’t allow a clump of conspicuously bright foliage to stand out in bold relief from a dark background of evergreens. Endeavour to interpose plants with foliage of a similar nature, harmonising in colour, and that will lead the eye gradually from the sombre shades to the vivid colouring or variegation. If preferred, the coloured or variegated specimens can be planted together in a special corner of the garden, where they will form pleasing patches of colour, the stems being especially attractive in winter. But even with this separate arrangement, care must be taken in the blending of the colours.

Plants with variegated foliage usually have the veining and mottling on a cream or white ground, the markings should be distinct and bright. In most cases the variegation is permanent, but some shrubs are coloured only when the leaves are young in spring, their foliage becoming green as the summer advances. Others have green leaves in spring, the colouring appearing only as the foliage matures. Just as a poor soil seems to encourage brilliance in autumn-tinted foliage, so is variegated foliage all the more striking when the plants are grown in not too rich a soil. (See lists, pages 55-59.)
**SOME SHRUBS AND TREES WITH COLOURED FOLIAGE**

For cultural details, propagation, suitable soil and situation, height, colour of flowers, time of blooming, see Alphabetical List of Shrubs and Trees, Chapter XXXV.

### Red or Purple Foliage

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer coccineum rubrum</td>
<td>Acer coccineum rubrum</td>
<td>Young Growth Bright Crimson</td>
</tr>
<tr>
<td>Acer palmatum atropurpureum</td>
<td>Acer palmatum atropurpureum</td>
<td>Foliage and Young Shoots, Bronzy-crimson</td>
</tr>
<tr>
<td>Acer Pseudoplatanus purpureum</td>
<td>Acer Pseudoplatanus purpureum</td>
<td>Foliage, Bright Purple on Brown Stems</td>
</tr>
<tr>
<td>Berberis vulgaris folis purpureis</td>
<td>Berberis vulgaris folis purpureis</td>
<td>Rich Purple Foliage</td>
</tr>
<tr>
<td>Betula verrucosa purpurea</td>
<td>Betula verrucosa purpurea</td>
<td>Deep Purple Foliage</td>
</tr>
<tr>
<td>Corylus maxima atropurpurea</td>
<td>Corylus maxima atropurpurea</td>
<td>Purple Foliage</td>
</tr>
<tr>
<td>Dierhilla florida folis purpureis</td>
<td>Dierhilla florida folis purpureis</td>
<td>Dark Purple Foliage</td>
</tr>
<tr>
<td>Euonymus europaeus atropurpureus</td>
<td>Euonymus europaeus atropurpureus</td>
<td>Purple-tinted Terminal Growths</td>
</tr>
<tr>
<td>Fagus sylvatica atropurpurea</td>
<td>Fagus sylvatica atropurpurea</td>
<td>Deep Bronze Purple Foliage</td>
</tr>
<tr>
<td>Osmanthus Aquifolium purpureum</td>
<td>Osmanthus Aquifolium purpureum</td>
<td>Coppery red Foliage</td>
</tr>
<tr>
<td>Prunus cerasifera Pissardi var nigra</td>
<td>Prunus cerasifera Pissardi var nigra</td>
<td>Purple Shoots and Foliage</td>
</tr>
<tr>
<td>Pyrus Aldenhamensis</td>
<td>Pyrus Aldenhamensis</td>
<td>Dark Purple Foliage</td>
</tr>
<tr>
<td>Pyrus purpurea</td>
<td>Pyrus purpurea</td>
<td>Purple Foliage</td>
</tr>
<tr>
<td>Quercus pedunculata purpurea</td>
<td>Quercus pedunculata purpurea</td>
<td>Wine coloured Foliage</td>
</tr>
<tr>
<td>Rhododendron ponticum purpureum</td>
<td>Rhododendron ponticum purpureum</td>
<td></td>
</tr>
<tr>
<td>Rhus Cotinus folis purpureis</td>
<td>Rhus Cotinus folis purpureis</td>
<td></td>
</tr>
</tbody>
</table>

### Golden or Yellow Foliage

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer cappsococcum aureum</td>
<td>Acer cappsococcum aureum</td>
<td>Yellow Foliage, turning Gold</td>
</tr>
<tr>
<td>Acer japonicum aureum</td>
<td>Acer japonicum aureum</td>
<td>Pale Golden-yellow Foliage</td>
</tr>
<tr>
<td>Acer Negundo californiae aureum</td>
<td>Acer Negundo californiae aureum</td>
<td>Yellow Foliage and Young Shoots</td>
</tr>
<tr>
<td>Alnus incana aurea</td>
<td>Alnus incana aurea</td>
<td>Golden Foliage</td>
</tr>
<tr>
<td>Calluna vulgaris aurea</td>
<td>Calluna vulgaris aurea</td>
<td>Rich Yellow Foliage</td>
</tr>
<tr>
<td>Catalpa bignonioides aurea</td>
<td>Catalpa bignonioides aurea</td>
<td>Golden Foliage</td>
</tr>
<tr>
<td><em>Cedrus Deodara aurea</em></td>
<td><em>Cedrus Deodara aurea</em></td>
<td>Yellow Foliage</td>
</tr>
<tr>
<td>Corylus Avellana aurea</td>
<td>Corylus Avellana aurea</td>
<td>Yellow Foliage</td>
</tr>
<tr>
<td><em>Cupressus Lawsoniana darievensis, etc</em></td>
<td><em>Cupressus Lawsoniana darievensis, etc</em></td>
<td>Golden Foliage</td>
</tr>
<tr>
<td>Diervilla japonica Looymansii aurea</td>
<td>Diervilla japonica Looymansii aurea</td>
<td>Bright Yellow Foliage</td>
</tr>
<tr>
<td>Fagus sylvatica Zlatia</td>
<td>Fagus sylvatica Zlatia</td>
<td>Golden Foliage</td>
</tr>
<tr>
<td>Ilex Aquifolium aurea medio picta</td>
<td>Ilex Aquifolium aurea medio picta</td>
<td>Golden Foliage</td>
</tr>
<tr>
<td><em>Juniperus chinensis aurea</em></td>
<td><em>Juniperus chinensis aurea</em></td>
<td>Golden yellow Leaves</td>
</tr>
<tr>
<td>Ligustrum ovalifolium folis aureis</td>
<td>Ligustrum ovalifolium folis aureis</td>
<td>Yellow Foliage</td>
</tr>
<tr>
<td><em>Nelumbia nucifera lutea</em></td>
<td><em>Nelumbia nucifera lutea</em></td>
<td>Yellow Foliage</td>
</tr>
<tr>
<td>Populus serotina aurea</td>
<td>Populus serotina aurea</td>
<td>Clear Golden yellow Foliage</td>
</tr>
<tr>
<td>Quercus pedunculata Concordia</td>
<td>Quercus pedunculata Concordia</td>
<td>Foliage suffused Golden-yellow</td>
</tr>
<tr>
<td>Ribes alpinum aurea (dwarf)</td>
<td>Ribes alpinum aurea (dwarf)</td>
<td>Yellow Foliage</td>
</tr>
<tr>
<td>Ribes sanguineum Brocklebankii</td>
<td>Ribes sanguineum Brocklebankii</td>
<td>Golden Foliage</td>
</tr>
<tr>
<td>Robinia Pseudacacia aurea</td>
<td>Robinia Pseudacacia aurea</td>
<td>Golden Foliage</td>
</tr>
<tr>
<td><em>Sambucus nigra folis aureis</em></td>
<td><em>Sambucus nigra folis aureis</em></td>
<td>Brucht Golden Foliage</td>
</tr>
<tr>
<td><em>Taxus baccata aurea</em></td>
<td><em>Taxus baccata aurea</em></td>
<td>Golden Foliage</td>
</tr>
<tr>
<td><em>Taxus baccata fastigiata aurea</em></td>
<td><em>Taxus baccata fastigiata aurea</em></td>
<td>Golden Foliage</td>
</tr>
<tr>
<td>Ulmus campestris Louis Van Houtte</td>
<td>Ulmus campestris Louis Van Houtte</td>
<td>Bright Golden-yellow Foliage</td>
</tr>
</tbody>
</table>

* Denotes conifers For climbers, see Chapter XVII Dwarf Shrubs, see Chapter XVIII

### White, Silver or Grey Foliage

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Abies concolor violacea</em></td>
<td><em>Abies concolor violacea</em></td>
<td>Glaucous Leaves</td>
</tr>
<tr>
<td><em>Abies nobilis glauca</em></td>
<td><em>Abies nobilis glauca</em></td>
<td>Glaucous blue Leaves</td>
</tr>
<tr>
<td>Atriplex canescens</td>
<td>Atriplex canescens</td>
<td>Silvery-white Foliage</td>
</tr>
<tr>
<td>Atriplex Halimus</td>
<td>Atriplex Halimus</td>
<td>Silvery grey Foliage</td>
</tr>
<tr>
<td><em>Cedrus atlantica glauca</em></td>
<td><em>Cedrus atlantica glauca</em></td>
<td>Silvery-blue</td>
</tr>
<tr>
<td><em>Cupressus Lawsoniana Triomphe de Boskoop</em></td>
<td><em>Cupressus Lawsoniana Triomphe de Boskoop</em></td>
<td>Silvery-grey Foliage</td>
</tr>
<tr>
<td><em>Cupressus Lawsoniana elegantrisma</em></td>
<td><em>Cupressus Lawsoniana elegantrisma</em></td>
<td>Silvery-grey Foliage</td>
</tr>
<tr>
<td><em>Cupressus Lawsoniana &quot;Silver Queen&quot;</em></td>
<td><em>Cupressus Lawsoniana &quot;Silver Queen&quot;</em></td>
<td>Glaucous grey Foliage</td>
</tr>
<tr>
<td><em>Cupressus pisifera squarrosa</em></td>
<td><em>Cupressus pisifera squarrosa</em></td>
<td>Glaucous blue Foliage</td>
</tr>
<tr>
<td><em>Cupressus pisifera squarrosa sulphurea</em></td>
<td><em>Cupressus pisifera squarrosa sulphurea</em></td>
<td>Foliage of a Sulphur Hue</td>
</tr>
<tr>
<td>Elaeagnus macropylla</td>
<td>Elaeagnus macropylla</td>
<td>Silvery Foliage</td>
</tr>
<tr>
<td>Hippophae rhamnoides</td>
<td>Hippophae rhamnoides</td>
<td>Silvery Foliage</td>
</tr>
</tbody>
</table>

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SOME SHRUBS AND TREES WITH COLOURED FOLIAGE—(continued).

White, Silver or Grey Foliage (continued).

*Juniperus chinensis Fortuni
*Juniperus chinensis glauca
Picea pungens glauca
Picea pungens “Silver Queen”
Juniperus communis Fortunel
Juniperus communis glauca
Picea pungens
Picea pungens “Silver Queen”
Pinus excelsa
Pyrus Arla
Pvrs salicifolia
Salix alba argentea
Santolina Chamæcypræssus

Silvery grey Foliage
Silver Foliage

Undersides of Leaves White
Silver Foliage

SILVER FOLIAGE

SOME SHRUBS AND TREES WITH VARIEGATED FOLIAGE

Silver or White Variegations

Acanthopanax spinosus variegatum
Acer Negundo variegatum
Acer Pseudoplatanus Leopoldi
Buxus sempervirens argentea
Cornus alba sibirica variegata
Cornus Mas variegata
Cupressus Lawsoniana argentea variegata
Cupressus obtusa alba variegata
Dietrilla florda variegata
Elaegnus pungens variegata
Euonymus radicans “Silver Gem”
Euonymus radicans variegata
Fraxinus excelsior variegata
Hedera canariensis variegata
Hedera canariensis azorica variegata
Hedera Helix “Lee’s Silver”
Ilex Aquifolium argentea marginata
Ilex Aquifolium argentea pendula
Ilex Aquifolium argentea regina
Juniperus chinensis japonica albo variegata
Kerria japonica variegata
Osmanthus Aquifolium argentea variegatus
Osmanthus Aquifolium latifolius variegatus
Philadelphia coronarius variegatus
Persia japonica variegata
Quercus Ceris variegata
Thuja dolabrata variegata
Ulmus campestins variegata

Leaves mottled White
Silver Variegations

Golden or Yellow Variegations

Acer Negundo elegantissimum
Arundinaria arundinacea
Aucuba japonica variegata
Buxus sempervirens aurea maculata
Buxus sempervirens variegata
Cornus alba Schlesiani
Cornus Mas aurea and M a elegantissima
Cupressus Lawsoniana variegata
Cupressus pisifera nana aureo-variegata
Elaegnus pungens aureo variegata
Euonymus japonicus aureo pictus
Ilex Aquifolium aurea regina
Ilex Aquifolium “Golden King”
Ilex Aquifolium myrtifolia variegata
Ilex Aquifolium ovata aurea
Libocedrus decurrens variegata
Ligustrum ovalifolium variegatum
Linderaaldron Tulipifera aureo-variegata

Golden Variegations

Golden Variegations

Mottled Yellow and Green

Mottled Golden yellow

Golden Variegations, turning Silver

Suffused Golden yellow

Golden Markings

Leaves tipped with Yellow

Bright Golden Variegations

Narrow Leaf, a Golden Variety

Golden Variegations

Pale Yellow-margined Leaves

Golden margined Leaves

Leaves mottled Golden-yellow

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

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Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations

Golden Variegations
AUTUMN TINTS

SOME SHRUBS AND TREES WITH VARIEGATED FOLIAGE—(continued)

<table>
<thead>
<tr>
<th>Golden or Yellow Variegations—(continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lonicer a japonica aureo reticulata</td>
</tr>
<tr>
<td>Magnolia acuminata aureo variegata</td>
</tr>
<tr>
<td>Osmanthus Aquifolium aureus</td>
</tr>
<tr>
<td>Salix cinerea tricolor</td>
</tr>
<tr>
<td>Sambucus nigra aureo marginata</td>
</tr>
<tr>
<td>Taxus baccata Dovastonu aurea variegata</td>
</tr>
</tbody>
</table>

For cultural details, propagation, suitable soil and situation, height, colour of flowers, see Alphabetical List of Shrubs and Trees, Chapter AXXV

AUTUMN TINTS

In planting trees and shrubs full use should be made of those whose foliage assumes shades of yellow, gold, bronze, russet, scarlet, crimson or purple in autumn. There is no dearth of these, and to help the reader in his selection I have compiled a representative list of those shrubs and trees whose leaves “turn” in autumn. (See page 58) It is essential to consider the appearance of these plants, not only in the spring and summer but in the early and late autumn also, for when the garden is at its most sombre, they will serve to give notes of cheerful and striking colour. Excellent subjects for this purpose are. the Guelder Rose; the Japanese and other Single Roses (see page 504); such trees as the Maples, of which there are many beautiful varieties. the North American Thorns, of which the best varieties are, perhaps, Cratagus prunifolia and vars arbutifolia, ovalifolia and splendens, with leaves shaded with orange, purple, and brown; and C. Crus-galli, whose foliage turns a beautiful scarlet, and one with bronzy-orange leaves which hang till late in the season—C. Carrierei. All these are most useful autumn trees of moderate size. Many of the flowering currants are lovely in autumn, turning many shades of red and rosy-pink, Ribes aureum and var. aurantiacum being two of the most decorative of them. The White Ash and the Yellow-barked Ash are both lovely in autumn gardens, while among our native shrubs, the Spindle Trees (Euonymus) are conspicuous, and the White Beam (Pyrus Aria) makes a lovely mass of varied colour, with its clusters of red berries and its silver-backed leaves. It would be too long a task to give a complete list of all those subjects available, but I have drawn up a fair selection which should enable the reader to make a suitable choice of the best of the autumn-tinted trees and shrubs for garden use.
AUTUMN TINTS

The time at which the foliage assumes its autumn tints and the intensity of the colour are dependant upon the nature of the soil and also upon the weather conditions that have prevailed throughout the summer and autumn. In countries like Great Britain, therefore, where the climate is variable, autumn tints are not regular either in intensity or duration. A rather poor, dry soil seems to encourage the turning of the foliage. A dry, sunny spell at the close of summer also appears to enhance the autumn tints, especially when the earlier part of the year has been a good-growing one and ample young wood has been produced. Again, each genus of plants is affected differently by the soil and prevailing weather conditions.

Enough has been said to show the variety both of colour and form which can be secured during the comparatively flowerless months of autumn. A careful use of the light and dark evergreens as relief for the brighter-coloured deciduous trees will give some very beautiful effects, and where the colour of the bark and the shapes of the trees themselves are taken into account, the beauty will last throughout the winter.

SOME TREES AND SHRUBS WITH ATTRACTIVELY-TINTED
FOLIAGE IN AUTUMN

<table>
<thead>
<tr>
<th>Tree/Magnolia</th>
<th>Color Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer japonicum vars</td>
<td>Crimson and Red</td>
</tr>
<tr>
<td>Acer rubrum</td>
<td>Crimson</td>
</tr>
<tr>
<td>Acer platanodes Reitenbachu</td>
<td>Purplish-red</td>
</tr>
<tr>
<td>Amelanchier laevis</td>
<td>Red, Golden and Yellow</td>
</tr>
<tr>
<td>Berberis Thunbergii</td>
<td>Scarlet crimson and Orange-yellow</td>
</tr>
<tr>
<td>Carya alba</td>
<td>Clear Yellow</td>
</tr>
<tr>
<td>Crataegus Crus galli</td>
<td>Red and Orange</td>
</tr>
<tr>
<td>Crataegus prunifolia and vars</td>
<td>Red and Orange</td>
</tr>
<tr>
<td>Disanthus cercidifolius</td>
<td>Red, Orange and Yellow</td>
</tr>
<tr>
<td>Enkianthus campanulatus</td>
<td>Bright Ruddy Tints</td>
</tr>
<tr>
<td>Euonymus europeus</td>
<td>Rich Yellow</td>
</tr>
<tr>
<td>Fothergilla major</td>
<td>Rich Scarlet and Crimson</td>
</tr>
<tr>
<td>Fothergilla monticola</td>
<td>Golden-yellow</td>
</tr>
<tr>
<td>Ginkgo biloba</td>
<td>Bright Yellow</td>
</tr>
<tr>
<td>Gladiolus triacanthos</td>
<td>Ruddy-brown and Orange</td>
</tr>
<tr>
<td>Liquidambar styraciflua</td>
<td>Golden yellow</td>
</tr>
<tr>
<td>Liriodendron tulipifera</td>
<td>Orange and Scarlet</td>
</tr>
<tr>
<td>Nyssa sylvatica</td>
<td>Red</td>
</tr>
<tr>
<td>Oxydendrum arboreum</td>
<td>Rich Golden crimson Shades</td>
</tr>
<tr>
<td>Parrotia persica</td>
<td>Golden yellow</td>
</tr>
<tr>
<td>Pseudolarix Fortunei</td>
<td>Red</td>
</tr>
<tr>
<td>Pyrus arbutifolila</td>
<td>Bronze-red and Yellow</td>
</tr>
<tr>
<td>Pyrus crataegifolia</td>
<td>Scarlet crimson Tints</td>
</tr>
<tr>
<td>Quercus coccinea splendens</td>
<td>Shades of Scarlet, Red, Orange</td>
</tr>
<tr>
<td>Rhododendron (Deciduous Azaleas)</td>
<td>Scarlet, Claret and Orange</td>
</tr>
<tr>
<td>Rhus cotinodes</td>
<td>Rich Orange scarlet</td>
</tr>
<tr>
<td>Rhus trichocarpa</td>
<td>Rich Orange and Red</td>
</tr>
<tr>
<td>Rhus typhina</td>
<td>Golden-bronze and Red</td>
</tr>
<tr>
<td>Ribes aureum and var. aurantiacum</td>
<td>Crimson and Bronze</td>
</tr>
<tr>
<td>Vitus Cougnutis ...</td>
<td>...</td>
</tr>
</tbody>
</table>

58
COLOURED STEMS AND BARK

No one who has seen, in the chalk counties, a winter copse-wood with groups of silver-stemmed young ash-trees silhouetted against a mass of dark yews, with the foreground again diversified by masses of the crimson and purple-stemmed dogwoods, decorated, perhaps, with wreaths and festoons of the silver feathers of the Old Man’s Beard, can ever say that colour and beauty need be lacking in the garden and shrubbery at any time throughout the year. Subjects such as the Dogwoods (*Cornus*), Brambles (*Rubus*), and the Willows (*Salix*), planted for the winter effect of their coloured stems, should be massed in bold groups, the brambles and willows being pruned hard back each spring. (See list below.)

### A FEW SHRUBS AND TREES WITH COLOURED STEMS AND BARK

<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer capillipes</em></td>
<td></td>
</tr>
<tr>
<td><em>Acer Davidii</em></td>
<td></td>
</tr>
<tr>
<td><em>Acer griseum</em></td>
<td></td>
</tr>
<tr>
<td><em>Acer Hirsutum</em></td>
<td></td>
</tr>
<tr>
<td><em>Acer pensylvanicum</em></td>
<td></td>
</tr>
<tr>
<td><em>Acer pennsylvanicum</em> var. <em>erythrocladum</em></td>
<td></td>
</tr>
<tr>
<td><em>Arbutus Andrachne</em></td>
<td></td>
</tr>
<tr>
<td><em>Arbutus andrachnoides</em></td>
<td></td>
</tr>
<tr>
<td><em>Berberis aristata</em></td>
<td></td>
</tr>
<tr>
<td><em>Berberis dictyophylla albicaulis</em></td>
<td></td>
</tr>
<tr>
<td><em>Berberis virenses</em></td>
<td></td>
</tr>
<tr>
<td><em>Betula verrucosa</em></td>
<td></td>
</tr>
<tr>
<td><em>Betula lutea</em></td>
<td></td>
</tr>
<tr>
<td><em>Cornus alba</em></td>
<td></td>
</tr>
<tr>
<td><em>Cornus stolonifera</em></td>
<td></td>
</tr>
<tr>
<td><em>Fraxinus excelsior</em></td>
<td></td>
</tr>
<tr>
<td><em>Kerría japonica</em></td>
<td></td>
</tr>
<tr>
<td><em>Populus alba</em></td>
<td></td>
</tr>
<tr>
<td><em>Populus canescens</em></td>
<td></td>
</tr>
<tr>
<td><em>Prunus serrulata</em></td>
<td></td>
</tr>
<tr>
<td><em>Prunus tibetica</em></td>
<td></td>
</tr>
<tr>
<td><em>Rubus biflorus</em></td>
<td></td>
</tr>
<tr>
<td><em>Rubus bissorus</em></td>
<td></td>
</tr>
<tr>
<td><em>Rubus giraltanus</em></td>
<td></td>
</tr>
<tr>
<td><em>Rubus lasiostylus</em></td>
<td></td>
</tr>
<tr>
<td><em>Rubus leucoderms</em></td>
<td></td>
</tr>
<tr>
<td><em>Rubus thibetanus</em></td>
<td></td>
</tr>
<tr>
<td><em>Sauv daphnoides</em></td>
<td></td>
</tr>
<tr>
<td><em>Salix triandra</em></td>
<td></td>
</tr>
<tr>
<td><em>Salix vitellina</em></td>
<td></td>
</tr>
<tr>
<td><em>Salix viminalis</em></td>
<td></td>
</tr>
<tr>
<td><em>Spartium junceum</em></td>
<td></td>
</tr>
<tr>
<td><em>Stephanandra Tanaka</em></td>
<td></td>
</tr>
</tbody>
</table>

For cultural details, propagation, suitable soil and situation, height, colour of flowers, time of blooming, see Alphabetical List of Shrubs and Trees, Chapter XXXV
BERRIED AND FRUITING TREES AND SHRUBS

CHAPTER IX

These form a most valuable group of trees and shrubs, many of them evergreen, for providing colour in the autumn and winter months, when their brightly-coloured berries—red, white, yellow, orange, green, blue or black—are very attractive. It should not be forgotten that, in the case of most genera, there are species and varieties which bear fruits of different colours, and that should a certain genus be thought specially desirable for some situation, a species or variety with berries of a suitable colour can usually be found. This is of distinct value, for in spite of the fact that the red berries of *Pyracantha Lalandi*, for example, look well upon the wall of a yellow-bricked house, they are not so conspicuous against a red wall. *Pyracantha Rogersiana fructu luteo*, however, has yellow fruit and solves the difficulty. The plants of some of the genera, *Aucubas, Hippophae rhamnoides, Skimmias, Ilex* (Holies), for example, are unisexual, that is to say, the male (pollen-bearing) and the female flowers are borne on different plants, and if berries or fruits are to be produced, they must be planted in mixed groups of at least one male to five to eight female plants.

The number of trees and shrubs that carry berries and fruit in autumn and winter is large, but the plants are by no means all of equal decorative value. In some, the fruits are insignificant; others in England ripen their fruits only in the south-west, or when given the protection of a wall. Birds may take a heavy and early toll of the fruits of many species, so that these also should give place to the more desirable kinds, which, I think can be defined as those whose fruits are outstandingly brilliant in colour, are most regularly ripened in our climate, and which, at the same time, hang on the trees over the longest period.
**COLOURED FRUITS AND BERRIES**

In most cases, these lovely fruits ripen in September and October, when bloom is over for the year and when the leaves of deciduous trees are falling. Generally they last through November and December, even until March in some cases. Berry-bearing and fruiting trees and shrubs, are, therefore, of the highest value for providing interest and colour at a time when most other inmates of the garden, except, perhaps, the evergreens and a few flowering shrubs, are past their beauty for the season. The following list includes a number of the most desirable species and varieties.

**SOME SHRUBS AND TREES WITH COLOURED FRUITS OR BERRIES**

<table>
<thead>
<tr>
<th>Shrub or Tree</th>
<th>Deciduous or Evergreen</th>
<th>Height</th>
<th>Colour and Nature of Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acanthopanax Henryi</td>
<td>Deciduous</td>
<td>8 ft</td>
<td>Compound Folage, Black Fruits</td>
</tr>
<tr>
<td>Acanthopanax Smoquin</td>
<td>Deciduous</td>
<td>5-6</td>
<td>Compound Folage, Black Fruits</td>
</tr>
<tr>
<td>Aegle sepiana</td>
<td>Deciduous</td>
<td>8-10</td>
<td>Small Orange-like Fruits</td>
</tr>
<tr>
<td><em>Ailanthus glandulosa</em></td>
<td>Deciduous</td>
<td>60-70</td>
<td>Clusters Orange red, Winged Fruits on Female Trees</td>
</tr>
<tr>
<td>Arbutus Unedo</td>
<td>Evergreen</td>
<td>10-30</td>
<td>Orange to Red Edible Berrnes</td>
</tr>
<tr>
<td><em>Aucuba japonica</em></td>
<td>Evergreen</td>
<td>3-8</td>
<td>Large Bright Red Berrnes</td>
</tr>
<tr>
<td>Berberis vulgaris</td>
<td>Deciduous</td>
<td>8-12</td>
<td>Good varieties festooned with Red Fruits</td>
</tr>
<tr>
<td><em>Berberis aggregata Pratti</em></td>
<td>Deciduous</td>
<td>5-6</td>
<td>Coral-red Fruits</td>
</tr>
<tr>
<td><em>Berberis Darwinii</em></td>
<td>Evergreen</td>
<td>8-12</td>
<td>Plum-purple Fruits</td>
</tr>
<tr>
<td>Berberis polyantha</td>
<td>Deciduous</td>
<td>5-9</td>
<td>Red Berrnes</td>
</tr>
<tr>
<td>Berberis rubrostilla</td>
<td>Deciduous</td>
<td>4-5</td>
<td>Coral-red Fruits</td>
</tr>
<tr>
<td>Berberis subcauhalata</td>
<td>Deciduous</td>
<td>4-5</td>
<td>Salmon red Fruits</td>
</tr>
<tr>
<td>Berberis Wilsoniae</td>
<td>Deciduous</td>
<td>3-4</td>
<td>Coral red Berrnes</td>
</tr>
<tr>
<td>Celastrus articulatus</td>
<td>Deciduous</td>
<td>Chmber</td>
<td>Golden-yellow Fruits, Ex posed Scarlet Seeds</td>
</tr>
<tr>
<td>Clerodendron trichotomum</td>
<td>Deciduous</td>
<td>10-12</td>
<td>Blue-black Fruits</td>
</tr>
<tr>
<td>Conleae arborescens</td>
<td>Deciduous</td>
<td>6-10</td>
<td>Brownish Seed Pods</td>
</tr>
<tr>
<td>Cornus Mas</td>
<td>Deciduous</td>
<td>10-25</td>
<td>Red Berrnes</td>
</tr>
<tr>
<td>Cotoneaster frigida</td>
<td>Deciduous</td>
<td>15-20</td>
<td>Large Clusters Crimson Berrnes</td>
</tr>
<tr>
<td>Cotoneaster Henryana</td>
<td>Evergreen</td>
<td>10-12</td>
<td>Red Fruits</td>
</tr>
<tr>
<td>Cotoneaster horridalis</td>
<td>Deciduous</td>
<td>2-3</td>
<td>Bright Red Berrnes</td>
</tr>
<tr>
<td>Cotoneaster microphylla</td>
<td>Evergreen</td>
<td>3-8</td>
<td>Red Berrnes</td>
</tr>
<tr>
<td>Cotoneaster rotundifolia</td>
<td>Semi-evergreen</td>
<td>5-8</td>
<td>Red Fruits</td>
</tr>
<tr>
<td>Cotoneaster salicifolia var floccosa</td>
<td>Evergreen</td>
<td>6-9</td>
<td>Red Fruits</td>
</tr>
<tr>
<td>Crataegus coccinea</td>
<td>Deciduous</td>
<td>15-25</td>
<td>Bright Red Fruits</td>
</tr>
<tr>
<td>Crataegus Crus galli</td>
<td>Deciduous</td>
<td>15-25</td>
<td>Deep Red Fruits</td>
</tr>
<tr>
<td>Crataegus Carrieri</td>
<td>Deciduous</td>
<td>15-25</td>
<td>Orange red Fruits</td>
</tr>
<tr>
<td>Cydonia japonica</td>
<td>Deciduous</td>
<td>4-9</td>
<td>Large Greenish yellow Fruits</td>
</tr>
<tr>
<td>Daphne Mezereum</td>
<td>Deciduous</td>
<td>2-4</td>
<td>Scarlet Berrnes (Summer)</td>
</tr>
<tr>
<td>Elaeagnus multiflora</td>
<td>Deciduous</td>
<td>6-10</td>
<td>Orange Fruits</td>
</tr>
</tbody>
</table>
### SOME SHRUBS AND TREES WITH COLOURED FRUITS OR BERRIES—(continued)

<table>
<thead>
<tr>
<th>Shrub or Tree</th>
<th>Deciduous or Evergreen</th>
<th>Height</th>
<th>Colour and Nature of Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Elaeagnus umbellata</em></td>
<td>Deciduous</td>
<td>12-18 ft</td>
<td>Silvery Fruits, turning Red</td>
</tr>
<tr>
<td><em>Euonymus europeus</em></td>
<td>Deciduous</td>
<td>10-25 ft</td>
<td>Pinky-red Fruits</td>
</tr>
<tr>
<td><em>Euonymus latifolius</em></td>
<td>Deciduous</td>
<td>10-12 ft</td>
<td>Large Rosy red Fruits</td>
</tr>
<tr>
<td><em>Fraxinus Mariesii</em></td>
<td>Deciduous</td>
<td>10-20 ft</td>
<td>Bronzy red Fruits</td>
</tr>
<tr>
<td>Gaultheria procumbens</td>
<td>Evergreen</td>
<td>Creeping</td>
<td>Large Bright Red Berries</td>
</tr>
<tr>
<td>Gaultheria Shollon</td>
<td>Evergreen</td>
<td>3-6 ft</td>
<td>Dark Purple Fruits</td>
</tr>
<tr>
<td>Hedera Helix arborescens,</td>
<td>Evergreen</td>
<td>Climbing or Bush</td>
<td>Purple Berries</td>
</tr>
<tr>
<td><em>Hippophae rhamnoides</em></td>
<td>Deciduous</td>
<td>10-40 ft</td>
<td>Orange coloured Fruits</td>
</tr>
<tr>
<td><em>Hymenanthera crassifolia</em></td>
<td>Semi evergreen</td>
<td>3-4 ft</td>
<td>White Berries</td>
</tr>
<tr>
<td><em>Ilex Aquifolium</em></td>
<td>Evergreen</td>
<td>10-60 ft</td>
<td>Red Berries</td>
</tr>
<tr>
<td><em>Ilex Aquifolium</em> fructu luteo</td>
<td>Evergreen</td>
<td>10-60 ft</td>
<td>Yellow Berries</td>
</tr>
<tr>
<td>Leycesteria formosa</td>
<td>Deciduous</td>
<td>6-8 ft</td>
<td>Purple black Fruits</td>
</tr>
<tr>
<td>Ligustrum sinensis</td>
<td>Deciduous</td>
<td>8-10 ft</td>
<td>Dark Purple Fruits</td>
</tr>
<tr>
<td>Lonicera Henrici</td>
<td>Evergreen</td>
<td>Climber</td>
<td>Black Berries</td>
</tr>
<tr>
<td>Lyccium chinense</td>
<td>Deciduous</td>
<td>5-10 ft</td>
<td>Orange scarlet Egg-like Fruits</td>
</tr>
<tr>
<td>Mahonia Aquifolium</td>
<td>Evergreen</td>
<td>2-4 ft</td>
<td>Blue or Bluish-black Berries</td>
</tr>
<tr>
<td>Pernettya mucronata</td>
<td>Evergreen</td>
<td>2-6 ft</td>
<td>White, Purple or Crimson</td>
</tr>
<tr>
<td>Pyracantha angustifolia</td>
<td>Evergreen</td>
<td>10-15 ft</td>
<td>Orange yellow Berries</td>
</tr>
<tr>
<td>Pyracantha coccinea</td>
<td>Evergreen</td>
<td>10-15 ft</td>
<td>Bright Red Berries</td>
</tr>
<tr>
<td>Pyracantha coccinea Lalandei</td>
<td>Evergreen</td>
<td>10-15 ft</td>
<td>Orange red Berries</td>
</tr>
<tr>
<td>Pyracantha Rogersiana</td>
<td>Evergreen</td>
<td>6-10 ft</td>
<td>Orange and Scarlet Berries</td>
</tr>
<tr>
<td>Pyracantha Rogersiana var fructu luteo</td>
<td>Evergreen</td>
<td>6-10 ft</td>
<td>Rich Yellow Berries</td>
</tr>
<tr>
<td>Pyrus Aucuparia</td>
<td>Deciduous</td>
<td>30-40 ft</td>
<td>Red Berries</td>
</tr>
<tr>
<td>Pyrus baccata</td>
<td>Deciduous</td>
<td>20-30 ft</td>
<td>Bright Red Berries</td>
</tr>
<tr>
<td>Pyrus purpurea</td>
<td>Deciduous</td>
<td>15-25 ft</td>
<td>Purple Fruits</td>
</tr>
<tr>
<td>Pyrus Malus (various)</td>
<td>Deciduous</td>
<td>5-30 ft</td>
<td>Red or Golden Fruits</td>
</tr>
<tr>
<td>Pyrus Serrus</td>
<td>Deciduous</td>
<td>20-30 ft</td>
<td>reddish-brown Pear-shaped Fruits</td>
</tr>
<tr>
<td>Rhus typhina</td>
<td>Deciduous</td>
<td>10-25 ft</td>
<td>Brightly-coloured Berries</td>
</tr>
<tr>
<td>Rosa alpina</td>
<td>Deciduous</td>
<td>4-8 ft</td>
<td>Rich Red Bottle-shaped Hips</td>
</tr>
<tr>
<td>Rosa canina</td>
<td>Deciduous</td>
<td>4-8 ft</td>
<td>Rich Red Fruits</td>
</tr>
<tr>
<td>Rosa Davidii</td>
<td>Deciduous</td>
<td>7-10 ft</td>
<td>Red Berries</td>
</tr>
<tr>
<td>Rosa microphylla</td>
<td>Deciduous</td>
<td>5-7 ft</td>
<td>Yellow, Thorny Fruits</td>
</tr>
<tr>
<td>Rosa Moyesii</td>
<td>Deciduous</td>
<td>6-10 ft</td>
<td>Dark Red Pear-shaped Fruits</td>
</tr>
<tr>
<td>Rosa omeiensis</td>
<td>Deciduous</td>
<td>8-10 ft</td>
<td>Red-crimson, Pear-shaped Fruits</td>
</tr>
<tr>
<td>Rosa pomifera</td>
<td>Deciduous</td>
<td>4-6 ft</td>
<td>Hair, Red Fruits</td>
</tr>
<tr>
<td>Rosa rugosa</td>
<td>Deciduous</td>
<td>4-6 ft</td>
<td>Roundish, Bright Red Fruits</td>
</tr>
<tr>
<td><em>Ruscus aculeatus</em></td>
<td>Evergreen</td>
<td>2-3 ft</td>
<td>Bright Red Berries</td>
</tr>
<tr>
<td>Sambucus racemosa</td>
<td>Deciduous</td>
<td>10-15 ft</td>
<td>Large Clusters Scarlet Fruit</td>
</tr>
<tr>
<td><em>Slumma japonica</em></td>
<td>Evergreen</td>
<td>3 ft</td>
<td>Red Berries</td>
</tr>
<tr>
<td>Symphorocarpus racemosus lavigratus</td>
<td>Deciduous</td>
<td>7-10 ft</td>
<td>Clusters Round, White Berries</td>
</tr>
<tr>
<td>Viburnum Opulus</td>
<td>Deciduous</td>
<td>6-8 ft</td>
<td>Scarlet Berries</td>
</tr>
<tr>
<td>Viburnum Opulus fructu luteo</td>
<td>Deciduous</td>
<td>6-8 ft</td>
<td>Yellow Berries</td>
</tr>
</tbody>
</table>

* There are both male and female plants of this genus (see Chapter XXXV), only the female having attractive fruits.

For cultural details, propagation, suitable soil and situation colour of flowers and time of blooming, see Alphabetical List of Shrubs and Trees, Chapter XXXV.

62
CATKIN-BEARING TREES AND SHRUBS

CHAPTER X

The catkin-bearing shrubs and trees form a most interesting group. They are mostly early-flowering woody plants. The catkins are usually crowded, downy tufts of unisexual flowers. The male inflorescences are generally the more ornamental, and are usually cylindrical, pendulous, and fall after having shed their pollen. The female, or seed-bearing catkins, are usually considerably smaller; indeed, sometimes almost insignificant, often bud-like in appearance. The catkins are conspicuous on the branches and interesting, although they are not usually brilliant in colour. They mostly appear in early spring before the leaves open, and rely upon wind and not insect pollination. They are the heralds of spring, and as such, ever welcome. One or two of the Alders produce their catkins in autumn, and the Spanish Chestnut catkins develop soon after mid-summer.

Among the commoner trees and shrubs that belong to this catkin-bearing class are the Alder, Birch, Hazel, Hornbeam, Oak, Poplar and Willow. The following are some of the most desirable of this group, a few representatives of which, at least, should be planted in view of the earliness of their flowering season.

Alnus (Alder). The species with the most showy male catkins include: *A. glutinosa, A. incana, A. japonica* and *A. sachensis*, the last named having catkins 4 to 5 inches long. The long and slender catkins are usually freely borne from February to April, according to the weather, and are yellowish-green in colour. *A. maritima* and *A. nutuda* develop their catkins in autumn.

Betula (Birch). Noteworthy species with attractive catkins include: *B. Maximowiczii, B. nigra, B. papyrifera, B. pubescens* and *B. verrucosa*. The long, slender catkins, or tails, are borne in March or early April.
CATKINS

Carpinus (Hornbeam). The male catkins average 1½ inches in length, and the female or fruiting catkins, which begin to develop in March, are 1½ to 3 inches long. In addition to the common Hornbeam, C. Betulus, C. japonica and C. caroliniana have attractive catkins in spring.

Castanea sativa (Spanish or Sweet Chestnut). The unisexual flowers of this well-known tree develop in July. The more showy male flowers are pale yellow and fragrant. They are borne towards the ends of the young shoots, but terminate in two or three female flowers.

Corylus (Hazel and Filbert). The Hazels and Filberts are attractive in February and March when festooned with the greenish-yellow male catkins. In addition to the common nut, C. Avellana, the following species have attractive catkins: C. Colurna (catkins 2 to 3 inches long), and C. maxima (catkins 2 to 3 inches long).

Garrya elliptica. This plant carries silvery-grey catkins from November to February. Male and female catkins borne on different bushes, the former being the longer (4 to 10 inches) and more attractive.

Populus (Poplar). Male and female catkins are borne on different trees. With a few exceptions, they are of little ornamental value. The most showy are those of P. tremula and the variety pendula, which carry greyish catkins 3 to 4 inches long in February and March. A female tree near a flower garden or a dwelling house may be an annual nuisance in early summer, when the catkins fall and cover everything nearby with cotton-like woolly tufts.

Salix (Willow). A few willows have attractive silvery or golden catkins from January to April. Those most worthy of cultivation being: S. Medemii, the first to develop the large yellow catkins in January; S. Caprea, the Goat-Willow or "Palm"; and S. gracilistyla, with numerous slender silky-grey catkins. The male and female catkins of S. Bockii are 1 to 1½ inches long and appear in October.

For full cultural details, suitable soils and situations, propagation, description of foliage, heights etc., see the paragraphs devoted to the particular plants in the Alphabetical List of Shrubs and Trees, chapter XXXV.
TREES AND SHRUBS FOR DIFFERENT SITUATIONS AND SOILS

CHAPTER XI

Sun and Shade—Chalky, Peaty, Sandy, Gravelly, Loamy, Moist, Dry and Poor Soils—Sites and Localities

ONE is sometimes at a loss to know the most suitable situation for the various shrubs and trees, whether they prefer shade or sun, or what soil suits them best. With a view to aiding the reader in this difficulty, I have compiled a number of short lists giving some suitable species and varieties for the various situations. As to soil, the majority of trees and shrubs are very adaptable, and will grow in practically any ground, provided it is not too shallow, sandy, or poor. But there are many subjects, as the following lists will show, that will thrive even in soils of this nature, which, assuming that the plants are not overcrowded, tend to encourage ample bloom, and not overmuch woody growth. Many trees and shrubs, naturally, have a distinct preference for certain types of soil, and where possible should be humoured in this respect. Most peat lovers, rhododendrons, for example, will grow in almost any soil, provided there is no lime in it. Where chalk lies just below the surface, very many trees and shrubs are unhappy, but the list of subjects that will thrive on a chalk formation shows that quite an interesting planting can be made, even on such an apparently unkindly soil. A glance at the Alphabetical List of Shrubs and Trees will quickly reveal the particular site and soil most suitable for any subject not included in these lists.

Most trees and shrubs love ample sun, a few, most rhododendrons, for example, grow best in partial shade, but there are many, and these are invaluable subjects in the garden, that will thrive in the shade, and even under the drip of trees. There are times, of course, when trees are displayed to the

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best advantage when the earth beneath their branches is covered with grass. Frequently, however, an underplanting of shrubs is advisable, and then plants like Aucubas, Berberrys, Boxes, Cotoneasters, Euonymuses, Hollies, and Yews may be considered. It will be noticed that these shade plants are mostly evergreen, but there are some deciduous subjects that can be planted (see list), these, however, as a rule, do not flower so well in the shade and under trees as do the evergreens. Shrubs under trees will need water sooner than those growing in the open, for the roots of the trees will absorb most of the moisture from the soil. If any watering is done, a good soaking should be given, a mere sprinkling is worse than useless.

Shrubs grow better under some trees than others; deep-rooting trees like the Chestnut or Oak allow plants growing around them a good root run, but shallow-rooting subjects, the Beech and the Elm for example, will, with their own fibrous roots, choke the roots of their satellites and take most of the goodness from the surface soil. Also, the denser the shade cast by a tree the more difficulty will shrubs planted under it find in thriving, but much may be done by trimming away the lower branches to afford the underplanting more light and air. In very dry and shady places it will be found that Aucuba japonica (Japanese Spotted Laurel), Hypericum calycinum (St. John’s Wort), Hedera (Ivy), Ruscus aculeatus (Butcher’s Broom), and the Vincas (Periwinkles) will grow where most other things would die.

If the ground boasts a stream or pool, it will be possible to arrange for some of the most beautiful effects obtainable in the garden, and the chief agents for producing these are the trees and shrubs, mostly of luxuriant growth, that flourish at the water’s edge and in moist soil. In conjunction with them should be planted moisture-loving herbaceous plants, Reeds, Lilies, Irises, Spiræas, also Bamboos. Some trees and shrubs will grow in swampy soil, and these can be planted right at the water’s edge, plants for a situation such as this are marked with an asterisk in the list of plants for a moist soil on page 68.

Trees and shrubs suitable for seaside planting and for wind-swept localities are described in the following chapter.
SHRUBS AND TREES FOR SHADY PLACES

For full cultural details, suitable soils and situations, propagation, heights, colour of flowers, times of blooming, description of foliage, etc., see the paragraphs devoted to the particular plants in the Alphabetical List of Shrubs and Trees, Chapter XXXV

†Aucuba japonica (Spotted Laurel)
Berberis stenophylla (Barberry)
Buxus sempervirens vars (Box)
Choisyta ternata (Mexican Orange)
Cornus alba (Dogwood)
Cotoneaster Henryanus
Cotoneaster microphylla
Cotoneaster salicifolia flocosa
Danae Laurus (Alexandrian Laurel)
Euonymus japonicus (Japanese Spindle Tree)
Euonymus radicans and var Carreriei
†Gaultheria Shallon (Salal)
†Hedera 'all' (Ivy)
†Hypericum calycinum
Ilex Aquifolium [Green vars] (Holly)
†Leycesteria formosa (Partridge Berry)
Ligustrum [various] (Privet)
†Mahonia Aquifolium (Evergreen Barberry)
Olearia Haastu (New Zealand Daisy Bush)
Osmanthus Aquifolium
†Pachysandra terminalis (Japanese Spurge)
Pernettya mucronata
Phillyrea decora (Mock Privet)
Phillyrea latifolia (Mock Privet)
Phillyrea media (Mock Privet)
Prunus Laurocerasus (Cherry Laurel)
Prunus Laurocerasus var Zabeliana (Dwarf Cherry Laurel)
Prunus lusitanica (Portugal Laurel)
Pyracantha coerulea (Fire Thorn)
Rhododendron Cunningham's White
Rhododendron ponticum
Ribes alpinum (Alpine Currant)
Ribes aureum (Buffalo Currant)
Ribes sanguinea (Flowering Currant)
Rubus thyrsoiforus flore pleno
Rubus ulmifolius bellidifolius (Bramble Daisy Flower)
†Ruscus aculeatus (Butcher's Broom)
†Ruscus Hypoglossum
Sambucus nigra (Elder)
Sambucus nigra aurea
Sarcococca humilis
†Sarcococca ruscifolia
Sarcococca saligna
Skimmia japonica
Symphoricarpos racemosus (Snowberry)
Viburnum Tinus (laurustinus)
Viburnum Traversii (Shrubby Speedwell)
†Vinca major (Pervinkle)
†Vinca minor (Pervinkle).

† The best twelve.

SOME SHRUBS SUITABLE FOR GROWING UNDER TREES

Aucuba japonica
Buxus sempervirens (Box tree)
Cotoneaster (some vars)
Danae Laurus (Alexandrian Laurel)
Euonymus japonicus (Japanese Spindle Tree)
Euonymus radicans
Hedera Helix (Ivy)
Hypericum calycinum (Rose of Sharon)
Ilex Aquifolium (Holly)
Ligustrum ovalifolium (Privet, Oval-leaved)
Ligustrum vulgare (Common Privet)
Mahonia Aquifolium (Evergreen Barberry)
Phillyrea decora (Mock Privet)
Phillyrea latifolia (Mock Privet)
Phillyrea media (Mock Privet)
Rhododendron Cunningham's White
Rhododendron ponticum
Ribes alpinum (Alpine Currant)
Ruscus aculeatus (Butcher's Broom)
Ruscus Hypoglossum
Sambucus nigra (Elder)
Sarcococca humilis
Sarcococca ruscifolia
Sarcococca saligna
Skimmia japonica
Symphoricarpus racemosus (Snowberry)
Taxus baccata (Yew)
Viburnum Tinus (Laurustinus)
Vinca major (Pervinkle)
Vinca minor (Pervinkle)

Note — It is important to cultivate well the ground under trees before planting shrubs, to add new soil if the ground is poor, also old rotted manure. It is likewise essential to water freely until established, and subsequently during dry weather.
SOME TREES AND SHRUBS FOR A MOIST SOIL AND THE WATER-SIDE

Abies nobilis (Noble Fir)
Abies pectinata (Silver Fir)
• Ailanthus [various] (Alder)
Andromeda (Wild and Marsh Rosemary)
Arundinaria varia (Bamboo)
• Arundo Donax (Great Reed)
Bambusa [various] (Bamboo)
Cassandra calyculata
Cornus alba (Cornel)
Cortaderia argentea (Pampas Grass)
Crataegus [various] (Thorn)
Dierovilla [various] (Weigela)
• Hippophae rhamnoides (Sea Buckthorn)
Leycesteria formosa (Partridge Berry)

Myrica Gale (Sweet Gale)
Nyssa sylvatica
Phyllostachys [various] (Bamboos)
Picea stichensis
• Populus [various] (Poplar)
Pterocarya caucasia (Wing nut)
• Salix [various] (Willow)
Sambucus [various] (Elder)
• Taxodium distichum
Tsuga heterophylla
Thuya occidentalis
Thuya orientalis
Viburnum Opulus etc (Guelder Rose)
Zenobia speciosa

• These can be planted in the swampy soil at the water’s edge

SOME TREES AND SHRUBS FOR DRY PLACES, POOR SOIL, AND BANKS

Atriplex Halimus (Tree Purslane)
Berberis Thunbergii (Barberry)
Calluna vulgaris varia (Heath or Ling)
Caragana arborescens
Cistus [various] (Rock Rose)
Clematis Flammula (Clematia)
Clematis Vitalba (Old Man’s Beard)
Colutea arborescens (Bladder Senna)
Cotonaster microphylla (Small leaved Rock Sarsaparilla)
Cytisus [all] (Broom)
Genista [all] (Broom)
Hedera Helix varia (Ivy)
Helianthemum [all] (Sun Rose)
Hippophae rhamnoides (Sea Buckthorn)
Hypericum calycinum
Juniperus communus (Juniper)

Juniperus Sabina (Savin)
Lavandula spica (Lavender)
Lychnis chinensis (Box Thorn)
Mahonia Aquifolium (Common Barberry)
Pinus montana
Rosa rugosa (Japanese Rose)
Rosa spinosissima (Scotch Rose)
Rosa Wichurana (Japanese Trailing Rose)
Rubus [various] (Brambles)
Santolina Chamaecyparissus (Lavender Cotton)
Spartium junceum (Spanish Broom)
Spirea salicifolia (Willow leaved Spirea)
Ulex europaeus fl pl (Double Gorse)
Ulex Galli (Furze)
Yucca (all)

SHRUBS AND TREES FOR SANDY AND GRAVELLY SOILS

Acer [various] (Maple)
Amelanchier [various] (Barberry)
Betula (Birch)
Calluna vulgaris varia (Ling)
Caragana varia (Siberian Pea Tree)
Cistus (various)
Colutea arborescens (Bladder Senna)
Crataegus (Thorn)
Cytisus [various] (Quince)
Genista [various] (Broom)
Enca [some varia] (Heath)
Fagus sylvatica varia (Beech)
Gaultheria Shallon (Shallon)
Genista [various] (Broom)
Helianthemum [various] (Sun Rose)
Ilex Aquifolium varia (Holly)
Juniperus [various] (Juniper)
Lavandula spica and L vera varia (Lavender)
Osmanthus Aquifolium
Prunus Amygdalus (Almond)
Prunus Cerasus (Wild Cherry)
Prunus Padus (Bird Cherry)
Quercus Ilex (Holm Oak)
Rhamna [various] (False Acacia)
Rosmarinus officinalis (Rosemary)
Rubus ulmifolius fl pl (Double Bramble)
Spartium junceum (Spanish Broom)
Tamarix [various] (Tamarisk)
Ulex [various] (Gorse)
Ulmus [various] (Elm)

For full cultural details, suitable soils and situations, propagation, heights, colour of flowers, times of blooming, description of foliage, etc., see the paragraphs devoted to the particular plants in the Alphabetical List of Shrubs and Trees Chapter XXXV
SOME SHRUBS AND TREES FOR ORDINARY SOIL

Acer [various] (Maple)
Aesculus [various] (Chestnuts)
Alnus glutinosa (Tree of Heaven)
Aucuba japonica (Spotted Laurel)
Berberis [various] (Barberry)
Betula [various] (Birch)
Buddleia variabilis var. 
Carpinus Betulus and var. (Hornbeam)
Cocculus trilobus
Cornus [various] (Dogwood)
Cotoneaster [various]
Crataegus [various] (Thorn)
Cupressus [various] (Cypress)
Cytisus [various] (Broom)
Deutzia [various]
Diervilla [various] (Wegela)
Escallonia [various]
Euonymus europaeus (Spindle Tree)
Fagus [various] (Beech)
Forsythia [various] (Golden Bell)
Genista [various] (Broom, Gorse)
Hippophae rhamnoides (Sea Buckthorn)
Hypericum [various]
Ilex Aequifolium var. (Holly)
Laburnum [various]

SOME SHRUBS AND TREES FOR A LOAMY SOIL

Abies [various] (Silver Fir)
Acanthopanax
Acer [various] (Maple)
Adenocarpus decorticans
Aesculus [various] (Chestnut)
Arundinaria [various] (Bamboo)
Berberis [various] (Barberry)
Betula [various] (Birch)
Buddleia [various]
Carpinus Betulus (Hornbeam)
Cedrus [Cedar]
Catalpa bignonioides (Indian Bean Tree)
Cotoneaster [various]
Colutea arborescens (Bladder Senna)
Cupressus [various] (Cypress)
Euscaulis staphyleoides
Exochorda [various] (Pearl Bush)
Fagus [various] (Beech)
Patsia japonica
Prunus [various] (Bitter Almond)
Ginkgo biloba (Maidenhair Tree)
Hamamelis [various] (Witch Hazel)
Hydrangea paniculata var. 
Hypericum [various]
Juglans regia (Walnut)
Ilex Aequifolium and var. (Holly)
Laurus nobilis (Sweet Bay)
Larix [various] (Larch)
Liriodendron tulipifera (Tulip Tree)
Lonicera [various] (Bush Honeysuckle)
Magnolia [various]
Philadelphus [various] (Mock Orange)
Phillyrea [various] (Mock Privet)
Populus [various] (Poplar)
Prunus [various] (Peach, Plum, Cherry, Almond, etc)
Pyrus [various] (Mountain Ash and Crab)
Quercus [various] (Oak)
Ribes [various] (Flowering Currant)
Rosa [various] (Wild Rose)
Sarcobatus vermiculatus
Spartium junceum (Spanish Broom)
Spira [various]
Spathilea [various] (Bladder Nut)
Symphoricarpus racemosus (Snowberry)
Syringa [Named Vars] (Lilac)
Taxus baccata and var. (Common Yew)
Thuya [various] (Lime)
Ulex europaeus fl pl (Double Gorse)
Ulmus [various] (Lime)
Viburnum [various].

For full cultural details, suitable soils and situations, propagation, heights, colour of flowers, times of blooming, description of foliage, etc., see the paragraphs devoted to the particular plants in the Alphabetical List of Shrubs and Trees, Chapter XXXV.
**SOME SHRUBS’ AND TREES FOR A PEATY SOIL**

Abies nobilis
Andromeda (various)
Arbutus (various)
Bryanthus Breweri, B erectus, B empetriformis
Bruckenthalia speculifolia
Calluna vulgaris and vars (Heather)
Cassandra calyculate
Cassiope tetragona
Cassania fulvida
Comptonia asplenifolia
Cornus canadensis (Dwarf Cornel)
Daboecia polifolia (Irish Heath)
Daphne (various)
Enkianthus campanulatus vars and E perulatus (japonicus)
Erica (various) (Heath and Heather)
Eriocereus pungens
Gaultheria procumbens (Creeping Winter Green) G Shallon
Kalmia (various) (Sheep Laurel)
Laurus nobilis (Sweet Bay)
Ledum latifolium, L. palustre (Labrador Tea)
Leuchotis
Magnolia (various) (Lily Tree)
Myrica cerifera
Oxvendrum arboreum (Sorrel Tree)
Pernettya mucronata (Prickly Heath)
Pieris floribunda (Lily of the Valley Bush)
Polygala camabuxus
Rhododendrons (various, including Azaleas)
Rhodothamnus Chamæcostus
Slimmia (all)
Vaccinium pennsylvanicum, V uligin osum, etc
Zenobia speciosa.

**A FEW SHRUBS AND TREES FOR CHALKY SOILS**

Abies cephalonica (Greek Silver Fir)
Abies ciicca (Cilician Fir)
Abies Pinsapo (Spanish Fir)
Acer (various) (Maple)
Æsculus [various] (Chestnut)
Aucuba japonica
Berberis (Barberry)
Betula (various) (Birch)
Buddleia variabilis
Buxus sempervirens (Box)
Cedrus [all species] (Cedar)
Cistus [various] (Rock Roses)
Clematis (various)
Cornus [various] (Dogwood)
Cotoneaster (various)
Crataegus [various] (Thorn)
Cydonia japonica (Japanese Quince)
Diervilla (various) (Weigela)
Fagus sylvatica vars (Beech)
Forsythia [various] (Golden Bell)
Helianthemum [various] (Sun Roses)
Hypericum (various)
Ilex Aquifolium etc (Holly)
Juglans regia (Walnut)
Juniperus [various] (Juniper)
Larix europaea (Larch)
Ligustrum [various] (Privet)
Philadelphus vars (Mock Orange)
Pinus Laricio (Corsican Pine)
Pinus Laricio var nigricans (Austrian Pine)
Populus [various] (Poplar)
Prunus [All] (Plum, Peach, Cherry, Almond, etc)
Prunus Laurocerasus (Cherry Laurel)
Prunus Lustianus (Portugal Lauré)
Pyrus [various] (Mountain Ash and Crab)
Ribes [various] (Flowering Currant)
Rubus [various] (Bramble)
Spiræa [various]
Syringa [various] (Lilac)
Taxus baccata and vars (Yew)
Ulmus [various] (Elm)
Yucca (various)

For full cultural details, suitable soils and situations, propagation, heights, colours of flowers, times of blooming, description of foliage, etc, see the paragraphs devoted to the particular plants in the Alphabetical List of Shrubs and Trees, Chapter XXXV.
TREES AND SHRUBS FOR WINDSWEPT SITUATIONS AND FOR SEASIDE PLANTING

CHAPTER XII

It is not an easy matter to make a selection of trees and shrubs for planting in a windswept situation or by the seaside. The habits and characteristics of the plants must be known, so must the climatic conditions prevailing in the locality to be planted. Except where a screen or windbreak is required (see also chapter XVI), shrubs are more suitable than trees for these situations.

In seaside planting there are two main features to be studied, the force and prevailing direction of the wind and the shrivelling effect on the foliage of the salt sea breezes, especially in spring and early summer.

When starting with entirely bare ground, a bank of earth can be thrown up as a windguard for the newly-planted young trees and shrubs. Wattle hurdles, which are not unsightly, and which will last seven or eight years at least, may also be used to screen the young plants, or the latter can be set closer together so that as they grow they will protect each other from the wind, their foliage and branches breaking its force far more effectively than a brick wall, which will merely accentuate its strength in certain quarters and cause draughts. The closely-planted shrubs must be thinned out as they grow, or they will become weak, straggly and drawn up.

Extra care is needed when planting by the seaside. The ground is prepared for planting in the ordinary way (see page 149), but it must be very thoroughly done. It is best to put in quite small, recently-transplanted subjects, as they the more quickly become established. All young trees should at once be staked and securely fastened, for if they are free to blow about in the wind, immense harm can hardly fail to be done to the roots. Evergreen subjects will transplant best at the seaside from mid-April to mid-May, although autumn planting in October is possible. Deciduous shrubs and trees
WINDSWEPT SITUATIONS AND SEASIDE PLANTING

are most satisfactorily put in late in October or early in November, all planting being completed by the end of November. (See also Planting, page 149)

Trees and shrubs to be grown by the sea and in windswept localities, should be robust and hardy ones reared in nurseries where the climatic conditions are as similar as possible to those likely to prevail in their future home

There are seldom very severe frosts at the seaside in the British Isles, and many half-hardy plants that will not stand the winter inland will be found to flourish on the coast, especially in the south and west if they are given protection from the wind (See Half Hardy Trees and Shrubs, page 75)

Many hedge plants are especially suitable for seaside planting, these are marked with an asterisk in the list on page 85

To sum up, successful seaside planting demands the choice of the right subjects and infinite care in their cultivation

### SHRUBS AND TREES FOR WINDSWEPT AREAS

<table>
<thead>
<tr>
<th>Acer Pseudoplatanus (Sycamore)</th>
<th>Populus canescens (Grey Poplar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alnus glutinosus (Alder)</td>
<td>Populus serotina (Black Italian Poplar)</td>
</tr>
<tr>
<td>Aucuba japonica (Japanese Laurel)</td>
<td>Prunus spinosa (Blackthorn)</td>
</tr>
<tr>
<td>Berberis vulgaris (Common Barberry)</td>
<td>Quercus ilex (Evergreen Oak)</td>
</tr>
<tr>
<td>Colutea arborescens (Bladder Senna)</td>
<td>Quercus pedunculata (Common Oak)</td>
</tr>
<tr>
<td>Crataegus [various] (Thorns)</td>
<td>Rhus aculeatus (Butcher's Broom)</td>
</tr>
<tr>
<td>Hypericum calycinum (Rose of Sharon)</td>
<td>Sambucus nigra (Elder)</td>
</tr>
<tr>
<td>Ilex Aquifolium (Shepherd's Holly)</td>
<td>Spartium junceum (Spanish Broom)</td>
</tr>
<tr>
<td>Lentiscus glaberrimus (Shepherd's Holly)</td>
<td>Spiraea salicifolia</td>
</tr>
<tr>
<td>Pinus Laricio (Corsican Pine)</td>
<td>Symphoricarpos racemosus (Snowberry)</td>
</tr>
<tr>
<td>Pinus Laricio var nigricans (Austrian Pine)</td>
<td>Ulex europaeus flore pleno (Double Gorse)</td>
</tr>
<tr>
<td>Pinus montana (Dwarf Mountain Pine)</td>
<td>Ulmus montana (Wych Elm)</td>
</tr>
<tr>
<td>Populus alba nivea (White Poplar)</td>
<td></td>
</tr>
</tbody>
</table>

For cultural details, suitable soils, propagation, height, colour of flowers, time of blooming, etc, see the Alphabetical List of Shrubs and Trees, Chapter XXXV

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SHRUBS AND TREES FOR SEASIDE PLANTING

Acer Pseudoplatanus (Sycamore)
*Arbutus Unedo (Strawberry Tree)
Atriplex Halimus
Aucuba japonica
Baccharis patagonica (Groundsel Tree)
*Buddleia globosa (Orange Ball Tree)
Buddleia variabilis vars
Bupleurum fruticosum
*Cistus laurifolius (Rock Rose)
Colutea arborescens (Bladder Senna)
Cornus sanguinea (Dogwood)
Cotoneaster bacilarians
Crataegus [various] (Thorns)
*Cupressus macrocarpa (Monterey Cypress)
*Escallonias (various)
Euonymus japonicus and vars
(Japanese Spindle Tree)
Euonymus radicans
Praxinus excelsior (Ash)
*Fuchsia (some hardy)
*Garrya elliptica (California Garrya)
*Griselinia littoralis
Hippophae rhamnoides (Sea Buckthorn)
*Hydrangea hortensis vars
Hypericum calycinum (Rose of Sharon)
Ilex Aquifolium (Holly)
camelliafolia
Hodginsi
Shepherdu
Laburnum alpinum (Scotch Laburnum)
*Lavandula spica (Lavender)
Leycesteria formosa (Partridge Berry)
Ligustrum ovalifolium (Privet)
Lonicer a nitida (Chinese Bush Honeysuckle)
Lycium chinensis (Tea Tree or Box Thorn)
Mahonia Aquifolium (Evergreen Barberry)

*Olearia Haastli (New Zealand Daisy Bush)
Phillyraeas (various)
Pinus Laricio and var nigricans
Pinus montana
Pinus Pinaster
*Pinus radiata (syn nsigens)
*Pittosporum tenuifolium
Populus alba var fastigiata (Bolles Poplar)
Populus alba nivea (White Poplar)
Populus nigra fastigiata (Lombardy Poplar)
Populus serotina (Black Italian Poplar)
Prunus spinosa (Blackthorn)
Pyrus Aucuparia (Mountain Ash)
Quercus Cerris (Turkey Oak)
Quercus ilex (Evergreen Oak)
Khamnus Alaternus (Evergreen Buckthorn)
Rosa canina (Dog Rose)
Rosa rubiginosa (Sweet Briar)
Rosa spinosissima (Scotch Rose)
*Rosmarinus officinalis (Rosemary)
Sambucus nigra and var folius aureus (Elder)
Skimmia japonica
Spartium junceum (Spanish Broom)
Symphoricarpus racemosus (Snowberry)
Tamarix angihe (Tamarisk)
Tamarix pentandra
Tamarix tetrandra
Ulex europaeus flore pleno (Double Gorse)
Ulmus montana (Wych Elm)
*Veronica salicifolia (Speedwell)
*Veronica speciosa vars
*Veronica Traversii
*Viburnum Tinus (I aurustinus)
Yucca gloriosa (Adam’s Needle)
Yucca recurvifolia

* These plants are not suitable for cold maritime districts

For cultural details, suitable soils, propagation, height, colour of flowers, time of blooming, etc., see the Alphabetical List of Shrubs and Trees, Chapter XXXV
ALTHOUGH not sufficiently hardy to be grown in the open in exposed positions, there are many beautiful semi-hardy shrubs and trees, which, given the protection of a warm wall or other shelter, do quite well outdoors, even in the north of England. Moreover, in the milder localities such as the south-west of England, the west of Scotland, and in Wales and Ireland, where the influence of the Gulf Stream is felt and severe frost is rarely experienced, very many semi-hardy and many of the more tender shrubs may be successfully grown in the open. Indeed, in these localities, the selection of beautiful and interesting subjects is almost endless, for in addition to the species and varieties on the borderland of hardiness dealt with elsewhere, many choice genera from Australia, New Zealand, Tasmania, South Africa, South America, India and other parts of Asia may be included.

The heavier rainfall in these south-western districts encourages the growth of trees and shrubs, but it should be remembered that under these conditions the soil must be well drained and porous, otherwise the ground will become sour, and plant life will suffer accordingly. In most of the districts under review the soil is largely sandy, gravelly or peaty, and is thus naturally porous. Where this is not so, the ground should be drained and suitable composts should be introduced, otherwise, it is useless to expect the trees and shrubs to thrive.

The first of the following lists provides a selection of trees and shrubs that, given the protection of a wall, will thrive even in the north of England, although not hardy enough to grow in the open unprotected even in the south and west. In the second list are included subjects that, as far as the British Isles is concerned, can only be grown in the open in the south-
HALF-HARDY AND TENDER SHRUBS

western districts of Great Britain and in Ireland. If the reader's garden is in such a locality, he is advised to plant a few of these subjects, many of which are exceptionally beautiful, and provide an interest impossible to secure in less favoured places.

SOME SHRUBS AND TREES WHICH BENEFIT FROM WALL OR OTHER PROTECTION

Note—Although not fully hardy in the open, some of these subjects may be grown outside, even in the north, if they are afforded the protection of a wall.

For cultural details, suitable soil and situation, propagation, height, particulars of foliage, colour of flowers, seasons of bloom, see Alphabetical List of Shrubs and Trees, Chapter XXXV.

SOME SHRUBS AND TREES FOR THE SOUTH AND WEST OF GREAT BRITAIN AND FOR IRELAND

Abelia floribunda
Abelia serrata
Abutilon vitifolium (Indian Mallow)
Acacia (several)
Arbutus Unedo, etc
Azara microphylla
Berberidopsis corallina
Bignonia capreolata
Boronia elatior
Boronia heterophylla
Buddleia Colvillier
Callistemon speciosus
Camellia reticulata
Carpenteria californica
Caryopteris (several)
Cassinia corymbosa, etc
Ceanothus [California Lilac] (several)
Choisyra ternata
Clethra arborea
Chianthus puniceus
Corokia Cotoneaster
Corynilla glauca
Dendromecon rigidum
diospyros Kaki
Eccremocarpus scaber
Elaeocarpus cyaneus
Eucalyptus (numerous)
Eurya japonica
Eucryphia cordifolia
Fabiana imbricata
Fremontia californica
Grevillea robusta
Griselinia littoralis
Hydrangea hortensia and var.'
Laurelia novae-zealandiae
Leptospermum scoparium, etc

Garrya elliptica
Itea ilicifolia
Lapageria rosea
Leptospermum (several)
Lippia citriodora (Aloysia)
Mitraria coccinea
Ozothamnus rosmarinifolius
Photinia (several)
Plagianthus Lyalli
Punica granatum
Raphathammus cyanocarpus
Solanum jasminoides
Sophora tetrapera
Stauntonia hexaphylla
Tecoma grandiflora
Tecoma radicans
Teucrium fruticans
Trachelospermum (several)
Viburnum macrocephalum
HALF-HARDY AND TENDER SHRUBS

SOME SHRUBS AND TREES FOR THE SOUTH AND WEST OF GREAT BRITAIN AND FOR IRELAND—(continued).

Lippia citrodora
Magnolia Campbellii
Michelia (Magnolia) fusca
Mitratia coccinea
Myrtus communis
Nerium Oleander
Olea europaea
Olearia dentata
Osteomeles Schwerinae
Ozothamnus rosmanifolius
Photinia (various)

Piptanthus nepalensis
Pittosporum (various)
Podocarpus andina
Punica granatum
Rhaphithamnus cyanocarpus
Rhodoleia Championii
Senecio Grayi
Sophora tetraperata
Tricospermum dependens
Tricosperma lanceolata
Veronicas (in great variety).

Note—The above subjects, as far as the British Isles are concerned, will only grow in the south west of England and in Ireland. But, in addition to these, practically all genera mentioned in this book will thrive in these localities.

Fig 4—Suggested placing of specimens on a lawn

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prunus Avium flore pleno</td>
<td>Pyrus Schiedeckeri</td>
<td>Cupressus Lawsoniana lutea</td>
<td>Prunus serrulata var Sekiyama</td>
<td>Picea pungens glauca</td>
<td>Betula verrucosa</td>
<td>Magnolia Lennei</td>
<td>Picea Omorica</td>
<td>Prunus Padus Waterer</td>
<td>Pyrus Alderhamensis</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Amelanchier lavis</td>
<td>Crataegus cordata</td>
<td>Pyrus Sorbus</td>
<td>Pyrus baccata adpressa</td>
<td>Magnolia Soulangeana</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note.—Instead of dotting specimen trees irregularly over a lawn and perhaps spoiling a broad sweep of grass or preventing the making of a grass tennis court, it is often found convenient to group the trees at the end or along the side of a lawn.
FORCING
CHAPTER XIV

The process of making a tree or shrub flower out of its natural season is known as forcing. To effect this a suitable glass shelter and a means of applying artificial heat are desirable or even necessary. The heat of the sun’s rays alone is not usually sufficient, and additional heat has to be applied, either by means of a hot-bed or by the aid of hot-water pipes.

Shrubs and trees for forcing must, above all things, be vigorous, and the shoots should be firm, well-ripened, and must show plenty of flower buds. Heat should be applied gradually, and too little rather than over much should be given. The shrubs are usually potted up in fairly large pots in October and early in November, as soon as the leaves have fallen. They are then plunged outdoors, with the rims of the pots covered in leaf-mould, peat or fibre until required. If preferred, the pots may be plunged in a bed of ashes to prevent worms from finding their way up into the compost. This time for potting applies to shrubs lifted from the open ground. Where they are cultivated in pots and forced year after year, potting, when necessary, is best done after flowering and before the plants are stood out in the open for the summer. In particular, Wistarias, Forsythias, the Moutan Pæomes and the Japanese Maples give the best results when grown in pots from year to year. The position chosen should be a sunny one where ample air is obtainable and where the plants have plenty of space to develop their flower buds. Early potting is essential, and the plants should be kept weed free and carefully watered so that the roots shall not become dry. The earlier a plant has been potted up, after the leaves have fallen, the longer will be its period of bloom.

About the middle of December some of the earlier-flowering
FORCING

subjects may be transferred to the greenhouse, being placed in a night temperature of about 45°F for the first fortnight, during this period syringing overhead twice a day will be necessary in fine weather. After the first couple of weeks, the temperature may be raised to 55°F., and as soon as the plants break into active growth, the temperature can be increased by another ten degrees. Once the buds burst, syringing must cease, or the blooms will be damaged. When the colour of the buds begins to show, lower the temperature by five or ten degrees and maintain this level while the plants are flowering. The lower the temperature used to force the plants into bloom, the richer will be the colour of the flowers. So unless the plants are required to bloom some considerable time before their natural flowering period, but little artificial heat should be used. Once in bloom the plants can be moved into a house with considerably lower temperature, this will extend the period of bloom. The harder the forcing, the more the plants are weakened.

After forcing, the old wood of deciduous shrubs that has borne flowers should be cut away and any weak shoots should be cut right back, the aim being to let air and light into the centre of the plant, so that the young shoots shall become thoroughly ripened and be able to produce buds for the following season. After trimming, let the plants remain in the warm for three weeks or so, and syringe overhead in fine weather with tepid water, feeding once a week with weak liquid manure. Following this treatment, they should be stood in the cold house or cold frame for a fortnight or three weeks to be gradually hardened-off preparatory to being set out in the open for the summer as soon as frosts and severe winds are no longer to be expected. Unless the heat applied is very slight, nearly all the shrubs are better if forced every alternate year only, and with Lilacs this is essential. Roses, however, can quite successfully be forced for several years in succession, so can shrubs that have been given only a small degree of artificial heat to bring them into bloom but a short time before their natural flowering period.

The treatment of Roses differs slightly from that of other shrubs in that they must be established in their pots for at least twelve months before forcing is to take place; that is
HARDY SHRUBS FOR FORCING

to say, they must not be lifted straight from the open ground to be forced, as can be, and is, done with many shrubs, though most subjects for early forcing are best established in the pots for a year or more. Roses can, however, be repotted in October, if need be. Early in November, they must be placed in a cold frame, pruned about the middle of December, and transferred to the greenhouse. About a fortnight later, the heat may be gradually increased.

THE FOLLOWING IS A SELECTION OF HARDY TREES AND SHRUBS FOR FORCING

Acer japonica vars
Acer palmatum vars
Acer Negundo variegata
Amelanchier canadensis
Azalea (see Rhododendrons)
Ceanothus dentatus
Ceanothus Veitchianus
Chimonanthus fragrans
Corvopsis spicata
Daphne Mezereum
Deutzia gracils and vars
Deutzia Lemoinei
Forsythia spectabilis
Hydrangea paniculata var grandiflora
Jasminum nudiflorum
Kerria japonica flore pleno
Laburnum vulgare
Lilac (see Syringa)
Lonicera fragrantissima
Magnolia conspicua
Magnolia Soulangeana
Magnolia stellata
Peonia Moutan
Philadelphus Lemoinei erectus
Philadelphus microphyllus
Prunus Persica (Double Peaches) vars
Clara Meyer, flore albo pleno, flore rubro pleno, and magnifica
Prunus serrulata fugenzo
Prunus serrulata kirk
Prunus serrulata Sekiyama (Japanese
) (Cherries)
Prunus japonica flore albo pleno and
flore roseo pleno
Prunus subhirtella
Prunus trifolia fl pl
Pyrus floribunda var atro sanguinea
Pyrus purpurea
Pyrus Schiedeckeri
Pyrus spectabilis
Rhododendrons Cunningham's White,
Pink Pearl, Nobleman, fastuosum
fl pl., Prince Camille de Rohan,
etc
Rhododendron praecox
Rhododendron (Azalea) moyle vars
Rhododendron (Azalea) sinense vars
Rhododendron (Azaleas) Ghent vars.
Ribes sanguineum
Roses
Spiraea arguta
Spiraea Van Houttei
Spiraea prunifolia flore pleno
Spiraea Thunbergii
Staphylea colchica
Syringa Charles X
Syringa Marie Legaraye
Viburnum Carlesi
Viburnum Opulus sterile
Viburnum Tinus
Viburnum tomentosum var plicatum
Wisteria sinensis

For cultural details, propagation, pruning, soil, particulars of foliage, colour of flowers, usual season of bloom and height of plants, see Alphabetical List of Shrubs and Trees, Chapter XXXV.
UNTIL quite recently it was the custom to form hedges almost exclusively of the inevitable and monotonous Privet, Quick (Thorn), or Laurel, with the Holly and Yew as the most useful evergreen hedges of substantial proportions. Of deciduous hedges, the Beech, Hornbeam, Cherry Plum, Briar, and Thorn (Quick) are cheap to plant in quantity and effective, while the Box, Cypress (*Cupressus macrocarpa* and *Cupressus Lawsoniana*), Lonicera nitida, Evergreen Oak, Holly, Thuya and Yew all make excellent evergreen hedges. Mixed hedges of evergreens and deciduous shrubs are rarely a success.

Considering its importance, very little forethought is given, as a general rule, to the choosing and planting of a hedge, which can do much to make or mar the garden. But of late years it has been realised that there are interesting and more attractive subjects for hedges.

**The Uses of the Hedge**

Whether the hedge is required as a shelter from the wind, as a screen, as a barrier, or purely as an ornament, are points which must be taken into consideration, and shrubs suited to the soil and aspect should be chosen. Evergreens like Holly, or Yew, and in the south and west of the British Isles - the Evergreen Oak are excellent for shelter from cold winds. As a screen, Cypress, Thuya, Escallonia, Holly, Laurel or Yew are undoubtedly the best; while flowering shrubs such as Berberis stenophylla and B. Darwinii, Double Gorse, Flowering Currant, Lilac or Viburnum Tinus, make an excellent ornamental hedge. Nothing is so suitable for a barrier from the road or field as Beech, Hornbeam, Myrobella Plum, or Thorn. With rather frequent and close pruning at the proper time, it would be easy to name a hundred shrubs suitable to plant with the idea of forming an effective and attractive hedge.
PLATE 5
Right, Cotoneaster horizontalis, showing close up of branch in berry.

Below, Cotoneaster horizontalis
FORMING THE HEDGE

Forming the Hedge

In forming any hedge, it is, of course, necessary to take into consideration the aspect, the quality of the soil, and other particulars. All plants will not suit all climates, all situations, and all soils. It is wise, therefore, to consider that though there are many ornamental trees and shrubs that will make good hedges, it is not all of these that may choose to flourish where we wish our hedge to grow. As a general rule, the knife may be used unsparingly on all things suitable for hedges, and the hedge itself will be greatly improved by its use. All hedges, but especially those that bear the shears or clippers, should be cut upwards or rather narrower at the top, for by this means the lower part, not being overshadowed by the upper, will be kept thick, and the lower part of the hedge will last sound much longer. Hedges so trimmed will not hold the snow as will those with a flat, broad top. After they have been planted for a number of years, hedges of some kinds benefit by hard pruning to keep them close and within reasonable bounds, for despite constant annual clipping, such hedges as Privet and Laurel inevitably increase in size. Very old and badly-neglected hedges are often better cut right down almost to the ground, the soil being renovated, and, perhaps, new plants introduced. This necessity, however, is very generally the result, with a few exceptions, of neglect in early years, for where proper care has been bestowed and annual pruning given, hedges of most subjects will last for very many years.

Flowering Shrubs as Hedge Plants

Many flowering shrubs make excellent hedges for dividing and screening one part of the garden from another; these are seldom advisable as closely-clipped barriers or as boundary hedges. The best of these are: Berberis Darwinii, B. stenophylla, the Flowering Currant, Cydonia japonica, Double Gorse, Guelder Rose, Kerria, Leycesteria, Lilac, Olearia Haastii, Pyracantha, Symphoricarpus, the Shrubby Honeysuckles, Veronica Traversii and Viburnum Tinus, and in the south and west of the British Isles, Fuchsias and Escallonias. The Scotch Briar, the Sweet Briar, and the Penzance Briars make splendid hedges if a thicket of growths is formed when the plants are
TREES AND SHRUBS FOR HEDGES

young and the old shoots that have borne flowers or fruits are
cut away each year after their beauty has passed

Where formal and closely-clipped hedges are needed,flowering shrubs are wasted as hedge plants, for the trimming
will, naturally, prevent the formation of bloom On the
other hand, a hedge of flowering shrubs need not necessarily
be allowed to become a mass of straggling shoots, after
flowering the shoots may be cut back closely, the hedge being
kept formal by topping the longest shoots after a few weeks' growth, without its flowering capacity being much impaired.

How to Plant

Many seem to think that a hedge will grow anywhere and
however it is planted, but it must be borne in mind that a
hedge, once planted, is usually in position for many years,
and that if it is to do well, every care should be taken in its
planting A strip of ground 2 to 3 feet wide, in which the
hedge is to be planted, should be trenched to a depth of at
least 2 feet, and vegetable refuse, leaf-mould, and well-decayed
manure should be dug in well below the surface Most hedge
shrubs are best planted when from 2 to 3 feet in height, some­
times even less, they then more easily establish themselves,
are easier to train, so as to form a close bottom to the hedge,
and are also cheaper to purchase. The larger the shrub, the
more care necessary in planting With the exception of
the quicker or larger-growing shrubs, such as the Evergreen
Oak or the Cupressus, most hedge shrubs are best planted out
10 to 15 inches apart, if a very thick hedge is required, two
rows may be planted some 10 inches apart, the plants, as
before, being 10 to 15 inches apart in the rows, but planted so
that those of one row come opposite the middle of the gaps
between those in the other row thus:

* * * * * * * * *

Time for Planting

Hedges of deciduous shrubs are, with few exceptions, best
planted in November The earth then is still warm and the
shrubs begin to root in the soil almost immediately Such work,
however, may be carried out during open weather until March
Avoid frosty periods, cold piercing winds, and when the
PRUNING AND CLIPPING HEDGES

Ground is very wet. Evergreens require more care in planting, as the leaves continue functioning even in midwinter. The second half of September and October or April and early May are usually the most favourable periods.

Long tap roots should always be shortened back before planting, and to ensure bushy plants, do not hesitate to cut hard back at planting time if the bushes are at all thin, loose or straggly. Water well after putting the shrubs in, and particularly when dealing with evergreen shrubs, water once a week in dry weather until the roots are established. Should a very dry season follow, syringe the foliage of evergreens every evening if the plants do not appear to be thriving. In late April or early May, during its first year, the hedge should be well watered and then mulched with a 2 to 3-inch layer of equal parts of well-decayed manure and leaf-mould. This should also be continued in alternate years, should the hedge appear not to be doing well. Severe frosts during the first winter after planting will probably raise the bushes somewhat from the soil. After frosts, therefore, newly-planted shrubs should be firmed with the foot. We refer the reader to chapter XXVIII, page 149, and to the table of Trees and Shrubs for Hedges, page 85, where will be found a wide choice of hedge shrubs, together with details as to the planting, and the manner of pruning and trimming.

For individual cultural details, see chapter XXXV.

Pruning and Clipping Hedges

Most hedges are best trimmed twice a year, in May and again in August; few shrubs will make much growth after the late summer trimming, and will remain tidy all the winter. In the case of vigorous young Privet hedges, it is usually necessary, or at least desirable, to clip three or four times during the season. Hedge-clipping is not an easy matter for the amateur, and only the man with a very "straight eye" can trim successfully without some guidance in the form of a string stretched taut horizontally and at the required height. The clipping of boundary hedges, notably in the front garden, is often not difficult as there is usually a fence to serve as a guide for the height.

All hedges, especially evergreen hedges, should be cut slightly
narrower at the top, for if the top is allowed to overhang the bottom, the lower shoots will invariably die off. With Hollies and Laurels use the knife or sharp secateurs in pruning, to avoid the rusty appearance of the withering of half-cut leaves. Privet, Box, Thorn, and all small-leaved shrubs may be clipped with the garden shears. With such plants as Berberis stenophylla and other flowering shrubs, clipping should take the form of pruning, if bloom is desired. This should be done immediately after flowering, when all the coarse shoots and old flowering wood may be cut back to the required length. A second trimming, or shortening of the strongest young growths, is usually desirable three or four weeks later.

In winter the hedge and the soil round it should be thoroughly cleaned, all dead wood should be cut out, any brambles and climbers being removed. If the hoe has not been kept busy throughout the summer, as it should have been, the weeds must be taken out from the hedge bottom, the ground being cleaned and pricked over. Where insect pests and disease have been prevalent, the hedge should be sprayed in the early spring, with a nicotine or paraffin solution, which must not be too strong in the case of flowering shrubs, or the blossom may be damaged.

**Neglected Hedges**

Few things afford stronger indications of the necessity of renovation in a garden than the state of the hedges. These are so easily and so insensibly allowed to grow wild, and are so seriously injured by want of care and the proper use of the knife, that neglect cannot go on very long without its ill consequences becoming manifest. The Escallonias and most other evergreens may be hard pruned, but with the Common Laurel it is a saving of time to cut it down at once, the Arbutus and Sweet Bay also respond to hard pruning. Privet hedges, which from years of neglect are found to be occupying too much space, may with advantage often be cut down to within a foot or two of the ground. Holly and Yew hedges requiring drastic treatment may be cut close on all sides to the main branchlets. This drastic cutting back is best done in late April, the work being spread over a period of three years.
TREES AND SHRUBS FOR HEDGES

Hedges in the Small Garden

Although hedges are delightful and useful features in a garden, since they help to produce the much desired "element of surprise," and are useful as screens, shelters, or barriers, too many should not be planted in a small garden. Nor should they be allowed to grow too high or very wide, as they take up a deal of room, and make a great demand upon the soil; especially is this so with that gross feeder, the Privet.

SOME TREES AND SHRUBS SUITABLE FOR HEDGES

*Note—For Times of Flowering, Colour of Blooms, and Cultural Details, see Chapter XXXV*

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name</th>
<th>Average Height in Feet for Form of Hedge and Time in Years to Make Good Hedge</th>
<th>Height in Feet at which to Plant</th>
<th>Number of Rows</th>
<th>Distance in Inches between Plants</th>
<th>If two rows, distance in Inches between Rows</th>
<th>When to trim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berberis Darwinii</td>
<td>(E) Barberry</td>
<td>5 ft., 6 yrs</td>
<td>20</td>
<td>1</td>
<td>15</td>
<td>—</td>
<td>Clipped after flowering</td>
</tr>
<tr>
<td>B stenophylla</td>
<td>(E) Barberry</td>
<td>5 ft., 5 yrs</td>
<td>18-24</td>
<td>1</td>
<td>18-24</td>
<td>9</td>
<td>Clipped May and August</td>
</tr>
<tr>
<td>Buxus sempervivens Handsome</td>
<td>(E) Handsome Box</td>
<td>3 ft., 4 yrs</td>
<td>10-12</td>
<td>1 or 2</td>
<td>12-15</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Carpinus Betulus</td>
<td>(D) Hornbeam</td>
<td>5 ft., 6 yrs</td>
<td>15-18</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>August</td>
</tr>
<tr>
<td>Cotoneaster Simonsii</td>
<td>(E) Rockspray</td>
<td>5 ft., 5 yrs</td>
<td>18-24</td>
<td>1</td>
<td>18</td>
<td>18</td>
<td>剪后</td>
</tr>
<tr>
<td>Cydonia japonica</td>
<td>(D) Japanese Quince</td>
<td>6 ft., 6 yrs</td>
<td>18-24</td>
<td>1</td>
<td>18-24</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Crataegus Oxyacantha</td>
<td>(D) Hawthorn, Quick or May</td>
<td>6 ft., 8 yrs</td>
<td>12-20</td>
<td>2</td>
<td>5-9</td>
<td>15</td>
<td>剪后</td>
</tr>
<tr>
<td>Cupressus Lawsoniana</td>
<td>(E) Lawson's Cypress</td>
<td>8 ft., 6 yrs</td>
<td>12-24</td>
<td>1</td>
<td>15-20</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Cupressus macrocarpa</td>
<td>(E) Monterey Cypress</td>
<td>5 ft., fast grower</td>
<td>12-20</td>
<td>1</td>
<td>24</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Cytisus albus, &amp;c</td>
<td>(D) Broom</td>
<td>6 ft., 5 yrs</td>
<td>12</td>
<td>2</td>
<td>12</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Escallonia macrantha</td>
<td>(E) —</td>
<td>5 ft., 4 yrs</td>
<td>15-18</td>
<td>1</td>
<td>18</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Euonymus japonicus</td>
<td>(E) Japanese Spindle Tree</td>
<td>6 ft., 6 yrs</td>
<td>12-18</td>
<td>1</td>
<td>18</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Fagus sylvatica</td>
<td>(D) Beech</td>
<td>Tall, 6 yrs</td>
<td>18-30</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>剪后</td>
</tr>
<tr>
<td>Forsythia spectabilis</td>
<td>(D) Golden Bell</td>
<td>6 ft., 6 yrs</td>
<td>12-18</td>
<td>1</td>
<td>12-18</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Fuchsia macrostemma</td>
<td>(D) Fuchsia</td>
<td>5 ft., 6 yrs</td>
<td>9-12</td>
<td>1</td>
<td>12</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>flex Aquifolium</td>
<td>(E) Holly</td>
<td>Thick Hedge, Slow grower, first 3-4 yrs</td>
<td>15</td>
<td>1 or 2</td>
<td>12-15</td>
<td>12</td>
<td>剪后</td>
</tr>
<tr>
<td>Lavandula spica</td>
<td>(E) Lavender</td>
<td>6 ft., 5 yrs</td>
<td>12</td>
<td>1</td>
<td>12</td>
<td>9</td>
<td>剪后</td>
</tr>
<tr>
<td>Ligustrum ovalfolium</td>
<td>(E) Privet (Oval-leaved)</td>
<td>4-6 ft., fast grower</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td>15</td>
<td>剪后</td>
</tr>
<tr>
<td>Name</td>
<td>Common Name</td>
<td>Average Height (m)</td>
<td>Height in ins at which to Plant</td>
<td>Number of Rows</td>
<td>Distance in inches between Plants</td>
<td>If two rows, distance in inches between Rows</td>
<td>When to trim</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>---------------------------------</td>
<td>----------------</td>
<td>-----------------------------------</td>
<td>---------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td><em>Ligustrum ovalifolium aureum</em></td>
<td>(E)Privet (Golden)</td>
<td>1.5</td>
<td>4</td>
<td>20</td>
<td>2</td>
<td>10</td>
<td>April and August</td>
</tr>
<tr>
<td>Lonicera fragrantissima</td>
<td>(D)Honeysuckle</td>
<td>1.5</td>
<td>6</td>
<td>18</td>
<td>1</td>
<td>12</td>
<td>April, shorten long growths</td>
</tr>
<tr>
<td><em>Lonicera nitida</em></td>
<td>(E)Shrubby ditto</td>
<td>1.5</td>
<td>5</td>
<td>12-18</td>
<td>1</td>
<td>12-18</td>
<td>June August</td>
</tr>
<tr>
<td><em>Olearia Haastii</em></td>
<td>(E)N Zealand Daisy Bush</td>
<td>1.5</td>
<td>4</td>
<td>12-18</td>
<td>1</td>
<td>12-15</td>
<td>Trm straggly shoots</td>
</tr>
<tr>
<td>Osmanthus</td>
<td>(E)</td>
<td>1.5</td>
<td>4</td>
<td>9-12</td>
<td>1</td>
<td>18-24</td>
<td>August</td>
</tr>
<tr>
<td>Aquifolium</td>
<td>(E)</td>
<td>1.5</td>
<td>6</td>
<td>12-15</td>
<td>1</td>
<td>15-18</td>
<td>May to August</td>
</tr>
<tr>
<td>Prunus Laurocerasus var pyramidalis</td>
<td>(E)Cherry Laurel</td>
<td>1.5</td>
<td>6</td>
<td>24-30</td>
<td>1</td>
<td>24</td>
<td>May and August with knife</td>
</tr>
<tr>
<td><em>Prunus cerasifera</em></td>
<td>(D)Cherry Plum Boundary,</td>
<td>1.5</td>
<td>6</td>
<td>20</td>
<td>2</td>
<td>9</td>
<td>June</td>
</tr>
<tr>
<td><em>Quercus flex</em></td>
<td>(E)</td>
<td>1.5</td>
<td>5</td>
<td>18-20</td>
<td>1</td>
<td>18</td>
<td>May and August</td>
</tr>
<tr>
<td>Rhododendron, Cunningham's White</td>
<td>(E)Common Purple Rhododendron</td>
<td>1.5</td>
<td>5</td>
<td>18-20</td>
<td>1</td>
<td>18</td>
<td>Trm with knife or secateurs after flowering</td>
</tr>
<tr>
<td>Rhododendron ponticum</td>
<td>(D)Flowering Currant</td>
<td>1.5</td>
<td>5</td>
<td>18-24</td>
<td>1</td>
<td>18</td>
<td>Trm with knife or secateurs after flowering</td>
</tr>
<tr>
<td>Ribes sangueum</td>
<td>(D)Sweet Briar</td>
<td>1.5</td>
<td>5</td>
<td>18</td>
<td>1</td>
<td>18</td>
<td>Shorten after flowering</td>
</tr>
<tr>
<td>Rosa rubiginosa and Pénzance Briars</td>
<td><em>Rosa rugosa</em></td>
<td>1.5</td>
<td>5</td>
<td>14-2</td>
<td>1</td>
<td>15</td>
<td>March August</td>
</tr>
<tr>
<td><em>Tamarix gallica</em></td>
<td>(D)Tamarisk</td>
<td>1.5</td>
<td>6</td>
<td>24</td>
<td>2</td>
<td>2.15</td>
<td>May and August</td>
</tr>
<tr>
<td>Taxus baccata</td>
<td>(E)Yew</td>
<td>1.5</td>
<td>5-10</td>
<td>30</td>
<td>60</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Thuya placa (syn gigantea)</td>
<td>(E)Giant Thuya</td>
<td>1.5</td>
<td>5</td>
<td>30</td>
<td>1</td>
<td>18</td>
<td>May to August</td>
</tr>
<tr>
<td>Thuya orientalis</td>
<td>(E)Chinese Arbor-vita</td>
<td>1.5</td>
<td>5</td>
<td>24</td>
<td>1</td>
<td>24</td>
<td>May to August</td>
</tr>
<tr>
<td>T. occidentalis</td>
<td>(E)Arbor vita</td>
<td>1.5</td>
<td>6</td>
<td>30</td>
<td>1</td>
<td>18</td>
<td>May to August</td>
</tr>
<tr>
<td>Ulex europaeus fl pleno</td>
<td>(E)Double Gorse</td>
<td>1.5</td>
<td>5</td>
<td>12</td>
<td>2</td>
<td>18</td>
<td>Trm after flowering</td>
</tr>
<tr>
<td><em>Veronica</em></td>
<td>(E)Shrub Speedwell</td>
<td>1.5</td>
<td>3</td>
<td>12-18</td>
<td>1</td>
<td>18</td>
<td>Clip sides freely</td>
</tr>
<tr>
<td>Traversi</td>
<td>(E)Laurustinus</td>
<td>1.5</td>
<td>6</td>
<td>12-20</td>
<td>1</td>
<td>18</td>
<td>Spring</td>
</tr>
</tbody>
</table>

Note — D = Deciduous  E = Evergreen.

* Suitable for Seaside Planting
TREES AND SHRUBS FOR SCREENS AND WIND-BREAKS

CHAPTER XVI

See also the chapters on Hedges, page 80, and on Trees and Shrubs for Windswept Localities, page 71

There may be several reasons for planting a screen of trees; perhaps there are unsightly buildings to be blotted out, privacy may be sought, or it may be necessary to protect the house and garden from strong and cold winds from the north and east. Where time is no object, beauty can be combined with utility as the choice of suitable trees for forming the screen is great, in this case, the screen can be made one of the most interesting and beautiful features of the garden. As a rule, however, the chief requirement is that an effective screen shall be produced in as short a time as possible, then quick-growing subjects must be selected, and here the Black Italian Poplar or the White Bolleana Poplar are invaluable.

Because they hold their leaves all through the winter, evergreens, especially conifers, make the best screen, but a few more brightly-coloured deciduous trees should be planted among them, or in front of them, to relieve the rather sombre effect produced by over many evergreens massed together. Silver Birches, for example, form an excellent foil to the dark and heavy green of a belt of pines. Some of the variegated forms are also useful in this connection, especially the golden and silver conifers.

Another disadvantage of evergreens is that they are, except for a few conifers, much slower growers than the deciduous trees. Among the conifers the best screen-makers are: Cupressus Lawsoniana and vars., C. macrocarpa, Pinus nigricans (Austrian Pine), P. excelsa, P. insignis, P Laricio (Corsican Pine), P. Pinaster (Cluster Pine), P. radiata (syn. P. insignis), P. sylvestris (Scot’s Pine), Taxus baccata (Yew), and Thuja plicata. Of the broad-leaved evergreens, some of the most
SCREENS AND WIND-BREAKS

suitable are: *Arbutus Unedo*, *Ilex Aquifolium* (Holly), *Prunus lusitanica* (Portugal Laurel), *Prunus Laurocerasus* (Common Cherry Laurel), and *Quercus Ilex* (Holm Oak)

Deciduous trees have the advantage over evergreens in that they are quicker in growth and can be transplanted successfully when of a much greater size; considerable time can, therefore, be saved in the formation of the screen. Of deciduous trees, the *White Poplar* (*Populus alba nivea*), and the *Black Italian Poplar* (*P serotina*) are quick growing, making as much as five feet or more of new wood in a year. For a still closer hedge-like screen, plant the two fastigiate Poplars, *Populus alba fastigiata* and *P nigra italica* (syn. *fastigiata*). Where space is at a premium and the screen must be effective but comparatively narrow, either of these trees will meet the case if planted from 8 to 10 feet apart in two rows so that those in one row come opposite the spaces between two trees in the other row. If a high screen is not needed, the trees can be topped when from 9 to 12 feet in height, their branches will then thicken out to form quite a dense screen, even when the leaves are off in winter. Other deciduous trees suitable for forming a screen are: *Acer platanoides* (Norway Maple), *Acer Pseudo-platanus* (Sycamore), *Fraxinus excelsior var heterophylla* (Ash), *Populus trichocarpa*, *Prunus Pissardii* (Purple-leaved Plum) and *Tilia vulgaris* (Lime), but most of these require more space.

A screen need not necessarily be formed of a straight line of trees of the same kind, and where there is room, it is usually better to plant the trees in groups of say, 3, 5, or 7, according to the size of the garden, breaking the straight line by leaving a gap at any point where screening is not called for. Where a straight line of trees is planted and there is sufficient room, irregular groups of smaller trees of a different nature can be planted in front of the screen to break the monotonous and even row. As a final warning, I would remind the reader that belts of large trees should not be planted too near the house. Not only will a feeling of gloom be produced but the atmosphere will become unpleasantly damp. Many a small garden has been ruined by the planting of over many large trees.
SCREENS AND WIND-BREAKS

In bleak, exposed and windswept situations, it is always advisable to plant some sort of screen or wind-break of shrubs or trees, but it must be remembered that many of the hardy shrubs and trees themselves resent being planted in such positions, and I have, therefore, compiled a list of subjects which may safely be utilised, where so desired, for this purpose (see page 72). In exposed situations it is best to plant trees fairly close together at first, transplanting some of them later when a certain amount of growth has been made. In this way the young trees will protect one another. Trees and shrubs for such localities should be purchased from nurseries situated at a spot where the prevailing climatic conditions are as nearly as possible similar to those under which the young plants will have to grow.

TREES SUITABLE FOR SCREENS AND WIND-BREAKS

For cultural details, soils, propagation, height, nature of foliage, see Alphabetical List of Shrubs and Trees, Chapter XXXV.

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer pinnatifolius</td>
<td>Norway Maple</td>
</tr>
<tr>
<td>Acer Pseudo platanus</td>
<td>Sycamore</td>
</tr>
<tr>
<td>Ailanthus glandulosa</td>
<td>Tree of Heaven</td>
</tr>
<tr>
<td>Arbutus Unedo</td>
<td>Strawberry Tree</td>
</tr>
<tr>
<td>Betula alba verrucosa</td>
<td>Common Silver Birch</td>
</tr>
<tr>
<td>Carpinus Betulus</td>
<td>Hornbeam</td>
</tr>
<tr>
<td>Crataegus oxyacantha and</td>
<td>May or Thorn</td>
</tr>
<tr>
<td>vars.</td>
<td></td>
</tr>
<tr>
<td>Cupressus Lawsoniana</td>
<td>Lawson's Cypress</td>
</tr>
<tr>
<td>Cupressus macrocarpa</td>
<td>Monterey Cypress</td>
</tr>
<tr>
<td>Fraxinus excelsior</td>
<td>One leaved Ash</td>
</tr>
<tr>
<td>heterophylla</td>
<td>Holly</td>
</tr>
<tr>
<td>Ilex Aquifolium</td>
<td>Larch</td>
</tr>
<tr>
<td>Larix europaea</td>
<td></td>
</tr>
<tr>
<td>Pinus montana</td>
<td>Dwarf Mountain Pine</td>
</tr>
<tr>
<td>Pinus Laricio</td>
<td>Corsican Pine</td>
</tr>
<tr>
<td>Pinus Laricio nigricans</td>
<td>Austrian Pine</td>
</tr>
<tr>
<td>Pinus Pinaster</td>
<td>Cluster Pine</td>
</tr>
<tr>
<td>Pinus radiata (syn insignis)</td>
<td>Monterey Pine</td>
</tr>
<tr>
<td>Pinus sylvestris</td>
<td>Scotch Fir</td>
</tr>
<tr>
<td>Populus alba nivea</td>
<td>White Poplar</td>
</tr>
<tr>
<td>Populus alba fastigiata</td>
<td>Bolleana Poplar</td>
</tr>
<tr>
<td>Populus nigra italica</td>
<td>Lombardy Poplar</td>
</tr>
<tr>
<td>Populus serotina</td>
<td>Black Italian Poplar</td>
</tr>
<tr>
<td>Prunus Pissardii</td>
<td>Purple leaved Plum</td>
</tr>
<tr>
<td>Quercus flex</td>
<td>Holm Oak</td>
</tr>
<tr>
<td>Tavus baccata and vars.</td>
<td>Yew</td>
</tr>
<tr>
<td>Thuja occidentalis</td>
<td>American Arbor-Vita</td>
</tr>
<tr>
<td>Thuja plicata</td>
<td>Lobb's Arbor-Vita</td>
</tr>
<tr>
<td>Tilia vulgaris</td>
<td>Lime</td>
</tr>
<tr>
<td>Ulmus montana</td>
<td>Wych Elm</td>
</tr>
</tbody>
</table>

Note—See also Trees and Shrubs for Windswept Localities, page 71, and Hedges, page 80.
CLIMBING SHRUBS
CHAPTER XVII

CLIMBING plants have their place in every garden. Even the smallest cottage or villa garden calls for Honeysuckle, Rambling Rose, and Clematis or Jasmine, whilst in gardens of larger size, climbing plants may be made a most interesting and decorative feature. Generally speaking, not nearly enough use is made of climbers, they take up comparatively little ground area, and for this reason are an invaluable means of securing additional colour and interest in the garden, especially when it is a small one. The beauty of the English hedgerow is in large part attributable to those beautiful climbing plants which are native to our country. Traveller's Joy and Honeysuckle, Ivy and Bryony, all in due season garland the copse and hedge. In our gardens, walls, trellises, and arches, overhung with the lovely climbers which are now available, may be among the loveliest features.

Under the heading of climbing shrubs I have included the real climbers and twiners, as for example, the Aristolochia, Clematis, Humulus (Hop), Jasminum (Jasmine), Lonicera (Honeysuckle), Passiflora (Passion Flower), Polygonum, Rambler Roses, Tecoma, Vitis (Vines) and Wistaria, and also many shrubs that, although often grown in bush form, love the protection and shelter of a wall. Examples of this latter class are the Buddleia, Camellia, Ceanothus, Chosya ternata, Cotoneaster, Cydoma, Escalloma, Forsythia, Garrya, Magnolia, Myrtus communis, Pyracantha, and several Viburnums, to mention a few of the more commonly grown.

The real climbers, such as the Clematis, Honeysuckle, Hop, Vine, and Wistaria, although they may be grown successfully on walls, usually look best when allowed to ramble naturally over a pergola, arbour and even a dead tree, while the more bushy and sturdy wall shrubs, Cotoneasters, Cydonias, Forsythias and Pyracanthas, for example, are well suited to covering
DECIDUOUS CLIMBERS

blank walls and fences. The actual choice of climbers, however, depends first on the climatic conditions and soil available (the likes and dislikes of each plant in these respects are shown in chapter XXXV, to which the reader is referred), and also on the aspect of the wall to be covered. To help the reader in this latter difficulty, I have arranged the list of Climbing Plants, page 98, under the aspect for which they are most suitable. Although many climbers thrive on a warm, sunny wall, and in some instances such an aspect is imperative, it should be remembered that there are some subjects that, although hardy on an east wall, would be ruined by the scorching rays of the morning sun falling upon them while still frozen by a late spring frost. These plants should be given a north wall, or one facing west. If a careful selection is made, it is possible to have either bloom or berries on at least one of the walls of the house throughout the whole year. It should also be remembered that, by planting shrubs of the same genus in more than one aspect, or by training the shoots round from say, a south wall to an east wall, it is possible to have that particular shrub in bloom for a fortnight or three weeks longer than if it were grown in one aspect only.

Climbing plants are often given but crude treatment, yet if they are to thrive and be truly luxuriant and beautiful, it is scarcely possible to spend too much attention in the preparing and enriching of the soil in which their roots are to grow.

Deciduous Climbers

With the possible exception of the Rose, perhaps the most generally-grown deciduous climbers are the Virginia Creepers, especially that species of self-clinging habit, Vitis inconstans, better known to most readers as Ampelopsis Vestchii. Another species which has the self-clinging habit is V quinquefolia. The old-fashioned, large-leaved variety, V vitacea, though it has not the self-climbing habit, yet, by its vigorous growth and large leaves, which, like all the other members of this genus, turn to beautiful shades of red and orange in the autumn, merits a place in our admiration. The same may be said of another species, V aconitosolia, with finely-divided leaves. The colour of all these Virginia Creepers is more brilliant
CLIMBING SHRUBS

in autumn when the plants are grown in a somewhat dry soil. They are readily propagated by cuttings and by layering. All the species of Ampelopsis strictly belong to the genus of the Vitis or vine, but commonly that term is reserved for certain other plants more closely allied to the ordinary grape vine. These species of Vitis are among the most beautiful of all deciduous climbers, their handsome leaves, the grace of their habit, and the beautiful colours commonly assumed in autumn, all contribute to their value in the garden. Of them all, perhaps the most attractive is Vitis Cognetae, though V. Thunbergii, V. megalophylla, V. heterophylla var. humulfolia, and V. vinsera var purpurea are all graceful and interesting. Another deciduous climber which has long been a favourite in British gardens is the Wistaria, whose racemes of drooping purple flowers form so conspicuous a feature of cottage walls in many villages. The Wistaria is easily grown, and may be readily multiplied by means of layers. The white variety of the Chinese Wistaria is not so generally valuable as the purple form, W. sinensis, but the White Japanese Wistaria, W. mullbyga alba, is very floriferous and has a longer raceme than the Chinese kind. W. mullbyga has drooping mauve racemes between 2 and 3 feet in length.

The winter-flowering yellow Jasmine, Jasminum nudiflorum, bears its gay flowers in the closing months of the old year and the very early months of the new year, before the leaves have begun to appear, and the sweetly-scented, white-flowered J. officinale blooms in summer. These two are among our oldest favourites. Both are easy to grow, and are easily propagated by cuttings or layers. A number of Honeysuckles also rank with the best of our hardy trellis or wall plants. Among the climbing species are the sweet-scented, yellow-flowered Lonicera Caprifolium, the fragrant yellow and purple L. etrusca, and the creamy-yellow flushed with pink L. japonica. Nor must we forget the Common Honeysuckle, L. Periclymenum and its varieties. Most of these Honeysuckles do better growing over an arch or trellis than against a wall, where they are liable to attacks of green-fly.

The Aristolochia is an interesting deciduous climber. Some species, such as A. Stpho (Dutchman’s Pipe), which carries uncommon-looking brown and yellow flowers in June and
EVERGREEN CLIMBERS

July, are hardy in sheltered situations, but others are only suitable for the greenhouse. The hardier species should certainly be planted if a warm, sunny site is available.

Several of the Brambles are interesting and beautiful climbers. Among these are: the Double-flowered Blackberries, *Rubus thyrsiflorus flore pleno* (white), and *R. ulmifolius bellad-florus* (pink), the Parsley-leaved Bramble, *R. lactatus*; *R. Phaeomelasius*, the Japanese Wineberry, with its hairy stems and scarlet fruit, and *R. Henryi*, the Chinese Evergreen Bramble, with thorny stems and black fruits. Another very handsome climbing plant for warm districts, and one not often seen, is *Mutisia decurrens*, which has long leaves ending in tendrils and large orange-coloured flowers. It does best in a soil containing peat, sand, and a little limestone, and likes a reasonable amount of shelter. *Polygonum baldschuancum* is a luxuriant deciduous climber. It is covered in summer and early autumn with masses of tiny white flowers that are tinged with pink, and is of a very rapid growth. Rambling over a pergola or a dead tree, it is a sight not easily forgotten.

Evergreen Climbers

Not many of our hardy climbing plants are evergreen, but growing wild in every wood and hedgerow we have what many people consider the most beautiful climbing plant in the world. The ordinary Ivy, *Hedera Helix*, has many varieties, all of which are easily grown. When planted against walls which require to be kept more or less neat, ivy must be clipped back fairly early in April. The clipping should under these circumstances be vigorously and even severely performed, the bare appearance thus produced being quickly hidden by a new growth of leaves. Where neatness is not essential, and a rapidly-growing variety is wanted, the Irish Ivy, *H H hibernica*, may be selected. It has large leaves and a loose habit of growth. Other large-leaved kinds are *H H colchica* and *H. H colchica var dentata*. There are other varieties, too numerous to mention here, including *H H digitata*, with deeply-cut leaves, and the little *H H minima*, which grows well over rocks or stumps.

In mild localities the Passion Flower, *Passiflora caerulea*,
and its white variety, Constance Elliot, are evergreen climbers. They do best against a sunny wall, and are easily grown from cuttings, which root readily over a little bottom heat or under a bell-glass The Glory Vine, Clainthus puniceus, is a very ornamental evergreen climbing plant, which, however, can only be grown on a wall in mild and favoured localities. It bears red flowers, and does best in an ordinary gritty garden soil, to which a good deal of leaf-mould has been added. Another handsome climbing plant for warm districts is the orange-flowered Bignonia capriolata. This does best in a peaty soil, and is easily propagated by cuttings, which may be rooted over heat in the spring. The most important climbers of all, the Clematis and the Rose, are fully dealt with elsewhere in this book. The wall shrubs are too numerous to mention in detail here, and the reader is referred to the list on page 98, and to the paragraphs on the particular shrubs in chapter XXXV.

Selecting the Sites

Many climbers do better if the air can circulate freely round their stems and shoots, but this does not mean that they enjoy cold draughts from the north or east. Any climber will thrive better on a wooden trellis, provided it is sheltered from these cold blasts, than it will against a brick wall, which throws back the sun’s rays and is apt to scorch it. Many of less hardy nature, of course, demand the shelter of a wall, and several require that this wall shall also face south to catch all available sunlight and warmth. In the list on page 98, the preference as to aspect shown by each is referred to:

How to Plant

A climber must not be planted with its roots right up against a wall, the stem should be placed a few inches from the wall so that the roots may receive adequate air and moisture. In dry weather a good watering should be given periodically to all wall plants, even though correctly planted with their roots some way from the wall; this is especially necessary during the first year after planting. The creosote used on the wooden supports of a pergola may be very harmful if it comes into contact with the roots, and this is another reason
HOW AND WHEN TO PLANT

why the climber should not be planted too close to its support.

Climbers are all too frequently planted in a narrow border at the base of a wall that is bone dry for the greater part of the year. The borders should be at least 2 to 3 feet in width so that they may catch the rain and allow it to permeate to the roots. At times, too, a small hole is dug in a hard path, and the plant is set in this and expected to thrive. It should be borne in mind that climbers make a large amount of growth and, once planted, remain in the same position for many years. Unless the soil is properly prepared in advance, the majority of plants will soon starve.

The hole to receive the roots must be dug 2 feet deep and at least 3 feet wide. The soil at the bottom should be well loosened, and with it should be mixed stable manure, decayed leaf-mould or vegetable refuse. Over this must be placed a layer of mould some six inches in thickness to prevent the roots from coming into direct contact with the manure. The soil that has been taken from the hole, if too heavy, should be lightened by the addition of sandy loam, well-rotted stable manure, ashes of garden rubbish and leaf-mould, should it be too light, it can be improved by mixing in heavy loam, a little pig or cow manure and leaf-mould.

In planting climbers that have been grown in pots, the outer roots should be spread out carefully, but the "ball" of earth around the roots should be as little disturbed as possible. They should then be planted to about the same depth as was previously the case, that is to say, the top of the ball of earth should be only just covered with fresh soil. The soil about them should be firmly pressed or trodden in. In the case of non-potted plants, the roots should be well spread out, the soil being firmly pressed about them as before. The necessary supports should be at once afforded, and the plants should be attached thereto by some form of loose tie. Except in wet weather, water should at once be given, being continued at intervals as required.

When to Plant

The planting of deciduous climbers may be done at any time between the falling of the leaves and early April of the next year, provided the ground is not too wet and that there
CLIMBING SHRUBS

is not a frost. It is, however, best to plant as early in November as possible, so that the plants may become established and be better able to withstand inclement weather.

Evergreen climbers should be planted during September and October or April and May. If in pots, climbers may be planted whenever soil and weather conditions permit at practically any time of the year. Half-hardy plants, however, whether deciduous or evergreen, should not be planted in the autumn. These subjects are best planted in late spring when all danger from severe frosts is over, that is, in late April or early in May.

Allow as large a "ball" of earth as possible to remain round the roots while replanting—this is especially applicable to evergreens—and do not permit the roots to be exposed to cold, dry winds, to the hot sun or to frost. As much of the fine roots as possible should be carefully taken up when transplanting. If the roots have been damaged, the injured parts must be cut away before planting, and should the parts trimmed be thick, the cut surfaces should be painted with coal tar to prevent "bleeding" or attack by fungus. Where it has been necessary to cut away a considerable part of the roots, a proportionate amount of branches, particularly in the case of evergreen climbers, should also be sacrificed so that the roots shall not have undue top-growth to nourish.

A good mulching in spring of well-rotted manure about an inch or so deep, after a thorough watering, will assist the plants to become established, and will help to keep the soil moist through the summer. See also the instructions for planting deciduous and evergreen shrubs in chapter XXVIII.

Training and Nailing Up

For growing climbing plants other than those which, like ivy, attach themselves by means of natural appendages to walls or fences, various methods are employed to support the growths. Stretched galvanised wires to which the shoots are tied with string form convenient support for such plants. Or, again, plants may be attached to the walls by nails and shreds of cloth, or by patent nails with soft metal tops which can be bent over the stems. This is a rather difficult operation, for nails are, as a rule, by no means ornamental, and the less
Right, Clematis vitalba (Travellers' joy). Below, Crataegus cotallina
PLATE 8
Callicarpa giraldiana
they show the better. The gardener’s skill must be exerted to conceal his nails and shreds as much as possible. For use in brick or stonework, cast-iron nails are best, for these will pierce very hard substances without bending. Cloth list or shreds of old cloth are generally used, but strips of leather or black tape are preferred by some, under the supposition that they not only have a neater appearance but afford less harbour for insects. The shreds vary from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch in width and from 4 to 6 inches in length, according to the size of the twig or branch on which they are to be used. Iron or other metal is too subject to changes of temperature to make good supports for climbing plants.

Pergolas and arches should be of as simple a construction as possible, larch poles with joining crosspieces being as satisfactory and cheap for the purpose as any. The long straggling growths of such climbers as the Clematis, Polygonum, or the Honeysuckle should be periodically disentangled and trained in to cover the required space.

Pruning

The pruning of climbers which flower on the new growths of the year should generally take place in February. In the case of plants which flower on the old wood, little pruning is required, but superfluous, weak, and straggling shoots may with advantage be shortened. The early-flowering climbers, represented by Jasminum nudiflorum, Forsythia suspensa and Clematis montana, should be pruned as soon as the blooms fade in spring. In hard wooded plants an occasional worn out branch should be cut out. This will enable new main shoots to be laid in gradually to replace them. On the other hand, plants which bear their flowers on the young wood may be cut back to within two or three eyes of the old wood or, in some cases, to within 6 inches of the ground in November for spring flowers, or a little less severely in spring for autumn blooming. In any case, all breastwood, shoots that grow straight out to the front, should be shortened or cut away. See also the section on pruning Trees and Shrubs, page 159.

Full descriptions, the best varieties, and cultural details of the climbers mentioned in this chapter are given in chapter XXXV.
SOME CLIMBERS FOR WALLS OF DIFFERENT ASPECTS

Note — For descriptions, good varieties, heights, colour of flowers, time of blooming, propagation, soil, and full cultural details, see the paragraphs devoted to each particular plant, Chapter XXXV

Climbers provide a most attractive means of beautifying the walls of a house, wooden fences, and of covering trellises, arches and pergolas. Below is given a list of some of the best plants to grow, but it must not be forgotten that most climbers have a preference for a certain aspect. Therefore, in compiling the list an endeavour has been made to show what plants are best suited to north, south, east and west aspects respectively. Some climbers will thrive in any position, these also are tabulated. In addition, those specially suitable for covering trellis, arches and pergolas are listed.

### North Walls

- *Azara microphylla*
- Calycanthus occidentalis
- Celastrus scandens
- Clematis (most varieties)
- Cotoneaster horizontalis
- Cotoneaster microphylla
- Cotoneaster Henryanana
- *Garrya elliptica*
- Hedera colchica (Persian Ivy)
- Hedera Helix (Ivy) (also variegated forms)
- *Hydrangea petiolaris*
- *Jasminum nudiflorum*
- *Lapageria rosea and var alba*
- Lonicera japonica Halleana
- Lonicera tragophylla
- *Pyracantha coccinea Lalandu*
- *Pyracantha Gibbii and var yunnanensis*
- Roses (see list of varieties, page 100) Schizophragma integrifolia
- †Vitis inconstans
- Vitus Henryana
- †Vitis quinqufolia.

### South Walls

- *Azara microphylla* (Southern Counties)
- Berberidopsis coralina (Southern Counties only, Partial Shade)
- Ceanothus glandulosa (Southern Counties only)
- Chimonanthus fragrans
- Choisyta ternata
- Eccremocarpus scaber
- Euclia volubilis
- Escallonia organensis
- Escallonia macrantha
- Escallonia monteviensis
- Forsythia suspensa
- *Jasminum primulinum*
- Lippia citriodora
- Lonicera etrusca
- Lonicera flava
- *Magnolia grandiflora* (Shelter from E Wind)
- Mutisia decurrens
- Myrtus communis
- Myrtus lusitanica tarentina
- *Passiflora caerulea and var Constance Elliot*
- Pyracantha angustifolia
- Roses (See List of Varieties, page 100)
- Solanum crispum
- Solanum jasminoides (Sheltered Southern Counties only)
- Tecoma grandiflora
- Tecoma radicans
- Veronica Hulkeana
- Viburnum rhytidophyllum
- †Vitis Coignetiae
- Vitis heterophylla humulifolia
- *Wistaria multisnaga and var alba*
- *Wistaria sinensis.*
SOME CLIMBERS FOR WALLS OF DIFFERENT ASPECTS

(continued)

East Walls

Celastrus articulatus
Celastrus scandens
· Cotoneaster horizontalis
· Cotoneaster microphylla
Cotoneaster Henryana
· Garrya elliptica
Hedera canarrensis
· Jasminum officinale
· Jasminum revolutum

Loncera Caprifolium
Loncera japonica flexuosa
Loncera Periclymenum, etc
· Pyracantha (various)
Roses (See List of Varieties, page 100)
Tecoma grandiflora
Tecoma radicans
††Vitis inconstans
††Vitis quinquefolia

West Walls

†Akebia quinata
Aristolochia Siphora
Berberidopsis corallina (Southern Countries only Partial Shade)
Calycanthus occidentalis
Camelina Donnelaedia
Ceanothus azureus
Ceanothus dentatus
Ceanothus floribundus
Ceanothus Vertichianus
Chimonanthus fragrans (Sun)
·Clematis (See List of Varieties, page 299)
·Cydonia japonica, varieties

Forsythia suspensa
·Garrya elliptica
Hedera Helix (variegated varieties)
· Jasminum officinale
· Jasminum primulun
·Magnolia conspicua
· Magnolia grandiflora
· Passiflora caruula and var. Constance Elliott
Roses (See list of varieties, page 100)
Schizandra chinensis
Solanum Jasminoides
Viburnum rhytidophyllum

Any Aspect

Celastrus articulatus
Celastrus scandens
Cotoneaster Henryana
Forsythia suspensa
Hedera (Ivy)

·Hydrangea petiolaris
· Pyracantha coccinea and var. Lalandii
Jasminum officinale
††Vitis inconstans
††Vitis quinquefolia

Climbers for Covering Pergolas, Arches and Trellis-work

Actinidia chinensis
Actinidia Kolomikta
†Akebia quinata
Aristolochia Siphora
·Clematis (most varieties)
Celastrus articulatus
Celastrus scandens
Eccremocarpus scaber
Forsythia suspensa
Hedera [Ivy] (most varieties)
·Jasminum nudiflorum (N or W Aspect)
·Jasminum officinale

Loncera Caprifolium
†Loncera japonica flexuosa
Loncera japonica aureo reticulata
·Pyracantha (various)
Loncera Periclymenum (var. Belgica and serotina)
Polygonum baldschuanicum
Roses (See list of varieties, page 100)
††Vitis Cognatius
††Vitis vunifera purpurea
Vitis vitacea
·Wistaria multijuga and var. alba
·Wistaria sinensis

*These are considered especially good
† Tinted foliage in autumn

Note.—For descriptions, good varieties, heights, colour of flowers, time of blooming, propagation, soil, and full cultural details, see the paragraphs on the particular plant in Chapter XXXV
CLIMBING ROSES
For Walls and Fences

North Aspect
Conrad F. Meyer (Silvery-rose)
Dr. Van Fleet (Pink, deeper in centre)
Glories de Dijon (Buff)
Paul’s Scarlet (Scarlet)
Purity (White)
Zephyrine Drouhin (Bright Silvery pink)

South Aspect
Climbing Mrs. H. Stevens (White, Peach Centre)
Climbing Mme. E. Herriot (Coral red, shaded yellow and rosy scarlet)
Climbing Lady Hillingdon (Apricot-yellow)
Climbing Mme. Melanie Soupert (Saffron yellow, suffused pink and carmine)
Climbing Paul Lede (Deep Rose, shaded yellow)
Mermaid (Sulphur yellow, single).

East Aspect
Alberic Barbier (Creamy-white, shaded Yellow)
Climbing General McArthur (Crimson)
Climbing Caroline Testout (Silvery-pink)
Climbing Mme. Abel Chatenay (Carnation rose, shaded to Salmon)
Mme. Alfred Carrier (White, Yellow at base)
Souvenir de Claudius Denoyel (Deep Red)

West Aspect
Albertine (Vermillion to Copper, Salmon and Coppery pink reverse)
Climbing Château de Clos Vougeot (Scarlet)
Climbing Los Angeles (Pink)
Climbing Ophelia (Salmon, shaded Rose)
Climbing Mrs. Aaron Ward (Yellow, washed Salmon rose)
William Allen Richardson (Orange-Yellow, shaded pale Straw at edges)

RAMBLING ROSES
For Arches and Pillars

American Pillar (Rose pink, gold anthers)
Dorothy Perkins (Pink)
Chaplin’s Pink Clumber (Pink)
Excelsa (Bright Scarlet)
Francois Juranville (Salmon-pink, Orange at base)

Hawatha (Crimson, White at base)
Mrs. F. W. Flight (Bright Pink)
Minnehaha (Deep Pink)
Royal Scarlet (Scarlet)
Sander’s White (White)

The old flowering shoots of the Climbing Roses on walls and fences may be removed when the blooms fade, with a general pruning of the growths in March. The section of Rambling Roses clothing arches and pillars are best pruned in late summer when the blooms fade. The removal of the old stems, often right down to the ground, allows for the tying in and ripening of the vigorous new growths.
DWARF FLOWERING AND ORNAMENTAL SHRUBS AND TREES FOR THE ROCK GARDEN

CHAPTER XVIII

DWARF shrubs and trees should play an important part in the composition of a rock garden of any size. Dwarf shrubs are planted in the rock garden for several reasons. They may be used as a background and to break the skyline. They serve to accentuate the appearance of height or depth, for this purpose they are generally placed on a summit, on a ridge, or in some other prominent position. In exposed situations they may be used to provide shelter. They help to maintain a succession of flowers, berries, and colour throughout the year as a contrast and foil to the flowers and foliage of the rock plants. The Rock Roses, Sun Roses, Heaths, Hypercums, Brooms, and Rhododendrons, to mention only a few, flower almost the whole summer through. The evergreen species and varieties add to its attractive features and provide interest in winter. This last function is especially well performed by the dwarf conifers, the foliage of many of which assumes different hues with the passing of the seasons. I refer especially to the Cypresses and the Junipers. Happily, there are dwarf representatives of almost all the genera. Another class extremely valuable for the rock garden are the small Ericaceous, or Heath-like Shrubs. Many are prostrate or of trailing habit, and will furnish a variety of beautiful colour throughout the year. In spring, summer, and autumn, we may choose from a plethora of dwarf flowering shrubs, both evergreen and deciduous. These dwarf shrubs may be divided into two main classes - those of a prostrate and trailing nature that are used as ordinary rock plants to clothe the rocks, and those of dwarf rounded or pyramidal growth that serve, as explained above, to bring variety and contrast to the contours of our rock gardens.

The reader should bear in mind that the rock garden is first and foremost the home of rock plants; too many shrubs,
unless they are alpine in character—as a great number of them are, should not be planted. The larger specimens must be placed singly, usually in some prominent position to relieve flatness and monotony, or to shelter, perhaps, some tender subjects. Smaller-growing kinds, as Heaths and Sun Roses, should be planted in groups of three, five, or seven, in accordance with the space available, to form bold patches of colour. Another point, often forgotten, is that it is essential to consider the appearance of the shrubs, not only when in flower but during the longer season when all bloom is over.

The choice of shrubs for the rock garden depends mainly upon the size of the garden, the soil, and the aspect. Large shrubs may be used as backgrounds and where the rock garden gradually merges into some other part of the grounds, but in the rock garden proper—even when of large proportions—rarely should shrubs whose eventual height will exceed about three feet be used, in most cases, between one and two feet should be the maximum height allowable. Care should also be taken that fast-growing and straggly shrubs do not overwhelm choice rock plants, if planted, these must be periodically trimmed back. The frequent pruning or shortening of the branches and twigs of shrubs and trees in the rock garden is even more important than in the shrub borders as the plants must not be allowed to outgrow their positions, or crowd and injure choice and rare alpine plants.

**Fig 5—Constructing the Rock Garden**

The rocks should be set at a uniform angle to simulate the strata of a natural outcrop of rock; they should tilt slightly backwards and the higher rocks must not overhang those below them, or no moisture will find its way into the horizontal fissures. The brick or rubble drainage is clearly shown.
**SHRUBS FOR THE ROCK GARDEN**

### Dwarf Deciduous Flowering and Foliage Shrubs

<table>
<thead>
<tr>
<th>Species</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Berberis Thunbergii minor</td>
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<tr>
<td>Betula nana</td>
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<td>Betula plumul</td>
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<tr>
<td>Ceratostigma plumbaginoides</td>
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<td>Cydonia Maulei</td>
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<td>Cyttus Andreamus prostratus</td>
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<td>Cyttus Ardoini</td>
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<td>Cyttus Beanu</td>
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<td>Cyttus decumbens</td>
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<td>Cyttus hirsutus</td>
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<td>Cyttus kewensis</td>
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<td>Cyttus purpureus</td>
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<td>Cyttus scoparius pendulus</td>
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<td>Daphne alpina</td>
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<td>Daphne Mezerueum</td>
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<td>Daphne Mezerueum album</td>
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<tr>
<td>Erinacea pungens</td>
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<tr>
<td>Fuchsia [hardy varieties] (cut down to the ground in early March)</td>
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</tbody>
</table>

### Dwarf Evergreen Flowering and Foliage Shrubs

<table>
<thead>
<tr>
<th>Species</th>
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<tbody>
<tr>
<td>Arctostaphylos Uva ursi</td>
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<tr>
<td>Aucuba japonica nana rotundifolia</td>
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<tr>
<td>Berberis buxifolia nana</td>
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<tr>
<td>Berberis Darwinii prostrata</td>
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<td>Berberis stenophylla corallina compacta</td>
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<td>Berberis stenophylla gracilis nana</td>
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<td>Bruckenthalia spiculifolia</td>
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<td>Bryanthus erectus</td>
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<tr>
<td>Buxus sempervirens rosmarinifolia</td>
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<tr>
<td>Cistus corbariensis</td>
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<td>Cistus Loreti</td>
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<td>Cistus obtusifolius</td>
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<tr>
<td>Cistus rosmarinifolius</td>
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<tr>
<td>Daphne Blagayana</td>
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<td>Daphne Cneorum</td>
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<td>Daphne collina neapolitana</td>
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<td>Daphne oleoides</td>
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<td>Daphne petraea and D retusa</td>
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<td>Helianthemum formosum</td>
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<td>Helianthemum formosum concolor</td>
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<td>Helianthemum Libanotus</td>
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<td>Helianthemum umbellata</td>
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<td>Hypencum olympicum</td>
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<td>Hypencum orientale</td>
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<td>Hypencum rhodoaenem</td>
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<tr>
<td>Lavandula spica nana</td>
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<tr>
<td>Lavandula spica Munstead Dwarf</td>
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<tr>
<td>Lonicer a pilet</td>
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<td>Mahonia nervosa</td>
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<td>Moltka petrea</td>
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<tr>
<td>Pachysandra terminalis</td>
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<td>Polygala Chamablueus</td>
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<td>Polygala Chamabuxus purpurea</td>
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<td>Polygala Vavredae</td>
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<td>Prunus Laurocerasus Zabeliana</td>
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<tr>
<td>Rhodothammus Chamaecistus</td>
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<tr>
<td>Rhododendron calostrotum</td>
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</table>

*So many dwarf Rhododendrons have been introduced from China and Tibet during the present century that it would not be difficult to name one hundred species that are suitable for cultivation in rock gardens of considerable area.*
Abies balsamea hudsonia
Abies nobilis glauca prostrata
Cedrus Deodara var pendula
Cedrus Libani nana
Cephalotaxus drupacea prostrata
Cryptomeria japonica nana
Cupressus Lawsoniana Fletcher
Cupressus Lawsoniana nana
Cupressus obtusa ericoides
Cupressus obtusa nana
Cupressus obtusa pygmaea
Cupressus obtusa tetragona minima
Cupressus pisifera ericoides
Cupressus pisifera nana
Cupressus pisifera plumosa aurea compacta
Cupressus pisifera plumosa aurea nana
Cupressus thyoides nana
Juniperus chinensis globosa
Juniperus communis compacta
Juniperus communis echiniformis
Juniperus communis hibernica
Juniperus communis nana

Dwarf Heath-like Shrubs and Lime-haters

Andromeda polifolia
Bruckenthalia spiculifolia
Calluna vulgaris var alba minor
Calluna vulgaris var aurea
Calluna vulgaris var Foxii
Cassiope tetragona
Daboecia pohlia vars.
Daphne Blagavana
Daphne Cneorum
Empetrum nigrum
Erica cinerea and vars.
Erica carnea and vars.

Dwarf Conifers

Juniperus communis prostrata
Juniperus pachyphylma
Juniperus Sabina tamariscifolia
Picea Albertiana conica
Picea excelsa Clanbrassiliana
Picea excelsa conica elegans
Picea excelsa Gregoriana
Picea excelsa humilis
Picea excelsa procumbens
Picea excelsa pumila
Picea excelsa pygmaea
Picea excelsa reflexa
Picea excelsa tabuliformis
Pinus sylvestris pumila
Podocarpus alpina
Pseudotsuga Douglasiana nana
Taxus baccata compacta
Taxus baccata horizontalis
Taxus baccata repandens
Thuja dolabrata nana
Thuja occidentalis globosa
Thuja orientalis compacta
Tsuga canadensis nana

Dwarf Heath-like Shrubs and Lime-haters

Erica darleyensis
Erica Tetralix and vars.
Erica ericae and vars
Erica Watsonii
Ernicea pungens
Gaultheria procumbens
Gaultheria nummularioides
Kalmia angustifolia nana
Ledum latifolium
Ledum palustre
Leptophyllum buxifolium
Vaccinium Vitis idaea

Trailers and Prostrate Shrubs

Artemisia lanata var pedemontana
Cotoneaster adpressa
Cotoneaster congesta
Cotoneaster Dammeri
Cotoneaster thymifolia
Dryas octopetala
Helianthemum alpestre
Helianthemum appenninum
Helianthemum vulgare (varieties)
Hypericum Coris
Hypericum empetrfolium
Hypericum polyphyllum

Hypericum reptans
Juniperus communis nana
Juniperus Sabina
Linnnea borealis
Polygonum vaccinifolium
Salix arbuscula
Salix herbacea
Salix retusa
Spiraea decumbens (Syn procumbens)
Veronica Bidwillii
Veronica Catarractae diffusa

Note—For descriptions, heights, colour of flowers, season of bloom, description of foliage, soil and situation, propagation, and full cultural details of the above, see the paragraphs devoted to the particular plants in Chapter XXXV
WHERE lime-free soil permits, a heath garden may form an interesting and beautiful feature of the garden, quite as distinctive and attractive in its way as such features as the rock garden, the water garden, or the wild garden. The Ericas and their associates, the Callunas and Daboecias, furnish a remarkably wide choice of subjects, ranging from the tall-growing, tree-like Erica arborea down to such dwarf-growing species as Erica carnea, Calluna vulgaris var. Forn, and Daboecia pultifolia, many of them furnishing bloom at a time when other flowers are scarce. All those in the following list are hardy, except Erica arborea, E australis, E lusitanica and E. Vestchii, which are not suitable for planting in cold districts. A careful selection will secure a continuity of flowers almost the whole year through, many species blooming for three or four months on end. They are generally neat in growth, and furnish a profusion of tiny globular or cylindrical flowers, usually purple, mauve, red, pink, or white in colour. In a few varieties, too, the foliage is coloured—gold, silver, bronze, and red-brown shades being available. If left unpruned, the plants become straggly, so dead flowers and long growths should be trimmed off as soon as bloom is over.

The heath garden should be a far more common and popular feature than it is at present, as the plants are of quite easy culture, their chief requirements being a peaty or sandy soil, with a cool, moist foundation. On dry, sandy banks heaths will soon perish. Peat, however, is not essential, a fairly light loam to which a good dressing of leaf-mould or peat and sand has been added will answer admirably. One or two species, such as E carnea and E mediterranea, will do quite well in a soil containing a fair percentage of lime. If the soil is clayey, work in a very liberal supply of leaf-mould, sandy peat and coarse gritty sand to a depth of 12 to 18 inches. The bed should then be trodden firm and left to consolidate.
for a few weeks before planting. The plants are best put in
in October or in March or April. An annual top-dressing
of leaf-mould during the growing season will be beneficial.

It is desirable that there should be nothing formal about
the heather garden. The heaths should be planted in broad
masses, irregular in shape and with goodly numbers of plants
of the same species or variety grouped together. Plants
blooming over the same period should be associated, and in
grouping place next to one another, species and varieties of
varying heights. It is the greatest mistake to plant together
single specimens of the various species, especially of kinds
flowering at different times. An enclosed, shady position is
useless for the heath garden, though the tall species benefit
by shelter from winds, except in the mild climate of the south
and west of the British Isles. The ideal site for the dwarf
hardy types is an elevated southern slope exposed to full sun
and open to the wind. If the ground is undulating and broken
occasionally by a natural outcrop of rock, so much the better.
Let the garden have a rugged, wild and unrestricted appear-
ance. Where space will not permit one to devote a large
expanse of ground to the heath garden, a site connecting the
shrubbery or rock garden with the wild garden may be chosen;
or where the ground is still more restricted, clumps of dwarf-
growing heaths make an interesting feature in the rock garden.
The dwarfer heaths may also be used to form carpets between
sparsely-planted shrubs, especially in the foreground.

To keep the shrubs bushy as long as possible, the young
plants should have the growths freely tipped and stopped,
but in course of time the tall tree heaths tend to become
"leggy." When this eventually happens, the old plants must
be pulled up, young ones being put in to replace them. It is
useless to cut heaths right back into the hard wood, for they
will rarely "break" again, and usually die. It is, therefore,
advisable to have a few plants of each species on hand for
replacements from time to time. Propagation of species is
by seeds, but it is difficult to ensure that hybrids and varieties
shall come "true" when raised in this way, so these are
usually propagated from cuttings of short, semi-matured
side shoots of the current year's growth pulled off with a
"heel" in July or August and inserted in sandy soil in a
THE HEATH GARDEN

frame, which should be shaded from bright sunshine. Heaths may also be propagated by layering in the open during late summer and autumn. See page 341

I append a short list of heaths which will enable the reader to make a suitable selection to meet his requirements. If a wider range is desired, growers' catalogues should be consulted. For the detailed cultural requirements, see chapter XXXV.

SOME HARDY HEATHS

ERICA

<table>
<thead>
<tr>
<th>Species</th>
<th>Petal Colour</th>
<th>Bloom Period</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enca arborea* (Tree Heath)</td>
<td>White</td>
<td>Feb - May</td>
<td>10-15 ft</td>
</tr>
<tr>
<td>Enca arborea alpina</td>
<td>White</td>
<td>April - June</td>
<td>5-10</td>
</tr>
<tr>
<td>Enca australis* (Spanish Heath)</td>
<td>Bright Rose red</td>
<td>March - May</td>
<td>4-6</td>
</tr>
<tr>
<td>Enca australis Mr Robert*</td>
<td>White</td>
<td>March - May</td>
<td>4-6</td>
</tr>
<tr>
<td>Enca carne</td>
<td>Carmine-crimson</td>
<td>Nov - April</td>
<td>4-1</td>
</tr>
<tr>
<td>Enca carne alba (Syn herbacea)</td>
<td>White</td>
<td>Nov - April</td>
<td>4-1</td>
</tr>
<tr>
<td>Enca cinerea (Grey Heath)</td>
<td>Rosy red</td>
<td>July - Sept</td>
<td>4-1</td>
</tr>
<tr>
<td>Enca cinerea alba (Grey Heath)</td>
<td>White</td>
<td>July - Sept</td>
<td>4-1</td>
</tr>
<tr>
<td>Enca cinerea pallida</td>
<td>Pale pink</td>
<td>July - Sept</td>
<td>4</td>
</tr>
<tr>
<td>Enca darleyensis</td>
<td>Rosy red</td>
<td>Nov - April</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Enca fustanica (syn E codon-oides)*</td>
<td>White</td>
<td>Jan - April</td>
<td>6-10</td>
</tr>
<tr>
<td>Enca Mackau</td>
<td>Pale Rose</td>
<td>June - Sept</td>
<td>1</td>
</tr>
<tr>
<td>Enca mediterranea*</td>
<td>Lilac-rose</td>
<td>March - May</td>
<td>4-8</td>
</tr>
<tr>
<td>Enca mediterranea alba*</td>
<td>White</td>
<td>March - May</td>
<td>2-4</td>
</tr>
<tr>
<td>Enca multiflora</td>
<td>Rose-purple</td>
<td>July - Oct</td>
<td>1</td>
</tr>
<tr>
<td>Enca scoparia</td>
<td>Greenish-white</td>
<td>June - Sept</td>
<td>2</td>
</tr>
<tr>
<td>Enca stricla (Syn ramulosa) (Cor- scan Heath)</td>
<td>Pale Rose</td>
<td>June - Sept</td>
<td>6 - 8</td>
</tr>
<tr>
<td>Enca Tetralix (Cross leaved Heath)</td>
<td>Rosy-pink</td>
<td>May &amp; June</td>
<td>1/2</td>
</tr>
<tr>
<td>Enca vagans and vars (Cornish Heath)</td>
<td>Rosy-purple, White or Red</td>
<td>July - Oct</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Enca Veitchii*</td>
<td>White</td>
<td>Feb - April</td>
<td>6-10</td>
</tr>
</tbody>
</table>

CALLUNA

<table>
<thead>
<tr>
<th>Species</th>
<th>Petal Colour</th>
<th>Bloom Period</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calluna vulgaris (Ling, Heather)</td>
<td>White</td>
<td>July - Oct</td>
<td>12 ins</td>
</tr>
<tr>
<td>Calluna vulgaris alba</td>
<td>White</td>
<td>July - Oct</td>
<td>18</td>
</tr>
<tr>
<td>Calluna vulgaris alba Serlei</td>
<td>Silver Foliage</td>
<td>July - Oct</td>
<td>24</td>
</tr>
<tr>
<td>Calluna vulgaris argentea</td>
<td>Golden Foliage</td>
<td>July - Oct</td>
<td>9</td>
</tr>
<tr>
<td>Calluna vulgaris Alporti</td>
<td>Crimson-pink</td>
<td>July - Oct</td>
<td>24</td>
</tr>
<tr>
<td>Calluna vulgaris flore pleno</td>
<td>Double Pink</td>
<td>July - Oct</td>
<td>12</td>
</tr>
<tr>
<td>Calluna vulgaris Hammondi</td>
<td>White</td>
<td>July - Oct</td>
<td>24</td>
</tr>
<tr>
<td>Calluna vulgaris tenuis</td>
<td>Red</td>
<td>July - Oct</td>
<td>12</td>
</tr>
</tbody>
</table>

DABCECIA (Syn Menziesia)

<table>
<thead>
<tr>
<th>Species</th>
<th>Petal Colour</th>
<th>Bloom Period</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daboecia polifolia (Irish Heath)</td>
<td>Rosy-purple</td>
<td>June - Sept</td>
<td>1-2 ft</td>
</tr>
<tr>
<td>Daboecia polifolia alba</td>
<td>White</td>
<td>June - Sept</td>
<td>1-2</td>
</tr>
<tr>
<td>Daboecia polifolia atropurpurea</td>
<td>Reddish-purple</td>
<td>June - Sept</td>
<td>1-2</td>
</tr>
<tr>
<td>Daboecia polifolia bicolor</td>
<td>Purple and White</td>
<td>June - Sept</td>
<td>1-2</td>
</tr>
<tr>
<td>Daboecia polifolia purpurea</td>
<td>Dark Purple</td>
<td>June - Sept</td>
<td>1-2</td>
</tr>
</tbody>
</table>

For cultural details, soil and situation, propagation, etc, see Chapter XXXV

* Not suitable for planting in exposed positions, except in the south and west of the British Isles, nor in cold districts.
HARDY BAMBOOS, REEDS AND GRASSES

CHAPTER XX

BAMBOOS

THESE beautiful woody grasses of tropical appearance make ideal subjects for planting by the waterside or as clumps on lawns. They should not, however, be placed in over-conspicuous positions, as following severe winters and cold biting March winds, the leaves become brown, and the plants are then not at all attractive in spring and early summer. With the falling of the old leaves and the new growths of the year, however, their graceful stems and bright green luxuriant foliage is at its best between late summer and early March. If planted in suitable positions, they will stand out very effectively against the deep green background of evergreens and the rich autumn colouring of deciduous trees and shrubs. Bamboos undoubtedly attain their greatest beauty in the south and west of the British Isles and in Ireland.

There are three great classes of bamboos, namely the *Arundinarias*, the *Bambusas*, and the *Phyllostachys*. They are mostly natives of India, China, and Japan, with one or two from North America. With the exception of a few Indian species, most bamboos are hardy and do well in the open, except in cold districts and in windy and exposed positions. They are very suitable subjects for semi-shaded positions. While bamboos will thrive in good garden ground, they respond to deep cultivation and liberal manuring of the ground with old rotted manure and leaf-mould, rich fibrous loam being added if the natural soil is light or poor. In exposed situations they require protection from winds, especially those from the north and east. This shelter is a most important point, for although most species can stand many degrees of frost, biting, cold winds soon turn the foliage brown and unsightly. In any case, the clumps do not assume their brilliant green colouring until June or July, being quite sombre and rather dirty in colour through the spring and
BAMBOOS, REEDS AND GRASSES

early summer months. As stated earlier, it is, therefore, essential not to plant bamboos to excess in the most prominent positions. Set them in some well-sheltered corner, a deep enclosed valley, or a depression entirely surrounded by tall shrubs and trees, forms an ideal home. Bamboos are moisture-loving plants, and during dry weather should be afforded liberal supplies of water.

Bamboos are best propagated by division of the clumps in early autumn, or better still in late spring, May and June; never during the winter or early spring. Planting is also best done at the same time. Nearly all the bamboos spread by means of a network of underground stems, and when planting, care should be taken not to set the clumps too close together, or the roots will soon become choked. The taller-growing species, as for example, Arundinaria fastuosa, A. japonica, Phyllostachys nigra, and P. viridi-glaucescens especially, must be afforded a liberal root run. An annual top-dressing of old stable manure and leaf-mould will be found very beneficial.

REEDS AND GRASSES

The taller-growing and more robust reeds and grasses—Arundo, Cortaderia, Stipa, etc—form an equally graceful and attractive group. All of them may be used in similar situations to those suitable to the bamboos. They thrive under the same treatment. In spite of their utility, and the ease with which most of them may be grown, however, ornamental grasses are not cultivated in gardens to anything like the extent they should be.

First, let us consider those splendid importations from the River Plate: Cortaderia argentea (Pampas Grass); C. a. elegans; and O. conspicua, syn Arundo conspicua (Silvery Reed-grass, from New Zealand). In severe winters these should have some dry, strawy litter thrown over them, and a few spruce boughs or branches of evergreen shrubs placed round to prevent the litter from blowing away.

The Pampas Grass is decidedly the king of all grasses, and deserves a place in every garden. As the centre group of a small grass plot, or placed in a shady dell, near rocks or water, it finds a congenial home. A rich loamy soil, at least, two
FEET DEEP, ABUNDANCE OF SPACE TO UNFOLD ITS LARGE, GRACEFUL LEAVES AND THROW UP ITS FLOWER-STEMS, A LIBERAL SUPPLY OF WATER IN SUMMER, AND SHELTER FROM STRONG WINDS ARE ALL THE CONDITIONS ITS SUCCESSFUL CULTURE DEMANDS. IT CAN BE RAISED FROM SEEDS, AND WITH LIBERAL TREATMENT SEEDLINGS WILL FLOWER IN THEIR THIRD OR FOURTH YEAR. BY SOWING THINLY IN FEBRUARY OR MARCH IN POTS, AND PLANTING OUT IN A PREPARED SHELTERED BED IN MAY, ALMOST A SEASON MAY BE GAINED IN THE GROWTH OF THE PLANTS. THE PAMPAS GRASS CAN ALSO BE RAPIDLY INCREASED BY DIVISION, BUT THIS SHOULD BE DONE IN THE OPEN GARDEN IN MAY ONLY WHEN GROWTH IS RE-COMMENCING.

A COMPANION GRASS TO THIS, WITH BROAD-STRIPED FOLIAGE AND LARGE, FEATHERY FLOWERS, IS ENANTHUS RAVENNEA, THE WOOLLY BEARD GRASS, WHICH GROWS TO FOUR OR MORE FEET IN HEIGHT. OTHER TALL-GROWING GRASSES ARE: ARUNDO DONAX AND A. CONSPICUA SYN (CORIADERIA CONSPICUA), WHICH MUCH REMISELBS THE PAMPAS GRASS, AND A BEAUTIFUL AND LITTLE-KNOWN KIND, GLYCERIA AQUATICA VARREGATA. THE TUSsock GRASS, DESCHAMPSIA, AND SOME OF THE COMMON REEDS AND RUSHES ALSO FORM BEAUTIFUL FEATURES WHEN USED IN CONNECTION WITH THESE.


ALL THE HARDY PERENNIAL GRASSES MAY BE RAISED FROM SEED SOWN IN A NURSERY BED OF FINE SOIL IN THE OPEN IN MAY AND JUNE, BEING TRANSPLANTED TO THEIR PERMANENT POSITIONS A YEAR LATER. IF SOWN UNDER GLASS IN MARCH, GROW IN A FRAME AND PLANT OUT IN THE OPEN IN THE NEXT OCTOBER. ALL GRASSES SOWN WHERE THEY ARE TO GROW MUST BE THINNED WHEN FROM TWO TO THREE INCHES HIGH, IF BUSHY PLANTS ARE TO RESULT. ALMOST ALL SPECIES THRIVE IN GOOD, WELL-DRAINED LOAM, IN A SUNNY, OPEN POSITION. IN COLD AND DAMP SITUATIONS, IT IS SOMETIMES NECESSARY TO TREAT MANY OF THE PERENNIALS AS ANNUALS AND TO RAISE FRESH PLANTS EACH YEAR. PERENNIAL GRASSES ARE ALSO PROPAGATED BY DIVISION OF ROOTS EITHER IN APRIL OR OCTOBER.
**SOME HARDY BAMBOOS**

**Arundinaria**

<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arundinaria anceps</td>
<td>Purple brown Stems</td>
<td>10-15 ft</td>
</tr>
<tr>
<td>&quot; auricoma</td>
<td>Purplish green Stems and Yellow Variegated Foliage</td>
<td>3-4 ft</td>
</tr>
<tr>
<td>&quot; chrysantha</td>
<td>Purplish green, striped with Yellow</td>
<td>3-4 ft</td>
</tr>
<tr>
<td>&quot; Falconeri*</td>
<td>Feathery Foliage</td>
<td>20-25 ft</td>
</tr>
<tr>
<td>&quot; fastuosa</td>
<td>Rich Green Foliage</td>
<td>18-20 ft</td>
</tr>
<tr>
<td>&quot; Fortunei</td>
<td>Variegated Foliage</td>
<td>About 2 ft</td>
</tr>
<tr>
<td>&quot; graminea</td>
<td>Grass-like Foliage</td>
<td>8-10 ft</td>
</tr>
<tr>
<td>&quot; japonica (syn Bambusa Metake)</td>
<td>Common Bamboo</td>
<td>10-15 ft</td>
</tr>
<tr>
<td>&quot; ntada</td>
<td>Purple brown Stems</td>
<td>9-10 ft</td>
</tr>
<tr>
<td>&quot; Sumanu</td>
<td>Vivid Green Foliage</td>
<td>15-20 ft</td>
</tr>
<tr>
<td>&quot; Vetchhu (syn Bambusa albo marginata)</td>
<td>Spreads rapidly</td>
<td>1-3 ft</td>
</tr>
</tbody>
</table>

**Bambusa**

<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bambusa disticha</td>
<td>Short Zig zag Stems</td>
<td>2 ft</td>
</tr>
<tr>
<td>&quot; quadrangularis</td>
<td>Square Stems</td>
<td>8-12 ft</td>
</tr>
</tbody>
</table>

**Phyllostachys**

<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phyllostachys aurea</td>
<td>Yellowish green Stems</td>
<td>10-12 ft</td>
</tr>
<tr>
<td>&quot; Castellana</td>
<td>Dark Green and Yellow Stems</td>
<td>9-10 ft</td>
</tr>
<tr>
<td>&quot; flexuosa</td>
<td>Green to Dark Brown Stems</td>
<td>6-8 ft</td>
</tr>
<tr>
<td>&quot; Henonis</td>
<td>Arching Stems</td>
<td>10-12 ft</td>
</tr>
<tr>
<td>&quot; nigrans</td>
<td>Black Stems</td>
<td>12-20 ft</td>
</tr>
<tr>
<td>&quot; Quilico</td>
<td>Dark Green Stems</td>
<td>15-20 ft</td>
</tr>
<tr>
<td>&quot; ruscifoha</td>
<td>Zig-zag Stems</td>
<td>1-2 ft</td>
</tr>
<tr>
<td>&quot; viridi glaucescens</td>
<td>Bright Green to Yellow</td>
<td>12-20 ft</td>
</tr>
</tbody>
</table>

* Suitable only for the south and west of England or for Ireland

For full cultural details, suitable soils and situations, propagation, heights, description of foliage, etc., see the paragraphs devoted to the particular plants in the Alphabetical List of Shrubs and Trees, Chapter XXXV

**GRASSES**

*Note*—The undermentioned grasses are not strictly woody, but have herbaceous stems with perennial root stocks. For this reason, they are not included in the Alphabetical List of Shrubs, Chapter XXXV, but are recommended for association with trees and shrubs by the waterside and in shrub beds and borders where the soil is moist, or at least not dry and sandy

<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arundo Donax (Great Reed)</td>
<td>Glaucous Leaves and Canes</td>
<td>10 ft</td>
</tr>
<tr>
<td>&quot; macrophylla</td>
<td>Very Large Leaves</td>
<td></td>
</tr>
<tr>
<td>&quot; variegata</td>
<td>Creamy white Variegated Foliage</td>
<td></td>
</tr>
<tr>
<td>Cortaderia argentea (syn Glyceria)</td>
<td>Creamy Plumes, Autumn</td>
<td>6-8 ft</td>
</tr>
<tr>
<td>&quot; argentea (Pampas Grass)</td>
<td>Conspicua</td>
<td>6-8 ft</td>
</tr>
<tr>
<td>&quot; Elymus arenaria (Lyme Grass)</td>
<td>Silvery Plumes, Autumn</td>
<td>2-6 ft</td>
</tr>
<tr>
<td>&quot; Eranthis Hostu</td>
<td>Glaucous Leaves</td>
<td>2-6 ft</td>
</tr>
<tr>
<td>&quot; Ravennae (Woolly Beard Grass)</td>
<td></td>
<td>4-5 ft</td>
</tr>
<tr>
<td>Glycera aquatica variegata (Variegated Manna Grass)</td>
<td>Green and White Leaves</td>
<td>2 ft</td>
</tr>
<tr>
<td>Miscanthus japonicus var zebrinus (Striped Zebra Rush)</td>
<td>3-4 ft</td>
<td></td>
</tr>
<tr>
<td>&quot; sacchariflorus</td>
<td>7-8 ft</td>
<td></td>
</tr>
<tr>
<td>&quot; sinensis var variegatus and zebrinus</td>
<td>3-5 ft</td>
<td></td>
</tr>
<tr>
<td>Panicum virgatum (Hare’s Tail Grass)</td>
<td>3-5 ft</td>
<td></td>
</tr>
<tr>
<td>Phalaris arundinacea (Ribbon Grass)</td>
<td>3-5 ft</td>
<td></td>
</tr>
<tr>
<td>&quot; var variegata</td>
<td>3-5 ft</td>
<td></td>
</tr>
<tr>
<td>Spartina polystachya (Reed Grass)</td>
<td>6-8 ft</td>
<td></td>
</tr>
<tr>
<td>&quot; aureo variegata</td>
<td>6-8 ft</td>
<td></td>
</tr>
<tr>
<td>Stipa arundinacea (Feather Grass), S pennata and S splendens</td>
<td>2-3 ft</td>
<td></td>
</tr>
</tbody>
</table>
THE art of dwarfing trees is of great antiquity. In Japan it has been long fostered as an aristocratic accomplishment, with its expert teachers and being treated as a special subject in horticultural education. The object is to produce in miniature, that is, in a form and size enabling it to be presented in a china pot, the shape and outline of a great forest tree. Even when 50 or as much as 100 years old, these "freaks" will not exceed 2 or 3 feet in height. If they had been left to grow naturally, they would probably have reached a height of 100 feet or more. But the method of bringing about this dwarfing is not so utterly unnatural as it at first sight appears to be. Similar results, though far less in degree, are produced quite naturally, as may be seen in pines and other trees growing in exposed places, half starved on a mountain side, and among rocks. Many an old pine tree growing on thin soil, with its head repeatedly battered by wind and storm, presents much that same twisted, knotted, deformed appearance so characteristic of many of the dwarf pot-grown trees of Japan.

When raised from seeds, the latter are selected from the poorest specimens of their kind, and are sown in poor soil in small pots. When the young plants appear, the central shoot is pinched off just above the first two normal leaves. Two lateral shoots result, the more vigorous of these is again pinched off. Only sufficient water is given to keep the plants alive. As soon as it becomes long enough, the shoot may be bent or trained in a serpentine or twisted manner, and often abnormal development is produced by the tying of tight strings round it at intervals. Buds and branches are, where it is necessary to the appearance aimed at, nipped off. The principal roots are also cut, mutilated and restricted, and the plant is only repotted at intervals of several years, and then
JAPANESE DWARF TREES

only into a pot a fraction larger than the previous one, poor soil always being used. Instead of raising these plants from seed, it is sometimes possible to find on mountains or cliff sides naturally stunted and deformed specimens which, when all but the barest necessary roots have been removed, can be transferred to pots and treated in such a manner as just to keep the plant from dying. In cultivating Japanese dwarf trees in England, many people make the mistake of attempting to grow them indoors. As a matter of fact, they are hardy and should for the most part be grown in a partially sheltered position out of doors, on the outside window-sill, or in a cool or cold greenhouse, and should be brought into the house for occasional use only. Every spring, at least, they should be hard pruned, unnecessary buds being nipped off as they appear. Every three or four years a little of the old soil may be changed, and the plant replaced either in its old pot or in another but little larger. The soil should, as a rule, be a mixture of poor loam, peat and sand in equal parts. In repotting, as much of the old soil as can easily be removed should be rubbed off, a little fresh mould being placed at the bottom of the pot, the plant being replaced and the sides filled in with fresh soil, firmly pressed with a stick. The plant should then be well watered.

The trees and shrubs most favoured by the Japanese for dwarfing purposes include Cupressus obtusa, the Japanese Maples, the Oak, the Larch, Pinus montana and the Wistaria.

FIG 6—JAPANESE DWARF TREES.
Pinus Thunbergi
Cupressus obtusa.

S. & T.  H  113
TOPIARY OR CLIPPED TREES

CHAPTER XXII

CLIPPED evergreen trees suitably placed in the formal garden, or when used to ornament the tops of hedges, are always a striking and interesting feature. They give an air of peaceful old-world dignity to the garden, and this is a very valuable asset in these times of modern rush and bustle. In some of the old country seats of Britain large and most fascinating collections of these trees, neatly clipped into all manner of shapes, form a most interesting feature, while in cottage gardens it is not unusual to find trees or bushes carefully and skilfully trimmed into the shape of a bird, animal, or some other design.

Topiary is an ancient art. We know that it was practised by the Romans. The great gardener, Le Notre, who designed the famous gardens of Versailles, delighted in it, and he introduced many fine examples of the craft into his gardens. The art of topiary reached its zenith early in the 16th century, but about 1750 gardeners began to forsake the formal garden, and an era of "natural" gardening ensued. At the beginning of the 20th century, however, topiary again came into favour in British gardens, and many examples of the art were imported from Holland, where it had never ceased to be popular. For this reason, a garden in which clipped trees largely feature is still called a "Dutch garden". During and since the Great War, however, because of the labour necessary in their upkeep and the high price of really good examples, its popularity has not been maintained, though, in the present-day formal villa garden, quite a considerable number find a place either planted out or in tubs.

Yews are the trees most generally employed to form these living ornaments, but the Box, Bay and Holly serve the purpose almost as well, in fact, any evergreen that will submit to the frequent use of the clippers will serve. The bushes
TOPIARY OR CLIPPED TREES

take some years to acquire size and an established shape, and are, therefore, usually purchased when already well formed. Numerous shapes, such as balls and cones, spirals, pyramids,

FIG 7—EXAMPLES OF TOPIARY WORK OR CLIPPED TREES

various animals and birds, and articles of domestic interest are obtainable. The bushes need considerable attention after transplanting as regards watering, and very careful clipping, usually several times during the summer, so that they shall keep their shape.
ONE of the chief things to be borne in mind in the selection of shrubs and trees for town gardens is that it is necessary to select, as far as possible, those whose leaves are moderately smooth, or even glossy. The clogging of the pores by soot and smoke is a great danger to the town plant, and one which bears a leaf having a surface which does not catch the dirt, and is smooth enough to be washed clean by a fairly heavy shower or by a good dousing with a syringe or garden hose, has a far better chance of a healthy life than one without this advantage. This rule holds good especially in the case of the evergreen shrubs, which have to keep their leaves in working order throughout the smoky town winter season. As far as possible, therefore, choose for town use shrubs with glossy or smooth leaves. Deciduous trees and shrubs, naturally, better withstand an atmosphere impregnated with acrid fumes and soot, for they receive a new furnishing of leaves each year. It is practically useless to plant conifers in the vicinity of factory chimneys.

Many flowering and ornamental shrubs, especially several of those lately imported from the East, do quite well in town gardens, and a glance at the list at the end of this chapter will show the reader that he has a fairly wide choice of subjects. Much naturally depends on the size of the garden, and before a final selection is made, the habit, growth and ultimate size of the particular plant chosen should be ascertained from the alphabetical list (chapter XXXV). I can here only mention a few subjects. The Lilac, for example, blooms freely, and does well as a screen, since it shows a little green in the summer. Aucuba japonica is the best tall evergreen in shaded positions. The Euonymus does very well in smoke, and retains its foliage. Fatsia japonica, the Japanese Aralia, is a very good town shrub. The two best Rhododendrons for permanent
SHRUBS FOR THE TOWN GARDEN

planting in town gardens are Cunningham's White and Cunningham's Blush Dwarf Roses, especially the free-flowering Hybrid Tea and the Dwarf Polyantha varieties are amenable to culture in the town garden, provided the soil is suitable. Trees are not often wanted in the very small garden, but where one or two can be accommodated there are a number of different kinds suitable for town culture from which to make a selection. Choose a tree that will give a variety of blossom, ornamental fruit and leaf colour changes. The Mountain Ash, the Purple-leaved Plum, and the False Acacia (Robinia) are all quite at home in the smoke of towns. (For other suitable trees see the list below.) Good shrubs for the town garden are the evergreen Barberry (Mahonia Aquifolium), Holly, Box, Cotoneaster Simonsii, Laurustinus and Pyracantha. All these are evergreen. See also list, page 118.

Do not plant too many privet hedges in the town garden, they deplete the surrounding soil of much of its goodness. Berberis stenophylla, Aucuba japonica, Cherry Laurel, Pyracantha Lalandii, Rhododendron Cunningham's White, and Viburnum Tinus make far more beautiful and satisfactory hedges, and thrive in the town garden.

As regards tall trees, four of the most satisfactory are the London Plane, the Sycamore, the Catalpa and the Tree of Heaven.

Town gardens almost invariably need lime to counteract the sulphurous acid that is washed into the ground from the smoke-laden atmosphere. The soil is usually poor in nitrates and phosphates, but rich in humus and potash, and a considerable trace of sulphuric acid, due to smoke, is present. Such soil will benefit by the application of basic slag and bone-meal, applied at the rate of two ounces of each to the square yard. Although there is some lime in basic slag, additional lime should be applied at the rate of four ounces to the square yard to counteract the injurious effect of the sulphurous acid.

Because the shrubs and trees have to battle against unfavourable climatic conditions, it is most important that special attention should be given to the preparation of the soil. Not only is it desirable to trench the ground before
SHRUBS FOR THE TOWN GARDEN

planting but unless the existing soil is good, in addition to incorporating manures, take away some of the underneath soil, and replace it with good fibrous loam.

SOME SHRUBS AND TREES SUITABLE FOR TOWN GARDENS

<table>
<thead>
<tr>
<th>Shrubs and Trees</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer Pseudoplatanus (Sycamore)</td>
<td>Linodendron Tuluifera (Tulip Tree)</td>
</tr>
<tr>
<td>Acer rubrum (Red Maple)</td>
<td>Lonicera [some vars.] (Bush Honey suckle)</td>
</tr>
<tr>
<td>Aesculus [most] (Horse Chestnut)</td>
<td>Magnolia conspicua</td>
</tr>
<tr>
<td>Ailanthus glandulosa (Tree of Heaven)</td>
<td>Magnolia stellata</td>
</tr>
<tr>
<td>Alnus glutinosa</td>
<td>Magnolia Aquifolium</td>
</tr>
<tr>
<td>Amelanchier laevis</td>
<td>Oleanna Haastii (NZ Daisy Bush)</td>
</tr>
<tr>
<td>Aucuba japonica</td>
<td>Osmanthus Aquifolium</td>
</tr>
<tr>
<td>Berberis stenophylla</td>
<td>Paulownia imperialis</td>
</tr>
<tr>
<td>Berberis vulgaris</td>
<td>Phillyrea media (Mock Privet)</td>
</tr>
<tr>
<td>Betula verrucosa (Silver Birch)</td>
<td>Platanus acerifolia (Plane)</td>
</tr>
<tr>
<td>Buxus sempervirens var Handsworthi (Box)</td>
<td>Prunus Amygdalus (Almond)</td>
</tr>
<tr>
<td>Catalpa bignonioides (Indian Bean Tree)</td>
<td>Prunus Avium fl pl</td>
</tr>
<tr>
<td>Cercis siliquastrum (Judas Tree)</td>
<td>Prunus laurocerasus (Cherry Laurel)</td>
</tr>
<tr>
<td>Clematis (various)</td>
<td>Prunus Persica fl pl (Double Peach)</td>
</tr>
<tr>
<td>Cornus alba sibirica (Dogwood)</td>
<td>Prunus cerasifera Pissardii (Purple leaved Plum)</td>
</tr>
<tr>
<td>Colutea arborescens (Bladder Senna)</td>
<td>Pyrus Aucuparia (Mountain Ash)</td>
</tr>
<tr>
<td>Cotoneaster horizontalis</td>
<td>Pyrus baccata (Siberian Crab)</td>
</tr>
<tr>
<td>Cotoneaster microphylla</td>
<td>Pyracantha coccinea Lalandii (Evergreen Thorn)</td>
</tr>
<tr>
<td>Cotoneaster Smouni</td>
<td>Rhododendrons Cunningham's White and Cunningham's Blush</td>
</tr>
<tr>
<td>Crataegus orientalis</td>
<td>Rhus typhinaus (Sumach)</td>
</tr>
<tr>
<td>Crataegus oxyacantha (Hawthorn)</td>
<td>Ribes sanguineum (Currant)</td>
</tr>
<tr>
<td>Cydonia japonica (Quince)</td>
<td>Robina Pseudacacia</td>
</tr>
<tr>
<td>Daphne Mezerem</td>
<td>Sambucus nigra</td>
</tr>
<tr>
<td>Derrvula [various] (Waygela)</td>
<td>Sambucus nigra var folius aureus</td>
</tr>
<tr>
<td>Euonymus japonicus (Spindle Tree)</td>
<td>Skimmia japonica</td>
</tr>
<tr>
<td>Fagus sylvatica var purpurea (Purple Beech)</td>
<td>Spiraeas (various)</td>
</tr>
<tr>
<td>Forsythia [various] (Golden Bell)</td>
<td>Symphoricarpus racemosus (Snowberry)</td>
</tr>
<tr>
<td>Fraxinus Ormus (Ash)</td>
<td>Syringa [Lilac] (numerous)</td>
</tr>
<tr>
<td>Ginkgo biloba (Maidenhair Tree)</td>
<td>Viburnum Opulus var sterile</td>
</tr>
<tr>
<td>Hodera [various] (Ivy)</td>
<td>Viburnum tomentosum var plicatum</td>
</tr>
<tr>
<td>Hibiscus syriacus (various)</td>
<td>Viburnum Tinus (Laurostunus)</td>
</tr>
<tr>
<td>Hypericum calycinum</td>
<td>Vinca (Periwinkle)</td>
</tr>
<tr>
<td>Ilex Aquifolium (Holly)</td>
<td>Wistaria sinensis</td>
</tr>
<tr>
<td>Jasminum nudiflorum</td>
<td>Yucca gloriosa (Adam's Needle)</td>
</tr>
<tr>
<td>Jasminum officinialis</td>
<td>Yucca recurvifolia</td>
</tr>
<tr>
<td>Juglan regia (Walnut)</td>
<td></td>
</tr>
<tr>
<td>Kerria japonica fl pl</td>
<td></td>
</tr>
<tr>
<td>Laburnum vulgare</td>
<td></td>
</tr>
<tr>
<td>Ligustrum (Privet)</td>
<td></td>
</tr>
</tbody>
</table>

For colour of flowers, period of bloom, height, description of foliage, soil and situation, propagation, and other cultural details, see Alphabetical List of Shrubs and Trees, Chapter XXXV.
TREES FOR SPECIMENS ON LAWNS AND
FOR STREET PLANTING

CHAPTER XXIV

TREES used as specimens on lawns may be of tall spreading growth, fastigiate, of upright form, or weeping in habit. They are seen to the best advantage when placed singly in prominent positions, and must not be planted too regularly or to excess, a green sweep of lawn should always be the outstanding feature. That which would otherwise be an uninteresting expanse of turf being relieved by specimens of handsome and striking growth so arranged that they are, if possible, viewed over a stretch of green grass. Above all, a "spotty" effect must be avoided. The following lists of trees, both deciduous and evergreen, for specimen planting show that there is no dearth of these interesting subjects.

TREES OF PENDULOUS HABIT

Weeping trees are unsuitable for grouping, but very valuable for planting as specimen trees on the lawn, and by the water side. Here again, they must be planted sparingly, one, correctly positioned, can be most effective, but a group may look anything but pleasing. It is unwise to strive for a contrast by planting them in proximity to trees of erect growth, rather should they be placed near bushes of rounded and spreading habit.

Some of these weeping trees, as for example: *Prunus pendula, Salix babylonica, S vitellina pendula* and *Tilia petiolaris*, are naturally of pendulous habit, and come true from seeds, but the majority are "sports," or variations from trees of normal habit. They are usually budded or grafted on to an upright stock of the type. Most of these weeping trees are deciduous by nature, and there are few evergreens of pendulous habit, the hollies being the most notable exception.
STREET PLANTING

Some of the weeping forms of more vigorous growth, the Ash, Beech, Elm, and Willow, for instance, are frequently grown on standards 8-12 feet or even more in height, and their branches hang down more or less in the form of a circle until they ultimately reach the ground and form shelters and shady arbours, underneath which seats may be placed, being naturally well shaded from the summer sun. (See also list, page 122)

TREES FOR STREET PLANTING

Of recent years considerable attention has been paid to the beautifying of our streets and highways by the planting of ornamental, flowering and shade-giving trees. Ornamental, and in some cases flowering, trees are being grown in great quantities in nurseries for planting along our new arterial roads, these being, in places where opportunity offers, supplemented by banks of shrubs and flowers. One interesting experiment is the planting of tall Lombardy poplars at cross-roads to warn the motorist of their presence. In narrow streets trees are, naturally, altogether out of place, but where space permits they add greatly to the beauties of the road.

Should shade be desired, the Ash, Beech, Chestnut, Elm, Lime, Maple, Plane, Poplar, or Sycamore may be planted, where blossom is the aim, such trees as Acacias, Horse Chestnuts, Flowering Cherries, Mountain Ashes, Crabs or Plums will be found to meet the case. (See also list, p 122)

The trees are usually planted down either side of the road at regular intervals, but where the road is sufficiently wide, a row of trees down the centre is most effective, giving three lines of trees in all. This central line of trees, however, must not be continuous, for on long roads traffic must have space now and again to pass from one side of the street to the other.
DECIDUOUS TREES FOR SPECIMEN PLANTING

For cultural details, soils and situation, propagation, colour of flowers, times of blooming, description of foliage, heights, etc., see Alphabetical List of Shrubs and Trees, Chapter XXXV

Acer dasycarpum (Silver Maple)
A macrophyllum (Oregon Maple)
A rubrum (Red Maple)
Aesculus carnea (Red Chestnut)
A Hippocastanum (Horse Chestnut)
A indica (Indian Chestnut)
Ailanthus glandulosa (Tree of Heaven)
Alnus cordata (Alder)
Betula pubescens (White Birch)
B verrucosa (Silver Birch)
Carpinus Betulus (Hornbeam)
Carya cordiformis (Bitter Nut)
Castanea sativa (Spanish Chestnut)
Catalpa bignonioides (Indian Bean)
C speciosa (Western Catalpa)
Corylus Columna (Constantinople Nut)
Davidia Vilmoriana (Chinese Dove Tree)
Fagus sylvatica (Beech)
P s purpurea (Copper Beech)
Fraxinus americana (White Ash)
P excelsior (Ash)
P Ornus (Manna Ash)
Ginkgo biloba (Maidenhair Tree)
Gleditscha japonica (Honey Locust)
Juglans nigra (Black Walnut)
Liquidambar styraciflua (Sweet Gum)
Liriodendron Tulipifera (Tulip Tree)
Nyssa sylvatica (Tupelo)
Platanus acerifolia (London Plane)
P orientalis (Oriental Plane)
Populus canescens (Grey Poplar)
P trichocarpa (Black Cottonwood)
Quercus castanefolia (Chesnut leaved Oak)
Q Cerris (Turkey Oak)
Q coccinia splendens (Scarlet Oak)
Q Lucombeana (Lucombe Oak)
Q pedunculata (Common Oak)
Q rubra (Red Oak)
Q sessiliflora (Durmast Oak)
Robinia Pseudacacia (False Acacia)
Salix Salamoni (Hybrid Willow)
Sophora japonica
Tilia euclora (Lime)
T peticolaris (Pendent Silver Lime)
Ulmus carpinifolia Louis van Houtte (Golden Elm)
U montana (Wych Elm)
U nitens (Smooth leaved Elm)
U stricta Wheatley (Guernsey Elm)
Zelkova crenata

DECIDUOUS TREES OF FASTIGIATE OR UPRIGHT HABIT

Aesculus Hippocastanum pyramidalis (Horse Chestnut)
Betula verrucosa (alba) fastigiata (Birch)
Carpinus Betulus columnaris (Hornbeam)
C Betulus pyramidalis
Crataegus monogyna stricta (Thorn or May)
Fagus sylvatica fastigiata (Beech)
Liriodendron Tulipifera fastigiata (Tulip Tree)
Populus alba pyramidalis (White Poplar)
P nigrum italica (Black Poplar)
Pyrus pinnatifida fastigiata
Quercus pedunculata fastigiata (Oak)
Robinia Pseudacacia fastigiata (False Acacia)
Taxodium distichum
Ulmus montana fastigiata (Wych Elm)
U stricta Wheatley (Guernsey Elm)

SPECIMEN FLOWERING TREES OF MODERATE SIZE FOR LAWN PLANTING

Aesculus carnea Briotii (Red Horse Chestnut)
Amelanchier Lavis (June berry)
Crataegus Carrierei
t orientalis
" ovyanthodes fl pl albo (Double White Thorn)
" fl pl coccineo (Double Crimson Thorn)
" fl puniceo (Paul's Scarlet Thorn)
" prunifolia (North American Thorn)
Fraxinus Ornus (Flowering Ash)
Laburnum alpinum
" Watereri
Prunus Amygdalus (Almond)
Prunus Avium fl pl (Double Gean)
" cerasi perissardu
" Persica Clara Meyer (Double Peach)
" serrulata alba plena (James H Veitch)
" Sekiyama (Red Japanese Cherry)
" Padus flore pleno (Double Bird Cherry)
Pyrus Aucuparia (Mountain Ash)
" Eleysz
" prunifolia
" purpurea
" Schuettekern
" spectabilis Kaido
### CONIFERS FOR SPECIMEN PLANTING

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies brachyphylla</td>
<td>Pungens</td>
</tr>
<tr>
<td>A nobilis and A pectinata</td>
<td>Pinus excelsa</td>
</tr>
<tr>
<td>A Pinus Sylvestris glauca</td>
<td>P Laricio and P sylvestris</td>
</tr>
<tr>
<td>Cedrus atlantica and var glauca</td>
<td>Pseudolarix Fortunei</td>
</tr>
<tr>
<td>*Cephalotaxus pendulicola fastigiatata</td>
<td>Pseudotsuga taxifolia (Douglasii)</td>
</tr>
<tr>
<td>Cupressus Lawsoniana and var</td>
<td>Sequoia gigantea (Wellingtonia)</td>
</tr>
<tr>
<td>C macrocarpa and C obtusa</td>
<td>S sempervirens (Redwood)</td>
</tr>
<tr>
<td>*C. sempervirens fastigiatata</td>
<td>Taxus baccata fastigiatata (Irish Yew)</td>
</tr>
<tr>
<td>*Juniperus communis hibernica</td>
<td>Thuya occidentalis</td>
</tr>
<tr>
<td>*Juniperus chinensis</td>
<td>T orientalis</td>
</tr>
<tr>
<td>*Libocedrus decurrens</td>
<td>T plicata pyramidalis</td>
</tr>
<tr>
<td>Picea excelsa</td>
<td>Tsuga heterophylla (Redwood)</td>
</tr>
<tr>
<td>P. Morinda</td>
<td>*Note — These are fastigiatia or upright-branched trees</td>
</tr>
</tbody>
</table>

### PENDULOUS OR WEEPING TREES

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betula verrucosa (alba) pendula</td>
<td>Prunus Mahaleb pendula (St Lucia Cherry)</td>
</tr>
<tr>
<td>B. v. Youngii (Young's Weeping Birch)</td>
<td>Prunus serrulata rosea (Cheal's Weeping Cherry)</td>
</tr>
<tr>
<td>*Cedrus Deodara pendula (Deodar)</td>
<td>*P subhirtella pendula (Rosebud Cherry)</td>
</tr>
<tr>
<td>†Crataegus monogyna pendula (Thorn)</td>
<td>*Pyrus Aucuparia pendula (Mountain Ash)</td>
</tr>
<tr>
<td>*Cupressus Lawsoniana intertexta</td>
<td>*Malus pendula</td>
</tr>
<tr>
<td>*Fagus sylvatica pendula (Beech)</td>
<td>Salix babylonica (Willow)</td>
</tr>
<tr>
<td>*F. s. purpurea pendula (Copper Beech)</td>
<td>S Caprea pendula (Goat Willow)</td>
</tr>
<tr>
<td>*F. s. purpurea pendula fastigiata</td>
<td>S elegansissima</td>
</tr>
<tr>
<td>*F. s. purpurea pendula (Copper Beech)</td>
<td>S vitellina pendula</td>
</tr>
<tr>
<td>*Fraxinus excelsior pendula (Ash)</td>
<td>Sequoia gigantea pendula</td>
</tr>
<tr>
<td>Ginkgo biloba pendula</td>
<td>Sophora japonica pendula</td>
</tr>
<tr>
<td>Ilex Aquifolium pendula (Holly)</td>
<td>Taxus baccata pendula</td>
</tr>
<tr>
<td>I. A. argentea pendula (Silver Holly)</td>
<td>Tilia petiolaris (syn T. alba pendula)</td>
</tr>
<tr>
<td>I. A. aurea pendula (Golden Holly)</td>
<td>(White Weeping Lime)</td>
</tr>
<tr>
<td>†Laburnum vulgare pendulum</td>
<td>*Tsuga canadensis pendula</td>
</tr>
<tr>
<td>*Morus alba pendula (White Mulberry)</td>
<td>*Ulmus montana pendula (Wych Elm)</td>
</tr>
<tr>
<td>*Picea excelsa pendula (Spruce)</td>
<td>Unitez pendula</td>
</tr>
<tr>
<td>*P. Morinda (Himalayan Spruce)</td>
<td>*Ulmus stncta (Cormsh Elm)</td>
</tr>
<tr>
<td>*Populus tremula pendula (Aspen)</td>
<td>*Ulmus stncta Wheatley's (Guernsey Elm)</td>
</tr>
<tr>
<td>*P. tremuloides pendula (Parasol de Julchen)</td>
<td>*Make good arbours</td>
</tr>
<tr>
<td>†Prunus Amygdalus pendula</td>
<td>*Carry Blossom</td>
</tr>
<tr>
<td>†Prunus Mahaleb pendula</td>
<td>†Conifers</td>
</tr>
</tbody>
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### SOME TREES FOR ROAD, STREET AND AVENUE PLANTING

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species Name</th>
</tr>
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<tbody>
<tr>
<td>Acacia Pseudacacia</td>
<td>Fraexinus excelsior heterophylla</td>
</tr>
<tr>
<td>Acer platanoides (Norway Maple)</td>
<td>Ginkgo biloba (Maidenhair Tree)</td>
</tr>
<tr>
<td>Acer platanoides var Schwedleri</td>
<td>Liriodendron Tulipifera (Tulip Tree)</td>
</tr>
<tr>
<td>Acer Pseudo platanus (Sycamore)</td>
<td>Platanus acerifolia (Plane)</td>
</tr>
<tr>
<td>*Aesculus carnea</td>
<td>Populus alba pyramidalis (Poplar)</td>
</tr>
<tr>
<td>*A. Hippocastanum (Horse Chestnut)</td>
<td>Populus trichocarpa</td>
</tr>
<tr>
<td>*A. Hippocastanum flore pleno</td>
<td>*Prunus Avenum flore pleno (Double Gean)</td>
</tr>
<tr>
<td>*Aesculus plantherensis</td>
<td>*Prunus cerasifera Pissardi</td>
</tr>
<tr>
<td>Althas glandulosa (Tree of Heaven)</td>
<td>*Prunus serrulata Sekiyama (Jap Cherry)</td>
</tr>
<tr>
<td>*Betula pubescens (White Birch)</td>
<td>*Pyrus Aucuparia (Mountain Ash)</td>
</tr>
<tr>
<td>*Betula verrucosa (Silver Birch)</td>
<td>Quercus Cerris (Oak)</td>
</tr>
<tr>
<td>*Carpinus Betulus columbiae (Hornbeam)</td>
<td>Salix corylifolia (Willow)</td>
</tr>
<tr>
<td>*Carpinus Betulus pyramidalis</td>
<td>*Tilia euchlora (Lime)</td>
</tr>
<tr>
<td>*Davidia involucrata (Chinese Dove Tree)</td>
<td>*Tilia petiolaris</td>
</tr>
<tr>
<td>Fagus sylvatica (Beech)</td>
<td>*Ulmus stricta (Cornish Elm)</td>
</tr>
<tr>
<td>Fagus sylvatica purpurea (Purple Beech)</td>
<td>*Ulmus stricta Wheatley's (Guernsey Elm)</td>
</tr>
</tbody>
</table>

* Trees of medium growth suitable for streets and roads of moderate width

**Note** — These are only a few of the trees most generally employed for this purpose, but the range may, of course, be increased indefinitely. Flowering trees, and those that offer foliage tints, are especially suitable, so are many of the subjects given under the list of trees for specimen planting, page 121.
TREES AND SHRUBS FOR THE SMALL GARDEN

CHAPTER XXV

See also lists, page 236.

Trees are not, as a rule, wanted in the very small garden, which is generally devoted entirely to flowers and often a plot of grass. But where space will allow, two or three should be planted, if only for the interest they provide and for the air of permanence they lend. Because of the prominent positions they will occupy, considerable care should be taken to select kinds that will give variety of bloom, conspicuously ornamental fruits, good leaf colour in late summer and autumn, or possibly those that will provide shade. For this purpose Acer Negundo variegatum (Variegated Negundo), Æsculus carnea (Red Horse Chestnut), Laburnum alpinum (Scotch Laburnum), Crataegus oxyacanthoides punicea (Scarlet Thorn), Crataegus Carrierei, Prunus Amygdalus (Almond), Prunus serrulata Sekiyama (Japanese Cherry), Prunus Avium flore pleno (Double Gean), Pyrus aucuparia (Mountain Ash), Pyrus Eleyi and Pyrus Scheideckeri are all excellent.

As to shrubs, it is possible to grow, even in a moderately small garden, quite a representative collection if the less vigorous varieties of some of the dwarfer-growing species are chosen (see lists p 125). When care is exercised in the selection it will be possible to keep the shrub border in good order without over hard and continued cutting back of the branches, which would soon become necessary if the stronger-growing plants had been chosen. Excessive pruning of this nature means, in most cases, the sacrifice of all bloom, and probably the elimination of the distinctive beauty of the shrubs as individuals. Ultimate size must always be kept in mind when planting shrubs, and adequate space should be left between them.

Flowering and ornamental shrubs are now becoming such a popular feature that the owner of even the smallest of
TREES FOR THE SMALL GARDEN

gardens generally desires to include a few specimens. Space being very limited, there is all the more reason for every plant to furnish its quota of bloom, which should be available, as far as possible, throughout the year. It is here that the difficulty lies, it being no easy matter in a garden of strictly limited size to plant a sufficiently representative selection of shrubs that will also furnish a succession of bloom throughout the year, for to do this a fairly large number of varieties is necessary. If too many shrubs are planted in a small border, this will in the course of a few years become nothing but a tangle of overgrown branches. The mixed shrub and herbaceous border, in which the shrubs are set at some distance apart and with herbaceous plants in between, is a happy solution of this problem, and provides interest of a permanent nature unknown to gardeners who devote all their space to bedding plants or to annuals.

Among the herbaceous plants suitable for combining with the shrub border are Anemones (especially varieties of *A. japonica*), Astilbes, the Chimney Bellflower (*Campanula pyramidalis*), Columbines (*Aquilegia*), Funkias, Hollyhocks, Helianthus, Irises, Lilies (*L. auratum*, *L. candidum*, *L. croceum*, *L. Henryi*, *L. regale*, *L. tigrinum*, *L. testaceum*, etc.), Lythrums, Michaelmas Daisies, Phloxes, Sidalceas, Sunflowers, and Verbascums. Among the smaller plants for the front of the border in spring are* Forget-me-nots, Polyanthuses, Primroses, Violas, and many kinds of bulbs and tubers. This combined shrub and herbaceous border bids fair to become an increasingly popular feature of the small or moderate-sized garden. Even for the garden of some extent, it is well worthy of consideration, for it offers a wonderful sequence of colour and interest, and is never bare.

The various dwarf-growing shrubs and trees referred to in our chapter *Shrubs and Trees for the Rock Garden* are, naturally, also eminently suitable for cultivation in the small garden. I have here compiled lists of some of the species and varieties most desirable for the purpose under discussion, and have graded the plants according to the height to which they ultimately grow. This should help the reader to make a selection of trees and shrubs suitable for both the small and the medium-sized garden.
SHRUBS GROWING FROM 1 TO 3 FEET HIGH

For cultural details, soils and situation, propagation, colour of flowers, times of flowering, description of foliage, height, etc., see Alphabetical List of Shrubs and Trees, Chapter XXXV

- *Andromeda polifolia* (Wild Rosemary)
- *Arundinaria Fortunei* (Dwarf Bamboo)
- *Berberis candidula* (Barberry)
- *Berberis Thunbergii and B Wilsonii*
- *Calluna vulgaris* vars (Ling Heather)
- *Cistus corbariensis* (Rock Rose)
- *Cistus Loreti* (Rock Rose)
- *Cotoneaster horizontalis* (Rockspray)
- *Cotoneaster microphylla* (Rockspray)
- *Cyttisus Ardoinii* (Broom)
- *Cyttisus kerstinensis, C purpureus*, etc
- *Daphne mezereum*
- *Daphne Blagayana and D Canescens*
- *Deutzia gracilis vars*
- *Erica cannea*, etc (Heath)
- *Gaultheria Shalloni* (Shallon)
- *Gaultheria Veitchiana* (Winter Green)
- *Genista hispanica* (Spanish Broom)
- *Genista radiata, G pilosa*, etc
- *Helianthemum formosum* (Sun Rose)
- *Helianthemum ocymodes* (Sun Rose)
- *Hydrangea hortensia* vars
- *Hypericum calycinum* (Rose of Sharon)
- *Kalina glauca* (Swamp Laurel)
- *Lavandula spica* (Lavender)
- *Ledum palustre*
- *Lilium arborescens* (Tree Flax)
- *Pernettya mucronata* (Prickly Heath)
- *Philadelphus Manteau de Hermione*
- *Philadelphus microphyllus*
- *Philadelphus purpureo maculatus*
- *Phlomis fruticosa* (Jerusalem Sage)
- *Polygala Chamaebuxus* (Milk-wort)
- *Potentilla fruticosa*
- *Rhododendron hippophloides*
- *Rhododendrons impeditum, orbiculate, racemosum, scoticulans and William-stanum*
- *Ruscus aculeatus* (Butcher's Broom)
- *Sainthona Chamagynarcticus*
- *Genisio compactus*
- *Skimmia japonica*
- *Spiraea japonica Anthony Waterer*
- *Veronica salicifolia* (Speedwell)
- *Veronica Autumn Glory* (Speedwell)
- *Vinca major and V minor* (Periwinkle)
- *Yucca angustifolia*
- *Yerobora speciosa*

SHRUBS GROWING FROM 3 TO 6 FEET HIGH

- *Abelia grandiflora*
- *Aucuba japonica* (Spotted Laurel)
- *Berberis stenophylla*
- *Carpyopteris Mastanlanthus*
- *Cassina fulvida* (Golden Heath)
- *Choisy ternata*
- *Cistus cypricus* (Rock Rose)
- *Cistus tadanicus, C goreyens* (Rock Rose)
- *Cistus laurifolius* (Rock Rose)
- *Corokia Cotoneaster*
- *Cotoneaster Franchetii* (Rockspray)
- *Cydonia japonica* (Quince)
- *Cyttisus albicus* (White Broom)
- *Cyttisus nigricans and C precox*
- *Cyttisus scoparius* var Andreanuss
- *Deutzia discolor grandiflora*
- *Diervilia amabiliis* (Weigela)
- *Diervilia Eva Rathke, etc* (Weigela)
- *Enkianthus campanulatus*
- *Erica arborea* var alpina (Heath)
- *Erica lusitanica* (Heath)
- *Espaloni (various)*
- *Forsythia intermedia* and var spectabilis
- *Fuchsia* (various)
- *Genista nigricans* (Broom)
- *Hedysarum многалохорд*
- *Helenium autumnale*
- *Hypericum clatum* (St John's Wort)
- *Hypericum patulum* Henry
- *Ita virginica*
- *Jamesia americana*
- *Kerria japonica f l* pl (Jew's Mallow)
- *Lonicer a Maackii*
- *Lonicer a tartanica* (Bush Honeysuckle)
- *Lupinus arborescens* (Free Lupin)
- *Mahonia Aquifolium* (Oregon Grape)
- *Olearia Haastii* (N Zealand Daisy Bush)
- *Osmanthus Delavayi*
- *Osmanthus ichiopholium purpureum*
- *Philadelphus Lemoinei* (Apollo)
- *Philadelphus Virginal*
- *Philadelphus Vehe Lactee*
- *Piers floribunda* (Lily-of-the-Valley)
- *Piers japonica* (Bush)
- *Prunus japonica* fl albo pl
- *Rhododendrons Azaleas Ghent and Molins Hybrids, Cunningham's White, Everestanum, etc
- *Rhodotypos kernoides*
- *Ribes aureum* (Golden Currant)
- *Ribes sanguinum* (Flowering Currant)
- *Rose Species* (various)
- *Rosmarinus officinalis* (Rosemary)
- *Rubus deliciosus*
- *Spiraea arguta, bracteata and Douglass*
- *Spiraea Mensiesii triumphant*
- *Staphylea colchica* (Bladder Nut)
- *Symphoricarpus (Snowberry)*
- *Syringa* (various) (Lilac)
- *Ulex europaeus* fl pl II (Double Gorse)
- *Veronica speciosa* vars (Speedwell)
- *Viburnum Carlesii*
- *Viburnum tomentosum plicatum*
- *Yucca gloriosa* (Adam's Needle)
- *Yucca recurvifolia*
- *Zenia speciosa*

* Denotes Evergreen
SOME TREES FOR THE SMALL GARDEN

Acer Negundo variegatum
*Esculus carnea
*Acer Pavia
Amelanchier canadensis
Amelanchier lavis
Betula verrucosa
Carpinus Betulus columnaris
Cercis siliquestrum
Cornus Mas
Cotoneaster frigida
Crataegus coccinea
Crataegus Carrierei
Crataegus cordata
Crataegus orientalis
Crataegus oxyacanthoides varieties
*Cryptomeria japonica elegans
*Cupressus pisifera filifera
*Cupressus pisifera plumosa
*Cupressus pisifera squarrosa
*Cupressus pisifera squarrosa sulphurea
*Cryptomeria japonica
*Cupressus p. filifera
*Cupressus p. plumosa
*Cupressus p. squarrosa
*Cupressus p. squarrosa sulphurea
*Cupressus p. sulphurea
*Eucryphia pinnatifolia
*Euonymus europaeus
*Fraxinus Ornus
*Halesia carolina
*Hamamelis japonica arborea
*Hamamelis japonica Zuccardinana
*Flex Agguifolium varieties
*Laburnum alpinum
Laburnum Adamii
*Laurus nobilis
*Magnolia conspicua
*Magnolia Lovnei
*Magnolia salicifolia
*Magnolia Soulangiana
*Oxycodendrum arboreum
*Parrotia persica
*Pinus montana
*Prunus Amygdalus
*Prunus Avium flore pleno
*Prunus cerasifera
*Prunus cerasifera Pissardii
*Prunus Lannesiana erecta
*Prunus Lannesiana grandiflora
*Prunus Lannesiana sirotae
*Prunus Padus flore pleno
*Prunus Persica Clara Meyer
*Prunus serrulata albo pleno
*Prunus serrulata fugenzo
*Prunus serrulata Sekiyama
*Prunus subhirtella
*Prunus, Padus Watereri
*Prunus Avium flore pleno
*Prunus Avium
*Prunus baccata
*Prunus Elegy
*Prunus floribunda
*Prunus purpurea
*Prunus Sargentii
*Prunus Scheideckeri
*Prunus spectabilis
*Robinia hispida
*Styrax japonicus
*Ulmus montana pendula

Variegated Box Elder 20-40 ft
Red Horse Chestnut 25-50
Red Buckeye 15-20
Service Berry 15-30
June Berry 20-30
Silver Birch 30-50
Upright Hornbeam 30-75
Julias Tree 15-20
Cornelian Cherry 10-25
Rockspray up to 20
Scarlet Hawthorn 15-20
Hybrid Thorn 15-20
Washington Thorn 15-20
Oriental Thorn 15-20
Single & Double May Trees 15-20
North American Thorn 15-20
Japanese Cedar 10-15
Sawara Cypress 20-30
Variety of Sawara Cypress 20-30
Common Quince 10-20
Chilean Eucryphia 12-20
Spindle Tree 10-25
Flowering Ash 20-25
Snowdrop Tree 8-30
Witch Hazel 15-20
Holly 10-40
Scotch Laburnum 10-30
Purple Laburnum 10-20
Bay or Sweet Laurel 10-50
White Magnolia 20-40
Purple Magnolia 12-20
Willow-leaved Magnolia 15-30
Hybrid Magnolia 10-40
Sorrel Tree 10-30
Persian Witch Hazel 20-40
Mountain Pine 4-6
Almond 12-25
Double Bean 20-40
Cherry Plum 16-20
Purple Cherry Plum 10-15
Japanese Cherry 10-18
Cherry Plum 10-18
Double Bird Cherry 10-30
Double Peach 10-30
Japanese Cherry 10-25
Bud Cherry 10-25
Mountain Ash 10-30
Siernan Crab 15-30
Flowering Crab 15-20
Japanese Crab 12-15
Purple Crab 15-25
Flowering Crab 15-20
Witch Hazel 15-20
Rose Acacia 6-10
Elm Buckeye 11-18
Storax 10-15
Weeping Wych Elm 10-30

* Denotes Conifers or Evergreens.
See also lists, page 236.
SOIL PREPARATION AND BORDER CONSTRUCTION

CHAPTER XXVI

Suitable Soils—Types of Soil—Soil Improvement—Drainage—Ditching—Bastard Trenching—Trenching—Construction of the Border.

By deep digging and manuring, or by the addition of loam, leaf-mould or peat, most soils can be made suitable for the cultivation of the majority of trees and shrubs, where special preparation is desirable, mention is made in the paragraph devoted to the particular plant in chapter XXXV. Nearly all of them will thrive in a friable and well-drained loam, provided it is some two feet in depth. The soil should not be too heavy and clayey, but at the same time it must not be too fine and sandy, nor too gravelly, if it is, the plants will soon suffer in a drought. In a future paragraph I shall discuss the best methods of improving both light and heavy soils.

Many trees and shrubs will do quite well on a chalk formation, provided there is twelve to eighteen inches of good soil above the chalk. The best-known exceptions are Rhododendrons, including Azaleas, Heaths, and other Ericaceous plants, which are lime-haters and will not do in a calcareous soil. They are peat-lovers, but peat is by no means essential to them, for they will be quite happy in lime-free loam and even in a clayey soil, provided a good amount of leaf-mould and humus has been added.

Although most trees and shrubs are not over particular as to the composition of the soil, I should like to impress upon the reader that the thorough preparation of the ground before planting is of vital importance. Lack of attention in this quarter is one of the most fruitful causes of failure in the culture of trees and shrubs. The difference in rate of growth, wealth of blossom and fruit, and general health, between, trees and shrubs planted in well-prepared soil, and when planting has been done without due preparation is astonishing.

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SOIL PREPARATION

This is especially noticeable during the first few years. It should be borne in mind that trees and shrubs, once planted, are likely, in the ordinary course of events, to occupy the same ground for many years. The time spent in its preparation, therefore, should not be grudged. In addition, it is almost impossible to make up for this lack of attention, once the plants are in the soil.

Shrubs and trees must be provided with a well-drained and free root-run at least two feet in depth and extending over an area equal to the probable extent of the root-growth of several years. This is usually accomplished by bastard-trenching (see page 134), in which the ground is dug over to two spades' depth. Except where the top soil is very deep, trenching proper, that is, to a depth of three spades, is not advisable, as it is unwise to bring the bottom layer of soil to the surface. This bastard-trenching should be applied to the positions the trees and shrubs are to occupy, whether arranged in groups in a border or placed singly as specimen trees on a lawn. In the latter case, the soil must be broken up to a depth of at least two feet over the area of a circle of 5-6 feet in diameter, or even 6 to 8 feet for large trees. Should the ground be waterlogged, adequate drainage must be provided by means of nine inches to a foot of rubble and broken brick below this. Where the plants are being grouped together in a border, it is far more satisfactory to bastard-trench thoroughly the whole strip of ground rather than dig out just the stations to accommodate the plants. Better drainage and a much freer root-run is then secured, and the increased growth and health of the plants will be very noticeable. In many places a pan or layer of hard, impermeable soil, perhaps merely a few inches in thickness, may exist only a foot or so below the surface. If this were left unbroken, the roots of the shrubs would never force their way through it in their search for water and nourishment. Trenching, however, will break up the pan, and will at the same time adequately drain the soil, which will also hold more moisture in times of drought. Never should trees and shrubs be planted in an unaerated and unprepared soil; the ground should always be bastard-trenched at least; the labour is well repaid.
TYPES OF SOIL

CLASSIFICATION OF SOILS

Soils are composed of two great groups of compounds: namely, inorganic matter, i.e., material derived from the decay of rocks, and organic matter, i.e., material derived from the decay of vegetable and animal matter, the organic matter is termed humus.

Practically all soils contain sand, clay, limestone, and humus, but in widely differing proportions. The preponderating ingredient determines the nature of the soil. Thus:

Calcareous soils contain upwards of 20 per cent of lime in their composition. They are formed largely of lime, with clay and loam or sand, and humus in very small proportion.

Clay soils contain 50 per cent of stiff unctuous clay with a little sand, and are lacking in lime and humus.

Loamy soils are soils in which the proportion of clay varies from 20 to 40 per cent, sand and various kinds of alluvium making up the remainder, with a little lime and humus. When the loam contains a large proportion of sand, it is known as Sandy Loam; when it holds a large proportion of lime, it is called a Calcareous Loam.

Gravel loam and chalk loam are loams in which there is a considerable proportion of gravel and chalk respectively.

Marly soils are the débris of limestone rock decomposed and reduced to a paste. They contain from 5 to 20 per cent of carbonate of lime, and humus is found in them. They are distinguished as Argillaceous, Loamy, and Sandy Marls, according to the predominance of clay, loam, or sand.

Peaty soils, or vegetable mould, the richest of all garden soils, contain from 5 to 12 per cent of humus. Peat and Bog Soil is composed of fibrous, insoluble vegetable matter mixed with sand and humus.

Sandy soils contain 80 per cent, or thereabouts, of silica, that is, the crumbling débris of granite or sandstone rock. In other words, they consist chiefly of sand, with a little clay and lime, and a small proportion of humus.

A loose, open soil shifts beneath the feet, and does not adhere to the boots; a clay, or heavy soil, impedes walking and clings to the boots. A clay soil, especially when wet, can be moulded in the hand; a loose soil will pass through the fingers. The texture of a soil can be told by rubbing between
SOIL IMPROVEMENT

the fingers. If it has a greasy or soapy feeling, it is a clay soil, if gritty, a sandy soil.

A Good Soil is Indicated by—Gentle slopes, strong woodlands, but no birch or fir, good strong hedges, rich green pasturage, with an abundance of white clover, deep soil, of a good brown or reddish colour, and strong healthy weeds. Oak trees and cowslips grow on clay soils.

A Poor Soil is Indicated by—Prevalence of birch, larch and fir trees, stunted hedges and trees, sedges plentiful, thin soil, wet and spongy, and the presence of weeds, such as quaking grass, Yorkshire fog, heath, bracken, and moss. Birches, alders and cotton-grass grow on wet and marshy land.

THE IDEAL GARDEN SOIL

The perfect soil for general garden use, and one in which most trees and shrubs will thrive, should be composed of the various elements in the following proportions: \( \frac{1}{3} \) lime, \( \frac{1}{6} \) humus, \( \frac{1}{6} \) clay, and \( \frac{1}{6} \) sand. Soil containing constituents in these ratios will rarely be found, but many loams will not be far from the ideal, and a little judicious improvement will, in many cases, furnish a compost in which most plants will thrive beyond expectation. Where facilities are available for improving the soil by the addition of other constituents such as clay, sand, lime, or humus (which must be well decayed), these should be evenly spread over the soil in autumn, and dug in, leaving the surface rough until the spring.

SOIL IMPROVEMENT

To some extent different soils naturally need different treatment if they are to be rendered fertile, but there are certain general principles which are more or less applicable to all. In relation to a plant’s life, the soil can be considered from various standpoints. In the first place, it furnishes a root-hold by means of which the plant is able to fix itself in space. Then, again, the soil acts as a storehouse from which the plant absorbs, as required, the greater part of the nourishment on which its continued life depends. Clearly, therefore, we must see to it that if the soil of our garden is to be fertile, it must be of such a texture as shall be compatible with the healthy life and development of the roots and rootlets, and shall contain within
DRAINAGE

reach of those rootlets in an assimilable form the necessary food elements for the plant’s growth, and a sufficient supply of moisture at all seasons to present those elements in a dissolved form for absorption.

DRAINAGE

Water-logged soil will not allow the continued life of the majority of trees and shrubs, moisture-loving subjects that thrive by the water’s edge, of course, being exceptions to this rule. Very sandy soil so unretentive of moisture as rarely to contain enough water for dissolving plant foods is equally difficult. What most trees and shrubs require is a soil which, while efficiently drained and containing within a few feet of the surface no body of stagnant water, shall yet be of such a texture and shall include a sufficient proportion of organic material as to retain for an appreciable time a moderate degree of water. If the soil is naturally very heavy, that is to say, if it consists very largely of clay, and especially if it rests, at a comparatively shallow depth below the surface, on an almost impervious layer, it is almost certain to be more or less waterlogged. In such a case it is necessary to dig it deeply and to provide adequate drainage, in bad cases by means of pipes laid in trenches 3 feet in depth and from 4 to 6 yards apart, in less bad cases by means of stones and broken bricks. At the same time it is advisable to lighten the upper layers of the soil by the addition of sand, leaf-mould, organic manures such as stable manure, bonfire ashes, and the like.

In a similar way very light, sandy soils should be improved by the liberal addition of clay, fibrous loam such as is obtained from the top-spt of meadow land, leaf-mould, and cow or pig manure. These latter, which, in the case of the heavy soils, serve to keep open the clay, which would tend otherwise to form a solid block, help, in the case of sandy soils, to bind them together, and enable them to retain water.

In the case of practically all soils, one of the first things to do, over and above such special measures as have been suggested above, is to trench the ground, or to dig it deeply. The processes of trenching, though extremely simple, are not always well understood by amateur gardeners. They aim essentially at the breaking-up of the soil.
DRAINAGE

DRAINAGE IN SMALL GARDENS

This is often a very difficult problem—at least the carrying away of the surplus water is no easy matter, for the natural slope is probably towards a neighbour’s garden, and the small garden rarely has a ditch into which the drains can be carried. Pipe-draining is also a somewhat expensive and laborious matter, the cost and difficulties, therefore, often lead to the small garden not being drained at all, which is, of course, the worst possible policy, for nothing save a few sickly-looking specimens will thrive in saturated and water-logged land. Some attempt must, therefore, be made at drainage, where necessary, and when cost makes the use of pipes prohibitive, quite efficient drainage can be effected by cutting parallel trenches about 3 feet deep and 1 foot wide across the ground to be drained. Into the bottom of these trenches should be thrown 9 inches of broken bricks, old rubble, and ballast—in fact, any hard material that will keep the soil open and allow the water to percolate through. Brushwood and heather may be used, but are not so lasting as cinders and rubble. Over this drainage material place turves bottom-side-up to prevent the finer soil from sifting through and clogging up the drainage. The remaining 18 inches or so should be filled in with the excavated soil, this must not be rammed down, but should be allowed to sink naturally, otherwise the drain will be rendered useless and might as well not be there.

These drains must either empty themselves into a ditch that will carry off the water, or, where this is not possible, a large sump must be dug in the lowest part of the garden and filled in with drainage material in the same way as the drains. Into this the water will flow and be gradually dissipated through the soil.

DIGGING (SINGLE)

Single digging is one of the most important of garden operations. In digging with the fork, little can be done
DIGGING

beyond breaking and turning over the ground and reducing the clods thus turned up. In digging with the spade, the soil can be transferred more readily from one position to another. Shallow digging is of very little value, and to enable the soil to be deeply worked, the spade should be inserted in as nearly an upright position as possible. The digger should stand well over his spade, and must not try to dig out more than 5 to 6 inches of soil each time—that is to say in width—he must always dig to the full depth of the spade. The first thing to be done is to mark the ground out into strips each some 10 feet wide, if trenches longer than this are dug it will be found difficult to keep the soil level. Next should be taken out a trench about a spade deep and a spade wide, or, in other words, about 12 inches in depth, the same in width, and to the full extent of the strip. The sides of this trench must be cut straight and square, and all loose earth must be removed from the bottom, which must be flat and even. The soil from this trench should be taken to the other end of the ground to be dug over. Another trench of the same size is then taken out and the soil is transferred into the first trench and is left as rough as possible, thus exposing as large a surface as may be to the action of the weather during the winter months. This process is carried on until the whole ground has been dug over and the last trench taken out is filled with the soil taken from the first trench.

Digging should be completed before the soil becomes too wet. If left over-late, the ground may become quite unworkable and the digging may have to be deferred until the early spring—a very bad policy, as the soil is thereby deprived of the beneficial action of air, rain, and frost through the long winter. Digging when the soil is very wet does more harm than good, for the earth becomes trodden down and compressed, and loses all its porosity, which is the very characteristic that digging is meant to increase.

In digging, all roots of perennial weeds should be carefully picked out, but vegetable stems and leaves and all annual weeds can be dug in as manure, provided they are deeply buried. In manuring during digging, the manure should be thrown with the fork along the bottom of the trench, the earth from the next trench being thrown on top of it. (See also Double Digging, and Trenching, p 134)
TRENCHING

"DOUBLE DIGGING" OR "BASTARD-TRENCHING"

Trenching to three spades’ depth, as described in the article on Trenching, is not often performed, as unless the top-soil is very deep and good, there is always the danger of bringing dead, useless sub-soil to the top. On only moderately-deep ground bastard-trenching, that is, to two spades’ depth, is usually adopted. The process is the same, except that the second spit is not removed but is broken up in the same way as the third spit in trenching proper. The top-spit of the second portion of ground is not wheeled away, but is placed over the second spit in the first trench. Bastard-trenching does not, of course, take so long as trenching proper, it should be possible to cover the same area in three-quarters of the time necessary for trenching to three spades’ depth.

When bastard-trenching grassland, the top two or three inches of the soil should be removed before the ground is dug over. The sods removed should be placed upside down at the bottom of the trench from which the second spit has been taken, and before the top-spit is thrown in. Ground that has been bastard-trenched in autumn or in early winter must again be "single dug" preparatory to planting in the spring, to break down the clods.

TRENCHING

The immediate object of trenching is to deepen the soil and prepare the sub-soil to nourish the fibres of deep-rooting trees and shrubs. The sub-soil is not brought to the surface. The operation is commenced by digging a trench 2 to 2 1/2 feet wide and a foot deep, throwing out the top-spit, and wheeling it to the further end of the bed. The second spit is treated in the same manner, if the trenching is to be three spades’ deep. This done, the bottom of the trench is dug over to the full depth of the fork, well broken up, and is left level. The top-spit of a second portion of the ground is now removed and placed alongside the top-spit from the first trench, and the second spit of this portion is dug up and placed roughly over the bottom of the first trench. The first spit of a third portion is now removed and placed in as large masses as possible over the second spit in the first trench; the bottom of the second trench is then dug up in the same manner as the first, and so
on till the whole is finished. Heavy soils are best trenched in the autumn, throwing the soil up in ridges, thus exposing a large surface to the action of frost and air during the winter. Treated in this way, the ridges should in the spring break down to a fine tilth. Light soils may be trenched in the early winter, or can be dug at almost any time, as required.
BORDER CONSTRUCTION

"POINTING" THE BORDER

Trees and shrubs, especially when young, will always be found to do better when the soil above their roots is kept weed-free and open to the air. This is accomplished by hoeing and "pointing," which consists in thrusting the garden fork some 5 or 6 inches into the soil, which is lifted and turned over. In order, however, not to damage the roots of the plants, the surface of the soil close in to the shrubs should be "scratched" only. This will prevent the ground from caking, and no harm will come to the roots near the surface. The process is especially useful in beds and borders filled with shrubs whose roots run near the surface, and where it would be harmful to dig to a spade's depth. By pointing, manure is worked into the shrub borders in the winter, the manure being first laid evenly over the surface, and then worked in around the plants. The surface of a bed or border is usually pointed over when it has become unduly caked and hard. Even when trees and shrubs are planted as specimens on the lawn, for the first few years after planting the turf should be removed over an area equal to the spread of the roots so that the soil may be kept weed-free and aerated. This is especially necessary in the case of young and newly-planted specimens. As the trees grow, the branches will gradually extend and droop closer to the ground, thus naturally smothering all weed growth. Even then, however, the use of the hoe will keep the soil broken up, and will allow air and moisture to penetrate to the roots.

PLANNING AND PLANTING THE BORDERS

Before the actual construction of the borders is commenced, it will be necessary to expend considerable thought on the positioning and grouping of the trees and shrubs. It must be remembered that they will be, practically speaking, permanences, and their ultimate height and extent must be visualised. This is a point often forgotten by the novice, who usually plants his trees and shrubs much too close together, with the result that in a few years' time his borders are nothing but a hopeless tangle of branches, the plants bearing practically no bloom and having quite lost any beauty of form natural to them.
In a large garden, the groups of trees and shrubs must be so positioned that they will harmonise with the landscape, of which the larger and more distant ones must form a part. They must also serve to set off and act as a background to the smaller and less permanent features of the garden. In the smaller and more enclosed garden, the duty of trees and shrubs may be to act as a wind-break, to hide some ugly building or chimney, to shut off the house and garden from the road, or to screen off some untidy section of the ground. Groups of shrubs may be required to edge or divide up large areas of lawn, or with trees may be employed to form long vistas from the main windows of the house over sweeps of green lawn, or, perhaps, they may be placed to form items of interest along the paths that run through the garden.

It will be seen, therefore, that the positions of the borders is dependent on the landscape, the objects surrounding the garden, the position of the house, and the layout of the paths and lawn. There is, perhaps, one point that needs emphasising, and that is that it is unwise to plant trees too near the house, they may make it damp, will exclude light and air, and will probably cast an atmosphere of gloom over the building. Again, except in gardens of considerable extent, it is not advisable to plant many large trees. Select rather the smaller-growing flowering and ornamental trees that will be so much more decorative and interesting. I will not, however, discuss here their selection, as this has been done in chapter XXV.

The next thing to consider is the size of the border. If this is less than eight feet in width, only the smaller-growing ornamental trees and the small and neat-growing shrubs can be selected. If the border is twelve or more feet in width, the plants can be planted irregularly according to their habit of growth. The wider the border is, within reason, the better. As to shape, let the border conform to the other features of the garden, and to its situation. Let its boundaries be graceful, sweeping curves rather than straight lines.

CONSTRUCTING THE BORDERS

As has already been stressed in an earlier part of this chapter, the ground in which trees and shrubs are to be planted should be thoroughly prepared in advance. This is much more
BORDER CONSTRUCTION

important than in the case of beds for plants which will occupy the ground but for a single season. Once planted, trees and shrubs will, in the ordinary course of events, occupy the same ground for many years.

The border may be prepared either in September or in early January. In the first case, the evergreens should be put in in early October and the deciduous subjects in November. When the border is prepared early in the New Year, the deciduous subjects should be planted in February, March, or early in April, and the evergreens in late April and May.

The ground should be thoroughly trenched to a depth of 2 to 3 feet, care being taken not to bring any sour or heavy subsoil to the top, if inclined to be waterlogged, the ground should be first drained. With the bottom spit should be mixed good stable manure when the soil is heavy, or cow or pig dung if the land should be light. Substances such as the ashes of burnt vegetable matter, bone meal, or basic slag—in fact anything that will help to break up and lighten the soil—should be added to the topspit of heavy ground. If the soil is too light, it may be improved by the addition of leaf-mould and a little thoroughly-pulverised clay. Should the earth prove very heavy, coarse sand and wood ashes will serve to lighten it. The border should be left for a month or so after trenching, in order that the soil may settle down. See also Planting, chapter XXVIII.
Provided trees and shrubs have been planted in a carefully-worked, well-drained, friable soil, and assuming that the roots have adequate moisture, manure is not strictly necessary, for young shrubs need moisture more than manure. Manure is, nevertheless, beneficial to trees and shrubs when correctly applied. It may be mixed with the second spilt when the ground is being bastard-trenched previously to planting, care being taken to keep the manure well away from the roots unless it is thoroughly well rotted. But it is an equally good plan to fork it into the surface soil over the roots three or four years after planting, the newly-planted trees and shrubs needing, practically speaking, no manure until they are thoroughly established. A light mulch round newly-planted trees and shrubs is, however, very helpful; it will keep the roots moist during a dry spell in early summer.

Once the plants are established, it is an excellent scheme to spread, in the spring of every other year, a mulch two-three inches in thickness over the surface of the soil occupied by the roots. This may be supplemented in the intervening years by a dressing (2-3 oz to the square yard) of bone meal. This will very appreciably help the plants, as it is a slow-acting manure, and its effects are apparent over a considerable period. Chemical manures, however, must be given to newly-planted trees and shrubs with discretion; they should never be applied in hot, dry weather, as there is danger of the roots being scorched.

On a sandy soil farmyard manure, or other organic manure should be used, as it gives body and humus to the soil, greatly
ORGANIC MANURES

increasing its moisture-retaining capacity, which is always small in ground of this nature. Heavy soils do not require the farmyard manure so thoroughly decomposed, in their case, well-rotted leaf-mould worked into the soil is also beneficial.

The reader will find the following notes on the natures and the best methods of application of the various manures of considerable value. They should enable the cultivator to select those most suitable to the soil.

In the first place, manures are a source of actual food elements, which they directly contribute to the plants' necessities, and secondly—and this is true particularly of so-called organic manures, such as farmyard manure—by reason of the fermentation which takes place in the manure, chemical changes, which liberate materials required by the plants, are brought about in the surrounding soil.

ORGANIC MANURES

It is because it fulfils both these functions that farmyard manure, or its equivalent, is so specially valuable.

Not only does it directly add to the soil constituents needed for the healthy life of plants but also, through the fermentation which it undergoes, and the acids produced thereby, it liberates from the soil itself plant foods which would not otherwise be available.

By its texture, and by the gases produced in the process of its fermentation, moreover, it tends to lighten the soil and keep its texture open. For similar reasons there is considerable value in such manural substances as leaves, lawn cuttings, road sweepings, vegetable refuse, fish guano, and seaweed. All organic waste, indeed, has some manural value. It is very great in the case of such substances as cow manure, fowl manure, pig manure, and night soil. Wood-ashes and soot are also useful, the former largely on account of the potash it contains, the latter for its ammonia.

Natural Manure the Best.—Whenever possible, natural, rather than artificial manure, should be used. The rubbish-heap, composed of turf parings, soft vegetable matter, and clearings of the garden, forms a compost which puts heart into the land. Artificial manures are to the land what stimulants or tonics are to the human being, useful for a season, but
THE COMPOST HEAP

Imparting no lasting and enduring benefit, and incapable of rendering the soil fit to keep up a sustained effort over a considerable period of time. Artificial manures are soon exhausted, and leave no traces of their influence if not constantly renewed.

In its dissolution the contents of the rubbish heap adds to the humus, or vegetable mould, which forms so essential a part of fertile soils, and supplies, or is the means of supplying, all growing plants with the food that is so absolutely necessary to their growth and well-being.

The Compost Heap.—The gardener should endeavour always to have at hand:

- All the leaves which can be got together, except those in the shrubberies which should be dug in.
- A heap of clean road-grit (from non-tarred roads)
- A heap of sand, silver or river
- A good stack of turves cut from some pasture.
- A heap of cow-dung
- A heap of stable-dung
- A stack of turfy peat from a common

All the waste of the garden should also be placed where it may rot, for it is a capital dressing.

The scourings of ditches, sweepings of non-tarred paths, decayed short grass, half-rotten leaves, all soft vegetable matter, soot, and every bit of solid manure that can be got, should be collected and well mixed together, being allowed to rot thoroughly before being applied as manure to the soil in the late autumn or early winter. If turned two or three times, the heap will decompose without getting too hot or becoming mildewed. After turning, the heap should again be pressed firm, and occasionally sprayed with water or liquid manure to assist decomposition. The materials should remain in the stack for at least six months; if left for longer, it should be covered with a layer of six inches of earth. The compost should be applied to the soil at the rate of some 15 lb to the square yard, and must be well dug in in the autumn or spring.

Hop Manure.—In small gardens hop manure is being very extensively used as a substitute for farmyard manure, both for digging into the ground and as a surface dressing to fork into the soil in early spring.
MANURES

ARTIFICIAL MANURES

It is, however, not always easy or convenient to obtain a sufficiency of stable or farmyard and organic manure. In such cases resort must be had to the various so-called artificial manures, most of which provide plant food in a highly-concentrated form. These, for the most part, have but little effect—at any rate directly—on the structure or chemical activity of the soil itself. They add no humus to the soil and do not affect the tilth, and for this reason, if for no other, they cannot entirely replace organic manures.

The three elements which it is generally necessary to add to the soil in the form of manure, where trees and shrubs remain in the same ground year after year, are phosphates, potash, and nitrogen. And it must be remembered that these have not only to be added to the soil, but must be given in such a form that they are, or readily become, soluble and thus capable of being absorbed by the finer rootlets of plants.

Nitrogenous Manures.—The most expensive of these elements is nitrogen, that is to say, nitrogen in a form available for plant food. Apart from guano and other mixed-elements manures, the most useful nitrogenous manures are nitrate of soda and sulphate of ammonia, the latter should be applied early in the spring at the rate of 2 lb to the rod. The former fertilizer is often applied at the rate of 1 lb to the rod as a top-dressing in late spring or early summer. Nitrate of Potash is also good, but is much more expensive. Nitrogenous manures act very rapidly and appreciable growth is often visible, quite soon after application. The plants become noticeably greener and more vigorous. Nitrates must, however, not be used to excess, or rank growths will follow, accompanied by lack of flowers and fruit.

Potash Manures.—These help the development of sugar and starch in fruit, and improve the colour and size of the blooms. Of potash manures, kainit is, on the whole, the cheapest and most useful, it should be forked well into the soil at the rate of 2½ lb to the rod early in the spring. On heavy soils, sulphate of potash, applied at the rate of 1½ lb to the rod in the early spring, is also valuable. A simple way of providing potash for a few plants is to add wood ashes and the ashes from burnt weeds in generous quantities.
SOIL REQUIREMENTS

**Phosphatic Manures.**—These assist the correct development of the plant, its fruit or seed, and its roots. The three commonest forms of phosphatic manure are superphosphate of lime, dissolved bones, and basic slag. Superphosphate is the quickest acting, whilst basic slag is the cheapest, slowest acting, and therefore most enduring. It is best applied in autumn. Superphosphate is usually applied at the rate of 5 lb to the square rod in autumn on medium soil, or in spring on light ground. It should be thoroughly mixed with the top 4 inches of the soil.

Basic slag is a chemical manure much used of late years, consisting largely of lime, phosphoric acid, and various iron oxides. It contains other constituents as well as these, but in small proportions. Its effects are much those of superphosphate, but almost twice the quantity is required to produce a given result. It does not succeed mixed with ammonia salts, as it sets free the ammonia and wastes valuable material, but is useful with nitrates. It is most valuable on medium or heavy soils which are deficient in lime, or are too wet and stiff; but to obtain the full advantage, the ground must already be fairly well provided with organic matter. As a manure it is good for flowering shrubs and roses. It should be applied and forked in in the autumn at the rate of 15 lb to the rod.

Phosphates encourage the formation of fibrous roots, cause earlier development of the plants, and counteract rank, sappy growth caused by excess of nitrogen in the soil. They may be applied every third year.

Where chemical manures are applied to trees and shrubs which have made full root growth, so that the soil is filled with roots, the best plan, in order to avoid injury to the plants, is to scatter the manure where it is required, and then lightly to "point it in" with a fork, only placing the manure just under the surface of the ground. In this way the manure is protected from loss by wind or rain, while the delicate roots are not liable to suffer, as they are if the manure is dug in with a spade.

REQUIREMENTS OF DIFFERENT SOILS

The requirements of each soil can only be ascertained after individual consideration, experiment, and possibly analysis. But there are certain rough rules. Farmyard manure in
APPLICATION OF MANURES

Reasonable quantities improves almost all soils, heavy or light. It is usually unnecessary to add potash to clay soils, and, as a rule, advisable to add it to sandy soils. At the same time, it may be necessary, in order to liberate the potash in the clay soil, to add lime. Gravelly and sandy soils are nearly always deficient in nitrogen, and are much less retentive of manures generally. Soils that are peaty, or that have become sour from excessive humus from constant year-by-year manuring with organic manure, are much improved by the addition of quicklime applied frequently in small doses and dug in at once.

Then again, different manures in each class differ in their action; nitrate of soda, for instance, works more rapidly than sulphate of ammonia. The requirements of the soil must be carefully studied when applying manures.

AMOUNT OF MANURE REQUIRED

As some guide to the amount of the various manures to apply in average cases, we may say that it is safe, as a rule, to add to a square rod of ground needing that particular manure, 2½ lb. of kainit, 1½ lb. of sulphate of potash, 5 lb. of superphosphate, 4 lb. of dissolved bones, 5 lb. of steamed bone flour, 12 to 15 lb. of basic slag, 2 lb. of guano, a quarter of a load of stable manure, 10 lb. of fowl manure, 1 lb. of nitrate of soda or 2 lb. of sulphate of ammonia.

The fertilizers must be spread evenly over the soil, and must be crushed fine and be free from lumps, so that every inch of soil receives its proportion of the fertilizer. If this is not done, parts of the ground will receive an excess amount, which may damage the plants. The manure should be well worked in.

HOW AND WHEN TO APPLY MANURES

Slow-acting manures, such as bone-meal, basic slag, farmyard and poultry manure, are best applied while the digging is being done in the autumn and early winter. Quickeracting fertilizers, as dissolved bones, nitrate of soda, sulphate of ammonia, sulphate of potash, must be applied in the spring or early summer.

The following table shows the soils to which the manures are most suitable and the time and quantity to apply.
Left, Euonymus europaeus

Below, Crataegus oxyacantha
PLATE 10
Euonymus japonicus
### HOW AND WHEN TO APPLY MANURES

<table>
<thead>
<tr>
<th>MANURE</th>
<th>Soil to which best suited</th>
<th>When to apply</th>
<th>Rate per square rod</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia, Nitrate of</td>
<td>Any</td>
<td>Early Summer</td>
<td>2 lb.</td>
<td>Never on Soil deficient in Lime.</td>
</tr>
<tr>
<td>Ammonia, Phosphate of</td>
<td>Clay and Chalk</td>
<td>Spring and Early Summer</td>
<td>2 lb.</td>
<td>Do not use on Chalk or Sand.</td>
</tr>
<tr>
<td>Ammonia, Sulphate of Basic</td>
<td>Heavy or Light</td>
<td>Autumn (Heavy)</td>
<td>15 lb.</td>
<td>One of the best Chemical Manures for Trees and Shrubs.</td>
</tr>
<tr>
<td>Slag</td>
<td></td>
<td>Spring (light)</td>
<td></td>
<td>Never on Soil deficient in Lime.</td>
</tr>
<tr>
<td>Blood, Dried</td>
<td>Any</td>
<td>Autumn and Winter</td>
<td>6 lb.</td>
<td>A valuable manure for Trees and Shrubs.</td>
</tr>
<tr>
<td>Bone Meal</td>
<td>Light or Heavy</td>
<td>Spring or Summer</td>
<td>4 lb.</td>
<td>Never on Soil deficient in Lime.</td>
</tr>
<tr>
<td>Bones, Dissolved</td>
<td>Chalk</td>
<td>Autumn, Winter or Spring</td>
<td>3 Large Barrows</td>
<td>An excellent manure for Trees, Shrubs and Roses.</td>
</tr>
<tr>
<td>Farmyard Manure</td>
<td>(Horse) Heavy or Light</td>
<td>Autumn and Winter</td>
<td>3 lb.</td>
<td></td>
</tr>
<tr>
<td>Fish Meal</td>
<td></td>
<td>Spring</td>
<td>2 lb.</td>
<td></td>
</tr>
<tr>
<td>Guano</td>
<td>Any</td>
<td>Autumn or Spring</td>
<td>30 lb.</td>
<td></td>
</tr>
<tr>
<td>Hop Manure</td>
<td>Clay, Chalk, Heavy &amp; Light</td>
<td>Autumn (Heavy)</td>
<td>2½ lb.</td>
<td></td>
</tr>
<tr>
<td>Kainit</td>
<td></td>
<td>Spring (Light)</td>
<td></td>
<td>Adds Humus to the Soil.</td>
</tr>
<tr>
<td>Leaf-mould</td>
<td>Heavy or Light</td>
<td>Winter or Early Spring</td>
<td>3 Large Barrows</td>
<td></td>
</tr>
<tr>
<td>Lime, Nitrate of</td>
<td>Any</td>
<td>Spring</td>
<td>2 lb.</td>
<td></td>
</tr>
<tr>
<td>Lime, Sulphate of</td>
<td>Clay or Medium</td>
<td>Early Summer</td>
<td>2 lb.</td>
<td></td>
</tr>
<tr>
<td>Nitrate of Potash</td>
<td>Any</td>
<td>Spring</td>
<td>3 lb.</td>
<td></td>
</tr>
<tr>
<td>Nitrate of Soda</td>
<td>Light and Dry</td>
<td>Early Summer</td>
<td>1 lb.</td>
<td></td>
</tr>
<tr>
<td>Potash, Muriate of</td>
<td>Light &amp; Medium</td>
<td>Spring or Early Summer</td>
<td>2½ lb.</td>
<td></td>
</tr>
<tr>
<td>Potash, Phosphate of</td>
<td>Light or Heavy</td>
<td>Summer</td>
<td>1½ lb.</td>
<td></td>
</tr>
<tr>
<td>Potash, Sulphate of</td>
<td></td>
<td>Summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry Manure</td>
<td>Any</td>
<td>Autumn and Summer</td>
<td>10 lb.</td>
<td>Never on Soil deficient in Lime.</td>
</tr>
<tr>
<td>Soot</td>
<td>Sandy or Light</td>
<td>Autumn</td>
<td>1 Peck</td>
<td></td>
</tr>
<tr>
<td>Superphosphate of Lime</td>
<td>Medium or Light</td>
<td>Summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable Ashes</td>
<td>Any</td>
<td>Autumn (Medium)</td>
<td>5 lb.</td>
<td>Adds Humus to the Soil.</td>
</tr>
<tr>
<td>Vegetable Refuse</td>
<td>Medium to Light</td>
<td>Spring (Light)</td>
<td>4 Barrow Loads</td>
<td>Usefull for lawns.</td>
</tr>
<tr>
<td>Wood Ashes</td>
<td>Heavy &amp; Rich</td>
<td>Autumn, or as Top-dressing</td>
<td>10 lb.</td>
<td></td>
</tr>
</tbody>
</table>

**Note.—** A dressing of 2½ cwt. per acre is equal to 2 lb. to the square rod, or 1 oz. per square yard.

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DRESSING THE SOIL

LIME

The nitrates, phosphates, and potash supplied by manures are quite inaccessible to plants in a soil deficient in lime. Lime, too, assists the bacteria which render organic matter in the soil available to crops, and is itself an essential plant food. It makes heavy soils more porous and, therefore, better drained and warmer, cleanses the soil of insect and fungoid pests, and sweetens sour soil, which has become deficient in lime.

On soil naturally deficient in lime, heather, gorse and bracken will be found to flourish. In sour soil plants become weakly and are unable to resist the attacks of disease and insect pests. When soil has thus become sour, the state should be rectified as soon as possible by the application of lime at the rate of 10 oz. to the square yard, the dressing being repeated every 4 to 5 years. If the soil is not sour, but merely deficient in lime, dressings equal in amount to those shown in the table below will be sufficient. Lime must never be applied at the same time as farmyard manure. When applied it should be perfectly dry and powdered as finely as possible, must be evenly dusted over the ground, and immediately well pricked into the top 3 to 4 inches of the soil, which must also be dry. Whether the lime is applied in the form of slaked lime, or carbonate of lime, depends on the nature of the soil and the time of the year.

HOW AND WHEN TO APPLY LIME

The following table will show the forms calculated to prove most effective under the various conditions prevailing:

<table>
<thead>
<tr>
<th>Form of Lime</th>
<th>Nature of Soil</th>
<th>When to Apply</th>
<th>Amounts to Apply</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slaked Lime</td>
<td>Heavy</td>
<td>Before ground is dug over in autumn or winter, unless soil is manured in the latter case apply in Spring</td>
<td>12 lb per sq rod</td>
<td>Use immediately after slaking Of little value on Light Soils</td>
</tr>
<tr>
<td>Carbonate of Lime</td>
<td>Light and Sandy</td>
<td>At any season</td>
<td>20 lb per sq rod</td>
<td>Of little value on Heavy Soils</td>
</tr>
</tbody>
</table>

Note — A dressing of 2 lb to the square rod is equal to 1 oz. to the square yard or 2½ cwts to the acre.
DRESSING THE SOIL

MULCHING

This operation, which saves much watering in dry weather, consists in spreading a 3-inch layer of half-decayed stable manure, well-decayed vegetable refuse, leaf-mould, peat moss, hop manure, or other material over the soil occupied by the roots of the trees and shrubs, especially those which have been recently transplanted, and in times of drought watering thoroughly before the mulch is laid down. The mulch will then prevent the water from evaporating too quickly.

Rain falling or water applied on a mulch soaks through and carries nourishment through to the roots and thus performs an additional service. Where a mulch of manure or other matter is unsightly and unpleasant, as on some borders near the house, peat moss can be used as the mulch itself or can be sifted over to hide the mulch used. A mulch is of little benefit unless it is at least 3 inches in thickness, but if deeper it is liable to make the roots too cold. After a time the material used may be forked into the soil, a new mulch should then be applied. It is, however, seldom necessary to apply more than one mulch during the season.

A mulch should be very retentive of moisture; certain mulches are more suitable to one soil than to another. For instance, rich loamy or clayey soils are best mulched with well-decayed leaf-mould, freshly mown grass, or with well-rotted horse manure; on light sandy soils, a mulch of vegetable matter should always be well-decayed, and cow-dung, when available, is preferable to horse manure. The mulch must not be placed close up to the stems of the shrubs or trees, as it is apt to damage them and cause them to rot. Besides, it is the finer roots that benefit by the mulching, and these are mostly found a considerable way out from the stem.

A word of caution is, however, necessary, for there are several materials that should not be used as mulches; some because they soon "cake" and form a hard crust, others because of chemical properties they impart to the soil, or because they encourage insect pests. The following are a few substances that should not be used: mud from the bottom of ponds and streams, tarred road-sweepings and pine needles.

Mulching is usually carried out during the months of May, June, and July; it should not be confused with top-dressing.
TOP-DRESSING

(which see), which aims chiefly at providing nourishment for the roots, and does not prevent evaporation in hot weather. Plants whose roots lie near the surface of the soil, Rhododendrons, for example, are those that suffer first in a drought, and these are the ones that most require mulching. With plants of this nature, a mulch is put down in the spring, with other plants many gardeners wait until the drought has arrived. Where mulching is difficult or impossible, hoeing will go a long way towards making up for it.

TOP-DRESSING

Although some mulches are at the same time top-dressings, these two preparations are applied for entirely different purposes. Mulches are used primarily to prevent over-rapid evaporation and to keep the roots cool and moist, the aim of the top-dressing is to enrich the soil and furnish new food for the roots.

Most of the organic manures and artificial fertilizers mentioned in the previous pages may be used as top-dressings; those most generally employed for this purpose are bone-meal, kainit, leaf-mould, old lawn mowings, old hot-bed manure, nitrate of soda, sulphate of ammonia, superphosphate of lime, and wood-ashes. For shrub borders, a dressing of 75 per cent old hot-bed manure, or the same proportion of well-decayed farmyard manure, and 25 per cent leaf-mould or other well-rotted vegetable matter is excellent. The reader is referred to the table showing When and How to Apply Manures, p. 145.

Top-dressings are used to augment the plant food supplied by the manure dug in at planting time or when it is not feasible to disturb plants so that manure may be dug in, as in the case of the shrub border. They are usually employed in spring or early summer, or in the autumn, the coarser organic manures are generally applied in even layers an inch to two thick, and are then forked into the soil. Artificial fertilizers are usually very fine in texture. They can be applied during showery weather or may be well raked into the soil and then watered.
PLANTING AND TRANSPLANTING

CHAPTER XXVIII

Planting — Staking and Tying — Transplanting.

As a general rule, specimens of medium size for their kind should be planted rather than those that are more fully grown, though trees of 10-12 feet in height can be planted with a fair margin of safety, provided they have been transplanted every two years during their period of raising in the nursery garden. This transplanting encourages the formation of fibrous roots and prevents the growth of coarse tap roots that would be torn when the plant was lifted. It certainly checks the growth of the branches, but favours sturdy, short-jointed stems, which the buyer should look for, for he can then be sure of a nice fibrous-rooted plant. Medium-sized trees more readily take root, the proportion of losses is much smaller, and they will establish themselves so much more quickly and thoroughly that they will usually outgrow in a few years those transplanted when of greater size. When there is no hurry, and planting is done with an eye to an effect which is to be produced several years later, it is often wise to plant even younger bushes. In this case it is possible either to fill the spaces with small bushes and to remove a proportion from time to time when they become over-crowded, or each shrub may be allotted the full space it will require in later years, the bare soil in between being temporarily decorated by herbaceous perennials and annuals.

WHEN TO PLANT

Provided there is no frost, and the soil is not too wet, deciduous shrubs may be planted from late October to March. Usually the best time to plant deciduous shrubs is during late October, when the leaves are falling and the soil is still warm, and in November, or failing this, in February and early March. Evergreens, whose foliage transpires throughout the year, and which consequently make more demands upon their roots in
PLANTING AND TRANSPLANTING

winter than do deciduous plants, are best planted in September and early October, or in April and the beginning of May, if the latter month is showery. At these times the young rootlets are more active and more readily re-establish themselves. Never plant evergreens in the depth of winter, when their vitality is at the lowest, nor when cold, drying winds are prevalent. Evergreens planted in late spring usually suffer considerably from dry and parching winds, which, owing to the transpiration of the foliage, put a great strain on the roots at a time when they are least able to withstand it. Many gardeners cover newly-transplanted evergreens for three weeks or so with fine scrim or canvas that will allow the penetration of light, but which will at the same time help to keep the foliage moist. Plants that have been grown in pots may, of course, be planted out at almost any time during the year, provided the roots are not unduly disturbed, except, perhaps, during the driest of summer weather. It is very important that pot plants should not be planted out with the “balls” dry. Should this be done, the plant will probably die before the moisture from the surrounding earth has had time to penetrate the dry “ball”: if dry, pot plants should be immersed in a bucket of water for several hours before planting, as only by this means can the “ball” be thoroughly moistened.

When young trees or shrubs have been in the pots for some time, they reach the stage known as “pot-bound,” or in other words the roots become curled round and round. Obviously, before placing such pot plants in the prepared holes, the roots must be untwined and spread out to some extent, as, unaided, the roots would not penetrate into the surrounding ground, but would continue the encircling growth, ultimately strangling the whole root system.

The preceding remarks are applicable to the general run of trees and shrubs, but there are a few that need careful or special treatment. Brooms and Gorses, Clematises, and Ivies, for example, should when young be grown on in pots, if raised in the open ground, they stand a very poor chance of surviving transplantation, however much care may have been taken. Other plants, again, can only be moved with safety when quite young. All these idiosyncrasies, however, are
ROOT PRUNING

mentioned in the paragraphs devoted to the particular plants. (chapter XXXV)

In the case of both deciduous and evergreen shrubs of any size, it is usually wise, at the time of planting, to thin out and reduce the length of the branches by as much as from one-third to a half, this will somewhat relieve the strain put upon the roots, at this time themselves considerably reduced. Especially is this necessary in the case of most evergreens. Rhododendrons are a notable exception.

When trees and shrubs are planted in spring, especially on light soils, it is absolutely necessary to keep the ground continuously moist by frequent watering and surface mulching with manure, leaf-mould, or decayed garden refuse. Planting must never be done during frost, nor when there is a dry, parching wind, nor at times when the ground is cold, wet and sticky. This applies especially to clayey ground. In a light, friable soil there is not much danger of the roots being "puddled in"; that is, encased in a sticky coat of liquid clayey soil that will cling round the roots and become impermeable to their fine fibrous shoots. If conditions similar to those mentioned above prevail when the trees arrive from the nursery, they must be "laid in" by the roots in a sheltered position, that is to say, they must have their roots well covered up with soil until the weather is suitable for planting. In frosty weather when the trees cannot be "laid or heeled in"; they should be kept in a frost-proof shed, with the roots covered with several thicknesses of sacking or paper, and should be sprinkled with water if at all dry.

PRUNING THE ROOTS

Bruised or broken roots should be removed entirely by a clean, sharp cut outwards and upwards. If the cut surface is large, this should be tarred over to prevent the entry of bacteria into the roots, which might soon start decay and rapidly destroy the whole root system of the plant. In most cases shrubs make considerably more fibrous roots than do trees, and for this reason they transplant better, as the fine root system more quickly re-establishes itself. It should be remembered, however, that it is no good burying in the soil tangled masses of bruised fibrous roots, for these will only rot and will probably cause the death of the shrub. All
PLANTING

damaged or tangled and crushed root growth should be carefully cut away with a sharp knife. The larger roots will soon throw out another fine fibrous network as the plant re-establishes itself. Should the roots be dry, soak them well in water until the bark has become plump, then plant immediately. One great point in planting shrubs and trees is to keep the roots of the plants as little exposed as possible. A dry wind or frosty air is very harmful if not fatal to them.

PLANTING

As the trees and shrubs will probably occupy the same positions for many years, it is essential that the ground shall be well prepared for them. A hole of sufficient width to allow the roots to be laid out horizontally, probably 4 to 6 or 8 feet in diameter, and 2 feet in depth, is dug out in ground that has been well drained. To fill in the bottom half mix with the best of the soil removed, some old decayed manure, rotted vegetable refuse, or leaf-mould. The remainder of the hole should be filled in with earth suitable to the requirements of the shrub or tree. The shrub or tree should be placed upright in the centre of the hole so that the main stem will be not more than half an inch lower in the ground than was previously the case, as shown by the mark on the stem. Deep planting is a sure cause of failure, for the bark of the stem should be exposed to the light and air; if covered with soil, especially a heavy one, it will tend to rot, and so bring about the death of the tree or shrub. There are, however, exceptions to this rule, and in their case deeper planting is not detrimental. The plants referred to are those that easily form roots from the lower parts of their branches—Heaths and Veronicas, for example—and also shrubs that throw up considerable sucker growth. All these when transplanted should have the branches well spread out, and may be planted deeply, being "earthed up" as far as the foliage. It must always be remembered that as the soil settles, the tree will sink with it, and for this reason it must be set 3 or 4 inches higher in its station to allow for this subsidence. The lowest roots should be laid out horizontally. The bottom of the hole should be made perfectly firm, though not too hard, before the roots are placed thereon. Fine earth should then be loosely thrown over the fibrous roots, and carefully worked between them. The next layer of roots
STAKING AND TYING

should be treated in a like manner, and so on until the whole of the roots are covered. It is most important that the rootlets should, as far as possible, assume their natural position, thoroughly penetrating and permeating the surrounding soil. It is also most necessary to make the soil firm at each stage of planting, in order to minimise the depth to which the tree will sink. Firm planting is necessary in any soil, and in light land, it may be necessary to use a rammer. Where the soil is heavy and sticky, it is advisable to import a little soil of a finer and drier nature to sift in among the fine roots, the natural soil may be used to fill in the hole once the fine rootlets are covered by the lighter compost. The hole should be filled in with the ordinary soil which was previously removed from it. A good soaking with water before the hole is finally filled in will help to settle the soil round the roots. After this thorough application, however, no further water should be given until root growth again begins, when, should the weather be dry, water must be given regularly, and in the case of evergreens, the foliage should be syringed night and morning until the plants are thoroughly established.

When the planting has been done early in the spring, a 2-3 inch mulch of old stable manure, leaf-mould, or rotted garden refuse will help to establish the roots. If, however, the trees are planted in November or when the ground is cold, the mulch is best reserved till early the following summer.

STAKING AND TYING

It is necessary to support any newly-planted tree over about four feet in height with a strong stake, always stouter than the tree. This support should reach to the lowest branch, but not higher, and must be driven firmly into the ground, before the earth is filled in round the roots. Staking is also necessary in the case of smaller trees planted in very windy places, also with trees whose roots are one-sided, and which, for this reason, cannot hold the tree firmly in the soil. Trees with weak stems should also be supported.

This staking will prevent the tree from swaying about in the wind and thus tearing the roots from the soil before they can establish themselves. Should it be noticed that the swaying of the tree has made a hole or socket in the soil round the stem, the tree must be more firmly secured to the stake.
which must be driven in yet further, the hole in the ground round the stem being filled in with soil that must be made solid and firm. The stem should be tied very securely to the stake with strong but soft tarred cord, after the stem has been surrounded with a piece of rubber from an old hose pipe or motor car tyre, or even with a wrapping of old felt, so that the string will not cut into the bark. The stakes are frequently not required for more than a few months—it is wise to dispense with them as soon as this can safely be done—but when they are necessary for some time, the cord should be renewed annually, so that it may not cut into the bark as the tree swells. The stake should be rounded, so as not to chafe the tree, should be pointed at the bottom, and should have the lower 2 feet treated with tar. Care must also be taken that the stake does not cross the stem, if it does and there is the slightest play between the two, the bark will soon become badly chafed. After the stake has been driven into the ground, the buried-over top, caused by the mallet, must be trimmed up so that it will not damage the bark of the tree. After planting, ample water should be given if the weather is dry, and a mulch of stable manure should be applied to protect the roots. After three weeks or a month, the soil will have settled down, and it will be advisable to examine the ties to make sure that they are not holding the tree up and preventing its roots from settling down with the soil (See p. 152).

The actual arrangement of the trees and shrubs in the borders is discussed in chapter I, page 18.

**TRANSPLANTING**

Trees and shrubs may be moved more easily and with much less chance of disaster than most people think. Those whose main stems are not more than 3 or 4 inches in diameter can be transplanted with comparative safety, provided due care is taken. But the moving of trees larger than this always involves a certain amount of risk if they have been in position for more than 4 or 5 years. Most of the remarks on planting in this chapter refer equally well to the process of transplanting.

In transplanting—whatever the subject may be—the great thing is to keep the roots out of the ground for as short a time as possible, and for this reason, when transplanting trees and large shrubs, it is advisable to prepare the sites and
TRANSPLANTING

dig in advance the holes they are to occupy. Keep the roots "heeled-in" if possible, but if they must remain out of the soil for some little time, moisten and cover them with litter and matting to keep them from the frost and from becoming dried up, as once the small fibrous roots dry up, they perish and the plant must form new ones before it can again take up nourishment from the soil. It, therefore, takes a long time to become re-established, and the tree or shrub receives a severe check. If the roots have become dry, soak them well before planting.

In the case of trees or shrubs that have to be taken up and moved to some other position, it is always desirable to ensure that the "ball" shall be moist before removal. In dry weather, therefore, a basin some 6 inches deep should be formed with soil a yard or two distant from the stem and round the plant. This should then be filled with water, more being added from time to time as it drains through the soil, until there can be no doubt that the "ball" is well moistened. The soil should then be allowed to drain for twenty-four hours before the tree is taken up.

The "ball" of earth round the roots should be kept intact, especially in the case of evergreens, although this is not always feasible in the case of large shrubs and trees, in view of the weight of the soil that would have to be moved.

Every care must be taken not to damage the roots, at any rate to keep as many of the smaller roots intact as possible. Small shrubs are best lifted by inserting two garden spades to their full depth vertically on each side at a convenient distance from the plant according to its size, and then by levering the handles gently downwards and away from the plant. This method will lift the plant from the soil with the roots intact. Larger shrubs and trees are a more difficult matter; the best way is to dig a trench round the tree or shrub 2 to 3 feet, or more for large specimens, from it, then dig inwards towards the tree or shrub until the roots are reached, placing the fork with its back to the bole of the tree or shrub so as to injure the roots as little as possible. Next dig downwards under the tree or shrub, and it will be found possible to remove it without much damage to the roots, which, if the process takes some time, should be moistened and covered with sacking to prevent them from becoming parched. In removing a tree
or shrub from the soil, care must be taken never to use the stem as a lever, or serious damage may be done. Trees and shrubs should be planted firmly, and well watered after transplanting. If the weather becomes dry before they are thoroughly established, evergreens should have their foliage thoroughly syringed every evening as long as the drought lasts. The most suitable times for transplanting the various kinds of trees and shrubs are those indicated for planting in the previous paragraphs. The method of setting the tree or shrub in its new station is also, naturally, the same.

Transplanting is an important operation, and in a general way November is the best month for it, but the work may be done in December with equal safety, and even in January, although it is better to have it done before December has passed away. The removal of small trees and shrubs is a comparatively easy matter and simple in itself, it is in the case of large trees and shrubs that the work becomes more difficult and laborious.

Transplanting Large Trees and Shrubs.—To secure immediate effects, it is sometimes desirable to transplant large trees and shrubs. Even very large specimens may be moved with no other apparatus than a few strong planks nailed on a low truck or sledge, but the process is always attended by a certain amount of risk, and is always costly, for it may take two or three days, and may, at times, require the services of as many as six, eight or more men. Expert knowledge is always advisable when undertaking the moving of large specimens.

The ease with which a tree or shrub that has been in one position for some years may be transplanted is dependent on the nature of its roots. Those in which they are of a fibrous nature become established far more readily than do those with thick and far-reaching ones. Examples of plants that transplant well are: Aucubas, Flowering Currants, Diervillas, Kalmias, Kerrias, Rhododendrons, and Spraas. On the other hand, Buckthorns, Cotoneasters, Elaagnuses, Hollies, Laurels, Magnolias, Evergreen Oaks, and nearly all coniferous trees that have been long in one position stand a comparatively poor chance of life after a move, unless transplanted with large balls of soil holding the roots together. Where the plants have been frequently transplanted, however, they can usually be moved with but little risk.
TRANSPLANTING LARGE TREES

A trench is dug round the tree at a distance from the bole of two-thirds the diameter of the top, and to a depth of 2 to 3 feet, rarely more, according to the age and size of the tree, character of the soil, and the depth of the roots, leaving untouched a space of from 2 to 3 feet at the back of the tree. At the same time, the front, or part where the tree is intended to come out, should be approached at an easy angle of inclination, extending from two to three feet beyond the circumference of the trench already begun. The earth is rapidly removed from the trench, the long and strong roots being cut and the fibrous ones being carefully preserved as the work proceeds. The great thing being to keep the “ball” as much intact as possible, its size in the centre must be determined by the nature of the soil and the size of the plant. Its size is of less consequence than the preservation of the roots.

Where the gardener can take his time and has a year or even a few months’ grace in which to move a large tree, the trench should be taken out as described, and the stronger roots should be cut. The soil is then filled in again without the tree being moved. New fibrous roots will form and these will support the tree when it is moved a few months or a year later, the tree then having a far better chance of surviving the move. This operation is rarely necessary in the case of evergreens, however large, as their roots are usually far more fibrous and less spreading than those of deciduous kinds.

Let us suppose that the tree is being actually moved. As the removal of the earth proceeds, a fork must be used to separate the roots from the soil, and they should be carefully bent back. Sacking or canvas should be wrapped round the “ball” to keep it moist and should be firmly kept in place by means of ropes, which, however, must be prevented from cutting into the “ball” by short pieces of batten. The depth of the ball of soil. After excavating from 1 to 3 feet beyond the line of the bole of the tree or shrub, according to its size, introduce into the vacant space a sledge or low truck, cut through the solid part at the back line, and the tree will rest on the machine. This should be furnished with four rings at the corners, through which ropes or cords should be fastened and firmly fixed to the bole of the tree. Of course, some soft substance, such as sacking or soft rope will be introduced.
between the bole and the cords, to prevent them from chafing the bark. The tree is then ready for removal. The plant will slide gently up the inclined plane without undue expenditure of labour, and may with ease be moved any distance. Sometimes it may be impossible to fix the cord through the back rings until the tree is out of the hole. In that, and indeed in any case, cords had better be attached to the top, being carefully held by men, lest the tree topple over.

If the tree is large, the hole in which it is to be deposited should be made in such a manner as to have an inclined plane on each side to enable the horses or tractor to pass through. When the sledge arrives at the centre of the hole, it must be stopped. If the tree is not too heavy, the truck or sledge is prised up by hand, and the tree is gradually slid off. If very heavy, a strong chain is passed under the ball, attached to a couple of crowbars; the motive power is attached to the other end of the truck, and the tree drops off into its place.

The roots are then carefully undone, and are spread throughout the whole mass of soil as the process of filling up goes on. Three strong posts are driven in to form a triangle, and rails are securely fixed to them across the ball to keep it immovable. The branches are reduced in proportion to the mutilation the roots may have suffered. The ground is thoroughly drenched with water, and is covered over with 4 inches of litter to ward off cold and drought. The transplanting is then complete. If this operation is well performed, the loss will not average more than from five to eight per cent. The principle involved in all planting is the same, and is only of secondary importance to securing as many healthy roots as possible. The stability or immovability of both root and top comes next, for, if not attended to, every breeze that blows is analogous to a fresh removal.

At Kew we are fortunate in the possession of three transplanting machines capable of moving balls of soil weighing respectively: 5 to 10 cwts, 10 to 20 cwts, and from 5 to 8, or even 10, tons. This enables us to move large and rare trees and shrubs with every hope of success. The actual operation of removal is performed more quickly, though more men are usually required than when transplanting is done with planks, rollers and levers and with a trolley for moves of some distance.
THE first thing to be done before undertaking the operation of pruning is to study the trees and shrubs to be dealt with, and to make up your mind clearly as to what effect you wish to produce. Where you are dealing with young trees, their vigour should be devoted to the formation of good healthy, well-ripened wood, a well-shaped head, and healthy roots. In the case of shrubs, their habit of growth must be studied, and it will be necessary to know whether they blossom on the wood of the current year, on that made the previous year, or on branches two or more years old.

It is essential, if this job is to be done properly, for the pruner to be able to differentiate between new and old wood. New wood is usually green and pliable, one-year-old wood is brown and the bark is still smooth, older branches are darker or greyer in colour and the bark is wrinkled or rough.

Although pruning is of vital importance in cases where it is necessary, it should be remembered that there are numerous trees and shrubs that need little or no pruning, save when they become old and "leggy" or overcrowded with a mass of tangled branches. Faulty and careless pruning does untold harm; but, on the other hand, lack of systematic pruning may be quite as injurious, for the bushes soon become nothing but a mass of weak and tangled shoots incapable of bearing any but the most scanty blossom. The first thing to do, therefore, when pruning neglected shrubs, which is best done in spring before growth commences, is to get rid of these weak shoots and to cut away most of the very old wood, although some must be left for a year or so, until there is sufficient new growth to take its place. Some old wood must, as a rule, be left to carry the new shoots that will form on it. Generally speaking, however, as much old wood as possible should be cut out as soon as it has borne flowers.
HOW TO PRUNE TREES

When pruning, it must be borne in mind that flowering shrubs, even of the same genus, vary greatly in their habit of growth and manner of flowering. Some carry their blossom on the young shoots formed during the current year; others bloom on wood made during the previous year; while others, again, flower on branches two or more years old. In each of these cases, pruning has to be carried out along different lines.

In pruning a tree or shrub, we aim at three main objects. The first is to promote healthy growth of young and productive wood, and this is the chief aim in pruning young trees. The second, and one almost equally important in the early life of the tree, is to give the form desired, a point of great moment in the future of the tree as regards foliage, flower, or fruit. These ends are attained by shaping the tree in such a way that, when fully grown, it may be well balanced and well proportioned according to its natural habit; and by thinning the branches so as to allow of perfectly free circulation of air and light throughout the tree, thus promoting the ripening of the wood and keeping it healthy. The third and most important object is the increase of fruitfulness, which of course means increase of flowers in plants grown for their blossoms. This is carried out by means of the judicious cutting out or cutting back of weak shoots and the shortening of strong ones.

Trees and shrubs should be pruned and trimmed from the very start, in order that they may be kept in good shape, and should have all old and useless branches cut away. Never trim shrubs with garden clippers, except when grown as hedge plants, when it is often imperative. Always use secateurs or a sharp knife that will make a clean cut. The shears are apt to tear the shoots, and the damaged leaves of evergreens, especially the laurel, are very unsightly. Wherever
PLATE 11
Hippophae rhamnoides
Above, *Cornus sanguinea*

Right, *Gaultheria procumbens*
possible, cut shoots well back to the base or to side branches. Do not leave "snags" that are likely to rot and die off. More or less tender shrubs grown in the open in sheltered positions should never be pruned in autumn, as this would lay them open to severe damage by frost; they should be pruned in April, or even later when the danger of hard frosts is past.

Trees require different treatment as regards pruning from that accorded to shrubs. During the first few years of their life, most ornamental and flowering trees require careful pruning to ensure a clean, straight main stem and a well-balanced and symmetrical head, with its centre open to the sun and air. Once well shaped and of mature size, little pruning will be necessary, save, perhaps, the occasional removal of any old and weak wood that crowds the centre of the tree, or the trimming in of long and straggling shoots. In the course of nature, most young trees grow up close together in clumps and among other trees. Being shut in on all sides, they strive to reach upward to the air and light, and in so doing usually develop a straight stem, the lower lateral branches gradually decaying as the tree grows upward and forms a compact head at the top. In our gardens we must help this natural process by shortening, but not cutting right out, these laterals, so that the tree's energies may be concentrated in its main stem. Remove only the weakest of the crowded branches entirely; the side branches should not be cut away altogether, for the more leaves a tree carries, the more wood it will make, and if the longest laterals are shortened, this formation of wood will go to the building up of the main trunk.

In the young tree it is this main stem that the pruner must encourage, he must keep it straight, sturdy, and

FIG. 12.—SECOND YEAR'S PRUNING OF A STANDARD WITH FOUR SHOOTS.
predominant. It must not be allowed to fork low down. Such a fork is always a weakness, there being a great tendency to split at this point, which would allow the entry of damp, and would probably cause rot. The tree would also be laid open to the attacks of fungoid diseases. Should the main stem be broken by a storm or by some accident, the damaged part should be cut clean away. Side shoots will form, and only the most robust and straightest of these should be trained to replace the damaged main stem. A conical shape is natural to most young trees, and should be encouraged by the pruner, who should shorten in over-long and remove entirely weak side shoots, but he should not chop a tree of naturally graceful or spreading habit into a regular and formal outline.

**PRUNING KNIVES, SECATEURS, AND SAW**

Clean cutting is the first thing to aim at in pruning, and the tools used must always be clean and sharp. Blunt ones will bruise the shoots, which may subsequently die back or die off, or an entry may be provided for fungoid diseases, and for bacteria. The secateurs are used for certain operations, and for the amateur are useful, as they do away with the possibility of injury to other shoots by the slipping of the knife blade. Instead of a clean cut, the secateurs are apt, however, to pinch and flatten the wood. This damaged end frequently withers, and if the cut has been made in the position, which in pruning with the knife would be the correct one, the injury affects the bud, which is thus destroyed, and the pruning must recommence lower down. To obviate this difficulty, when pruning with secateurs, a piece of wood about half an inch long must be left above the bud. This wood will subsequently dry up and wither, and must be removed the following year. A small hand saw is useful for the removal of branches too large for the knife.
WHEN TO PRUNE

If it is necessary to cut away a branch altogether, no portion of it should be left on the main stem, as this stump would decay and encourage fungi and pests. The cut should be as nearly perpendicular as possible, smooth, and slightly bevelled, thus presenting the smallest possible extent of wounded surface. When a large branch has to be removed, it is best to cut it away in two or even more operations, for a heavy branch may fall before the cut is complete, and the wood will probably be broken and torn. To avoid this tearing of the bark and wood, should the branch fall before it is completely severed, it is wise also to make a small cut on the underside of the branch before the main cut from above is commenced. Where the cut surface is over about an inch in diameter, it should be painted or dressed with tar; this will keep out damp and prevent fungoid diseases. The lopping of large branches is best done in November.

WHEN TO PRUNE SHRUBS

The time for pruning varies considerably and depends, to a large extent, on the season of flowering of the shrub, and the method is dependent upon whether the bloom is borne on the new or the old wood. For pruning purposes, shrubs can be grouped in six classes as follows:

(1) In shrubs where the new shoots, that is to say those of the current year, bear the flowers, pruning may be done any time from October to February, or when growth commences in spring, as the flowers are usually borne in summer or early autumn, the shoots of the previous year being pruned hard back to within a couple of inches of the old wood. In the case of shrubs of this nature, sufficient old wood, it must not be too old, must be left in to form a structure to carry the new growth. This naturally does not apply to shrubs that throw up strong new wood directly from the base, that is, from ground level.
WHEN TO PRUNE

(2) Where the plants flower on the wood made during the previous summer, generally in late winter or spring up to the end of May, pruning is usually done directly after flowering, as it is of vital importance to give the plants as much time as possible to form and ripen new wood before the winter sets in, for on this wood the flowers will be borne the next spring. Many such plants, the earlier-flowering *Spireas* and the *Diosvillas*, for example, are only thinned, the old flowering branches being removed and pruned sufficiently to keep them tidy and trim.

(3) Then there is the third group, and this consists of those shrubs that flower from about mid-May and onwards through the summer on the wood produced during the previous growing season. These shrubs start to make much of their new wood before the blossom fades, and thus much of this new growth would have to be cut away with the old wood if the pruning were left until after the flowering season. Shrubs of this class should, therefore, have the oldest wood cut right out from the base early in the autumn. This will give the new wood a complete growing season in which to develop. When a shrub is pruned in this way, it will sometimes make so much young growth that a thinning out of this new wood may be necessary during the summer.

(4) The fourth group comprises shrubs whose blossom is borne on wood over two years old, or on short "spurs" from it. With this class of plant very little pruning is needed in the ordinary way, but the young growth must be cut back annually in winter to within two or three inches of the old wood. Very old wood and weak growths should be cut out annually.

(5) There is another group that consists of plants that throw up vigorous young growth direct from the roots. Some of this class flower best on the old wood, and most of the young growth must be cut away annually. But where the best flowers are borne on the young wood, and in cases where the plants are grown for their foliage or coloured stems rather than for bloom, they should be cut down almost to the ground each year. Where a shrub has been grafted on a common stock, all suckers must be cut away, as the bloom they bear, if any, is not the same as that borne above the graft.

(6) The last group is composed of slow-growing shrubs.
HOW TO PRUNE

that need no, or practically no pruning. Many of them need cutting hard back annually in their earlier stages to make them robust and sturdy, but once mature they will require no pruning save for occasional thinning when overcrowded, or trimming should any of the branches become straggly.

It sometimes happens that when a shrub has been in the same position for several years, the wood becomes thin and weak, and blossom is consequently poor and scarce. Should this happen, all old wood must be cut right out, the newer being cut hard back. It is unwise, however, to cut out all the old branches at once, remove an entire branch at a time, one every second or third year in late spring. The Arbutus and plants of a similar nature require this treatment when old. Ample newer and strong wood will soon break from the older branches.

There are a few shrubs, the Broom is one, which do not like hard pruning. To cut a tall Broom right back into the hard, woody stem generally kills it. When a specimen gets really old and overgrown, it is best to replace it with a young plant, raised from seeds or by cuttings.

Evergreens and Conifers.—Most evergreens require comparatively little pruning, except for the trimming in of straggling shoots and an occasional thinning when the branches become overcrowded. April is the best time to trim evergreens, except conifers, which are best trimmed in September or October. Conifers, however, except when grown as hedge-plants, are not usually pruned. When such conifers as the Cupressus, Taxus, Thuya, or Tsuga, are used as hedges, they can be pruned back to any height desired; the lateral branches also being trimmed in with shears.

The reader is referred to the Alphabetical List of Flowering Trees and Shrubs, chapter XXXV, where will be found full instructions for the pruning of each particular kind.

HOW TO PRUNE

As already stated, the aim of pruning is, firstly, to let air and light to the wood so as to ripen it and thus encourage bloom on flowering shrubs. To effect this, wood should be cut away so as to keep the centre of the bush open. This, of course, does not apply to shrubs of pyramidal form or of
some equally uniform and compact shape Secondly, to train the plant to the shape and size required Thirdly, to keep it tidy. There are also several ways of pruning, the most usual being the cutting back of the shoots. Side shoots are often “spurred” or cut right back, leaving only three or four buds, care being taken not to prune further back into the hard wood than this, unless there are one or two buds below the point of cutting from which the plant can “break.” Plants requiring this treatment are usually late flowerers, such as varieties of Buddleia variabilis, Ceanothus Gloire de Versailles, and Hydrangea paniculata. Again, the strong main shoots may be “topped” or cut back by about one-third to encourage sturdy growth, or may be only just “tipped” to keep the plant tidy and the growth within bounds, at the same time, all old and weak wood is cut out.

Another method of pruning, often required, is the removal of the seed-heads from such plants as the Heath, Lilac, Pieris, and Rhododendron. If these seed-heads are allowed to remain in position, a poor crop of bloom will result in the following year. The new shoots of these shrubs form just at the base of these seed-pods, and great care must therefore be taken not to injure the young wood when removing these. These plants rarely need actual pruning, except when they have become drawn up and “leggy.” The old branches should then be cut out, one every two or three years, almost from the ground. New wood will soon be grown to replace them. Disbudding, the removal of superfluous buds, is also looked upon as pruning, for it increases the size of the flowers left upon the plant.

**How to Make the Cut.**

—The way in which the cut is made is most vital. It should be as nearly as may be straight, and should not leave a surface slanting upwards from below the bud, with its lower edge below the spring of the bud and its

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![Diagram](https://via.placeholder.com/150)

**Fig 15**—Pruning How to Make the Cut

The perfect cut (A) begins on the side of the shoot opposite the selected bud, slants slightly upwards, and ends just above the tip of the bud. In B (incorrect), the cut is made too far above the bud, if cut as in C (incorrect), the bud will be weakened.
ROOT PRUNING

upper on a level with it. This weakens the bud, which does not receive its full nourishment, and it results either in the shoot budding strongly from an undesirable bud lower down, or in the bursting of a new strong bud just below the one chosen, necessitating the re-pruning of the shoot down to that level. On the other hand, the cut should not be made too far above the chosen bud, or the wood left will wither up, and will have to be removed the following year. The perfect cut begins on the side of the shoot opposite to the selected bud, and slants ever so slightly upwards across the shoot till it ends immediately above the tip of the bud. It should be clean and unbruised. See that the bud faces in the right direction, that is, usually outwards, so as to keep the centre of the bush open to the sun and air.

ROOT PRUNING

This consists in the cutting away of some of the stronger roots, in order to prevent excessive growth of wood and consequent scarcity of bloom. The plants may be taken up, root-pruned, and replanted, or a trench may be dug round the tree or shrub, exposing the roots, which may then be pruned in situ. In the case of extra large trees, dig half way round and prune those roots one year, following with the other half a year later. Where a thick branch or root has been cut, it is advisable to paint the cut surface with coal-tar to prevent "bleeding." Root-pruning is valuable in the case of fruit trees, but is not so frequently resorted to in the case of ornamental and flowering trees and shrubs.

PRUNING CLIMBERS

Creepers which cling without tying need no pruning, except when they go beyond their allotted space. The pruning of Vines is best done before Christmas, so that the cuts are
PRUNING CLIMBERS

quite hard before new growth is due to begin in spring, as Vines "bleed" very readily when pruned in spring. If the support over which the plant is trained is well-covered, all last season’s growth should be cut back to within a few inches of the old wood. Where further extension is desired, a few straight young shoots should be retained at full length. Ivy, which left unpruned becomes too cumbersome and encroaches over gutters and windows, can be cut back with shears just before new growth begins in the spring. Do not be afraid; give a plant of this kind a real "haircut". It will very soon break out into new, clean growth, very much more charming than the old soot-begrimed leaves. The winter-flowering Jasminum nudiflorum blooms more freely when the young growths of the previous year are rather closely pruned in early spring as soon as the last flowers fade. The summer-flowering Jasmnes need less attention in the way of pruning, though they must be kept tied up to the supports. When plants of this kind become too cumbersome, a little of the old wood should be cut out and the growths thinned.

Pruning Clematis.—The Wild Clematis (Old Man’s Beard) needs no pruning, but it must at all times be securely tied to its support, as it will otherwise get broken. The novice often takes the thin brown stems in winter to be dead, and cuts away what might develop into fine flowers. It is unwise to attempt any pruning until growth has commenced. The method of pruning, and also the time, depends on the plant’s habit of growth. Early-flowering sorts, like C. montana, which has masses of lovely white flowers in spring on the stems of the old shoots, must not be pruned during the winter. Whatever restriction of growth is necessary should be done as soon as the flowers are over. The large summer-flowering sorts do not require a great deal of pruning. Take off the thin unripened ends of the long growths in February or early March, and shorten weak side shoots. Late-flowering sorts, which flower on the young growth of that season, may be pruned back as soon as growth begins and it is possible to tell how much of the apparently dead wood is alive. The purple C. Jackmani is one of those which flower late on the current season’s growth. It blooms more freely when hard pruned each year in March or early in April.
The pruning of Rambling Roses should be done immediately after the flowers have faded. A little discretion must be used if the plant makes fine strong shoots from the base, only these should be retained, the old wood being entirely cut away, and the new shoots trained in its place. Some Ramblers are slow in producing new basal shoots, and merely send out new branches from the old stems. These must be treated less drastically, but in every case the old flowering shoots must be removed, and only new shoots retained if good flowers are to be produced the following season.

The perpetual-flowering climbing Roses, like Gloire de Dijon, William Allen Richardson and Climbing Caroline Testout, should be pruned towards the end of March.

Shrubs like the spring-flowering Ceanothus, which are not tree-climbers, but which are much used as wall-plants, need considerable care in pruning. Every two or three years, one or two of the oldest branches should be cut right out, the strongest of the young shoots being trained in to take their place. In the case of shrubs flowering on the wood of the current year, some of this new wood must be laid in annually. All breastwood, that is, branches that grow straight out from the front, away from the wall, and all young shoots that cannot be laid in should, as soon as the flowers fade, be shortened back to within two or three buds of the older wood from which they spring.

The Pyracantha, being an evergreen, is best pruned towards the end of April when new growth is about to re-commence. As, however, the flowers are borne on the shoots of the previous year, only loose and unwanted growths must be cut away. Hard pruning would remove the flowering shoots which later develop the attractive fruits. Should a Pyracantha become too large and straggly for its position, it will be necessary to sacrifice a season’s flowers and fruits, and to cut the growths back hard all over the plant in April.

Note — For detailed instructions as to the pruning of the particular species and varieties, see the Alphabetical List of Shrubs and Trees, Chapter XXXV.
CHAPTER XXX

WHEN trees grow old they suffer from disease and decay, as do members of the animal kingdom. Young trees, too, are, of course, open to the attacks of diseases and pests (for their control, see chapter XXXIII), but aged specimens are far more susceptible to them, and, in addition, are especially open to the ravages of decay. The spores of fungoid diseases find a home in the cracks in the broken bark of branches and trunks damaged by storm and on cut surfaces exposed to the weather when large branches have been lopped.

Trees whose trunks have, when young, divided near the ground are those that are most liable to damage by storm, the heavy main branches being very prone to split at the point of union. To prevent this, it is sometimes desirable to support the heaviest branches by means of iron bars bolted through the larger limbs with plates and nuts. The higher up the branches the bars are fixed the greater the support that will be afforded to the branches.

In practice it is found that the small hole bored through the larger limbs does infinitely less, if any, harm to the tree than does the old method of looping the limbs together with chains and metal collars, which in course of time cut into the bark as the limbs increase in size. The supporting bars can be screwed up or loosened from time to time if required, but they must not be used to lever the branches together. All that can be done is to prevent them from growing further apart and to afford them support during storms and high winds. The heads of branches, if heavy, should at the same time be reduced, care being taken to maintain, as far as possible, the symmetry of the tree. Where branches have split and broken, they must be cut right back into the sound wood.

When large branches are removed, they must be cut right
back flush with the trunk, main stem or a strong side branch, so that the bark can eventually grow over the cut surface and protect it from the weather. If "snags" are left, the bark is unable to do this, and the exposed surface decays. In so doing it will allow damp and fungoid spores to penetrate the sound wood and set up disease. All cut surfaces of any size must immediately be treated with Stockholm tar or with gas tar. This tarring should be repeated annually until the bark has grown over and protected the wound, a process which, in the case of a large wound, will occupy several years. (For the removal of large branches, see also chapter on Pruning, page 163.) The prevention and treatment of diseases is discussed in chapter XXXIII.

When decay has formed a cavity in the wood, all rotten matter must be cut right back to the sound wood, and should there be a hollow in which water has accumulated, this must be drained, the cavity being allowed to dry out thoroughly. The walls of the cavity should then be painted with tar. the hollow being filled up with asphalt, cement, or concrete and brick rubble, which should be brought up level with the under-side of the bark round the mouth of the cavity, making it thoroughly watertight. If the wound is not too large, the bark will, in the course of years, grow over the surface of the filling material, which must not project beyond the level stated above. In the case of badly neglected trees with a mass of overgrown and damaged branches, all the dead wood should be removed, together with any boughs that have been bruised, barked, split or injured in any way.

In dealing with old climbers on walls, it is a good plan to cut back every other main lateral branch to within six inches from the main stem, and as soon as fresh shoots have replaced these, to cut out those previously left, allowing them to be replaced by new shoots in the same way. Another plan is to remove the main stem, with all its branches, down to the level of the lowest main lateral branches. By this operation, the formation of strong new shoots will be stimulated from below, these can be encouraged to grow in an upright form at such regular distances as are required. In the case of overgrown bushes, the centre should be opened up, all crossing branches being removed.
PROPAGATION

CHAPTER XXXI

TREES and shrubs are so various in their characteristics and habits of growth that numerous methods of propagation must here be considered. Most shrubs and trees may be raised from seeds, cuttings may be taken of the great majority, a large number can be layered; in a few cases the roots may be divided, of some root-cuttings can be secured, while many choice species and varieties are propagated by grafting or by budding. The last two methods, however, need only be resorted to when other methods are unsuitable, as nearly all plants are better when grown on their own roots. Besides, in grafted shrubs, sucker growths may spring up and are often difficult to distinguish from the grafted wood. This defect is not so troublesome in the case of grafted trees, as the suckers can be readily seen growing from the clean stem of the stock.

The first two methods of propagation are by far the most simple and the easiest. Garden hybrids, plants with coloured or variegated foliage, those with double flowers, and botanical varieties cannot be relied upon to come true to type when raised from seed. In such cases the plants should be increased by means of cuttings or layers, or by budding or grafting on stocks of the common species, as these methods will generally produce plants identical in all characteristics to the parent. Grafting and budding are the usual methods by which garden varieties of Prunus, Pyrus, the large-leaved hybrid Rhododendrons, and other choice trees and shrubs are propagated. These two methods save much time, and provide a good-sized plant several years sooner than can other ways of propagation, and because of this, they are often used when other and simpler methods are also available.

It is useful to bear in mind that nearly all trees and shrubs can be increased by more than one method, and many shrubs,
PROPAGATION

for example, can be propagated by both hard and soft wooded cuttings at the respective seasons. (See chapter XXXV) Also, most species in any one genus can usually be raised by the same methods of propagation. Provided due care is taken, the great majority of trees and shrubs are easy to propagate, and there is, within reason, considerable latitude in the seasons for propagation by the various methods. But a few subjects are difficult, and call for great skill and ingenuity, and also a rigid adherence to the time or method of propagation.

RAISING FROM SEEDS

Seed sowing is the natural method of raising trees and shrubs, and should be resorted to when possible, as the resulting plants are usually more virile and longer lived. It must be remembered, however, that although most trees and shrubs bear seeds, many when raised from seeds take years to attain even moderate size, and for this reason it is frequently advisable to resort to cuttings, layers, budding or grafting, and by this means save many years of tedious waiting. In addition, garden hybrids and plants with coloured and variegated foliage will rarely come true to type, also, double flowers, with very few exceptions, do not ripen seed. There are also certain plants which do not ripen seed in this country. In these cases, therefore, other methods of propagation must be tried: cuttings or layers, or if these are unsuitable, resort must be had to budding or grafting, but these last two should be attempted only when other methods are not likely to prove successful.

Seeds should not be gathered too early, but must be allowed ample time to ripen, and must be cleaned before being sown. The seeds of such trees as the chestnut, oak, walnut, and beech are oily in nature and, unless carefully stored in slightly moist sand or fibre, are apt to shrivel. They are, therefore, best sown in pots or pans in a cold frame or in drills 6 inches apart in the open as soon as they are ripe, the seedlings remaining in the seed-bed during the first year, and being transplanted the following spring. The seeds of most shrubs are better sown in well-drained pots, pans or boxes of sandy soil under glass, as soon as ripe in autumn. When
RAISING FROM SEEDS

germinated and their characteristic leaves have formed, they should be pricked out in boxes $1\frac{1}{2}$ to 2 inches apart, the less hardy kinds being hardened-off in boxes in a cold frame, and the hardy species being planted out from 6 to 10 inches apart in nursery beds in the open.

The seeds of such shrubs as the Rose and the Thorn, if not sown under glass in the autumn (the best method, see below), should be gathered in early winter and stored in layers of moist sand. They should be kept in a moderate temperature until planted out in a seed-bed in the open in spring (see page 175).

The seeds of most shrubs and trees germinate in a month or two: some, however, like those of the Holly, Rose and Thorn, may take a year, those of the Prunus, a year and a half, and some trees and shrubs, two and a half years, or even more, unless sown straight from the trees or bushes. These are best sown as soon as ripe, late in the autumn, being very slightly covered with soil. As frost very materially assists germination, the pots should be plunged to the rim in the open throughout the winter, being placed in a cold frame or heated greenhouse in March. The finer seeds, when sown in the open ground, are liable to get lost or damaged before they have had time to germinate.

Gentle bottom heat is useful in helping the germination of seeds of some hardy trees and shrubs sown under glass, but once the seeds germinate, the heat must be reduced and gradually discontinued, or the young trees and shrubs will become weak and straggly.

The seeds of some conifers must ripen in their cones on the trees for about a year, some require to hang for quite two years. When the cones have been gathered, they should be stored in a warm and dry place; the dryness opens the cones, and the seeds are liberated. They may be sown thinly in the open in March or April, being only just covered with fine sandy soil.

Seeds from healthy trees only should be used. Transplant from the seed-beds to rows in the nursery garden as soon as the seedlings are large enough to handle.

It is always wise to shelter the young seedlings from the sun when first transplanted.
PROPAGATION

SOWING IN THE OPEN

Preparing the Seed-Bed.—The seed-beds should be sheltered from the north and east. The soil should be made as fine as possible, the lumps being first broken up with a fork and then raked over thoroughly until the earth is well pulverised. The soil should contain 10 per cent to 20 per cent. of sand,—this will make it porous and will enable the air to penetrate freely through it. If the soil is not made fine in this way, many of the seeds will fall down in between the clods, and will not germinate. Those that do come up will have their tiny roots parched, as there will be no fine soil through which they can spread to obtain nourishment and moisture. Too rich a soil must not be used, for the seedlings would become tall and straggly, instead of short and sturdy, which is the ideal at which to aim. No manure should be employed. In making a seed bed for lime-loving plants a little lime should be worked in, and peat-lovers should be given a little peat or leaf-mould. The bed must be pressed down firmly, being left to settle for a few days before seeding. Water the bed thoroughly, if dry, and sow thinly in drills running, preferably, north and south, and from 6 to 12 inches apart.

Weather for Sowing.—Never sow in a cold, wet soil. Wait until the ground has dried sufficiently and until the weather really bids fair to be mild. Dry weather, should, therefore, be chosen for seed sowing, and if seed can be sown just before a gentle shower, or when the weather is likely to be showery, so much the better. Of course, there is a proper time for sowing the seeds of each species of trees and shrubs, and where sowing is a recognised method of propagation, this time is stated in the paragraph devoted to each particular plant (See chapter XXXV). These times cannot be specified in a series of general instructions which apply equally to all, but the matter is discussed on broad lines on page 174. The smaller the seed the finer should be the soil in which it is grown. The soil in which seed is sown should be tolerably dry—dry enough to crumble lightly when worked with the hand. It must not clot together in a pasty mass. Place or position—whether in the open air or under protection—also forms an important factor with regard to time, and the requirements in this respect of each particular shrub or tree are also set forth in chapter XXXV.
SEED SOWING

How Deep to Sow.—Cover the seeds lightly with fine, sandy soil. The depth of covering required depends on the size of the seed. Minute seeds, like those of the Rhododendron, for example, need hardly anything over them, a mere sprinkling of sand is sufficient. Medium-sized seeds must have a covering a little less than half an inch thick, and large seeds and nuts, such as those of the Chestnut, can do with $\frac{1}{2}$ to 1 inch of soil over them. Few seeds require a covering of more than 1 inch in thickness. Seeds may be sown slightly deeper out of doors than under glass, as the rain is liable to wash out any with too sparse a covering. When sowing in the open a good rule is to cover the seeds with a layer of earth of twice their own thickness, and with one of their own thickness when under glass. Do not pat down the soil after the seeds have been planted. Seeds sown in heavy soil must not be placed so deep as those planted in sandy loam; while in sandy soil a covering of nearly twice that given in a heavy soil will be required. Do not plant the seeds too deep, however, as if so planted and they ever reach the surface at all, they will have used up most of their strength and energy, and will make weak, straggly seedlings. Should the soil of the seed-bed be very dry, water the ground and defer sowing for twenty-four hours.

Watering and Protection from Birds.—Should the weather be dry, give the seeds a good watering from a can, with a fine rose the day following sowing; the rose must be very fine, or the seeds may be uncovered and washed away. Keep the soil uniformly moist, but not too wet; over-watering causes the seeds to rot, and is the most frequent cause of failure. A few strands of black cotton, supported on small sticks, should be stretched across the bed to keep the birds away, or gauze, sprigs of heather, or a few twiggy branches, can be laid over the ground. If, before planting, the larger seeds are steeped in a weak solution of paraffin, or rolled in red lead, neither mice nor birds will trouble about them.

Thinning Out and Transplanting.—When large enough to be handled between finger and thumb, the seedlings should be pricked off some 3 to 6 inches apart, less or more according to the growth of the seedlings. This should always be done at the earliest possible moment. Delay in thinning and transplanting means that the seedlings become drawn-up.
and weakly, and when they are eventually moved, the fibrous roots may be torn and the seedlings will take much longer to become established. They will, in fact, never make such sturdy plants as those transplanted at the right time. In order that the roots shall not be torn, the seed-bed should be watered the evening before the day on which transplanting is to take place. The seedlings should be raised from the seed-bed by means of a small fork, each seedling may then be separated from its neighbours without any damage to its roots, and should be planted very firmly, by means of a small trowel, in a hole just large enough to receive the roots without cramping them or doubling them up, and care must be taken not to leave an air-pocket below the roots, or they will soon be parched. The soil should be firmly pressed back around those seedlings left in the seed-bed, or they will be likely to die off. If transplanting is done in the evening, the seedlings will have the cool night in which to recover, and will not be so liable to be scorched as when transplanted in the heat of the day. The nursery garden into which the seedlings are transplanted must possess a sunny aspect, should have been well dug, and the soil, if poor, will be all the better for having had good fibrous loam, leaf-mould, or old well-rotted manure mixed with the top 6 inches, and in order to ward off slugs must be dressed with just sufficient soot to blacken the surface. A further dressing of vegetable ashes, if available, will help to lighten the soil and furnish nourishment for the seedlings. In dry weather the prepared bed should be well watered the day before it is to receive the seedlings, but it must not be made too wet, as the seedlings will not thrive if it is allowed to “cake.” The bed should again be watered after the transplanting. If transplanting can be carried out in showery weather, so much the better.

When to Water.—In dry weather, the seedlings should be watered (but not when the hot sun is on them), and the bed must be well hoed. Tepid water from a tank standing in the sun is far more congenial to them than cold water from the tap or a deep tank, and, provided the soil is fairly rich, the seedlings should receive no manure until they are well established and growing strongly. An application of soot water is a sufficient stimulant, is a protection from slugs, and lessens the risk of “damping-off.”
SOWING UNDER GLASS

Protection During Winter.—In sheltered districts the young seedlings of hardy trees and shrubs may be left in the open all winter, but in colder districts it is safer to place movable frame lights over the more tender seedlings from October to April. Light, sandy soil and a southerly aspect best suit most seedlings. As much air as possible should be given, but care must be taken to protect from sharp frost and heavy rain or drip. Slugs are the great enemy of seedlings, and it is worth while using some good soil fumigant to keep these at bay.

SOWING UNDER GLASS

When only a few seedlings of each kind are required, which is usually the case in small gardens, there are several points in favour of sowing the seeds in small pots, pans or shallow boxes in a cool greenhouse or frame, or sowing may be done in pans, these being covered with sheets of glass and placed in a sheltered position outside. In this way the seedlings are easier to manage, and are under closer supervision than when sown in the open air. Also, germination and early growth are quicker and there is less liability of damage by insects and birds. With the possible exception of lime-hating subjects, for which peat should be used, the soil for the seed pans, pots, or boxes, should consist of a composition of two parts good loam, one part leaf-mould, and one part grit or sharp sand. For rare and uncommon subjects, a little powdered charcoal should be added to keep the soil sweet. The compost should be sieved through a quarter-inch mesh, and the soil for covering the seeds, through a sieve even finer. Mix the compost thoroughly, press it gently into the pot or box, and make a level surface just below the rim of the pot. The seed pans, pots, or boxes should be drained by means of "crock," or broken pots, an inch of crocks being required in a box or pot 5 inches in depth. Over the crocks should be placed a layer of moss, rough siftings or fibrous loam, to prevent the fine soil from silting away to the bottom of the pot. Earthenware pots or pans are preferable, as the earthenware keeps the soil more evenly moist than does the wooden box, though for seeds which germinate quickly this is of no great consequence. Water the soil, and allow it to drain before sowing the seeds. The seeds must be sown thinly, usually as soon as ripe (for the requirements in
SOWING IN A FRAME

this respect of particular trees and shrubs, see chapter XXXV). Rare and choice seeds should be given water subsequently, when required, not with a can, but by the pots or pans being immersed nearly to their rims, the water being in this way able to soak up from the bottom. If the surface of the soil is dusted over, after sowing, with a little sharp sand, mosses and lichens will not be so likely to grow and suffle the young seedlings. Set the seed pans in a frame or cool greenhouse with or without a little artificial heat from October to the end of April or early in May. A sheet of glass should be placed over the pots, pans, or boxes, the glass in turn being covered with a sheet of brown paper to keep out the light. Each day the glass must be lifted so that the condensation may be wiped off, or the glass should be turned over, otherwise the seeds will be kept too moist. But little further water need, as a rule, be given until the seeds have germinated, except in the case of seeds which take a considerable time to germinate; in which case, the soil must be kept only just moist, excessive moisture being carefully guarded against. If the seeds are sown in pots, these should be stood on pea gravel, finely-broken coke, or on coal ashes, to allow the ready egress of surplus water from the bottom of the pots and to prevent worms from entering the pots through the vent holes beneath. As soon as the seeds begin to germinate, air should be gradually admitted by placing a label under the glass and removing the paper. The seedlings must be lifted by gradual steps up to within 6 inches of the lights of the house. If left some distance from the glass, weak straggling seedlings may result. In warm weather it is wise to water the seedlings in the evening, but in the colder weather the watering must be done before lunch time, or there may be a danger of the seedlings "damp-ing off." At all times shade seedlings from bright sunlight.

Sowing in a Frame.—Seeds may be sown in a frame in exactly the same way as described for sowing in pans or boxes. The frame should be in a sheltered, but not shaded, position, for when the weather is sunny and calm it is essential to ventilate as much as possible after germination. The disadvantage of sowing seeds of hardy trees and shrubs in a cold frame is that unless they belong to one family, germination is very irregular, and may vary from two or three weeks to eighteen months or two years.
PRICKING-OFF AND PLANTING-OUT

Pricking-off the Seedlings.—When the seedlings are large enough to handle readily, they must be pricked-off, a wooden label being used in place of a small hand-fork, and great care must be taken not to damage the tender young stems, for the slightest scratch may cripple the young plant, even if the damaged seedling is not killed there and then. The seedlings should be transplanted into boxes of light sandy soil, being set from 1 to 1½ inches apart (strong-growing kinds, a little more). After this they may again be put in position some 6 inches from the roof glass. When pricking-off, the wooden label should be inserted in the soil by the side of the seedlings whose roots may then be gently levered up without damage—never should seedlings be pulled up between the finger and thumb, as this will sorely damage the roots. The seedlings should be planted so that the first pair of leaves show just above the soil. They must be planted fairly firmly, and should have the soil pressed down around the roots and stems, though care must be taken not to injure any part of the seedling. A thin dibble about the size of a pencil, or slightly larger, may be used to make the holes for the seedlings, and these must not be made too deep, otherwise the roots of the seedlings will not reach the bottom, and the air-pockets left under them may cause withering of the roots. When dealing with seedlings of substantial size, do not "firm" them by pressing the earth round the stems with the fingers, but use the dibble, inserting it into the soil, in three or four places round the seedlings, about half an inch from them, and to the same depth as when preparing the holes. This will firm the soil all round the seedlings, right down to the bottom of the roots, the fingers would only press in the surface of the soil and the roots would be left loose in the ground. In the case of seeds that germinate irregularly, the first batch of seedlings may be pricked-off as soon as they can be handled, and the seed boxes should then be returned to the greenhouse or frame so that the remaining seeds may germinate. After pricking-off, keep the seedlings in a close atmosphere, and shade from the sun for a few days until they are established.

Hardening-off and Planting-out.—In due course, the healthy and vigorous young plants will be ready to harden-off by being gradually given more and more air, until they are planted out on a sheltered border, or in the nursery garden, in
CUTTINGS

May or early June. It is usual to nurse slow-growing and rare subjects for a longer period under glass, accommodating them for a second winter in a frame. If preferred, they may be planted out-doors on a sheltered bed or border where the protection of a movable frame-light can be readily given when required.

CUTTINGS

This is, undoubtedly, the most popular method of propagating shrubs, and quite a number of trees. It ensures that the new plants shall be true to type, which cannot always be guaranteed when raising from seeds. This method is resorted to especially when propagating popular varieties, and also in the case of rare shrubs. Many trees are also raised by this method, but with a few exceptions, notably Willows and Poplars, the cuttings do not strike so readily as do those of most shrubs. Healthy shoots should be removed from the plant with a sharp knife, a clean, straight cut being made just below a joint or node. An even better cutting is made by removing the shoot with a heel, or wafer-like portion, of the old wood and bark with it. It is especially necessary to take a heel when the cuttings do not have any prominent leaf buds at the joints of the stems. Hard-wooded cuttings are best taken with a heel, but this is not essential. When, however, no heel is secured, the cut must be especially clean, and just below a joint. The heel, from which all ragged edges should be trimmed, when placed in contact with the ground, provides a larger surface on which roots can form. Cuttings are best taken in the early morning, or on a dull day, they then better retain their vitality. A tin box or vasculum is preferable to a wooden basket or cardboard box when collecting cuttings from the bushes and trees.

Length of the Cuttings.—Quite a number of considerations have a bearing on the length of the cuttings, in addition to the amount of growth suitable and available from which to make the cuttings. Among these considerations are the habit of growth of the shrub or tree; the season of the year, whether the cuttings are to be inserted under glass, with or without heat, or on a border outside, and their nature, that is, whether "hard" or "soft." Again, the distance between the joints on the stems enters into the question. When these are,
LENGTH OF CUTTINGS

say, an inch apart, the cuttings may be 12 inches long, and in the case of hard-wooded cuttings, from one third to one half of this length should be buried in the soil when the cuttings are inserted. Where the distance between joints is less, the cuttings must be shorter, but all hard-wooded cuttings inserted in the open air should have two-thirds of their length inserted in the soil. Soft cuttings are usually much shorter than hard-wooded ones. According to the habit of growth of the plant, they should vary between 3 and 6 inches in length, while hard-wooded ones may be from 8 to 12 inches long, cuttings of half-ripe wood being from 4 to 5 inches in length. There are a number of hard-wooded shrubs, the Ericas and some of the small-leaved Rhododendrons, for example, whose cuttings it is not usual to attempt to root on a border outside, as the hard wood does not easily form roots. With shrubs of this kind, just the soft ends of the branches, some 2 inches or even less in length, should be taken. The thin shoots on the sides of the growths should be selected, from strong, healthy growths. It is advisable to leave cuttings out of the ground for long after they have been taken from the parent plant. If they cannot be inserted in the soil at once, bury them in moist soil, or place them in a tin box. The cuttings must be inserted to the bottom of the hole prepared for them and made firm. They should be dubbled immediately in fine, sandy soil on a sheltered border or in pots or boxes in sandy loam under glass, according to the type of cuttings, see page 183. Though useful to secure quicker rooting, with most shrub cuttings, heat is not a necessity, but with a large number of hardy trees and shrubs, gentle bottom heat encourages the rapid development of roots. The soil must be kept uniformly warm and moist. The cuttings should be shaded from the sun until rooted, especially is this necessary in the case of soft cuttings, which are soon scorched by the sun. For most cuttings, the cold frame may with advantage be placed in a sheltered locality where the cuttings will get plenty of light but no direct sunlight. There are exceptions to this rule, the most notable examples being the Cytisuses, Genistas and Cistuses, which root best in very sandy soil in a sunny frame, being given plenty of moisture at the roots and being shaded for only a few hours when the sun is hottest at mid-day. Cuttings of
TIME TO TAKE CUTTINGS

nearly all the less hardy shrubs are best inserted in a propagating frame with slight bottom heat. As a general rule, it may be stated that for cold frame and outdoor propagation, the cuttings should be made from the matured laterals of the current year, and the foliage should be stripped from the lower one-third of the stems.

**Evergreens and Conifers.**—Cuttings of most hardy evergreens and conifers are best rooted under glass, not because they need heat, but because a close, steady, and fairly moist atmosphere is required to prevent the foliage from flagging or wilting.

**Time to Take Cuttings.**—Shrub and tree cuttings may be taken at three distinct times:

- **First,** cuttings may be taken when the young stems are still soft in early summer. These soft cuttings consist of small shoots of new growth, and must be inserted under glass, preferably with slight bottom heat until the cuttings have rooted.

- **Secondly,** in July, August, or September, when the shoots of the current year have half matured. These cuttings, even of hardy shrubs, however, are more certain of rooting when treated like those of less hardy nature and inserted under glass, but bottom heat is not a necessity. This second period is, perhaps, the best of the three for most trees and shrubs.

- **Thirdly,** in late autumn and winter when the wood has hardened and is quite ripe. It is possible to strike hard-wooded cuttings right through the winter up till the time that the young shoots show signs of bursting forth again in spring, but the sooner cuttings are taken after the growth is mature, and even before the complete fall of the foliage, the better. The cuttings may be inserted 3 to 6 inches apart in a sheltered nursery bed of sandy soil in the open. The length of the cuttings will obviously vary from a few inches to even 18 inches or 2 feet, according to the growth and habit of the particular shrub or tree. The soft tops of the cuttings must be removed, as these would only be damaged by the winter’s frosts. A good general rule to follow is to insert one-half to two-thirds the length of the cuttings firmly in the soil. Protection should be afforded against drying winds. Hard-wooded cuttings should be very carefully selected, for they must be healthy shoots of well-ripened one-year-old growths. Hard old wood,
PREPARING THE COMPOST

with one or two exceptions, notably Willows and Poplars, will not develop roots, and young, sappy shoots soon wilt in the open ground.

Cuttings of Soft and Half-ripe Wood.—Cover these with glass so that they shall be in a close and uniform atmosphere. This enables the leaves to keep fresh until the roots are strong enough to support them. Cuttings inserted in the open remain inactive through the winter, and do not usually form roots until the following spring. They must, therefore, not be disturbed until the next autumn, at the earliest; but cuttings inserted under glass usually root in a few weeks, and can be potted up in early autumn and wintered in a frame. The roots will then have a chance of becoming established before the winter. In a cold frame but little water should be given until the spring, and even then only enough to keep the soil just moist until new growth is active. For some time cuttings emit but few roots, and consequently consume little water. Excess moisture will be likely to cause the stems to rot.

Preparing the Compost.—Coarse, gritty and moist sand is, perhaps, the best medium in which to root the majority of cuttings, but if inserted in this way, the cuttings must be potted off into a good compost (see below) as soon as roots have formed, for there is little or no nutrient in pure sand. A light soil through which the air can pass freely is essential to the well-being of all cuttings. That aeration is necessary is proved by the fact that cuttings will strike readily in peat moss, a material that is extremely pervious to air and which retains moisture for a considerable period. Perhaps the free access of air through the excellent drainage in such a position is the reason why cuttings root more freely when placed close to the side of the pot. When cuttings are inserted in pots or boxes, these should be well drained by an inch layer of crocks at the bottom, which should be clean. Clean pots and pans should always be used, if they are dirty, the mould will be likely to stick to the sides when the cuttings are turned out for transplanting, and the tender new root fibres may be torn.

A good compost for rooting the cuttings of most plants on a border outside can be made by mixing equal quantities of leaf-mould and sandy loam, and by adding to this a good proportion of coarse sand. No manure should be added, and
INSERTION OF CUTTINGS

the soil should not be sieved or it will become caked and sodden after watering. It is always well to sprinkle the surface of the soil which is to receive the cuttings with a layer of coarse sand about 1 inch thick, so that when the dibble is pressed down to form the hole for the cutting, some of the sand will trickle into it and be ready to encourage the production of roots. The sand keeps the soil porous and prevents the base of the cutting from rotting. The distance apart the cuttings are inserted varies very considerably, according to the size of the cutting and whether it is inserted outside or under glass. When under glass, they are inserted closer together, especially in a heated frame, because they soon root, and are transferred elsewhere at an early period. The soil should be made firm. The cuttings must not be placed too close together, however, otherwise they may "damp-off." Press the earth well down round the cuttings, as they will not root if standing loosely in the soil. If the cuttings can be fairly easily pulled up, it may be taken as an indication that they are not planted sufficiently firmly. In the case of hard-wooded cuttings inserted in the open ground in early winter, it will frequently be found necessary to firm down the soil round the cuttings after it has been raised by a frost. Should this operation be neglected, the cuttings will root only with extreme difficulty.

Inserting the Cuttings.—As already stated, cuttings root more readily when placed at the side of a pot than when inserted in its centre. Generally speaking, from five to seven cuttings can be placed in a 3½ inch or a 5 inch pot, according to the size and vigour of the cuttings. No cutting should be set too deeply, but as in the case of seeds, the depth will depend mainly on the nature and size of the cutting. A good general rule is to set about two-thirds of the length of hard-wooded cuttings inserted in the open air in the soil; with soft-wooded cuttings, only one-third or even less in a heated frame should be inserted. Leaves should not be permitted to touch the soil; if they do, they will "damp off." A good watering after insertion should suffice for a considerable time, except when coarse sand only is used. This dries more rapidly, as, by reason of its nature and porosity sand does not hold moisture very long. It is important not to employ cold water straight from a tap or well, the water should,
SHADE AND VENTILATION

before use, be allowed to stand exposed to the atmosphere in which the plants are growing for at least 24 hours.

When using pots or boxes, it is better, but not necessary, to sink these nearly to their rims in ashes or peat moss. This will keep the soil at an even temperature. Whether the cuttings are covered by sheets of glass, bell-glasses, or the lights of a frame, the condensation must be wiped off each morning. Once the cuttings have rooted, ventilation must be given whenever possible, all decaying leaves being removed to avoid any possibility of "damping-off."

If a considerable number of cuttings are to be inserted in the open, the bed should be prepared as described for the seed-bed in the open (page 175), but the soil need not be brought to quite such a fine tilth. Where many cuttings have to be inserted, instead of using the dibber, a straight-sided trench two-thirds of the length of the cuttings in depth and with an even bottom should be taken out with the spade. A sprinkling of coarse sand should be laid along the bottom to encourage rooting. When all is ready, the cuttings are stood three to six inches apart, according to the vigour of the plant, and so that they rest against the vertical side of the trench. The rows should be from 12 to 18 inches apart to allow of the free use of the hoe. Replace the soil, and firm the cuttings in well, but do not tread down the top inch of soil. This should be left friable to allow moisture readily to soak into the ground. No water should be needed or given after inserting the cuttings, or throughout the winter. During a drought in early spring, however, watering will doubtless be necessary.

Shade and Ventilation.—Too much sunlight, air, water, heat, or cold are alike injurious to cuttings freshly inserted under glass. A close, equable temperature and a moderate degree of moisture should be maintained until the cuttings have "rooted," the frame being kept closed during this time, except for a brief period each morning, when the interior of the glass should be wiped and the surplus moisture allowed to escape. Once the cuttings have rooted, which will vary from a week to probably with difficult subjects two or three months, they should be gradually given more ventilation and hardened-off until they can be planted out into the open with safety.
Transplanting and Potting Off.—Soft-wooded cuttings soon form roots, and can often be potted-off in a month or so’s time. Cuttings of hard-wooded shrubs, however, on outside borders, take root less quickly, and should not be disturbed for at least a year (sometimes 18 months) after rooting. To give the cuttings ample room to grow, they are usually planted 4 to 6, or rarely up to 12, inches from each other in rows a foot or eighteen inches apart. Cuttings inserted in pots and pans should be potted-off before the roots fill the soil, if this happens, the roots may become intertwined and be torn when the young plants are removed. It will sometimes be found that a large callus has formed on the bottom of the cutting, but that no roots have grown, in this case the callus should be carefully pared away with a sharp knife, and the cutting re-inserted in the soil, when roots will usually form.

Layering

This is a most valuable and sure method of increasing many of the shrubs and trees that are not easy to propagate by cuttings, as for example, the Magnolia, Hamamelis, Stewartia and Disanthus. There are few shrubs that cannot be increased in this way, provided the branches to be layered can be brought in contact with the soil without being broken. In nurseries it is the method very largely employed to propagate Aces, Lilacs, and many Rhododendrons, including Azaleas. Owing to the fact that quite large branches may be layered, this means of propagation often provides large plants more quickly than will any other method. Layering is usually carried out from June to the end of October, and although this is, in most cases, the best time, this method of propagation may be accomplished at any season. In the case of deciduous subjects, the work is more easily done when the shoots are leafless. The actual process of layering is to bury a portion of the branch, without severing it from the parent plant, until an independent root system is formed. Old hard-wooded and thick-barked branches are of very little, if any, value for layering. Firstly, because they are liable to split when bent down to the ground; and secondly, for the reason that the old wood does not readily put forth roots. Sturdy semimatured but flexible shoots up to two or three years old that
LAYERING

may be easily pegged down to the ground should be chosen, all unwanted laterals and surplus foliage being removed. The average length of the shoot may be from 6 to 18 inches, but it is often allowed to be longer, in the endeavour to obtain a good-sized specimen in a short time. An upward cut, just below a joint, is made in the layer or shoot, the incision should pass from the underside well into the bark, but should not penetrate deeply into the wood of the shoot, and should be from about 1 inch to 3 inches in length, according to the size and nature of the plant to be propagated. The aim is to produce a “tongue” of bark and wood that can be wedged open and pegged down into the soil; the more the tongue is kept open when placed in contact with the earth, the better the chances of rooting. Certain shrubs, the Heaths for example, will form roots on their branches if these are well earthed-up, even if no incisions have been made. In the case of very hard or brittle-wooded plants whose branches would be likely to snap when cut into, it is usual to impede the flow of the sap by binding a strand of wire tightly round the branch at the place to be layered. The branch is then earthed up without any incision, and will put forth roots at the point of the binding. Some gardeners, instead of making an incision, prefer to twist and so break the bark of the stems at the point to be layered. This practice is suitable to nearly all types of trees and shrubs. It is usual to layer several shoots at a time, and when the cuts have been made as described above, the earth all round the plant is stirred up to a depth of 3 inches, and the layers are pegged down very firmly, so that the open tongues come well in contact with the soil. Little mounds of earth some 6 inches high are then piled up over the layers, which are pressed firmly down into the earth, being well watered. The layers must be pegged down very securely, for if they become loose in the soil, the chances of rooting will be greatly diminished. An addition of coarse sand and leaf-mould (but no manure) to the soil (often in the proportion of 50 per cent. of its volume), as in the case of cuttings, helps the layers to root. The outer end of the shoot, beyond the cut, should be turned upwards to check the flow of the sap and encourage the formation of roots. All buds not required to form shoots in the new plant should be removed. When the layers have rooted firmly, they may be cut away from the

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DIVISION OF ROOTS—SUCKERS

the parent plant, being potted up or planted out, in autumn or spring. A useful practice is to sever the rooted layers from the parent plant in autumn, but defer their removal until spring, so that the double check of disconnection from the parent plant and lifting from the soil does not occur at the same time. The layers of shrubs like the Laurel and Veronica may root within a year. With hard-wooded shrubs like the Daphne or Rhododendron it takes usually two years, sometimes even longer. Where only a few young plants are required, layering is an ideal method of increase.

PROPAGATION BY DIVISION OF ROOTS, OR BY SUCKERS

All the so-called "tufted" shrubs, or those that throw out suckers from their crowns or base, may be propagated by division of roots at the time of year when they are best transplanted. The most favourable time, however, is just when young growth is pushing forth in spring. Examples of shrubs easily propagated by this method are the Snowberry, Kerna, Lilac (when grown on its own roots), Mock Orange, and Spiraea.

The clumps are sometimes lifted with their roots as entire as possible, that is, with a good "ball" of earth round the fibres. In the case of small shrubs these are sometimes divided by inserting two forks with their backs facing each other, and then, by levering outwards, the mass of stems and twigs is gradually forced apart, often making three or four separate plants. Larger shrubs may be taken up as advised in the chapter on Transplanting, page 156, or in some cases, it is possible carefully to fork away the soil round the shrub so that some of the young growth, together with a fair root system, may be removed from the old plant without damaging it. When the plant has been lifted, don't, as is so often done, use a spade to cut the roots apart, but work the points of a fork among the roots to remove as much soil as possible, and then carefully divide the plant up into a number of offsets by means of a sharp knife, this will do the minimum injury to the roots. The strong new outer offsets are those that should be retained and replanted, the old inner stems being discarded. The stems that have already borne flowers should be cut away from the new offsets, so that only the young and vigorous...
shoots from the base remain. In re-planting, holes should be dug of sufficient depth to allow the roots to be placed in without being doubled up, and wide enough to admit of the roots being well-spread out and covered with fine soil, which should be pressed down firmly. Firm planting is essential, and care must be taken that the crowns are not placed lower than ground level, as there is every possibility of their rotting off if this is done.

The plants should be so inserted that the crowns are just on the surface of the soil. When planting, study the habits of the roots, and allow them to follow what seems to be their natural course rather than direct them in one special way. The roots of some shrubs want to run deep into the ground, others grow horizontally, each should be assisted and humoured.

ROOT-CUTTINGS

This is another and easy method of propagation eminently suitable in the case of plants with fleshy roots. Cuttings of these roots may be from 2 to 6 or 8 inches in length, in accordance with the virility of the plant. The thickness of the fleshy roots will vary very much, according to the type of plant. The root-cuttings are planted 1 inch deep and 3 to 6 inches apart in light sandy soil in partial shelter against a warm wall, in a cold frame, or sometimes in a propagating case with slight bottom-heat. The cuttings are inserted vertically with that part of the root which was nearest the stem uppermost.

In propagating plants whose roots are fleshy, but rather more fibrous in nature, the larger root-stems should be cut away from the crowns with as many of the smaller fibrous roots as possible adhering, and should be planted as advised above, but should be left intact and not be cut up into small pieces. In the case of plants whose roots creep horizontally just below the surface of the soil, cut the roots into pieces from 2 to 6 inches in length.

The root-cuttings are sometimes inserted rather close together in the autumn and potted up singly or planted out in the open in April or May. Others may preferably be planted direct in the nursery rows, and are left to grow for a year undisturbed.
BUDDING

Budding is resorted to as a means of increasing shrubs and trees which do not come true from seeds and are not easy to increase by cuttings. It is based on the same principles as those which govern grafting (page 195). It is often preferred to the latter, inasmuch as it is quicker, easier, and produces a more perfect union, a proportionately larger surface of the inner bark coming in contact with that of the stock. In budding, no wood at all is left on the bud employed, only the bud itself and a surrounding surface of bark being left on the "bud" when prepared. Another advantage that budding has over grafting is that the bud can be inserted in almost any position on the stock or branches, while in grafting the positions for the point of union are, naturally, limited. It goes without saying that only plants that form prominent buds can be increased by this method. Budding is possible with many trees and shrubs, but it is only practised in a comparatively few families.

Preparing the Bud.—In this operation, unlike grafting, the bud and stock are prepared on the spot, not beforehand, and a time should be chosen when the sap is rising freely both in stock and bud. The tree should be looked over, and the best shoot selected for the cutting of the buds. If they are not to be used at once, the shoots should be put in water, or the bark will dry slightly and be more difficult to work.

Choosing the Buds.—In selecting the buds, care must be taken to make sure that the buds are wood buds, from which a shoot will start, and not blossom buds, which will not make wood. These two kinds of bud are more easily distinguished in some kinds of trees than in others, but as a general rule it may be taken that the wood buds are more pointed than are the blossom buds. The buds of

![FIG 17—BUDDING I](image1)

1. A rose shoot suitable for providing buds. It must have borne a flower.
2. The shoot after the leaves have been cut off, only the base of the leaf stems are left.
BUDDING

some trees, most usually in dry seasons, are troublesome to peel away from their wood, the wood frequently pulling out the middle of the bud with it, as described on page 193. When this is very marked, it is a good plan to pierce the wood just behind the bud with the point of the knife, so as actually to cut it away from the bud at that point, before beginning to peel it from the bark. The shoots selected for budding should be plump, firm, and well-ripened. Watery shoots, or buds that are commencing to open, are valueless.

A good half-matured shoot of the current year's growth having been chosen, the leaves, except in the case of evergreens, when they are left on the bud, should all be removed from it close to the leaf-stalk, only a piece of the latter being left on. If the leaves are allowed to remain, they will draw and pass out the moisture from the bark and the bud, causing the latter to shrivel. With a sharp knife the bud is then cut out of the wood, the knife making a curve behind it, leaving the bud midway on a thin strip of bark and wood. The knife should enter the wood some half an inch above the bud, and come out an equal distance below it, leaving a piece of bark of the shape of a long shield, whence the name of "shield-budding," sometimes given to the operation. The woody part of this "shield" must now be removed, and in order to do this, the piece is held by the leaf-stalk and bud, while the bark is started away from the wood at the top end with the tip of the knife, and is then given a sharp pull, when the bark should peel cleanly off the slip of wood. Occasionally, and generally when the bud is too forward when cut, the wood, when it pulls away, will leave a small hole in the bark behind.
PREPARING THE STOCK

the bud, as if it had pulled out a little bit of the inside of the bud with it. When this has occurred the bud is spoilt, and will shrivel and die before it has time to build up new cells. Such a bud should be thrown away, and a fresh one, less developed, taken.

Preparing the Stock.—The bud being ready, the stock must next be dealt with. A clean, smooth spot on the stem is chosen, great care being taken to remove all grit and dirt from the bark, especially if the bud is to be inserted near the ground. With the budding knife a cut about 1½ inches long is made, only just sufficient pressure to pierce the bark without penetrating the wood beneath being employed. At the top of this a cross-cut half an inch long should be made with equal care, the bark on either side of the first cut then being raised from the wood by means of the blade of the knife, or its thin handle, slipped in between bark and wood. The point of the "shield" containing the bud is then inserted at the cross-cut, and is gently pushed down under the bark until the bud is well below the level of the cross-cut. The easiest way to do this is to hold the shield between the finger and thumb of the left hand, by the leaf-stalk, while holding the bark open with the knife held in the right hand. When the bud is well down, the projecting tip of the shield should be cut off with a cut exactly on a level with the cross-cut in the stock, so that the tip of the shield fits inside the bark. Afterwards bandage lightly with soft material—raffia, worsted, or matting—above and below the eye, bringing the lips of the bark of the stock together again over the bud by means of the ligature in such manner that no opening remains between them. Above all, take care that the base of the eye is in free contact with the bark of the stock. As much rapidity as is consistent with thoroughness should be
used, for much of the success of the operation depends on
the moist condition of the bud and stock when brought into
contact.

**Time for Budding.**—A spell of showery or dull weather
should be chosen for the operation of budding, as then the
bark separates freely and easily from the wood, but if the
year is very dry and hot, the stocks to be budded should be
given good soakings of water for a day or two before the
operation. The best time for budding is between the early
part of July and the end of September, and if the buds do not start
until the next spring, so much the better. New wood of the current
year's growth is usually the best for budding upon, but young growths
up to two or three years may be used, if otherwise more suitable.
Cherries and Crabs are best budded in July and August, while Roses do
best if budded between the middle of July and early September.

**After-care for the Bud.**—After the budding process is
completed, the stock should be left untouched, neither leaves
nor any other part being cut away until about November,
when the binding must also be cut to allow the stock to grow.
At this time the top of the stem which bears the bud may be
cut back to about 3 inches above it. When the bud shoots in
the spring—or possibly before—this three inches should be
reduced to one, and all shoots springing from the stock
should be cut away periodically through the summer. In
autumn the "snag" above the bud may be cut away
completely.

When the buds begin to grow, they require to be protected
from strong winds; otherwise they will be detached from the
stem. This is done by driving a stake, A (Fig 25), firmly
into the ground, attaching it by a strong cord to the stem of
the stock above and below the junction, as in the illustration,
and tying the shoot of the young scion firmly to the stake
above, protecting it by a bandage of soft cord or other
substance, to prevent the bark being injured.
GRAFTING

Grafting is very considerably employed as a means of increasing varieties of trees and shrubs which do not come true from seeds, or which are difficult to propagate by means of cuttings. Notable examples are the garden varieties and hybrids of such plants as the Cytisus, Prunus, Pyrus and the large-leaved evergreen Rhododendrons that cannot be raised true to type easily or in quantity by any of the other methods. Grafting often saves much time, and provides a good-sized plant several years sooner than can the other methods of propagation, and because of this, grafting is often resorted to even when other and simpler methods are also available. This means of propagation has been spoken of as "ennobling." The branch which is transferred is spoken of as the "scion," and the tree to which it is attached as the "stock." The scion of a garden hybrid, for example, becomes, as it were, parasitic upon the seedling or sucker stock of the common species, and by carefully removing all branches which spring from the stock below the point of union, gardeners are able to divert to the scion all the energy produced by the roots of the stock. It is only possible to graft a scion on to a stock of a nearly-allied species or genera. Thus Plums, Peaches, Apricots, and Almonds, can all be mutually grafted on to one another, but it would be impossible to graft successfully an Apple on to an Oak, or a Plum on to a Willow. It is, however, a common practice to graft Cytisus on to the closely-allied genus Laburnum.

Alteration of Habit.—As stated above much valuable time may often be saved by grafting. It might take some ten or fifteen years before trees raised from seeds would bear a good crop of blossom or fruits, whereas by grafting, flowers and fruits may often be had in three or four years. Better results are also often obtained by grafting a tree on to a stock and roots other than its own.

Another purpose for which grafting is employed is for the altering of the habit of a tree. Thus, Pears and Apples are dwarfed by being grafted respectively on the Quince and the Paradise stock, and trailing or weeping trees are converted into weeping standards by attaching a scion from the weeping variety to a tree with a tall, upright trunk.
TIMES FOR GRAFTING

Restoration and Development.—Grafting is also occasionally employed to bring about the development of flowers or fruit from parts of a tree otherwise lacking in them. Sometimes, again, it is made use of for the purpose of restoring an exhausted tree; and lastly, it is employed to bring together on one stock the two sexes of monoeious plants—that is to say, those which bear their male and female flowers on different plants—and so to facilitate their fertilisation and consequent fructification, as, for example, in the case of the Maidenhair Tree, Ginkgo biloba.

Times for Grafting.—In order to effect a successful union by grafting, it is necessary that the sap shall be flowing in the portions of the wood used for the operation, and it is therefore possible to graft in the open between the first signs of growth in the buds at the beginning of spring and until about midsummer, when the sap has risen fully. Deciduous shrubs and trees are best grafted at the earlier period, and evergreens about May, but the exact period is dependent on the weather prevailing at the time. As a rule, the grafting of evergreen shrubs and trees is carried out under glass in close frames, with or without the aid of artificial heat. The greenhouse propagating case, with slight bottom-heat is of great assistance in grafting evergreen shrubs like the Rhododendron and choice or delicate trees and shrubs, including the hybrid Brooms. It is very desirable to pot up the stocks in autumn in order to have them well established in pots before grafting. Under glass, the time for grafting is somewhat earlier, the operation being possible any time from January to March, and again from July to September. The operations of budding and grafting trees and shrubs will vary outside with the time, but whereas in budding just a single bud of the current year's growth is employed, in grafting whole branches are used while their buds are still dormant or nearly so. The time for grafting trees and shrubs will vary outside with the time of their breaking into leaf, those kinds which bud early being the first to be dealt with, towards the end of March.

To ascertain whether the stock is ready for grafting, the bark should be slit, and if it is easily raised to expose the polished surface of the wood beneath, the stock is ready. If the bark tends to tear, the stock must be left for a week or so longer. Under glass the stock should be placed in
PREPARING THE SCIONS

a house with moderate heat a fortnight or three weeks before grafting is to take place.

Preparing the Scions.—Grafting needs a certain amount of previous preparation. The stock or tree which is to receive the graft should be cut back or beheaded at about the end of January. Where the frosts are still very hard, it is well to defer the operation till the weather loosens a little, but no risk must be run of movement having begun in the sap. The object of the preparation of the grafts and scions beforehand is that the last year's ripened sap shall still be in them, to supply life to the severed scion until union has been effected, and to this end the scions, which must be of well-ripened one-year-old wood and taken from prolific and healthy trees only, should be cut in winter before there is any chance of movement, and while the buds are still absolutely dormant. Grafting must be carried out when the scion is in the same state of vegetation as the intended stock, or not quite so far advanced. It is necessary, therefore, where the grafts selected are in a more advanced state of vegetation, to detach them from the parent stems, and to lay them with their stems three parts buried in moist soil under a north wall until stocks and grafts are in a similar state. In this position the grafts will remain stationary while the stocks are advancing. When the weather is so mild as to appear likely to cause movement of the sap, the scions should be pulled up occasionally, and left exposed to the air for a little while in order to check growth. The scions may be cut at about the same time as the stock is cut off.

Cutting off the Stock.—This process consists in removing from the stocks, usually about three-year-old plants, planted at least a year before grafting, all the side branches, together with the tops, and in cutting down the main stock to just above a bud within about 7 or 8 inches of the soil. Where older plants are used as stocks, as in the case of grafting on mature trees, these should be cut back throughout to within from 3 to 6 feet from the old stock, according to the size of the tree. Enough wood should always be left to allow of the removal of a further portion, as this will be necessary when the actual grafting is proceeded with. If this cutting back is not done until the actual time of grafting, the junction is seldom so good, and where the trees employed are those known as stone-
fruit trees—the flowering Cherries and Peaches are particularly liable to this trouble—gumming is very likely to result, with consequent weakening of the trees. Stocks to be used as standards must be allowed to grow to the height required. The time of grafting varies according to the stock used. It should be ascertained with accuracy that the sap is really rising, and it is better for that reason to be a little too late than too early, when there is a chance that it has not yet begun to move. Usually the second half of April and early May will be found the best time for grafting on mature trees, and early April for those which are only in their third year.

Suitability of the Stock for the Soil.—In the selection of a suitable stock, attention should be paid not only to the readiness with which connection is able to be established between the scion and the stock but to the soil in which the trees and shrubs are to be grown. The stocks selected should have been transplanted bi-annually while being grown in the nursery garden, to ensure a good fibrous root system.

The Principle of Grafting.—Except when standard or half-standard trees are to be formed, the stock should be grafted, as in the case of budding, as near to the ground as possible. To effect a union, the inner edges of the inner bark of the two parts must meet and remain in contact, this inner layer of bark being the only portion of the wood that is capable of uniting. The process consists in cutting the bark of the two portions so that this inner layer shall be in contact when the two pieces are pressed together, and in keeping them together and excluding air, which might dry the tissues, by means of ties of woollen thread, or raffia, and wax or clay. In grafting under glass, however, no wax or clay is necessary, the ties being sufficient to keep the scion and stock together, and the air of the house is humid enough to maintain the moisture in the graft.

Materials and Tools.—When grafting is to be undertaken, all materials should be got in readiness beforehand. The stocks and grafts should be prepared and at hand, together with a few tools such as a strong knife for cutting back the stocks, a saw, chisel, mallet, a small knife with a narrow blade for fine operations, woollen thread and soft string for tying, and the wax or clay required. The clay needs careful preparation, and should be obtained a week or two before it is required for
FORMS OF GRAFTING

use, being beaten up into the consistency of mortar with water. This moistening and beating should be repeated several times before required for use. A day before it is to be used it should be mixed with one-third of its own bulk of cow manure and about the same amount of hay. The hay should be cut up into lengths of about 3 inches, being thoroughly mixed into the other ingredients. It will prevent the clay from cracking off as it hardens, and will also materially assist in keeping it moist.

It is simpler for the amateur to buy a good grafting wax than to prepare it for himself, and he is advised to obtain some Tenax grafting wax, sold by most nurserymen and florists who deal in garden sundries. A good substitute for grafting wax is the quick-drying varnish called "knotting" used by carpenters and painters. This is very quickly dry, and is impervious to wet and weather. It is applied with a brush over the part to be protected.

FORMS OF GRAFTING

Whip- or Tongue-Grafting.—The method of grafting employed depends largely on the size and other conditions of stock and scion. Where the stock is a young one, and about the size of the finger, the method known as tongue-grafting is the most suitable. With this method of grafting, the stock must be more advanced in its state of growth than the scion. The scion is prepared by taking a well-ripened one-year-old shoot some 6 inches long, and selecting a place on it where two good buds come on opposite sides of the shoot, one a little higher than the other. Beginning just below the upper of the buds, make a clean cut at one sweep through the wood in a downward slope, coming out just below the lower bud. It is essential that there shall be a good bud just above the cut at each end. Now, beginning at the top of the cut just under the top bud, with a sharp knife cut a hollow curve in the wood, sloping the cut from the inner end of the curve down in a straight line to the tip of the cut by the lower bud. The bottom of the shoot, seen sideways, should now have a section like the letter J turned upside down. It is important that these cuts shall be made firmly and without unevenness, otherwise the scion will not fit closely to the stock, and its chance of a perfect union will be lessened. Having prepared
WHIP- OR TONGUE-GRAFTING

the scion, attention should be turned to the stock. This, in the case of young specially-grown stocks, as will be remembered, was cut back late in January to about 8 inches from the ground. Remove all side growth from the base, and selecting a good smooth place about 3 or 4 inches from the surface of the ground, cut the stock cleanly off just above a good healthy bud. This bud's chief function will be to draw up the sap into the top of the cut parts while they are healing together, just as do the buds on the scion, but while the latter are allowed to grow and, indeed, become the real tree, the former should not be permitted to outlive its utility, and when perfect union has taken place, it should only be allowed to grow two or three leaves, and then should be stopped. Having cut down the stock, its top should be carefully measured against the scion, and cut in a curve corresponding with the curve on the scion. Where the scion has a long "tail," the tail of the "J" shape, a strip of wood and bark should be peeled from the side of the stock, with the greatest care to adjust it so that the stock and scion, when placed together, may fit with accuracy. The tail of the scion will be found to fit on to the peeled strip of the outside of the stock, though, owing to the different angle of the section, a narrow strip of the inner bark of the stock will show round the edge of the scion when applied. The important thing to arrive at is that the cut surfaces of the inner bark of both stock and scion shall touch as much as possible. If it is found impossible to make these layers of bark meet on both edges, make them meet perfectly on the one side. The tail of the scion should not in any case come below the end of the peeled piece of the stock, if anything, it should err very slightly on the other side.
SADDLE-GRAFTING

When both scion and stock fit perfectly, a further security should be obtained by making a small upward cut in the tail of the scion, in order to obtain a slip projecting towards the stock. In the stock itself, opposite this slip, should be made an incision into which the slip will exactly fit, thus holding stock and scion together during the operations of tying and covering with wax. This slip should be thin, or it may cause the junction to bulge, and the scion to be pushed away from the stock. When these two latter are fitted closely together, and it is found that their layers of inner bark are fitting closely and neatly, the junction should be made firm by tying with raffia, woollen thread, or soft string, the ligature being made firm enough to prevent movement, but not tight enough to prohibit the proper circulation of the sap beneath the bark.

The last process is the secure covering of the whole junction—scion, stock, and ligature—with grafting wax or clay—and the graft is complete. The label should always be attached to the stock, not to the scion, as, otherwise, there would be an added risk of the scion being caught accidentally and pulled off before a union has been effected.

Saddle-Grafting.—Saddle-grafting is a method much used for stocks of about the thickness of, or a little thicker than, a pencil, notably for the large-leaved evergreen Rhododendrons. The scion in this case being about the same thickness as the stock, and cut with two tails, the one below the upper bud being shorter than that beneath the lower bud. The whole of the inner part of the wood below the buds is removed, and at the top the cuts are ended by a cross-cut beginning just behind the upper bud and sloping slightly upwards. The scion will now have two tails of unequal length, the shorter one having a bud at its upper extremity, and the longer one having a bud midway up its length. The stock should then
RIND- OR CROWN-GRAFTING

be taken, and its top cut to slope slightly, at an angle corresponding with that of the cross-cut of the scion. A slip should be peeled corresponding with the long tail of the scion, and the latter laid over the stock, saddle-wise, the long tail fitting its peeled slip, and the top angle of the stock fitting into the top angle of the cross-cut. The short tail of the scion will be found to cross the top of the stock and project a little. A slip should be cut off the side of the stock to fit this projecting piece of the tail, which should then be bent down on to it, and the graft is ready for tying and waxing. This system has the advantage that the scion unites on both sides of the stock, and is therefore not so liable to an accidental break during the healing process.

These methods of grafting are both employed for young stocks, but others—Cleft-grafting, Crown-or Rind-grafting, and Notch-grafting—must be used in the case of mature trees, where the branches are usually too large for either of the systems already described. Cleft-grafting is not to be recommended, as it results in a crack being left right across the top of the stock, in which ram, insects, and fungi are apt to lodge, and injure the tree.

Rind- or Crown-Grafting.—This is the most popular and the easiest method of grafting on to mature trees when the stock is comparatively large, especially when renovating old trees. In this system the scion is prepared much as for tongue-grafting, but the curve at the top is replaced by a sloping cut about 1½ inches in length. The tail is quite thin, too much wood often being left by beginners when preparing scions for grafting. The stock should be cut off cleanly, and with a sharp knife a slit should be made in the bark of the same length as the tail of the scion. While the knife is still in the cut, the blade should be gently pressed from side to side so as to loosen the bark in the immediate neighbourhood of the
SLIT- OR NOTCH-GRAFTING

cut, and on withdrawing the knife, the scion is slipped in between the wood and the bark, and pressed down until the surface left by the cross-cut at its head lies on the top of the stock. Any number of scions from two to four should be placed on each branch over 4 inches in diameter so treated, for the more scions there are, the better and more strongly will the sap be drawn up, and the quicker and better will the stock heal and effect a junction. When the grafts are growing well, they should be supported by being tied to sticks fastened securely to the branches of the stock. Until the grafted tree has developed a good head of new grafted wood, it is a great mistake to remove all the shoots and twigs of the old stock. A number of these should be allowed to grow for some time, the circulation of the tree will, otherwise, be impaired, and its health affected.

Slit- or Notch-Grafting.—Notch-grafting is rather difficult, but is excellent when well done, and is used when the diameter of the stock is several times greater than that of the graft. In this method the stock is first cut clean across as in the other ways, and is then pointed, wedge-shaped incisions being made in the bark and wood, beginning at the cut edge of the bark and sloping downwards and outwards. The scions are prepared by making sloping cuts on two sides of the wood, making an angle corresponding with that of the wedge-shaped incision in the stock, so that the scion, when fitted into the stock, fills the space closely, the outer layer of the bark of the scion being slightly lower—because thinner—than that of the stock. The best way of doing this is to make the first cut in the stock with a widely-set saw, and then to slope the sides of the cut slightly outwards with a
sharp knife  The angle of the cut in the stock should not be quite so wide as that of the scion, as the latter will in this way be held tighter in the slit. The scion, when properly shaped, should be set into the cut, being hammered lightly down into position with a small wooden mallet. It should then be tied and waxed as described.

After-Care of the Graft.—When the grafts have begun to make growth, the clay or grafting wax should be removed so that the binding may be undone before it "throttles" the new growths, which it will do if left in position. It is desirable, and one may even say, usually necessary, to replace the binding material loosely, but the clay or wax must not be replaced. The graft should be supported by a stake firmly bound to the stock. Laterals that form on a graft should be pinched off to encourage a good straight single shoot from the graft, and any shoots forming on the stock below the point of grafting must be rubbed off, once they have served their purpose in drawing sap up to the graft.

The wax may be found difficult to remove, and in such a case care is required in order to get it off without damaging the junction. It is best done by placing a block of wood, or some other firm thing, on one side of the lump of wax, and then by lightly hitting the other side with a hammer, no unnecessary force being employed. The wax will crack off, and may be removed with ease.

The reader is advised to consult the Alphabetical List of Ornamental and Flowering Trees and Shrubs, chapter XXXV, where he will find the best methods of propagating each particular species or variety of shrub or tree, the most suitable time, whether it is effected in the open or under glass, or whether artificial or bottom heat is necessary. Here also will be found full cultural details.
WATERING AND PROTECTION FROM FROST

CHAPTER XXXII

WATERING

RAINWATER is by far the best for trees and shrubs, as the carbonic acid and the nitrates that it contains make it a soil fertiliser. Even pump water, apparently clear, is often far too hard to be suitable for watering plants, but this hardness may be removed by keeping it in shallow tanks and exposed to the air for some time before use. Nothing does greater mischief to the roots of young plants than the continued chilling of them with water of lower temperature than the atmosphere in which the plants are growing.

Water supplied by pipe from the main is not usually so cold as well-water, but it is often equally hard. If possible, it should be stored in a tank, exposed to the air for at least twenty-four hours to soften it and to raise it to the required temperature before use.

It is impossible to make hard and fast rules for watering, for many points have to be considered. First, the nature of the plants, then their situation, whether in sun or shade, on a high well-drained spot or in a low-lying and damp locality.

Plants on light soils on a well-drained sub-soil, such as gravel or chalk, will suffer from drought far sooner than those growing on heavy loams with retentive clay beneath them. But, except, in the case of recently-planted specimens, the watering of old-established trees and shrubs growing in the open is, as a rule, seldom necessary. There are, however, exceptions to every rule, and during a drought, trees and shrubs must be carefully watched, especially those on a hot, dry bank of light soil. Trees and shrubs on lawns are very prone to lack sufficient moisture, unless the soil is cultivated over a radius of several feet from the stems, for the grass in course
WATERING IN THE OPEN

of years forms a mat of roots almost impermeable to moisture. The best remedy in cases of this kind is to have the turf up, and give the plants a dressing of turfy loam, well-rotten manure and leaf-mould some 3 or 4 inches in thickness. Then water thoroughly, and subsequently keep the soil cultivated until the roots have quite out-grown the area of cultivated ground.

The first intimation, apart from the actual wilting of the foliage, that a tree is lacking nourishment and water is, firstly, that it makes but little new growth each year, and then, that the branches begin to die off. For the watering of newly-planted trees and shrubs, see the chapter on Planting, page 151.

When to Water.—Spraying is best done when the sun has gone down; if spraying is done while the sun is up and hot, the flowers and foliage will be scorched, as some moisture is sure to find its way on to them, and the globules will act as microscopes to magnify the power of the sun’s rays. This leads us to make the point that watering is best done with the uncapped spout of the hose or can and not through a rose, which tends to cause the surface of the soil to “cake.” A rose should only be used when watering seeds, seedlings, newly-planted subjects to settle the soil, and when spraying the foliage. Water, whenever possible, should be applied direct to the roots of each plant and not over the foliage. Hold the hose or can so that the spout is within reasonable distance of the ground, if water is given from a height, the soil will be disturbed overmuch and the roots exposed.

Watering in the Open.—Unless the shrubs and trees are newly planted, watering in the open should not be undertaken until it is apparent that it is essential. When commenced, it must be done generously, and sufficient must be given thoroughly to moisten the top 30 inches of the soil; this takes a good deal more water and longer than most people imagine. A little water over the surface merely chills the soil, and draws the roots to the surface, where they are quickly scorched unless water is frequently given. This, however, soon “cakes” the surface, and prevents the air from penetrating to the roots. To obviate this, always follow watering by a thorough hoeing of the surface soil. It pays to give a thorough watering once a week rather than a daily sprinkling.

An excellent plan with newly-planted specimens is to form a
basin around any tree or shrub that is in need of a good soaking. This should be made by placing a circular sloping ridge of soil 5 to 8 feet in diameter, according to the size of the tree or shrub, around the plant. The hollow should be about a \( \frac{3}{4} \) foot in depth at the centre, the walls sloping outwards. The basin can then be repeatedly filled with water until the soil is thoroughly saturated. The basin should be made so as to come just outside the estimated spread of the roots. Constant hoeing, or mulching (see page 147), will eliminate the need for frequent watering. If a border is pricked up with a fork, and is then well watered one evening, and mulched the following morning with well-rotted manure, decayed vegetable material, or decaying leaf-mould, or is well hoed—the latter is, of course, not so effective—it will require little further moisture for a week, or perhaps more.

Trees and shrubs should never be watered overhead when the sun is shining on the foliage, or in cold weather. Never, except to wash off dust, should those having a soft or woolly foliage be so treated. On the other hand, some plants, such as Rhododendrons, Myrtles, Laurels, Aucubas, and others with hard leaves, may be plentifully syringed, or watered overhead from a fine rose in warm weather, especially when in full growth, or in order to soften the bark and encourage the formation of new shoots. The best time to hose or syringe trees and shrubs is after the sun has lost its strength in the late afternoon or evening.

**PROTECTION FROM WIND AND FROST**

**Wind.**—If the garden is very much exposed to certain prevalent winds, belts of trees or dense-growing shrubs must be planted to break its force, and to protect the more tender trees and shrubs in the borders. (See chapters on Hedges, page 80, and Trees and Shrubs for Wind-Breaks, page 87.) For protecting winter-blooming and shrubs that flower in the early spring, especially those in exposed positions, temporary screens of coarse canvas, scrim, or coco-nut matting, can be erected on poles, or straw or wattle hurdles may be used to break the force of the wind. If branches of fir, or other evergreens, are available, these can be stuck into the ground on the windward side of the plants. Tender shrubs
PROTECTION FROM FROST

should, whenever possible, be given the protection of a wall facing south or south-west. In some gardens, rather tender subjects, like *Lonicera tragophylla* and *Vitis Henryana*, thrive exceedingly well on a north or north-west wall.

**Frost.**—Against cold weather and frosts individual protection for the more tender shrubs will be required, and there are many ways of affording this, varying with the nature of the plant. The ordinary garden mat is a most useful thing for tying round new and rare tender shrubs and for covering frames containing young stock of choice and uncommon shrubs and trees during hard weather. The mats or frigi-domes may be tied into a cone shape, being supported on sticks like a "wigwam" over small plants, or spread over trees trained against walls. The great thing is to keep the plants dry during cold weather; it is when a plant gets wet and is subsequently frozen that the damage occurs. In the early spring, protection is chiefly needed for the blossoms of early-flowering subjects and to protect the tender young shoots of shrubs which our changeable British climate often induces to make unduly early new growth.

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**Fig. 28.**—SUGGESTED PLANTING PLAN FOR A SCREEN OR WINDBREAK.

PLATE 13

Right,
Lonicera pileata

Below,
Pernettya mucronata
Lonicera periclymenum (Honeysuckle)

PLATE 14

Magnolia liliflora
ORNAMENTAL foliage and flowering trees and shrubs are, speaking generally, exceptionally free from the ravages of diseases and pests, provided they are planted in thoroughly-drained and cultivated ground, and are well cared for. Rosaceae and coniferae are, perhaps, the greatest sufferers. In saying this, I am, of course, not including fruit trees, which always appear very open to the attacks of insect pests and fungoid diseases. At the same time, if the diseases and insect pests of trees and shrubs are to be adequately controlled, it is essential that the nature of the complaint, whether it is due to insects, fungi or bacteria, shall be fully understood. It cannot be too strongly impressed that every effort should be made to detect the presence of disease at the earliest possible moment, and to treat it immediately. Most diseases are easily controlled during their earlier stages, while, if allowed to run unchecked, they soon get quite out of hand. All trees and bushes should be kept free from mosses and lichens, which harbour pests, by periodical spraying in winter or early spring with one of the cleansing washes given on pages 213-4. Most cultivators of gardens are willing to spend time and money in spraying their trees in spring and summer, when they can actually see the damage being done, but few seem disposed to give sufficient time to winter cleansing washes at a period when the pests are unseen, though still present and usually easier to deal with, as stronger spraying washes can be used. I would impress upon the reader the importance of winter-spraying and the great value of preventive measures.

It must be remembered that all insects are not harmful to the garden. Some, too, are not only harmless, but helpful; the centipede, for instance, devours soil grubs; the hover-fly attacks green-fly; the ichneumon fly, while in the grub stage, devours the flesh of other caterpillars; and the ladybird, like
the hover-fly, is a great enemy of the green-fly. The garden lover should, therefore, learn to recognise these friends.

**FUNGOUS DISEASES**

Once established, fungi develop rapidly, and in the later stages little can be done to remove them. Efforts should, therefore, be directed rather at prevention than cure. If the fungus does become established, the earliest possible opportunity should be taken of controlling it. When trees have been attacked by fungus in the previous season, all dead wood should be cut out in winter and burned, care being taken always to cut back to healthy wood. The fungus finds its way into the tissues of the wood, and there passes the winter, it may be, where no amount of spraying can affect it. In early spring, trees known to be infected, or liable to infection, should be sprayed with a fungicide projected on to the twigs and branches through a fine nozzle. This will form a film that will prevent the establishment and germination of fungus spores blown at this season by the wind, or carried by birds from affected trees.

If an attack occurs in spring or summer, a fungicide must be used in the same way, all parts likely to be attacked—foliage and bark—being sprayed until the solution commences to drip off. It may be found necessary to make a second, or even third, application at intervals of two or three weeks. Two of the most useful fungicides are Bordeaux Mixture and Lime Sulphur (see page 213).

Unfortunately, however, fungi also attack the roots of trees and shrubs, though, happily, not so frequently, and they are then far more deadly than when they assail the trunk and branches, for it is rarely possible to detect the presence of fungi in the roots until they are firmly established and most of the damage has been done. They enter the roots by way of cuts and tears made during digging operations, and for this reason, every care should be taken when using the spade or fork near the roots of trees and shrubs. If a large surface root is damaged, a clean cut should be made of it, and it should then be painted with gas or Stockholm tar. The softer-wooded trees and shrubs are more open to attacks of this sort than are hard-wooded kinds, as the Oak, for example.
DISEASES AND PESTS

INSECT PESTS

The most effective methods of prevention and extermination are determined by the habits of the pest. Insect pests may be divided into two classes; firstly, those, like aphides (green-fly), that puncture the bark and tissues of the young shoots and leaves, and suck the sap, thus reducing the vitality of the plant, and secondly, those that feed on the outer tissues of the shoots and leaves. In this latter class are included most beetles and caterpillars. The former class, the suckers, must be controlled by the use of "contact" insecticides, that are sprayed actually on to the bodies of the insects themselves. These insecticides poison the pests through the breathing pores in the bodies, the soap in the solutions also helping to clog the pores; they should be applied with considerable force in a spray from a moderately coarse rose. The second class of pest, the eaters and biters, are more easily controlled, for it is possible to cover their food with a thin film of poison; if the whole plant is sprayed, they will sooner or later be forced to eat the poison. To ensure that every particle of available food shall be poisoned, both sides of the foliage and all parts of the branches must be thoroughly covered with the solution. This must be applied in a mist-like form from a sprayer with a very fine rose, so as to produce an even film over the leaves and twigs, as soon as the insecticide begins to drip from the foliage the spraying must cease, for, if the fluid reaches the roots, the would-be cure may do them more harm than the damage done by the insects, for which the spray is used. The actual insecticide employed depends upon the pest to be controlled and the season of application. (See also Table, page 213)

CLEANSING AND WINTER WASHES

Washes of this kind are applied not only to destroy what insect and fungus pests they come in contact with but also to remove lichen and moss from the bark of trees. The use of these washes is most necessary, but unfortunately a much neglected operation, as the lichen and moss form an ideal hiding-place for insect and fungoid pests. Caustic soda and lime sulphur (see page 213) are excellent cleansers and can be applied at any time while the trees and shrubs are dormant.
DISEASES AND PESTS

in winter and early spring, but not later than February; they must be used before the buds break into blossom.

The Use of the Sprayer.—For small gardens the "knap-sack" type of machine is the most handy. The machines have variable nozzles that can produce a fine, medium, or coarse spray as required. The spraying should be thorough, trunks and branches in winter being saturated, and in summer both upper and under sides of the foliage receiving attention. The operation should always be carried out on dull, still days, or in the evening, just before sunset.

DUSTING POWDERS

In most cases it is more convenient to spray affected trees and shrubs with liquid insecticides and fungicides, but powders applied in the dry form may be used, especially when dealing with the various forms of mildew. The powders must be dusted over the affected parts in the morning while the foliage is yet wet with dew, and preferably in hot, dry weather. As the powder must be very fine and evenly distributed, it is advisable to use special dusting bellows or a "sulphurator." "Flowers of sulphur" is the powder most frequently used.

GREASE BANDING

Grease bands are used to prevent the Winter Moth from crawling up the trunks of fruit trees to lay their eggs. To have good and attractive crops of highly-coloured ornamental Crabs and other fruits of Pyrus, it is necessary to adopt similar measures. The stems are encircled early in September with bands, ten to twelve inches wide, of some material which the crawling moth will be unable to pass. Materials such as brown paper coated with cart-grease mixed with oil, or any other coarse grease of the kind will serve, but special bands and grease may also be purchased. If the bark is rough and uneven, which would enable the pests to crawl up between the band and the stem, soft putty should be smeared over the bark to be covered by the band, and should then be well rubbed in till an even surface is formed to take the band. If there is a stake supporting the tree, it must also be grease-banded—a point often overlooked. The bands should remain in position until the following May. See Winter Moth, page 228, and Codlin Moth, page 219.
## INSECTICIDES AND FUNGICIDES
### When and How to Use

<table>
<thead>
<tr>
<th>Preparation</th>
<th>How to Make</th>
<th>How to Apply</th>
<th>Principal Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arsenate of Lead.</strong></td>
<td>Dissolve 1 oz arsenate of soda, 2½ oz sugar of lead in 14 gallons of rainwater, then add 1 lb black treacle. Harmless to foliage. Can be purchased in paste, or as a fine powder ready for use (Poison)</td>
<td>Spray trees and shrubs whenever there are signs of caterpillar pests, but not when the shrubs and trees are in flower. Use a knapsack machine. This insecticide poisons the food of the pests.</td>
<td>Caterpillars, winter moth, lackey moth, magpie moth, tortrix moth, slug-worms, cherry sawfly, beetles, goat moth and gooseberry sawfly. Never use where the spray is likely to fall on vegetables or fruit.</td>
</tr>
<tr>
<td><strong>Bordeaux Mixture.</strong></td>
<td>Dissolve 1 lb sulphate of copper in boiling water, then slake 1 lb freshly burnt quick lime in a little boiling water, mix well and dilute to 19 gallons. Stir well, and use at once.</td>
<td>Apply early in summer. An excellent fungicide if necessary, make second and third applications at intervals of 3 weeks.</td>
<td>Apple scab, leaf curl, leaf spot, and vine mildew.</td>
</tr>
<tr>
<td><strong>Carboe Emulsion.</strong></td>
<td>Dissolve ½ lb soft soap in 1 gallon water, add ¼ pint carboe acid, boil, stirring meanwhile. Dilute with 25 parts water as wanted. Label &quot;Poison.&quot;</td>
<td>Useful for summer spraying and as fungicide. Good surface spray.</td>
<td>Eelworms, and leather jackets.</td>
</tr>
<tr>
<td><strong>Caustic Soda</strong></td>
<td>Dissolve 12 oz caustic soda in 8 gallons water. Use rubber gloves and goggles, and only when trees dormant.</td>
<td>A good cleansing winter wash applied by means of knapsack sprayer. Cleans bark and destroys scale.</td>
<td>American blight, aphids, apple sucker, codlin and winter moths, fungi, red spider, weevils, wither-up and brown rot.</td>
</tr>
<tr>
<td><strong>Cleansing Washes</strong></td>
<td>See Caustic Soda, and Lime Sulphur.</td>
<td>Used when arsenate of lead not practicable owing to possible poisoning of fruit or vegetables.</td>
<td>Caterpillars, especially those of sawflies and the magpie moth.</td>
</tr>
<tr>
<td><strong>Hellebore Emulsion.</strong></td>
<td>Dissolve 1 lb of hellebore powder and ½ lb of soft soap in a little hot water, and dilute to 5 gallons.</td>
<td>Summer spraying on foliage, makes good combination with arsenate of lead. Strain solution before use, and do not use apparatus having copper fittings. Give second and third application at 3 weekly intervals.</td>
<td>Apple scab, apple sucker, blister mite, beetles, mildew, brown rot, red spider, scales, scab, weevils, and woolly aphids. A good fungicide, insecticide, and cleanser.</td>
</tr>
<tr>
<td><strong>Lime Sulphur</strong></td>
<td>Boil 5 gallons slaked lime and 5 lb flowers of sulphur in water for about 1 hour, stirring meanwhile, make up to 25 gallons. Harmless to foliage. Best purchased ready for use.</td>
<td>A wash for applying to the trunks of trees just before the bloom opens. A good insecticide, also an excellent cleansing wash.</td>
<td>Aphides, scale, lichen and mosses on tree trunks. Strain two or three times before use in sprayer.</td>
</tr>
<tr>
<td><strong>Lime Wash</strong></td>
<td>Slake 6 lb of quicklime with a little water, then dilute to 5 gallons. See that the lime is not air-slaked before use. Stir well.</td>
<td>A wash for applying to the trunks of trees just before the bloom opens. A good insecticide, also an excellent cleansing wash.</td>
<td>Aphides, scale, lichen and mosses on tree trunks. Strain two or three times before use in sprayer.</td>
</tr>
</tbody>
</table>
# INSECTICIDES AND FUNGICIDES

## When and How to Use

<table>
<thead>
<tr>
<th>Preparation</th>
<th>How to Make</th>
<th>How to Apply</th>
<th>Principal Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liver of Sulphur.</strong></td>
<td>Dissolve 3½ to 5 oz potassium sulphide (liver of sulphur) in 10 gallons water, add ½ lb soft soap</td>
<td>For outdoor use as summer spray Make fresh as wanted</td>
<td>Rose and vine mildew, and red spider</td>
</tr>
<tr>
<td><strong>Nicotine—Emulsion</strong></td>
<td>Nicotine 98% ½ to 1 oz, soft soap ½ lb, and soft water 10 gallons Boil the soap in 1 gallon of water, add the nicotine, and make up to 10 gallons (Poison)</td>
<td>Reliable insecticide for use at all times, on trees as soon as blossom has fallen and leaves have formed Apply as coarse spray One of the most effective “contact” poisons</td>
<td>Aphides, applesucker, green fly, sawfly grubs, caterpillars, white fly, leaf-miners and woolly aphids In the case of fruit trees, it must be used at least 14 days before fruit is to be gathered</td>
</tr>
<tr>
<td><strong>Paraffin Emulsion.</strong></td>
<td>Boil 1 lb soft soap in 1 gallon rainwater, while hot mix in 1 gallon paraffin by means of syringe When required for use dilute with rainwater to 20 gallons, mixing well</td>
<td>Stringent summer wash and soilspray</td>
<td>Applesucker, aphides weevils and beetles, mussel scale, red spider and woolly aphids</td>
</tr>
<tr>
<td><strong>Paris Green.</strong></td>
<td>Mix ½ oz Paris Green with ¼ lb bran Moisten with water until bran flakes adhere Scatter with a wooden spoon over 120 sq yards</td>
<td>Poison bait for cutworms Apply before or after planting</td>
<td>Cut worms, caterpillars on Euonymus</td>
</tr>
<tr>
<td><strong>Pyrethrum Powder Emulsion.</strong></td>
<td>Dissolve 1 lb of pyrethrum powder and ¼ lb of soft soap in a little hot water for about 4 hours, dilute to 5 gallons and mix thoroughly</td>
<td>Apply as fine spray</td>
<td>Ants, aphides, beetles, caterpillars, and weevils</td>
</tr>
<tr>
<td><strong>Quassia Emulsion.</strong></td>
<td>Steep 1 lb quassia chips in 1 gallon water for 12 hours, add ½ lb soft soap and boil Make up to 8 gallons with water</td>
<td>For use in warm weather after showers</td>
<td>Black fly, green fly, red spider, and woolly aphids</td>
</tr>
<tr>
<td><strong>Soda—Resin Wash.</strong></td>
<td>Boil 1 oz washing soda and 8 oz powdered resin in 1 pint of water, dilute to 1 to 2 gallons</td>
<td>Spring wash, hinders insects coming to life</td>
<td>Brown currant scale, mealy bug, mussel scale, oyster scale and woolly aphids</td>
</tr>
<tr>
<td><strong>Winter-washes.</strong></td>
<td>See Caustic Soda, and Lime Sulphur</td>
<td></td>
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</tr>
</tbody>
</table>

**Note** —All insecticides are better used slightly warm.
<table>
<thead>
<tr>
<th>General Signs of Disease</th>
<th>Detailed Symptoms</th>
<th>Probable Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foliage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piercing, Cutting and</td>
<td>Leaves badly eaten</td>
<td></td>
</tr>
<tr>
<td>Deformities of Foliage</td>
<td>Well known frothy spittle appears</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ribes leaves Small round holes</td>
<td>Subsequently entirely eaten</td>
</tr>
<tr>
<td></td>
<td>Leaves eaten by colonies of small blackish caterpillars which spin webs over leaves Hair and coloured later, white stripe, orange, black and blue lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small circular pieces cut clean out of leaves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leaves eaten, and pale streaks across surface, or brown shrivelled patches</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leaves eaten and spun together by small green, yellow, brown or red caterpillars</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leaves eaten by black and white caterpillars marked with yellow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rose Leaves and buds eaten Distorted foliage noticeable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leaves badly eaten by grubs</td>
<td></td>
</tr>
<tr>
<td><strong>Discoloration of</strong></td>
<td>Large purple-black spots appear</td>
<td>Leaves eventually fall (Roses)</td>
</tr>
<tr>
<td><strong>Foliage</strong></td>
<td>Prunus Leaves on young shoots turn yellow and shrivel</td>
<td>Black Spot</td>
</tr>
<tr>
<td></td>
<td>Ribes Leaves marginally yellow, turning greyish</td>
<td>Die-back</td>
</tr>
<tr>
<td></td>
<td>Leaves turn yellow, then whitish</td>
<td>Die-back</td>
</tr>
<tr>
<td></td>
<td>Leaves turning silvery</td>
<td>Red Spider</td>
</tr>
<tr>
<td><strong>Wilt of Foliage</strong></td>
<td>Prunus Foliage wilts</td>
<td>Silver Leaf</td>
</tr>
<tr>
<td></td>
<td>Foliage wilts from spring to autumn, whitish mould appears</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leaves wilt and fall early, scale-like insects on leaves and bark</td>
<td></td>
</tr>
<tr>
<td><strong>Stems and Branches</strong></td>
<td>Small holes in bark apparent</td>
<td>Bark or Trunk Burr</td>
</tr>
<tr>
<td>Cracking of, or Attack on Bark</td>
<td>Small concave patches on bark, stems swell and crack, and deep wounds form, followed by concentric rings</td>
<td>Canker</td>
</tr>
<tr>
<td></td>
<td>Prunus Bark cracks, and “bleeding” occurs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ribes Bark withers and cracks, and grey woolly fungus forms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bark appears unhealthy Holes stopped with small wood flakes may be detected, and a peculiar goat-like smell is noticed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bark or stems nibbled at base</td>
<td>Rabbits</td>
</tr>
<tr>
<td></td>
<td>Scale like insects noticeable on bark</td>
<td>Scale</td>
</tr>
<tr>
<td></td>
<td>Vertical cracks in bark on southern side, bark turning brown and saggng</td>
<td>Scale</td>
</tr>
<tr>
<td><strong>Growth on Bark</strong></td>
<td>Masses of orange pink spores form on dead, or nearv dead, woody stems</td>
<td>Coral Spot</td>
</tr>
<tr>
<td></td>
<td>Hard round whitish swellings (turning darker) form on roots, stems, or branches, usually near crowns</td>
<td>Crown Gall</td>
</tr>
<tr>
<td></td>
<td>Prunus Young shoots and bark take on purple hue, and fungus forms</td>
<td>Die-back</td>
</tr>
<tr>
<td></td>
<td>Birch Dense tufts, much like short beem brooms, form on branches</td>
<td>Gall Mite</td>
</tr>
<tr>
<td></td>
<td>Rose Shoots covered with orange coloured fungus in spring</td>
<td>Rose Rust</td>
</tr>
<tr>
<td><strong>Flowers and Fruit</strong></td>
<td>Buds wilt from spring to autumn, and white mould appears</td>
<td>Mildew</td>
</tr>
<tr>
<td>Wilting, Deformed or</td>
<td>Rose Bolls eaten by small golden-green beetle</td>
<td>Rose Beetle</td>
</tr>
<tr>
<td>Stunted Fruit</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dropping of Buds or</strong></td>
<td>Worm-eaten fruit falling early</td>
<td>Codlin Moth.</td>
</tr>
</tbody>
</table>
# Moths and Caterpillars

## Moth

<table>
<thead>
<tr>
<th>Moth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Tail Moth</td>
<td>A pure white moth, with a greyish spot on the front wings, measuring when the wings are open, an inch-and-a-half across. It has a brown hairy tuft-like tail, and may be found in August and September</td>
</tr>
<tr>
<td>Goat Moth</td>
<td>Forewings light brown, splashed with grey and having irregular greyish-black transverse lines. The hind wings are a deeper shade of grey-brown, flecked with a darker colour. Large plump, grey body rugged with white, hairy thorax of greyish brown, banded in rear with deeper shade. Wing expanse, 2-3½ inches.</td>
</tr>
<tr>
<td>Lackey Moth</td>
<td>Brown moth with two pale stripes on each forewing. Flying in July and August.</td>
</tr>
<tr>
<td>Leaf-Roller Moth</td>
<td>Several kinds of small insignificant moths</td>
</tr>
<tr>
<td>Magpie Moth</td>
<td>Pretty black and white moth about 2 inches across wing spread. Flying in July and August</td>
</tr>
<tr>
<td>March Moth</td>
<td>Female brown and wingless. Male has forewings greyish-brown, banded with a deeper colour; hind wings dirty white with irregular grey band running across them.</td>
</tr>
<tr>
<td>Mottled Umber Moth</td>
<td>The wingless female moth is unable to fly. Male, brown and yellowish-grey, and speckled all over.</td>
</tr>
<tr>
<td>Winter Moth</td>
<td>The female is not fully winged and is unable to fly. Male has forewings brown with darker markings and rearwings greyish.</td>
</tr>
</tbody>
</table>

## Caterpillar

<table>
<thead>
<tr>
<th>Caterpillar</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark brown</td>
<td>Dark brown with two fine red lines along the back and white spots on either side. Covered with reddish brown hair. In spring the young caterpillars, not yet coloured, congregate in large silken cases.</td>
</tr>
<tr>
<td>A deep mahogany-red, with stiff hairs on each segment</td>
<td></td>
</tr>
<tr>
<td>Black head</td>
<td>Black head, and deep pinkish-yellow down the sides and underneath. 3 4 inches long.</td>
</tr>
<tr>
<td>Small black caterpillars, maturing into brightly-coloured ones with a white stripe down back, flanked with orange, black, and blue lines, and covered with long brown hairs</td>
<td></td>
</tr>
<tr>
<td>Small crawling, not “looping,” caterpillars, green, yellow, brown or red. They spin leaves and blossom together. Quickly wriggle backwards if heads are touched</td>
<td></td>
</tr>
<tr>
<td>Black and white caterpillars, flanked with yellow</td>
<td>About an inch long.</td>
</tr>
<tr>
<td>Yellowish, with deep green streak, flanked with yellow lines along back</td>
<td>Progresses by “looping” movement.</td>
</tr>
<tr>
<td>Small “looping” caterpillars, brown with yellow lines on either side</td>
<td></td>
</tr>
<tr>
<td>Small green caterpillars with light and dark green lines</td>
<td>Progresses by “looping” movement.</td>
</tr>
</tbody>
</table>

*How to Recognise Them*
ALPHABETICAL LIST OF DISEASES AND PESTS THAT ATTACK TREES AND SHRUBS

American Blight.—See Woolly Aphis.

Ants.—The best time to get rid of ants is in the early spring, when the young brood is hatching and food is greatly in demand. Sprinkle sugar round their haunts, and they will reveal their nest by carrying the sugar into it. Saturate the nest with paraffin or some strong disinfectant, or destroy it with boiling water. Empty honey jars or old treacle tins make good traps for the little pests, and hundreds may be easily destroyed by plunging the infested traps into boiling water. Old pieces of sponge, dipped in syrup, are equally efficacious.

Aphides (Aphis) — The common name for all the many species of aphis is “Greenfly,” probably from the brilliant green of the aphis affecting the rose. Many kinds of aphis are, however, coloured differently, white, reddish, and black aphis being almost as common as the green. Aphis are sucking insects, not chewing ones, so that in order to deal with them, it is not enough merely to poison the surface of their food plant, as is the case with caterpillars and such creatures. The aphis pierce right through the poisoned surface and suck the juices of the plant, so that, to deal with them at all effectually, the insecticide has to be applied directly to their bodies. The best way to do this is to spray the plants on which the aphis are found with a solution of soft soap and quassia chips, with a nicotine preparation or with paraffin emulsion (see p. 214), the spraying being done directly on to the insects themselves and as soon as possible after the pests are discovered. All these insecticides are better used slightly warm, and whenever possible rain water should be employed when mixing them. The spraying should be fairly violent, so as to dislodge as many of the creatures as possible. A mere solution of soft soap and tepid water, or even, in some cases, tepid water alone, will do a good deal towards the cleansing of the plants. Where possible, as in the case of choice rose trees, they should be gone over with a stiff paint brush, all the aphis being either brushed off or killed by squashing between thumb and finger. Alternatively, the infested shoots may sometimes be turned down and actually immersed in the insecticide. The insect which deposits the sticky substance known as “Honeydew” is an aphis, and on this gummy substance a fungus grows, which is known as “sooty mould,” and does a great deal to weaken the plant by blocking up the pores on the surface of the leaves, and thus suffocating the plant. A lime wash applied in March is especially vulnerable to these honey-dew producing aphis. Special efforts should always be made to exterminate aphis in spring and autumn.
DISEASES AND PESTS

**Bark or Trunk Borer (Scolytus rugulosus)** —These shiny brownish-black beetles bore small round holes into the twigs, branches and trunks of trees, especially the *Prunus* (Plum and Cherry), and *Pyrus* (including the Mountain Ash families) The females lay their eggs in a gallery between the bark and the wood. The larvae hatch out, first bore at right angles to the gallery, and then along the branches or trunk, always keeping between the bark and the wood. They then pupate, and when the complete beetles emerge, they bore their way out through the bark to attack another part of the bark, or some other tree. The bark is often so riddled that the tree dies, in any case, its vigour is greatly impaired. **Treatment** —All affected wood must be cut out in the autumn and burned. Badly-infected trees should be destroyed altogether. If the damaged wood is not burned before the following spring, the pests will migrate to other trees. Where the damage has not gone too far, methylated spirit may be squirted into the holes, which must immediately be stopped with clay or grafting wax.

**Bee.** — *See Leaf-cutter Bee.*

**Beech Coccus (Cryptococcus fagi)** —This insect is widespread on beech trees in woods and forests, and, in fact, wherever beech trees are grown. It was at one time thought that because a number of trees which were badly attacked died, widespread damage might be done by the insects. Investigation and careful study over a period of years, however, point to the insects doing little, if any, harm to healthy trees, but the insects do increase in numbers rapidly on the bark of unhealthy trees. **Treatment** —Sickly trees should be cut down and burned. Spray leafless trees in winter with a caustic wash, and scrub the trunks and large branches with a paraffin-soap emulsion.

**Beetles.** — *See Bark or Trunk Borer, Cockchafers, etc.*

**Birch Mite (Eriophyes rudis)** —The presence of this insect becomes apparent by the formation of clusters of abnormally-developed branches. Infested trees lose their graceful habit and may eventually die, though some trees live for many years. **Treatment** —There does not appear to be any sure means of eradicating the disease once the insects have become firmly established, and the trees in such cases should be grubbed up and burned. Where only a branch or two are affected, cut these off well back beyond the point of infection, and dress the cuts with tar. Spraying with a paraffin emulsion, or lime-sulphur wash, during April may be used to prevent the infection spreading to young trees.

**Birds.** —It is often worth while protecting the ripening fruits and berries of the Pyrus, Crataegus, Cotoneaster, Pyracantha, etc, from birds by means of netting. In spite of the damage these creatures do at times, most birds do more good in the garden than harm, on account of the enormous numbers of insect pests they devour. Seeds are best protected by means of black cotton stretched on short sticks, or by old netting thrown over small shrub or tree branches spread over the seeded surface.

**Black Aphis.** — *See Aphides.*

**Black Spot.** —This fungus attacks some varieties of roses, many of the Pernetiana varieties being very subject to the disease. It causes
DISEASES AND PESTS

large purple-black spots to appear on the leaves, which are greatly disfigured, and eventually fall to the ground. **Treatment**—Collect and burn all diseased leaves and shoots, remove a couple of inches of the top soil in winter, and dress the ground liberally with slaked lime. Import fresh soil to replace that removed, and dress again with lime. Spray with Bordeaux mixture, or with liver of sulphur. Dusting with flowers of sulphur and lead arsenate powder has given good results.

**Canker.**—Few diseases are more destructive than canker. The fungus enters through a wound in the stem, however small, and the disease becomes apparent as small concave patches. These increase in size, the stem swells and cracks, and large deep wounds are formed. Concentric rings appear round the wound. **Treatment**—If treated in the early stages, the plants may usually be saved. Spraying is of no avail. All affected shoots must at once be cut back to sound, healthy wood, the diseased parts being burned. The cut surfaces should be painted with Stockholm or gas tar. Badly-cankered trees and bushes are best destroyed. Low-lying, ill-drained, and heavy soil predispose the plants to attack. Poplar trees are very prone to canker, so also are some of the Pyrus family.

**Caterpillars.**—The caterpillars of numerous moths, notably the Brown-tail Moth, Lackey Moth, Leaf-roller Moth, Mottled Umber Moth, Pale Tussock Moth, Tortrix Moth, Vapourer Moth, and Winter Moth, all cause havoc in the shrub garden and pleasure grounds. **Treatment**—They are all biters, and their food is easily poisoned by means of spraying. Spray the foliage with arsenate of lead solution in summer, or, if preferred, careful hand picking may be resorted to.

**Cockchafer Beetles.**—The Cockchafer (Melolontha vulgaris) has the forepart of the body black and the wing-cases reddish-brown. On the side of the thorax are five white triangles, separated by black. This beetle is about an inch long, and appears in May and June. The eggs are laid in the ground and the grubs are a dirty white in colour with brownish heads and tails. They feed on the roots of shrubs and trees. The Chafer Beetles may be very destructive to the roots of young trees and shrubs in the nursery borders, seedling Pines being prone to attack. **Treatment**—In spring or autumn dig naphthalene into the soil at the rate of 2 cwt to every acre. Pick out all grubs while the soil is being dug over, and make a trap by placing a piece of turf upside down on the ground. The grubs will collect under the turf. Where the Garden Chafer is attacking the foliage of a tree or shrub, spread sticky paper on the ground underneath, and strike the stems suddenly. Many of the beetles will fall on the sticky paper, and may be easily destroyed.

**Codlin Moth** (Carpocapsa pomonella)—Several moths attack apple-trees, one of the most destructive, as well as the commonest, being that named from its habitat, the Codlin Moth. "Worm-eaten" apples are those which have been spoiled by the larvae of this insect. The moth lays its eggs singly, one in the eye of each fruit, and fixes it inside the calyx with a gummy fluid. As the little apple grows and swells, the grub eats its way further and further in, until a little before the fruit would normally be ripe, the maggot has reached its core,
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feeding upon the pips, a proceeding which causes the fall of the fruit. The caterpillars, released from the fallen apples, creep up the tree-stem until they find a sheltered crack in which they pass the other stages of their life, till the perfect moths emerge in the following spring to repeat the process. **Treatment**—The chief preventive operations consist of placing bands of sacking or hay closely round the trunks, some 1 to 2 feet from the ground in late summer, to trap the caterpillars as they ascend. Collect and burn the bands several times should the pest be very active. This is indicated when the crabs or other fruits fall freely. Gather and destroy all prematurely fallen fruit and spray the trees with arsenate of lead as soon as the petals of the flowers fall. Crab apples are frequently infested with the Codlin moth.

**Coral Spot (Nectria cinnabarina).**—This disease is so called from the masses of orange-pink spores on the dead, or nearly dead, woody stems of the plants affected. Trees and shrubs of all kinds are frequently affected by this disease, which procures a footing through a cut in the stem or through dead shoots. It usually makes its appearance in autumn. The Judas Tree, Sycamore, Hibiscus syriacus and Plagianthus Lyalli, I have noticed, are particularly susceptible to the attack of Coral Spot. **Treatment**—Remove and burn all dead and diseased branches, leaving none of the affected wood on the trees. Care must be taken while pruning not to injure the branches, and all wounds or jagged surfaces should be coated with Stockholm tar or gas tar. No dead wood or rubbish should be allowed to lie about in the vicinity of the trees.

**Crown Gall (Bacillus tumafaciens)**—This is a disease that does not greatly harm matured trees and bushes. It attacks chiefly young plants, and sometimes proves fatal to them, although they usually live for some time, remaining stunted and unhealthy. The damage varies with the position of the gall. When a plant contracts this disease, hard, round swellings of various sizes appear on the roots, stems, or branches, though the disease usually makes its appearance in the neighbourhood of the "crown." The swellings are first white, but later become dark in colour. Manetti rose stocks used for budding roses are very liable to the attack of Crown Gall. **Treatment**—Since the bacteria causing the disease enter through a wound in the bark, great care should be taken not to injure the stems in any way. The cutting out of a gall will not invariably effect a cure, as the disease may break out in another place and the operation may be so drastic that the plant is killed. Badly-diseased plants should, therefore, be discarded and burned, but where the malady is local, such as on the roots, cut away the affected parts and burn them, dressing the wounds with a mixture of bluestone, copperas, and lime in about equal proportions.

**Cuckoo Spit or Frog-Hopper (Aphrophora spumaria).**—A yellow insect known as the frog-hopper causes this trouble. The female hopper lays her eggs on the plant, and the grubs suck the sap from the stems and leaves, covering themselves meanwhile with the well-known frothy substance known as "spittle" or "spit." They are prevalent
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from May to July, and greatly retard the development and growth of the plants. The Cuckoo Spit is very noticeable on Lavender and Rosemary bushes. **Treatment**—Spray with nicotine or paraffin emulsion. Project the spray as forcibly as possible to wash away the covering of froth and thus enable the substance used for spraying to come in actual contact with the insects.

**Die-Back.**—This disease, caused by various fungi, quite frequently attacks trees and shrubs of the Prunus, Pyrus and Ribes families. Although the general symptoms are the same in all cases, that is to say, the branches wither and "die-back," the different kinds of trees are attacked by different species of fungus, and the first symptoms vary somewhat. In the Pyrus the older wood is usually first attacked, large cankerous wounds, surrounded by purple patches of rough bark, are formed. If unattended, the cankers will soon kill the tree. The yellowing and shrivelling of the leaves on the younger branches are the first signs of the disease in the Prunus, notably in the Cherry group. The bark then cracks, and from the wounds "bleeding" or gumming occurs. The branch dies, and the disease spreads downwards to the older wood and the trunk. When the wood has been dead some time, little pustules form beneath the bark, these soon burst and broadcast the fungus spores. **Die-back in the Ribes affects leaves, young shoots, branches and fruit.** The leaves become margined with yellow, and later with greyish-white. If this discoloration spreads over the whole leaf, the latter soon drops. The older wood is usually first attacked just above the ground, and grey tufts of woolly fungus appear on the withered and cracked bark. The fungus extends up the branches, and eventually kills the entire bush. **Treatment**—All affected branches should be pruned out, care being taken to cut right back to sound, healthy wood. The pruning must be burned immediately, and the cut surfaces should be painted over with a dressing of tar. Badly-diseased trees should be dug out entirely and burned. In the case of Ribes, the above treatment should be applied, but the bushes should also be thoroughly sprayed the following spring, just before the buds commence to open, with a solution of copper sulphate. This will prevent the spread of the disease if any spores have been left on the bushes.

Elm Bark Beetle (**Scolytus destructor**)—This small beetle sometimes causes considerable harm to Elm trees. Young and old trees, also felled Elm timber, may be attacked. The beetle makes its appearance in June. The females bore holes into the bark as far as the cambium, and then form burrows in which to lay their eggs. In due course the larvae hatch, pupation beginning in August. Unhealthy trees seem the most liable to attack, and notably those developing the Dutch Elm disease. The beetle is difficult to control, and the only protective measure which can be suggested is to fell and burn the infected trees.

Elm Disease (**Graphium ulmi**)—Considerable attention has recently been given to a disease of Elm trees, which, as it was first noted in Holland, has become known as the Dutch Elm disease. Though first found in England as recently as 1927, it is now widespread in England,
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as well as in Holland, Belgium, France and Germany. Usually, the first symptoms of the presence of the disease are discoloration and withering of the leaves in summer. Longitudinal sections of affected branches show brown streaks in the youngest wood close to the bark. 

Treatment — So little is at present known of the life history of the disease that it is only possible to suggest methods to check the spread of the disease. Trees badly attacked should be felled as soon as the presence of the disease is definitely determined. When only an isolated branch or two, especially of large trees, are infected, these should be cut off flush with a side branch or the main stem, and the cut surface should be dressed with tar. Careful watch must be kept in case other branches develop the disease.

Euonymus Caterpillar. — The Euonymus is very liable to attack by the caterpillar of the Magpie Moth in early summer. These hang on the branches in cobwebby masses, feeding on the leaves. Two or three sprayings with Paris Green are very effective. (See Magpie Moth, p. 224.)

Frog Hopper. — See Cuckoo Spit.

Gall-Fly. — The large, woolly, greenish or reddish galls which are sometimes encountered on rose species, bushes, ramblers and climbers, are produced by a species of gall-fly (Rhodites rosea). Treatment — The parts affected should be cut right away and burnt at once.

Gall-Mite. — Dense, twiggy tufts, much like short besom brooms, are frequently to be seen growing from the branches of birch trees. These galls, often called witch-knots, are caused by irritation set up by the gall-mite. They should be cut clean away and burned, the cut surface on the branch being tarred, otherwise these growths are liable to spread to other branches and trees. See also, Birch Mite.

Goat-Moth (Cossus ligniperda) — This moth, in its caterpillar stage, does much damage to numerous trees, boring long channels, equal in diameter to that of a lead pencil, between the bark and the wood. The openings are surrounded with bark shavings. At first sight the damage is very similar to that caused by “Sun-stroke” or “Scorch.” The female lays its eggs on the trees, usually on isolated specimens. These eggs hatch out into caterpillars that make large oval burrows in the trunks, which, if the pest is not checked, will eventually kill the trees. The caterpillars feed on the trees until they pupate in a cocoon of sawdust and small flakes of wood, in the burrow near the outside. This takes place about May, and the moths appear during June, July, and early August. The caterpillars are from 2-3 inches in length, and are of a deep pinkish-yellow beneath and down the sides, while the back is a deep mahogany-red and carries stiff hairs on each segment. The head is black. The moth has a hairy thorax of greyish-brown which is banded in rear with a much deeper brown. The abdomen is large and plump, and is grey, ringed with white. The forewings are light brown, splashed with grey and irregular greyish-black transverse lines, the hindwings are of a deeper shade of grey-brown, flecked with a darker colour. The wing expanse in the male measures from 2 to 3 inches, but from 3 to 3½ inches in the female. The peculiar goat-like smell which the moth exudes gives it its name,
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and is a clear indication of its presence. **Treatment**—Badly-infested trees, if of no great value, should be cut down and at once burned. Where branches only are affected, these should be cut back to sound wood, the trimmings also being burned. The cut surfaces should be tarred. Where the holes are not too numerous, sodium cyanide (poison) may be inserted in them, the opening then being sealed with clay. Woodpeckers feed on the caterpillars. Poplar, Willow, and Lime Trees are not infrequently attacked by the larvæ or caterpillars of the Goat Moth (See also, Wood Leopard Moth).

**Greenfly.**—See Aphides

**Holly Fly** (*Phytomyza ilicis*)—This fly deposits its eggs beneath the epidermis of the leaves, the eggs hatch out in due course, and the grubs feed on the leaves. **Treatment**—On small specimens pick off and burn the worst-affected leaves. Spray with a paraffin emulsion every 10 or 12 days during April, May and June, when the flies are active and depositing eggs.

**Honey-dew.**—See Aphides

**Lackey-Moth** (*Ceisiocampa neustria*)—There are several moths which attack trees, one of the commonest being the Lackey-Moth, which lays its eggs in rings round the bark of a branch or twig. The caterpillars, which hatch out about April, live in colonies, and cover themselves with webs spun over the leaves. The caterpillars are black, or nearly so, when first hatched, but as they mature, become brightly coloured and have a white stripe down the back, flanked on either side by three orange lines separated by black and blue streaks. The caterpillars are covered with long brown hairs, and feed on the foliage, doing great damage. Early in July they pupate. The moths are brown in colour, and emerge in July and August. They can be recognised by the two pale stripes on each forewing. **Treatment**—Small trees may be looked over in May and June, all infested leaves being picked off, shoot and all, and dropped into a bucket of strong insecticide. If a dull, damp day is chosen, the caterpillars will be all inside their little webs, and are more easily dealt with. The trees may also be sprayed with lead arsenate. The Oak, Pyrus family, Hornbeam, Poplar and Birch are well-known trees subject to attack.

**Larch Blight** (*Chermes abietis*)—Larch trees are frequently infested with this white woolly insect. Spray several times in spring with a paraffin emulsion.

**Larch Canker** (*Dasyscpha calycina*)—Canker or Larch Blister will soon check the healthy growth of young Larch trees unless checked by spraying in summer. Bordeaux mixture is one of the most effective spraying emulsions. Vigorous young trees are much less liable to attack than trees in indifferent health.

**Leaf-Cutter Bees** (*Megachile centuncularis*)—Leaf-cutter Bees are best destroyed by means of spraying affected foliage with arsenate of lead. This bee is partial to rose leaves in particular.

**Leaf-Roller Moth** (*Tortrix viridana*)—The caterpillars of this moth appear in spring on Oak trees as the leaves unfold. I have seen them so numerous on the oak trees in Richmond Park plantations that the leaves were stripped as fast as they grew. The mature moths...
appear in June, and deposit eggs for next year's brood. Fortunately, the second growth of oak leaves is not injured, but if attacks follow in successive years, serious injury to the trees may result. The annual increment of wood certainly suffers. Treatment.—Spraying is of little value in spring, as an emulsion sufficiently strong to kill the caterpillars would also kill the young leaves. Insect-eating birds destroy large numbers.

**Leather Jackets** (*Tipula maculosa*).—These are the grubs of Daddy Longlegs. They do great damage to the roots of young shrubs and trees during summer, winter and spring, feeding just below the soil, and working their way right into the centre of large roots, and, in damp weather and at night, attacking the stems of the plants. The Daddy Longlegs, or Cranefly as it is sometimes called, needs no description. These flies should not be confused, however, with the Daddy Longlegs spider, which is quite harmless. The Leather jacket is so called because of its hard leathery skin. It has no legs, is cylindrical in shape, and of an earthy-brown colour. The head is black and the tail-end is blunt with several short finger-like projections.

**Prevention and Treatment.**—Break up new land thoroughly in the summer, as the grubs will soon die if exposed to hot sun and dry soil, or will fall a prey to birds. Where possible keep weeds well in check by constant hoeing. Dig naphthalene, at the rate of 2 oz. to the square yard, thoroughly into the soil and water well.

**Magpie Moth** (*Abraxus grossulariata*).—The Magpie Moth is one of the chief enemies of shrubs of the Ribes family. It also attacks the Prunus, Euonymus, Hawthorn and Laurel, as well as various other plants. The pretty black and white markings on the wings of the perfect insect render it unmistakable, and when the moths first appear in July, they may be caught with tolerable ease and destroyed, thus checking the egg-laying. The caterpillars are also marked with black and white, with yellow along each flank, and feed on the leaves of the bushes, sometimes stripping them almost bare. The eggs are laid on the leaves in July, and the caterpillars begin to feed in August. They live through the winter in sheltered nooks, and continue feeding in the spring, turning into black and yellow chrysalides in June.

**Treatment.**—In the winter, all material which might harbour the caterpillars should be removed, preferably when the pruning is done and with these fallen leaves and prunings about an inch of the surface soil should be raked off and burned. The remaining caterpillars should be picked off by hand in the spring, while spraying with kerosene emulsion, or Paris Green, is useful at this early period.

**May Bug.**—See Cockchafer Beetles.

**Mildew.**—In this disease, which is due to a fungus, the buds, leaves and small shoots are affected from spring to autumn. They become covered with a whitish mould, which, if neglected, does much to cripple the growth of the bush or tree. **Treatment.**—Mildew is a disease that requires immediate attention, for if it is neglected, it will spread rapidly from plant to plant. Dust with “flowers” of sulphur, and repeat the application in ten days’ time, or spray with liver of sulphur Potassium Sulphide, using ½ oz. to one gallon of water, or 1 oz. to three gallons of water for young and tender foliage.
PLATE 15
Above, *Prunus lannesiana*, below, *Pyrus arnoldiana*
OAK GALL INSECT.—The Oyster Gall Insect (*Andricus ostreus*) disfigures the leaves of Oak trees, but does not appear to have any noticeable effects on the health of the trees.

OAK-LEAF MINER BEETLE (*Orchestes quercus*).—This is a small, brownish beetle which attacks the leaves of Oak trees in May and June. Small holes are eaten in the leaves, and the female deposits her eggs singly in the mid-ribs. The larvae hatch in about ten days, and begin to feed on the leaves, leaving the upper and lower epidermal skins of the leaf. These form a large brown patch. The insect does not cause serious permanent injury to the health of the trees.

OAK-LEAF ROLLER MOTH.—See Leaf-Roller Moth.

OAK MILDewed (*Oidium* sp.).—This is one of the most common diseases in the pleasure grounds and woodland. Fortunately, the attack is usually confined to the second growth in late summer and autumn, and even if the attack is severe, the health of the trees is not seriously affected, though it may spoil the autumn colouring. Small trees should be sprayed with Bordeaux Mixture or with Potassium Sulphide.

PINE BEETLE (*Mylophilus piniperda*).—This beetle attacks Pine trees of all ages, causing most damage to the leaders of young trees. Mature insects appear in May and June, and begin boring into the bark, forming tunnels beneath the bark, where the female lays her eggs. The larvae soon appear, boring as they feed. In a few weeks, pupation takes place, and towards the end of July, the mature beetles disperse and bore into other trees. Hibernation takes place in winter.

Preventive Measures.—Keep the ground near the trees clear of all rubbish, and burn sickly and unhealthy trees.

PINE TREES.—Witches' Brooms are not uncommon on Pine trees, notably on the Scots Pine and Corsican Pine. They are sometimes called, in country districts, "Crows' Nests," and may be three or four feet across and of equal thickness. These growths do not appear to cause serious injury to the trees. The branches may be cut off if inclined to increase, and the wounds should be dressed with tar.

PINE WEEVIL (*Hylobius abietis*).—Though known as the Pine Weevil, this insect is destructive to other trees, in addition to Conifers. The period of the mature weevil extends from late spring to autumn, but they are most active in May, June and September, when they gnaw the bark, injuring or killing young trees. Treatment.—Hibernation takes place during the winter. The female lays her eggs on fallen branches and dead wood, the larvae feeding only on dead wood. The ground should, for this reason, be kept free of dead wood and rubbish. The beetles can be trapped in boxes containing pieces of wood and bark. In the case of bad attacks, these should be examined each morning, the weevils being destroyed.

RABBITS.—Much injury is done to the bark of trees and shrubs by the nibbling of rabbits. The best plan is to keep them out by suitable wire fencing, but this is costly, and perhaps, in some places, impossible. A safeguard for individual trees is to place boards, connected with hooks and eyes, round the stem or trunk. Boarding of this kind may be easily put up and readily shifted. If preferred, some sticks, about 1 inch in diameter, may be placed at intervals round and against the

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stem of the tree, being bound round from the bottom upwards with
tarred cord as far as may be necessary. The remedy is an unsightly
one, but it has the merit of being effectual. Some recommend tarring
the stems from the ground to the height of about 20 inches, but this
is likely to prove injurious to the tree itself. Instead of doing this,
it is better to drive in three or four stakes round each plant at a
distance of nine or twelve inches from it, and then loop fresh tarred
twine round the stakes, up to the height of nine inches from the ground.

Red Spider (Tetranychus spp) — Though known by the name of Red
Spiders, these insects are not true spiders. They attack many kinds
of trees and shrubs, notably Limes, Ribes and Poplars. The insects
eat into the underside of the foliage, and suck at the sap, causing the
leaves to turn yellow, and later, if the attack is severe, whitish. The
pest is encouraged by drought. Treatment — Plants that are attacked
should be sprayed with paraffin emulsion or lime-sulphur, but it is
essential that this shall be done early, before the trees or bushes are
badly damaged.

Scale. — These insects infest and do much injury to the wood and
leaves of many trees and shrubs. They pierce the bark, and suck the
sap from the plants, attacking first the older wood. They infest the
young shoots only after all the larger branches have been covered.
Badly-affected trees and bushes lose their leaves early in the season,
and rarely carry good flowers, the sucking of the sap soon drains
their vitality. The males are in the form of small flies. The females
look like little plates or scales — whence the name — fixed to the bark
and sometimes the leaves. Treatment — Scale is destroyed by scrubbing
the trunks and larger branches, or by thorough spraying with
strong soapy water in the proportion of 1 oz of soap to 1 quart of
water, with paraffin in the proportion of ¼ gill to 1 gallon of water,
with nicotine wash, or with lime sulphur. As much of the old wood as
possible should be cut away. The sprays or washes should be applied
in spring at intervals of five or six days when the larvæ are hatching,
and special attention should be given to the undersides of the branches.
Trees of the Salix (Willow), Vitis inconstans, Populus (Poplar), Frax-
inus (Ash), Ribes (Flowering Currant), Rosa (Rose species), and Pyrus
(Apple and Pear) families seem the most liable to attack.

Scorch or Sunstroke. — Many of the softer-wooded trees are, when
young, that is, up to 10 or 12 feet in height, open to suffer from scorch
or sunstroke. Hard-wooded trees, the Elms and Oaks, for example,
are rarely sufferers. When growing in the wild state, young saplings
usually grow up close together, and so provide mutual shade for their
young stems. Besides, the young plants are, as a rule, found grouped
round their parent trees, which also afford ample shade. It will be
noticed, too, that where a young tree has grown up naturally on the
edge of a copse, the stem is feathered with branches almost to the
ground, and these protect it from the rays of the sun. In nature,
therefore, sunstroke is but rarely met with, and it is only when young
trees with but little “head” of branches to protect their stems are
planted singly in the open that this complaint is met with. Although
this disease is due to scorching by the rays of the sun, it does not
necessarily follow that it is especially prevalent in very hot, dry summers; on the contrary, sunstroke is most frequently met with after a few days of very hot sun following a wet spell, for after a period of this kind, the wood is moist, soft and pappy, and is more readily damaged. The first symptoms of sunstroke in young trees are vertical cracks in the bark on the southern side of the tree. The bark turns brown, and sags, indicating the hollow beneath it caused by the shrinkage of the wood, which, if the bark is peeled away, will be found to be dry and hard. The area attacked is usually a vertical strip some two inches in width and one to two feet long. Treatment — The damaged wood must be cut away right down to the healthy core, and the wound should be tarred. The young stems must be shaded by means of canvas screens, wattle hurdles, or branches of evergreens fixed into the soil round the damaged trees. Badly-scorched saplings may take years to recover, many are damaged beyond recovery, as the harm is rarely discovered until it is too late to rectify matters. Trees most liable to sunstroke are: the Acer, Esculus, Betula, Fraxinus, Salix, and Tilia.

Silver Leaf (Stereum purpureum) — The fungus is said to enter the wood only through an injury to a branch, and causes the leaves to take on a silvery hue. A tree sometimes recovers if the branch is cut off as soon as Silver Leaf is noticed, but more frequently the branches gradually die off, till the whole tree is killed if the attack is not arrested. The fungus later shows itself as a purple, leathery coating over the under parts of the dead wood, or in the form of horizontal lines of purple crust on the side of the trunk. It was formerly thought that the Silver-leaf disease was confined to the Prunus family, but it is now known to be very general in the natural order, Rosaceae, which includes the Spireas, Pyrus, Amelanchiers and Cydonias. Silver-leaf also attacks Rhododendrons. Treatment — As soon as the disease is discovered, cut the branches back to healthy wood, and paint the cut surfaces with Stockholm Tar, this dressing should be renewed at intervals. Trees badly attacked should be dug up and burned. Burn all diseased parts, also all old wood lying about near the trees. The soil should be well limed, and faulty drainage must be carefully rectified.

Sooty Mould.—See Aphides

Spruce Aphis (Aphis abietina) — This aphis defoliates Spruce branches badly one season, and may then disappear or remain inactive for a number of years. Weekly spraying (as soon as detected) with nicotine wash is a good remedy.

Thrip (Thrips vulgarissima) — These tiny insects are a great nuisance in dry seasons. The plants they attack should be sprayed with a weak paraffin emulsion, with nicotine, or lime sulphur.

Tree Root Rot Fungus (Armillaria mellea).— This is one of the commonest and most destructive of fungi to trees. It most frequently occurs when new trees have been planted in ground where old ones have been grubbed up or cut down. The fungus first develops on the stumps and dead roots, and then spreads to the young trees. If possible, it is, thus, desirable to remove and burn all the roots from
the ground before planting young trees. The mycelium travels quickly through the ground. The loss of several large Horse Chestnut trees in a group at Kew was due to Armillaria spreading from one tree cut down. The mycelium may be checked by digging a trench 18 inches wide and 2 to 3 feet deep, to cut off an infected area.

**Winter Moth (Chimatobza brumata)**—Although found on many kinds of trees and shrubs, the damage done by the Winter Moth is most apparent on trees of the Pyrus family, including the Ornamental Crabs and the Crataegus. The female moth is not fully winged and, being unable to fly, crawls up the tree stem to lay her eggs. The caterpillars appear in April and May, and begin at once to feed upon the young leaves, flowers and young fruits. When fully fed, they let themselves down from the tree by means of spun threads, and bury themselves in the ground, there to pass the next stage of their life.

*Treatment*—The eggs are laid all through the winter, and the best method of prevention is the encircling of the stems of the trees early in October with bands about eight inches wide of some material which the crawling moth will be unable to pass. Brown paper coated with cart-grease mixed with tar, or any other coarse grease of the kind will serve. The bands, if possible, should be placed about 4 feet from the ground, to prevent the females from being able to get over them. In the case of bushes where the bands cannot be placed at this height, spraying is the better method. The bands should be kept greased at intervals throughout the winter and early spring months. Spraying of the trees with Paris Green, of a strength of one pound of Paris Green to 200 gallons of water, should be carried out during the period between the middle of March and the middle of April, when any grubs that have been hatched will be destroyed.

**Witches’ Brooms.**—These occur on many kinds of trees. The majority are harmless, but some are detrimental to the health of the tree on which they grow. They are due to an abnormal development of adventitious buds, said to be caused by irritation due to the presence of insects or fungi.

**Witches’ Brooms on Prunus (Exascus cerasi)**—On Cherries, notably the varieties of Japanese cherries and Prunus Avium, the mycelium is perennial in the tissues, causing burrs or gouty swellings, which disfigure the trees, stop the development of flower buds and, in extreme cases, ultimately kill the trees. *Treatment*—Cut off all evidences of Witches’ Brooms right back to healthy side branches, and dress the cuts with tar. Spray with Bordeaux mixture in spring.

**Woolly Aphids, or American Blight (Schizoneura lanigera)**—These aphides are usually dark purple in colour, and are very difficult to get rid of. They derive their name from the masses of downy white wool with which they cover themselves. *Treatment*—Spray the affected trees with a paraffin emulsion or with any good insecticide. See p. 213. In autumn, too, the soil round the trees should be dressed with naphthalene at the rate of 1/4 lbs per rod. Several sprayings with caustic soda wash in December and January are usually very effective in eradicating the pest. Woolly Aphids is troublesome on Crab Apple trees and on the various species of Pyrus.
GLOSSARY OF TERMS

CHAPTER XXXIV

Acuminate.—Tapering to a long narrow point

Aeration.—To admit fresh air into soil. Sweeten by means of digging, trenching, hoeing, etc

Albino.—A term sometimes applied to a plant with white flowers or leaves

Alluvial Soil.—Soil carried by the action of water and deposited.

Alpine.—Pertaining to the Alps. Plant that grows in rocky situations with little sub-soil

Alternate.—Arranged one above the other on opposite sides.

Anther.—The pollen-bearing part of the stamen

Artificial Manure.—Not natural manure. Food which has been specially prepared to promote plant life.

Axil.—The angle between the stem of a plant and the base of a leaf

“Ball.”—Soil surrounding roots of a plant when lifted from the ground. The bigger the “ball” the less likely are the roots to be disturbed, and thus the quicker the plant will settle down in its new position. The term “ball” is also used for the roots of a plant and soil removed from a flower pot

Bark.—The corky outer rind of a tree or plant, stem, branch or trunk.

Basic Slag.—A useful fertiliser extremely rich in phosphates and lime

Bast.—The inner rind of the Lime and some other trees, sometimes used for tying.

Bell-Glass.—A bell-shaped glass used for protecting young seedlings and rooting cuttings

Berries.—Fruits with succulent pulp containing seeds or pips.

Bifoliate.—Double leaved, or having two leaflets

Bigeneric Hybrid.—A cross between two different genera; i.e. Crataegus and Mespilus

Bipinnate.—Doubly pinnate

Biserrate.—Doubly saw-edged

Bleeding.—Loss of sap through a wound in the bark or wood.

Bordeaux Mixture.—A useful fungicide for spraying trees, shrubs, etc.

Bottom-heat.—Heat applied from below when rearing plants.

Bract.—A leafy appendage to flowers or stalk

“Break.”—Burst forth into new growth. Also the development of side-shoots

Breastwood.—The outward and forward-growing branches of trained wall trees

Brier Stock.—Wild dog rose plant on which cultivated roses are budded.

Budding.—Propagation by means of inserting dormant bud of one plant in shoot or stem of another

Bud.—The end of the shoot of a plant. Buds are of three kinds: those containing the flowers, those containing the leaves, and stem or growth bud, and some contain both flowers and leaves

Calcareous Soil.—Soil having the nature and properties of chalk or lime—containing chalk or lime.
GLOSSARY OF TERMS

Callus.—A sort of hard tissue which forms at the base of a cutting before it commences to send forth roots.

Calyx.—The outer covering or part of a complete flower.

Cambium.—A tissue which forms between the inner wood and the bark.

Campanulate.—Shaped like a bell or campanula.

Canker.—A disease—decaying of parts.

Capsule.—A dry fruit of two or more cells.

Catkin.—Long narrow spike or tail-like tuft of tiny unisexual flowers.

Ciliate.—Having the edge fringed with hair.

Climber.—A plant that sends out long straggly shoots, often to a considerable length, and requiring support on walls, trellis, etc.

Clipping.—Trimming to shape hedges, shrubs, trees, etc.

Cloche.—See Bell-glass.

"Close."—Applied to atmospheric conditions in a greenhouse or frame when little or no ventilation is given.

Clump.—A fair-sized cluster or patch of plants, shrubs or trees.

Cold Frame.—Frame without any artificial heat.

Cold Greenhouse.—Greenhouse that affords protection, but without any artificial heat.

Compound Foliage.—Made up of two or more leaflets.

Cone.—The scale-like "fruit" containing the seeds of coniferous plants.

Conifer.—A plant which bears cones.

Compost.—A mixture of soils more especially the mixture used when potting plants or sowing seeds under glass.

Cordate.—Heart-shaped.

Cordon.—A form in which certain trees and shrubs are grown, usually against a wall or fence—denotes single stem.

Corolla.—Coloured petals of flower.

Corrugated Foliage.—Wrinkled leaves.

Cortex.—The outer portion of stem or root—bark.

Corymb.—A cluster of blooms having a flat appearance.

Cotyledons.—The first leaves of seedlings also a genus of succulent plants.

Crab.—Species of wild apple useful as a stock for grafting or budding cultivated varieties.

Creeper.—See Climber. Creepers are more especially those plants which creep over the ground.

Crock.—Broken pieces of pot, china, etc., usually placed in the bottom of pots, pans, etc., for draining purposes.

Cross-breeding.—The introduction of new varieties by crossing one established species or variety with another.

Crown.—Junction of root and stem Head of foliage.

Crown Bud.—The central or the topmost flower bud.

Crown Grafting.—Form of grafting See Grafting.

Cuneate.—Wedge-shaped leaves, truncate at apex and tapering to a point at base.

Cut-backs.—Shrubs or trees that have been hard pruned.

Cuttings.—Slips or young portions of plants used for propagation purposes.

Cyme.—A flattish cluster of flowers.

Dampening Down.—Method of keeping atmosphere moist by means of moistening greenhouse walls, floor, etc.

Damping Off.—Decay of seedlings due to over-crowding, over-watering, insufficient air, etc.

Deciduous.—Trees and shrubs that lose their leaves in winter.

Decussate.—With four leaves arranged in the form of a cross.
LEAF FORMATIONS

1. Cordate. Lime. Serrate except at Base
2. Oblong. Elder. Regular Serrate
3. Obovate. Wych Elm. Strongly Serrate
4. Lancesolate. Crack Willow. Serrate
5. Elliptic. Laburnum. Entire
6. Lobed. Plane
7. Needle shaped. Stone Pine
9. Elliptic (Broad). Hazel. Bi-Serrate
10. Lanceolate (Broad). Chestnut. Dentate
GLOSSARY OF TERMS

Dentate.—Toothed or saw-edged.

Dibber.—A pointed instrument used for making holes in the ground when planting certain seeds, seedlings or cuttings.

Digitate.—Consisting of finger-like sections.

Dioecious.—Bearing female flowers only on one plant and male flowers on another.

Disbudding.—Picking off superfluous buds so as to strengthen main or principal buds.

Distichous.—A plant carrying its flowers or fruit in two vertical rows, one on each side of the stem.

Division.—Propagation by means of dividing the clumps or rootstocks of plants.

Dot Plants.—Planted out like dots, every plant distinct and separate, with dwarf plants as a groundwork.

Draining.—Providing means for surplus moisture to drain away or run off.

Dressing.—Application of manure, mulch or fertiliser to the soil.

Drill.—A shallow furrow or continuous long shallow and narrow hollow made, usually with a hoe, for sowing seeds in.

Drupe.—A cherry-like fruit with stone in the centre.

Drying-off.—Ceasing to water plants during season when they are dormant. Applied especially to tubers and bulbs.

Dusting.—Sprinkling with fine powder, charcoal, lime-sulphur, etc.

Entire.—Leaf with unindented margin.

Ericaceous.—Belonging to the heath family (Ericaceae).

Espalier.—A row of trees trained to a frame, or a single fruit tree thus trained, the frame or lattice work used for the training.

Evergreen.—Shrubs and trees which retain their foliage all-the-year round.

Eye.—The dormant bud of a plant; i.e., used in budding trees and shrubs.

Fastigiate.—Upright and narrow or close in growth.

Feeding.—Application of fertiliser, liquid manure, etc.

Fertilisation.—Union of male and female flowers. See Pollination.

Fimbriate.—Having a fringed edge.

Flore Pleno.—Double-flowered.

Floret.—Each individual flower in a cluster, as in the Olearia and Senecio.

Floriferous.—Bearing flowers freely.

Foliage Plants.—Plants grown for the sake of their foliage, the flowers being usually insignificant.

Forcing.—Encouraging, by means of heat, plants to flower or fruit earlier than their normal time.

Frame.—A wood-sided structure with movable glass “lights,” like the top of a small greenhouse.

Friable Soil.—Fine good sandy soil.

Fumigation.—Cleansing, and killing insects by means of fumes or smoke from nicotine, tobacco, etc.

Germination of Seed.—Commencement of growth. Development of shoots by the seeds.

Glaucous.—Covered with a bluish, greenish or greyish “bloom.”

Graft.—A young shoot of one plant specially prepared for inserting in the branch of another. See Grafting.

Grafting.—The operation of Grafting. See page 194.

Gumming.—See Bleeding, also chapter on Diseases and Pests.

Habit.—Form or method of growth.

Habitat.—Natural home or locality of a plant.
INFLORESCENCES

1. **Raceme** Laburnum vulgaris
2. **Pseudo** Yucca filamentosa
3. **Umbo** Prunus Cerasus
4. **Terminal Cyme** Jasminum officinale
5. **Whorl** Phloemis fruticosa
6. **Terminal Head** Lonicera Periclymenum
7. **Corymbs** Pyrus Sorbus
8. **Auxiliary** Eucalyptus europaea
9. **Thyrsus** Syringa vulgaris
10. **Caulis** Corylus Avellana

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GLOSSARY OF TERMS

Half-Hardy.—Requiring a certain amount of protection, mostly in winter.

Half Standard.—Shrub or tree with a short stem. Between a standard (which see) and a bush in form.

Hardening-off.—Gradual reduction of protection, heat, etc. Preparation of plants raised under glass for planting out in the open.

Hardy Plants.—Those that thrive in the open throughout the year, and need no protection.

Hand-light.—A small frame used for protecting tender plants, rooting cuttings, and for raising seedlings.

"Heel."—Cuttings taken with "heel" are cuttings with a thin piece or wafer-like slice of mature wood attached at base.

Heeling-In.—Placing the roots of shrubs and trees temporarily in soil until they can be planted out properly in their permanent positions.

Hoeing.—Stirring the surface of the soil with a hoe.

Honey Dew.—See chapter on Diseases and Pests.

Hot-bed.—A specially-prepared bed of straw, manure, leaves, and usually grass cuttings, mixed together and with a frame placed on the top. In this seeds can be grown and cuttings rooted.

Humus.—Decayed vegetable matter.

Hybrid.—A plant produced by the mixture or "crossing" of two species or varieties.

Inflorescence.—The arrangement or method of bearing flowers.

Insecticide.—Specially-prepared mixture for the destruction of insects. Usually applied by means of spraying or dusting.

Joint.—The part of the stem, also called the node, from which leaves grow.

Lanceolate.—Lance-like, long narrow pointed leaf.

Lateral.—A shoot growing out sideways from the main stem.

Layering.—A process of propagating certain plants by means of pegging or fastening down shoots in the soil until they root.

Leaf-mould.—Mould composed of decayed leaves.

Leggy Plants.—Plants which have become over tall and weak.

Lichens.—A sort of moss, or growth, on tree trunks, damp walls, etc.

Ligature.—Band of bast, twine, etc., securing a plant to its stake, etc.

Linear.—Long and narrow, with parallel margins.

Lobed.—Divided into lobes or leaflets.

Maiden Trees.—Trees, roses, etc., that have only been budded or grafted a year.

Monoeocious.—Plants bearing male and female flowers on the same plant.

Monotypic.—Pertaining to the only species or representative of the genus.

Mulching.—The placing of a layer of manure, etc., on the surface around plants to keep the ground cool and moist for the benefit of the roots.

Nodes.—Places where leaves come off from stem.

Non-calcareous Soil.—Soil containing no chalk or limestone.

Obcordate.—Heart-shaped, but with the broad indented portion outwards.

Oblong.—Longer than broad.

Obovate.—Egg-shaped, broad end outwards.

Osier.—Species of Willow, the twigs of which are used for basket-making and binding purposes.

Oval.—Elliptical, egg-like in shape.
GLOSSARY OF TERMS

Ovary.—The part of the flower where the seed forms.
Ovate.—Egg-shaped
Palmate.—Palm-like
Panicle.—Elongated and branching spray of flowers
Peat.—Old deposits composed of decayed vegetable matter, roots, fibre, etc.
Peduncle.—Stalk connecting leaves or flowers to stem
Pegging Down.—Bending down young shoots and fixing them in the ground so that they may root
Pendulous.—Weeping or drooping
Petal.—A leaf-stalk, a foot-stalk of a leaf next the stem
Pinching-back.—Punching out the centres of young shoots of plants to make them branch and become bushy, instead of tall
Pinnate.—Many leaflets arranged in pairs Feather-like
Pistil.—The little upright column in the centre of a flower, crowned by the stigma
Pointing.—Lightly forkng over the surface of the soil.
Pollen.—The fecundating dust of flowers
Pollination.—The act of fertilisation of flowers; i.e. placing the pollen grains on the stigma
Pricking-off.—Transplanting seedlings.
Procumbent.—Trailing or low-growing.
Propagation.—The act of increasing plants.
Protection.—The protecting of plants from the cold by means of frames, screens, etc.
Pruning.—See chapter XXIX
Pubescent.—Covered with soft downy hair.
Pyramid.—Form in which certain trees are grown. Shaped like a pyramid
Raceme.—A cluster or inflorescence of flowers, each with a stalk
Ripening Wood.—Thinning and in other ways exposing the new growths of the year to the air, sun and wind
Root Pruning.—The operation of reduction of roots
Scale.—See Diseases and Pests, chapter XXXIII
Scion.—A young shoot of a tree, a cutting of a twig used for grafting.
Second Crown Bud.—The next bud to form on a new shoot after removal of the crown bud
Seeding.—Young plant raised from seed
Self-fertile.—Flowers which develop fruits and seed when fertilised by their own pollen
Semi-evergreen.—Evergreen in mild localities, but deciduous in more exposed situations and in hard winters
Serrate.—Saw-edged.
Set.—The flowers are said to have set when the fruit forms afterwards.
Simple Leaves.—Those having a single blade.
Spit.—A spade’s depth of soil, 9-12 inches
Sport.—An unusual variation from type of plant.
Spur.—A short shoot of a plant
Stamen.—The organ of a flower for the preparation of pollen
Standard.—Rose or other tree with a clean straight stem
Stock.—The stem of a common plant on which another species or variety is grafted or budded
Stopping.—See under Pinching-back
Striking.—The insertion of cuttings in soil to form roots and a new plant
Sub-soil.—The underneath layer of soil.
Subulate.—Awl-like.
GLOSSARY OF TERMS

Sucker.—A shoot from the roots of a plant which has been budded or grafted.

Tap-root.—The main root of a plant descending straight down into the earth.

Tendril.—Growth by means of which climbing plants fasten themselves on to walls, trellises, etc.

Terminal Bud.—The last flower bud at the end of a side shoot.

Tomentum.—A woolly covering of matted hairs.

Toothed.—See Serrate

Top-dressing.—A dressing of manure or fertiliser applied on the surface.

Topiary.—The trimming of hedges, shrubs and trees into the shape of animals and other forms.

Transplanting. The act of taking up plants and moving them to another position.

Trifoliate.—Three-leaved

Truncate.—Cut off at tip or base

Umbel.—Inflorescence in which several flowers springing from one point are borne at the same level.

Undulate.—In the shape of a wave.

Unisexual.—Single-sexed. One sex in a flower or on a plant.

Whorl.—A circular formation

Young Wood.—The soft green shoots of a plant.

SMALL SELECTIONS OF THE BEST TREES AND SHRUBS

The man with a new garden, and knowing, perhaps, but little about shrubs and trees, may, in spite of the many classified lists in the various chapters of this work, find some difficulty in making a small selection of the very best subjects for a garden of limited extent. The following assortment will help him.

**Flowering Trees**

Crataegus Oxyacantha (Paul’s Double Scarlet)
Laburnum Watereri

**Flowering Shrubs**

Buddleia variabilis magnifica
Forsythia spectabilis
Phillyrrea Virginica
Syrtuga (Lilae) Souvern de Louis Spath
Viburnum tamentosum picatum

**Evergreens**

Berberis Darwiil & stenophylla
Osmanthus Delavayi

**Berried Shrubs**

Berberis rubrostilla
Cotoneaster rotundifolia
Euonymus yedoensis

**Shrubs Beneath Trees**

Aucuba japonica
Buxus sempervirens
Phillyrrea deora
Rhododendron Cunningham’s White
Viburnum Tinus

**Climbers**

Clematis Jackmanii
Clematis montana rubens
Jasminum nudiflorum

See also Chapter XXV.
CHAPTER XXXV

The names in this section preceded by an asterisk indicate those most suitable to a small garden, or represent the best in the respective genera when only a limited selection can be accommodated.

Abelia. (Caprifoliaceae)
Attractive, hardy and half-hardy, evergreen and deciduous shrubs, which in mild, sunny and sheltered positions may be grown in the open, and in the colder areas against a south or west wall.

Among the most desirable species are: *A. Englertiana* from China, which grows from 3 to 6 feet high, is deciduous, and carries rosy-pink flowers in summer; *A. floribunda*, evergreen or semi-evergreen, which grows from 4 to 5 feet in height and produces large, pendulous, purple-rose flowers in June and July. It is hardy in the open in the south of England, but not at Kew, and is best grown against a wall, *A. Grabneriana*, a deciduous species from China, which makes a bush some 4 to 8 feet in height, and in summer produces an abundance of pink flowers with pinky-yellow throats; the hybrid *A. grandiflora* (*A. chinensis* x *umiflora*), a lovely semi-evergreen hardy shrub 3 to 6 feet, or more, in height, with bright green foliage and a mass of pink to white, funnel-shaped flowers from June to November; *A. Schumannii* (syn *A. longistoba*, Bot. Mag. tab. 8810), a deciduous shrub from western China, which is from 2 to 4 feet, or more in height, and carries rosy-lilac flowers in summer and autumn; and *A. triflora*, deciduous, a taller-growing species from 8 to 10 feet in height, with pink to white flowers in summer.

Culture.—Take cuttings of the current year’s shoots about 3 inches long in late summer and strike in gentle heat in a frame, or propagate by means of layering in August. Plant in March in well-drained loam and leaf-mould with peat added, if available. Pruning.—Trim to keep the bushes in shape and keep them thin by the removal of the older wood after flowering. The flowers are borne on the current year’s growth.
Abies. Silver Fir. (Conifera.)

These are handsome, evergreen, coniferous trees with flattened, and at times, four-angled, needle-like foliage, which adds considerably to a garden’s appearance during the winter months. They require ample room, as most species grow into large trees in the course of time, and thrive in open positions and in a good loam.

Among the best-known species are *A. brachyphylla* (Nikko Fir), a native of Japan, 40 to 90 feet in height; *A. cephalonica* (Grecian Silver Fir), a chalk-lover, 40 to 100 feet in height, and having sharp-pointed foliage; *A. concolor* (Colorado White Fir), 100 to 150 feet; *(A. c var violacea, 100 to 150 feet, has foliage more glaucous than the species)*, *A. Forrestii*, a native of China, from 30 to 60 feet, the glaucous undersurface of the leaves being conspicuous; *A. grandis* (Giant Fir), a fast-growing species from the western districts of North America, and ultimately reaching a height of from 100 to 300 feet; *A. Lowiana* (Low’s Silver Fir), ranging from southern Oregon to California and reaching 100 to 250 feet in height, is a fast-growing tree; *A. magnifica* (Californian Red Fir), 100 to 200 feet, is a very attractive conifer, doing well in cool, moist valleys and on mountain sides; *A. nobilis* (Noble Fir), from the western districts of North America, is a fine, glaucous-foliaged and lime-hating subject, 100 to 150 feet or more in height, the best glaucous-blue form is sold by nurserymen as *var glauca* and there is a prostrate form in *A. n. prostrata* (1 to 2 feet), useful for the rock garden; *A. Nordmanniana* (Caucasian Fir), 100 to 200 feet, is a beautiful tree which succeeds best in a cool, moist soil and under rather damp atmospheric conditions; *A. pectinata* (Silver Fir) grows from 40 to 150 feet in height, and in central and southern Europe is a beautiful tree in localities with a high rainfall, but is not satisfactory at Kew; and *A. Pinsapo* (Spanish Fir), 40 to 100 feet, a useful conifer for chalk soils.

*Culture.*—Plant in April or October. No pruning is required. To propagate, sow seeds in the open in March or April. Varieties may be grafted on to seedlings of the Silver Fir (*A. pectinata*). The Abies are not good town trees. *A. brachyphylla* is the most satisfactory of the Silver Firs at Kew.
ABUTILON—ACANTHOPANAX

Abutilon. Mallow (Malvaceae).
The majority are greenhouse deciduous shrubs or climbers. Two or three are fairly hardy in the south and west of Great Britain, but elsewhere should be planted against walls and in sheltered corners. *A. megapotamicum* (syn. *A. vexillarium*), a native of Rio Grande, produces free-growing, slender shoots 8 to 10 feet, or more, in length, and carries small, yellow-veined leaves, and bell-shaped flowers with dark red sepals and pale yellow petals, very freely produced in late summer and autumn. The blooms have a graceful, drooping habit. *A. vitifolium* is a Chilean shrub growing from 10 to 25 feet in height and carrying in late summer pale, purplish-blue flowers 3 inches wide; in *A. v. var alba*, 10 to 25 feet, the blooms are snowy-white.

*Culture.*—Plant out from pots at the end of April in sheltered sunny positions in well-drained loam and leaf-mould, with peat added, if available. Cut back the ends of the shoots to firm wood in February, tie in new growths during the summer, and thin if necessary. Frosts may destroy the ends of the branches, but new shoots will grow from the older stems in spring. To propagate, sow seeds in a cool greenhouse, or frame in early spring, or insert cuttings, 2 to 4 inches long, made of the half-ripe ends of the growing shoots in late summer in gentle heat in a frame or under a handlight.

Acacia. Mimosa (Leguminosae)
These are best known as cool greenhouse plants. The only one much cultivated outside in the south and west of Great Britain is *A. dealbata*, the feathery, fern-like-leaved plant usually known as Mimosa. It grows from 20 to 50 feet, or more, in height and bears numerous spikes of small, golden-yellow, globular flowers from January to March.

*Culture.*—Sow seeds when ripe in a cool greenhouse or frame, or take cuttings of half-matured wood with a "heel" and strike in a close frame about midsummer. This shrub requires rather hard pruning in spring, immediately after flowering, in order to keep the trees shapely. The best soil is a fibrous, sandy loam and peat. Plant outside from pots early in May.

Acanthopanax. (Araliaceae)
This genus, the species of which are natives of China and Japan, is closely allied to the Aralia. It consists of a group
ABC OF SHRUBS AND TREES

of quite hardy deciduous shrubs or small trees, often with prickly or bristly stems. Their deeply-lobed or compound foliage and the beautiful black fruit make them striking subjects in the garden. The dullish-white or greenish flowers are not showy. A *Henryi* (8 to 10 feet), *A. leucorrhizus* (6 to 8 feet), *A. Simonii* (3 to 6 feet) and *A. spinosus* [syn. *A. aralia pentaphylla*] (6 to 9 feet), and *var. variegatum* (4 to 8 feet) are good shrubs. In the wild state *A. ruscifolius* makes a tree 80 to 90 feet in height with a trunk up to 4 feet in diameter and is of remarkable tropical appearance.

**Culture.**—These plants do well in light, loamy soil. Plant from November to early March. Thin out shrubby species, when necessary, in early spring. *A. ruscifolius* requires but little attention, it merely being necessary to cut away unwanted side shoots from the main stem. Propagation is carried out by means of seeds sown in spring in a cool greenhouse or frame, by root-cuttings placed in a close frame in spring; by stem cuttings inserted in a close frame in late summer, and by division or offsets in early November or early March.

**Acer.** Maple. (*Aceraceae.*)

A large genus of trees, most of which are deciduous (a few are large shrubs or small trees), ranging from a few feet to over 100 feet in height. They have opposite leaves and winged fruits. The flowers appear in spring, mostly in advance of or with the development of the young foliage, and vary from greenish-white to yellow, sometimes, but rarely, purple or red. A goodly number make attractive lawn, pleasure ground and park specimens because of their attractive foliage in spring, summer or autumn. Several have ornamental bark. The leaves vary greatly in size, colour and lobing. Most species have simple leaves, but several with compound leaves are in cultivation, notably, *A. Negundo*, *A. griseum* and *A. Henryi*.

* *A. campestre* (Common or Field Maple), which grows from 20 to 40 feet high and occasionally more, is not uncommon as a hedge-row shrub or tree. It has palmate, five-lobed leaves and is the only Maple growing really wild in Britain. *A. dasycarpum* (American Silver Maple) is a fast-growing tree from 80 to 120 feet in height. The silvery-white under-
Acer

Sides of the leaves give to the tree a distinctive beauty. *var. laciniatum* (80 to 100 feet) has attractive foliage with deeply-divided lobes. *A. griseum* (Peeling Chinese Maple) grows from 20 to 45 feet high, has mahogany-brown, peeling bark, and is worthy of attention. *A. japonicum*, a large shrub or small bushy tree, may grow up to a height of 15 to 25 feet or more. It is a Japanese Maple of which the varieties *A. japonicum* (10 to 20 feet) with pale golden-yellow foliage, and *A. japonicum* (10 to 20 feet) more ornamental than the type. *A. macrophyllum* (Oregon Maple) is a fast-growing tree up to 100 feet or more in height and with the largest leaves of any of the cultivated Maples. *A. monspessulanum* (Montpelier Maple) is a tree of southern Europe and of moderate size, that is, from 25 to 45 feet, and occasionally more, in height. *A. Negundo* (Box Elder) is a fast-growing North American tree that reaches up to some 50 to 60 feet in height. The variety *A. Negundo* (20 to 40 feet) is better known, being freely planted, especially in small gardens, because of its attractive green and white foliage.

*A. palmatum* is interesting as the type of the numerous varied and beautiful Japanese Maples that are extensively cultivated as shrubs or small trees, some 3 to 20 feet in height, in the rock garden, formal garden and in tubs. A selection of the best and most distinct sorts should include the varieties *A. palmatum* (Bronzy-crimson, 10 to 15 feet); *A. palmatum* (Finely-cut Bronze foliage, 3 to 5 feet); *A. palmatum* (Bronze, Finely-cut Leaves); *A. palmatum* (Bright Green, Finely-cut Leaves, 10 to 20 feet); *A. palmatum* (Green in summer, Colours in autumn, 4 to 6 feet); *A. palmatum* (Dark Bronzy-crimson, 4 to 6 feet). *A. pennsylvanicum*, the North American Snake-bark Maple, also known as *A. stratum*, with its striking white strations of the trunk and branches, especially in winter, makes a fine tree up to 25 feet or more in height. *A. platanoides* (Norway Maple), 50 to 80 feet or more in height, is an attractive fast-growing tree for park and woodland planting. It is popular in America as a street tree in towns and, with its varieties, is being used in this country on the new wide arterial roads. There are several varieties, the most useful being *A. platanoides* (40 to 60 feet), with purplish-red leaves.
in autumn; *A. p. Schwedleri (40 to 60 feet), with rich red leaves in spring. *A. Pseudoplatanus (Sycamore or Scotch Plane) is a tall tree growing some 75 to 100 feet in height, and useful for planting in exposed positions and in towns. The most useful varieties are *A. P. brilliantissimum (60 to 80 feet), whose foliage has a pink tinge in spring; *A. P. purpureum, the Purple-leaved Sycamore (60 to 80 feet); and *A. P. Worler, the Golden Sycamore (60 to 80 feet). *A. rubrum (Red Maple) is a tree from the eastern districts of North America which reaches a height of 100 feet. Its leaves colour well in autumn. *A. saccharum (Sugar Maple), 50 to 100 feet in height, is a well-known North American tree, and yields Maple Syrup, but it is not a great success in British gardens.

Culture—For planting, select preferably open, sunny positions where there is good loamy soil, or prepare special stations of soil for the trees. Plant from November to February, when soil and weather conditions permit. Cut out dead wood in summer. Thin crowded shoots and shorten very long unbalanced branches in early winter. Propagate by means of seeds sown under glass or on a border outside as soon as convenient after ripening in autumn, by layering in autumn or spring, and by budding in the open or under glass in August in the case of special varieties, using the species or an allied species as the stock.

Actinidia. (Ternstroemaceae)

Hardy deciduous climbers often with unisexual flowers, natives of N. India, China and Japan, which thrive in any good garden soil. They develop the clusters of flowers in June and July; but it is chiefly for their foliage and fruits that they are grown. *A. arguta is a very vigorous climber, running up to from 20 to 40 feet or more in height, and useful to trail up tall trees. It has large, ovate, dark green and tooth-edged leaves, and slightly fragrant greenish-white flowers, which appear in July, followed by large greenish-yellow gooseberry-like fruit. *A. chinensis, a vigorous climber which runs up from 25 to 50 feet in height, has heart-shaped leaves and the branches are clothed with shaggy red hairs. Its large creamy-white, unisexual flowers turn buff-yellow, the female flowers being followed by edible walnut-like fruits. *A. Kolomikta, which
reaches a height of from 6 to 18 feet, has purple foliage when young, but portions later turn white and pink. This species has white flowers in June. *A. polygama* is similar, but is a stronger grower than *A. Kolomikta*, running up to from 12 to 20 feet in height, but without variegation.

**Culture**—Plant from early November to early March. Prune only to thin and regulate the trailing branches in summer or in February before new growth begins. Propagation is best carried out in July by means of cuttings of semi-ripe shoots, about 3 inches long, placed in sandy soil in a frame with gentle heat, but layers may be put down in autumn.

*Adam's Needle.* See Yucca gloriosa.

*Adenocarpus decorticans.* (*Leguminosae*)
A beautiful, semi-hardy, deciduous broom-like shrub that is a native of Spam, and which needs wall protection at Kew. In mild localities it reaches a height of from 7 to 8 feet, and carries golden flowers in May and June.

**Culture**—A warm, sunny sheltered situation is desirable, also light, well-drained loamy soil. Plant during the second half of March. Cut out old wood and shorten long shoots, if necessary, about the middle of June after flowering. It is easily increased by means of seed sown when ripe in a cool greenhouse or frame, and as the plants are not long-lived, it is wise to sow seeds occasionally to maintain a stock of healthy shrubs.

*Ægle sepiaria* (*syn. Citrus trifoliate*). *Hardy Orange or Bengal Quince.* (*Rutaceae*)
An interesting, deciduous and spiny-stemmed shrub that is a native of China and Japan and allied to the Citrus. It grows from 8 to 10 feet high, has compound foliage and carries fragrant white flowers in April or May. These are followed by small, orange-like fruits in autumn.

**Culture**—The plants like a sunny position and a well-drained, fibrous loam and leaf-mould. They are hardy at Kew, but require protection in cold gardens in the north of the British Isles. Plant out in March or April. In February cut out dead wood, if any, and trim and thin the bushes to keep them in shape. To propagate sow seeds in March in a frame, or take cuttings, 2 or 3 inches long, of half-ripened shoots and strike in gentle heat in July.
Æsculus. Horse Chestnut and Buckeye. (*Sapindaceae*)
The Common Horse Chestnut, *A. Hippocastanum*, a native of northern Greece and of Albania, is one of the most handsome of flowering trees. It grows from 50 to 100 feet, or more, in height, and is much used for avenues. The tree has large, fan-like, compound foliage and in May carries an abundance of spikes of beautiful white blossoms with yellow blotches that later change to red. The flowers are followed by the well-known “conkers,” borne in their prickly green cases. Other important species and varieties include: *A. californica* (California Buckeye), which is a smallish, spreading tree or shrub, some 10 to 20 feet in height, with spikes of fragrant white, or white tinted pink flowers in July and August; *A. carnea* (Red Horse Chestnut), a hybrid between *A. Hippocastanum* *x* *Petra*, and *var. Broton*. These are compact and smaller-growing trees than the Common Horse Chestnut. They grow from 25 to 50 feet in height and carry in May and June spikes of red and deep red flowers respectively; *A. Hippocastanum fl. pl.* (Double Horse Chestnut) is white, and flowers in May; *A. indica* (Indian Horse Chestnut) is a large-growing species from the western Himalayas, 70 to 80 feet in height. It has handsome foliage of sub-tropical beauty and large spikes of beautiful flowers, white blotched with red and yellow, which are borne in June and July. *A. octandra* (*syn* *A. flavum*) [Sweet Buckeye], from the south-eastern regions of the United States, reaches a height of from 30 to 60 feet and carries yellow flowers in May and June; *A. parviflora*, the Shrubby Pavia from the south-eastern districts of the United States of America, develops its racemes of white flowers in July and August. It is a shrubby species not growing to more than 10 to 12 feet in height and is, therefore, a very useful garden shrub; it may be propagated by means of division in March; *A. Petra* (Red Buckeye) is a compact and smaller-growing tree, some 10 to 12 feet in height, from the southern regions of the United States of America and bears rich crimson flowers in June and July; *A. planterensis*, a hybrid (*A. Hippocastanum* *x* *carnea*), is a tree of vigorous growth, from 60 to 75 feet in height, and with large spikes of suffused pink flowers. It does not produce fruits and is thus valuable for planting in public parks and roads.
AESGULUS — AKEBIA

Culture—Plant from November onwards in ordinary soil or preferably in deep rich loam. Thin out the branches when overcrowded only. To propagate, sow seeds outdoors or in a frame when ripe. In the case of hybrids and choice varieties, graft in the spring, and bud in July, using the Common Horse Chestnut as a stock, and Æsculus flava for the Buckeyes.

Ailanthus. Tree of Heaven. (Smarubaceae)
A fine, hardy, deciduous tree that is a native of China, the branching resembles a gigantic stag’s horn. It grows from 50 to 70 feet in height. The flowers, which appear in June, are insignificant and dioecious and in the case of female trees are followed, when male and female plants are grown in close proximity, by attractive clusters of orange and red winged fruits in August and September. This is an excellent tree for planting in towns, being, in fact, the commonest tree in New York City. Its striking, large, pinnate leaves make it a very ornamental plant for beds. When so grown and cut down to the ground each year in early spring, the shoots that grow from the base, if reduced to one, will be very handsome.

Culture—Plant from November onward in well-drained, ordinary soil. Thin out the wood when overcrowded. To propagate, take root-cuttings, 3 or 4 inches long, and place in very sandy soil in a frame in February and March, sow seeds when ripe in a frame, or suckers with roots attached may be taken in March or April.

Species.—A glandulosa is readily distinguished from similar-looking pinnate-leaved trees by the glandular teeth near the base of the leaflets and A. velmormana is distinguished from A. glandulosa by the soft spines on the young shoots.

Akebia. (Berberidaceae)
Beautiful, hardy, deciduous, or semi-evergreen climbing plants from China and Japan. They thrive in any fairly good soil, and make useful subjects for arbours, pergolas and for rambling over stumps. A. lobata, which runs up to about 10 feet in height, has attractive, trifoliate leaves and in April produces not very conspicuous purple flowers. A. quinata grows to about the same height, but its leaves are five-foliate and the fragrant chocolate-purple flowers, which are borne in racemes, appear in April and May. Both have greyish-violet or purplish, sausage-shaped fruits.
**A B C OF SHRUBS AND TREES**

*Culture.*—It is best grown in pots and planted out in April. Cut away unwanted weak and straggly shoots in winter. Seeds sown in a cool greenhouse or frame in spring provide ready means of increase. Propagate also by means of layering in autumn, or cuttings of semi-ripe shoots, 2 to 3 inches long, may be struck in slight heat about July.

**Alangium. (Cornaceae)**

Two species, *A. chinense*, from China, and *A. platamfolium*, from China and Japan, are grown; they are deciduous and grow to a height of 6 feet or more, having large, Maple-like leaves and white flowers produced during June and July. This plant is also known as *Marlea platamfolium*.

*Culture.*—The plants thrive in ordinary loamy soil and are best increased by layering in autumn. Plant early in March. No pruning is required. The young growths may be damaged by frosts in severe winters, but new shoots grow freely from the older wood.

**Albizzia Julibrissin.** Acacia Julibrissin. *(Leguminosae)*

A deciduous tree, a native of the Orient, that is on the borderland of hardiness at Kew. It is also known as the "Nemu Tree" or the "Pink Siris." In warm sheltered situations it forms a small, acacia-like tree, some 25 to 30 feet in height, has attractive, compound foliage and produces an abundance of clusters of lovely pink flowers in July and August.

*Culture.*—Seeds should be sown in pots under glass when ripe, the resultant plants being gradually hardened off and planted out in the open towards the end of May. Except in very mild localities, these trees will not stand the winter in the open, but on sunny south and south-west house walls, are attractive and interesting. No definite method of pruning is required, but there are often dead ends of branches killed by frosts to be cut off in spring.

**Alder** See *Alnus*

**Allspice.** See *Calycanthus*.

**Almond.** See *Prunus Amygdalus*.

**Alnus.** Alder *(Betulaceae)*

Deciduous trees which are not particular as to soil, but which grow well in moist, swampy ground. There are a number of species and varieties, the best being *A. cordifolia* (Italian Alder), up to 80 feet; *A. firma* (Japanese Alder), 15 to 30 feet;
ALNUS — AMELANCHIER

_A. glutinosa_ (Common Alder), 30 to 90 feet, a native of Europe, including Britain, western Asia, and northern Africa. The Common Alder produces its male flowers in March on attractive slender catkins. Its saw-edged, oval, broadly-ovate or lanceolate foliage is distinctive and will stand cutting well, and thus the tree makes a good hedge plant when desired for that purpose. The timber of this species is employed in the manufacture of clogs worn by the mill hands in northern towns. Other interesting trees are _A. g. var. aurea_, a showy variety, 30 to 50 feet in height, with golden-yellow leaves; _A. g. var. imperialis_, 30 to 50 feet, with deeply-divided leaves and drooping twigs, which is beautiful by the water-side; _A. g. var. lactmata_, 30 to 50 feet, a tree of stiffer habit, the leaves not being so deeply divided as in _var. imperialis_; _A. incana_ (Grey Alder of the North Temperate Regions), 60 to 70 feet, a handsome tree showing the grey down beneath the leaves; _A. i. var. lactmata_, with handsomely dissected foliage, an attractive variety, some 50 to 60 feet in height, and _A. i. var. ramulus coccineus_, also from 50 to 60 feet in height, with the young twigs reddish-orange and the catkin-scales crimson. _A. japonica_ (Japanese Alder) is a distinct tree 40 to 80 feet in height with narrowly-ovate leaves; _A. nitida_ (Himalayan Alder) is a tall tree up to 100 feet, with large, lustrous green leaves, and is distinct from most of the alders in bearing its catkins in September, and _A. viridis_ (Green Alder), of a shrubby nature, is very hardy and grows about 6 to 10 feet high.

**Culture.**—Plant from November onwards to February, preferably in moist ground. Prune when required to keep the trees shapely and to form a good leading shoot. These trees may be propagated by means of seeds sown in spring in a frame, by layering in autumn or spring, or, in the case of hybrids and select varieties, by budding or grafting. A percentage of cuttings of leafless shoots 10 to 15 inches long will sometimes root in the open if inserted in October or November. _Aloysia_. See _Lippia citriodora_.

**Amelanchier.**

Beautiful, hardy, deciduous, early-flowering shrubs and small trees, natives of Europe and Asia and abundant in North America. They thrive in sunny positions and in moderately light and moist soils, notably on chalk.
Culture—Plant from November onwards to early March. Prune only to cut out dead wood and thin, when necessary, after flowering. Propagate by means of seeds sown when ripe in a frame, by cuttings io to 12 inches long inserted in the open in October or November, by layering in autumn, or by division and suckers, preferably in November, or March.

Species.—*A. asiatica* (Eastern Service-berry) is a small tree of slender, graceful habit that grows from io to 20 feet in height, occasionally more, and flowers in mid-May; *A. canadensis* (Common Service-berry) is a tree from 15 to 30 feet in height, a native of North America, which has ascending branches. A persistent tomentum gives a somewhat greyish hue to the tree. It bears white flowers at the end of April.

* *A. laveus* (June-berry) is a very beautiful North American tree, some 20 to 30 feet in height, with spreading branches, covered at the end of April and early in May with white flowers amongst which the young bronze-tinted foliage gradually develops. The leaves also assume rich autumn tints.

* *A. oblongifolia* (Swamp Sugar Pear) is a shrub 5 to 6 feet high and a native of North America. It spreads freely by means of suckers and is useful in damp soils. *A. rotundifolia* syn. *A. vulgaris* (Snowy Mespilus) is a native of the mountains of central and southern Europe. It forms a shrub or small tree up to 10 to 15 feet in height and has the largest individual blooms (1 ½ inches in diameter) of all the Amelanchiers. All these trees bear racemes of white flowers from April to May, followed by purple-black berries in summer, while in autumn the foliage takes on rich tints.

*Amorpha canescens.* Lead Plant. (*Leguminosae*)

An attractive, deciduous sub-shrub with a hardy root-stock, but tender year-old shoots. It is a native of the eastern districts of North America, and is allied to the Broom family. This bush grows some 2 to 3 feet in height, has elegant, pinnate, fern-like foliage and from July to September bears spikes of purple flowers with golden anthers. *A. fruticosa* (False Indigo) is a similar, but somewhat taller and more straggly-growing species, growing from 6 to 12 feet in height. The young shoots die back, or are killed back, often to their entire length, causing the plants to form a woody root-stock from which vigorous young shoots grow in spring each year.
AMORPHA — ANDROMEDA

Culture—Plant in November or February and early in March in light warm soils and sunny positions. Propagate by means of seeds sown in a frame when ripe, by suckers removed with roots attached in late October or early November, or by cuttings, 2 to 3 inches long, made of the ends of the weaker shoots and inserted about midsummer in a close frame.

Ampelopsis. (Virginia Creeper) See Vitis.
Amphiraphis. See Microglossa.
Amygdalus (Almond) See Prunus Amygdalus.
Anagyris foetida. (Leguminosae)
A deciduous bush or small tree, 6 to 10 or 12 feet high, with alternate, trifoliate leaves and pea-shaped yellow flowers produced in short racemes in early summer. It is a native of the Mediterranean regions, requires a porous, stony soil, and the protection of a south wall at Kew, where even then the ends of the shoots are killed in severe winters.

Culture—Propagate by means of seeds sown in a frame or cool greenhouse when ripe. Plant in March. Only prune to keep the bushes in shape or to train them. When necessary, this is best carried out after flowering.

Andrachne. (Euphorbiaceae)
Two shrubby species of this Spurge family are grown in gardens featuring rare and uncommon plants. A. colchica, from the Caucasus, and A. phyllanthoides (syn. A. Ræmeriana), from the south-central regions of the United States of America, are both deciduous shrubs up to 3 feet in height, and produce small, yellowish-green flowers in summer and autumn.

Culture.—They like a well-drained, loamy soil, and a sunny position. Plant in February or early March. Increase in August by cuttings, 2 to 3 inches long, in a close frame or under a handlight. Only prune to keep the bushes in shape.

Andromeda polifolia. Bog Rosemary (Ericaceae)
A hardy, evergreen, heath-like shrub, usually between 1 and 2 feet high and bearing linear-oblong leaves up to 1½ inches long, rich green above and glaucous beneath. A native of the peat bogs of northern Europe, including Britain, it thrives in the sun and in moist, peaty soil. The roots should never be suffered to become quite dry. If this occurs, the plant has seldom vigour enough to send out a sufficient quantity of

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new roots, and generally dies. It can be grown in fibrous loam if ample moisture is provided, and no lime is present. The pink flowers are borne in clusters at the end of the branches in May and June. Two varieties are usually grown, var. angustifolia, the narrow-leaved form, and var. major, the broad-leaved form.

Culture — Plant in late autumn in open positions. No pruning is required. Propagate by means of seeds sown in pans or boxes under glass in spring, divide the roots in late autumn or spring, or layer in September. See also Cassiope, Leucothoe, Pieris and Zenobia; all of which are sometimes grown under the name of Andromeda.

Angelica Tree. See Aralia chinensis.

Anopterus glandulosus. (Saxifrageæ)
A beautiful, but somewhat rare, half-hardy evergreen shrub, 3 feet or more in height, in Tasmania it makes a small tree. In warm, sheltered situations in the mildest parts of the south and west of England and the west of Scotland, it may be grown out of doors with perhaps slight winter protection. In April and May the plant produces attractive white campanula-like flowers, which are borne in erect terminal racemes.

Culture — This shrub grows best in sandy loam and peat. Plant outside from pots in late April or May. Prune in June after flowering only to shape the plants. Cuttings, 1\(\frac{1}{2}\) to 2 inches long, made of the half-ripe growths, root readily under a bell-glass or close frame in late summer.

Anthyllis. (Leguminosæ)
Pretty shrubs from the Mediterranean region and belonging to the Broom family. They like a sunny position and a warm, gritty loam.

Culture — In August take cuttings 1 to 2 inches long made of side shoots and insert in light, sandy soil under a bell-glass. Plant in March or April from pots. Prune shrubs on walls and fences a little if required after flowering.

Species — A Barba-Jovis (Jupiter’s Beard), sometimes called Silver Bush, is an attractive, but somewhat tender small evergreen shrub. It is a native of Europe and the Mediterranean area, has large, compound leaves covered with silvery hair and bears yellow flowers like those of the pea in...
ANTHYLLIS — ARALIA

May and June. It is on the borderland of hardiness, but given the shelter of a warm wall, as at Kew, it will grow to about 10 feet in height. A. Hermanniae (Kidney Vetch) is a hardier, deciduous species 2 feet high and with yellow flowers in June and July.

Aphananthe aspera. (Urticaceae)
A deciduous tree, a native of China and Japan, that grows from 50 to 70 feet high and is allied to the Celtis (Nettle Tree), from which it differs in the greenish unisexual flowers borne in May.

Culture.—Plant early in March in a sunny position and in a well-drained, loamy soil. Prune in winter only to shape the trees. Grow from seeds sown in a frame when ripe, or graft, in spring, on Celtis occidentalis.

Apolopappus ericoides. (Compositae)
A pretty little half-hardy, evergreen shrub, a native of California and reaching some 3 to 5 feet in height. It has heath-like foliage and clusters of yellow, daisy-like flowers borne at the ends of the current year’s shoots in August and September. In sunny, warm, sheltered sites in the milder counties of Great Britain it may be grown out of doors, and is a good seaside shrub. It succeeds against a south wall at Kew.

Culture.—Plant about mid-April in light, well-drained soil, adding if available a little leaf-mould or peat. If required, remove the thinnest of crowded shoots and shorten very long twigs by just a few inches in February. Propagation is carried out by means of semi-mature cuttings 2 to 3 inches long inserted in a propagating frame with slight bottom heat in July or August.

Apple, Crab. See Pyrus Malus.
Apricot. See Prunus Armeniaca.
Aquifolium. See Ilex and Mahonia.
Aralia. (Araliaceae)
Two species of handsome and hardy deciduous small trees or large shrubs, commonly known as the Angelica Tree. The Aralas are rather spreading in habit and throw up suckers that are prone to overcrowd neighbouring plants. They grow to a height of from 6 to 30 feet and like a sunny position and a sandy soil. The doubly-pinnate leaves on vigorous
specimens may be from 3 to 4 feet long and two-thirds as wide. The inflorescences are creamy-white and are borne in August and September.

**Culture** — Plant in November or March. No definite system of pruning is required, but groups of stems can be thinned in winter when necessary, by cutting out one or two of the oldest. Propagation is by means of root cuttings, 2 to 4 inches long, placed in gentle heat in autumn, or by suckers taken from the parent plants in spring.

**Species** — *A. chinensis* (Angelica Tree), 10 to 15 feet, a native of China, Japan and Manchuria. Of this the following varieties are in cultivation: *A. c. albo-marginata* (6 to 12 feet, Silver Variegations); *A. c. aureo-marginata* (6 to 12 feet, Golden Variegations), *A. c. mandschurica* (10 to 30 feet, *Dinomorphanthus mandschuricus*), a harder variety for exposed gardens; and *A. c. pyramidalis*, 15 to 30 feet, the leaves of which are not so spreading in growth; and *A. spinosa* (Hercules Club), a native of the south-eastern regions of the United States of America.

For the misnamed Aralia Sieboldi, see paragraph under Fatsia japonica.

**Araucaria.** (*Conifera*)

A genus containing nine or ten species of South American and Australasian coniferous trees, only one of which is hardy outside at Kew, the others being grown in the large Temperate House. This hardy species is *A. imbricata*, which grows from 50 to 150 feet high, and is commonly known as the Chile Pine or Monkey Puzzle. It is claimed to be the only tree which the monkey cannot climb, owing to the sharp, stiff, leathery leaves, armed with thorns at the points, which cover the long boughs like scales. These trees, which make striking and distinctive specimens, like a sunny position and a well-drained, deep loam, thriving notably in the moist climate of Scotland. They are unsuitable for town gardens, though rather frequently planted.

**Culture** — Plant in April, September or October. No pruning is necessary. Propagate by seeds sown when ripe in a frame. The male and female flowers with cones are usually borne on separate trees.

**Arbor-vitae.** See Thuja orientalis.
ARBUTUS

**Arbutus.** Strawberry Tree (*Ericaceae*)

Beautiful evergreen trees or shrubs with striking red-barked branches and attractive dark green foliage. They are, perhaps, found in the greatest perfection in the West of Ireland and along the South coast of Devon and Cornwall. The Strawberry Trees thrive in warm, sunny, sheltered positions and in moist, well-drained loam and peat. The light, well-drained, sandy loam at Kew is obviously very suitable for their cultivation, as the genus is represented in the pleasure grounds and arboretum by a number of beautiful specimens. The best known is *A. Unedo*, a native of southern Europe and of Ireland, which grows from 10 to 30 feet in height and has dark green, leathery, oblong and toothed leaves which are a lighter green on the underside. This tree bears small, cup-like, creamy and rosy-crimson blossoms in clusters from September to November and at the same time orange-red, ripe, strawberry-like berries produced by the flowers of the previous year. These berries may be eaten, but they have not much flavour to recommend them.

*Species and Varieties*—Distinct varieties are *A. U. integerrima*, 10 to 15 feet in height, a form with entire leaves; *A. U. microphylla*, 10 to 15 feet in height, a variety with small leaves; *A. U. New Scarlet*, 10 to 20 feet in height, with rosy-crimson flowers; *A. U. quercifolia*, with oak-like leaves; and *A. U. rubra* (syn. var. *Croom*), 10 to 25 feet in height, with rosy-red flowers and reddish stems in winter. Other species are *A. Andrachne* (Entire Leaves, White Flowers, tinged Green, March to April, 10 to 30 feet, a native of south-east Europe); *A. andrachnozdes* (*A. Andrachne x A. Unedo*), known also as *A. hybrida* (Toothed, Long-stalked Leaves, slightly Glaucous on the Under-sides, 15 to 30 feet); and *A. Menziesii* (Madrona), a native of California, (White, May, 20 to 100 feet)

*Culture.*—Plant in October or May. Trim back the long, straggling shoots in April and cut out dead wood. Seeds, cuttings, layering and grafting provide ready means of increase. Seeds should be sown in sandy soil in a frame when ripe. As the Arbutus does not transplant readily, grow the young plants in pots till large enough for their permanent positions. Choice varieties may be grafted on seedlings or
rooted cuttings of *A. Unedo*. Cuttings of young shoots about 2 to 4 inches long may be inserted in late summer and autumn and rooted in a close frame, preferably with a little artificial heat. Layer in autumn, and graft under glass in early spring.

**Arctostaphylos.** (*Ericaceæ*)

*A. Uva-ursi* (Red Bearberry) is a pretty little trailing evergreen shrub, found in the Northern Hemisphere of the Old and New Worlds. It has small, roundish, bright green, leathery leaves on trailing growths only a few inches in height, and in April and May it carries clusters of flowers shading from white to rose. It is indigenous to certain moorland and mountainous districts of Britain, and if similar conditions are provided, can be propagated by division and offsets in autumn. Suitable soil consists of peat, leaf-mould and coarse grit, or sandy loam, if free from lime, as these shrubs dislike lime or chalk in the soil. *A. alpina* (*syn. Arctous alpinus*), the Black Bearberry, with white flowers in September, is a delightful little deciduous shrub of tufted or creeping habit. It attains a height of from 5 to 6 inches, and grows wild in the mountains of Europe, including Scotland, and in northern Asia and northern America. *A. Manzanita*, evergreen, a native of California, is a rare shrub or small tree, usually 5 to 10 feet in height. It has thick, leathery leaves and carries pink or white-tinted flowers in early spring.

**Culture**—Plant in October or April. No pruning is required. To propagate, sow seed as soon as ripe in a frame, or, in the case of seed obtained from abroad, it should be soaked in tepid water for a few hours before sowing. Cuttings 1 to 2 or 3 inches long, according to the species, of semi-ripe shoots may be taken with a "heel" from August to the end of the year and may be rooted in sandy peat in gentle bottom heat.

**Arctous.** See Arctostaphylos alpina.

**Ardisia japonica.** (*Myrsinaceæ*)

This shrub is on the borderland of hardiness at Kew. It comes from China and Japan, and is a low-growing, evergreen shrub, 12 to 18 inches in height, with ovate, glossy green leaves and white, star-shaped flowers, half an inch across; these are borne in August and September and are followed by globular red fruits.
ARDISIA — ARISTOTELIA

**Culture** — Plant towards the end of April in warm, sheltered positions in the milder localities and in well-drained, sandy loam with leaf-mould added, and peat, if available. No pruning is required. Propagate by seeds sown under glass when ripe and by cuttings about 2 inches long, made of half-ripe wood and inserted in a close frame in late summer. Grow small plants in pots until large enough to plant in their permanent positions.

*Aria.* See Pyrus Aria.

**Aristolochia.** Dutchman’s Pipe (*Aristolochiaceae*)

Five or six woody, climbing deciduous species with luxuriant and attractive foliage are hardy in British gardens, others are only suitable for the warm greenhouse, for which they form excellent pillar plants. The curiously-constructed flowers, bent like a siphon, are tubular and inflated, having some resemblance to a Dutchman’s pipe.

**Culture** — Sow seeds under glass in March, take cuttings, 3 to 4 inches long, made of the ends of leafy shoots and insert in sandy soil under glass in summer, or propagate by layering in autumn, or offsets in March. Plant out in the following March against sheltered walls with almost any aspect, or on a pergola or trellis, in a mixture of light, sandy loam and leaf-mould, adding peat, if available. Give ample space, and thin-out the growths if required in February or early in March.

**Species** — *A. moupinensis* (Green and Yellow, dotted Purplish-red, June, 10 to 15 feet, west China), *A. Siphon* [Dutchman’s Pipe] (Brown and Yellow, June to July, 20 feet, eastern United States), and *A. tomentosa* (Greenish-yellow, Yellow and Brown, Midsummer, 20 to 30 feet, south-eastern United States).

**Aristotelia Macqui.** (*Thaceae*)

An interesting half-hardy evergreen shrub that is a native of Chile. It may be grown out of doors in ordinary soil, in warm and sheltered sites, in the milder counties. The species and its variety *A. M variegata*, with yellow-variegated foliage, grow some 6 to 12 feet in height, have longish, ovate foliage, and produce small, insignificant greenish flowers in June, followed by purple-black, pea-like berries. In the open at Kew the growths are cut to the ground each year, causing the formation of a woody root-stock from which strong young
shoots grow each spring. On a warm, sheltered wall the main branches survive the winter, except during very severe frosts. Male and female flowers are borne on separate bushes and if berries are desired, one male shrub should be planted in proximity to every clump of five or six females.

Culture.—Plant in late April or May in good garden ground. No pruning is required, unless it is to cut off dead ends of stems damaged by frosts in winter. Propagation is best carried out by means of cuttings, 2 to 3 inches long, of semi-mature wood, inserted in gentle heat during late summer.

Armeniaca. See Prunus Armeniaca.

Aronia. See Amelanchier and Pyrus.

Artemisia. Old Man, Lad’s Love, Mugwort, Southernwood, or Wormwood. (Compositae.)

A family of hardy herbaceous perennials and evergreen and deciduous shrubs with fragrant foliage. They thrive in well-drained, light, gritty soils and in open sunny positions. These shrubs look well in hot, dry, sunny borders and on sunny banks in the wild garden or open woodland.

Culture.—Propagate by means of offsets of some species in October or by cuttings made of the ends of semi-mature shoots during late summer and inserted in sandy soil in a frame. Plant new bushes or transplant in March. Prune little or much, as required, in April, to shape the bushes and to fit them for the positions in which they are growing.

Species.—A. Abrotanum, the Southernwood or Lad’s Love of southern Europe, is a semi-shrubby, fragrant bush about 3 feet high and with greyish, finely-divided leaves. It is grown in old-fashioned gardens and produces heads of yellow flowers in September. A. arborescens is another southern European species of somewhat taller (up to 4 feet) and more woody growth, with graceful silvery-grey foliage and yellow flowers borne in August. A. tridentata, the Sage Bush of the western districts of North America, is a spreading bush, 6 to 8 feet high. It has silvery-grey, fragrant foliage and, in October, carries small heads of yellow flowers.

Arundinaria. Bamboo. (Gramineae.)

A genus of bamboo, the hardy species of which grow from 1½ to 20 feet high, thrive in a moist, deep, rich, loamy soil, and need plenty of protection from north and east winds. To this
ARUNDINARIA

genus belong many of the most useful and handsome of the bamboos. Arundinarias are excellent for planting near streams and ponds, in shrubbery borders, and as specimen clumps in sheltered positions upon lawns. During the spring and early summer, however, they are not at their best as much of the foliage is usually damaged by frost. For this reason, bamboos should not be planted in very conspicuous positions or in much-frequented parts of the garden. It is from mid-summer to Christmas that these plants are most attractive.

The flowering of bamboos is an event which seldom occurs, but it is of great interest to botanic students as, though there are exceptions, it is usual for the plants of the same species to flower simultaneously all over the country. Presumably in a wild state, also, the continuity of the species rests only on the production of seeds and the raising of seedlings. This happened at Kew some years ago with *A. Falconeri* and *A. Simoni*.

All species, save *A. japonica*, quickly suffer from drought, and it is essential that they shall receive attention in dry weather, if planted where the soil is apt to dry quickly.

Of the hardy kinds *A. auricoma* is one of the best variegated species. It has slender stems growing to a height of from 3 to 4 feet and green leaves striped or flushed with golden-yellow. The tallest of the hardy bamboos at Kew is *A. fastuosa*, which grows to a height of up to 20 feet or more and is clothed with dark, lustrous green leaves. *A. Fortunei* is a dwarf-growing variegated species some 20 inches high with narrow, light green leaves that are striped with silvery white. It is an excellent plant for a moist shrubbery border. Other hardy species are *A. graminea*, a slender and graceful species up to 10 feet in height; *A. japonica* (syn. *Bambusa Metake*), growing from 10 to 15 feet high and with deep green leaves, makes a most attractive plant and is easily cultivated, thriving even in dry soils, and *A. macrosperma* and *var. tecta*, 6 to 8 or 10 feet high, which are interesting as being natives of North America, though they are not so attractive as some of the Oriental species. The newer Chinese species, *A. Munidea*, 8 to 12 feet, resembles *A. nitida* in its graceful habit, but has attractive golden-yellow stems. *A. nitida*, which grows best in semi-shade or when sheltered from the mid-day sun and soon suffers from drought, is a hardy and
beautiful plant. The graceful arching stems are of a deep purple-brown colour, grow in dense masses, and carry handsome pale-green leaves on short branchlets. It is a very robust grower, running up to a height of 10 feet, and needs ample space. *A. Ragamowskii* is distinct in having very large leaves some 18 inches long and 3 to 4 inches wide. They are borne on stems 3 to 4 feet high. *A. Simoni* is a fast and vigorous grower and soon furnishes thick clumps of graceful stems 15 to 20 feet in height. Another hardy species worthy of mention is *A. Vestchii* (1 to 2 feet or more in height) All are beautiful and make splendid foliage plants. A number of the species grown in the Winter Garden at Kew may be planted outside in the very sheltered gardens of the south and west of the British Isles.

*Culture*—Propagate by means of division of clumps in May for preference, or in September, and plant in sheltered positions, or seeds when available may be sown as soon as ripe in a cool greenhouse or frame. Cut out dead and crowded stems in April. See also *Bambusa* and *Phyllostachys*.

*Ascyrum hypericoides*. St Andrew’s Cross. (*Hypericaceae*)
This is a dwarf and much branched shrub or sub-shrub that grows up to about 1 foot high and carries yellow flowers from July to September. The blooms are from a half to three-quarters of an inch across and the petals and sepals are arranged in fours; in the *Hypericums* they are in fives. It is a native of the eastern United States.

*Culture.*—Increase by seeds sown in spring in a frame, by division of the clumps early in March, and by cuttings 2 to 3 inch long made of semi-ripe shoots and inserted in July or August in a close frame or handlight. Plant in March, in sun or partial shade, in a light, well-drained soil in the rock garden or along the front of a border devoted to choice shrubs. Remove very thin and weak shoots and shorten the stronger growths early in March.

*Ash.* See *Fraxinus*.

*Ash, Manna.* See *Fraxinus Ornus*.

*Ash, Mountain.* See *Pyrus Aucuparia*.

*Asimina triloba*. Papaw Tree (*Anonaceae*)
An attractive and fairly hardy deciduous shrub, or a tree, that grows up to 40 feet high in a wild state. It is a native.
of the south-eastern districts of the United States of America. This shrub has large, long, oval leaves, and produces purple blooms in May or June, followed by large bottle-shaped fruits.

Culture —The flowers are borne on the new wood of the previous year and any pruning or thinning that is done should be carried out as soon as the blooms fade. This shrub likes a well-drained, rich loam and in favourable positions grows from 5 to 25 feet in height. Plant in November. Seeds may be sown under glass in spring, or propagation can be carried out by means of layering in autumn.

Aspen (Trembling Poplar) See Populus tremula.

Astragalus Tragacantha. Goat's Thorn (Leguminosae.) An interesting dwarf-growing, deciduous and very spiny shrub of the Broom family. It is a native of Asia Minor and the Mediterranean area, has attractive compound foliage and bears pretty violet-purple flowers like those of the pea, from May to July. This little shrub reaches only about 12 inches in height and makes an excellent subject for the rock garden, as it thrives in the sun in deep loam, sand and mortar rubble. *A. Massilensis* is somewhat similar in growth, but is a white-flowered species.

Culture —Plant early in November. No pruning is required. Seeds, when obtainable, may be sown as soon as ripe, or propagation can be carried out in August by means of cuttings made of the ends of the young shoots, these are inserted in sandy soil under a cloche or bell-glass.

Athrotaxis. Tasmanian Cedars (Coniferae) Beautiful half-hardy trees of moderate stature with attractive imbricated scale-like foliage. They may be grown outdoors in mild, sheltered situations in the warmer southern and western gardens of the British Isles. They are allied to the Cryptomerias and Sequoias, and average from 20 to 40 feet in height. All bear handsome cones. Three species are in cultivation: *A. cupressoides*, which has small, closely-imbricated leaves, *A. laxifolia*, with slightly larger and less appressed leaves, and *A. selaginoides* (King William Pine), more robust in habit and with larger leaves, which have a conspicuous white stomato.

Culture.—Plant in late April or early in May in deeply-cultivated ground, leaf-mould and peat, if available, being
freely incorporated in loamy soils. Prune at the end of April, only to shape the bush or tree. Increase by seeds, when available, sown under glass when ripe, or by cuttings, 2 to 3 inches long, made of the ends of the shoots or strong side shoots and inserted under a bell-glass or in a close frame in late summer.

**Atragene.** See Clematis alpina.

**Atraphaxis.** Goat Wheat (*Polygonaceae*)

Attractive deciduous shrubs, hardy in most British gardens, that are natives of central Asia and south-eastern Europe and allied to the Polygonums.

*Culture.*—A sunny position in well-drained, sandy loam is desirable. Plant preferably in late February and early in March. Prune after flowering only to shape the bushes. Propagation is usually carried out by means of layering in autumn and by cuttings inserted under a bell-glass or hand-light in August or September. Ripe seed is difficult to obtain in British gardens owing to the lack of continuous hot brilliant sunshine.

*Species.*—*A. Billardieri*, which grows from 2 to 3 feet in height and has very small leaves, is the best-known species. It carries small clusters of tiny pink flowers in June. *A. lanceolata*, 1 to 2½ feet, carries white to pink-tinted flowers in August; and *A. Muschketown*, a taller-growing species 5 to 6 feet in height, has white flowers with rose centres in May and June.

**Atriplex Halimus.** Tree Purslane (*Chenopodiaceae*)

A hardy, semi-evergreen shrub with silvery-grey foliage. It grows from 5 to 8 feet in height and thrives in full sun in light, dry, sandy soil. The small whitish flowers are insignificant, but the shrub is excellent for seaside planting. It is a native of Southern Europe *A. canescens*, a spreading bush from 5 to 6 feet high, with silvery-white foliage and known as the American Grey Sage Bush, is another distinct and useful species for seaside planting.

*Culture*—Plant in November or February and March. Prune to shape bushes and keep them within bounds in February or early in March. Propagation is usually carried out by means of semi-mature cuttings inserted in summer in sandy soil under a hand-light or bell-glass.

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AUCUBA — AZARA

Aucuba japonica. Spotted or Variegated Laurel. (Cornaceæ)
A very hardy evergreen shrub, growing from $\frac{3}{4}$ to 10 feet high, and one of the best, if not the best, of all tall-growing evergreen shrubs for shady places, under trees, and for town gardens, in which the air is often close and smoky. It may also be grown in large pots or tubs on roof gardens and in paved yards. There are numerous distinct varieties with spotted and deep green foliage. The male and female flowers are borne on separate bushes, and when the two sexes are grown near together, the female bush produces bright-red berries in autumn.

Culture.—The Aucuba thrives in most soils and positions. Plant preferably in October and November or in April and May. Hard pruning, when required, is best done early in May; shorten long shoots, if desired, in summer. To propagate, take cuttings made of the ends of the shoots from July to November and insert in light, sandy soil, in a close frame, or in the open in late autumn. Seeds may also be sown in a frame or outside when ripe.

Varieties (Male) *A. j. crassifolia, 5 to 10 feet, with thick green leaves; A. j. maculata, 5 to 10 feet, with leaves freely spotted with yellow; A. j. viridis, 5 to 10 feet, with large glossy-green leaves. (Female). *A. j. Hillieri, 5 to 10 feet, with large green leaves; *A. j. longifolia, 4 to 8 feet, with narrow leaves; A. j. maculata, 5 to 10 feet, with spotted leaves; *A. j. nana rotundifolia, a dwarf compact bush some $\frac{3}{4}$ to 3 feet in height, with green leaves; and A. j. salicifolia, 4 to 6 feet, with long narrow green leaves.

Azalea. See Rhododendron.

Azara. (Bixaceæ)
Evergreen shrubs that come from Chile and that are on the borderland of hardiness at Kew. For protection they are often grown as wall climbers. Azara flowers have no petals, but showy clusters of stamens. They have deep green, glossy leaves and fragrant flowers and grow from 6 to 15 feet high, or even more, in the south and west of the British Isles.

Culture.—Plant in April or October in a warm, sheltered position and in well-drained sandy loam with leaf-mould added and peat, when available. Thin out and shorten the branches to train on walls, but otherwise do not prune. Propagate by means of cuttings of semi-mature shoots, preferably with a
"heel," inserted in gentle heat under glass in late summer, or by layering in autumn.

Species.—A. dentata, 8 to 10 feet, with fragrant yellow flowers, A. Gilliesii, broad, leathery leaves and very showy creamy-yellow stamens in April and May; and A. microphylla, a beautiful small-leaved shrub, 6 to 10 feet in height, with pale yellow, vanilla-scented flowers in early spring (February), followed by attractive little orange-red berries in autumn.

Baccharis. Groundsel Tree (Compositae)
Hardy deciduous and evergreen shrubs growing from 8 to 12 feet in height, which thrive in sunny positions and in dry, sandy soil, and which are, therefore, suitable for seaside planting. They also make good hedges or wind screens. The flowers, however, have little beauty. B. patagonica, the best-known species, is a small-leaved evergreen with small yellowish-white, daisy-like flowers that appear in May. B. halimifolia is a deciduous species with dull white flowers.

Culture.—Propagation is usually carried out by means of cuttings made of the semi-mature ends of the shoots inserted in sandy soil in a close frame during late summer and autumn. Plant the evergreen species early in October or in April, and the deciduous species early in November. Prune only to thin the branches and to shape the bushes when required, the deciduous species in February, the evergreen in April. Should the bushes outgrow their positions, cut them hard back at these same times.

Bamboo. See Bambusa, also Arundinaria and Phyllostachys.

Bambusa. Bamboo (Gramineae)
Two species of Bambusa are grown in the open at Kew. They thrive best when the soil is of a moist, deep, loamy nature and has some peat or leaf-mould in it. They are not very satisfactory in exposed situations.

Culture.—Propagate by means of division of roots in May. Cut out dead canes in April, and mulch annually in early summer with a good dressing of leaf-mould and well rotted manure.

Species—B disticha is a dwarf bamboo from Japan and grows from 1 to 2½ feet high. It is easily recognised by its
BAMBUSA — BERBERIS

distichously arranged leaves; that is, arranged in two vertical lines on opposite sides of the stem. *B. quadrangularis,* “the square-stemmed bamboo,” is a native of China and Japan and grows from 8 to 12 feet high.

**Barberry.** See Berberis and Mahonia.

**Bay, Sweet.** See Laurus nobilis.

**Beech.** See Fagus.

**Bengal Quince** See *Ægle.*

**Benthamia.** See Cornus capitata

**Bentham’s Strawberry Tree.** See Cornus capitata.

**Benzoin.** See Lindera

**Berberidopsis corallina.** Coral Plant (*Bixaceae*)

A handsome half-hardy evergreen climbing shrub, a native of Chile. It thrives in the south and west of the British Isles in a well-drained, lime-free soil of loam with leaf-mould and peat, if available added, and is usually planted against walls facing south or west, but it is not suitable for northern counties. The Coral Plant bears glossy, prickly leaves, carries coral-red, pendant flowers from July to September, and grows to a height of from 10 to 20 feet, or more against a wall.

**Culture** — Take cuttings made of side shoots, 2 to 4 inches long and insert in sandy soil in a close frame or under a cloche from July to September, or propagate by means of layering in autumn. Plant-out in April. Thin-out branches when crowded.

**Berberis.** Barberry. (*Berberidaceae*)

A large and important group of evergreen and deciduous shrubs, amongst which are a number of very useful and attractive subjects. The stems are very thorny. A number bear showy orange or yellow flowers in spring or early summer, and in autumn many of the bushes carry handsome red, purple, or black fruits. A goodly few of the deciduous species, notably *B. Thunbergii,* have gorgeously-tinted foliage in autumn.

**EVERGREEN** *B. Darwinii,* from Chile, forms a sturdy bush 8 to 12 feet in height. In April and May the glossy, dark green foliage sets off the beauty of the clusters of golden-yellow blossoms and the plum-coloured berries in autumn. In addition to its value in shrub beds and borders, *B. Darwinii* is an excellent hedge shrub and valuable for massing on sunny
ABO OF SHRUBS AND TREES

banks; B. D. var prostrata, which only reaches a height of from 1 to 2 feet, is worthy of attention for the rock garden. The hybrid *B. stenophylla (B Darwini x empetrofola) has small, deep green, spiny lanceolate leaves and bears during April and May rich yellow flowers on long, slender, arching branches. This is one of the most beautiful and valuable shrubs for an evergreen flowering hedge. It stands clipping well; the first time, with shears immediately after flowering, and five or six weeks later the strongest growths should be shortened with secatore or a sharp knife. A few plants grouped in the shrub border, or in the pleasure grounds, will soon form an attractive mass 6 to 10 feet high. Several distinct varieties obtained by raising seedlings are worthy of attention: B. s. autumnalis, 3 to 4 feet, a late-flowering variety; B. s. coccinea, 3 to 4 feet, with orange-yellow blossoms tinted with carmine; B. s. corallina, 3 to 4 feet, with flowers tinted bright red; B. s. corallina compacta, 2 to 3 feet, a dwarf gem for the edge of the shrubbery and the rock garden; B. s. gracilis nana, 1 to 2 feet, dwarf and compact; and B. s. Irwinii, 1 to 2 feet, but more spreading in growth. B. atrocarpa, from western China, grows from 5 to 6 feet, or more, high, and forms a large ornamental evergreen bush with yellow flowers in early June, and later, jet-black fruits. B. candidula is a Chinese shrub of dense, compact habit, probably not higher than 2 feet, but more in diameter. The leaves are a dark, glossy-green above and blush-white beneath. This species has yellow solitary flowers in June and blue-black fruits. B. Gagnepini, from western China, grows from 3 to 4 feet high. Wilson says it ultimately reaches 6 feet. This shrub has dark green leaves with undulate margins, yellow flowers in late May, and blush-black fruits; it is useful as a low hedge. At Kew B. Juliana is the most free-growing and the hardiest of the newer evergreen Chinese Barberries. It forms a large bush up to 8 feet high and more in diameter with yellow flowers at the end of May and blush-black fruits in autumn. B. Sargentiana, from central China, which reaches a height of from 6 to 8 feet, has conspicuous three-pronged spines, dark green spiny-teethed leaves and yellow flowers in late May, followed by blush-black fruits. B. verruculosa, a distinct semi-dwarf Chinese Barberry of
BERBERIS

slow growth, reaches from 2 to 3 feet in height and has dark, glossy-green leaves, which are whitish beneath, and bears large primrose-yellow flowers in May, followed by violet-black fruits.

DECIDUOUS. *B. aggregata* is a bush of dense habit from western China. It grows some 5 to 6 feet, or more, high with pale yellow blooms in early June. The flowers are borne in close panicles, 1 to 2 inches long, towards the ends of the branches; the fruits are coral-red. Even more showy, especially in fruit, is the variety *B. a. Pratns*, an elegant bush 5 to 6 feet in height, with more numerous clusters of flowers followed by handsome fruits in autumn. *B. concinna*, a shrub from the Sikkim-Himalayas, grows from 2 to 4 feet high, has attractive leaves, white beneath, and large solitary, bright yellow flowers in early June; these are followed by oblong red fruits, which are among the largest of the genus. *B. dictyophylla*, a tall and graceful shrub from Yunnan, reaches a height of 6 feet and assumes a lovely ruddy hue in autumn. It bears pale yellow flowers in May and red fruits in autumn; the variety *B. d. albicaulis*, 6 to 8 feet in height, has the young growths and undersides of the leaves covered with a whitish bloom. *B. polyantha*, a native of western China, forms a large bush 5 to 8 or 9 feet high and carries during June an abundant display of yellow flowers arranged in large panicles, these are followed in autumn by grape-like clusters, often consisting of forty to fifty, or even more, red fruits. In *B. Thunbergii*, from Japan, we have a plant with the most brilliant and glowing of autumn tints of scarlet, crimson and orange-yellow. In the United States of America it is the most popular shrub for a low hedge; a nurseryman in New York State told me recently that his annual sales of this one Barberry averaged 200,000. It usually grows from 2 to 3 feet in height, but old specimens may reach 5 feet or more. The yellow flowers, tinted with red, are borne in May and are followed by red berries. The variety *B. T. atropurpurea*, 2 to 3 feet, with sanguineous red leaves, is one of the half-dozen best shrubs with coloured foliage. The variety *B. T. minor*, 1½ to 2 feet, is a dwarf gem for the rock garden. *B. vulgaris*, of which there are several varieties, is the Common or Wild Barberry of our hedgerows. It grows
from 6 to 15 feet high, and clusters of drooping yellow flowers are freely borne in May. In autumn a good form of the Common Barberry, thickly clothed with coral-red fruits, is unsurpassed by any and rivalled by few species. The Purple-leaved Barberry, *B. vulgans fols purpureus*, 8 to 12 feet, has purple-red, vinous leaves, which provide a pleasing contrast to the nodding yellow blossoms. *B. Wilsonæ*, from China, with bright yellow flowers in May, is a small-leaved, dwarf-growing plant, 2 to 3 feet in height. It is a most useful shrub in the rock garden and for groups along the front of the shrub border. The coral-red berries in autumn, borne in tight clusters, last a long way through the winter. *B. yunnanensis*, the Yunnan Barberry, must close our list. It is a tall-growing species, reaching a height of from 4 to 6 feet, and carrying yellow flowers in May, followed by bright red fruits. The colouring of the foliage in autumn is exquisite.

*Hybrid Barberries* Among the barberries most useful as ornamental fruiting bushes are a race of hybrids which have originated in gardens chiefly as the result of the cross pollination by insects of several Chinese species (*B. polyantha, B. Wilsonæ, B. subcaulatalata*, etc.) Some of the most distinct and attractive of those raised at Wisley have been given distinctive names: *Autumn Beauty, Comet, Firefly*, and *rubrostilla*. Being hybrids, these can only be propagated true to type by layering or by cuttings. The raising of seedlings, however, is so easy and offers so much interest, and so many possibilities, that many shrub lovers are now raising seedlings and selecting the best fruiting bushes for permanent planting. *Szbbertoft Coral* was raised in this way.

*Culture*—Plant evergreens in April or October and early in November, and deciduous kinds from November to March when the weather and soil conditions permit. Barberries thrive in ordinary cultivated garden soil or in sandy loam enriched with manure. Thin-out shoots when overcrowded after flowering, or in winter after fruiting, and trim to shape. Trimming should be delayed until the leaves fall in the case of shrubs which are grown for the beauty of their autumn foliage; much of the latter would otherwise be cut away before it matures Most species are propagated by means of seeds sown in the open in autumn or spring, by half-matured
BERBERIS — BERCHEMIA

cuttings taken with a slight "heel" and dibbled in a frame or under a bell-glass from July to September, or by layering in autumn. But propagation is best carried out by means of cuttings, as the Barberries readily cross pollinate and seeds do not always come true.

*B* stenophylla and vars, being hybrids, must be propagated by cuttings some 5 to 6 inches long inserted in a frame in August, or by layering.

**Berberis Aquifolium.** See Mahonia Aquifolium.

**Berchemia.** (*Rhamnaceae*)

A genus of more than a dozen ornamental deciduous woody climbers. They thrive in rich, moist loam and in warm sheltered situations. *B. flavescens*, a native of the Himalayas, Tibet and China, is a scandent climber, 8 to 10 feet high, and bears pyramidal panicles of small creamy-white flowers in summer, followed by red or reddish fruits. *B* *Giralduana*, a newer introduction from China, is a graceful scandent shrub, which looped to supports will reach a height of from 8 to 15 feet. The small white flowers in summer are borne in terminal clusters and are followed by red and black berries. *B* *racemosa*, a native of Japan and Formosa, of which there is a variegated variety, is the best-known species. It runs up to a height of about 12 to 14 feet and has small, heart-shaped, bright green foliage, which in autumn turns golden-yellow. The clusters of small, greenish-white flowers in summer are rather insignificant, but the berries which follow, first green, then red, and finally black, are attractive. *B* *scandens* (*syn* *B* *volutialis*), the Supple Jack of the southern United States of America, has twiny branches 10 to 15 feet in length. The greenish-white flowers in June are followed by bluish-black fruits.

**Culture** — Berchemias thrive in well-cultivated ordinary garden ground. Plant during suitable weather from November to February. When growths become crowded, cut out the older twining stems in winter, otherwise no pruning is required, except to keep the plants shapely. Propagation is usually carried out by means of seeds sown in a frame when ripe, though cuttings made of semi-mature shoots, 3 to 4 inches long, in late summer and layering in autumn also provide ready means of increase.
Beschorneria yuccoides. (Amaryllidaceae)
A beautiful, half-hardy, evergreen, yucca-like shrub from Mexico, which bears pendant racemes of distinct green flowers and pink floral bracts during June and July on tall flower spikes, usually some 5 to 6 feet in height. It may be grown successfully in warm, sheltered situations, preferably against a south wall, in well-drained sandy loam.

Culture.—It can be propagated by means of offsets removed from the parent plants in April and by seeds sown in a greenhouse or frame when ripe. Plant in late April. No pruning is required.

Betula. Birch. (Betulaceae)
The birches are amongst the most beautiful and elegant of deciduous trees of moderate size. They are exceptionally hardy and thus are very valuable for planting in exposed positions. The family contains trees with some of the most striking and richly-coloured trunks among hardy trees. The colours include white, brown, and red, and some of the trunks also have attractive shaggy, peeling bark. The native birch, long cultivated as Betula alba, comprises two distinct species, B. pubescens, the White Birch, a tree from 30 to 60 feet, and occasionally more, in height, is valuable for planting in wet ground. It has papery, white, peeling bark and downy shoots, but the branching is not so elegant and graceful as that of the other species, *B. verrucosa*, the Silver Birch, 40 to 75 feet in height, a tree eventually taller and with a striking silvery-white trunk and pendulous branchlets. The warts on the young branchlets also readily distinguish the latter tree from *B. pubescens*. There are in all more than forty species of Birch. The flowers are borne on slender drooping catkins or “tails.” The male catkins, which are attractive in spring, are larger and more showy than the female.

Culture.—Plant from November onwards to March in sunny, open and preferably moist positions. All the species will grow in a poor, gravelly soil, but good cultivation of the ground previous to planting is desirable to obtain attractive specimens. No pruning is necessary, except to maintain leading shoots and to regulate the branches. Propagate by means of seeds sown in light soil in February or March in a frame or on a border outside. The birch takes a few years
only to grow into a good-sized tree. Thin out the seedlings into reserve beds as soon as possible and later transplant into permanent positions. If preferred, the trees may be increased by means of layering in autumn, or by grafting in early spring; the latter process being adopted in the case of choice varieties.

Species and Varieties—Among other species and varieties are: *B. verrucosa var. laciniata* (Cut-leaved Birch), 30 to 50 feet; *B. v. var. purpurea* (Purple Birch), 25 to 40 feet; *B. v. pendula Youngii* (Young's Weeping Birch), 10 to 20 feet, which likes a deep, rich soil with leaf-mould in it and should be propagated by means of grafting, *B. Ermanii* is an Asiatic species, 40 to 60 feet or more in height, with an attractive creamy-white trunk and orange-red branches; *B. japonica*, 40 to 60 feet, also from Asia, has silvery-white bark, peeling to orange, the variety *szechuanica*, from western China, has larger and broader leaves; *B. lenta*, the Black or Cherry Birch, 40 to 60 feet, and *B. lutea*, the Yellow Birch, 50 to 80 feet, both from North America, *B. Maximowiczii*, a Japanese species, up to 100 feet high, with large Poplar-like leaves and male catkins up to 5 inches long, for wet soils *B. nigra*, the North American River Birch, 40 to 70 feet, with its dark rugged trunks of blackish and flaking bark, and *B. papyrifera*, the Paper or Canoe Birch, 50 to 70 feet, which has the whitest bark of all the Birches, are very useful. The latter also comes from North America *B. fruticosa*, *B. nama*, and *B. pumula* (Low Birch), 3 to 5 feet, are more or less low-growing and bush-like species.

*Bignonia capreolata*. Cross Vine. (*Bignoniaceae*)

This plant is closely allied to the Tecoma and is a native of the south-eastern regions of the United States of America. It is a beautiful evergreen, or partially evergreen, climber, running up to from 25 to 50 feet in height with handsome, glossy-green, ovate, lanceolate foliage and rich orange, tubular flowers borne in clusters in June. In warm, sheltered positions it may be grown out of doors against a wall.

_Culture._—Plant in April or early in May in well-drained loam. Prune rather hard after flowering and thin the shoots. Increase by means of cuttings, 3 to 4 inches long, made of semi-mature growths and inserted in a close frame in July.
by layering in autumn, and by seeds sown under glass when ripe. The variety *B. c. atrosanguinea* has darker reddish-purple flowers

**Bilberry.** See Vaccinium Myrtillus.

**Billardiera longiflora.** (*Pittosporaceae*)

A beautiful evergreen climbing plant, a native of Tasmania, which may be grown successfully out of doors in warm sheltered situations in the milder districts of the British Isles, preferably against a south wall. It runs up to from 8 to 12 feet in height and the greenish-yellow flowers, which appear in July, are followed in autumn by large striking, dark blue, oblong, plum-shaped berries, three-quarters to one inch in length. *B. l. fructu-albo,* 8 to 10 feet in height, is a variety bearing white fruits.

**Culture.**—Increase by seeds sown when ripe in a greenhouse or frame and by cuttings, 2 to 4 inches long, made of half-ripe shoots inserted in a close frame in late summer. No definite method of pruning is required. Thin, shorten, and tie-in shoots to keep the plants shapely when required. Ordinary well-drained garden ground will suffice, but add leaf-mould and peat, if available, when planting, which should be done in April or early in May.

**Biota.** See Thuya orientalis.

**Birch.** See Betula.

**Blackthorn.** See Prunus spinosa.

**Bladdernut.** See Staphylea

**Bladder Senna.** See Colutea

**Bowkeria Gerrardiana.** (*Scrophulariaceae*)

A beautiful, but somewhat rare, half-hardy evergreen shrub, a native of South Africa and only suitable for warm, sheltered situations on walls and for planting in the border in the mildest districts of the British Isles. It grows some 6 to 12 feet in height and in summer and early autumn produces a mass of small white flowers very like those of the Calceolaria.

**Culture**—Propagate by means of cuttings, 2 to 3 inches long, made of half-ripe shoots, inserted in a close frame in late summer. A well-drained, light ground with leaf-mould and peat, if available, added, suits these shrubs. Plant in April. If required, prune and trim after flowering and in spring, to keep the shrubs shapely only.
BOX — BRUCKENTHALIA

Box. See Buxus
Box-Elder. See Acer Negundo.
Brachyglottis repanda. (Compositæ)
A striking, but somewhat tender, evergreen shrub, some 10 to 15 feet in height, from New Zealand. It has very large leaves, whitish underneath, and in late summer produces fragrant, greenish-white flowers, which are scented something like those of the Mignonette. It may be grown outdoors in a warm, sheltered spot, preferably against a south wall. I have seen numerous beautiful specimen lawn and border shrubs in Cornwall.

Culture.—Increase by cuttings, 3 to 5 inches long, made of semi-mature growths inserted in a slightly-heated frame or under a handlight in late summer. Plant in April or May in light, loamy ground with leaf-mould and peat, if available, added.

Bramble. See Rubus.
Bridgesia. See Ercilla.
Broom. See Cytisus, Genista and Spartium.
Broussonetia papyrifera. Paper Mulberry (Moraceæ)
A deciduous tree or shrub, a native of China and allied to the Morus (Mulberry). It grows from 15 to 30 feet in height and bears uni-sexual flowers. The male tree, with its drooping, yellowish catkins in May, is the more attractive. B. p. lactantha is a curious dwarf form up to 4 or 5 feet high, with dissected leaves.

Culture.—Plant preferably in early November. Any well-drained, good garden soil is suitable and propagation may be carried out in summer by means of cuttings made of half-ripe shoots, about 3 inches long, taken with a “heel” and placed in sandy soil in a close frame. No pruning is necessary, except to shape the trees.

Bruckenthalia spiculifolia. (Ericaceæ)
These little hardy, dwarf-growing, evergreen shrubs, which are closely allied to the Heath family and are natives of the mountains of eastern Europe and Asia Minor, rarely exceed 7 or 8 inches in height and make excellent subjects for the rock garden. The dense, heath-like foliage makes a good setting for the pretty pale rose, bell-shaped flowers, which are borne in June and July.
ABO OF SHRUBS AND TREES

Culture.—These shrubs prefer a light, peaty, non-calcareous soil. Plant early in October or in April. Cut away dead blooms immediately after flowering. The plants may be increased by means of seeds sown in early spring in a greenhouse or frame, by layering in autumn, or cuttings of semi-mature shoots about an inch long may be taken in August and placed in peaty soil in a cold frame or under a bell-glass.

Brunnichia cirrhosa. (*Polygonaceae*)
A deciduous climber from the south-eastern United States of America. It grows 15 feet or more in height and has small clusters of greenish flowers in July and August. The plant is of botanical rather than garden interest.

Culture.—It thrives in ordinary cultivated garden ground. Plant in November. Thin out woody stems in February before new growth begins and tie-in and thin summer growths as required. Increase by means of cuttings, 3 to 4 inches long, made of semi-mature side shoots in late July or August and inserted in a close frame.

Bryanthus. See Phyllodoce and Phyllothamnus.

Buckeye. See *Æsculus*.

Buckleya distichophylla. (*Santalaceae.*)
This is an interesting deciduous shrub, which is parasitic on tree roots, one of the most common host plants being *Tsuga canadensis*. A bush of spreading habit, it may grow from 5 to 10 feet in height. The ovate leaves are 1 to 2½ inches long and ½ to 1 inch wide, and the small greenish flowers are borne in May and are followed by nut-like greenish-yellow fruits. It is a native of north Carolina and Tennessee.

Culture.—Grow plants of *Tsuga canadensis* in pots, sow the seeds of Buckleya when ripe around the base of the stem in a frame or cold greenhouse. Plant outside when the young Buckleya is 5 or 6 inches high. No pruning is desirable or required.

Buckthorn. See *Rhamnus*.

Buddleia. (*Loganiaceae*)
Beautiful flowering shrubs, many of them half-hardy or tender, that are natives of China, India, and South America. A few species not quite hardy enough to endure severe winter weather in the open ground in the British Isles, flourish in well-drained, deep, ordinary soil or good loam, and in warm,
BUDDLEIA — BUMELIA

sunny, sheltered positions on a wall. *B. globosa, a native of Chile and Peru and commonly called the Orange Ball Tree, grows from 8 to 15 feet high and is valued for its pretty sprays of fragrant, ball-shaped orange blossoms in May and June, also for its lanceolate leaves, pale green above, and whitish below. It is evergreen or semi-evergreen, will thrive in most cultivated garden soils, and grows well near the sea. The Chinese B variabilis and vars, with long lanceolate foliage, grow from 10 to 20 feet high and produce long, honey-scented inflorescences of lilac or mauve flowers from July to October. *B. v. magnifica and B v. Vertichiana are of a deeper shade, and are better than the type. B. v. nanhaensis is a dwarf, shrubby variety which is useful for small gardens, as it rarely exceeds 4 feet in height.

Culture — Plant B. globosa in April or October, the others from November to March. Do not prune B. globosa, merely cut out a little old wood after flowering, unless the bushes have become old and leggy, then cut them hard back in April and sacrifice a season's flowers. In the case of B variabilis, cut the last year's shoots back to within a few inches of the old wood in February. Another Chinese species, B alternifolia, 4 to 6 feet in height, carries pale purple flowers on the previous year's growth. The clusters of small blooms are borne in June, close in to the long, drooping and slender stems. Shorten the branches a little directly after blooming. B. Colvillei, a somewhat tender Himalayan species, runs up to tree-like size, reaching a height of 30 to 40 feet, and carries beautiful, large, rose-coloured flowers in summer. It should not be closely pruned, as the bloom only appears on mature, unpruned trees.

Propagation is by means of cuttings of young shoots taken with a "heel" and inserted in a frame in late summer; or in the case of the stronger-growing kinds, mature wood cuttings about a foot long may be inserted in sandy soil in the open in autumn. Alternatively, seeds may be sown in early spring in a frame or cool greenhouse.

Bull Bay. See Magnolia grandiflora.

Bumelia lycioides. Southern Buckthorn. (Sapotaceae) A small deciduous tree or shrub from the south-eastern United States of America that grows up to 15 or 20 feet, and that has
been called *Sideroxylon lycioides*. It carries small white flowers, produced in hemispherical clusters, in August and September. This shrub is of botanical rather than garden interest.

**Culture**—Increase by cuttings, 2 to 3 inches long, made of the ends of the branches in July or August. Insert in a close frame with slight bottom heat or under a bell-glass. The bushes thrive best in sunny positions and a well-drained garden soil or loam. Plant preferably in November or late February and early in March. No pruning is necessary, except thinning in February when branches become crowded; very long shoots should be shortened at the same time.

**Bupleurum fruticosum.** (*Umbelliferae*)

An interesting evergreen, or semi-evergreen shrub with bluish-green foliage. It is a native of southern Europe and grows from 5 to 6 feet in height, or more, against a wall, producing terminal umbels of small yellow flowers in late summer.

**Culture**—It is on the borderland of hardiness at Kew, where it is grown as a wall shrub. This evergreen likes a light sandy soil and grows well near the seaside. Plant at the end of March and during April. Prune to shape and thin the bushes early in April. It is readily propagated in July or August by means of cuttings, 3 or 4 inches long, made of the half-ripe shoots of the year and inserted in a close frame or under a bell-glass.

**Burning Bush.** See *Rhus Cotinus*.

**Burr Oak.** See *Quercus macrocarpa*.

**Bursaria spinosa.** (*Pittosporaceae*)

An evergreen shrub, 5 to 8 feet high and a native of New South Wales. It makes an interesting wall shrub, otherwise it is suitable only for the mild climate of the south and west of England. It carries small white flowers in panicles on the ends of the branches in August.

**Culture.**—Plant in spring in light, sandy soil. To prune, when required, thin out the branches and shorten long shoots in April. Increase by means of cuttings, 2 to 3 inches long, made of semi-ripe growths and inserted in a close frame, preferably with slight bottom heat, during July or August.

**Butcher’s Broom.** See *Ruscus aculeatus*.

**Butternut.** *Juglans cinerea*.

**Button Bush.** See *Cephalanthus*. 274
BUXUS — CÆSALPINIA

Buxus. Box. (*Euphorbiaceae*)
The different varieties of Box are very ornamental, hardy, evergreen shrubs or small trees some 10 to 20 and at times, but rarely, up to 30 feet in height. They will grow well in sun or shade and in light, well-drained soil (including chalk soils). The leathery green, oval foliage always looks fresh.

*Culture* — Plant in April or September. Hard prune, if required, in late April and May, and clip with shears in August. Propagate by means of cuttings about 2 to 4 inches long taken with a “heel” in August or September and placed in sandy soil in a frame or under bell-glasses. Increase the Box Edging (*Buxus sempervirens var. suffruticosa*) by division in April, or by layering in October.

*B. sempervirens*, the Common Box, is a native of Europe (including probably Britain), northern Africa and northern and western Asia. *B. s. argentea* and *B. s. aurea*, the Silver and Golden varieties respectively, both 15 to 20 feet, form an agreeable change and should be planted in sunny positions where the bushes will colour *B. s. Handsworthii*, a close-growing upright form, 15 to 20 feet in height, is the best for Box Hedges. Other distinct and interesting varieties with names descriptive of their appearance are *B. s. myosotifoilia*, 1½ to 3 feet; *B. s. suffruticosa* (Box Edging), 1½ to 3 feet; *B. s. rosmarinifoilia*, 2 to 4 feet; and *B. s. elegantissima*, 10 to 12 feet, with narrow green leaves margined silver. *B. balearica*, the Balearic Box, has, for a Box Tree, large green leaves and makes an attractive small evergreen tree or large bush from 15 to 30 feet in height.

Cæsalpinia japonica. (*Leguminosae*)
A beautiful but somewhat tender deciduous thorny shrub, a native of China and Japan and allied to the Robinia family. It has pretty pinnate, acacia-like foliage, and in June and July produces long racemes, some 10 to 12 inches in length, of clear canary-yellow flowers with crimson anthers. Planted in favourable situations it will run up to 15 feet or more in height.

*Culture* — These plants require a rich, loamy, well-drained soil, full sun and a hot, sheltered situation with the protection of a wall in all but the mildest districts of the British Isles. Plant in March. Prune in autumn or spring, only to keep
within bounds. Increase by seeds, when available, sown as soon as ripe in pots of sandy soil in a greenhouse or frame, and by layering in autumn. *C. Gilliesii* is an Argentine species with yellow flowers, long scarlet stamens and fern-like foliage, which in favourable situations assumes the proportions of a small tree, reaching up to 25 feet, or more, in height. A plant on a south (Museum) wall at Kew is 25 feet in height and flowers annually in July and August.

**Callicarpa.** (*Verbenaceae*)

A small genus of interesting deciduous shrubs with foliage which assumes delicate rose-madder shades in autumn, at which time clusters of pale, shining, violet berries are borne, following the small, insignificant, pinky-lilac flowers. *C. Giraldrana*, a native of China, with large leaves and growing to about 6 feet in height, is one of the hardiest species *C. purpurea*, also from China and Korea and growing to about the same height, has purplish-tinged foliage, is less hardy than some *C japonica* usually grows from 4 to 5 feet high and has pale pink flowers in August, followed by violet-mauve berries *C koreana*, a species of recent introduction, 3 to 5 feet in height, has smaller serrate leaves and attractive mauve-pink berries.

**Culture**—These shrubs may be grown successfully in loamy soil outdoors in warm, sheltered situations and in the milder localities of the British Isles. Plant during suitable weather from November to early March. Seeds sown in a frame or cool greenhouse early in the year provide a ready means of propagation. Long shoots, if not damaged by frosts in winter, may be shortened back annually in March, as the flowers and fruits are produced on the growths of the current year.

**Callitris.** (*Coniferae*)

A genus of Conifers, natives of Australia and Tasmania, which are found in dry arid regions. Twenty or more species have been described. They are only suitable for cultivation in the warmest localities of the British Isles. Several species are grown in the Temperate House at Kew. The only Callitris generally listed in catalogues is *C. oblonga* (Tasmanian Cypress Pine). This is a dainty, slender, coniferous shrub or small tree, cypress-like in appearance and only suitable for growing in warm, sheltered situations and in the mildest of localities.
CALLITRIS — CALOPHACA

When at Rostrevor, Ireland, in 1915, the late Sir John Ross drew my attention to a small tree of this species, then about 6 feet high, which had been growing outside since 1893.

Culture — The Callitris thrives in a lime-free, well-drained and rather light soil. Plant towards the end of April. No pruning is necessary, except to shape the bushes about mid-April. If imported seeds cannot be obtained, insert cuttings made of the ends of small side shoots in a close frame with slight bottom heat about midsummer.

Calluna vulgaris. Ling, Heather. (Ericaceae)
A hardy evergreen shrub, a native of Europe, including Britain, with tiny, closely-packed, linear-lanceolate, scale-like foliage. It grows from 3 to 24 inches high, occasionally more, and thrives in full sun and in peaty or non-calcareous soil. The plant blooms from July right through the autumn and is an excellent subject for the wild garden.

Culture.—Plant in October or April. Trim-off dead flower-heads in April and cut back long and straggling shoots. To propagate, take cuttings about an inch long in August and insert in peaty soil under a handlight or bell-glass; divide the roots in spring or autumn, or layer in autumn.

Varieties — C. v. var. alba (White Scotch Heather, 1 foot); C. v. var. alba Serlei (White, 18 inches), *C. v. var. Alportii, (Deep Crimson, the best tall Red Ling, 2 feet); C. v. var. aurea (Golden Foliage, Purple Flowers, 9 inches); *C. v. var. flore pleno [Double Ling] (Pink, 1 foot), C. v. var. Faux (Very Dwarf, Moss-like, Purple, 3 inches); *C. v. var. Hammondii. (One of the best tall White Heathers, 2 feet)

Calophaca Wolgarica. (Leguminosæ)
A hardy deciduous shrub of spreading habit, a native of south-eastern Russia, that rarely grows more than 3 or 4 feet in height. It has attractive compound foliage, and in June and July produces racemes of small yellow flowers like those of the pea.

Culture — This shrub likes a position in full sun and a dry, rather than a moist, soil. Plant in March. Shorten long and straggling shoots in winter. The plant may be raised from seed sown when ripe in a frame, or by means of grafting under glass in early spring on to common Laburnum stocks cultivated in small pots.
ABC OF SHRUBS AND TREES

Calycanthus. \((Calycanthaceae)\)
Three species of hardy deciduous and fragrant shrubs, related to the Chimonanthus, are grown. They like a semi-shaded position and a moist rather than dry loamy soil with leaf-mould and peat, if available, added

Culture—Plant in November. Cut-out old wood after flowering. Propagate by means of cuttings, 2 to 3 inches long, made of the end of the shoots, inserted in July or August in a close frame preferably with slight bottom heat; by layering in autumn, or by suckers. Seeds obtained from abroad should be sown as soon as received, preferably in a frame.

Species.—\(C\) \(fertilis\) (syn \(C.\) \(glaucus\)) is a bushy shrub, 5 to 6 feet or more in height and has chocolate-purple flowers from July to September; \(C.\) \(floridus\) (Carolina Allspice) is of open habit, reaches a height of 6 feet or more, and carries fragrant reddish-purple flowers in May, June and July. \(C.\) \(occidentalis\), known as Californian Allspice, reaches a height of from 8 to 10 feet and carries maroon flowers from May to July.

Camellia. \((Ternstroemiaceae)\)
Camellia \(japonica\) and varieties, with single, semi-double and double red, pink, or white flowers, are old-established favourites. Camellia \(japonica\) is an evergreen flowering shrub some 10 to 30 feet in height, a native of China and Japan and was at one time supposed to be essentially a greenhouse plant. It has been found, however, that it is as hardy as the Rhododendron and equally easy of culture out-of-doors, but to afford some protection to the flowers, which begin to open early in the year, plant the bushes in sheltered and semi-shaded positions. Camellias thrive in well-drained loam or in a mixture of peat, loam and leaf-mould, but they will grow in practically any well-drained soil, provided it is lime-free. The dark, glossy-green foliage is perfectly hardy, but shelter is desirable for the wax-like flowers, which are soon damaged by frosts and cold winds. Camellias are, perhaps, most useful when grown as shrubs, 4 to 10 feet in height, but they will run up to a height of 30 feet if given the chance. They bloom from February to April, at a time of year when richly-coloured flowers in the open are, comparatively speaking, scarce.

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CAMELLIA — CAMPHOROSMA

Culture.—Plant from the middle of April to the middle of May. Keep the roots moist when the buds are forming and top-dress with leaf-mould and old well-rotted manure, or give weekly applications of weak liquid manure water during the summer. Trim-back all straggling shoots after flowering. Propagate by grafting in a close propagating frame in early spring, using seedling C. japonica as a stock, or by cuttings of half-matured shoots in a frame in July or August. Seeds may be sown when ripe or when received from Japan, ½ inch deep in a compost of ⅔ peat, ¼ leaf-mould, and ¼ coarse grit, being raised in a moist heat (65°F). Germination may take as long as two years, and during that time the compost should never be allowed to become dry.

Named Varieties of C. japonica: C. alba plena (White, Dbl, 10 to 30 feet); C. alba simplex (White, Single, 10 to 30 feet); C. Chandleri elegans (Dbl, Pink, 10 to 30 feet); *C. Donckelaarri (Loose-Dble, Rosy-red, the best outdoor Camellia, 6 to 10 feet); C. Gloire de Nantes (Pink, Single, 10 to 30 feet); C. Henri Faure (Rose-salmon, Dbl, 10 to 30 feet); C. Jupiter (Rosy-red, Single, 10 to 30 feet); C. Lady Clare (Pink, Semi-Dbl, 10 to 30 feet); C. latifolia (Crimson, Single, 10 to 30 feet); C. Mathiotsiana (Rose-red, Dbl, 10 to 30 feet); and C. Waltham Glory (Scarlet, Dbl, 10 to 30 feet).

Species — C. cuspidata is a Chinese species, some 4 to 6 feet high, with small single white flowers; C. reticulata, also Chinese, grows from 15 to 40 feet in height, has very large rosy-salmon semi-double blooms and is only suitable for cultivation on a wall in the south and west of Great Britain; C. Sasanqua, 5 to 15 feet in height, a Chinese species but very much grown in Japan, has single flowers which vary from white to pale pink and rose.

Camphorosma monspeliacum. (Chenopodiaceae) This is an attractive, but somewhat tender, dwarf-growing evergreen shrub with grey, lavender-like foliage. The flowers, which appear in late summer, have conspicuous red styles. It is a native of the Mediterranean region, rarely exceeds 18 inches in height and, as it thrives in dry, sandy soil, makes a useful plant for growing near the sea shore. At Kew this shrub can only be cultivated successfully for any length of
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time at the foot of a sunny south wall in light, well-drained soil.

Culture — Propagate by means of cuttings 2 inches long, made of the ends of the shoots and inserted in a handlight or under a bell-glass in August. Plant towards the end of April. Prune in April, if required, to shape the bushes.

Cantua buxifolia [syn. C. dependens] (Polemoniaceae)
A beautiful, half-hardy, semi-evergreen shrub, a native of Peru, that grows from 3 to 4 feet in height or more against a wall and bears at the end of the branches in June corymbs of bright rose or pale red funnel-shaped flowers with an elongated tube. In the milder localities of the British Isles it may be grown outdoors in the shelter of a south or southwest wall and in a sheltered bay of the rock garden.

Culture — It does best in a sandy, peaty soil. Plant from pots early in May. Increase by layering in autumn. No pruning is necessary or desirable.

Caragana. Pea Tree (Leguminosae)
Interesting and attractive hardy deciduous shrubs or small trees of the Cytisus family, which flower from April to June and thrive in sunny positions on dry banks and in light, sandy or well-drained ordinary soil. C. arborescens and C. frutescens are good subjects for the town garden.

Culture.—Plant from November to February. Cut out old wood, if any, after flowering. Propagate by means of seeds sown as soon as ripe in a frame, or in the case of choice species and varieties, by grafting under glass in early spring, using C. arborescens seedlings for stock. Cuttings of young shoots, 2 to 4 inches long, may also be taken in July and August and placed in a close frame with slight bottom heat.

Species — The best species for cultivation are C. arborescens, the Siberian Pea Tree, which grows some 10 to 20 feet in height, has attractive pinnate foliage and early in May produces a mass of small yellow flowers like those of the pea. There is a weeping form of this, C. a. pendula, which makes a striking and compact small tree, some 4 to 6 feet in height, the particular height depending upon the height of the stock on which it is grafted. It is usually propagated by means of grafting in spring on to seedlings of the type, C. aurantium. (Orange-Yellow, May and June, 4 feet) and C. frutescens (Yellow, April to May, 3 to 6 feet).
CARMICHÆLIA — CARPINUS

Carmichælia. (Leguminosæ)
A small genus of almost hardy deciduous shrubs, natives of New Zealand and allied to the Broom family. *C. flagelliformis*, the best-known species, makes an erect or somewhat spreading shrub from 3 to 6 feet in height, and is remarkable for its apparent scarcity of foliage. In late June and July its curiously flattened green stems are usually smothered with tiny lilac-pink flowers like those of the pea. *C. Enysii* is a remarkable little dwarf-growing species for the rock garden, where it forms a dense mat only a few inches in height, *C. Petreii*, 1 to 3 feet in height, is also useful in the rock garden and on a sunny border.

**Culture.**—Seeds sown when ripe in a frame or cool greenhouse are the best method of increase. The shrubs like a sandy loam with a little leaf-mould and peat added and a sunny, sheltered position. Plant from pots in April. No pruning is required.

Carniola mantica. See Genista tinctoria

Carpenteria californica. Californian Mock Orange. (Saxifragaceæ)
Beautiful semi-hardy shrubs related to the Philadelphus, but evergreen, and with long, narrow leaves, greyish on the undersides. They like a warm, sheltered position, preferably against a wall, and a well-drained loam. These shrubs grow from 8 to 10 feet high or more against a wall, and at the ends of the young shoots in June and July, carry clusters of fragrant white rose-like flowers with golden anthers, each flower being some 2½ inches in diameter. In the milder southern localities of the British Isles, they are quite hardy in the open.

**Culture**—Plant in late April or May, and prune-out weak wood and old flower-shoots after flowering. Propagate by means of cuttings of young wood inserted in sandy soil in a close frame with slight bottom heat in April, raise from seeds sown in early spring in a cool greenhouse or frame, or increase by layering in September.

Carpinus. Hornbeam. (Corylaceæ)
Hardy deciduous trees growing some 30 to 75 feet, occasionally more, in height and which thrive in sunny, open positions in moist, deep, rich soil. They will grow, however, in almost any ground, including chalk. The trees are fairly fast in
growth and the wood is very hard. In March the male flowers of the Common Hornbeam are produced on long, greenish-gold catkins, and make the tree extremely interesting and conspicuous.

**Culture** —Plant from November to February. No pruning is necessary beyond attending to the leading shoots and thinning the branches if crowded. Propagate by means of seeds sown when ripe on a border outside or in a cold frame. Graft varieties in March on the Common Hornbeam, or layer in autumn or spring.

**Species and Varieties** — *C. Betulus* (Common Hornbeam), 30 to 75 feet, *vars. columnar"is* (40 to 75 feet), *incisa* (30 to 60 feet), and *pyramidalis* (40 to 75 feet). The Common Hornbeam makes a good hedge as it responds readily to pruning and holds its leaves into the winter. A collection of trees should include *C. carolinana* (American Hornbeam), 20 to 40 feet; *O. cordata*, Japan, 30 to 40 feet; *O. japonica* (Japanese Hornbeam), 30 to 50 feet; *O. laxiflora var. macrostachya*, Central China, 30 to 50 feet; and *O. Tschonoski* (Chinese Hornbeam), 15 to 30 feet.

**Carrierea calycina.** (*Bixaceae*)
An interesting, but rare, semi-hardy deciduous shrub or small tree from China. It grows from 15 to 30 feet in height and may be planted out-doors in warm, sheltered situations in the milder southern and western localities of Great Britain; elsewhere it requires the protection of a south or west wall. The white flowers, borne in terminal panicles in June, are followed by interesting winged seed cases.

**Culture.** —The most suitable soil is a well-drained loam with peat and leaf-mould added. Plant early in March. No pruning, except to shape the bushes or wall specimens after flowering, is required. Increase by cuttings made of half-ripe young shoots in July or August. Insert the cuttings in a close frame, preferably with a little bottom heat.

**Carya.** Hickories (*Juglandaceae*)
These are fast-growing and stately nut-bearing trees varying from 50 to 100 feet in height. They are natives of North America and are allied to the Walnuts. The male blooms in June are in most cases borne in branched slender catkins, 3 to 5 inches long, the small cluster of female flowers developing
CARYA — CASSANDRA

at the ends of the strong new shoots. The attractive and large compound leaves turn a clear yellow in autumn.

Culture.—These trees like a deep, well-drained loam. The Hickories do not transplant readily. To overcome this difficulty, plant the nuts when ripe in autumn singly in 6-inch pots in a cold frame or plunge the pots outside, and when the seedlings are from 1 to 2 feet high, plant in their permanent positions as large plants do not transplant readily. Early in November is the best time to plant. No pruning is required.

Species — C. alba, 50 to 100 feet; C. cordiformis (syn. C. amara), the Bitter Nut, 70 to 90 feet; C. glabra (syn. C. porcina), Pig Nut, 60 to 80 feet; C. laciniosa, the Big Shell-bark, 80 to 100 feet; and C. ovata, the Shell-bark Hickory, 80 to 100 feet.

Caryopteris. (Verbenaceae)
Interesting and showy deciduous shrubs on the borderland of hardiness at Kew. They have deeply-indented aromatic leaves, grow from 3 to 8 feet high, or more against a wall, and flower in late summer and autumn. C. Mastacanthus, 3 to 5 feet, a native of China and Japan, bears clusters of pale blue flowers, C. mongolica, 3 to 5 feet, from northern China and Mongolia, carries bright blue flowers; and C. tangutica, 3 to 5 feet, another Chinese species, has purple-blue flowers.

Culture.—These shrubs like a sunny, sheltered position, preferably against a wall in cold districts, and thrive in sandy loam with leaf-mould and peat, if available, added. Plant in March or April. Cut back the previous summer’s shoots rather hard in March. In cold districts protect the stools from frost in winter with a heap of old coal ashes. Propagate by means of division in March, or take cuttings in July and August of young shoots about 3 inches long and insert in gentle heat or under a bell-glass.

Cassandra calyculata. Leather Leaf (Ericaceae)
A hardy evergreen shrub of bushy growth, a native of North America. It grows from 3 to 4 feet in height and in March, and April bears racemes of delicate white, heath-like blossoms.

Culture.—This shrub grows well in moist, sandy, non-calcareous soil. If a mulch of leaf-mould is given in alternate
years, no manure is necessary. The outer branches may be pegged down to form a spreading mass of foliage. Plant in October or April. The Cassandas are most effective when planted in groups. There is no definite method of pruning, but old worn-out shoots can be cut out to the ground at the end of April after flowering. They are propagated by means of seeds sown in early spring in peaty soil in a frame, by layering in autumn or spring, by division or offsets in October, or by cuttings of young shoots about 2 inches long placed in a close frame or under a bell-glass in August.

C. c. nana (15 inches) is a small-leaved dwarf variety and is useful when planted in groups along the front of a shrub border.

Cassia. (Leguminosae)
Half-hardy, deciduous and evergreen plants that thrive in the mildest localities of the south and west of the British Isles or against a wall.

C. corymbosa (5 to 12 feet), a native of South America, has evergreen pinnate leaves and bears terminal clusters of bright yellow flowers from July to October. It will grow outdoors in the London districts against a warm wall, as also will C. marylandica (Wild Senna), a deciduous shrub some 2 to 4 feet in height or more against a wall. It is also a native of South America and carries racemes of yellow flowers with purple anthers from July to October.

Culture—A well-drained sandy loam suits these plants. Plant in March. The growths are often cut back by frosts in winter. This causes the formation of stools which it is worth while covering with dry litter or coal ashes in case of severe frosts. Shorten back all shoots killed by frost to firm living wood at the end of March. Propagate by means of seeds obtained from abroad and sown in a cool greenhouse or frame, or by cuttings, 2 to 3 inches long, made of the ends of the young side shoots and inserted in a close propagating case during late summer.

Cassinia [syn Diplopappus] (Compositae)
Attractive evergreen shrubs from New Zealand, very branching by nature, and which like a sunny position in ordinary light soil. They grow from about 3 to 6 feet high and flower in late summer and autumn.
CASSINIA — CASTANEA

*C. fulvina*, the best-known species, has yellow stems and small, deep green, narrow and oblong leaves which are yellow on the undersides. It grows from 3 to 6 feet high and carries at the ends of the shoots clusters of small white daisy-like flowers with bright yellow stamens. *C. leptophylla* (3 to 4 feet) is distinguished from *C. fulvina* by the greyish-green or whitish hue of the leaves. *C. Vauvilliersii* (4 to 6 feet) is not so bushy in habit as the two foregoing and the leaves are slightly larger.

Culture — Plant in late April or May. Thin-out the branches when overcrowded or cut down in spring when the bushes grow too tall and lax. To propagate, insert cuttings 1 to 2 inches long made of the young side shoots in a close frame or under a bell-glass in August.

*Cassiope tetragona*. (*Ericaceae*)
A beautiful low-growing evergreen shrub from the Arctic regions, with white flowers tinged with red, hanging like small bells from erect, heath-like stems in April and May. It rarely exceeds 6 inches in height and is an excellent addition to the rock garden.

Culture.—A cool, moist, semi-shaded site is desirable, also peat or sandy loam and leaf-mould. Plant in autumn or spring. No pruning is required. Propagate by means of layering in July, or by cuttings about an inch long inserted in August, in a compost of sand and peat placed under a bell-glass or in a cold frame.

*C. fastigiata* (9 to 12 inches), sometimes called Himalayan Heather; *C. hypnoides*, 2 or 3 inches, from the Arctic regions; and *C. Mertensiana*, 6 to 12 inches, a native of the Alpine regions from California to Alaska; are useful dwarf subjects for the rock garden. They differ in habit, but all have white flowers during April and May. They are lime-haters.

*Castanea sativa*. Sweet or Spanish Chestnut (*Fagaceae*). A hardy deciduous tree, which thrives in most soils and notably in light gravelly loam. It grows to a height of from 60 to 100 feet and often has a very large trunk. The leaves are long, narrow and saw-edged, and take on golden hues in autumn. This is the tree that bears the Spanish or Sweet "eating" Chestnuts. The pale yellow male flowers produced in July are borne on long erect plumes.
There is an interesting variegated form *C. aureo-marginatus* (40 to 75 feet), with golden-edged foliage *C. crenata* (Japanese Chestnut), 10 to 25 feet; *C. dentata* (North American Chestnut), 60 to 100 feet in eastern North America; *C. mollissima* (Chinese Chestnut), 40 to 60 feet, and *C. pumila* (Dwarf Chestnut or Chinquapin), 10 to 25 feet; are usually represented in tree collections.

*Culture*—Plant from November to February. Thin-out the branches of young trees when overcrowded. To propagate, sow ripe nuts in autumn, 2 to 3 inches deep in the open. The named commercial varieties are grafted on seedling trees of *C. sativa* in spring, either in the open or under glass.

*Castanopsis chrysophylla*. Golden Chestnut. (*Cupuliferae*)

An attractive, but somewhat rare, evergreen tree from California. It has striking foliage, the longish, ovate, glossy green leaves, being on their undersides of a rich golden tint. In its native habitat it assumes large-tree dimensions, reaching in height as much as 100 feet, but in the British Isles it rarely exceeds 30 feet. The creamy-white unisexual flowers are borne on cylindrical catkins, 1 to 1½ inches long, and are followed by burr-like fruits very similar to those of the Sweet Chestnut, but smaller. The nuts, which take practically a year to mature, are edible and ripen on the Kew trees during the development of the next season’s flowers.

*Culture.*—This tree will grow well in any good non-calcareous soil. Plant towards the end of April. No pruning is required. Propagation is best carried out by means of seeds (nuts) sown when ripe on a sheltered sunny border or in a frame.

*Catalpa*. (*Bignomaceae*).

Distinctive and strikingly handsome hardy deciduous trees, which thrive in full sun and in moist, but well-drained and rather light rich loam. They are good town trees and grow to a height of from 25 to 100 feet, flowering in July and August. Their attractive rounded habit gives the trees a particular value for growing as specimens on the lawn or in avenues.

*C. bignonioides* (Indian Bean Tree) is a native of the eastern United States of America. It has large heart-shaped foliage, grows to a height of from 30 to 50 feet and carries
spikes of white flowers, spotted purple and yellow, which somewhat resemble those of the Horse Chestnut. *C. bignomoides is, perhaps, the most beautiful of all late summer-flowering specimen trees for pleasure ground and park planting. *C. b. aurea (30 to 50 feet) is a very ornamental yellow-leaved variety, and C. speciosa (syn. cordifolia), the western Catalpa, from the south-central United States of America, is a taller tree, reaching up to from 60 to 100 feet in height, and carrying even larger foliage and larger blooms, but the flowers in the spikes are fewer than in the case of C. bignomoides.

**Culture** —Plant from November to February. No pruning is required, unless to shape the trees, to remove dead interior wood, or to thin the branches of young trees. To propagate sow seeds in a frame as soon as ripe or immediately they are imported. When seeds are not available, take cuttings of leafy shoots with a "heel" in July or August and insert them in gentle bottom heat, or increase by means of layering in autumn or spring.

**Additional Species.** —Several Chinese Catalpas, C. Bunger (15 to 25 feet), C. Ducloixii (20 to 30 feet), C. Fargesi (15 to 25 feet), and C. ovata (25 to 40 feet), are grown in British gardens, but there is no evidence at present of their rivalling the New World representatives as specimen flowering trees.

**Ceanothus.** Californian Lilac (*Rhamnaceae*)

An extremely handsome and free-flowering genus of highly ornamental shrubs or small trees, natives of California and Mexico, and suitable for covering the fronts of houses, walls, and fences or trellis work (especially the spring-flowering kinds) in warm and sunny situations.

There are two distinct classes: one flowering in spring, the other from July to October. They like a sunny, sheltered position and well-drained ordinary soil and leaf-mould or peat. The late-flowering kinds are hardy deciduous shrubs, growing from 3 to 8 feet in height. The spring-flowering species are evergreens suitable for sheltered walls and the mild climate of the south and west of Great Britain, where they will form bushes from 12 to 20 feet, or more, in height.

**Culture** —Plant the deciduous bushes in March, and the evergreens in April or May. The spring-flowering species
OF SHRUBS AND TREES (see below), when grown on a wall, should be cut well back in May after flowering, laterals being pruned to within 2 or 3 eyes of the previous season's growths. While training the trees on the wall, only such main shoots as are required should be allowed to make much growth. These should be shortened back by one-third each year. Overcrowded growths soon become weak, so all unnecessary shoots should be cut out. Branches that are retained require ample light and must be securely fastened to the wall. The July to October-flowering plants (see below) bloom on the shoots of the current season and must, therefore, be pruned fairly hard each year in early spring. Plants of the evergreen species grown as bushes will be shorter in growth and will not need severe pruning, if any. To propagate, take cuttings, about 2 to 3 inches long, of healthy young shoots in July and August and insert in sandy soil in a frame or under a handlight.

Species.—EVERGREEN, SPRING-FLOWERING: *O. dentatus (Blue); C. rigidus (Purplish-blue); *C. thyrsiflorus (Pale Blue); and O. Veitchianus (Bright Blue). DECIDUOUS, LATE SUMMER AND AUTUMN-FLOWERING (HYBRIDS): *Ceres (Rose-pink); *Gloire de Versailles (Lavender); *Henri Defosse (Dark Blue); Indigo (Indigo Blue); Marie Simon (Rose) and Perle Rose (Rosy-carmine). Two recent hybrid introductions worthy of attention, both with blue flowers, are C. Burkwoodii (Evergreen, 4 to 6 feet or more) and C. Autumnnal Blue (2 to 2½ feet). They are crosses between the spring and late summer-flowering hybrids.

Cedar. See Cedrus.

Cedrela sinensis. Chinese Cedar. (Meliaceae.)
A strikingly handsome, pinnate, large-leaved deciduous tree of rapid growth. It is a native of China and is allied to the Ailanthus, to which it is very similar in appearance. This tree grows some 50 to 70 feet in height, and although chiefly grown on account of its attractive foliage, in favourable conditions, it bears long panicles of fragrant small white flowers, followed in due course by interesting winged seeds.

Culture.—The trees thrive in deep, well-drained loamy soils. Plant from November to February, during the first month for preference. No pruning is necessary, except to keep the trees shapely. Propagation is best carried out by
Above,
Pyracantha Rodgersiana
var. aurantiaca

left,
Pyracantha angustifolia
PLATE 18

Above,
Pyracantha atalantioides
right, Prunus spinosa
means of seeds sown when ripe in a frame, or by root cuttings, 2 or 3 inches long, inserted in early spring in a box of sandy soil in a frame or on a border outside.

Cedrus. Cedar. (Coniferae.)
Beautiful hardy evergreen trees of imposing dimensions, suitable only for large gardens. In their native habitat they attain a height of some 150 feet or more, with a trunk 25 to 40 feet in girth. Cedars are distinguished by their handsome and stately form and beautiful stiff, needle-like foliage.

Culture.—Plant in September or October and in late April, with good balls of soil holding the roots, and when between about 2 and 4 feet high, in a sunny position and in well-drained, deep loamy soil. No pruning is necessary. To propagate, sow seeds when ripe in a cold frame. Varieties may be increased by means of grafting under glass in early spring on to seedlings of the species, and by cuttings made of young shoots near the top of the trees, 4 to 5 inches long, in a close frame in autumn.

Species.—*C. atlantica* (Mount Atlas Cedar), found on the Atlas mountains in both Algeria and Morocco, 80 to 120 feet; *C. a. var. glauca* (Blue Cedar), 80 to 120 feet and with leaves of a beautiful blue or glaucous hue; *C. Deodara* (Deodar), 100 to 200 feet, or more, in height, a widely distributed tree on the western Himalayas; and *C. Libani* (Cedar of Lebanon), 70 to 120 feet, and coming from the Lebanon Mountains and Cicilian Taurus. These are all well-known species often used as specimens on a lawn or to form an avenue. A fourth Cedar, *C. brevifolia*, is found in Cyprus. The Mount Atlas Cedar is a better tree for planting near London than either the Deodar or the Cedar of Lebanon. *C. Deodara* is distinguished from *C. atlantica* and *C. Libani* by its pendent branchlets and its longer leaves. *C. Libani* is stiffer in appearance than *C. atlantica*, but small leafy branches are difficult to identify.

Celastrus. Staff Tree. (Celastraceae.)
The hardy species are deciduous woody climbing plants from China and Japan, which thrive in moist soils and in open or half-shaded positions. The plants are particularly attractive when allowed to ramble through and over the branches of trees and vigorous shrubs and over arbours and tall fences. They grow from 12 to 40 feet high and in June and July carry
clusters of small, greenish-white or creamy-white flowers of more interest than beauty. In autumn the large leaves change to a rich yellow, and amongst them are usually to be seen large clusters of golden-yellow fruits the size of peas, which when ripe open to show the scarlet-coated seeds.

Culture.—Plant from November to March. Cut out weak wood and shorten stray shoots in February. See that several plants of Celastrus of opposite sexes are grown together as they are mostly unisexual. Propagate by means of seeds sown in early spring in a frame, by cuttings, 3 to 4 inches long, made of the ends of the new shoots and inserted in July or August in a close frame, preferably with slight bottom heat, or layer young shoots in October.

Species—*C. articulatus*, from China and Japan, is an interesting, tall, scandent shrub running up to a height of 40 feet. *C. hypoleucus* is a Chinese species, 12 to 15 feet in height, with large leaves which are bluish-white beneath. *C. rugosus* (12 to 18 feet) is a vigorous climber from western China with orange-yellow fruits. *C. scandens*, the Staff Tree of North America, is equally as free in growth as *C. articulatus*.

*Celtis*. Nettle Tree, Hackberry or Sugar-berry (*Urticaceae*)

A genus of deciduous trees or shrubs, not all of which are hardy at Kew. They are allied to the Ulmus (Elm) family, but are smaller in stature. The flowers are only of botanical interest and are unisexual, both sexes being produced on the same tree. The Celtis are of no distinctive merit, but the following may find a place in tree collections.

*C. mississippiensis*, the Sugar-berry Tree, which grows from 50 to 80 feet in height and is a native of the southern United States of America, and *C. occidentalis*, the North American "Hackberry" (50 to 75 feet in height), with black berries or drupes in autumn.

Culture—All species will grow in almost any well-drained soil, especially if a certain amount of chalk is available. Propagation is best carried out by means of seeds sown when ripe in a frame, layering in autumn, or by grafting choice species on to *C. occidentalis* stock in spring. Plant from November to early March when the weather and soil conditions are favourable. Prune in winter only to keep shapely and to regulate the branches.
CEPHALANTHUS — CEPHALOTAXUS

Cephalanthus occidentalis. Button Bush (Rubiaceae)
A hardy deciduous shrub, a native of Canada and eastern North America. It grows best in a rather sunny position and a moist soil with a liberal supply of peat and leaf-mould in it. It grows from 4 to 8 feet in height, has glossy, ovate or oval foliage, and in August carries globular heads of creamy-white flowers.

Culture.—Plant in February and early in March. Cut out very weak wood and shorten the stronger shoots to half their length in February. Propagate by means of imported seeds sown when available in a cool greenhouse or frame, increase by means of cuttings, 2 to 3 inches long, made of the ends of the young shoots and inserted in a close frame or under a bell-glass in July or August, or layer in autumn.

Cephalotaxus. (Taxaceae)
A small family of evergreen shrubs and small trees, growing some 10 to 30 feet in height and having long and narrow linear foliage. They are allied to the Yews and are found only in eastern Asia. There are male and female flowers, as in the case of the Yew, and these are borne in clusters in the axils of the leaves during April and May, male and female flowers being nearly always borne on different bushes. The female produces an egg-shaped or oval, olive-like fruit 1 to 1½ inches long and green to brown in colour when ripe.

Culture.—These plants thrive in most soils, including calcareous ground. They are quite hardy and are particularly useful evergreens to plant in semi-shade under deciduous trees. Plant in late September and April. Prune in late April, only to shape the bushes. Propagation may be carried out by means of seeds sown when ripe in a frame, by cuttings, 3 to 4 inches long, made of short semi-mature side shoots, taken with a thin “heel” of old wood and inserted in sandy soil in a close frame, or under a bell-glass on a sheltered border outside in late summer or autumn, and by layering in autumn.

Species and Varieties.—C drupacea, from Japan, is a tree of spreading habit or a large shrub, reaching 10 to 30 feet or more in height; C. d var fastigiata (10 to 30 feet) is an upright form comparable to the Irish Yew; C. d var pedunculata (8 to 12 feet) is a spreading shrub; C. d. var sinensis, 291
introduced by Wilson from China, is a shrub up to 12 feet in height; and C. Fortunei is a small Chinese tree, 8 to 15 feet, and occasionally more, in height.

**Cerasus.** Cherry. See Prunus Cerasus

**Ceratostigma.** Leadwort. (*Plumbaginaceae.*)

Several species are interesting subjects for warm and sheltered gardens. *C. plumbaginoides* (Cobalt Blue) is sometimes named *Plumbago Larpenza.* The plant has bronze or bronzy-green foliage in autumn. It is a low-growing and tufted plant and is extremely useful for ledges in the rock garden, and when planted in groups along the front of a sheltered shrub border. The plant grows from 9 inches to 1 foot in height and flowers from July to October. It is a Chinese shrubby perennial. *C. Willmottianum,* which is a very attractive shrub, grows some 2 to 4 feet in height, or more against a south or west wall, and carries rich blue flowers from July to October. It is attractive either in the sunny sheltered herbaceous border or in the shrubbery. This Plumbago is one of the most distinct and interesting of recent introductions from China. In cold districts, give it the warmest and most sheltered and sunny position available and protect it with dry litter from frosts. In very cold winters all the growths may be killed to the ground, but new shoots will come up freely from the roots in spring.

**Culture.**—Plant in gritty loam and leaf-mould or peat in April or early in May. Cut over in April, removing any stems killed by frost, and any weak ends of shoots. Propagate by means of seeds sown under glass in early spring, or by division in April. Cuttings, 2 to 3 inches long, made of half-ripe non-flowering shoots may also be inserted in a close frame, preferably with slight bottom heat, in July or August.

**Cercidiphyllum.** (*Cercidiphyllaceae.*)

Attractive deciduous trees, which in this country do not grow to any great height, although in their native habitat they sometimes make huge specimens. The small unisexual flowers, borne on different trees, are rather insignificant, but the medium-sized, heart-shaped and Cercis-like foliage, carried on the slender, semi-pendulous branches, is attractive. The trees rarely exceed 25 feet in height here and in some localities merely assume large shrub proportions.
CERGIDIPHYLLUM — GERCOCARPUS

Culture — Two species, *C japonicum* (Japan) and *C. sinensis* (China), are in cultivation. They do well in any ordinary soil, especially if chalk is present in it. Plant in early November and early March. No pruning is required. Increase by means of imported seeds sown, as soon as available, in a cool greenhouse or frame, and by layering in autumn. Some years ago I saw hundreds of self-sown seedlings growing under a large tree in the Arnold Arboretum (U.S.A.).

Cercis. Judas Tree. (*Leguminosae*)

Interesting and attractive hardy deciduous shrubs of tall stature, or small trees which deserve a place in every garden of any size. They thrive in full sun and in moist, sandy and well-drained loam, but will grow in any ordinary cultivated garden soil. The Judas trees make excellent specimen shrubs or trees for a lawn or may be grown trained against a wall. They carry, on the old wood in May, clusters of flowers shaped like those of a pea, before the shiny, green, heart-shaped and pointed foliage makes its appearance.

Culture — These plants do not transplant well, except when small, but when it is necessary to move bushes 3 to 6 feet high, this should be done early in May. No pruning is required, except in the case of the wall trees, which flower best when spur-pruned in June after flowering. To propagate sow seeds when ripe in a frame, layer in autumn or graft on the roots of *C. siliquastrum* in early spring in a close frame.

Species — *C. canadensis* [Redbud of North America] (Pale Rose, 12 to 15 feet), *C. chinensis* (from China and Japan, Bright Pink, 8 to 12 feet); *C. siliquastrum* [The “Judas Tree”] (from the Mediterranean Region, Rosy-lilac, 15 to 25 feet); also *C. s. var album* (White, 15 to 25 feet).

Cercocarpus parvifolius. Mountain Mahogany. (*Rosaceae*)

An evergreen shrub, some 8 to 12 feet high and a native of western North America. It bears small flowers of no distinctive beauty in May, followed in a sunny season by small, silky, oat-like fruits.

Culture.—The soil for these shrubs should be well-drained ordinary garden ground, with a little leaf-mould or peat added when the shrub is planted. Plant in April or early May. No pruning is required. Propagate by means of seeds sown...
when ripe in a frame, or by cuttings made of the short semi-
ripe side shoots with a thin heel of old wood and inserted in a
close frame soon after midsummer.

Chañomeles. See Cydonia.
Chamæcerasus. See Lonicera.
Chamæcistus. See Loiseleuria procumbens.
ChamæcyParis (White Cedar) See Cupressus.
Chamædaphne. See Cassandra calycalata.
Chamærops. See Trachycarpus excelsus.

Cherry. See Prunus

Chestnut. See Æsculus (Horse Chestnut), Castanea (Sweet
or Spanish Chestnut)

Chile Pine or Monkey Puzzle. See Araucaria

*Chimonanthus fragrans (syn Calycanthus præcox)

Winter Sweet (Calycanthaceae)

A winter-blooming hardy deciduous shrub, a native of China
and having a most delightful fragrance. It likes a sunny and
sheltered position, as at the base of a south wall, and a deep
and moist sandy loam, with leaf-mould and peat, if available,
added. It bears pale yellow, bell-shaped flowers, stained
purple in the centres, on the leafless branches from December
to March. The bushes reach a height of from 6 to 8 feet, or
more on walls. The lanceolate foliage, when it appears
following the flowers, is a rich green

Culture—Plant in November or March, and when grown
as a climber, cut back side shoots to within two or three
"eyes" of the main branches after flowering. This will
encourage new shoots to carry bloom the following winter,
as the flowers are borne on the wood made in the previous
season. Plants grown as bushes merely require a little
thinning and perhaps trimming to keep them in shape. Propa-
gate by means of layering in autumn, or seeds sown when ripe
in a cool greenhouse or frame.

C. fragrans grandiflorus (10 to 15 ft) has more showy
yellow blossoms, but they are not quite so fragrant as those
of the type.

Chiogenes serpyllifolia. (Vaccinaceæ)
This is the Creeping Snowberry of North America. It is a
trailing evergreen shrub with white flowers in spring, followed
by small white fruits.
CHIOGENES — CINNAMOMUM

Culture — Increase by means of division in October or late April, and by seeds sown when ripe in a frame. Plant in October or April in a damp, peaty soil in a rock garden pocket. No pruning is required.

Chionanthus. Fringe Tree. (Oleaceae)
These handsome hardy deciduous shrubs or small trees like a sunny position and a well-drained moist loam. They grow up to some 10 to 12 feet in height, rarely more, in cultivation and in June and July carry a profusion of panicle-like inflorescences of snowy-white flowers, each with 4 or 5 fringe-like petals.

Culture — Plant from November to March. Trim to shape after flowering, only if required. Propagate by means of layering in September, or insert cuttings 2 to 3 inches long made of half-ripe shoots in a close frame during July and August. *C. virginica* is probably best raised from seeds obtained from abroad and sown as soon as available in a frame. *C. retusa* may be grafted on to the seedlings, or layered.

Species — *C. retusa*, a native of China, and *C. virginica*, from the eastern United States of America.

Choisya ternata. Mexican Orange Blossom. (Rutaceae)
A very handsome semi-hardy evergreen shrub, a native of Mexico and which likes a position against a wall affording protection from north and east winds or a sunny, sheltered site and sandy loam. It grows from 6 to 9 feet, or more, high, and from May to September, and in mild winters much later, bears clusters of fragrant white, orange-blossom-like flowers with gold stamens, set off by the handsome compound (usually trifoliate) foliage.

Culture — Plant in April or September. In April cut out old wood or trim to keep within bounds if required. Propagate by means of cuttings of semi-mature wood, 3 to 4 inches in length, made of the ends of the shoots and inserted in sandy soil in gentle heat, or in a close cold frame, at any time from May to September, but preferably in July or August.

Christmas Tree. See Picea excelsa
Christ’s Thorn. See Palmaris Spina-Christi.

Cinnamomum camphora. Camphor Tree
A beautiful half-hardy evergreen shrub with attractive foliage. It is a native of China and Japan, and in mild
localities in the southern and western counties it may be grown outdoors in very sheltered situations. It reaches a height of from 10 to 12 feet, or more when grown against a wall

_Culture_—Plant outside in May in light, well-drained loam with leaf-mould and, if available, peat added. No pruning is required unless it is necessary to shape the bush, towards the end of April is the best time for this. Increase by cuttings, 2 to 4 inches long, made of the semi-mature ends of the shoots and inserted in sand or sandy soil in a close frame with slight bottom heat in July.

_Cissus._ See _Vitis._

_Cistus._ Rock Rose. (_Cistaceae_) Beautiful evergreen shrubs allied to the Helianthemums. They are natives of the Mediterranean region and should be planted in warm, sheltered sites in full sun. The bushes produce flowers very freely during June and July. Each flower, unfortunately, seldom lasts more than a day, but a succession of blooms keeps the bushes gay during the whole of June and July. They are commonly known as Rock Roses, from the fact that the flower resembles a large single rose. These plants make admirable subjects for large rock gardens and for the front of sunny shrub borders.

_Culture_—These shrubs love the sun and do well in dry, well-drained, sandy loam or in ordinary soil to which ample lime-rubble has been added. Plant in April. Cistus do not make new growth freely when hard pruned. It is thus desirable to form sturdy bushes by stopping the ends of the shoots freely when the plants are young. After flowering, remove worn-out wood. Propagate by means of seeds sown in spring in a cool greenhouse or frame, or take cuttings from 2 to 3 inches long made of half-matured wood in August and insert in a close cold frame. Grow the young plants in pots till ready for planting out, as they resent having their roots disturbed. When once established, transplanting is seldom satisfactory, and it is preferable to start again with young plants.

_Species and Hybrids—_C. corbariensis_ (White, Yellow Centre, 2 to 4 feet); *C. cyprinus_ (White, Blotched Blood-red, 5 to 8 feet); _C. ladaniferus_ (White, Blood-red Blotch, 4 to
OISTUS — CLEMATIS

5 feet); C laurifolius (White, 5 to 8 feet); * C. Loreti (White, Crimson Blotch, 2 to 4 feet); C populifolius (White, Yellow Centre, 5 to 7 feet) and C purpureus (Reddish-purple, Blotched Crimson, 3 to 4 feet).

Citrus. See *Ægle sepiana.

Cladostamnus pyroloeflorus. (Ericaceæ)
A deciduous shrub from 2 to 3 feet in height, occasionally more. It is a native of British Columbia and allied to the Ledums. The flowers are creamy-pink in the centre and open in June.

Culture.—Plant in November or early in March in peaty soil, or in well-drained, sandy loam and leaf-mould. No pruning is required. Increase by means of layering in autumn, by cuttings, 1½ to 2 inches long, made of semi-mature shoots and placed in a handlight or under a bell-glass in late summer, or by seed sown, when available, in a cool greenhouse or frame.

Cladrastis. (Leguminosæ)
A small genus consisting of four species of hardy ornamental deciduous trees allied to the Sophoras. They grow from 30 to 80 feet in height, and in summer produce a mass of small flowers like those of the pea.

C tinctoria [syn. Virgilsa lutea] (Yellow Wood) is a native of North America and has attractive compound foliage with seven to nine leaflets, which turns a rich yellow in autumn. When well-established, this tree carries in June panicles of white flowers. C. sinensis, from China, is somewhat similar, but it is a month later in blooming and there are more and smaller flowers in the panicle. C Wilsonii (50 to 75 feet), from central China, and C. platycarpa (40 to 60 feet), from Japan, are also in cultivation.

Culture.—These trees like a sunny, warm position and good loam. Plant in November. No pruning is necessary except to shape the trees. Propagation is usually carried out by means of imported seeds sown on arrival in a frame. The eastern species are grafted on seedling trees of C. tinctoria under glass in spring.

Clematis. (Ranunculaceæ)
With the possible exception of the rose, no genus of climbing plants can compare in variety and beauty with the Clematis. No one who has seen our common native Clematis, the
Traveller's Joy, *C. Vitalba*, with its graceful festoons decorating the copses and hedgerows, needs to be told of the grace and beauty of these plants when given freedom for development and natural growth. Nearly every colour is represented in the flowers of this beautiful race, whilst by the careful selection of species, varieties and hybrids, Clematises may be had in flower from quite early spring to late autumn. They are, for the most part easy to grow, though some knowledge of their several requirements in the matter of pruning is necessary.

The soil, as with most other climbing plants, should be deeply dug and generously enriched some little time previously to planting. Most Clematises do best in a soil containing chalk, and should the soil not be naturally calcareous, it will be wise to add chalk or lime liberally when preparing the ground for planting. The soil also should be rich in humus and leaf-mould should be freely incorporated. During the primary preparation of the soil, thoroughly rotted farmyard manure, with a preponderance of cow manure for preference, should be generously incorporated, and in subsequent years further top-dressings may be added, especially during dry summers.

Whilst the Clematis needs sunlight for its healthy growth, it is desirable to shade the lower parts of the stems by means of other plants. If one observes the manner in which Clematises grow in their native habitats, it will be found that only the upper parts are free and exposed to full sunlight. This condition should be imitated in garden cultivation.

As has been said, there are many species with very varying habits and yielding flowers widely differing in size and colour. But it is not only on the species that the gardener need rely, valuable though nearly all these are. There are in addition, hybrids almost innumerable, many of them of the greatest beauty.

*Species, Varieties and Hybrids*—The species, varieties and hybrids are very numerous. Flowering in spring and early summer, we have *C. calycina*, with dark evergreen leaves and purple-spotted, creamy-yellow flowers in February; *C. montana*, bearing white anemone-like flowers, and its variety; *C. m. rubra*, with purplish stems and rosy-red flowers in
CLEMATIS

May and June Also blooming in May and June we have the *patens* or *azurœ* type and its varieties; *Miss Bateman*, white, with dark brown stamens; *Lasurstern*, deep purple-blue; *Lady Londesborough*, silver-grey, *Mrs. George Jackman*, satiny-white, cream bar; and *The Queen*, delicate lavender. In June and July, we have varieties of the *florida* Type, with double flowers; *Duchess of Edinburgh*, fragrant white; *John Gould Veitch*, lavender, *Belle of Woking*, silvery-grey; and *Lucie Lemome*, white *C. Fargesii*, with pure white flowers in summer, comes from China and belongs also to the *C. montana* group. From July to October we have the hybrids: *C. Jackmannii*, whose violet or purple flowers are, perhaps, the best known of all Clematis blooms, with its darker flowered variety, *C. J. superba*; also *C. J. alba*, white; *Comtesse de Bouchaud*, satiny-rose; *Gipsy Queen*, a beautiful dark velvety-purple; *Snow-white Jackmannii*, a free-flowering pure white; *Jackmannii rubra*, deep velvety-red; *Madame Edouard André*, very bright red; *C. viticella* Type, with its deep purple-flowered variety, *grandiflora*; *alba luxurians*, white; *rubra grandiflora*, a large-flowered red, *ascotiensis*, azure-blue, *Kermesina*, bright red, *Villette de Lyon*, Carmine-red; the *lanuginosa* Type, *alba magna*, pure white, *Beauty of Worcester*, violet, with white stamens, *Fairy Queen*, pale-flesh colour, with pink stripes, *Henryi*, creamy-white; *Lady Caroline Nevill*, lavender, with mauve markings; *Lady Northcliffe*, deep lavender; *Marcel Moser*, mauve-violet, red bar; and *Nelie Moser*, light mauve, red bar. From August to October also bloom *C. Flammula*, a very fragrant and very hardy white-flowering kind, *C. F. var. rubro-marginata*, white, edged with reddish-violet, and fragrant; *C. coccinea* (syn *C. texensis*), brilliant scarlet, with its hybrids; *Countess of Onslow*, violet-purple, with a scarlet bar; *Duchess of Albany*, with a curiously cup-shaped, brilliant rose-coloured flower, shading off to lilac at the edges, and *Grace Darling*, rosy-carmine. *C. Jomuniana*, a hybrid (*C. Vitalba* x *C. Davidiana*), is very free-growing and useful to cover old tree-butts, and bears white, lilac-tinted flowers in autumn *C. orientalis*, a deciduous climber from Asia, has rich yellow lantern-like flowers in August and September. Very similar also is *C. tangutica*, from western China and
Mongolia, with golden-yellow flowers \( C. \) \textit{Rehderiana}, with pinnate leaves, and \( C. \) \textit{Vestchiana}, with bipinnate leaves, are very free-growing Chinese species introduced by Wilson, and in autumn carry primrose-yellow flowers that have a delicious cowslip-scent and are very freely-produced.

Of these several groups, \( C. \) \textit{Flammula} and \( C. \) \textit{Viticella} with, of course, our native \( C. \) \textit{Vitalba}, are the hardest and most vigorous. The \textit{Jackmannii} group, with its larger flowers and free-blooming habits, together with \( C. \) \textit{montana} and its varieties, are great favourites for house walls and verandahs. The \textit{lanuginosa} varieties, also, are hardy and bear flowers often of enormous size. The \textit{patens} and \textit{florida} varieties or hybrids, on the other hand, do best with some little shelter, or with the protection of a west or north wall or fence.

\textit{Culture}—Clematises may be propagated in several ways. Commercially, they are most commonly multiplied by grafting on the roots or seedling plants of some free-growing species, such as \( C. \) \textit{Vitalba}; the grafting being effected early in the year, and the young plants brought on in moderate heat. For this purpose, the roots are lifted, cut up into parts, split open, and young shoots of the varieties to be propagated placed in the clefts and tied in with raffia. A simpler method for those who wish to propagate a comparatively small number of plants, and who do not mind waiting a year or so for results, is by means of layers, pegged down and allowed to root in the open ground. Cuttings also can be taken in summer and will readily root if inserted in a light soil and kept in a warm frame. Unlike the great majority of shrubby plants, the \textit{Clematis} root much better from the internodes than when the cuttings are made with a heel or node at the base. Clematises can also be raised from seeds sown in light soil in spring in moderate heat or in a cold frame, the seedlings being pricked out into small pots when large enough to handle. Clematises do not transplant readily and should be grown in pots until ready for planting in their permanent positions. The best times to plant them out are from September to November and from February to May, plants coming from heat being planted out in the last-named month.

\textit{Pruning}—In the case of the \textit{patens}, \textit{florida} and \textit{lanuginosa} groups, which flower on the old wood, little pruning is
required, but superfluous, weak and straggling shoots may with advantage be removed in February. *C. montana* and varieties flower on the old wood and should have the old flowering stems on which there are no young shoots cut off in June as soon as blooming ceases. *C. Viticella* and *C. Jackmann*, on the other hand, bear their flowers on the young wood and may be cut back to within six inches of the old wood in February. The late-summer and autumn-flowering species, which include *C. Rehdertana* and *C. tangutica*, flower on the new growths of the year and benefit by the removal of most of the previous year's wood in February.

**Clematoclethra integrifolia.** (*Dilleniaceae.*)
An interesting and uncommon deciduous scandent climbing shrub, a native of China with white Clethra-like flowers in July, and a black berry-like fruit with thin flesh. It is an interesting wall or fence climber requiring a sheltered position, except in the south and west of the British Isles.

*Culture*—The soil should be rather light, a well-drained loam with leaf-mould and peat added, if available. Plant in early November or early March. Prune as required, only to keep the shrub within bounds. Propagate by layering in autumn, or by cuttings, 2 to 4 inches long, made of the ends of the semi-mature growths, and inserted under a bell-glass or handlight in late summer.

**Clerodendron.** (*Verbenaceae*)
Beautiful deciduous flowering shrubs or small trees that bloom from July to September.

*Culture.*—They thrive in a sunny, sheltered position and in well-drained rich loam. Plant in November or early March, and trim out dead and weak wood in spring. Propagate by means of seeds sown in early spring in a frame, by suckers which can be dug up round the parent-plants early in November or in early spring, or by cuttings made of semi-ripe shoots, 3 or 4 inches long, inserted in a close frame in July or August, and by root cuttings 3 to 4 inches long inserted in a close frame in early spring.

*Species.*—*O. trichotomum* is a good hardy species, a native of China and Japan, which grows to a height of from 10 to 20 feet. It bears fragrant white flowers with a red calyx, followed by blue-black berries in autumn. *O. Fargesii,*
Chinese species, is very similar, but has a green calyx turning rosy-red and turquoise-blue fruits. *C. fortunei*, also from China, and with large heart-shaped foliage, is not so hardy, the growths being often killed to the ground at Kew, so that it forms a woody stool from which vigorous annual shoots grow up in spring. These are crowned with large, rounded, terminal corymbs of purple-red blooms from August to October. It grows some 3 to 6 feet in height in one season, and is a good plant for a south border.

**Clethra. (Ericaceae)**

Choice hardy and half-hardy deciduous and evergreen flowering shrubs. The hardy species grow to a height of 5 to 8 feet and carry fragrant white Lily-of-the-Valley-like flowers in racemes borne on the current year’s growth from July to September. *C. alnifolia* (Sweet Pepper Bush), a native of the eastern regions of North America; *C. canescens*, and *C. tomentosa*, both from China and Japan; are all deciduous, and have longish obovate foliage. They are hardy and may be grown in the open. *C. arborea* (the Lily-of-the-Valley Tree), from Madeira, is, however, a half-hardy evergreen, and a much taller subject, which with shelter will thrive in a warm, sunny position in the south and west of the British Isles, but will not stand on the most sheltered wall at Kew.

**Culture**—A compost of rich, moist, lime-free loam and leaf-mould or peat suits them. Plant in March. No definite pruning is required, but thinning by cutting out a few of the oldest stems to the ground is often worth while, and this should be done, when necessary, during the winter while the bushes are leafless. Propagate by means of cuttings, about 3 inches long, made of semi-matured side shoots taken with a “heel” and inserted in gentle heat in a frame in late summer. Increase the Madeira species by layering in autumn, and the hardy species by division of clumps in March. Seeds may also be sown in spring in a cool greenhouse or frame.

**Cleyera Fortunei. (Ternstroemiaceae)**

An evergreen shrub from Japan with attractive variegated foliage that has also been called *Eurya latifolia variegata*. This shrub reaches a height of 4 to 6 feet, or more, and under favourable conditions produces pale-yellow flowers in the axils of the leaves in August and September. It needs the
CLEYERA — COLLETTIA

protection of a warm south wall, except in the milder districts of the south and west of the British Isles, where in the open border it forms an attractive bush.

_Culture_ — Plant in late April or May in well-drained, loamy soil. Prune in late April if thinning or shaping is desirable. Propagation may be carried out by means of cuttings, 3 to 4 inches long, made of the semi-mature ends of the young shoots, and inserted in a frame or under a handlight in August or September.

_Cneorum tricoccum._ (Simarubaceae)
An evergreen shrub, 1 to 2 feet high, with alternate greyish-green leaves and small yellow flowers in early summer, followed by brownish-red fruits. It is a native of the Mediterranean region.

_Culture_ — Plant in late April on a sunny sheltered rockery or at the foot of a south wall, in light, well-drained loamy soil. No pruning is required. Increase by means of cuttings, 2 inches long, made of the ends of semi-mature shoots during August or September and inserted in sandy soil under a handlight or in a cold frame.

_Cocculus trilobus._ (Menispermaceae)
A rather rare and curious hardy deciduous or semi-evergreen climbing shrub, a native of China, Japan, etc. The bright foliage is extremely variable as regards size and the shape of the leaves. Clusters of small, insignificant, unisexual flowers are produced in August and are followed in autumn by handsome purple-black fruits.

_Culture._—These plants thrive in ordinary cultivated ground and in a sunny position. Plant early in March. No pruning is needed, except to shorten long ends and to trim about February to keep the bushes within bounds. Increase by means of seeds sown early in the year in a frame, by division or offsets early in March, and by means of pieces of root placed in the fibre of a propagating case in early spring or potted in sandy soil and placed in a close frame.

_Colletia._ (Rhamnaceae)
Curious and almost leafless hardy shrubs with strikingly grotesque polymorphic stems or leaf-like formations. They are remarkable for their formidable spiny appearance, and planted in sandy loam, reach a height of from 8 to 9 feet or more.
ABC OF SHRUBS AND TREES

Culture.—Plant in April or May in sunny sheltered position. No pruning is needed, except to balance or to shape the specimens. This is best done in spring. Increase by means of cuttings, 3 inches long, made of the short side shoots taken with a thin "heel" of old wood at the base, and inserted in sandy soil in August or September in a close frame.

Species.—C. armata, from Chile, has in autumn urn-shaped, waxy-white flowers often tinted with pink; C. cruciata, from Uruguay, bears little waxy-white flowers in September; and C. infausta, a native of Chile, carries white flowers in autumn.

Colutea. Bladder Senna. (Leguminosæ.)
Pretty hardy deciduous shrubs of rapid growth, thriving in almost any position and in light soils. They have pinnate leaves and bear flowers like those of the pea from June to August; these are followed by bladder-like seed pods in autumn.

Culture.—Plant from November to March. Cut the previous year's growths well back about February. To propagate, take cuttings in August or September, 3 to 4 inches long, made of semi-ripe shoots of the current year, and insert them in a close frame, or sow seeds when ripe in a frame.

Species.—*C. arborescens (Yellow, 10 feet or more); C. media [arborescens x orientalis] (Reddish-brown, 8 to 10 feet); and C. orientalis (syn. C. cruenta) (Red and Yellow, with attractive Greyish-white Foliage, 6 feet).

Comptonia asplenifolia. See Myrica.

Convolvulus Cneorum. (Convolvulaceæ.)
An evergreen shrub, a native of southern Europe. It thrives at Kew against a dry, sunny south wall. In the south and west of the British Isles it is an interesting border-shrub, growing to 3 feet or more high and carrying attractive silky foliage. The white, pink-tinted flowers are freely borne from May to August.

Culture.—Plant in a well-drained, gritty loam in April or May. No pruning is required. Increase is best carried out by means of cuttings, 2 to 3 inches long, made of the semi-ripe ends of the young shoots and inserted in a close frame during July and August. May also be propagated by layering in autumn.
PLATE 19
Magnolia stellata
Left, *Rhododendron falconeri*,
below, *R. argyrophyllum*
Coprosma. (Rubiaceae.)
A genus of semi-hardy berry-bearing evergreen shrubs or small trees, natives of Australia and New Zealand. C. acerosa, a small-leaved dwarf-growing species, some 2 to 6 inches in height, which is fairly hardy, produces small insignificant unisexual flowers in early summer, followed by translucent blue berries, and is useful in the rock garden. C. lucida, 4 to 6 feet or more in height, with glossy ovate leaves and large orange-red berries is not so hardy and needs a warm, sheltered site in the mild localities of the British Isles. C. Petriei, with marble-like bluish-purple berries, is a creeping form, 2 to 4 inches in height and suitable for a warm, sheltered site in the rock garden.

Culture.—Plant early in May in a light sandy soil, adding a little leaf-mould and peat. No pruning is required, but trim in April if it is necessary to keep the plants shapely. Increase by means of seeds sown in sandy soil in a frame in early spring, by cuttings, 2 to 3 inches long, made of the ends of semi-mature young shoots and inserted under a bell-glass in August, and by layering in autumn.

Coprosmanthus. See Smilax.
Corchorus. See Kerria japonica.
Cordyline. Dracaena, Dragon Plant, Club Palm. (Liliaceae.) Handsome and tall foliage plants, of which at least two species and several varieties, natives of New Zealand, are hardy in the south and west of the British Isles. They are particularly useful for sub-tropical gardening and look well in the wild and woodland garden.

Species.—C. australis (10 to 40 feet, with long narrow green leaves); C. a. var. lentiginosa (10 to 25 feet, purple-leaved); C. a. var. Doucetti (10 to 25 feet, variegated leaves) and C. indivisa (10 to 20 feet), with broader and stiffer leaves.

Culture.—Plant out in late April or May in a moderately dry, sheltered and sunny position and in good porous loam, with leaf-mould added, also peat if available. No pruning is required. Propagate by means of seeds sown 1 inch deep in a heated greenhouse in March, by means of the fleshy toes formed at the base of the stem cut off and placed in fibre in spring in a close frame, by cuttings, made of the growths which develop on the stem when the top is cut off after “ringing,”
inserted in spring in a close frame with bottom heat, or by "ringing" in spring. This is done by cutting off a strip of the bark just below the leaves to check the flow of sap and then binding the stem with moss which is kept damp and enclosed in a split pot to encourage the development of roots.

Corema. Crowberry. (Empetraceae)
Small evergreen heath-like shrubs requiring peat, or lime-free soils, and that carry male and female flowers, usually on separate plants

Species — C. album (1 to 2 feet high) has inconspicuous flowers; the female carries clusters of white berries. This shrub is a native of Portugal and Spain. C. Conradi (9 to 18 inches high) is of trailing and tufted habit and has small brownish berries. It is a native of the eastern regions of North America.

Culture.—Increase by seeds sown in spring in a frame or cool greenhouse, by cuttings, 1 to 2 inches long, made of the ends of the semi-mature growths and inserted under a bell-glass in August, and by layering in autumn. Plant in October or towards the end of April. No pruning is required.

Coriaria. (Coriariaceae)
A small genus of semi-hardy berry-bearing deciduous shrubs with attractive pale-green, frond-like stems and foliage

Species.—C. japonica (1\frac{1}{2} to 2 feet), with red berries that later turn to black, is a native of Japan and is one of the best-known species. C. terminalis (3 to 4 feet), from the Himalayas and western China, and carrying berries that are black when ripe, is one of the most ornamental in fruit, there is a variety of the latter, C. t. xanthocarpa (2 to 4 feet), with attractive translucent yellow berries

Culture.—These shrubs require a certain amount of protection and are best grown against a warm sunny wall or fence, except in the milder southern localities of the British Isles. A fairly rich loam is best. Plant early in March. Cut out very weak wood down to the ground and take off the ends of growths killed by frosts in March. Propagation may be carried out preferably by means of seeds sown in early spring in a cool greenhouse or frame, or by cuttings of semi-mature shoots, about 3 inches long, inserted in sandy soil in a frame in July.
CORNUS

Cornel. See Cornus.

Cornus. Cornel, Dogwood and Cornelian Cherry. (Cornaceae).
Free-growing deciduous shrubs and trees with beautiful green,
silvery-grey or golden leaves, and, in many cases, bright-red
bark which makes them very effective shrubs in winter
*C. alba subirica variegata*, which grows about 8 or 9 feet in
height, is one of the most striking in this connection

Culture — Plant from November to early March in ordinary
soil. Sow seeds when ripe, under glass, or sow in October
and plunge the pots outdoors during the winter, bringing
them under glass in spring. Propagation can also be effected
by means of layering in October, or by suckers removed in
early November. *C. alba*, of western Asia, and varieties may
be increased by means of cuttings, about 9 inches long, in-
serted in the open in late autumn.

*C. Mas*, the Cornelian Cherry, a shrub or small tree which
reaches a height of from 10 to 25 feet and produces a mass
of small yellow flowers in February, followed by large red
berries, differs from most of the other species in that it thrives
quite well in a dry soil. There are several beautiful varieties
of this, for example. *C. M. var. aurea elegantissima* and
*C. M. var. variegata*, both with ornamental foliage. Thin-out
when the branches are overcrowded, removing old or thin
weak shoots. *C. officinalis* is a closely allied species from
Japan and Korea.

Species and Varieties — Other good species and varieties are:
*C. alba subirica variegata* (Silvery-white Variegated Leaves,
6-8 feet); *C. alba var. Spectabilis* (Golden Foliage, 5 to 8 feet),
*C. florida* (Flowering Dogwood, 15 to 35 feet, with good foliage
tints in autumn) is a very beautiful tree in the eastern United
States of America, and needs planting in full sun to ripen the
wood in autumn, and *C. florida rubra* (Rosy-pink instead of
White Floral Bracts, 10 to 20 feet).

*C. Kousa* (White Floral Bracts, 10 to 20 feet), a beautiful
large bush or small tree, is a native of Japan and Korea; *C. K
var chinesis* (Large White Floral Bracts, 8 to 15 feet) is one
of the most beautiful Chinese shrubs introduced by the late
Dr. E. H. Wilson; and *C. Nuttallii* (Tree Cornel), the most
beautiful of all the Cornels, which makes a tree 50 to 100 feet
high in western North America. The large creamy-white
bracts surrounding the head of flowers have the appearance of a bloom from 3½ to 5 inches across. All these flower in May.

**Cornus capitata.** syn. *Benthamia fragifera* (Nepaul Strawberry Tree)

A native of northern India and China, this is an ornamental half-hardy deciduous, or partially evergreen, shrub which usually grows to a height of 15 to 20 feet, although in favourable situations it reaches a considerably greater height. The flowers are inconspicuous; the beauty of the inflorescence is in the sulphur-yellow bracts which are at their brightest in June and July. They are succeeded by reddish-yellow to crimson strawberry-like edible fruit in October and November.

**Culture.**—This shrub may be grown in the open, in warm, sheltered situations in south Devon, Cornwall and the Scilly Isles, but is scarcely suitable for general culture, unless grown against a south wall and in places near the south coast. Plant in October or April in rich, moist loam. No pruning is required, but in early winter thin very crowded branches and shorten long twigs to shape bushes. Propagate by means of seeds sown when ripe in a cool greenhouse or frame, or by layering in September or October.

**Corokia.** (Cornaceae)

Pretty evergreen flowering shrubs on the borderland of hardiness at Kew. They are natives of New Zealand, grow from 3 to 8 feet in height, and more, against a wall and bear fragrant yellow flowers in May. These are followed by yellow, orange or red berries. These shrubs thrive in a warm, sunny position against a wall, except in the south and west of the British Isles, where wall protection is not necessary. Ordinary well-drained soil suits them well.

**Culture.**—Plant in April or May, and prune only to keep the shrubs in shape. To propagate, insert half-matured side shoots taken with a thin "heel" of old wood and cover with a bell-glass in August, or seeds may be sown in spring in a cool greenhouse or frame.

**Species.**—*C. buddleoides* has long grass-like, linear leaves. *C. Cotoneaster* is the most attractive species and has wiry brachlets, small leaves and bright yellow flowers. It is represented by a beautiful bush on a south wall at Kew.
COROKIA — CORREA

C. macrocarpa is a large-leaved shrub, the foliage being green above, and having a silvery-white tomentum beneath. C. vurgata is free-flowing and attractive when in fruit.

Coronilla. Crown Vetch or Scorpion Senna (*Leguminosae*)

Showy free-flowing evergreen and deciduous shrubs with pinnate foliage and pretty yellow flowers, shaped like those of the pea, in spring and summer these are dispersed in little tufts over the shrubs, like coronets. Being natives of a sunnier climate than is general in the British Isles, the plants need the warmest and sunniest positions.

Culture — Plant the deciduous species in March and the evergreen in late April in well-drained ordinary soil or in sandy loam. Prune the deciduous species into shape and cut-out old and dead wood in February, and in the case of the evergreen, C. glauca, shorten the long shoots and thin, if necessary, after flowering. To propagate, sow seeds in a frame when ripe, or take cuttings of young shoots, 2 to 3 inches long, with a “heel” in August and place in a close frame.

Species — C. emeroides is a deciduous shrub 3 to 5 feet in height with pinnate leaves composed of five or seven leaflets and has yellow flowers from the end of May to August. It is a native of south-eastern Europe. C. Emerus, a native of central and southern Europe, is deciduous, has pinnate leaves composed of seven or nine leaflets and has yellow flowers from May to September. It reaches a height of from 6 to 8 feet. C. glauca is evergreen, has yellow flowers from April to June, and reaches a height of from 4 to 6 feet, or more, against a wall. It is a native of southern Europe and is on the borderland of hardiness at Kew, but grows well in a sheltered position near the sea in the south and west.

Correa. (*Rutaceae*)

Half-hardy evergreen shrubs, natives of Australia. C. alba, which grows from 4 to 6 feet in height and carries white tubular flowers from April to July, is the best-known and hardest species. It can be grown out of doors only against a wall in warm, sheltered situations and in the mildest districts.

Culture — Plant in April or May in sandy loam with peat and leaf-mould added. No pruning is required. Increase by cuttings made of the ends of the partially-ripe shoots,
ABO OF SHRUBS AND TREES

2 to 2½ inches long, and inserted under a bell glass after midsummer, and by layering in autumn

Corylopsis. (Hamamélidaceæ) Hardy deciduous free-flowering shrubs, natives of north-eastern Asia and generally growing to a height of from 3 to 6 feet, but one or two ultimately become large bushes or small trees. The fragrant yellow or primrose-yellow flowers are freely borne in pendant clusters on the leafless branches in February, March and April. These plants, as they flower early, should be given sunny, sheltered positions, preferably, in cold districts, against a wall facing south or west, and in well-drained ordinary soil.

C. pauciflora, a dwarf shrub 3 to 4 feet in height and of spreading habit, is a native of Japan. It has larger flowers than most of the Corylopsis; these are primrose-yellow in colour and open in March or in late February when the shrubs are planted at the foot of a warm wall. C. spicata is a native of Japan. It grows some 5 to 6 feet in height and has heart-shaped leaves, broad at the base and tapering to the apex. The drooping clusters of yellow flowers are produced in February or March on the previous year's shoots and smell like cowslips. This is undoubtedly one of the most beautiful and useful species. C. Vestchiana is a bushy shrub, 5 to 6 feet high, and carries primrose-yellow flowers in April. It is a native of China. C. Willmottiae is also from China, but runs up to from 6 to 10 feet under favourable conditions. The fragrant, greenish-yellow flowers are freely borne in April.

Culture—Plant in late October or November. Little pruning is required with shrubs grown in the open. When it is necessary to cut out old and weak wood or to trim to shape, it should be done after flowering. Shrubs planted against walls and fences should be pruned and thinned after flowering to suit their positions. Propagate by means of layering in the autumn, or take cuttings, 2 to 3 inches long, made of the side shoots with a “heel” in July or August, and inserted in sandy soil in a close frame.

Corylus. Filbert, Hazel Nut (Corylaceæ) Best known as bearing edible nuts, but several trees and shrubs are valuable subjects for ornamental gardening. They have broad, heart-shaped, saw-edged leaves, broad at the

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CORYLUS — COTONEASTER

base and tapering to a point at the apex. The golden-yellow male flowers, borne on drooping catkins or tassels, are very attractive in January and February.

There are two rather distinct groups, one naturally forming a trunk, the other consists of shrubs which with attention to pruning will form small trees. The best-known tree is *C. Colurna* (Constantinople Nut), a tree 60 to 80 feet high. *C. Jacquemontii* (60 to 80 feet high), *C. chinensis* (60 to 100 feet high) and *C. tibetica* are also trees. *C. maxima atropurpurea* (Purple-leaved Nut) and *C. Avellana aurea* (Yellow-leaved Nut) are useful shrubs, from 8 to 12 feet in height, and provide colour in the borders and pleasure grounds.

*Culture* — The Corylus like a well-drained, deeply-dug soil and a situation sheltered from east and north-east winds. They thrive on chalk soils. Plant from November onwards. Prune or thin small crowded branches of the trees, when necessary, in February or March. The shrubby, coloured-leaved varieties are more attractive and highly-coloured when the stems are pruned fairly hard each year in March. In certain positions it is worth while cutting the larger branches down to the ground annually. Propagate by means of seeds (nuts) sown in pots in October, the pots being plunged to the rims outdoors during the winter and then removed to a cool greenhouse or frame. Suckers may be removed with roots attached in early spring and form an easy method of increase. The plants may also be increased by means of layering two-year-old wood in autumn, or failing any other means, by grafting on to seedlings of *C. Avellana* in March.

*Cotoneaster.* (Rosaceae)

Hardy ornamental deciduous and evergreen shrubs or small trees, the majority of which are natives of northern Asia, especially China. All species bear small and often not conspicuous white or pink-tinted flowers followed by attractive red, blue-black, and very occasionally, yellow berries in autumn and winter. The species vary greatly in habit. One or two may be trained to form small trees, many kinds make erect bushes, while others, again, are prostrate and creeping in habit. The last-named class is valuable for the rock garden. The majority, however, are free-growing hardy bushes valuable for pleasure-ground planting and for the
shrubbery borders; a few are worthy of attention as specimen lawn shrubs. In the deciduous species, the autumn-tinted foliage is often showy. Several are attractive flowering bushes, the best being *C. multiflora, C. salicifolia and vars. floccosa and rugosa.

_Rock Garden Species and Varieties._—For the rock garden, the dwarf-growing *C. adpressa* (D) is tight and neat in habit and its leaves assume a deep red tint in autumn and make a fine set-off for the bright red berries. It grows from 1 to 1½ feet in height and makes an excellent subject even for a small rock garden. *C. congesta* (1 to 2 feet high) (E) is of neat habit, its leaves being slightly smaller than those of *C. microphylla* (see below). *C. Dammen* (syn. humifusa) (3 to 4 inches high) (E) has larger leaves and is a distinct prostrate species. *C. horizontalis* (D), with its shoots projecting horizontally from the main branches like the bones of a fish radiate from the backbone, is a good shrub for a wall, bank or rock garden. It grows some 2 to 3 feet in height, or more against a wall, and the pink-tinted white flowers, which appear in May, are followed by bright red berries in autumn. Another useful species for the rock garden is *C. microphylla* (E), which has small, oval, glossy-green leaves, grey on the undersides, white flowers and extra large berries. It grows from 2 to 3 feet in height and does well near the sea, in the shade and under the drip of trees. *O. m. var. thymifolia* (E) is of dwarf and prostrate habit, grows to a height of from 9 to 12 inches and bears pinkish-white flowers in April, followed by crimson berries in autumn.

_Taller Species and Varieties._—*C. bacillaris* (D) (12 to 18 feet, Black Fruits); *C. bullata* (D) (9 to 12 feet, Red Fruits); *C. buxifolia* (E) (Box-like Foliage, Red Fruits, a useful Hedge Shrub, 8 to 12 feet); *C. Franchetii* (E) (7 to 10 feet, Orange-scarlet Fruits); *C. frigida* (D) one of the most vigorous and beautiful species, which forms a bush or small tree up to 20 feet in height with largish ovate leaves and bearing white or pink-tinted flowers in spring, followed by large clusters of crimson berries in autumn (there is a yellow-fruited variety of this, _fructu-luteo_); *C. Harroviana* (E) (5 to 7 feet, Red Fruits); *C. Henryana* (E) (10 to 12 feet, Red Fruits); *C. monocephalos* (D) (8 to 12 feet, Jet Black Fruits), _C. multi-
COTONEASTER — CRATÆGO-MESPILUS

flora (D) (10 to 12 feet, Red Fruits); *C. rotundifolia (Semi-evergreen, Round Leaves, 5 to 8 feet, Red Fruits); C salicifolia, var floccosa (6 to 9 feet) and var rugosa (E) (6 to 9 feet, Red Fruits); and C. Simonsii (D) (8 to 12 feet, Orange-scarlet Fruits). These are among the best species and varieties.

Culture — The Cotoneasters thrive very well in ordinary cultivated garden ground, including chalk soils. Plant from October to April, the evergreen species at the beginning and end of the period, the deciduous in the intervening months. A few species require thinning-out after flowering or fruiting. To propagate, take cuttings, about 3 or 4 inches long, of matured current year’s wood and strike in sandy soil in a frame in July or August, or layer in September or October. Cotoneasters also grow freely from seeds sown in a frame in March or April, or the seeds may be sown in pots in October, being stood out-doors during winter and placed in gentle heat in spring. Layering in autumn is also a ready means of increase.

Note — (E) denotes Evergreen, (D) Deciduous species.

Crab Apple. See Pyrus Malus.

Cranberry. See Oxycoccus.

Cratægo-mespilus. (Rosaceae)

Under this compound name are grouped three small but very interesting hardy deciduous trees, hybrids of Crataegus monogyna and Mespilus germanica. C. Asmeresii is intermediate in all its characteristics between the two parents. C Dardari, the Bronvaux Medlar, lies nearer in its affinities to the Medlar (Mespilus) Branches revert sometimes to one parent and sometimes to the other. C. grandiflora, the third, is a natural hybrid, and remains true to character. In spring and early summer it is smothered with blossom and makes a magnificent specimen tree for a lawn. All three grow about 15 to 30 feet in height and in early summer bear white hawthorn-like flowers that in autumn are followed by clusters of brownish fruits, at which time, too, the foliage takes on attractive autumnal tints.

Culture — The trees thrive in ordinary loamy ground. Plant from November to February. Propagate by grafting in March or by budding in July on one of the Common Thorns (Crataegus). No regular pruning is needed. Thin the branches, when required, in winter.
ABC OF SHRUBS AND TREES

Crataegus. Thorn or May (Rosaceae)
A very large genus (over two hundred and fifty species and varieties being cultivated at Kew) of free-growing hardy deciduous trees of no great height, and a few shrubs, that vary greatly in their flowers, their fruit and the shape and size of their foliage, which is usually thin, leathery and deeply lobed into three, five, or seven parts. They grow from 15 to 25 feet or a little more in height, and the branches of almost all species are protected by thorns. The Crataegus or Thorns are good town trees and are among the most useful shrubs for the formation of hedges, and are perhaps better known under the name of "Quick" or Hawthorn and, in the case of C. Oxyacantha, as May. As the name implies, most of the trees flower in May and furnish masses of colour—the great majority white, with several single and double-flowered pink and red varieties and which are pleasingly fragrant. The fruits of most Thorns, except the double-flowered varieties, are attractive and very decorative in autumn.

Species—C. Azarolus, a somewhat rare species from the Orient, has orange-coloured fruits; *C. Carrure, a hybrid Thorn and one of the most useful, has white flowers in June and orange-red fruits which remain on the tree until the New Year; C. coccinea, the Scarlet Haw of North America, has white flowers in May and, later, red fruits, C. cordata, the Washington Thorn of the eastern United States of America, bears white flowers in July and later, clusters of small scarlet fruits, which last over Christmas; C. Crus-galli, the Cockspur Thorn of the eastern regions of North America, has white flowers in June and deep-red fruits; C. monogyna (Common Hawthorn), the common hedge-row Thorn or Quick, is more thorny than C. Oxyacantha, C. monogyna var. praecox, the Glastonbury Thorn, has the normal white Hawthorn flowers in May and also blooms intermittently from late October to March; *C. orientalis bears white flowers in early June, which are followed by coral-red fruits, this is a not uncommon tree in the London parks, C. o var. sanguinea has purplish-red berries; *C. Oxyacantha fl. albo pl., White, Double, *C. O fl. roseo pl., Pink, Double; *C. O fl. coccinea pl., Paul’s Double Scarlet Thorn, C. O fl. pumiceo, Scarlet, Single, C. O fl. roseo, Single, Pink; *C. Prunifolia has white flowers in June.
and rich red fruits, the leaves turn a most beautiful orange-scarlet and crimson in autumn; *C. p var. splendens* has even more attractive foliage in autumn, *C tanacetfolia*, the Tansy-leaf Thorn from Asia Minor, is distinctive on account of its grey, downy, tansy-like foliage. The berries which follow the white flowers are like small yellow apples. *C tomentosa* bears large corymbs of white flowers in June, these are followed by orange-red fruits. This thorn is a native of the eastern United States of America.

**Culture** — Plant from November onwards to February in sunny positions and in ordinary loamy soil, including a chalk soil which has been deeply dug and manured. Thin-out the branches in winter when over-crowded. To propagate, sow seeds when ripe, bud in July or graft choice species or varieties on common Hawthorn seedling trees in March. The seeds should be sown when ripe in well-drained pots or pans and these should be plunged to the rim outdoors in a slightly sheltered position. The seeds may not germinate for a year or more when the seeds are not sown until spring, but if gathered from the trees when ripe and sown at once, they usually germinate within six months. When the seedlings appear, move the pots to a cold frame to encourage development. See also Pyracantha.

**Crinodendron.** See Tricuspidaria.

**Cryptomeria japonica.** Japanese Cedar. *(Conifera)*

A handsome and distinctive evergreen tree, native of China and Japan, which is quite hardy and has a pyramid-shaped head of tall and erect stems. It grows to a height of from 50 to 150 feet, or more, and thrives in deep sandy loam in sheltered and sunny situations. Numerous forms have been given varietal names. *C japonica var. elegans* forms a graceful bush, the pale-green, flattened, spike-like foliage taking on a bronze-purple hue in autumn. *C japonica var. Lobbi* is a Japanese tree, 50 to 150 feet high, of denser and more compact habit, with longer leaves. *C japonica var nana* (3 to 5 feet) is very dwarf and suitable for the rock garden.

**Culture.** — Plant in September or October and in April. No pruning is required, but there is usually a good deal of dead wood to cut out in autumn or winter. To propagate, sow seeds in March or April in a frame, or insert cuttings
(3 or 4 inches long), made of growths from the tops of the trees, under hand-lights in August. Choice varieties may be grafted under glass in early spring on to C. japonica seedlings grown for the purpose in pots.

**Cudrania tricuspidata.** Chinese Silkworm Thorn (*Urticaceae*). A hardy deciduous shrub or small tree from China, allied to the Mulberry (Morus) and Maclura, and very similar to the latter. It grows some 15 feet or more in height and in July produces small balls of greenish unisexual flowers borne on different trees.

**Culture.**—Ordinary cultivated garden ground suits this Plant in November or late February and early March. In winter thin the branches, if required, and shorten long ends to keep the bushes shapely. Sow imported seeds on arrival in a cool greenhouse or frame. When imported seeds are not available, insert cuttings 3 inches long, made of the ends of semi-ripe shoots, in a close frame in August.

**Cunninghamia.** (*Conifera*)

Under this name are included two species of beautiful coniferous trees allied to the *Cryptomeria* C. *sinensis* (Chinese Fir), the best known, is a tree from 50 to 100 feet or more in height, with longish, tooth-edged and dagger-like leaves, and is a strikingly handsome tree in the south and west of the British Isles. C. *Koni* from Formosa, has smaller leaves and is a much rarer and more tender species, suitable for culture outside only in the mildest parts of the British Isles. It grows from 40 to 80 feet in height and requires a sheltered site even in mild localities.

**Culture.**—Select sheltered positions for planting in late April or May, with a deep loamy soil for preference. No definite system of pruning is required, but there are invariably numerous dead branches to remove in autumn or winter. The trees of C. *sinensis*, at Kew, were killed to the ground during severe frosts in 1894, but young shoots grew freely from the base and are now 28 feet in height. Seeds are the best means of increase and should be sown as soon as available in a frame or cool greenhouse.

**Cupressus.** Cypress (*Conifera*)

Cypress trees are for the most part quick-growing conifers, mostly of pyramidal habit. Some will be found suitable only
CUPRESSUS

for large gardens, while others are sufficiently compact to be very ornamental in even quite a small place. It is in winter especially, when the scale-like foliage colours slightly, that these conifers are so effective. The reader is advised to use, in addition to the green-leaved kinds, golden and glaucous forms such as *C Lawsoniana Allumi (Grey-green Foliage); *C Lawsoniana lutea and *C. obtusa aurea (both with Golden Foliage). It is only possible in such a large family as the Cupressus to recommend a small selection for specimen trees on lawns and for planting in general. The best of these are *C. Lawsoniana and its many varieties, especially *Allumi (Grey-green), lutea (Golden), *erecta viridis (Rich Green), Hillieri (Golden Yellow), and *Triomphe de Boskoop (Glaucous-blue). They grow from 25 to 50 feet or more in height with age. *C Lawsoniana is a tree growing up to 200 feet in height in the western regions of North America.

For small gardens, none are better than the varieties of *C obtusa, the Hinoki Cypress (up to 100 feet or more in height in Japan). The most distinct varieties are *Crypsis (Golden Foliage), filicoides (With Fern-like Branchlets) and *tetragona aurea. These are comparatively slow in growth and range from 10 to 20 feet in height, or more with age. *C. o. nana (6 to 18 inches) and *tetragona mini-ma (4 to 8 inches) are dwarf-growing forms for the rock garden. The latter small-growing and juvenile forms of the Hinoki Cypress are often placed under the name of Retinospora in nursery catalogues. *C macrocarpa (Monterey Cypress), 50 to 100 feet in height, is a graceful and fast-growing tree that thrives unusually well near the sea. This, together with the hardier *C. Lawsoniana and *C. nootkatensis (75 to 120 feet), make good hedge plants, as they stand cutting well in late spring or summer, but not in autumn or winter. *C macrocarpa lutea (50 to 100 feet high) is an attractive golden-leaved tree. *C pisifera (Sawara Cypress) forms a tree 50 to 100 feet in height, is a native of Japan and has numerous attractive varieties, notably *aurea (Golden Foliage, 70 to 100 feet), pisifera (a rather wide-spread ing tree, 25 to 40 feet), *plumosa (Rich Green Feather Foliage, 20 to 30 feet), plumosa aurea (Golden Foliage, 20 to 30 feet), squarrosa (Glaucous Blue, 15 to 25 feet), and *squarrosa sulphurea (Sulphur-yellow Foliage, 15 to 25 feet).
ABO OF SHRUBS AND TREES

*C. sempervirens* (Italian or Mediterranean Cypress), a tree up to 100 feet or more, is not very hardy at Kew, but is an attractive tree in the south and west of the British Isles. It is interesting, as it represents the cypress of the ancients, the fastigiate form, *C. s. var. stricta*, being a strikingly effective columnar tree, some 80 to 150 feet in height.

Culture.—The Cypresses thrive in sunny, sheltered positions and in almost any moist soil. Plant in April or early May and in September. Pruning consists in keeping trees to one leading shoot, shortening long side branches which are likely to spoil the symmetry of the trees and cutting out the dead wood. Propagation of the species is best carried out by means of seeds sown when ripe in a frame; the species of Cypress and most of the varieties are also readily propagated by means of cuttings, 3 inches long, taken with a “heel” and inserted in a close frame in August or September.

**Currant.** See Ribes

**Cydonia.** Quince (*Rosaceae*)

Hardy deciduous flowering trees and shrubs of spreading habit, which thrive in well-drained ordinary soil, including chalk soils, either in the open border or against a wall.

*C japonica* (Japanese Quince), of which there are varieties with flowers of many shades of white, yellow, pink and red, is often known as “Japonica.” Its glossy bright-green, longish, oval and saw-edged foliage soon develops and forms a fine background for the lovely flowers, which are followed by edible fruits that are used for jellies and flavouring apple tarts and preserves. When grown as a bush it averages 4 to 5 feet, but it will reach a height of 6 to 9 feet or more against a wall, and flowers from February to June. Given the support and shelter of a south wall, the blossoms will often appear as early as January. *C Maulei*, the Dwarf Quince, is a shrub of dwarfer growth and rarely exceeds 3 feet in height. *C. vulgaris* is the Quince of the orchard. It has broad, lanceolate leaves and bears pink or white flowers in May and large, golden-yellow, pear-shaped fruit in autumn. *C. vulgaris lusitanica*, the Portuguese Quince, is the most ornamental variety; this and the type make trees 20 feet or more in height.

Culture.—Plant from November onwards to March. Cut-
out old wood, thin branches and shorten side shoots, where necessary, in June after flowering. Propagation may be carried out by means of seeds, budding in July, layering in autumn, suckers removed in early November or in March, or by cuttings of the ends of practically ripe shoots taken off 4 to 6 inches long and with a thin "heel" of old wood, in September or October, and planted under a bell-glass on a sheltered border. The seeds are best sown when ripe, in autumn in well-dramed pots or pans, the latter being plunged to the rim outdoors during winter and removed to a cold frame in early spring.

Species and Varieties — *C. japonica* (Orange-red) and its varieties — *aurantia* (Rose, Shaded Yellow, 4 to 9 feet), *cardinalis* (Rich Deep Red, 4 to 6 feet), *nivalis* (White, 4 to 6 feet), and *rubra grandiflora* (Crimson, 4 to 9 feet), *C. Maulei* (Orange-flame) and its varieties — *Knap Hill Scarlet*, *Simonini* (Deep Crimson) and *superba* (Orange-scarlet), all 2 to 3 feet in height. *C. sinensis* (Chinese Quince) is a small tree some 12 to 20 feet in height, that does best against a wall. *C. catlayensis* (8 to 10 feet), a Chinese Quince with very large fruits, and *C. vulgaris* (White, tinted Pink, 15 to 30 feet) are also trees.

Cypress. See Cupressus.

*Cyrilla racemiflora*. Leatherwood (*Cyrillaceae*)
A deciduous shrub, hardy in the open in the south and west of the British Isles, but which requires shelter in the north. It is a native of the eastern districts of North America and grows from 4 to 5 feet high. This plant has longish, oblong foliage and in late summer and early autumn produces slender racemes, each 4 or 5 inches long, of pretty little white flowers.

**Culture** — This shrub likes a light loamy soil to which a little leaf-mould and peat, if available, may be added. Plant during suitable weather from November to early March. In February, shorten old flowering shoots to half their length and cut out weak twigs. Propagate by cuttings made of the ends of the half-ripe shoots, some 2 inches long, inserted in a close frame towards the end of July or during August.

**Cytisus. Broom.** (*Leguminosae*)
A genus of very attractive shrubs, mostly hardy and deciduous, which thrive best in light, well-drained, ordinary soil in open
and sunny positions. Species and hybrids, *C. Ardoiini*, with deep yellow flowers shaped like those of the pea (6 to 12 inches), *C. Beani* (Golden-yellow, 6 to 12 inches), *C. kewensis* (Creamy-white, 9 to 12 inches, but more in diameter), and *C. purpureus* (Rose-purple, 1 to 1 1/2 feet), flowering from April to June, are all prostrate or trailing in habit and suitable for the rock garden or for the front of shrub borders. They flower on the previous year’s growths. *C. albus* (May, 6 to 10 feet) is the white Spanish Broom. *C. nigricans* has yellow flowers in July and August and grows to a height of 4 to 5 feet. *C. scoparius* (Yellow) is the common broom; this has a better variety, however, in *C. s.* *Andreanus*, which carries ruddy bronze and yellow flowers from April to June and forms a bush about 6 feet high, with typical small and narrow Broom-like foliage. For grouping purposes in the shrub border, no Broom is better than *C. pra3cox* (Sulphur-yellow, April to May, 6 feet). Equally useful and attractive are *Cornish Cream* and the hybrid brooms Dallimorei (Purple); Donard Seedling (Dark Red, streaked yellow), and *Dorothy Walpole* (Rich Crimson). All May-flowering, 5 to 6 feet. There are many other good species and varieties which thrive well under similar conditions.

**Culture.**—Plant in October and November, or in spring and after planting tread the soil well round the stems. Brooms do not transplant readily from the nursery beds and are usually grown in pots until large enough for their flowering positions. Except when quite young, only trim to keep in shape, for new shoots do not “break” easily from the old wood and if a branch more than, say, a couple of years’ old is cut into, it will be likely to die back. Pruning must, therefore, be systematic and regular so that it is not necessary to cut into the old wood. Spring-blooming species and varieties that flower on the previous year’s wood should be trimmed and pruned directly after flowering, to allow the whole summer for the formation and ripening of the new wood which is to bear the blossom of the following spring; late-flowering kinds, such as *C. nigricans*, for example, should not be pruned until the following February or March, as these flower on the young shoots made in the current year, and must be pruned hard back before the new shoots begin to “break.”
PLATE 5 Above, VERONICA GENTIANOIDES; Below, DRY WALL IN SUMMER
GYTISUS — DACRYDIUM

To propagate, sow seeds in a frame in autumn when ripe, take cuttings, 2 to 4 inches long, preferably with "heel," in August, strike in a frame and grow on in pots until ready for planting out. In the case of C. Dallimorei and similar hybrids which are not vigorous when grown on their own roots, grafting should be carried out in spring under glass, using seedling Laburnums for stocks. The Genista (which see) is closely allied to the Cytisus.

Dabœzia. Irish Heath or St Dabœc's Heath (Ericaceæ) Low-growing hardy evergreen shrubs related to the Erica. They grow to a height of from 1 to 2 feet and flower from June to October. The Dabœziæ are natives of south-western Europe and Ireland and thrive best when planted in sunny positions and in a mixture of sandy peat, leaf-mould and loam with no lime in it.

Culture —Plant out in March or October, and cut off dead blooms in November, or if frosts have set in, do it in early spring. To propagate, take cuttings about 1 to 1½ inches long of tips of sturdy side shoots and strike in a frame in August, layer in September or sow seeds in early spring in a cool greenhouse or frame.

Species and Varieties.—*D. polifolia (Rosy-purple), *D. p. alba (White); D. p. atropurpurea (Reddish-purple, Dark Foliage) and D. p. bicolor (Purple and White). The name Menziesia polifolia is also in frequent use for this plant.

DACRYDIUM. (Coniferæ)
Beautiful coniferous trees suitable for culture in the mildest localities of the south and west of the British Isles. Native trees attain a height of 50 to 100 feet. D. cupressinum, the Red Pine or "Rimu" of New Zealand, and D. Franklinii, the Huon Pine, a graceful Tasmanian species with slender thread-like branchlets clothed with green scale-like leaves, are the best-known species.

Culture —These trees are increased by cuttings 3 to 4 inches long, inserted in autumn in a close propagating case, preferably with slight bottom heat. Select for the purpose semi-ripe shoots from near the tops of the trees. Plant in late April and in May in a well-drained sandy loam with leaf-mould added and peat, if available. Prune in late summer only if necessary to thin and regulate the branches.
**AB C OF SHRUBS AND TREES**

**Dalbergia hupeana.** (Leguminosae)

A deciduous tree some 20 to 30 feet in height, a native of western Hupeh in China, with Robinia-like foliage and buff-yellow flowers like those of the pea.

*Culture*—Plant in March in well-drained loamy soil in warm sunny positions. Prune in winter, only to thin and regulate the branches. If imported seeds are not available, propagate by means of grafting in a close frame in early spring on Robinia Pseudacacia.

**Danaea racemosa.** [syn. *Ruscus racemosa*] (Alexandrian Laurel) (Liliaceae)

A hardy evergreen shrub from southern Europe and Asia Minor and growing to from 2 to 4 feet in height. It has bright glossy-green, flat and spiny oblong leaves carried on long arching stems, which are excellent for cutting and mixing with flowers in vases and for winter decoration indoors. The shrub is especially useful, as it grows well under the shade and drip of trees. The bright red berries, which follow the small inconspicuous greenish flowers, are borne on the female plant only.

*Culture*—This shrub grows in ordinary garden soil and may be increased by means of seeds sown when ripe in a frame, or by division of roots in autumn or spring. Plant in October, April or early May. Thin plants crowded with growths by cutting out a few of the oldest stems in spring.

**Daphne.** (Thymelaeaceae)

Beautiful dwarf-growing deciduous and evergreen shrubs, mostly noteworthy for their fragrant flowers. **DECIDUOUS:**

*D *Mezereum* (The Mezereon), 3 to 4 feet high, is the best-known species. It is a native of Europe, including Britain, and of Siberia. The fragrant purplish-red flowers are freely borne on the leafless branches from January to March. These are followed by scarlet berries in summer. The variety *D* *M.* *flore albo* (2 to 3 feet) has white flowers followed by yellow berries and *D* *M.* *var* *grandiflora* (syn *autumnalis*), 3 to 4 feet high, carries purplish-red flowers during mild weather from October to February. *Daphne Mezereum* and *vars*, although loving the sun, need a cool and moist, but well-drained root-run. They will not thrive in hot, dry soils. *D* *alpina*, growing from 9 to 18 inches high, bears fragrant
DAPHNE

white flowers during May and June, it is a native of the European Alps. *D Genkwa*, 2½ to 4 feet, is a free-flowering shrub with lilac blossoms in May, it is a native of China and Japan, and is a choice and rather tender shrub, which should be planted in a sheltered position. This Daphne is sometimes propagated by grafting in spring. *D Mezereum* being used as a stock. Evergreen *D Blagayana*, a dwarf shrub of spreading habit, grows from 9 to 12 inches high and has ivory-white flowers in March and April. This species is a native of the mountains of eastern Europe. It is best grown and also propagated by layering, by placing soil and stones annually, or biennially, on the spreading branches as the plants increase in size. *D Cneorum*, the Garland Flower, has trailing stems 9 to 12 inches in length and in May carries fragrant rosy-pink flowers. It is a native of central and southern Europe. *D Laureola*, the Spurge Laurel, bears yellowish-green flowers in February and March. It is a native of Europe (including Britain), northern Africa and western Asia, thrives best in partial shade and moist soil and grows from 2 to 4 feet high. *Daphne petrea* (syn *D rupestris*), a dainty little shrubby Alpine from the Tyrol, is usually under 6 inches high and has pink flowers in June. Plant on a sunny rock garden slope with mortar rubble in the soil. *D pontica*, which grows from 2 to 3 feet in height, has thinner leaves than *D Laureola* and produces its fragrant greenish-yellow flowers in April.

The majority of Daphnes thrive in sandy loam and leaf-mould, most of them with chalk or mortar rubble added. The dwarf species are ideal subjects for the rock garden, in fact, none attain a very large size, so that all may very well find positions in a rock garden of any pretensions.

Culture — Increase by seeds when available, sowing when ripe in a cool greenhouse or frame, by layering in autumn and by cuttings made of semi-ripe shoots, 2 to 3 inches long, preferably with a thin heel of old wood, in late summer and inserted in sandy soil under a bell-glass. Daphnes do not transplant readily and it is worth-while giving them pot-culture until large enough for their permanent positions. Plant the evergreen species in autumn or spring and the deciduous species in November. No pruning is required.
ABC OF SHRUBS AND TREES

Daphniphyllum. (Euphorbiaceae)

Handsome hardy evergreen shrubs of slow growth and with small unisexual flowers borne on separate plants. They are natives of China and Japan. *D. macropodum*, the best-known species, makes a large bush some 6 to 10 feet in height and although its flowers are insignificant, the large rhododendron-like foliage, glaucous white on the underside, makes it very attractive and useful. *D. humile* is a dwarfer species some 1½ to 2 feet in height, but more in width. It has oval, laurel-like foliage.

Culture—These shrubs like a somewhat shady position and grow well in any good moist soil, especially if lime is present. Propagation is best carried out by means of cuttings of semi-matured shoots, about 3 inches long, of current year's growth inserted in gentle bottom heat in July or August. Plant in October or late April. Prune in late April, only if necessary to keep the bushes shapely or to prevent crowding.

Davidia. Chinese Dove Tree. (Cornaceae)

Choice hardy ornamental deciduous trees of Chinese origin. They have rather large, broad and saw-edged bright green leaves, heart-shaped at the base and tapering to a point at the apex, very like those of the Lime or Linden. These trees grow from 40 to 60 feet in height and carry in May a pair of large drooping white bracts of uneven size surrounding the flowers. The fruit that follows in outward appearance is very like that of the walnut tree.

Culture—Plant in November or February in a sunny position in moist deep loam. No pruning is necessary, except to thin and regulate the branches. Propagate by means of seeds sown in the open in October, or in pots or pans stood outdoors during the winter. The seedlings, which appear at irregular intervals of from three months to two years, are more satisfactory when potted up singly and grown in a frame until at least a year old. Layering may be carried out in autumn, or cuttings of half-ripe wood made of side shoots, 3 to 4 inches long, with a thin heel of old wood, can be inserted in a frame with slight bottom heat in July or August.

Species—*D. involucrata*, which has red leaf-stalks and leaves hairy beneath, is not so hardy for British gardens as *D. Vilmorina* with leaves smooth and glaucous beneath.
DEBREGESIA — DECUMARIA

Debregeasia longifolia. (*Urticaceae*)
A somewhat rare and striking semi-hardy deciduous shrub or small tree from 5 to 15 feet in height, with long lanceolate leaves, whitish beneath, and with tiny insignificant flowers followed by small yellow raspberry-like fruit. It is a native of China, the Himalayas and of Java.

*Culture.*—It is increased by cuttings, 2 to 3 inches long, made of the semi-ripe ends of the young shoots and inserted in a close frame in late summer, and by seeds sown in a frame when ripe. Plant in March in ordinary well-drained garden ground. Thin the branches in winter, where crowded, by cutting out old wood.

Decaisnea Fargesii. (*Berberidaceae*)
A handsome deciduous shrub, a native of western China and with strikingly large drooping pinnate leaves some 2 feet or more in length. The shrub grows about 8 or 9 feet in height and produces in late April or early in May long racemes, a foot or more in length, of small greenish-yellow flowers, followed by curious and strikingly attractive cylindrical plum-blue pod-like fruits some 3 or 4 inches in length. It likes a sheltered site and rich sandy loam, with plenty of leaf-mould added.

*Culture.*—Propagation is by means of seeds sown under glass when ripe. Plant in early March for preference. No pruning is necessary.

Decumaria barbara. (*Saxifragaceae*)
A beautiful deciduous or semi-evergreen self-clinging climber, a native of America and allied to the climbing Hydrangea. In favourable situations it will run up to from 9 to 10 feet, or more, in height and during midsummer will produce a mass of terminal corymbs of small white flowers.

*Culture.*—This shrub requires wall protection, except in the south and west of the British Isles. Propagation is carried out by means of cuttings, 2 to 4 inches long, made of the ends of semi-ripe shoots and inserted in a close frame, preferably with slight heat, in late summer, or by layering. No pruning is needed, except in the training of the shoots. Planting is best done from pots early in May. Give the plants a well-drained compost of sandy loam with leaf-mould and, if available, with a little peat added.

*D. sinensis,* a Chinese species growing up to from 6 to 10
ABC OF SHRUBS AND TREES

feet in height, is probably less hardy, but makes a good subject for a sheltered south or west wall

Dendromecon rigidum. California Poppy Bush. (Papaveraceae)

A beautiful semi-hardy deciduous shrub from California. It has narrow glaucous foliage and in favourable situations will grow to a height of from 10 to 12 feet. During summer and early autumn it produces a mass of large fragrant yellow flowers very like those of a single poppy.

Culture.—This shrub requires a well-drained sandy loam with leaf-mould added, a sunny position and the shelter of a south wall in all but the mildest localities of the British Isles. To propagate, insert during July or August cuttings of mature shoots of the current year in small pots of sandy soil and place in moderate heat in a close greenhouse frame. Plant from pots in April. No pruning is required.

Deodar. See Cedar.

Desfontainea spinoso. (Loganiaceae)

This interesting evergreen shrub from Chile and Peru has prickly, holly-like leaves and is on the borderland of hardiness at Kew. It grows to a height of about 6 to 9 feet, or more against a wall. The pretty tubular-shaped scarlet and yellow flowers are borne from July to September. This shrub thrives in a well-drained compost of equal parts of loam and peat or leaf-mould with a little sand added. Choose positions for planting in warm sheltered borders in the west or south-west of the British Isles.

Culture.—Plant in spring. No pruning is required. Shorten very long shoots in April only if absolutely necessary, or cut such growths when in flower for table decoration. Propagate by means of seeds sown when ripe in a cool greenhouse, or by cuttings about 3 inches long, made of the tips of the semi-ripe shoots and inserted in sandy soil in slight heat in summer.

There is a variety known as D. s. Hookeri (6 to 9 feet), which is more upright in growth.

Desmodium. (Leguminosae)

Hardy and half-hardy deciduous semi-woody shrubs, natives of India, China and Japan. D tibialatum, which comes from the Himalayas, grows 2 to 4 feet high, and more against a
DESMODIUM — DEUTZIA

sunny wall, and carries broadly obovate trifoliate foliage and from July to September, large panicles of pinky-lilac flowers shaped like those of the pea. It is the best-known hardy species, and likes a sunny sheltered position and a well-drained light ordinary soil.

Culture — Propagation is carried out by means of seeds sown when ripe in a frame, by division of the roots in March, and by cuttings, 2 to 4 inches long, made of the short side shoots during July or August, and inserted in a close frame. Planting is best done early in March. Except during mild winters, the shoots are killed to the ground each year. These are pruned down early in March and cause the plants to form a woody root-stock.

Deutzia. (Saxifragaceae)

A genus of hardy deciduous shrubs, natives of China, Japan and the Himalayan regions. They are mostly of upright growth, varying from 3 to 12 feet in height, have longish oval or lanceolate, saw-edged leaves and in May and June are covered with clusters of pretty white, rose or purple flowers (single or double). Because of the spring tenderness of the new growths, they thrive best in a sheltered position. They are particularly useful in the shrubbery.

Culture — Plant from November onwards to March in deeply-cultivated loamy ground with leaf-mould and old rotted manure added. Mulch annually in May with well-rotted manure and leaf-mould. After flowering, thin-out drastically, cutting away weak and old wood, but leaving the young shoots alone as these will bear the best blooms. To propagate, take cuttings of soft wood, 3 inches in length, in July and insert in a frame, preferably with slight bottom heat, or sow seeds of the species in February in a frame or cool greenhouse.

Species and Varieties — D. discolor grandiflora (Pink, 5 to 6 feet); D. d. major (White, 5 to 6 feet); D. gracilis (White, 3 to 4 feet); D. kalmiaeflora (White anemone-like flowers, flushed Carmine, 3 to 4 feet); D. longifolia (Purplish-rose, 3 to 5 feet), *D. l. Vetchii (Deep Rose-purple, 3 to 5 feet); D. magnifica (Double White, 5 to 6 feet), D. m. latifolia (White, 5 to 6 feet), D. scabra [syn crenata] (White, 10 to 12 feet); D. s. fl. pl (Double Pink, 8 to 10 feet), *D. s. Pride
of Rochester (Double White, 8 to 10 feet); D. Vilmorina (White, 4 to 6 feet); and D. Wilsonii (White, 5 to 8 feet).

Dianella aspera. (Liliaceæ)

A handsome semi-hardy evergreen shrub, a native of New Zealand, with long rush-like leaves. It grows from 2 to 3 feet in height and bears a mass of long panicles of small white flowers in summer, and these are followed by highly decorative purple berries.

Culture.—Plant in well-drained sandy soil in a sunny position, as for example, against a wall, in April or early May. Increase is by seeds sown in a frame or cool greenhouse, or by division of the clumps in early autumn. Pot up the young plants and grow them in a frame or cool greenhouse the first winter, planting outside early in May. No pruning is required.

Diervilla. Bush Honeysuckle or Weigela. (Caprifoliaceæ)

Beautiful and interesting hardy deciduous shrubs related to the Loniceras. In April, May, June and July, they bear white, yellow, rose or crimson tubular flowers, over an inch in length, with some resemblance to those of the Foxglove. The foliage is longish, oval, sharp-pointed at the apex and saw-edged. The shrubs thrive in sun or semi-shade and in almost any well-cultivated soil, though moist fibrous loam and leaf-mould with good supplies of well-rotted manure, given as a mulch from time to time, suits them best. Diervillas are very pretty by the waterside.

Culture.—Plant from November to early March when weather and soil conditions allow. After flowering, cut out old and straggly wood to thin the bushes. To propagate, insert cuttings of half-ripe wood in July in a frame or insert matured cuttings in the open in October.

Species and Varieties.—*D. Abel Carrière (Carmine-red); D Conquete (Deep Rose); D Descarès (Blackish-crimson), *D Eva Rathke (Crimson-purple); D florida (Deep Rose); *D f candida (White), D f folius purpureus (Purple Foliage), D. Lavallet (Crimson), D. Le Printemps (Pink) and D Middendorfiana (Sulphur-yellow); Mont Blanc (White) and D. nivea (White). The average height of Diervilla bushes is from 5 to 6 feet, but D florida, a Chinese species (Rose-pink), may not grow more than 4 feet high.
DIMORPHANTHUS — DIOSTEA

Dimorphanthus. See Aralia chinensis.

Diospyros. (Ebenaceae)

A genus of interesting but little grown deciduous trees, the small unattractive male and female flowers of which are borne on different trees. *D. Kaki*, the Kaki or Chinese Persimmon (20 to 40 feet), is a native of China and carries large glossy-green oval foliage. It grows well in rubbly soil and if given a warm sheltered situation against a south wall, female trees produce a good crop of attractive small orange-like edible fruits, which are quite agreeably flavoured. Named varieties are extensively cultivated in Japan, South Africa and in the south of France. *D. Lotus* (20 to 30 feet), the common Date Plum, is a native of temperate Asia. Fruits grow freely on the female trees, but are disagreeable in flavour. *D. virginiana* (30 to 65 feet), the American Persimmon, has shining green ovate foliage, heart-shaped at the base and tapering to a point at the apex, and is an ornamental tree which rarely fruits in this country. A tree of this species at Kew is 65 feet high.

Culture — Diospyros are grown from seeds sown in a cool greenhouse or frame when ripe, except the named cultivated varieties of the Kaki (this is the popular name), which are grafted under glass in early spring on seedling *D. Kaki*. Plant during November or early March in well-drained loamy soil in sheltered and sunny positions. It is worth while planting female trees of *D. Kaki* against a sheltered sunny wall to obtain the fruits. No pruning is required, but the branches may be thinned in winter when necessary.

Diostea juncea (Verbenaceae)

An elegant hardy deciduous shrub or small tree, a native of Chile and which grows to a height of from 12 to 15 feet and is similar in habit and growth to some of the Brooms. It bears small narrow leaves, somewhat sparsely, and in midsummer produces a mass of small tubular pale-lilac flowers that are borne in clusters at the ends of the current year’s shoots.

Culture — Plant in March in light loamy soil in shrub borders where its bare stems will be hidden. Top the growths of the young plants several times after planting; no other pruning is required. Cuttings, 2 to 4 inches long, made of the short side shoots with a thin heel of old wood, may be
rooted in a frame or under a bell-glass during July and August.

**Dipelta.** (*Caprifoliaceae*)
A small genus of handsome deciduous shrubs from China. They are related to the Diervilla. *D. floribunda* makes a fine bush some 4 to 6 feet, or more, in height, has ovate-lanceolate foliage and in May and June produces from the axils of the leaves a profusion of clusters of slightly fragrant delicate rose funnel-shaped flowers with orange-yellow throats and large persistent bracts. This comparatively new introduction is well worthy of a place in any garden. *D. ventricosa*, with a smaller flower, grows some 6 to 12 feet in height and is very similar in appearance and habit; and *D. yunnanensis* (6 to 10 feet) has somewhat paler and more delicate flowers.

**Culture.**—These shrubs like a warm, sunny but moist site and a good loamy soil. Plant from November to early March. Propagation is carried out by means of cuttings made of the ends of the semi-mature shoots, about 3 inches long, placed in sandy soil in a close greenhouse frame in July, or under a bell-glass on a border outside in August or September. Remove old wood and thin crowded shoots as soon as flowering finishes.

**Diploclisia affinis.** (*Memspermaceae*)
This is a climbing shrub from western China and is allied to the Cocculus. It will run up to from 10 to 12 feet or more in height and has small inconspicuous flowers in June and purplish berries in autumn. An interesting climber for rustic poles, arches and fences.

**Culture.**—Increase is by seeds sown in a frame when ripe or in early spring, and by division of the roots in early March. Plant in well-drained loamy soil in sunny positions in November or early March. No pruning is necessary, except to thin, if crowded, when training and tying to rustic poles and fences.

**Diplopappus.** See Cassina.

**Dipteroma sinensis.** (*Aceraceae*)
A small hardy deciduous tree, or large bush, some 20 to 25 feet in height. It is a native of central China and is closely allied to the Maples, having attractive long pinnate leaves made up of many leaflets, similar to those of the Ailanthus.
DIPTERONIA — DISCARIA

The small insignificant flowers, which appear in June, are followed by clusters of attractive and interesting winged seeds.

Culture — This plant does well in good loam and may be propagated by means of seeds sown in a cool greenhouse or frame in autumn when ripe, by layers put down in autumn, or cuttings made of the ends of the side growths, 3 to 4 inches long, may be inserted in a close frame in July or August. Prune only to thin crowded branches. Plant in sunny positions from November to early March.

Dirca palustris. Leatherwood (Thymelaeaceae)
An early-flowering hardy deciduous shrub, a native of the eastern districts of North America, and related to the Daphnes. It grows some 3 to 6 feet in height, has medium-sized oval foliage and in March and April produces on the leafless branches a mass of small yellow flowers, borne in threes.

Culture — This shrub likes a fairly moist site in non-calcareous loam, leaf-mould and peat. Plant in late October and in November in sun or half-shade. No pruning is necessary. Propagate by seeds sown in early spring in a frame and by layering in autumn.

Disanthis cercidifolius. (Hamamelidaceae)
A hardy deciduous foliage shrub, a native of Japan and allied to the Hamamelis (Witch Hazel). It grows from 6 to 9 feet in height and likes a fairly rich soil containing leaf-mould and peat. This shrub is grown for the sake of the lovely shades of red and orange which its broadly ovate Cercis-like foliage takes on in the autumn, its purple flowers, which appear in October, being insignificant.

Culture. — Propagation may be carried out by means of cuttings of semi-ripe wood, made of the short side shoots, 2 to 4 inches long, taken with a "heel" in July or August, and inserted in sandy soil in a frame, by layering in autumn and by imported seeds sown when received in a frame. Plant in sheltered sunny positions in March. No pruning is necessary or desirable.

Discaria. (Rhamnaceae)
Two or three species of this genus are grown. They are small trees or shrubs allied to the Colletias and have spines and small axillary flowers.
ABO OF SHRUBS AND TREES

Culture.—Plant in March or April in light sandy soil in sunny sheltered positions. Increase is by cuttings made of semi-ripe side growths, 3 to 4 inches long, inserted in a frame during July. No pruning is required, except to shape and to train to a wall or fence.

Species.—D. Toumatou (Wild Irishman) is a remarkable and interesting half-hardy deciduous shrub or small tree from New Zealand, it is suitable for a wall, grows some 6 to 20 feet in height and has long spiny branches, which in May bear a mass of small greenish-white flowers. D serratifolia, a Chilean species, 10 to 15 feet in height, is very similar, but is harder and bears fragrant greenish-white flowers in June.

Distyllum racemosum. (Hamamelidaceae)
This is an interesting and uncommon hardy evergreen shrub, a native of Japan and allied to the Hamamelis (Witch Hazel). In its native habitat it makes a small tree, up to 25 feet in height, but in the British Isles it only reaches shrub proportions. This shrub grows well on chalky soil and in April its dark glossy green obovate foliage forms a fine setting for the curious flowers composed of red calyx and purplish stamens.

Culture.—Plant in October or in late April and early May, in sheltered sunny positions. Prune only if it is required to shape the bushes. Propagation may be carried out by means of cuttings, 3 to 4 inches long, made of the ends of the half-ripe growths and inserted in a close frame or under a bell-glass in July or August.

Dogwood. See Cornus.

Dorycnium hirsutum. (Leguminosae)
An interesting little hardy dwarf-growing deciduous shrub, a native of southern Europe and sometimes known as Cytisus Lotus. It grows about 3 feet in height or more against a wall, has attractive silvery foliage, much like that of the clover, and from June to September carries a mass of inflorescences of white Broom-like flowers.

Culture.—This shrub thrives in full sun and in a well-drained light soil. Cut out a few old growths in autumn if the shoots are crowded. Increase by means of seeds sown in sandy soil in a frame when ripe or in early spring. Grow in pots until ready for the permanent position and plant early in March.
DRACÆNA — ECHINOPANAX

Dracena. See Cordyline.

Drimys Winteri. Winter's Bark. (Magnoliaceae)
A highly ornamental semi-hardy evergreen shrub, a native of South America and growing in favourable situations up to from 10 to 25 feet in height. It has long pale green leaves and young shoots tinged with red, and in May produces umbels of scented ivory-white flowers. This shrub is a beautiful subject in the south and west of the British Isles. It grows freely in the milder districts and thrives in well-drained and warm calcareous loam. In cold districts it requires the protection of a wall. *D. aromatica*, a somewhat dwarfer species from Australasia, 10 to 15 feet in height, and with white flowers in April and May, is not quite so hardy.

Culture.—Plant in late April or May in sheltered sunny or partially-shaded positions. Prune only to keep in shape in late May after flowering. Propagation is carried out by means of cuttings, about 3 inches long, of semi-mature wood placed in sandy soil in a frame in July or August, or by layering in autumn.

Eccremocarpus scaber. (Bignoniaceae)
A semi-woody climber of great beauty that bears beautiful bi-pinnate foliage and paniculate racemes of rich orange-red bell-shaped flowers from July to September. A native of Chile, it reaches a height of from 10 to 20 feet and thrives in any well-drained light loam against south walls, trellises, pillars and arbours.

Culture.—Propagate by means of seeds, which are freely produced. Sow in heat in January or February. When large enough, place the seedlings singly in small pots and plant out in April or May in sunny sheltered positions. After flowering shorten the long growths, and protect the roots with mounds of old coal ashes or coarse grit in winter. During winters with severe frosts, the growths are killed to the ground, but young shoots grow freely from the base in March.

Echinopanax horridus. (Araliaceae)
This shrub, sometimes grown as *Fatsia horrida*, is a native of north-western America and north-eastern Asia. It is a deciduous shrub, some 6 to 12 feet in height, with spiny palmately-lobed leaves and unattractive green flowers in May, followed by scarlet fruits. I have seen plants growing in
a shaded Hemlock grove in the Arnold Arboretum under conditions which might be copied here in the British Isles

_Culture_—Plant in a mixture of fibrous loam and leaf-mould with plenty of coarse grit added in March. No pruning is required. Seeds provide the best means of propagation. They should be sown when available in a frame, or offsets can sometimes be removed in March, being potted up in a cold frame until well rooted.

**Edgeworthia chrysantha.** (*Thymelaeaceae*)

An attractive semi-hardy deciduous shrub, a native of the Himalayan regions and closely related to the Daphnes. It is chiefly remarkable for the wonderful flexibility of its branches, which can be tied in knots almost as readily as string. In favourable situations, it forms a bush some 3 to 6 feet in height and in early summer produces a profusion of clusters of yellow flowers very like those of the Daphne.

_Culture_—No pruning is necessary. Increase by cuttings, 2 to 3 inches long, made of side shoots with a thin heel of old wood. Insert in very sandy soil in a close frame or under a bell-glass in July or August. Grow in pots and plant outside in very sheltered sunny or partially-shaded positions in late March or early April.

**Edwardsia grandiflora.** See Sophora tetrapetala.

**Ehretia.** (*Boraginaceae*)

A small genus of semi-hardy and hardy deciduous ornamental trees, which might be more widely grown. _E. thysiflora_, a native of China, Japan, Korea and Formosa, makes an interesting specimen tree with large oblong-ovate saw-edged leaves and when established is quite hardy. It grows from 25 to 45 feet in height, and produces a mass of scented, small white flowers, borne in terminal panicles in August. _E. Dicksonii_, from China and Formosa, has dark roundish leaves and white flowers and is another good species, but is of less robust growth, averaging some 15 to 20 feet in height.

_Culture._—These trees do well in almost any soil and are partial to chalk. Increase by cuttings, 3 to 4 inches long, made of semi-ripe side shoots and inserted in late summer in a close frame. Plant in March in sheltered sunny or partially-shaded positions. No pruning is required, except to shape the trees.
ELÆAGNUS

_Elaegnus_. Oleaster or Wild Olive (*Elæagnaceæ*). A useful and hardy genus of evergreen and deciduous shrubs which grow freely in full sun or partial shade and in almost any soil. The silvery scales or scurf on the underside of the narrow oval or lanceolate leaves gives an attractive and interesting appearance. _E. argentea_ has the silvery scales on both sides of the leaves. The small fragrant flowers, which are yellow, cream or silvery-white according to species, are borne from early summer to early winter, and are followed by showy coloured fruits. Especially beautiful is the foliage of some of the variegated forms. These shrubs are excellent as specimens on a lawn, for shrub borders, and for clothing bare walls and dry banks. They may also be grown near the sea.

_Culture._—Plant the evergreen species in April and May, or from September to late October, and the deciduous species from November to March. To propagate the evergreens strike cuttings of fairly mature wood about 4 inches long in sandy soil in a frame in August or September, deciduous kinds should be propagated by means of seeds sown in spring in a frame, by layering in autumn, or by cuttings made of the young side shoots, 3 or 4 inches long, taken with a thin heel of old wood and inserted in a close frame, preferably with slight bottom heat, during July or August. Prune to thin out the wood and to shape the bushes, the evergreen species in late April or May, and the deciduous species in February.

_Species and Varieties._—_E. angustifolia_ [D] (Silvery-yellow, June, 12 to 20 feet, southern Europe, western Asia); _E. argentea_ [D] (Silvery-yellow, May, 6 to 12 feet, North America); _E. glabra_ [E] (White, Oct-Nov., 15 to 20 feet, China and Japan); _E. macrophylla_ [E] (Silvery Foliage, Oct-Nov., Oval, Scaly Red Fruit, 6 to 10 feet, Japan and Formosa); _E. multiflora_ [D or semi-E] (Whitish, April-May, 6 to 10 feet, Deep Orange, Scaly Oblong Fruits, China and Japan); _E. orientalis_ [D] (Silvery-yellow, June-July, 10 to 18 feet, Orient); _E. pungens_ [E] (Silvery-white, Oct-Nov., 10 to 15 feet, China and Japan); *E. p. aureo-variegata_ [E] 10 to 15 feet, one of the best golden variegated shrubs; _E. p. variegata_ (Creamy-white Variegation, 10 to 15 feet), and _E. umbellata_ [D] (Creamy-white, May-June, Globose, Silvery-red Fruit, 10 to 18 feet, Japan).

_E._ = Evergreen. _D._ = Deciduous.
Elæocarpus cyaneus. (Tiliaceæ)
This is an interesting half-hardy evergreen shrub, a native of Australasia and only fit for cultivation in the British Isles in the milder districts of the south and west, where it should be given the protection of a wall. It grows up to about 15 feet in height, and in summer bears a mass of racemes of small, white, fringed flowers, followed later by attractive blue berries.

Culture.—Plant in a well-drained, light, loamy soil in April or early in May in sunny sheltered situations. Seeds, sown in a cool greenhouse or frame in early spring, provide an easy means of increase. Grow in pots until large enough to plant in the permanent positions outside at the end of April or during May. No pruning is required.

Elder See Sambucus
Eleutherococcus. See Acanthopanax.
Elliottia racemosa. (Ericaceæ)
A deciduous shrub or small tree, 6 to 10 feet or more high, with obovate leaves and carrying terminal racemes of white flowers in July and August. It is a native of Georgia and a rare shrub both wild and in cultivation.

Culture.—This plant thrives in a rather light loamy soil with leaf-mould and peat added. An annual mulch of rotted leaves and decayed vegetable material in May should be given to keep the ground cool and moist in summer. Plant early in March in sheltered positions with plenty of light, but protected from the fierce heat of the mid-day sun. No pruning is required or desirable. Increase is by layering in autumn and by cuttings, 2 to 3 inches long, made of the ends of the semi-ripe side shoots and inserted in a frame with slight bottom heat in July.

Elm. See Ulmus.
Elsholtzia Stauntonii. (Labiatae)
This is a handsome, semi-woody hardy deciduous shrub, a native of China, that grows about 4 or 5 feet in height. From August to October it bears a profusion of panicles of small purplish-pink flowers. The tapering, lanceolate, saw-edged foliage is dark green and is mint-scented.

Culture.—This shrub likes a sunny position and a fairly rich soil. Plant in February or early in March. It may be increased by means of cuttings, 3 or 4 inches long, made of
soft wood in July and inserted in a close frame, preferably with slight bottom heat. Shorten the previous summer’s growths to half, or less than half, their length in February each year.

**Embothrium coccineum.** Fire Bush. (*Proteaceae*)
A wonderfully attractive semi-hardy spring-flowering evergreen shrub or small tree, a native of Chile and which in warm sheltered situations and in the milder districts of Great Britain is grown out of doors, notably in Cornwall, along the west coast of Scotland, and in some parts of Ireland. In May the glorious crimson-scarlet flowers are set-off to advantage by the glossy, longish, oval and leathery dark green foliage.

*Culture.*—It grows some 20 to 40 feet in height and does well in any fairly good soil, but does not like chalk. Plant in sheltered sunny positions and mulch each year with leaf-mould to keep the ground cool. Grow small plants in pots and plant out in late April or May. Increase is by seeds sown under glass in early spring, by layering in autumn, and by suckers lifted from the parent plants at the end of April. Prune after flowering only to keep the shrubs shapely.

**Emmenopterys Henryi.** (*Rubiacae*)
A very handsome monotypic genus, native to China and which in favourable situations in the British Isles develops small tree or large shrub proportions. The late Dr E. H. Wilson, who introduced it to cultivation in 1900, described the tree as one of the most striking and beautiful in the Chinese forests, growing from 30 to 80 feet high and having a stout trunk. It has not so far flowered in cultivation, but the tree is said to produce in July a mass of large white flower bracts and big white flowers.

*Culture.*—Plant in early March in rich loamy soil with leaf-mould added, also a little peat if available. Prune in February or March, only to shape the trees or bushes and to thin the branches. Propagation is easy by means of cuttings, 2 to 4 inches long, made of the ends of half-ripe shoots and inserted in July and August in a close frame with slight bottom heat.

**Empetrum nigrum.** Crowberry. (*Empetraceae*)
A dwarf-growing evergreen shrub not more than 12 inches in height, with linear heath-like foliage and indigenous to the mountain districts and moorlands in the north of Great...
Britain. In March it produces small unisexual flowers on different plants, followed where several are planted together by black berries on the female bushes. *E. n. scoticum* is a small-leaved dwarf form, rarely exceeding 6 inches in height.

**Culture**—Plant in October or April and May in sunny positions in a lime-free soil of sandy loam, peat and leaf-mould. Prune in May, but only if there are any long, loose ends to cut off. Propagation may be carried out by means of seeds sown in spring in a frame, or by cuttings of semi-mature wood, 1½ to 2 inches long, inserted in sandy soil under a bell-glass in August and layering in autumn.

*Enkianthus. (Ericaceae)*

Beautiful hardy deciduous flowering shrubs, natives of the Himalayas, China and Japan, which grow to a height of from 3 to 15 feet, or more, and in April and May carry drooping bell-shaped flowers on short stems that radiate horizontally and in rings from the main branches. In autumn the saw-edged, oval or lanceolate foliage assumes gorgeous shades of red and orange.

**Culture**—These shrubs like a sunny sheltered position and a moist peat or non-calcareous, sandy loam and leaf-mould, with peat if available. Plant preferably in late October and in November, or in February. No pruning is necessary. To propagate, sow seeds in early spring in a frame or cool greenhouse, insert cuttings made of the young wood, 2 to 3 inches long, in July in a close frame or bell-glass, or of mature shoots with a thin “heel” of old wood in October in a frame, or layer in autumn.

**Species**—*E. campanulatus* (5 to 6 feet, Creamy-yellow tipped Red); *E. c. Palibinu* (3 to 4 feet, a variety with Rich Red Flowers); *E. cernus* (4 to 6 feet, White); *E. c. var rubens* (3 to 4 feet, Red), and *E. perulatus* [syn. *japonicus*] (4 to 6 feet, White).

*Ephedra. Shrubby Horse-tail (Gnetaceae)*

A genus of peculiar hardy rush-like semi-shrubs, not unlike the Horse-tails and carrying a mass of apparently leafless green stems rising some 1 to 4 feet in height. They bear insignificant unisexual yellow flowers in early summer, followed in most of the well-known species in favourable seasons and under good conditions by scarlet fruits.
EPHEDRA — ERCILLA

**Culture.**—These shrubs like a sunny position and a well-drained sandy loam and are especially useful subjects for dry, sandy banks. They may be propagated by means of seeds sown in early spring in a frame, by division in April or October, by cuttings made of the small side shoots, 2 to 3 inches long with a thin heel of old wood, in a close frame in late summer, and by layering in October. Plant in April or October. No pruning is necessary.

**Species**—E. *distachya*, 3 to 4 feet in height, a native of southern and eastern Europe and one of the best-known species, is rather striking and unusual in appearance and sometimes bears attractive fruits in autumn. *E. Gerardiana*, from the Himalayas, a dense dwarf shrub, 1 to 2 feet high and of spreading habit, and *E. nebrodensis*, growing up to 3 feet and a native of south-eastern Europe, are other well-known species. These plants more or less form a link between the conifers and ordinary flowering plants.

**Epigaea repens.** (*Ericaceae*)

This is a very uncommon and hardy little creeping evergreen, known as the North American “May Flower.” It is an interesting dwarf-shrub for the rock garden. The little plant only grows from 3 to 6 inches in height and has leathery, glossy green foliage, and in April produces rose-tinted or white flowers. A second species from Japan, *E. asiatica*, 3 to 6 inches in height, is in cultivation at Kew and in the rock garden is a pleasing companion plant to the North American “May Flower.”

**Culture**—These shrubs thrive in almost any soil deficient in chalk, but should be protected against frosts. Epigæas usually thrive best in partial shade, but in moist ground they grow freely in sunny positions. Plant in April or early in May. No pruning is required. Propagation is best carried out by means of division in spring, and by seeds when available, sown in a cool moist frame.

**Ercilla volubilis** [Syn. *Bridgesia spicata*] (*Phytolaccaceae*)

This is an interesting hardy evergreen and woody climbing plant that grows from 10 to 20 feet high and represents a monotypic genus, native to Chile. It has long, fleshy, green foliage and produces dense spikes of small purplish flowers in March and April.
Culture — This shrub is not particular as to soil and grows best against a wall or fence. Plant in April or early May in sunny positions. Prune in May after flowering to train and keep the growths within bounds. To propagate insert in a frame during July or August, cuttings 2 to 3 inches long, made of the ends of the shoots.

**Erica.** Heath or Heather (*Ericaceae*)

This is a large and important genus of hardy and greenhouse evergreen flowering shrubs known as Heath or Heather and comprising several hundred species and varieties. Nearly all have small, glossy green, linear leaves crowded in whorls of three, four or five on the stem. They are invaluable in the garden and in the greenhouse, many of them flowering as they do at a time when other blooms are scarce, and in addition to the beauty of their flowers, there are varieties with bronze-gold or yellow foliage. The hardy kinds are delightful when grouped in sunny, well-drained beds in which nothing but the Heath family are grown, in fact, the "Heath Garden" should be far more popular than it is, as these plants are quite easy of culture, and by a careful selection of the species a succession of bloom may be had almost the year through. Keep all of one species massed together, if possible, rather than have plants of different colour and height dotted about indiscriminately. If grown with other shrubs, they make most fitting plants for the front of borders occupied by Kalmias, Azaleas, and Rhododendrons. Few shrubs are better fitted for sunny positions in the wild and woodland gardens, and the dwarfer species find a home in the rock garden or they may be used as edging plants.

Culture — Plant in October or in April and early May, in sunny positions and in any light garden loam without lime in it, and with plenty of leaf-mould added, or in well-drained sand and peat. Peat is not essential to Heaths, although they thrive in it. If the soil is heavy, it must be taken out to a depth of 18 inches or 2 feet and sandy loam, leaf-mould and peat, if available, should be freely mixed in. *E. carnea*, one of the best and most useful species, is an exception and does not mind lime in the soil. Other Heaths, which do not object to lime in the soil, are *E. darleyensis*, *E. stricta* and *E. mediterranea*. Do not prune, but merely keep in shape by
ERICA

removing dead blooms from the spring-flowering species in June, from the summer and autumn-bloomers in March and from winter-flowerers in April. This removal of all shoots that have flowered is essential to the ultimate health and appearance of the plants. However carefully trimmed, the plants become straggly in the course of time, and should be removed and replaced by young plants. To propagate, insert cuttings, 1 to 1½ inches long, made of the ends of half-matured side shoots in August in sandy soil (with peat added, if available) under bell-glasses, sow seeds thinly in shallow boxes or pots in a frame in February or March; divide the roots in October or April and early May, or layer in autumn, allowing a year, or more if necessary, for the layers to become rooted before they are severed from the parent plant.

Species and Varieties.—E. arborea (Tree Heath), up to 15 feet, or more, fragrant white flowers, Feb.-April, southern Europe, northern Africa and Caucasus; E. arb alpina, 5 to 10 feet, more hardy than E. arborea, white flowers, April to June, Spain; E. australis, 4 to 6 feet, rose-red flowers, March to May, Spain and Portugal; E. aust. Mr Robert, 4 to 6 feet, white variety. *E. carnea, ½ to 1 foot, rosy-pink, Jan to April, Alps of central Europe; E. car alba, ½ to ¾ foot, white.

A number of improved varieties of E. carnea are now in commerce, including James Backhouse, 6 to 10 inches, early-flowering; King George, 6 to 10 inches, deep pink flower, dwarf habit, and Vivellii, 6 to 9 inches, deep carmine flowers, bronzey-red foliage in autumn; E. cihars, ½ to 1 foot, rosy-red, June to October, south-western Europe, including southern England and Ireland; E. cili Maweana, ½ to 1 foot, darker green foliage, larger flowers, Portugal; E. cinerea (Scotch or Grey Heath), 6 to 18 inches, rosy-red, June to September, western Europe, including Britain; E. cin alba, ½ to 1 foot, white; E. cin. coccinea, dwarf, ½ to 1 foot, scarlet-red; E. cin. rosea, ½ to 1 foot, bright-rose. *E. darleyensis [syn. E. mediterranea var. hybrida] (carnea x mediterranea), 1 to 2 feet, rosy flowers, November to April; E. lusitanica (syn. E. codonodes), 6 to 10 feet, or more, white, Feb.-May, Spain and Portugal; E. mediterranea, 4 to 8 feet, or more, rosy-red, March-May, south-western France and Spain; E. med. alba, dwarf, 2 to 2½ feet, white; E. med. hibernica, dwarf form, 3 to 4 feet,
found wild in Ireland; *E. med superba*, 4 to 8 feet, rich rosy-red; *E. stricta*, 6 to 8 feet, bright rose, June to September, southern Europe; *E Tetralix* (Cross-leaved Heath), 6 to 18 inches, rose, June to September, northern and western Europe, including Britain; *E. Tet alba*, white; *E. Tet. mollis*, 6 to 18 inches, white flowers, greyish foliage. *E. vagans* (Cornish Heath), 1 to 1 ½ feet, rosy-purple, July to October, south-western Europe including Cornwall; *E. vag alba*, ¼ to 1 foot, white, *E. vag. Kevernensis*, ¼ to 1 foot, bright rosy-pink. *E vag. Lyoness*, ¼ to 1 foot, improved white variety; *E vag Mrs D F Maxwell*, ¼ to 1 foot, rich rosy-pink. *E Vetchii* (E lusitanica x arborea), 6 to 10 feet, white, April May. For *Erica vulgaris*, see *Calluna vulgaris*.

**Erinacea pungens.** Hedgehog Broom (Leguminosae) These uncommon little hardy shrubs, which in April and May carry pale purple-blue, pea-shaped flowers on spiny and almost leafless bushes up to some 12 inches in height, are of the Broom family and natives of the Eastern Pyrenees and N W Africa. They love a hot, dry situation and are useful in the sunny rock garden.

**Culture.**—Plant in March, 6 to 9 inches apart. No pruning is necessary. Propagation may be carried out by means of seeds sown in spring in a cool greenhouse or frame; by cuttings, 1 inch or more in length, and with a thin “heel” of old wood, inserted in sandy soil during August and covered with a bell-glass, or by layers in autumn.

**Eriobotrya japonica.** Evergreen Medlar or Loquat (Rosaceae) A striking large-leaved evergreen shrub or small tree, a native of China and Japan and growing some 15 to 30 feet high. It has handsome, large dark-green corrugated leaves, and thrives in any good calcareous loam, but its flowers, which are not unlike those of the hawthorn, are rarely developed in the British Isles, except under glass. It can be grown in very sheltered gardens in the south and west and is suitable for warm sheltered situations against a wall, as grown at Kew.

**Culture.**—Plant in May. Prune only to keep in shape in the open and to train on a wall or fence. This shrub may be raised by means of seeds usually from abroad, and sown in a cool greenhouse or frame on arrival, and by cuttings in August, 3 to 4 inches long, made of the side shoots and inserted in sandy soil in a close frame with slight bottom heat.
ESCALLONIA — EUCALYPTUS

Escallonia. Chilean Gum Box. *Saxifragaceae*

Handsome hardy and half-hardy evergreen (except *E. Philippiana*, which is deciduous) shrubs, natives of South America, and with rich glaucous-green saw-edged oval or obovate leaves and terminal clusters of pretty hawthorn-like or waxy tubular-shaped white, pink or red flowers during June and the succeeding months, except as stated below. They grow to a height of from 6 to 18 feet or more and succeed in sheltered sunny situations; they also do well near the seaside, where they may be used for forming hedges, providing they are not exposed to north or east winds. If a severe winter is probable, these shrubs should be protected by branches of conifers or evergreens laid among the stems. Any good light garden soil is suitable for them, but the drainage should be perfect.

Culture — Plant 4 to 5 feet apart in April or early in May, except *E. Philippiana*, which should be planted in February or early in March. Cut out old wood, and in the case of wall shrubs, shorten lateral shoots, in autumn after flowering or in April when new growth is about to begin, and trim to shape. The autumn-flowering species, such as *E. monteviendentis* and *E. rubra*, should not be pruned until the following March. To propagate, insert cuttings from 3 to 4 inches long, made of half-matured shoots, in a frame in July or August, or layer in autumn. Escallonias root so readly from cuttings that they are seldom raised from seeds, or layers.

Species and Hybrids.—*E. C. F. Ball* (Rosy-carmine, 6 to 10 feet); *E. Donard Brilliant* (Dark Red, 4 to 5 feet), *E. Donard Seedling* (Flesh-pink, 6 to 10 feet), *E. edulis* (Flesh-pink, 6 to 10 feet); *E. eximius* (White with Slight Tint, 10 to 18 feet), *E. illimita* (White, August, 8 to 10 feet), *E. Ingramii* (Rose-pink, 6 to 10 feet), *E. langleysis* (Rosy-carmine, 7 to 10 feet), *E. macrantha* (Rosy-crimson, 6 to 12 feet), largely planted in the south and west of Great Britain for hedges; *E. monteviendentis* (White, Sept., 6 to 10 feet); *E. Philippiana* (White, 6 to 9 feet); *E. punctata* (Rich Crimson, 6 to 10 feet), *E. rubra* (Deep Red, 10 to 15 feet); and *E. viscosa* (White, 6 to 9 feet).

Eucalyptus. Gum Tree. *Myrtaceae*

Evergreen trees, natives of Australasia, which are on the borderland of hardness and which, with one or two ex-
exceptions, can only be grown outside in the mildest localities. The Tasmanian Eucalyptus, *E. coccifera, E. Gunnii, E. G. var whittinghamensis* (the best tree at Kew) and *E. urniger*, are the most suitable for out-door cultivation in the British Isles. They are fast-growing trees and eventually make fine handsome specimens some 60 or more feet in height.

**Culture.**—Eucalyptus thrive in well-drained loamy soil and are useful for growing near the sea. They are readily raised from seeds sown in a greenhouse or frame in spring. They should be grown in pots until large enough to plant outside in their permanent positions in early May. No pruning is required, unless to keep a leading shoot and to maintain shapely trees.

**Eucommia ulmoides.** Chinese “Gutta-percha Tree.” *(Eucommiaceae)*

A hardy ornamental monotypic deciduous tree of elm-like appearance, but of small stature. It is a native of China, has large and distinctive leathery foliage and, as its popular name implies, produces gutta-percha. This tree grows from 20 to 30 feet in height and the flowers are dioecious. I have only seen the flowers, which consist of clusters of unattractive brown stamens borne in April, on male trees.

**Culture.**—The tree will grow quite well in almost any position and in ordinary calcareous loam. Plant in November or February. Prune in late summer or autumn only to shape and if required to thin the trees. Propagation may be carried out by means of cuttings, 3 to 4 inches long, made of semi-mature wood and inserted during July and placed in gentle heat, or under a bell-glass.

**Eucryphia pinnatifolia.** *(Eucryphiaceae)*

A hardy semi-evergreen shrub of rather slow growth when small. It is a native of Chile, has dark glossy-green, saw-edged, pinnate foliage and produces in late summer beautiful large white cup-shaped flowers with golden anthers, similar to those of the “Rose of Sharon.” The crimson and gold autumn tints of the foliage are usually very attractive. This shrub reaches a height of 20 feet or more and can be grown out of doors in sunny, sheltered positions and in well-drained, light, lime-free, loamy or peaty soils.

*E. cordifolia*, also from Chile, is a half-hardy evergreen.
EUCRYPHIA — EUONYMUS

species, 10 to 25 feet or more in height, with simple, heart-shaped leaves and clusters of milk-white bowl-shaped flowers, 2 inches across and with central tufts of terra-cotta anthers in late summer. It thrives in warm, sheltered positions in the south and west of Great Britain, where it grows taller than *E. pinnatifolius* Nymansay, a hybrid between these two species and raised at Nyman’s Gardens, Handcross, Sussex, promises to be a beautiful late summer-flowering shrub. It grows from 10 to 15 feet or more in height.

*Culture* — Plant out about mid-April, the roots will then have ample time to become established before midsummer. Spring planting is preferable to autumn planting, which is the cause of the loss of many plants. In cold districts protect in winter by means of wrapping a mat round stakes placed in the ground about the shrub and tied together at the top; leave the sheltered side open, except in severe weather. The soil over the roots should also be mulched with rough leaf-mould. Cut out old and weak wood, if any, in March. To propagate, sow seeds in pots under glass in spring and grow the young plants on in pots until they are ready for planting out in their permanent positions, or increase by means of layering in autumn, and by cuttings, 2 to 3 inches long, made of the side growths in July and inserted in a close frame, preferably with bottom heat.

**Euonymus. Spindle Tree (Celastraceae)**

Deciduous and evergreen shrubs and small trees which thrive in sun or semi-shade and in good loam, and may be grown to advantage near the sea or in town gardens. The evergreen species stand cutting well and are, therefore, useful hedge
plants. There are numerous species and varieties, including a number that have glossy leaves either wholly coloured or variegated. The flowers, borne in cymes in early summer, are small and insignificant, but in numerous instances they are followed by attractive fruits. *E. _alatus_ (syn. _amurensis_), which is deciduous and comes from China and Japan, grows from 6 to 9 feet in height, and is remarkable for its winged stems and branches; *E. _europaeus_, deciduous, which grows from 10 to 25 feet in height, carries showy pinkish-red fruits in autumn and winter, and has foliage that assumes a bright ruddy hue. The last-named is a native of Europe, including Britain. *E. _japomaeus_, with deep glossy evergreen foliage, grows from 9 to 12 feet or more in height. Its variegated forms are evergreen and make good hedges. Useful varieties are *E. _j. argenteo-marginatus_ (8 to 10 feet, Silver-edged Leaves), *E. _j. aureo-pictus_ (8 to 10 feet, Golden Foliage); *E. _j. latifolius_ (9 to 12 feet, a Broad-leaved Green Variety), and *E. _j. ovatus aureus_ (8 to 10 feet, Golden Foliage). *E. _latifolius_ is a small deciduous tree or shrub, 10 to 12 feet in height, a native of Europe, and is useful on account of its large rosy-red fruits and the brilliant autumnal tints of the foliage. *E. _radicans_ is a creeping, low-growing evergreen, from 1 to 1½ feet high, but which will climb up a wall 20 to 25 feet in height, and is also useful for edging, or for planting in poor soil beneath trees. The varieties variegata and *Silver Gem* make bright subjects for winter bedding. *E. _yedoensis_, from Japan and Korea, is a large deciduous shrub or small tree growing up to 12 feet or more, and produces pendant clusters of triangular, pinkish-red fruits, freely in autumn.

**Culture.**—Plant the evergreen kinds in April or in September and October; and the deciduous species from November to March. No pruning is necessary, except to shape the bushes; the use of a knife or a pair of secateurs is preferable to clipping with shears in the case of hedges. Propagate deciduous species by means of ripe seeds sown in pots under glass in early spring, or by layering in autumn. The evergreen species are increased by means of cuttings, about 3 inches long, made of the ends of the summer's growths in August or September, and inserted in sandy soil in a close frame with slight bottom heat.
EUONYMUS — EUROTIA

or under bell-glasses *E* radicans and varieties may also be increased by means of division of roots in October or April

**Eupatorium.** Hemp Agrimony (*Compositae*)

Most of the plants of this genus are evergreen shrubs suitable only for culture in the greenhouse. *E. Wenmanmanum*, a South American species, will grow in warm sheltered situations in the south and west of the British Isles and in warm seaside gardens. It reaches a height of from 4 to 8 feet and carries large flat corymbose heads of small white fragrant flowers in late summer and autumn.

**Culture** — Increase by means of cuttings made of partially-ripe shoots, 3 or 4 inches long, and inserted in July and August in a close frame or handlight. Prune back the previous year's growth in February to within a few inches of the old wood. Plant in April or May in light, well-drained loamy soil.

**Euptelia.** (*Trochodendraceae*)

A small genus of somewhat rare, hardy and half-hardy deciduous trees. In April, before the leaves appear, they carry flowers having no sepals or petals, but clusters of male stamens and female stigmas in umbels. The plants are of value for their ornamental foliage. They are natives of China, northern India and Japan; one or two species only are now obtainable here. *E. Franchetii*, from China, is an attractive small tree some 10 to 30 feet in height, with reddish young shoots in spring and in maturity displays rich autumn tints. It is worthy of consideration, so is *E. polyandra*, from Japan, a similar, but somewhat tender species, 10 to 25 feet in height. They do quite well in almost any well-drained soil and are best when grown in the milder localities, or in the case of *E. polyandra*, may be given the protection of a wall.

**Culture** — Plant in sheltered positions in November or February. No pruning is required. Propagation may be carried out by means of cuttings made of side shoots, 3 to 4 inches long with a thin heel of old wood, and inserted in July or August in a close frame with slight bottom heat, or the plants can be increased by layering in autumn.

**Eurotia ceratoides.** (*Chenopodraceae*)

This is a deciduous shrub of spreading habit, a native of Asia
Minor and the Caucasus. It grows from 2 to 4 feet high, has grey foliage and in July bears interesting but not very attractive flowers closely arranged in terminal woolly panicles.

Culture.—The plants thrive in sunny positions and in ordinary garden soil, and are readily increased by cuttings, 2 to 3 inches long, made of semi-ripe shoots and inserted in very sandy soil in a close frame during August. Plant in November or February in sunny positions. Trim the plants to shape in February and cut off old flower spikes in autumn.

Eurya japonica. (*Ternstroemiaceae*)
An evergreen shrub allied to the Camellias, with handsome glossy green, longish oval or lanceolate and saw-edged foliage. It grows from 4 to about 8 feet in height in the British Isles, but may grow taller as it sometimes attains small tree dimensions, 20 to 30 feet in height, in Japan. This shrub thrives in warm, sunny and sheltered situations out of doors. The flowers, which are unisexual, are small and insignificant.

Culture.—It requires a well-drained soil of sandy peat or leaf-mould and loam. Propagation is carried out by means of cuttings, 2 to 3, or 4 inches long, made of half-matured wood and inserted in a close frame in late summer. Plant in late April or in May. No pruning is required, unless to shape the bushes, it should then be done in May.

Eurybia. See Olearia Traversii

Euscaphis staphyleoides. (*Sapindaceae*)
A deciduous shrub, a native of China and Japan, and allied to the Staphyleas, but not so hardy. It makes a bush up to 10 feet high and is suitable for cultivation against a sheltered wall and in the open in the south and west of the British Isles. It has more leaflets (7 or 9) than the Staphylea and in May carries white or yellowish flowers in terminal panicles; these are followed by purplish, bladder-like fruits half-an-inch in length.

Culture.—Increase by seeds sown in spring in a frame or cool greenhouse, and by means of cuttings made of semi-ripe side shoots, 3 to 4 inches long, and inserted in a close frame during August. The shrub thrives in well-cultivated loamy soil and should be planted in March. Prune in winter to keep in shape and to thin out crowded branches.
EVODIA — EXOCHORDA

Evodia. (Rutaceae)

This is a distinctive and interesting genus of some fifty species of deciduous and evergreen trees and shrubs, natives of eastern and southern Asia, of Australasia and of Polynesia. Three or four hardy Chinese species are in cultivation. These are allied to the Phellodendrons, and were first introduced by the late Dr Wilson in the early years of the present century. They are useful ornamental trees, some 15 to 35 feet in height, and carrying compound leaves and during August small unattractive greenish flowers in panicles or corymbs, followed by showy clusters of black fruits.

Culture.—They grow quite well in ordinary garden soil. Prune in late summer or early winter only to shape the trees and to thin the branches. Seeds sown in a frame in early spring provide a ready means of increase. Plant from November to February.

Species—E. glauca, from Hupeh, 20 to 25 feet, has leaves up to 9 or 10 inches long and composed of seven to fifteen leaflets with a distinct glaucous underside. E. hupehensis, a native of western China, 20 to 30 feet, has smooth leaves composed of five to nine leaflets. E. velutina, another species from western China, 30 to 35 feet, has soft pubescent leaves composed of seven to eleven leaflets.

Exochorda. Pearl Bush (Rosacea)

Hardy deciduous tall and bushy Asiatic shrubs carrying masses of pure white blossoms in racemes in May or June. They are related to the Spiræas, and thrive in sunny, sheltered positions and in rich loam.

Culture.—Plant from November to February. Cut back straggling shoots and thin the bushes by removing old wood after flowering. To propagate, sow seeds in early spring, in a frame, or in late summer insert cuttings about 3 inches in length of half-ripe shoots, preferably with a heel in a close frame.

Species and Varieties.—E. Giraldu var Wilsonii, a variety from central China, is of vigorous habit, growing from 8 to 12 feet high and bearing white flowers ½ of an inch across. E. Korolkown, from Turkestan, a bush 10 to 12 feet high, produces quantities of small white flowers in May; *E. macrantha, a hybrid between E. Korolkown and racemosa, grows
A B C OF SHRUBS AND TREES

from 10 to 12 feet high, and carries racemes of large white flowers in April and May, and *E racemosa, from central China, a shrub 8 to 10 feet high, bears racemes of snow-white flowers in May.

Fabiana. False Heath. (Solanaceae)
An evergreen shrub that flowers in June and that is on the borderland of hardiness. It somewhat resembles the Heath in foliage.

Culture.—Plant in April or May in sandy loam and leaf-mould with some peat in it, if available, and grow against a sunny wall, except in the warm and sheltered gardens of the south and west of the British Isles. Propagate by means of cuttings, 2 to 3 inches long, made of the young side shoots and inserted in a close frame in late summer. When required, shorten long straggling shoots in early July after flowering.

Species.—The best-known species is *F. imbricata, a native of Chile. It attains a height of from 5 to 6 feet or more. The plumes of white tubular blossoms clothe the elegant branches in June.

Fagus. Beech (Cupuliferæ)
The Common Beech (*F. sylvatica) is one of our best-known woodland trees. Of this there are numerous varieties, notably *F. s cuprea (Copper Beech, 60 to 80 feet), *F. s heterophylla (Fern-leaved Beech, 40 to 60 feet); *F. s pendula (Weeping Beech, 20 to 30 feet), and *F. s purpurea (Purple Beech, 60 to 80 feet). All the varieties make most ornamental trees for a lawn and pleasure grounds, and *F. s Zlat'a (Golden Beech, 60 to 80 feet) also is a striking tree. *F. ferruginea (American Beech), reaching a height of from 90 to 120 feet, is a wonderful tree in North America, but our summers are apparently not hot enough for it to attain such dimensions and beauty here. *F. japonica (Japanese Beech) is a tree growing up to 75 feet, and *F. Sieboldii (Siebold's Beech), from Japan, makes a tree up to 90 feet in height. *F. sylvatica, which left alone, eventually reaches large tree dimensions, up to 100 feet or more, is often used as a hedge plant, as when trimmed in August, it holds its oval-shaped dentate-edged russet leaves all through the winter. These well-known trees thrive in chalk soils and are good for woodland planting.

Culture.—Plant from November to February. No pruning.
**FAGUS — FEIJOA**

is necessary, except to train a leading shoot and thin crowded branches in winter. Propagation of the varieties is usually carried out in March by means of grafting on the common beech in a sheltered position outside or in a close frame. Seeds may be sown when ripe on a border outside. Self-sown seedlings of the common beech are easily obtained from the woodland.

_Fallugia paradoxa._ (Rosaceae)

This is a Californian shrub thriving and flowering freely on a sunny wall at Kew all through the summer. It grows from 3 to 4 feet high, and even more against a wall. The flowers are white, about an inch across, and are followed by heads of feathery-tailed fruits.

_Culture._—Plant in spring in very well-drained, sandy loam with leaf-mould and peat added. Increase is by layering in autumn and by seeds, when available, sown in a frame in autumn. Cut off old flowers and trim to shape in autumn.

_Fatsia japonica._ Japanese Aralia (Araliaceae)

An evergreen shrub with large, thick, glossy green and fig-like leaves. The plant has a striking and tropical appearance, and thrives well in sheltered town gardens, notably in the gardens of London squares. It is often erroneously called the "Castor-oil Plant." In good well-drained loam and in warm, sheltered positions this plant will grow from 8 to 12 feet high and produce clusters of cream-white flowers in October and November, followed by clusters of black, pea-like berries. _F. sieboldii_ is a dwarf variety, rarely exceeding 3 to 6 feet in height.

_Culture._—Plant in April or May. To propagate, sow seeds in spring when ripe, in a greenhouse or frame, or insert 3 inch-long pieces of semi-mature stems in sandy soil in a propagating frame in spring.

_Feijoa Sellowiana._ (Myrtaceae)

This is a beautiful, semi-hardy evergreen shrub that is a native of Brazil. It grows from 7 to 10 feet in height, or higher against a warm, sheltered wall, and in summer produces lovely wax-like crimson and white flowers with golden anthers. It may be grown out-of-doors in warm, sheltered situations against a wall or fence and in the milder localities of the south and west of the British Isles, as a border shrub.

_Culture._—Increase by layering in autumn, plant in April.
or May in a well-drained soil of sandy loam and leaf-mould with peat, if available. No pruning is required, except to shape the bushes and to train the shrub against a wall.

**Fendlera rupicola.** (*Saxifragaceae.*)

A dainty and graceful little semi-hardy deciduous shrub, a native of the south-western districts of the United States, which, planted in the most sunny position available, preferably against a wall, makes a bush some 3 to 6 feet in height, and in early summer (May and June) produces quantities of delicate rose-tinted white flowers.

**Culture.**—A well-drained sandy loam, with leaf-mould and peat, if available, suits this shrub. Plant in late March or April. No pruning is required, except to shape the bush. Propagation is by means of half-ripe cuttings, 2 to 3 inches long, inserted in gentle heat in July or under a bell-glass in September.

**Fir.** See *Abies.*

**Ficus Carica.** Fig. (*Urticaceae.*)

A deciduous shrub or small tree, some 10 to 15 feet in height, or more against a wall, a native of Afghanistan and eastern Persia. The Fig is a not unattractive large-leaved shrub, but is usually cultivated in gardens for its fruits. These ripen best when the trees are planted against a sunny wall and in well-drained, rich loamy soil. In the mild climate of the south and west of the British Isles the figs ripen on bushes in the open border. Male and female flowers are borne on separate trees. Female plants are usually cultivated in gardens, these developing fruits without pollination.

**Culture.**—Increase by means of cuttings made of semi-ripe growths, 4 to 6 inches long, and inserted under a hand-light in September, or cuttings, 10 to 12 inches long, made of firm, woody shoots may be inserted against a sheltered wall outside in autumn. Plant in February or March. Prune in winter only to keep the branches spaced out and well-balanced. *Brown Turkey* is the best fruiting variety for general culture.

**Fitzroya patagonica.** Patagonian Cypress. (*Coniferae.*)

This is a distinctive and attractive evergreen cypress-like coniferous shrub or small tree, a native of Patagonia and Chile. It is on the borderland of hardiness at Kew, but grows quite well in warm, sheltered situations. In the south and
PLATE 21

Right, Rhododendron “King George”, below, Rhododendron in full bloom in spring
PLATE 22
12,000 feet up on the Burma-Tibet frontier, the natural home for many species of rhododendron
west of the British Isles there are specimens from 30 to 40 feet tall. Native trees attain a height of from 80 to 160 feet.

**Culture.**—Propagate by cuttings, 2 to 4 inches long, made of the ends of the side shoots with a thin heel of old wood, and inserted in sandy soil in a close frame during late summer. Plant in late April or May. No pruning is necessary, except to keep the bushes shapely, and this should be done in late April.

**Fokienia Hodginsii.** (*Coniferae.*)
This is a remarkable evergreen species of coniferous tree, a native of eastern China, and in form and habit intermediate between the Cupressus and the Libocedrus. It grows from 20 to 40 feet high, and is interesting to plant in the south and west of the British Isles, but is tender for general outdoor cultivation.

**Culture.**—Insert cuttings, 3 or 4 inches long, made of the ends of the side shoots, in sandy soil in late summer in a close frame, preferably with slight bottom heat. Plant towards the end of April or early in May. Prune only to keep the trees shapely, towards the end of April.

**Fontanesia.** (*Oleaceae.*)
Deciduous shrubs of Privet-like appearance, with smooth green lanceolate foliage and a mass of small greenish-white flowers in early summer, followed by interesting disc-like winged fruits.

**Culture.**—These shrubs grow quite well in any ordinary soil and are easily increased by means of cuttings, 6 to 12 inches long, made of the growths of the year, preferably with a thin heel of old wood or the thin tops of the cuttings removed in early autumn and inserted in sandy soil under a handlight, in a sheltered position outside. They may also be layered in autumn. Plant from November to early March when weather and soil conditions are favourable. Prune in winter or summer only to keep in shape, removing old wood to relieve crowded growths.

**Species.**—*F. Fortunei* is a shrub from 12 to 15 feet high, probably more with age, and has leaves 2 to 4½ inches long and from ½ to 1 inch wide. It is a native of China, where it is said to be planted as a hedge. *F. phillyreoides* reaches from 8 to 10 feet or more in height, has leaves from 1 to 2½ inches
long and from \( \frac{1}{2} \) to \( \frac{3}{4} \) inches wide. It is a native of Asia Minor, and is not so hardy as *F. Fortunei*.

**Forsythia.** Golden Bell-Bush (*Oleaceae*)

Free-flowering hardy deciduous shrubs that grow from 4 to 12 feet in height and carry small golden-yellow bell-like flowers in February, March and April. They thrive in ordinary well-manured soil and in sunny or partially-shaded positions.

**Culture**—Plant from November onwards to March, and cut the shoots well back after flowering, so that the bushes shall have the whole summer to produce fresh growths on which the next year’s flowers will be borne. To propagate, insert cuttings of soft wood about 3 inches long in a frame in June or July, cuttings of mature wood about 10 to 12 inches long out-doors in a sheltered spot in October or November, or layer in autumn.

**Species and Varieties**—*F. suspensa var. Fortunei* is a bushy stiff-branched shrub, 6 to 8 feet in height; *F. s var. Sieboldi* (8 to 10 feet) has graceful arching stems which carry the bell-like flowers and is attractive when grown against a wall or fence and over pergolas and arbours. *F. s var. atrocaulis*, 8 to 12 feet, in addition to rich yellow flowers has attractive purple stems which are very showy when the bushes are leafless in winter. A bushy and erect-growing species, some 5 or 6 feet in height, useful for the shrub border, is *F. viridissima*, which blooms a fortnight later than *F. suspensa F. intermedia* is a hybrid between the two above-mentioned plants. This is graceful and not so stiff as *F. viridissima*. There are several varieties of which *F. intermedia densiflora* and *F. s. spectabilis* are the best. The above species are natives of China.

*Fortunearia sinensis.* (*Hamamelidaceae*)

A striking and distinctive monotypic species of deciduous shrubs growing up to about 20 feet in height. It is a native of central China and is related to the Witch Hazels. This shrub is of botanical rather than of horticultural interest and bears inconspicuous flowers in April or May.

**Culture.**—Increase by layering in autumn. Plant in November or March in light sandy soil, adding leaf-mould and, if available, peat. Thin out the branches when required in late spring after flowering, cutting out the oldest wood.

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FOTHERGILLA — FRAXINUS

Fothergilla. (Hamamelidaceae)

Hardy deciduous shrubs related to the Witch Hazels. They like a cool moist position in sandy loam and peat or leaf-mould. The bushes grow some 3 to 8 feet high and carry clusters of thick thread-like white stamens borne in April and May in advance of the leaves, but there are no petals. *F. major*, the best-known species, is a native of the southern regions of the United States of America. It is of upright habit, 4 to 8 feet, and carries terminal clusters of white flowers and rich yellow foliage in autumn. *F. monticola*, 3 to 4 feet high, a native of Virginia and Carolina, is more spreading in habit than *F. major*, and the leaves turn a rich scarlet and crimson in autumn. *F. Gardenii* (syn. alnifolia), from the south-eastern districts of the United States of America, is a dwarf and fragrant shrub, 1 to 3 feet in height. The white flowers, which appear on the naked branches in April, are followed in autumn by brightly-coloured red leaves.

Culture—Plant from October to March. No pruning is necessary, except to cut out old branches if crowded; this should be done after flowering. Propagate by means of cuttings of mature wood, about 4 inches long, with a heel inserted in sandy soil in a frame in late summer, by layering in autumn, or sow seeds when ripe in late summer in a cool greenhouse or frame.

Fraxinus. Ash (Oleaceae)

These well-known, hardy, fast-growing trees, mostly with attractive compound toothed foliage, like a sunny position and ordinary soil and are valuable timber trees. As their roots extend for a great distance, they are not much grown in the garden proper, for they rob other plants of their necessary nourishment. *F. Orinus* (The "Manna" or Flowering Ash) is, however, an exception. It is a handsome tree, carrying clusters of feathery creamy-white flowers in May and June. The tree will grow up to 50 feet, but rarely exceeds 25 to 30 feet in height. A second species, *F. Mariesii* (12 to 20 feet), is a native of China and makes an attractive flowering tree of small dimensions or a large bush with creamy-white blossoms in June, followed by bronzey-red fruits.

Culture—Plant from November to March. Thin out the branches when crowded in winter, maintaining leading shoots to
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trees and shortening very long branches. To propagate, sow seeds in a frame, or the common species outside, in autumn. Varieties are usually grafted in spring on seedlings of the Common Ash.

Species—Other species suitable for pleasure ground and park planting are *F. americana* (White Ash) 100 feet, *F. angustifolia* (50 to 70 feet, southern Europe and northern Asia, elegant attractive foliage); *F. excelsior* (Common Ash) 100 feet, and *F. oregona* (Oregon Ash) 80 feet. *F. excelsior var. heterophylla*, the one-leaved ash, is distinct in foliage. It is being planted as a street and road tree. *F. e var. pendula* is an elegant weeping tree and makes an attractive lawn specimen and natural arbour.

**Fremontia californica.** Shrubby Californian Buttercup (*Sterculiaceae*)

This is a handsome and ornamental, but somewhat tender, semi-evergreen Californian shrub or small tree. It grows from 20 to 30 feet high and in summer carries a mass of large cup-shaped, golden-yellow flowers.

Culture—Though it will grow in poor soil, it does best in well-drained sandy loam and where chalk is present. Plant in full sun and in a sheltered position early in May. It should be given the protection of a wall except in the mildest localities. At Kew it is grown on the sheltered south and south-west side of the large Temperate House. The Fremontia does not like disturbance at the roots, which suggests that the young plants should be grown in pots until large enough to plant in their permanent positions. No pruning is necessary or desirable. Propagation is best carried out by means of seed sown in early spring in a cool greenhouse or frame.

**Fringe-Tree.** See Chionanthus

**Fuchsia.** (*Onagraceae*)

Few flowers are more pleasing either in form or colour than the South American Fuchsias. The plants have a grace and beauty peculiar to themselves. In addition to the many named varieties so often met with in the greenhouse, there are hardy kinds that will thrive out-doors, even through severe winters. A great many that are looked upon as tender can stand a winter in the open if the base of the stem or root-stock is covered at the first approach of frost with a mound, 5 or 6 inches deep, of dry cinder ashes. The ashes should not be
removed until the Fuchsias begin to shoot in the spring. If the bushes have not been killed to the ground by frosts in winter, the dead ends should be trimmed off in March. Hardy Fuchsias make a good show in late summer in mild districts of the British Isles. They are also useful to form a hedge, and those Fuchsias which trail upon the ground make effective plants for large rock gardens. Except in the south and west of the British Isles, a sunny, sheltered position is necessary, say under the protection of a south or west wall, here many of these handsome hardy species will run up to 7 feet or more.

**Culture** — To propagate, take cuttings, 1½ to 3 inches long, made of the young shoots in spring, and the ends of the growths about 2 inches long, in August, and root in a compost of two-thirds fibrous loam and one-third leaf-mould, with plenty of coarse grit or sand added, and place the pots in a close frame, preferably with a little bottom heat. Pot on as required and plant out, 12 to 18 inches apart, about May, in light, well-drained soil with some leaf-mould and, if available, mortar rubble in it.

**Species** — *F. Riccartonii*, 3 to 5 feet in height, with its profusion of lovely crimson and purple flowers from July to September, is a beautiful deciduous shrub that deserves a place in every garden with sufficient shelter or protection. It makes a striking hedge and thrives near the sea. *Chp*., or *trum*, in spring. Other good hardy species and varieties are: *F. corallina [syn. exomensis]* (3 to 5 feet, Purple and Red); *F. macrostemma* (4 to 6 feet, Scarlet); *F. m. globosa* (3 to 5 feet, Violet and Purple) and *F. m. gracilis* (an elegant-habited Fuchsia, 3 to 4 feet in height, with smaller leaves and flowers than the type). All flower from July to September and grow from about 3 to 7 feet in height. There are numerous named varieties, the best for outdoor culture being *Madame Cornellison*, 4 to 6 feet in height, which has red sepals and a white corolla.

**Furcreea longæva. (Amaryllidaceæ)**
This is a very handsome semi-hardy evergreen tree of Yucca-like appearance. It is a native of Mexico and is allied to the Beschorneria. In its native habitat it assumes very large proportions up to 50 feet high and produces a mass of white flowers. Such a distinct and striking plant is worthy of
attention in the south and west of Great Britain, but it will grow only in the mildest districts in hot, sunny positions and thoroughly porous soils.

**Culture**—Increase by off-sets taken from the parent plants at the end of April or early in May, which is also the best time for planting. No pruning is required.

**Furze.** See *Ulex*

**Gale.** See *Myrica*

**Garrya elliptica.** Californian Garrya. *(Cornaceae)*

A distinctive and handsome evergreen shrub or small tree with rich, dark green, oval leaves that are greyish on the undersides. It bears clusters of long drooping catkins of silvery-yellow or greenish-white flowers from November to March. It is especially suitable for growing against sheltered walls. In favourable situations it will grow to a height of from 10 to 12 feet and more in the open in the south and west of the British Isles. Male and female catkins, 3 to 8 inches, or more, in length are borne on separate bushes. The male catkins are the more attractive, the catkins borne on the female plant being smaller and less striking than those carried by the male plant. Two or three other Garryas are grown in the south and west, but they are not of outstanding merit.

**Culture**—Plant in May in ordinary well-drained soil and in sunny, sheltered positions. In May trim back long shoots a little to keep the bushes shapely or trained to a wall. The flowers are borne on the mature shoots of the previous year. To propagate, strike cuttings of semi-matured wood about 3 inches long in August in a close frame; sow seeds under glass in early spring, or layer in autumn. As young Garryas do not transplant readily, grow them in pots until large enough for their permanent positions.

**Gaultheria.** *(Ericaceae)*

An ericaceous "lime-hating" genus of evergreen shrubs, some of which are suitable for the woodland or rock garden. They have wiry stems bearing masses of deep green or bronze foliage. The pendulous, heath-like flowers, in most species pink and white, are usually borne in June, July and August, and are followed by white, pink, red or blue berries. *G Shallon,* "Shallon" or "Salal," a native of the western districts of
GAULTHERIA — GAYLUSSACIA

North America, which forms a dense shrub some 3 to 6 feet in height, has heart-shaped leaves and carries pinkish-white Andromeda-like flowers, borne on the previous year's shoots from May to July. These are followed by dark purple fruits. It thrives under trees and is useful for forming game thickets, etc. G. Vertichiana, a native of China, 2 to 3 feet in height, has oblong-ovate, net-veined leaves, 2 to 3 1/2 inches long and 1 to 1 1/2 inches wide, and bears short axillary racemes of white flowers, and the indigo-blue berries which follow are the size of peas. The best of the creeping or dwarf species are G. nummularioides, a tufted evergreen from the Himalayan regions, growing some 4 to 6 inches high, with small leathery, heart-shaped leaves and carrying white or pink-tinted flowers in August, followed by blue-black fruits in autumn; and G. procumbens, the Creeping Wintergreen of the eastern districts of North America, which is similar to the foregoing, except that the leathery leaves are a narrowish-oval in shape and larger, the pinkish-white flowers being borne in July and August. The berries are larger and a bright red.

Culture — Plant in April or October, in cool, moist peat and leaf-mould, or in lime-free loam in a partially-shaded position. Thin out old shoots when crowded, after flowering. Propagate by means of seeds, which ripen freely, sown in February or March in a cool frame, by cuttings made of the ends of the shoots, 1 to 3 inches long, according to the type of growth and inserted in July or August in sandy soil in a close frame, preferably with slight bottom heat, by means of division of the roots in October or April; or by layering in October.

Gaya. See Plagianthus.

Gaylussacia. (Vacciniumae) 
A genus of hardy and semi-hardy berry-bearing deciduous and evergreen shrubs, allied to the Vacciniums and including the North American Huckleberries.

Species — G. brachycera, the Box Huckleberry of the eastern United States of America, is a dainty evergreen shrub some 6 to 12 inches in height, and has leathery oval leaves up to 1 inch long. The white flowers, striped with red, are produced in May and June, and are followed by blue-black fruits G. dumosa (Dwarf Huckleberry of the eastern regions of North America), one of the best-known species, forms a small shrub
up to 2 feet or more in height, with narrow obovate foliage. It produces, during summer, a mass of white, wax-like, bell-shaped flowers, and these are followed by attractive oval-shaped black fruits *G. frondosa*, the Dangleberry of the eastern United States of America, grows from 4 to 5 feet in height, has purplish-green flowers borne in June, and these are followed by blue berries *G. resnosa*, the Black Huckleberry of the eastern States of North America, carries reddish flowers in June, followed by black fruits. It grows from 2 to 3 feet in height.

**Culture**—They may be associated with the Vacciniums in a bed of moist, sandy peat or lime-free loam and leaf-mould. In the dry sandy soil of Kew, the plants are given partial shade, but in moist ground they thrive in full sun. Plant the evergreen species in late April, deciduous species in March. Remove old and worn-out twigs, when necessary, after flowering. To propagate, sow seeds in a greenhouse or frame in March, insert cuttings about 2 inches long made of the tips of the current year’s shoots, in sandy soil in a frame or under a handlight in August, or increase by means of division in October or November and in early spring.

**Genista. Broom (Leguminosae)**
The hardy Genistas, which are closely related to the Cytisus, are very ornamental, and profuse-flowering deciduous shrubs; the various species furnishing bloom from May until early autumn, and being valuable for the sunny border, shrubbery or rock garden. *C. tinctoria*, the Dyer’s Greenweed, so named because it was formerly in considerable demand for a commercial dye, grows from 1 to 2 feet high. As it carries its flowers on the wood of the current year, it should be cut-back in February. The double variety *flore pleno* is even more showy. No plant makes a finer show when in bloom or does better on a dry sunny bank than *G. hispanica*, the Spanish Broom, with its golden flowers in May and June. It is a prickly and compact shrub, forming a bush rarely more than 3 feet in height. Among the best of the taller kinds are: *G. athenensis*, the “Etra Broom,” with its scanty linear foliage and golden flowers, *G. cinerea*, and *G. virgata*, the Madeira Broom, with its tiny greyish, linear leaves and yellow flowers. They flower from June to August, and reach a height of from
GENISTA — GINKGO

10 to 20 feet. All the species here recommended have pea-shaped flowers which come in clusters at the ends of the branches and are borne over a long period, mostly in May or June, a few in July and August.

Culture — Plant from November to March in dry, light soil in sunny positions, and, where possible, plant in groups of five or more plants; this bold massing will furnish gorgeous patches of colour at flowering time. Those species that flower on the old wood, that is to say the early-flowering types, such as G. hispanica, should have the old wood thinned out and the plants must be trimmed into shape, if necessary, directly after flowering. Pruning of the Genistas should be regularly carried out annually so that it is never necessary to cut into wood of more than a year or two old. Wood older than this, if cut, does not “break” well, and is liable to die back. Prune G. atnensis, G. cinerea and G. virgata several times during the season while young to induce bushy growth. In subsequent years only shorten the ends of the one and two-year-old shoots to keep the bushes shapely. To propagate, sow seeds in a frame when ripe, or insert cuttings of half-matured wood, made of the side shoots with a thin heel of old wood, in a cold frame during August, and grow on in pots until planted out, as they do not transplant readily from nursery beds.

Species — G. atnensis (July-August, 10 to 20 feet, Sicily); G. cinerea (June-July, 8 to 10 feet, south-western Europe); G. dalmatica (June-July, 4 to 6 inches, south-eastern Europe); G. hispanica (May-June, 1 to 3 feet, south-western Europe); G. pilosa (May-June, 1 to 1½ feet, southern Europe, including Britain), G. sagittalis (June, 1 foot, Europe); G. tinctoria and the double-flowered variety, G. t. flore pleno (July-August, 1 to 2 feet, Europe, including Britain), and G. virgata (July-August, 10 to 15 feet, Madeira). All the above-mentioned species bear yellow flowers.

Ginkgo biloba. Maidenhair Tree. (Ginkgoaceae)
A slow-growing hardy deciduous unisexual tree, a native of China, and thriving in deep loam. Its leaves, which in shape are somewhat like the pinnae of a giant maidenhair fern, are tinted with golden-yellow in the autumn, and make it one of the most distinct and ornamental trees we have. It is a good town tree, upright in growth, ultimately reaching a
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height of 60 feet, or more. Female trees bear large yellow cherry-like fruits.

_Culture_—Plant from November to March. No pruning is required. Propagate by means of seeds sown in a frame when the seeds ripen in late autumn.

_Gleditschia._ Honey Locust (£eguminosa_)

These are handsome deciduous trees with ornamental foliage. They grow up to 60 feet or more high and thrive in open, sunny positions, in well-drained loamy soils, but not in the windy and colder localities of the British Isles. These trees deserve to be more commonly planted, for they will withstand the smoky atmosphere of large towns, and although the greenish flowers borne in July are quite insignificant, the trees have beautiful pinnate, fern-like foliage, which turns bright yellow in autumn. An additional feature of interest is the long, sharp spines on the trunks and branches of the trees.

_Culture_—Plant from November to early March. Prune in winter, thinning out crowded shoots and shortening long branches when necessary, but being careful to maintain leading shoots. Raise from seeds sown in a cold frame when ripe, or graft in spring on _G. triacanthos_ on a sheltered border in the open air.

_Species_—_G. japonica_, which comes from China and Japan, is a very beautiful small tree of graceful habit. _G. triacanthos_, the best-known species, is a native of North America and has attractive fern-like foliage with from 20 to 25 or more leaflets to a leaf. The long, dark brown bean-like pods up to a foot or more long, in autumn are a feature of mature trees. _G. caspica_, the Caspian Locust of northern Persia, is a smaller tree, some 25 to 40 feet in height, with larger and fewer leaflets in a leaf.

_Glyptostrobus sinensis._ Chinese Deciduous Cypress. (_Conifera._)

This is a very beautiful semi-hardy deciduous tree, of Cypress-like appearance. Trees growing in Cornwall are probably 30 to 50 feet high. It is a native of China and related to the Taxodiaceae.

_Culture_—This tree is usually found in damp situations on the banks of streams and thrives in rich loamy soil. Plant...
GLYPTOSTROBUS — GREVILLEA

in April Increase by means of imported seeds sown in a cool greenhouse or frame as soon as received. No pruning is required.

Gordonia Altamaha [syn G pubescens] (Ternstræmiaceae)

This is a large shrub or small deciduous tree growing up to 30 feet in height, and a native of the southern states of America. It is on the borderland of hardiness and only really suitable for cultivation outside in the favoured climate of gardens in the south and west of Great Britain. Plants are tried from time to time outside on sunny walls and in sheltered positions at Kew, but they do not long survive and are really only satisfactory when cultivated under glass in the Temperate House with several other more tender species. The obovate-oblong leaves are from 3 to 5 inches long and the pure white flowers, from 2 to 3 inches across, are borne in autumn.

Culture—Plant in late April or May in sandy peat, loam and leaf-mould. Increase by means of cuttings, 2 to 4 inches long, made of the ends of the side shoots and inserted in late summer in a close frame, preferably with slight bottom heat. No pruning is required.

Gorse. See Ulex and Genista.

Grevillea. (Proteaceæ)

These are very interesting evergreen Australian shrubs, suitable only for cultivation in the south and west of the British Isles, and in other districts in selected and sheltered positions. They flower in May and June. The hardiest are G alpina, a dwarf species (2 to 4 feet) with crimson flowers, G rosmar- mifolia, with, as the name suggests, narrow Rosemary-like foliage, forming a bush from 4 to 6 or 7 feet high and as much or more in diameter, and with rosy-red flowers; and G sulphurea, growing from 3 to 5 feet high, and with pale yellow blossoms.

Culture—The plants should be grown in pots and planted in lime-free, light, well-drained soil in their permanent positions in May. Plenty of peat and leaf-mould should be added to sandy loam. Increase by cuttings, \( \frac{3}{4} \) to 2 inches long, made of the side shoots and inserted in July in sandy peat under a bell-glass, or layer the ends of several of the lower branches in autumn. Prune only to shape the bushes after flowering.
Grewia parviflora.  (*Tiliaceae*)
This is a deciduous shrub growing up to 6 feet or rather more in height, and a native of China and Korea. It has ovate or three-lobed leaves up to 5 inches long and half as wide. The pale yellow flowers are borne in July and August. It is an interesting shrub for sunny positions in the south and west of the British Isles, but not very hardy at Kew, where it does best in well-drained soil at the foot of a south wall.

*Culture.*—Layering in autumn is the best means of increase. Plant in March. Prune only to shape the bushes or to train to a wall about the end of March, cutting out old wood and shortening frost-damaged twigs.

Griselinia littoralis. Kupuka Tree. (*Cornaceae*)
A handsome evergreen shrub or small tree on the borderland of hardiness. It is a native of New Zealand and grows from 10 to 20 feet or more in height, 50 feet in a wild state. It has pale-green, leathery, oval leaves and produces inconspicuous unisexual yellowish flowers.

*Culture*—Plant in April or May in well-drained ordinary soil. It likes a warm, sheltered position, preferably in the milder localities. If several plants of the two sexes are grown in close proximity, the females produce attractive bunches of longish, green, grape-like fruits. Prune to keep in shape in early May, if required, and trim in summer when necessary. It stands clipping and is useful for forming a hedge and for seaside planting, where it is often a popular evergreen. Propagation is easily carried out in autumn by means of cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted under handlights, or the cuttings may be struck in summer in a frame with gentle bottom heat. There is a male variegated form, *G. l. variegata*, 10 to 15 feet high, with golden-edged foliage. *G. lucida*, 8 to 12 feet high, also a native of New Zealand, I have seen growing outside in Cornwall. It is not so hardy as *G. littoralis*, but has leaves twice the size and up to 6 inches or more in length.

Gum Tree. See Eucalyptus.

Gymnocladus canadensis. Kentucky Coffee Tree. (*Leguminosae*)
This is a very handsome hardy deciduous tree with ornamental foliage. It is a native of North America and has large,
GYMNOCRADUS — HALESIA

bluish-green, bipinnate, compound leaves sometimes as much as 2 feet wide and nearly 3 feet in length. It reaches a height of from 20 to 60 feet and in early summer produces spikes of greenish-white flowers, but it is for its remarkable foliage that it is chiefly grown. Male and female flowers are borne on different trees.

Culture — This tree thrives best in a sunny position and a well-drained, light rich loam. Plant from November to early March when soil and weather conditions permit. No pruning is needed, except to shape the trees when young. This should be attended to in summer. Propagate by means of imported seeds sown in a cool greenhouse or frame when available, or by means of root-cuttings in spring.

Hakea. (Proteaceae)

This is a large genus of semi-hardy and tender evergreen shrubs, natives of Australia, some of which are sufficiently hardy to stand the winter out-doors if planted in warm, sunny and dry sheltered situations in the south and west of the British Isles.

Culture — Plant in May, from pots, in light and very well-drained loamy soil with leaf-mould added and a little peat, if available. No pruning is necessary or desirable. Increase is by means of seeds sown under glass in early spring, and by cuttings made of ripened shoots, 2 or 3 inches long, and inserted in late summer in very sandy soil, preferably under a bell-glass on the greenhouse stage or failing this in a cold frame.

Species and Varieties — H. laurina attains in Australia a height up to 30 feet. The flowers appear in April and are like scarlet balls with showy golden styles. This species is largely grown on the Riviera. H. saligna, the Willow-leaved Hakea, grows from 4 to 8 feet high, and in April carries numerous white flowers in clusters.

Halesia. Silver Bell or Snowdrop Tree. (Styraceae)

Hardy deciduous May-flowering shrubs or trees of small stature, natives of North America. The flowers develop on the previous year's growth in clusters of drooping, silvery-white blooms, like those of the snowdrop, before the downy young oval-shaped foliage is fully developed. These blossoms are followed by winged fruits.
Culture.—The Halesias thrive in well-drained, moist, sandy (chalk-free) loam and in sunny, sheltered positions, a situation close to a pond or stream suitting them admirably. Plant from November onwards to March. Thin out the branches after flowering when overcrowded. To propagate, sow seeds in a frame in March, or layer in autumn.

Species and Varieties — *H. carolina* (syn *H. tetraptera*) is a shrub or small tree up to 30 feet high in the British Isles, but native trees grow taller in the south-eastern districts of the United States of America. The variety, *H. c. Meehanii*, differs in having thicker and coarsely wrinkled leaves and rather smaller flowers. *H. dipthera*, a shrub up to 12 feet or rather more in height, is a native of the south-eastern parts of the United States of America, where it is sometimes a small tree. It has larger leaves than *H. carolina* and a twin winged fruit.

*Halimodendron argenteum*. Salt Tree. (*Leguminosae*)
This is an attractive hardy deciduous shrub, a native of Siberia and related to *Caragana arborescens*. It grows from 3 to 6 feet in height, has silvery and downy pinnate foliage, and in June and July produces freely small pinky-purple, pea-shaped flowers.

Culture — This shrub thrives in light sandy soil and is a useful subject for dry sunny banks and for growing near the seaside. Plant preferably in November or March. Presumably because the British weather conditions are so changeable in winter, the Salt Tree is not very satisfactory on its own roots in some gardens where the soil conditions are moist. Grafted on *Caragana arborescens*, either as a bush or as a small standard tree, growth is much more vigorous. No pruning is required, but trimming to shape when necessary may be done in winter. Propagate by means of seed sown in spring in a greenhouse or frame; by grafting in early spring on standard plants outside and on small plants in pots in a close frame, or by layering in autumn.

*Hamamelis*. Witch-Hazel (*Hamamelidaceae*)
A most useful and attractive group of small, hardy and deciduous autumn and winter-flowering (October-March) trees or shrubs, which grow to a height of from 5 to 20 feet. The Witch-Hazels thrive, even in the smoky atmosphere of large
HAMAMELIS — HEDERA
towns and cities, in sunny positions and in moist, but well-
drained loam with peat and leaf-mould in it, but are not
recommended for growing in shallow, chalky soils. They
are suitable subjects for planting in a sheltered shrub border.
The quaint and fragrant flowers, each with four long, narrow
petals, that in some species are twisted and folded, are borne
from Christmas to March, except in the case of _H. virginiana_,
which flowers in autumn on the leafless branches. In autumn
the medium-sized broad, obovate, saw-edged, hazel-like
foliage, before it falls, is richly tinted.

**Culture**—Plant preferably in November or March. No
pruning is required, but it is sometimes necessary to thin-out
the branches in April when overcrowded, or to shorten very
long shoots. To propagate, sow seeds when ripe in a frame.
These often take as long as two years to germinate. The
plants can also be increased by layering in late summer, or
by grafting in spring on 2 or 3-year-old stocks of _H. virginiana_
in pots in a close frame.

**Species and Varieties**—_H. japonica_ (Japanese Witch
Hazel) (Yellow, 8 to 15 feet); _H. j. arborea_ (Yellow and
Claret, 15 to 20 feet); *H. j. Zuccarimana* (Lemon-yellow,
3 to 6 feet), *H. mollis* (Chinese Witch Hazel) (Golden-yellow,
8 to 10 feet) _H. vernalis_, 3 to 6 feet, a species of com-
paratively recent introduction from the United States of
America, carries small fragrant flowers with a red calyx and
light-yellow petals _H. virginiana_ (8 to 20 feet, the Virgman
Witch Hazel), from the eastern states of North America,
produces its yellow flowers in October and November. This
species, flowering in autumn, is a useful subject for the shrub
border.

**Hawthorn.** See Cratægus.

**Hazel.** See Corylus

**Heath and Heather.** See Erica, Calluna and Daboecia

**Hedera.** Ivy (_Araliaceae_)
There are several species and many varieties of this well-
known climber. The Irish Ivy, *Hedera hibernica*, has larger
leaves than the Common Ivy and is extremely useful as it
grows well as a carpet under the drip of trees. The varieties
of the Common Ivy, _Hedera Helix_, are numerous and very
varied in growth. *H. H. var. angularis* and _H. H. var
taurica have shining leathery green leaves, with three or five triangular lobes. The small insignificant greenish flowers are followed by purple berries growing in clusters. There are several varieties with gold and silver markings on the leaves, as, for example, *H. H. foliis argenteis and *H. H. foliis aureis, which are often spoken of as Gold and Silver Ivies. *H. H. marginata, whose pale-green leaves are edged with cream, is another showy Ivy, and *H. H. spectabilis aurea, with golden-yellow leaves, is also good. *H. dentata variegata is a variegated variety with large leaves. In winter the leaves of *H. H. purpurea assume a tint of crimson-bronze and are highly ornamental. *H. canariensis, the Canary Island Ivy, has large leathery, three or five-lobed leaves. Being of fast growth, this attractive Ivy is useful to clothe a trellis or upright iron fence, especially under trees. The variety *H. c. variegata (Gloire de Marengo) is pretty and has a dark green centre merging to silvery-grey and is edged with white. *H. colchica (syn. *H. Rægneriana), the Persian Ivy, is a handsome species with leaves up to 8 or 10 inches long and from 3 to 4 inches wide. It is one of the most distinct and attractive Ivies, fast in growth and useful for walls, fences, tree stumps and for planting beneath trees. The shrubby or tree form, *H. c. var. arborescens, forms a distinct and attractive bush. Other species and varieties are: *H. Cænwoodiana (Small Green Leaf); *H. Helix argentea variegata (Large Leaves, Margined White); *H. H. Lee’s Silver (Small Silver Variegated Leaves); and *H. H. minima (Small Triangular Leaves). The Tree or Shrubby Ivy, *H. H. var. arborescens, is a useful evergreen shrub to plant under trees. In open positions it produces clusters of black fruit. When Ivy has reached the top of the wall, trellis or stump up which it is climbing, it often forms bushy growths. If cuttings or grafts are taken from these shoots, the resulting plants will retain their shrubby habit and will form “Tree Ivies,” otherwise known as *H. Helix arborea varieties.

Culture.—All the climbing species and varieties thrive against walls and fences and in ordinary soil; the variegated kinds prefer walls facing south or west, and like ample lime in the soil. Insert cuttings of shoots, 6 to 10 inches long, in October or November in sandy soil on a sheltered border; or
PLATE 23

Strip,
Sambucus racemosa
and, left,
Rosa moyesisi
PLATE 24

Sorbus hupehensis

Skimmia japonica
HEDERA — HELIANTHEMUM

Increase by layering, preferably in autumn. Cuttings from 3 to 6 inches long may be rooted in a frame at almost any time. Growths 1 foot long inserted 4 to 6 inches deep on a sheltered border outside in October and November root readily. Plant out, for preference, in showery weather in October or April. When established, old leaves and untidy shoots should be trimmed, and Ivy on walls is kept neat and tidy by clipping hard back in April. Because they do not transplant readily from the open ground, Ivy plants are usually grown for sale in pots, and this should also be done with home-raised plants.

Hedysarum multijugum. French Honeysuckle. (Leguminosae.) This is a delightful small deciduous shrub, a native of Mongolia, and forms a bush some 3 to 6 feet in height. The purple-red, pea-shaped flowers are borne on the current year’s growths in long upright spikes from June to September, and the long pinnate foliage, with its numerous tiny leaflets, is an additional attraction.

Culture.—This shrub needs a well-drained sandy loam and a sunny position. Plant in November or March. Propagate by means of cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted in a close frame in July or August; by layering in the autumn; or by raising from seeds when obtainable, sowing in a greenhouse or frame as soon as ripe. Thin out annually and trim back long shoots in early spring.

Helianthemum. Sun Rose. (Cistaceae.)

This genus includes a number of beautiful hardy shrubby evergreens which flower in the early summer. The trailing species and hybrids of H. vulgare make lovely clumps of bluish-green foliage for the rock garden, thickly splashed for two or three months in the year with brightly-coloured flowers. These, unfortunately, fall the day they open, but this defect is made up for by the fact that the buds on the same bush open over a period of two or three months.

Species and Varieties.—H. alpestre, the Alpine Sun Rose, a native of central Europe, the Caucasus and Asia Minor, is a dwarf tufted species, some 3 to 6 inches in height, with greyish leaves and yellow flowers. H. alyssoides, a spreading shrub, 2 feet high, is a native of Spain and Portugal and has
rich yellow unspotted flowers, *H. appenninum* is a European species, found also in Britain, about 1 foot high and with white flowers. *H. formosum*, from Portugal, grows from 2 to 3 feet high and has golden-yellow flowers with a dark blotch. *H. fallax* var. concolor, 2 to 3 feet, is pure golden-yellow. *H. halimifolium*, from the Mediterranean region, is from 2 to 4 feet high and has yellow flowers with central blotches. *H. libanotis*, from Spain and Portugal, grows to 1½ feet in height and has golden-yellow flowers. *H. ocyoides*, also from Spain and Portugal, grows from 2 to 3 feet high and has rich yellow flowers with a dark centre. *H. umbellatum*, from the Mediterranean region, attains a height of 18 inches and has white flowers. The flowers of the varieties of *H. vulgare* (4 to 12 inches, with small, longish, oval or lanceolate foliage and flowering in June and July), which are single or double, may be had in almost any shade of crimson, scarlet, rose, orange, yellow or white. *H. vulgare* varieties: *album plenum* (Double White), *Bronze Queen* (Bronze), *croceum* (Yellow), *Fireball* (Brick-red), *Jubilee* (Lemon Yellow, Double), *Mrs. Earle* (Red, Double), *Rose Queen*, *rubens* (Orange), *Salmon Queen* (Salmon-pink), *Sudbury Gem* (Crimson), *The Bride* (White); and *venustum plenum* (9 to 12 inches, Double Crimson).

Culture.—These plants love the sun and do best on dry banks or on walls or rocky ledges in the rock garden and in sandy soil. Some species are valuable for the paved garden. As they do not transplant well from the nursery beds, grow the young plants in small pots and plant in March or April. Shorten long, straggling shoots after flowering. The plants need no protection in winter. To propagate, sow seeds in a cool greenhouse or frame in March; or take cuttings about 1 to 2 inches long, made of the ends of the young shoots, in July or August and insert under glass in sandy soil.

**Helichrysum.** (*Compositae.*)

These are sun-loving plants only suitable for the favoured climate of the south and west of the British Isles. *H. anten- narum*, an Australian species, 4 to 6 feet in height, with deep green leaves and heads of white flowers in June, is a useful seaside plant in the south and west. *H. rosmarinifolium* (Snow in Summer) is an attractive and very lovely half-hardy evergreen shrub, a native of Victoria and Tasmania.
HELICHRYSUM — HIBISCUS

that grows from 5 to 8 feet in height. It has long, narrow, dark green foliage, and about midsummer produces a mass of pretty white blossom. These flowers are unique in that they keep for several years and retain their lovely whiteness if cut and hung up to dry. This plant grows freely in warm sheltered situations and in well-drained loam, but wall protection in all but the mildest localities is needed. Another name for this plant is Ozoithamnus rosmarinifolius.

Culture.—Plant in April or early in May in light, well-drained sandy loam. Increase is by cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted in a close frame or under a bell-glass on a greenhouse stage in late summer. Prune in April only to keep the bushes in shape and to regulate the growth of the plants.

Helwingia japonica [syn. H rusciflora]. (Cornaceae.)
A distinctive and botanically interesting hardy deciduous shrub from Japan. It grows some 2 to 4 feet in height and has longish, saw-edged ovate foliage. The tiny greenish-white, unsexual flowers, borne in May, are quite insignificant in themselves, but are interesting owing to the fact that they are apparently produced in the centres of the leaves. The blossoms are followed by small oval fruits.

Culture.—To propagate, insert cuttings, 1½ to 2½ inches long made of the short side shoots, under glass in July and August. Plant from November to March in well-drained loamy soil. Prune only to thin the small bushes by cutting out the oldest twigs in winter.

Hemiptelea. See Zelkova Davidii.
Hemlock Spruce. See Tsuga
Heteromeles. See Photinia arbutifolia.
Hibiscus syriacus. Tree Hollyhock of the Orient, or Shrubby Mallow. (Malvaceae.)
Beautiful deciduous flowering shrubs with small three-lobed foliage like that of the Fig. They form round-headed bushes some 7 to 10 feet high, and from August to October develop quantities of large single or double flowers like those of the Malva, these being of many shades of colour, according to the variety—purple, pink, red, blue or white.

Culture.—These plants will thrive in almost any fairly good well-drained garden soil if planted in a warm, sheltered
situation in full sun. Plant, preferably, early in March. The flowers are produced towards the tops of the current year’s growths and the bushes must be pruned accordingly; that is to say, the previous year’s shoots should be shortened in early spring when the shrubs are becoming leggy or growing too large for their positions. Propagate by means of seeds sown in a greenhouse in February or March, by cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted in a close greenhouse propagating frame in July or August; or in a cold frame in September, or increase may be carried out by means of layering in autumn. In the case of choice varieties, grafting under glass in early spring on seedlings of the common kinds is a favourite method of increase on the continent.

Varieties — [SINGLE] *céleste* (Light Blue), *Hamabo* (White, Crimson Blotch), *Rubis* (Ruby-red); and *lotus albus* (White) [DOUBLE] *amplissimus* (Vinous Rose); *Duc de Brabant* (Red), and *Jeanne d’Arc* (White and Rose).

Hickory. See Carya

Hicoria. See Carya

Hippophae rhamnoides. Sea Buckthorn (*Eleagnaceae*)

This plant is a native of Europe, including Britain, and is a most striking and hardy deciduous shrub or small tree. It will grow from 10 to 40 feet in height and will do well in moist ordinary soil in open positions. It thrives notably well near the sea. The undersides of the narrow lanceolate leaves, blunt at the apex, are silver, and the shrubs bear small, insignificant, unisexual yellow flowers in April, followed in the case of the female tree by attractive translucent, orange-coloured fruits in the autumn and winter. As the male and female flowers are borne on different plants, shrubs of both sexes must be planted in the neighbourhood of one another if fruits are to be produced. One male plant will fertilize five or six female shrubs. There is also a very similar, but somewhat rarer species, *H salicifolia*, from the Himalayas, which grows some 40 to 45 feet in height and has broader leaves and pale yellow berries.

Culture. — Plant from November to February, or in March and cut back weak shoots in February. Tall, leggy bushes will grow freely from the old wood if the branches are cut
down in February to within 2 to 4 feet of the base. Propagate by means of seeds sown in a frame when ripe, by suckers or layers in autumn, and by root-cuttings placed in sandy soil in a cold frame or at the base of a warm sheltered wall in spring.

**Hoheria.** *(Malvaceae)*

This is a small genus of beautiful free-flowering semi-hardy evergreen or semi-evergreen shrubs or small trees. They are natives of New Zealand, and are related to the Plagianthuses, which by some botanists are included in the genus Hoheria. They can only be grown successfully out of doors on sheltered walls and in the milder districts of the British Isles. *H. sextylosa*, one of the hardiest and best-known species, grows up to 12 feet in height and produces a mass of large pure white flowers in August and September, followed by clusters of curious winged seeds. Other good species are *H. angustifolia* (10 to 20 feet, small-leaved) and *H. populnea*, an evergreen shrub or small tree, 12 to 25 feet high, with pure white flowers up to 1 inch across, and of which I have seen attractive specimens in Cornwall and in Ireland.

**Culture**—Propagation is best carried out by means of layering in autumn and by cuttings, 2 to 3 inches long, made of the ends of the half-ripe young growths and inserted in a close frame in July. Plant in March or April in a well-drained, rich sandy loam. No pruning is required, except to cut-out old and useless shoots after flowering. See also Plagianthus.

**Holbællia.** *(Berberidaceae)*

This is a small genus of hardy or semi-hardy quick-growing evergreen climbing plants with luxuriant leathery foliage and monoeccious flowers. *H. latifolia* (syn. *Stauntonia latifolia*), a native of the Himalayan regions, and which reaches up to 20 feet or more in height, is one of the hardiest and best-known species. It has attractive, dark green, glossy, compound foliage and in April and May produces a profusion of fragrant purple female and white male flowers, sometimes on the same inflorescence. The female blossoms are followed by long fruits like those of the pea. *H. cornacea*, from China (up to 20 feet or more), has similar but smaller flowers and is not quite so hardy.

**Culture**—These plants may be grown out-doors over arbours and rustic poles in the milder localities of the British....
Isles, but elsewhere they are suitable only for growing on sheltered walls and in a cool greenhouse. Propagate by means of cuttings, 2 to 3 inches long, made of pieces of the side shoots and inserted in a close frame in July or August, and by layering in autumn. Grow in pots until large enough to plant in their permanent positions in April or May in ordinary well-cultivated garden ground. Thin and regulate trailing shoots in late May or early June after flowering.

Holly. See Ilex.
Honeysuckle. See Lonicera.
Hornbeam. See Carpinus.
Horse Chestnut. See Aesculus.
Hovenia dulcis. Raisin Tree (Rhamnaceae)
This is a striking and botanically interesting monotypic semi-hardy deciduous tree from China. It grows some 20 to 30 feet in height, has medium-sized oval or heart-shaped, saw-edged foliage and produces clusters of small yellow flowers in summer, followed by curious red flesh-like formations surrounding the small berries, which the natives chew. It is cultivated in China, India and Japan.

Culture.—The plant thrives in warm, sunny, sheltered situations in the milder districts of the British Isles. The tree grows well at Kew during warm, sunny summers, but the ends of the shoots are often killed in winter. Plant in sandy loam in March. Cut off frost-damaged ends of shoots in March. Increase is by seeds sown in a frame or cool greenhouse in early spring, by root-cuttings, 2 inches long, placed in a box of sandy soil in a frame in autumn or spring; and by cuttings, 2 to 4 inches long, made of the partially-ripened wood and inserted in a frame or under a bell-glass in August or September.

Hudsonia ericoides. Beach Heather. (Cistaceae)
This is a dwarf evergreen shrub of heath-like appearance. It is a native of the eastern regions of North America and grows up to 6 to 9 inches high. In May it produces small yellow flowers.

Culture.—In the Arnold Arboretum this plant is grown in full sun in a layer of sand on a peaty mixture. Plant in April. It does not grow freely enough in the British Isles to require pruning. Increase is by division in October or April.
HYDRANGEA

Hydrangea. (Saxifragaceae.)

The Common Hydrangea (H. hortensis) is a useful and attractive half-hardy summer-flowering deciduous Chinese shrub, which was first imported into England in 1789 by Sir Joseph Banks. The numerous varieties grow from 2 to 6 feet or more in height, have large oval, saw-edged leaves and flower in June, July, August and September on the ends of the shoots of the previous year’s growth.

Culture—They thrive in a well-dramed and richly-manured sandy loam. Except in warm districts they require protection with dry litter in winter or a sheltered position. They grow well in large tubs or vases, and require plenty of moisture, including liquid manure H. paniculata and var. grandiflora, with somewhat similar foliage and large heads of bloom, are quite hardy in any part of the British Isles, and are among the best of our autumn-flowering shrubs. They form an attractive sight when massed in beds and borders. Plant in March, except in the case of numerous varieties of H. hortensis, the planting of which should be left until the end of April to obviate, as far as possible, damage by frost to the end of shoots. The two species require different treatment as to pruning. H. hortensis should be pruned after flowering. Remove all weak wood. If enough strong shoots remain, cut out the old flowering growths to the ground, or if a few are required to make the plants shapely, cut off the flower-heads with three or four leaves attached. H. paniculata, the variety grandiflora, H. arborescens and var. grandiflora should be pruned in March; the stems being thinned out so that only from six to twelve are left on each plant, according to the size of the bush; these should then be cut hard back to within a couple of eyes of the old wood.

Blue Hydrangeas are much admired. The colour is due to the presence of iron in the soil. Blue flowers may be produced by planting in a lime-free soil, notably peat, leaf-mould and sand, and by watering freely with a weak solution of alum, one teaspoonful in one gallon of rain-water, or with 3 ounces of aluminium sulphate in one gallon of water. Both these solutions should stand for at least twelve hours before use. Specially prepared blueing powders are also sold by florists. To propagate, insert cuttings of young wood, 3 to 4 joints in...
length in May, or of strong matured shoots, 6 inches long, that have not flowered, in August, both in a close frame, preferably with bottom heat. Autumn-struck cuttings may be wintered in a frost-proof frame, ample ventilation must be given in fine weather. Keep the roots moderately dry and plant out in the following spring.

*Species* (Hardy).—*H. arborescens grandiflora* (White, July-Sept, 3 to 4 feet), *H. paniculata* and *var. grandiflora* (Creamy-white, Aug-Sept, 3 to 6 feet); *H. petiolata* (a climber which ascends trees, walls, or whatever support it has in much the same way as ivy, running up to 50 to 75 feet. White flowers May to July), *H. acuminala* (Blue or Pink, 2 to 4 feet), *H. Thunbergii* (White, Flecked Pink and Red, Aug, 3 feet), and *H. villosa* (Lilac-blue, Aug-Sept, 6 to 8 feet). Named varieties of *H. hortensis*: *Etincelant* (Carmine); *Helge* (Dark Rose), *Krimhild* (Salmon-Rose), *Le Cygne* (White); *La Marne* (Mauve); *Mme Mulhère* (White); *Mme de Vries* (Apple-Blossom Pink), *Marie Matthes* (Rose), *Parsival* (Deep Red); *Peer Gynt* (Rose-red); *Rubis* (Red); *Triumph* (Rose-pink). Good varieties for blueing are *Blue Prince*, *Goliath*, *La Marne*, *Mme A. Riverain*, *Maréchal Foch*, *Niedersachen*, *Parsival*; and *Souv de M Chantard*, one of the hardiest.

**Hymenanthera.** (*Violaceae*)

This is a small genus of berry-bearing evergreen or semi-evergreen shrubs or small trees, natives of Australasia, and suitable for cultivation in the south and west of the British Isles. *H. chathamica* is a New Zealand, evergreen shrub growing some 3 to 6 feet in height. It has handsome long, pale-green, leathery, lanceolate leaves and a mass of tiny dioecious flowers in May, the female ones being followed by attractive white berries. One of the hardiest and best species is *H. crassifolia*, also a native of New Zealand. It is semi-evergreen and forms a low, spreading shrub some 4 to 6 feet in height and more in diameter. This plant has unisexual flowers, as in the case of *H. chathamica*, and white berries. *H. crassifolia* is hardy at Kew.

**Culture.**—The Hymenantheras thrive in light well-drained loamy soils with leaf-mould added and peat, if available. Plant in April in sheltered sunny positions. Prune only to shape or thin the branches after flowering. Propagation may
HYMENANTHERA — HYSSOPUS

be carried out by means of seeds sown in a frame or cool greenhouse in early spring, or by cuttings, 1½ to 2½ inches long, made of the side shoots and inserted in a close frame in August or September, and by layering in autumn.

Hypericum. (Hypericaceae)

This genus includes a number of most desirable hardy shrubs, both evergreen and deciduous. The bright yellow flowers are freely borne from June to September. Several of the dwarf-growing evergreen species make excellent rock or bedding plants. *H. calycinum* is the best dwarf flowering shrub to plant beneath the shade of trees. It is also useful for growing in town gardens.

_Culture_—Rich sandy loam and a sunny site suit them best, though they will thrive in partial shade. Plant from November onwards, and cut well back in March. Propagate by means of cuttings of semi-mature shoots about 2 inches long, inserted in July in a close frame, preferably with slight bottom heat, and in a cold frame or under handlights in August and September, by division in March in the case of the Rose of Sharon and other dwarf species, and by sowing seeds in spring in a cool greenhouse or frame.

Species—[EVERGREEN] *H. Androsænum, "Tutsan"* (Europe, 2 feet, fruits at first Red, changing to Black); *H. calycinum* (Orient, "The Rose of Sharon," 12 to 18 inches); *H. Coris* (central and southern Europe, 3 inches), *H. inodorum* (Orient, 3 to 4 feet); *H. Moserianum* (Hybrid *H. calycinum* x *patulum, 12 to 18 inches) [DECIDUOUS] *H. Buckleyi* (N. America, 6 to 9 inches, valued in the rock garden); *H. elatum* (Canary Isles, 4 to 5 feet), *H. Hookerianum* [syn. *H. oblongifolium*] (Himalayas, 3 to 5 feet); *H. patulum Henry* (China, 4 to 6 feet), *H. pat Forrestii* (China, 4 to 6 feet Rich Autumn Foliage); *H. polyphyllum* (6 inches), *H. reptans* (Himalayas, Trailing)

Hyssopus officinalis. Hyssop (Labiatae)

A semi-evergreen shrub growing up to about 2 feet high and with a woody base. It is a native of southern Europe and western Asia. The young shoots and leaves have a mint-like fragrance, Hyssop being one of the old medicinal herbs of the sixteenth century. The blush-purple flowers are produced in whorls during the late summer and autumn.
ABC OF SHRUBS AND TREES

_Culture_—Plant in November or February and early in March in a sunny position and in light well-drained ground. Prune back the previous summer's growths during the second half of February. Increase in late summer by cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted in sandy soil in a close frame or under a bell-glass.

_Idesia polycarpa._ (Bixaceae)
A hardy and ornamental deciduous tree, a native of China and Japan, and which grows in its native countries up to 50 feet high. It carries clusters of small greenish-yellow, fragrant flowers in June and July. The blooms are unisexual and borne on different trees, the male flowers being slightly larger. The flowers on the female trees are followed by bunches of small green grape-like fruit, which gradually turn brown, and finally deep red in autumn. The large and handsome deep green leaves are cordate (heart-shaped) and silvery-grey on the undersides.

_Culture_—The trees should have a sunny, sheltered position and a well-drained deep ordinary soil. Plant in early November or in February. Prune only to shape the trees in winter. To propagate, sow seeds in the spring in a frame or cool greenhouse. There is also a form of the above tree from western China, _I. vestita_, with leaves densely pubescent or tomentose on the undersides.

_Ilex._ Holly (Aquifolaceae)
A genus consisting of hardy evergreen and a few deciduous trees and shrubs, which thrive in sun or partial shade in almost any well-drained soil. Several species of the holly are grown, chief among which is _Ilex Aquifolium_, the common prickly-leaved holly, with its glossy, oval, curled and spiky-edged leaves. It is a native of Europe, including Britain, also of western Asia, and in favourable and suitable positions will attain a height of from 40 to 60 feet or more. The holly is unisexual, the male and female flowers being borne on different trees. The female trees alone bear berries, and then only if a male tree is growing in their vicinity.

_Culture_—Plant in May or in September and October, the latter time probably being the better. Prune with secateurs in April (hedges in May or August). To propagate, sow seeds in March in shallow drills in the open. The berries should
ILEX

be picked as soon as ripe and should be stored away in sand until planting time in the spring; the sand should be turned over several times between autumn and spring. The seeds usually take two years to germinate. Many people prefer to strike cuttings of both the green and strong-growing variegated varieties, using half-matured wood in August, the cuttings being 2 to 4 inches long and made of the side shoots, preferably inserted with a thin heel of old wood. They should be placed in a frame or handlight. Layering may also be undertaken in autumn. Variegated kinds may be grafted under glass in spring on to common holly seedlings.

Holly as a Hedge Plant—The Common Holly, Ilex Aquifolium, and several of the free-growing varieties make one of the best evergreen hedges, especially near towns, where they stand the smoke and fumes well, and few things have a better appearance than a well-kept holly hedge. It is a slow grower for the first three or four years. In forming a holly hedge, the ground should be prepared by trenching 2 feet deep, and if the soil is poor and sandy, it will be well to let it have a dressing of top-soil loam and old rotted manure. The best plants to set are those of three to five years' growth, which have had two or three shifts from the seed-bed, and are some 25 to 30 inches in height. They should be taken up carefully with as much soil on the roots as possible, being planted from 12 to 15 inches apart in April or September and October. Many people plant old mature shrubs in the hope of forming a good hedge quickly. It is really better to start with vigorous young bushes; they grow quicker and in the end far outstrip the older shrubs. A broad trench at least 2 feet wide, capable of receiving the plants, should be dug, the shrubs being placed in it singly with their roots well spread out. If the weather is dry at the time of planting, water freely and spray the bushes at night and in the morning. The next season, if they are well rooted, the young plants may be moderately pruned with the knife, after which they will branch out and form themselves into a good hedge. Mature hedges should be clipped in May or August. A few of the best varieties of I. Aquifolium are *argentea pendula (Perry's Silver Weeping), argentea regina (Silver Queen); regina (Golden Queen); *camelliaefolia (Large Green Leaves);
ABG OF SHRUBS AND TREES

*flavescens* (Moonlight Holly, Yellow), *Golden King* (Bright Golden); *Handsworth New Silver* (Silver Margin), *Hodginsii* (Green, especially useful for town gardens), *Lawsoniana* (Centre of Leaf, Yellow, edged Green), *Shepherdii* (Dark Green, a good town holly); and *Wilsonii* (Large Dark Green Leaves) *Aquifolium pendula* is a green-leaved weeping variety

Other species are *I. cornuta* (Horned Chinese Holly, 6 to 10 feet high, of slow, compact growth); *I. crenata* (a small-leaved Japanese Holly, a slow-growing shrub, sometimes reaching up to 20 feet in height, but rarely more than 4 to 5 feet); *I. c. var Mariesii* (a very slow-growing pigmy form, rarely more than 2 to 4 feet high and valuable in the rock garden), *I. opaca* (American Holly, represented at Kew by a tree 25 feet high); *I. Perrottii* (a distinct Chinese Holly, said to grow 20 to 30 feet high, introduced in 1900 by the late Dr Wilson) The best-known and most useful of the deciduous Hollies is *I. verticillata*, the American Winterberry, a bush 5 to 8 feet or more in height and carrying attractive scarlet berries in autumn and early winter.

Illicium. (*Magnoliaceae*)

Beautiful, half-hardy aromatic evergreen shrubs or small trees related to the Magnolia *I. anisatum* (syn *I. religiosum*), is a native of China and Japan and is grown in some Cornish gardens, along the west coast of Scotland and in Ireland, where its longish, oval, aromatic leaves and greenish-yellow flowers in March and April create considerable interest. It grows some 10 to 12 feet or more in height *I. floridanum*, from the southern districts of the United States of America, grows some 6 or 7 feet in height. The leaves are more lanceolate and the flowers brownish, maroon-crimson. Given wall protection and a warm sunny site they grow in the London district, but are more suitable for the milder southern localities of the British Isles.

*Culture*—These plants dislike chalky soil, but do well in similar conditions to those recommended for Rhododendrons. Plant in late April or May in light sandy ground, adding leafmould and peat. They seldom grow freely enough in British gardens to necessitate pruning, except to shorten long unwanted shoots. They are best increased by layering in autumn.
**INDIGOFERA — ITEA**

**Indigofera.** *(Leguminosae)*

These are attractive summer and autumn-flowering deciduous shrubs. They grow from 2 to 6 feet in height and from June to September carry 4 to 6 inch long racemes of white, pink or rosy-purple flowers. The beautiful sprays of grey-green compound acacia-like foliage are an additional attraction.

*Species*—*I. Gerardiana* is a Himalayan shrub producing from July to September a succession of small purplish-rose flowers shaped like those of the pea, on stems from 3 to 5 feet high and more against a wall. *I. hebepetala*, another Himalayan species of similar growth, produces rich rose and crimson flowers in August and September. *I. Kirilowii*, from Corea, western China and Manchuria, is a distinct shrub of erect habit, 3 or more feet in height, hardier than the two foregoing, and carrying erect racemes of small rose-coloured flowers from June to August. *I. Potaninii* is a hardy Chinese shrub of attractive and graceful habit that grows from 4 to 5 feet or more in height, with panicles of pink flowers in June and July.

*Cultures*—These plants like a sunny position in any good ordinary, well-drained garden soil, preferably light loam. Plant in early spring. They flower on the current year's growths and should be hard pruned or cut down to the woody stools in February or March. Propagation is best carried out by means of cuttings of semi-mature side shoots, about 3 inches long, preferably with a heel, inserted in slight heat in July, or seeds may be sown under glass in early spring.

**Itea.** *(Saxifragaceae)*

A small genus of deciduous and evergreen shrubs or small trees with representatives both in the New World and the Old World. *I. virginica* is a hardy deciduous summer-flowering shrub, a native of the eastern districts of the United States of America. It usually grows from 4 to 6 feet in height, though in a wild state from 15 to 20 feet is not unusual. It has longish, narrow, saw-edged, oval leaves and carries racemes of fragrant creamy-white flowers in July. *I. shastfolia* is quite a distinct evergreen species from China, it has dark, glossy green, small holly-like and prickly foliage, and the greenish-white flowers, closely set in pendulous racemes,
appear in August. It is a tall-growing species some 6 to 12 feet in height and does well on a south wall at Kew. I. yunnanensis, a second evergreen species from China, which grows from 6 to 10 feet in height, or more on a sheltered wall, is even less hardy, being cut to the ground by a very severe frost at Kew, when grown against a south wall. The evergreen species are interesting shrubs for the south and west of the British Isles.

Culture—These shrubs like a moist, peaty soil. Plant I. virginica in November or February and early March and the evergreen species in April or early in May. Propagate by means of seeds under glass in spring, by cuttings, 2 to 3 inches long, made of semi-mature wood and inserted in a close frame, preferably with bottom heat, in July or August, and I. virginica by division or by suckers in early spring. In the case of I. virginica, cut out the old wood each year in August after flowering. Shorten long shoots of the evergreen species in April only to shape the bushes.

Jamesia americana. (Saxifragaceae) This is a hardy deciduous flowering shrub, a native of North America and growing from 4 to 6 feet high. It has smallish, ovate, saw-edged foliage and in May bears small, erect clusters of faintly-scented white flowers at the end of the shoots. It is allied to the Deutzias, and is a useful subject for the front of a shrubbery border.

Culture—Plant from November to March; thin out the branches after flowering when crowded. To propagate sow seeds in early spring in a frame or cool greenhouse, or in late summer and autumn insert cuttings, 1 to 3 inches long, made of the ends of the side shoots, in a close frame. The most suitable soil is a rich, well-drained loam with leaf-mould added.

Jasminum. Jasmine. (Oleaceae) There are several hardy species of the fragrant and free-flowering deciduous and semi-evergreen shrubs called Jasmines. They may be grown as climbers on walls and fences, also several in bush form. *J. officinale, the common white Jasmine, ultimately 20 to 30 feet high, has dainty compound foliage and fragrant white blooms from June to October; J. o var. affine, or J. o. var. grandiflorum is a desirable large-flowered...
form. *J. revolutum*, with similar beautiful foliage and yellow flowers in May, is better grown in bush form \*J. nudiflorum (10 to 15 feet high), so called because the yellow flowers appear in the winter months from November to February before its trifoliolate leaves develop, is valuable for north walls and for fences and will thrive in town gardens *J. Beesianum*, a scandent climber from western China and growing up to 8 feet or more high, is remarkable on account of the crimson colour of its rather small flowers, which are freely produced in summer *J. fruticans*, a semi-evergreen bush 4 to 5 feet high or much more when treated as a climber, is a native of the Mediterranean regions and the Orient. The yellow flowers are freely borne from June to September. *J. humile*, the Italian Jasmine, a native of south-eastern Europe, is a semi-evergreen species averaging from 3 to 4 feet high and carrying bright yellow flowers in late summer and autumn *J. primulatum* is a Yunnan species suitable for culture only in sheltered positions in the south and west of the British Isles. The rich, semi-double yellow flowers average 1 1/2 inches across and are freely borne in early spring. *J. Stephanense* is a vigorous climbing Jasmine, the result of a cross between *J. officinale* and *J. Beesianum*. It has fragrant pale pink flowers freely produced throughout the summer.

Culture—These plants like rich loam, and most do well against walls, trellises and pergolas. Take cuttings of semi-ripe wood, 4 inches long, and insert them in sandy soil in late summer in a close frame and outside in autumn, or layer in autumn. Plant the deciduous species from November to March, and the evergreen species in April. After flowering, cut-out old and weak shoots and those that have bloomed, tie in the new growths and shorten in straggling stems. *J. nudiflorum*, the Winter Jasmine, gives the best display of blossoms each year in winter when the strongest of the shoots which have flowered are tied in and all others are cut back to within 1 to 2 inches of the old wood as soon as the last blooms fade in March.

**Juglans. Walnut. (Juglandaceae)**

Hardy deciduous nut-bearing trees, natives of North America, China, Persia and the Himalayan regions, that grow from 10 to 100 feet in height *J. regia*, the Common Walnut, which makes a large and handsome tree 50 to 100 feet in
height, has striking compound foliage, and in favourable seasons bears an abundance of edible nuts. There are several varieties of this, such as *J. r. sinensis*, a Chinese form, 50 to 80 feet in height, and *J. r. laciniata* (40 to 60 feet), the Cut-leaf Weeping Walnut, that makes an attractive and ornamental tree. The male flowers are borne on handsome, long, drooping catkins, and the female or pistillate flowers in small clusters at the ends of the shoots. One of the best nut-bearing varieties is *J. r. maxima* (40 to 60 feet). *J. r. præparturens* (10 to 40 feet) is a variety fruiting when the trees are small, though the nuts are rather below normal size. *J. cathayensis*, the Chinese Butternut, is a wide-spreading tree some 50 to 70 feet high and carrying pinnate leaves from 2 to 3 feet long. *J. cinerea* (50 to 75 feet or more), known as the American Butternut, comes from the eastern districts of North America and makes a handsome and fast-growing tree, as also does *J. nigra* (60 to 100 feet), the Black Walnut, a native of the eastern and central regions of the United States of America. With its deeply-furrowed bark and large ornamental leaves it is the most attractive Walnut tree for pleasure ground and park planting. *J. cordiformis* (30 to 50 feet) is a Japanese species with huge pinnate leaves, in young trees sometimes as much as 2 to 3 feet in length. As the trees get older, the leaves become somewhat smaller, but they still remain abnormally large and very decorative.

**Culture**—These trees thrive in well-drained loam and in sunny, open positions. Plant in November when two to four years old. They do not transplant well, and therefore, should be planted when small and when once planted they should be left alone. Walnut trees bleed badly when large branches are cut, thus it is desirable only to thin-out small branches when crowded, and this is best done in August. Bleeding may be checked by "charring" with a painter's blow-lamp. To propagate, plant nuts as soon as ripe 2 to 3 inches deep in the open. In the case of special varieties, it is usual to graft in the open in spring on to seedlings of the type

*Juniperus.* Juniper. (*Coniferæ*)

These are handsome evergreen coniferous shrubs and trees with narrow and sharply-pointed, needle-like foliage. Some
of them make very attractive specimen plants on lawns, especially on chalk soils. They thrive in the sun in moist, well-drained and deep loam with mortar rubble added. The genus includes plants varying from tall-growing fastigiate trees to dwarf and creeping rock plants. *J. chinensis*, the Chinese Juniper, is a handsome pyramidal tree growing from 40 to 60 feet high. There are varieties of this of similar height with beautiful golden (*var. aurea*), glaucous-grey (*var. glauca*), and silvery (*var. albo variegata*) foliage. *J. communis*, the Common Juniper, is, perhaps, the best-known species. It forms a small tree from 6 to 12 feet high, though it may in some positions reach a height of 20 to 40 feet. There are several dwarf varieties of this, such as *J. c var. compressa* (a veritable gem rarely exceeding 12 inches in height) and *J. c. hibernica*, the Irish Juniper, which is slow in growth, 6 to 18 feet in the case of very old specimens, and which resembles a small Italian Cypress. These are excellent subjects for the rock garden. Young plants of *J. pachyphleae*, with beautiful silvery-blue foliage, are also attractive in the rock garden, though old trees may grow 30 to 40 feet high. *J. Sabina* (Savin) makes a handsome shrub from 4 to 15 feet in height. Its variety, "Knap Hill," forms a useful garden shrub of plumose habit and 4 to 5 feet high; and *var. tamariscifolia* (the Spanish Juniper), also of spreading habit and 1½ to 3 feet high, is excellent in large rock gardens. *J. virginiana* (40 to 100 feet) is the Pencil or Red Cedar of North America, and produces the most valuable of all known woods for the manufacture of casings for lead pencils. At least a dozen varieties of the Red Cedar are grown in collections of Conifers. *J. v. glauca* (40 to 100 feet) has attractive silvery leaves, *J. v. Canartis* is a compact pyramidal tree, 10 to 15 feet or more in height, and *J. v. Kosteriana* is a bush or small tree, 8 to 15 or 18 feet high, with glaucous foliage and arching branches.

**Culture**.—Plant in April and May or in September and October. No pruning is necessary, but may be done about the end of April if required to shape the trees and bushes.

The species are best propagated by means of seeds sown in early spring in a frame or cool greenhouse. The tree
varieties can be increased by means of grafting under glass in early spring on to seedlings of the species. Cuttings, \( \frac{1}{2} \) to 3 inches long, made of the ends of the shoots of dwarf Jumpers, root in a frame in sandy soil during August and September. Dwarf Jumpers may also be increased by layering in autumn.

**Kadsura japonica.** (Schizandraceae)

An interesting semi-hardy evergreen climbing plant, growing up to 10 feet or more in height in favourable positions. It is a native of Korea and Japan and related to the Schizandras. This plant has long, narrow, oval glossy green foliage and tiny cream flowers are borne in April or May. These are followed by red berries. In autumn the foliage takes on attractive tints of red and orange. There is a creamy-white variegated variety, *K. j. variegata* (up to 10 feet).

**Culture**—These plants may be grown outdoors against a warm wall and in the milder districts on arches and pergolas. The most suitable soil is a well-drained loam with leaf-mould and peat, if available, added. Plant in April. Prune in summer only to thin the branches when required, and tie to supports. Propagation is best carried out by means of cuttings of semi-mature wood, 2 to 3 inches long, inserted in slight heat in late summer; or by layering in autumn.

**Kalmia.** American Laurel (Ericaceae)

The species named below are hardy evergreen shrubs, natives of North America, and thriving under similar conditions to those favoured by Rhododendrons. The rare *K. cuneata*, from the south-eastern regions of the United States of America, is semi-evergreen or deciduous in cold winters. Kalmias need a moist situation in sun or partial shade, and peat or well-drained non-calcareous loam and leaf-mould. The best known species are *K. glauca* (the Swamp Laurel), which grows about 2 feet high, has dark green small and narrow oblong leaves and carries attractive purplish-rose flowers in April and May. *K. latifolia* (the Calico Bush or Mountain Laurel) is in North America one of the most lovely evergreen flowering shrubs for acid soils. It has large, glossy-green oval leaves, bears rose to white flowers in June and grows to a height of 8 to 15 feet and as much or more through. *K. angustifolia* (the Sheep Laurel), with smaller oval leaves,
KALMIA — KETELEERIA

makes a bush some 3 feet in height and bears clusters of rosy-red flowers in June. *K a. var rubra (3 feet) has deep red flowers and *K a var nana (6 to 9 inches high) is an excellent dwarf-growing shrub for the rock garden.

Culture — Plant in October or April. No pruning is required, but to prevent seeding, the old flower-heads should be cut off when they fade. To propagate, sow seeds under glass in early spring, insert cuttings about 3 inches long of semi-mature shoots in a frame in late summer, or layer in October.

Kalopanax. See Acanthopanax ricinifolia.

Kerria. Jew’s Mallow. (Rosaceae)

These are hardy deciduous flowering shrubs from China that throw up long and slender branches, send out short side twigs furnished with pretty light green serrated lanceolate leaves, and in April and May bear golden-yellow flowers. *K japonica (Single) is a neat-growing shrub about 4 feet in height. *K japonica flore pleno (Double) is of more erect growth and from 6 to 9 or 12 feet in height. *K japonica variegata is not so tall-growing, rarely exceeding 3 to 4 feet in height, but has silvery-edged leaves, margined white. The double variety is sometimes grown as Corchorus japonicus or the Jew’s Mallow.

Culture — When the double variety is grown as a climber, as one sometimes sees it in cottage gardens, it will run up to double the height reached in the open border. The Kerrias do well in sandy soil and in sunny positions against walls or fences facing south or west and in shrub borders. Plant from November to March. In June cut the old wood down to the ground or to young vigorous side shoots. After pruning, mulch with well-decayed manure. Take cuttings of young side shoots, 3 inches long, and insert in a close frame in late summer; or propagate by division of the clumps in late autumn.

Keteleeria. (Coniferae.)

This genus includes two species of conifers allied to the Abies. *K. Davidi ana (80 to 100 feet), a native of western China, was first introduced by Henry in 1889. Young plants are now easy to obtain, Wilson and other collectors in China having sent home supplies of seeds. It makes a tree up to 15 feet in height at Kew, but in favourable situations may
ABC OF SHRUBS AND TREES

grow taller, as in its native habitat, it reaches large tree dimensions. *K. Fortunes* (75 to 90 feet), a native of China and introduced by Fortune in 1844, is not so hardy as the preceding, but should be an interesting tree for the south and west of the British Isles.

*Culture*—Plant in late April or early in May in a well-drained loamy soil with leaf-mould and peat added. No pruning is needed, except in the case of young trees, about the end of April, to shape the trees and to maintain a leading shoot. Propagate by means of seeds sown when available in a frame and by grafting under glass in spring on Abies.

*Kœlreuteria.* *(Sapindaceae)*

These are handsome deciduous trees, natives of eastern Asia and growing some 25 to 50 feet in height. They have attractive pinnate leaves, 8 to 20 inches long, and bear in hot summers large terminal panicles of yellow flowers nearly a foot in length in July and August. These are followed by bladder-like fruits.

*Species.*—*K. apriculata* was introduced from central China by Wilson in 1900, and *K. paniculata* (Varnish Tree), a native of China, Korea and Japan, was first introduced in 1763. *K. bupinnata,* from western China, and *K. formosana* are not so hardy and are suitable only for culture in the south and west of the British Isles.

*Culture*—The trees thrive in light soils and in sunny sheltered positions. They are good town subjects and are readily propagated by means of root-cuttings removed from the parent tree about February and placed in the fibre of a close propagating frame, and by seeds sown when ripe in a frame or cool greenhouse. Plant in November or February and early in March. No pruning is required, except to shape the trees. This is best done in February.

*Kolkwitzia amabilis.* Beauty Bush *(Caprifolaceae)*

This is a hardy and graceful deciduous shrub from China, growing to a height of 5 to 8 feet, having broad, oval leaves that taper to a point at the apex, and bearing in late May and June delicate pink, bell-shaped flowers tinged yellow in the throat, something like those of the Weigela. These are followed by interesting oval and bristly fruits. The Kolkwitzia is a very hardy shrub and blooms with remarkable freedom.
KOLKWITZIA — LABURNUM

under the North American conditions of severe frosts in winter and hot summers that thoroughly ripen the wood

Culture—Plant from November to March in rich fibrous loam and select open, sunny positions for planting. To prune, thin the bushes by cutting out the oldest flowering shoots in June or early July after blooming. Propagation may be carried out by means of cuttings of young wood about 3 inches long, inserted in sandy soil in a frame in July or August.

Laburnum. Golden Chain. (Leguminosae)

Very graceful and popular hardy deciduous flowering trees. They are of small stature, have trifoliate leaves and in May and June bear a profusion of long drooping racemes of yellow flowers. They are one of the most beautiful of the flowering trees for small gardens. Almost any well-drained soil and a sunny position suit them well. The trees grow from 15 to 30 feet high and are useful for town gardens. *L. alpinum (20 to 30 feet), though called the Scotch Laburnum, is not a native, but is a wild tree from central and southern Europe. It flowers about three weeks later and carries longer racemes of flowers than L. vulgare (the Common Laburnum), also from central and southern Europe. L. Adamit (15 to 25 feet), known as the "Purple Laburnum," is a graft hybrid of great interest between the common Laburnum vulgare and Cytisus purpureus. It produces at the same time and on the same tree, spikes bearing flowers of three different colours, some yellow, some purple and others a unicoloured fusion of yellow and purple. *L. Wateren (20 to 30 feet, Yellow) is one of the best hybrid Laburnums. L. Vossu (20 to 30 feet) is a hybrid between L. alpinum and L vulgare. L. vulgare autumnale produces a second crop of bloom in the autumn. L. caramanicum is a rare shrub, averaging from 3 to 5 feet high, which has flowers very similar to those of a Broom in June

Culture—Plant from November to March. Laburnums need no pruning except to remove sucker growths and unwanted crowded shoots, this should be done after flowering. The seeds are poisonous and children should be warned against eating them. To propagate, sow seeds in a frame when ripe and graft the hybrids and varieties, including L. Adamit, in spring on vigorous seedlings of Laburnum vulgare outside, or on small plants grown in pots under glass.
Lagerstroemia indica. (*Lythraceae*).

This is a beautiful semi-hardy deciduous shrub, 6 to 10 feet in height, from tropical and sub-tropical Asia, and produces a profusion of panicles of large rich pink flowers in summer.

*Culture*—It needs warm and very sheltered sites in the south-west of the British Isles. In less favoured districts it is not wise to attempt its cultivation in the open. Plant from pots in late spring in well-drained loamy soil with leaf-mould and peat added. Increase by cuttings, 2 to 3 inches long, made of the ends of the young non-flowering shoots and inserted in a close frame in summer. Prune in February or March, shortening the previous year's shoots to half or one-third their length.

Lapageria. (*Lilaceae*).

Beautiful evergreen climbers, natives of Chile and suitable for growing on a wall in the milder districts of the south and west of the British Isles. Clusters of pretty waxy, bell-like flowers, rose, or rosy-red and white, are produced in late summer and autumn. The leaves are green and leathery.

*Culture*—Plants thrive in a well-drained turfy loam plentifully mixed with sand, an equal portion of peat, and a little charcoal and, because of their love of shade, they will often grow and flower freely on a north wall. The roots and lower parts of the stems should be shaded from the sun. Propagate by means of seeds, when available, sown as soon as ripe in gentle heat, or by layers after flowering, the latter being the best way of obtaining strong, quick-growing plants. Plant in late April. Cut-out weak shoots only after flowering, but otherwise do not prune. Keep the plants fairly dry in winter.

*Species and Varieties.*—*L. rosea* (Rose, 15 to 25 feet, or more); *L. r var albilora* (White, 10 to 15 feet), and *L. r var. Nash Court* (Rosy-red, 15 to 25 feet).

Larch. See *Larix.*

Lardizabala biternata. (*Lardizabalaceae*).

This is a distinctive and striking, but somewhat tender evergreen climbing plant, a native of Chile and having bright green, tough, leathery and variable compound foliage. It runs up to 25 feet or more in height and produces a profusion of drooping racemes of purple and white unisexual flowers in
LARDIZABALA — LAUREL

May, followed by fleshy, sausage-shaped fruits. Give the protection of a warm, sheltered wall; in the milder localities it may be grown on arches and rustic poles.

_Culture._—Plant from pots in late spring in well-drained, light loamy soil with leaf-mould added and peat, if available. Increase by means of seeds sown in early spring in a cool greenhouse or frame, by cuttings in July or August, 2 to 4 inches long, made of the half-ripe growths of the year and inserted in a close frame, preferably with slight bottom heat; and by layering in autumn. Prune in early spring only to keep this climber within bounds and to prevent the growths from becoming crowded.

_Larix._ Larch. (_Conifera_)

One of the few deciduous conifers. These handsome trees grow from 30 to 200 feet in height and thrive in sunny positions and in well-drained ordinary soil. The soft, flat, needle-like, light green foliage, which grows in grass-like tufts, is very striking in spring.

_Culture._—Plant from November to March. Remove dead wood, when necessary, in late summer. Propagate by means of seeds sown in a pan of well-drained soil in a cold frame, or when a large number of trees are required, sow thinly in prepared beds of fine soil in the open in November. Cover with only a thin layer of mould and leave the young plants in the seed beds for two years. At the end of this period, plant out in lines, 11/2 feet apart, and with the young plants 12 to 15 inches apart in the lines. Here they should remain for a year or two before planting in the permanent positions. Rare species and varieties may be grafted on seedlings of _L. europaea_, in a close frame in early spring.

_Species._—_L. americana_, 50 to 70 feet, a native of the eastern states of North America, is the best Larch for damp and somewhat boggy ground; _L. europaea_, 80 to 140 feet (Common Larch); _L. leptolepis_, 75 to 100 feet (Japanese Larch); _L. occidentalis_, 100 to 200 feet (Western Larch); and _L. eurolepis_ (Dunkeld Larch, 100 feet or more), a hybrid between the European and Japanese Larches, which originated at two places in Scotland where the trees were growing together.

_Laurus._ See *Prunus Laurocerasus* (Cherry Laurel), *P. lusitanicus* (Portugal Laurel), and *Laurus nobilis* (Bay Laurel).
Laurelia. (Monimiaceae)

A genus of semi-hardy evergreen trees with pale green, leathery leaves, which are aromatic when bruised. Two species may be grown on south walls in the open in warm sheltered situations in the milder districts of the British Isles.

Culture—Plant in late April in well-drained loam with leaf-mould and peat, if available. Prune in late April only to thin and shape the trees. Increase by means of cuttings, 1½ to 3 inches long, made of the half-ripe growths of the year and inserted in a close frame in late summer, and by layering in autumn.

Species—L. nova-zealandiae, the “Pukatea” of New Zealand, which in its native habitat reaches up to 15 feet in height, and L. serrata, a large tree, 40 to 50 feet in height in Cornwall, whose greenish-yellow flowers are borne on short racemes in the axils of the leaves in April, and which is a native of Chile.

*Laurus nobilis. Bay Laurel (Lauraceae)

The common Cherry Laurel, Prunus Laurocerasus (which see), does not belong to this genus. The true Bay Laurel, or Sweet Bay, Laurus nobilis, here referred to, is a fairly hardy evergreen, ranging from 10 to 50 feet in height and which has fragrant, somewhat leathery, and rather large lanceolate leaves and greenish-yellow flowers in May.

Culture—It is often grown as a standard and as a hedge plant in mild and maritime districts. The Bay Laurel thrives in well-drained, fibrous loam, leaf-mould and peat, and in a sheltered position in sun or shade. Ample water, however, is needed in summer. Plant in late April or May, about 18 inches apart, if used as a hedge. It should not be planted in cold, exposed, and windswept districts, as it is easily damaged by frosts. This is a favourite shrub for growing in large tubs placed on steps, terraces and loggias. The Bay Laurel stands cutting well, and can easily be kept in shape and to any size. Prune towards the end of April, when growth is just beginning. In the case of a hedge, prune hard in late April and trim to shape for the winter early in August. To propagate, insert cuttings of semi-mature wood about 4 inches long in a frame in August.

Laurustinus. See Viburnum Tinus.
LAVANDULA

Lavandula. Lavender. (Labiatae.)
There are several species of this genus of fragrant evergreen shrub, natives of the Mediterranean region. The best-known is *L. spica*, the common lavender of the garden, with its longish narrow foliage. *L. vera*, from which oil of lavender is obtained, is extensively grown for commercial purposes, its foliage is of a more greyish or silvery shade. The white form of the common lavender is *L. spica alba*, and there is also a dwarf variety of this plant, namely *L. spica nana* or Dwarf French. *L. spica gigantea*, the Grappenhall variety, is strong-growing and later in flowering. *L. spica Munstead Variety* is a dwarf early-flowering Lavender with dark flowers. These all thrive in light and well-drained soils and in sunny, open positions, inland or near the sea shore. They grow from 2 to 4 feet high and occasionally more (except the dwarf varieties, which rarely exceed 1½ inches in height) and flower in July and August. *L. dentata* is a shrub, 1 to 2 feet high, with dark purple flowers in late summer.

**Culture**—Lavender needs good drainage (old mortar rubble is helpful) and deep cultivation, together with a fair enrichment with old manure and leaf-mould. A south aspect is best. It does not thrive in wet clay soils. Raising from seeds is a slow affair, and seldom worth while. A useful method of propagation is by offsets or slips, pulled off by hand from old plants, in October and with a heel of the old woody stem attached; the plants being placed a foot apart and transplanted a year later to 3 feet apart. Cuttings of semi-mature wood, about 3 inches long, may also be struck in sandy soil in a frame in August. Plant in March or September and October, and clip after flowering.

**Lavender as a Hedge Plant**—There are few things more pleasing in the garden than two well-kept lavender hedges flanking a paved path leading up, may be, to an old-world sundial. A lavender hedge is not only beautiful, it provides a delicious fragrance which does not fade with the passing of the summer, but which may be preserved by picking and storing the flowers. With care lavender may be trained in four or five years into a hedge from 3 to 4 feet high. The old flower stems should be trimmed off in September. It is only necessary to cut away the straggling shoots and to trim
the bushes into shape, too drastic a pruning often causes the shrubs to die back. April and September or October are the best times for planting and the best hedge is formed if the shrubs are put a foot apart when 6 to 9 inches high. *L. spicata* is the best species to grow as a hedge.

**Lavatera.** Tree Mallow. (*Malvaceae*)

This genus includes one or two beautiful semi-hardy flowering shrubs or trees. *L. arborea*, a native of southern Europe, also grows as a wild plant, an escape from gardens, in the south and west of Great Britain. It does best in maritime districts, where the bushes reach 6 to 10 feet in height and bear attractive purple-rose flowers in summer and autumn. The plants are not long-lived, but are readily grown from seeds. The variety *variegata* is increased by cuttings, 3 to 4 inches long, made of the ends of short side shoots and inserted in a close frame in late summer. *L. olbia rosea*, also a south European species, grows from 6 to 8 feet in height, and carries a profusion of lovely large, single, clear rose-pink, hollyhock-like flowers from July to September. *L. cachemiriana* (6 to 10 feet), a Himalayan species, is somewhat similar, and has clear pink flowers.

**Culture**—These plants thrive outdoors in warm, sheltered sites and in the milder localities, particularly near the sea. To propagate, sow seeds when ripe in a frame or cool greenhouse. Grow in pots and plant in sunny flowering positions in April in light, warm, loamy soils with leaf-mould added. No pruning is desirable, except to shape the bushes or to cut off in April the dead ends of shoots killed by winter's frosts.

**Ledum.** (*Ericaceae*)

Hardy evergreen shrubs of neat habit, growing from 1 to 4 feet in height, with small, narrow, oval leaves and carrying round clusters of small white flowers on the ends of the branches.

**Culture**—They thrive in cool, moist peat or loam deficient in lime, and in sun or semi-shade, but if need be, will do quite well in ordinary cool moist garden loam, provided it is non-calcareous. Plant in May or September. No pruning is necessary, but dead flowers should be removed. Propagate in September by means of layering, by cuttings about 1½ inches in length, made of the semi-ripe ends of the shoots.
and placed in a frame in August; or by seeds sown under glass in spring.

Species.—*L latifolium* (Labrador Tea) [North America] (White, April to June, 2 to 3 feet high), *L palustre* (Marsh Ledum) [N Arctic Regions] (White, April and May, 1 to 3 feet).

**Leiophyllum buxifolium.** Sand Myrtle (*Ericaceae*)

This is a hardy dwarf evergreen flowering shrub of compact growth, useful for the front of shrub beds and borders and the rock garden. It is a native of the eastern districts of North America and grows from 8 to 16 or 18 inches high. The Leiophyllum has small, oval, shiny leaves and in May and June bears clusters of little white flowers.

**Culture.**—The plants like a lime-free fibrous loam or peat and a position in full sun. Plant in April or September and October. No pruning is required until the plants grow old and straggly, then prune hard in mid-April, or root out and start again with young plants. Propagation is carried out by means of seeds sown in a frame or cool greenhouse in spring, by cuttings, 1½ to 3 inches long, inserted in sandy soil (with peat added if available) in a close frame in August or September, or by layering in September.

**Leitneria floridanana.** Cork Wood. (*Leitneriaceae*)

A deciduous shrub or small tree growing from 6 to 15 feet or more high and bearing in June unattractive male and female flowers on separate bushes. It is a native of the western districts of North America where it grows in swamps. I recently saw a large group in luxuriant growth in one of the Rochester (USA) parks. They were planted in ordinary moist, loamy soil near the bottom of a north-west slope.

**Culture.**—Plant early in March. No pruning is required or desirable. Increase is by means of imported seeds sown in autumn in a frame, and by cuttings, 2 to 4 inches long, made of the half-ripe side growths and inserted in a close frame in August.

**Leonitis leonurus.** Lion’s Tail. (*Labiatae*)

This is a beautiful but somewhat tender deciduous shrub, a native of South Africa. It grows from 3 to 6 feet in height and may be grown against a warm wall outdoors in the milder districts of the British Isles. The bright orange-scarlet flowers are produced in whorls in late autumn.
ABC OF SHRUBS AND TREES

Culture—The plants thrive in a well-drained loamy soil and should be planted in late April or May. Increase is by means of cuttings, 2 to 4 inches long, made of the ends of the young shoots and inserted in April or May, in a close frame, preferably with slight bottom heat. Prune rather freely in February or March, cutting back the flowering stems of the previous autumn.

Leptodermis kumaonensis. (Rubraceae)
A somewhat rare hardy deciduous shrub, a native of the north-western regions of the Himalayas. It grows from 5 to 6 feet in height. The violet-purple flowers, which are produced on lateral shoots, are borne in numerous small clusters in late summer.

Culture.—Leptodermis do well planted at the foot of a sheltered south wall in sandy loam and peat or leaf-mould. Plant in March. No pruning is required except to shape the shrubs or to regulate the branches. This may be done in late February. Increase by cuttings, 2 to 3 inches in length, made of the ends of non-flowering side shoots and inserted in a close frame in late summer.

Leptospermum. (Myrtaceae)
A genus of attractive evergreen shrubs, natives of Australasia and allied to the Myrtles. They grow from 4 to 30 feet in height, have small narrow oblong leaves, and in early summer carry white, pink or red flowers. Three Australian species, all with white flowers, are on the borderland of hardiness: L. laevigatum, which in Australia grows from 20 to 30 feet in height; L. pubescens, 10 to 20 feet, and L. stellatum, 8 to 10 feet. L. scoparium, 10 to 20 feet, a New Zealand species with white flowers, may be grown successfully outdoors on a wall or in sunny, sheltered situations in the south and west of the British Isles in almost any soil deficient in chalk—peat and coarse grit are to be preferred. The coloured varieties of L. scoparium, namely L. s. Boscawenii (Pale Pink); L. s. Chapmanii (Rosy-scarlet); and L. s. Nichollsii (Rosy-crimson, Purplish Leaves), are recommended.

Culture.—Plant outside from pots in late April or May. Prune after flowering only to keep the bushes in shape and to thin the branches when very crowded. Propagate by means of cuttings, 1 to 2 inches long, made of side shoots, preferably
LEPTOSPERMUM — LEUCODENDRON

with a thin heel of old wood, and inserted in a close greenhouse frame in sandy peat in May or June, or by seeds sown in March in a greenhouse or frame

Lespedeza. Bush Clover. \( (Leguminosae) \)
Hardy deciduous shrubs, natives of China and Japan and allied to the Desmodium and Indigofera, which they resemble \( L \) bicolor, the best-known species, grows from 6 to 8 feet high and even more in the south and west of the British Isles. It has attractive trifoliate foliage and from August to October produces a profusion of long inflorescences of vivid purplish flowers shaped like those of the pea \( L \) Sieboldii (syn. \( Desmodium \) penduliflorum) is a somewhat similar semi-woody species. It grows from 4 to 6 feet high and has trifoliate leaves and rosy-purple flowers in late summer, freely borne in loose panicles at the ends of the shoots.

Culture — These shrubs thrive in full sun and in almost any light soil, and should be planted from November to March. They flower on the current year's growths and should have the shoots cut well back in early spring, if not killed back by the frost in winter, for in most winters the stems are killed to the ground level. Propagation may be carried out by means of seeds sown in a frame in early spring, by cuttings, 2 to 3 inches long, made of the semi-ripe side shoots and inserted in July in sandy soil with peat added, if available, in a frame or handlight, and often by division of the roots, by merely chopping off woody outgrowths with an old sharp spade in early spring.

Leucodendron argenteum. Silver Tree. \( (Proteaceae) \)
A beautiful half-hardy evergreen tree of small stature, a native of South Africa. It has silvery foliage and terminal clusters of yellow flowers, these, however, are very seldom seen in Great Britain. It may reach a height of from 10 to 15 feet. This interesting tree may be grown in the open in warm, dry and sheltered situations in the mildest districts of the south and west of the British Isles.

Culture — Plant outside from pots in late April or in May in a soil consisting of about equal parts of loam, leaf-mould, peat and gravel or coarse grit. No pruning is necessary, or desirable. Propagation is by means of imported seeds sown in a cool greenhouse or frame in early spring.
Leucothoe. (Encaceae)

Beautiful hardy ericaceous evergreen and deciduous shrubs, natives of America, and sometimes included in the Andromeda group L Catesbaei, the best-known species, is a wild plant of the south-eastern districts of the United States of America and forms a handsome evergreen shrub some 3 to 5 feet in height with arching branches and large pointed, saw-edged, glossy-green, leathery leaves, and which in May produces a mass of small white Andromeda-like flowers L. C. Rollisonii (3 to 6 feet) is a small-leaved form. Other good species are L. axillaris, an evergreen shrub, 2 to 4 feet high, and a native of the south-eastern regions of the United States of America, with axillary racemes of flowers in April and May; L. Daviesii (Evergreen, 2 to 3 feet), from California, with racemes of flowers in June; and L. racemosa, a deciduous shrub, 3 to 6 feet or more in height, a native of the eastern districts of the United States of America, with racemes of flowers in June.

Culture—These plants thrive in moist situations in rich, sandy loam or peat, but do not like lime or chalk. They will grow well in semi-shade, in peaty or moist lime-free loam. Plant in October or April. No pruning is needed, but they bloom better if old and dead wood is cut away periodically after flowering. Propagation is best carried out in August by means of cuttings, about 3 inches long, of semi-mature shoots inserted in a frame, or, in the case of L. Catesbaei, division may be satisfactorily resorted to, also layering in autumn.

Leycesteria. Flowering Nutmeg or Pheasant Berry. (Caprifolaceae)

This hardy deciduous shrub is a native of the Himalayan regions. Only one species is at all extensively grown; that is, *L. formosa*. This grows from 4 to 8 feet high, has ovate, heart-shaped foliage, tapering at the apex, and in July and August carries at the end of the current year’s growth drooping racemes of purple and white funnel-shaped flowers. The blooming period often extends from June to September, and the flowers are followed by purple-black fruit in autumn.

Culture.—The plant thrives particularly well in maritime districts and by the waterside in light, well-drained soils.
LEYCESTERIA — LIGUSTRUM

and will also flourish under the shade of trees. Plant from November to March. During the winter cut out wood that has flowered. To propagate, sow seeds in a greenhouse or frame in the early spring. This shrub grows so freely from seeds that cuttings are not necessary.

**Libocedrus. (Coniferae)**
Hardy and half-hardy evergreen coniferous trees, which are rather slow-growing. The most popular species is *L. decurrens*, the Incense Cedar, a native of California and the Oregon. This forms a most imposing tree of pyramidal shape some 50 feet or more in height. *L. d. variegata* (50 feet) is a variegated form having the leaves mottled with golden-yellow. *L. chilensis*, the Chilean Cedar, grows up to 50 feet high in the south and west of the British Isles and is planted outside at Kew in a very sheltered position.

**Culture.**—They like a well-drained loam and a warm, sheltered position. Plant in late September or October and in April and early May. No pruning is required. Sow seeds (extracted from the middle pair of scales of a cone) in a frame when ripe; or insert cuttings, 2 to 3 inches long, made of the side shoots with a thin heel of old wood, in a frame in autumn.

**Ligustrum. Privet (Oleaceae)**
Evergreen and deciduous shrubs, some of which are largely grown as hedge-plants. These plants grow from 6 to 30 feet high and produce flowers from June to October if unclipped. The following are the most useful: *L. ovalifolium* (Oval-leaved Privet) from Japan, 12 to 15 feet, and *L. o. folius aureus* (Golden Privet, 10 to 12 feet), these two are those most used for hedges, *L. japonicum*, 5 to 10 feet, from China and Japan, *L. lucidum*, a tall tree in China, but in the British Isles rarely more than from 20 to 30 feet high (the two last-named are evergreens with glossy green leaves and white flowers); and *L. Quishouzi* (Deciduous, White Flowers, 8 to 10 feet) *L. smennis* (Chinese Privet) makes a tree from 8 to 15 feet in height and carries masses of bloom in July, followed by deep purple fruits in autumn and winter. The last four are tall-growing privets and make showy specimen shrubs if allowed to flower.

**Culture**—Privets thrive in ordinary soil. Plant the deciduous and semi-evergreen species from November to
March and the evergreen species in October and April and early in May. Clip hedges several times in summer and cut out dead wood. To propagate, insert cuttings of mature wood, 12 to 18 inches in length, in the open in autumn, or shorter cuttings, 3 to 4 inches in length, of softer wood may be rooted in a frame in August or September.

*Privet as a Hedge-plant*—Privet should be kept out of the way of cattle as it is poisonous to them. In gardens, however, it may be used with very good effect, for it bears clipping almost better than does anything else, and is very neat and compact. Privet mixes very well with the Thorn or Quick, where a greater strength is required than can be had by using privet alone. The Oval-leaved Privet (*L. ovalifolium*) is the best to plant, and is practically evergreen in all but the most severe winters. It is a fast grower and soon makes a screen if planted in ordinary soil in October in two rows 12 inches apart, with the plants alternating 12 inches apart in the rows. Shrubs, 18 to 20 inches high, are the best to plant. They should be cut back to half their height the first April after planting; after that, in addition to clipping several times during the summer, prune when straggly. The roots impoverish the soil and hedges should not be planted nearer flower borders than necessary.

*L. ovalifolium folius aureus*, the Golden Privet, does not grow so vigorously and is not suitable for poor soils and shaded positions. In rich soils and open positions it forms a good hedge, 3 to 6 feet or more in height, and provides a bright contrast to the other shrubs. It requires the same treatment as the Green-leaved Privet, except that trimming or clipping need not be so frequent.

*Lime*. See *Tilia*.

*Linden*. See *Tilia*.

*Lindera Benzoin*. Spice Bush. (*Lauraceae*)
This is an interesting hardy aromatic deciduous shrub, a native of North America and growing some 5 to 10 feet in height. In April it bears clusters of small, insignificant yellowish flowers, followed by small, oval, red or dark purple berries. *L megaphylla* is a distinct evergreen shrub introduced by Wilson from central China early in the present century. In its native habitat it reaches large tree dimensions.
LINDERA — LINUM

Culture — The bushes thrive in a moist, non-calcareous soil. Plant *L Benzoin* in March and *L. megaphylla* at the end of April. Cut-out old and worn-out wood at the end of March and take off the ends of shoots killed by frost. Increase by means of cuttings, 2 to 3 inches long, made of the half-ripe young shoots and inserted in a frame or under a bell-glass in late July or August.

Ling. See Calluna.

Linnea borealis. Twin-flower. (*Caprifoliaceae*)
A hardy, evergreen trailing or creeping shrub of dwarf habit. It is a native of the Northern Hemisphere and thrives in a mixture of sand and peat and in the shade on moist banks in the bog or woodland garden. It only grows about 3 inches high and soon forms a dense carpet. It is a useful plant for the rock garden. The flowers are funnel-shaped, small, white, flushed with pink, and are borne in pairs on short wiry stems from June to August.

Culture — Plant in April or early May. No pruning is required. Propagate by means of division in March or October; strike cuttings, 1½ to 2 inches in length, of semi-ripe wood in a frame in July; or increase by means of layering in autumn or spring.

Linum arboreum. Tree Flax. (*Linaceae*)
An interesting little semi-hardy evergreen shrub that is a native of the Mediterranean area. It grows from 12 to 24 inches in height, has attractive glaucous foliage and carries a mass of large bright yellow blooms. Individual flowers, unfortunately, last little more than a day, but a succession of bloom keeps the shrub gay from May to July.

Culture. — It thrives in a sheltered position in full sun in almost any ordinary well-drained garden soil. Plant in April. Propagate by means of seeds sown in a frame in May or in a heated greenhouse in February, when the young plants will flower the first year in late summer; or by cuttings, 1½ to 2 inches long, made of young wood and inserted in sandy soil in a close frame in July or August. Cut off the old flowers as soon as they fade if seeds are not required. The plants are not long-lived in our climate, and a fresh stock of plants should be raised from seeds about every third or fourth year in the manner described above.
Lippia. Sweet Verbena. (*Verbena*ae*)
Only one kind of this sweet-smelling deciduous shrub is grown to any extent, *Aloysia* or *Lippia citrodora*, a native of South America. This plant has long pale green lanceolate leaves, which exhalé a delicious perfume, especially when bruised. The purple blooms are borne in August. *L. citrodora* can be grown in the open in the south and west of England, where it will reach up to a height of 10 feet or more. It is grown on a sunny south wall at Kew, but requires protection with sacking or canvas from the frost in severe winters; in other parts it is suitable for the cool greenhouse.

*Culture*—Plant out from pots in April in a compost of light sandy loam and peat or leaf-mould. Against a wall cut young shoots back to within a few inches of the old wood in February each year. Take out the points of the young plants from time to time, but not later than June. Propagate by means of cuttings of young wood, 2 to 4 inches long, inserted in gentle heat in summer, or in a cold frame.

Liquidambar. (*Hamamelidaceae*)
These are deciduous and ornamental trees growing from 40 to 100 feet high, rarely more in this country, and with leaves so much like those of the Maple that they are frequently mistaken for the latter. They derive their name from the amber-like gum which oozes from the tree. As far as the flowers, which are borne in April, go, the trees have no merit, as these are not attractive. Their charm lies in the gorgeous ruddy-brown and orange tints which the foliage assumes in autumn. The trees are very useful for pleasure grounds and avenues. *L. formosana* (50 to 75 feet), from China and Japan, is a tree on the borderland of hardiness at Kew. *L. f var. monticola* (50 to 100 feet) is a harder form introduced from China by Wilson in 1908. *L. orientalis*, a species from Asia Minor, is interesting and has deeply-cut five-lobed leaves. In its native habitat it grows from 25 to 100 feet in height, but in British gardens only attains to small tree size. The best-known and most usually grown species is *L. styraciflua*, the Sweet Gum of the United States, the tree which yields the wood used in the manufacture of furniture known as “Satin Wood.” Native trees reach up to 150 feet, but in British gardens they rarely exceed 50 to 75 feet.
LIQUIDAMBAR — LITHOSPERMUM

Culture.—These trees like a cool, moist, ordinary soil and a sunny position. Plant from November to early March. Prune in late summer or early winter only to thin the wood and regulate the branches. Propagate by means of seeds obtained from abroad and sown as soon as received, in a frame, by layering in autumn, or by cuttings, 2 to 3 inches long, made of half-ripe wood and inserted in a close frame with slight bottom heat at the end of July.

Liriodendron. Tulip Tree (Magnoliaceae)
Handsome hardy, deciduous trees, growing from 70 to 150 feet in height and bearing green and yellow tulip-like flowers in June and July. In autumn the distinctive broad, angular and saddle-shaped leaves take on a lovely golden tint.

Culture.—These trees thrive in well-drained soil in sunny positions. Plant from November to March. Prune in late summer or early winter only to shape and regulate the growth of the branches. To propagate, sow seeds of *L. Tulipifera*, obtained from America, in a frame in March and use the seedlings as stocks on which to graft the varieties and *L. chinense*. Increase may also be carried out by layering in autumn.

Species — *L. chinense*, the Chinese Tulip Tree, 50 to 75 feet; *L. Tulipifera*, from the United States of America, 75 to 150 feet; *L. T. var aureo-variegata* (Leaves with Yellow Variegation, 75 to 150 feet); and *L. T. var fastigiata* or *pyramidale* (an upright-growing tree, 75 to 150 feet).

Lithospermum. Gromwell. (Boraginaceae)
Hardy trailing evergreen shrubs, excellent for dry walls, crevices in the rock garden and for carpeting and edging. *L. prostratum* is a prostrate shrubby plant with small, dark green, oblong foliage and gentian-blue flowers from May to July. It grows 6 inches to 12 inches high, but attains more in diameter. *L. rosmarinifolium*, from Italy and Greece, and growing 1 foot high, also has blue flowers.

Culture.—These plants do well in a mixture of gritty loam and peat in dry sites and with plenty of sun. Sow seeds under glass in March, in late summer take cuttings, 2 to 3 inches long, made preferably with the bottom half of the cuttings of two-year-old wood, and insert in sand and peat under glass, or propagate by means of layering in September, or by division in April. Plant out in permanent positions in...
spring In pruning, after flowering, cut-out old and crowded branches.

**Litsæa. (Lauraceæ)**

A large genus of trees and shrubs in the tropics, only one or two of which can be cultivated outside even in the warmest parts of the British Isles. These are *L. grumulata*, the Pond Spice of the southern districts of the United States, a half-hardy shrub, 4 to 6 feet or more high, with deciduous lanceolate leaves and yellow flowers in May; and *L. japonica*, a native of China and Japan, a bush, 3 to 4 feet high, with attractive evergreen foliage and white flowers borne in early summer in the milder parts of the country. There is a good specimen at Tresco Abbey, Isles of Scilly. This produces the white flowers freely in spring.

**Culture**—Plant from pots in May in well-drained light loamy soil with leaf-mould added and peat, if available. No pruning is required. Increase by means of cuttings, 2 to 3 inches long, made of the ends of half-ripe shoots and inserted in August in a close frame with slight bottom heat.

**Loiseleuria procumbens** (syn. *Azalea procumbens*). *Trailing* or *Alpine Azalea. (Ericaceæ)*

This is an attractive and valuable little shrubby evergreen plant of trailing habit, not growing more than 6 inches in height. It has small, oval, glossy green leaves and bears pink flowers in May.

**Culture**—An interesting subject for moist, shady situations in the rock garden, thriving in sandy peat and leaf-mould. This shrub does not like chalk in the soil. Plant in March. No pruning is required. Propagation is best carried out by means of cuttings, 1 to 2 inches long, made of the ends of the shoots and inserted in sandy peat in a frame in August or September, or layering in autumn.

**Lomatia. (Proteaceæ)**

Two species of these handsome semi-hardy evergreen shrubs (or small trees in South America) can be cultivated outside in very sheltered positions in the British Isles. The Australian species require greenhouse protection. The two species here described are valued for their ornamental foliage rather than for any conspicuous beauty of the flowers. *L. ferruginea* is a native of Chile and grows some 8 to 15 feet in height. It has
LOMATIA — LONICERA

large, much divided pinnate and fern-like leaves and produces a mass of small racemes of buff flowers that are bright red inside, developing in June and July. *L. obliqua*, a small tree or large evergreen shrub from Chile and Peru, has leathery and coarsely-toothed leaves, from 2 to 4 inches long and half as much in width, and white flowers borne in early summer. In a sheltered recess of one of the plant houses at Kew a bush grew to a height of 12 feet, but eventually succumbed to frosts.

*Cultrue*—These Lomatias may be grown outdoors in the mildest localities only of the British Isles and are interesting subjects for a sheltered wall. Plant in late April or in May. The most suitable soil is a well-drained light loam with leaf-mould and peat added. Prune to shape the bushes early in May, but only when absolutely necessary. Increase is by seeds, when available, sown when received in a greenhouse or frame, by cuttings, 2 to 3 inches long, made of the ends of the shoots in late summer and inserted in a close frame, and by layering in autumn.

**Lonicera. Honeysuckle. (Caprifolaceae)**

A genus of nearly 200 species, comprising all the bushy, trailing and climbing, deciduous or evergreen shrubby plants known as Honeysuckles; the climbing species and varieties of which are so valuable for their fragrance. The plants grow from 5 to 15 feet high, taller in the case of the climbers, according to the species or variety, and mostly bloom during the summer. Some, however, (see below), flower in late autumn and winter. The climbing species and varieties are admirably adapted for covering walls, fences, trellis-work, summer-houses, pergolas, etc. The Loniceras thrive in any good garden soil and frequently in partially-shaded positions.

*Climbers*—*L. Periclymenum* is the Woodbine or deciduous Honeysuckle common to our country hedgerows. For garden use the varieties *L. P. belgica* (Yellow and Purple-red, June) and *L. P. serotina* (Creamy-Yellow and Purple, Aug -Sept.) should be selected as these, respectively the Early and Late Dutch Honeysuckles, are better than the type for garden decoration. *L. Henryi*, a native of China, is an interesting evergreen climber and carries black berries in autumn, following its purple-red flowers, which are borne in June. *L. japonica aureo reticulata* is the golden-leaved Japanese Honeysuckle,
remarkable for its pretty variegated heart-shaped leaves and yellowish-white flowers from June to August. *L. j. var. flexuosa, which has pale red and white flowers, and *L j. var. Halliana, with flowers that are white changing to yellow, are attractive evergreen or semi-evergreen flowering climbers. *L. sempervirens (Trumpet Honeysuckle) can be grown on a warm, sunny and sheltered wall outdoors. *L tragophylla, a Chinese species introduced from China by Wilson in 1900, is the largest flowered of the hardy climbing species, the rich yellow tubular flowers being up to 3½ inches long. It is a valuable climber for a house-wall facing north or north-west.

**Bush Honeysuckles.**—Two Chinese species, *L. Standishii, deciduous or partially-evergreen with bristles on the young shoots, and L fragrantissima, deciduous or partially evergreen, green, flower in winter and early spring (December to March), bearing small, pale creamy-white, bell-like flowers, which are very fragrant. They grow to a height of from 5 to 6 feet, or more if used as climbers on walls, but make neat bushes for the shrubbery. *L. syringantha is a shrubby honeysuckle, 4 to 6 feet in height from China and bears fragrant, pale lilac blossoms. Two other useful flowering Bush Honeysuckles for the shrub border are *L. Maackii, from Manchuria and China (White and Yellow, 8 to 15 feet), and *L. tartanica, the best deciduous Bush Honeysuckle for shrub borders. The latter is a variable species found growing wild from Russia to central Asia. It is a vigorous bush, 7 to 10 feet high, and as much in diameter. The flowers, which are freely borne in May and early June, vary from white and pink to rich red; the red-flowered variety being known as *L. t. var. punicea (syn. sibirica). *L. nitida is an evergreen Chinese species growing from 4 to 6 feet or more high. It has glossy, deep green foliage, small creamy-white flowers in July, and translucent violet-purple berries in autumn. This plant is much used as a hedge plant and for growing near the sea.

**Culture**—Insert in sandy soil in the open, cuttings about 9 inches in length of ripe shoots in autumn. Let the cuttings stand in the bed for a year, then plant out from October to April. If preferred, cuttings of younger wood, about 4 inches in length, may be inserted in July and August in a frame with gentle heat. Propagation may also be carried out by
LONICERA — LUPINUS

means of layering in autumn or from seeds sown in a cool greenhouse or frame in early spring. The flowers form on the current year's wood. After flowering, cut away old wood and encourage the development of young shoots.

In the Arnold Arboretum and elsewhere in North America the greatest decorative value of the Bush Honeysuckle lies in the fruits, which after midsummer freely clothe the bushes. The abundant cropping is doubtless due to the thorough ripening of the wood by the brilliant sunlight in late summer and autumn and to the cold winters, which prevent the premature growth of the young shoots in early spring, as happens frequently in British gardens.

**Loropetalum chinense.** (*Hamamelidaceae*)

This is an attractive, but somewhat tender, evergreen shrub, a native of China, that rarely exceeds 4 to 5 feet in height. In spring it produces a mass of lovely white flowers, very similar to those of the Fothergillas. The shrub may be grown successfully out-of-doors in sheltered situations in the milder localities of the British Isles and is attractive on a sheltered wall.

**Culture**—This shrub thrives in well-drained peat, loam and leaf-mould with plenty of coarse grit. Plant during the second half of April. Prune after flowering only to shape the bushes. Propagation is best carried out by means of cuttings about 2 inches long, made of the ends of the half-ripe shoots and inserted in a close frame in July or August.

**Lupinus arboreus.** Tree Lupin (*Leguminosae*)

Beautiful hardy evergreen shrubs. They are quick-growing and free-flowering, natives of California and the Pacific coast, and have attractive compound, digitate foliage. Tree Lupins grow to a height of from 6 to 8 feet in a few years, and, therefore, require ample space, being valuable for the shrubbery borders, and for the wild garden. The sturdy spikes of sweetly-fragrant flowers, often nearly a foot in length, are borne in profusion throughout the summer. *L. arboreus* has yellow flowers, but there are varieties or hybrids whose blooms are white, yellow, blue, mauve or purple. "Snow Queen" is a good white variety.

**Culture.**—Tree Lupins must have plenty of sun and warmth, and prefer a light, rich well-drained soil, but will grow well in
A B O OF SHRUBS AND TREES

sunny positions, even in quite poor ground, particularly in seaside districts. Plant during the second half of October and in March. The shoots made the previous summer should be shortened well back in March each year. The dead flower-heads should be removed when the blooms fade, unless seeds are required. Seeds can be sown in a frame in April or May and, in a heated greenhouse, early in February to obtain flowering plants the first season, but, except with the species and Snow Queen, the seedlings of the named hybrids vary very much from the parent plant and to be sure of perpetuating a good type, it is better to take cuttings, 2 to 3 inches long, made of the short side shoots with a heel, and to insert them in a close frame in late summer.

Lycium. Box Thorn. (Solanaceae)
Hardy deciduous rambling shrubs of rather loose growth, which will, in favourable situations, run up to a height of some 10 feet. The foliage is longish and oval or lanceolate, and in May and June a mass of tiny purple flowers is borne. These are followed in autumn by orange-red, oval-shaped berries. *L. chinense* (syn *L. barbarum*), the Chinese Box Thorn, is also called the Tea Tree in country districts. The egg-shaped orange-scarlet fruits are very attractive in autumn. *L. halimifolium* (6 to 10 feet), said to be a native of southern Europe and western Asia, is very similar to the above, both in flowers and berries, but is slightly less rambling in growth and the fruits are more oval in shape.

Culture—The plants thrive in ordinary soil and against sunny walls and pergolas, and are most useful shrubs for warm, dry sites in the shrub border and for seaside planting. Seeds sown in early spring in a frame or cool greenhouse provide a ready and easy means of increase, it is also possible to take cuttings of ripe shoots 6 to 12 inches long in October and insert them in sandy soil in the open, or to propagate by means of layering in October. Let the cuttings stand in the bed for a year, and then plant-out from October to March. In winter cut-out weak wood and top strong shoots.

Lyonia ligustrina. (Ericaceae)
A beautiful hardy deciduous or semi-evergreen shrub, some 4 to 7 feet in height, a native of the eastern districts of North America and similar in appearance to *Leucothoe*. It is some-
LYONIA — MACLURA

times included in the Andromeda family. This shrub carries
terminal panicles of pretty white flowers in July and August
and later, in favourable situations, its somewhat large, oval,
glossy green and leathery leaves take on rich autumn tints.

Culture — This shrub likes a moist situation in peaty loam
and leaf-mould and grows well when treated in a similar
manner to that advised for the Leucothoe Plant from
November to early March No pruning is needed. Seeds
may be sown in spring in a cool greenhouse or frame, or
cuttings, 2 to 3 inches long, made of the non-flowering shoots
and taken with a heel can be inserted in autumn in a close
frame or under a bell-glass

Maackia amurensis. (Leguminosae)
This is an attractive and hardy deciduous tree attaining only
small dimensions in the British Isles, but growing in a wild
state from 30 to 35 feet or more high. It is a native of
Amurland and is related to the Cladrastis family, but is readily
distinguished by the fact that the buds are in the axils of
the leaves, in the Cladrastis they are covered by the leaf-
stalks. The leaves are long and pinnate, and an abundance
of erect spikes of tiny white flowers similar to those of the
pea are produced in July and August. M. a Buergeri, 30
to 35 feet, is a handsome variety from Japan; it is of larger
dimensions and has downy young wood and leaves.

Culture — Seeds sown in a frame as soon as ripe are the best
means of increase. Plant from November to March in sunny
positions in rather light, well-drained loamy soils. Prune
only in a young state to train and to regulate the branches.
Wounds of any size on mature trees, however carefully treated,
do not heal readily.

Maclura aurantiaca. Osage Orange. (Moraceae)
A rather striking hardy deciduous shrub or small tree of
upright growth and attaining a height of some 20 to 40 feet.
It is a native of the southern regions of the United States
of America and has dark green, longish, oval or lanceolate
leaves. Its branches are armed with spines, but it is chiefly
interesting on account of the large inedible orange-like fruit
borne on the female trees. The flowers are unisexual. There-
fore, grow several trees of the two sexes in a group or, for a
small garden, graft several branches of the male on to a female
tree. Trees fruit freely in the south of France and in Italy, but here, though they grow well enough, the British climate is apparently lacking in the brilliant sunlight necessary for abundant fruition.

Culture—Plant from November to March in well-drained loamy soil in the sunniest position available. No pruning is necessary except to thin and regulate the branches in winter if required. Propagation may be carried out by means of seeds sown in a frame or cool greenhouse in spring, by layers in autumn, or by root-cuttings, 2 to 3 inches long, placed early in the year in sandy soil in a propagating case or cold frame.

Magnolia. (Magnoliaceae)
These beautiful trees and shrubs have been aptly described as the aristocrats amongst hardy trees. The majority are hardy, though several are happier in the mild climate of the south and west of the British Isles. Nearly all bear large and very beautiful cup-shaped flowers with fleshy petals, which are mostly white or creamy-white, in a number of species, however, the flowers have a purple tinge, and in some the blossoms are rosy-purple or rosy-crimson. The blooms are borne singly at the ends of terminal and short side shoots. Magnolias add distinction to any garden.

Deciduous—M. acuminata (Cucumber Tree) is a large tree, 50 to 100 feet high and a native of the United States of America. The leaves are up to 1 foot in length and half as wide. The greenish-yellow flowers are not showy, but are followed by long, sausage-shaped fruits, becoming finally dark red in colour. It is useful as a large specimen tree for the pleasure grounds and the park. M. Campbellii is a tree said to grow from 80 to 150 feet high in the eastern Himalayas. As the rosy-red flowers are borne from February to April in advance of the leaves, it is suitable only for cultivation in the mild sheltered gardens of the south and west of the British Isles. There is a beautiful tall tree at Abbotsbury, Dorset. A tree at Kew, raised from a seed in 1904, is now 30 feet high, but the flower buds are invariably frozen. Only once have I seen fully-opened blossoms on the tree. *M. conspicua, the Yulan or Lily Tree, grows some 20 to 40 feet in height and bears large pure white, fragrant flowers in March and April.
MAGNOLIA

*M Lannei*, perhaps the finest of the hybrid Magnolias, forms a wide-spreading tree or large bush, probably 12 to 20 feet in height, but rather more in diameter. The richly-coloured, rosy-purple flowers are borne in May and the large leaves are an added attraction *M. parviflora*, a Japanese species, which at home grows some 30 feet or more in height, in British gardens forms a large shrub and bears, from May to August, fragrant white flowers with claret centres *M salicifolia* is a distinct and beautiful small tree, 15 to 30 feet in height, of slender, upright habit suggesting a Lombardy Poplar. It comes from Japan, has narrow leaves and bears pure white, flowers in April. The bark and wood are lemon-scented

*M Soulangiana*, the most commonly-cultivated Magnolia, a hybrid between *M. conspicua* and *M. obovata*, of which *Alexandrina, speciosa, superba, Norbertin, Hammondii, rustica*, and *Brozonom* are forms, is a large-sized shrub or small wide-spreading tree some 20 to 40 feet in height. It is one of the most popular flowering trees for the garden and carries its white and purple flowers on the leafless branches in April and early May. *M. stellata (Hall's Magnolia)* is a distinct and lovely slow-growing shrub from Japan and is usually the first to flower at Kew. It may ultimately reach a height of 10 to 12 feet. The fragrant white flowers, which are semi-double, are borne in great profusion on the leafless branches in March and April; *M s rosea* is a variety of this and has rosy-blush flowers. *M tripetala*, the Umbrella Tree of the United States of America, is of wide-spreading habit and attains a height of from 25 to 40 feet, the creamy-white flowers, often as much as 9 to 10 inches across, are borne from May to July and are followed by large and very showy, cone-shaped, rosy-red fruit some 3 to 4 inches long. The enormous leaves, up to some 2 feet in length and half as wide, are an added attraction.

*M. Watsonii* is a somewhat rare and beautiful small tree from Japan. It grows some 15 to 25 feet in height, has large, leathery leaves and from May to July bears very fragrant creamy-white flowers with prominent crimson stamens. *M Wilsonii* is a Chinese species of bushy habit, 10 to 25 feet in height, with white flowers in April and May.

Evergreen —*M. Delavayi* is an evergreen species, 15 to 30 feet in height, or probably more against a wall, with larger
leaves than has the well-known *M. grandiflora*. They are
dull green above and glaucous beneath. The large creamy-
white, fragrant flowers, borne in June, are from 6 to 8 inches
across. This plant grows freely on a sheltered wall at Kew
*M. grandiflora*, the Bull Bay or Laurel Magnolia, is usually
planted against a wall, but in favourable situations forms a
large tree from 25 to 40 feet in height, or more against a wall.
It has large and glossy oval leaves and in July and August,
bears huge, fragrant, creamy-white flowers, often 8 to 10
inches across. The variety *M. g. lanceolata*, or *Exmouth
Variety*, is the best to grow, as these flowers when the plants
are younger and with more freedom than many of the large
old plants of the type on house walls. There are evergreen
and deciduous forms of *M. glauca*, the Swamp Bay of the
United States of America. The undersides of its laurel-like
leaves are silvery-grey in colour and the fragrant, creamy­
white flowers are borne from June to August. It makes a
nice bush or small tree some 10 feet in height.

**Culture**—A good, deep well-drained loam with ample leaf­
mould and peat, if available, and a sunny, sheltered position
are desirable. Transplant as little as possible, the best time
being the second half of April and early in May, even though
in flower, or in October. Prune after flowering, but only
when required, which is but rarely. Propagate by means of
cuttings of semi-ripe shoots, 3 to 4 inches in length, taken with
a heel and inserted in a heated frame in summer, by layering
in autumn, by means of grafting under glass in spring, using
*M. acuminata* or *M. tripetala* for stocks, or by seeds. The
seeds should be sown in autumn as soon as ripe in pots or pans
of light sandy loam, leaf-mould and peat in a frame or cool
greenhouse. Germination may take as long as 18 months
or two years. In the case of *M. grandiflora*, insert cuttings
of mature wood of the current year in heat in autumn, or
layer during that period.

**Mahaleb.** See Prunus Mahaleb

**Mahoberberis Neubertii.** (Berberidaceae)
This is a sub-evergreen hybrid between *Mahonia Aquifolium*
and *Berberis vulgaris*. It grows about 4 or 5 feet in height
and bears yellow flowers in April and May. An interesting
botanical plant, but of no particular garden value.
MAHOBERBERIS — MAHONIA

Culture — Plant in October or April in well-drained loamy ground. Cut out old and worn-out wood in winter. Increase by means of cuttings, 2 to 3 inches long, made of half-ripe growths in July or early August and inserted in a close frame with bottom heat; or by layering in autumn.

Mahonia. (Berberidaceae) Evergreen Barberry
This comprises a group of evergreen shrubs with compound leaves, included by some botanists in the genus Berberis. The best-known species is *M Aquifolium* (Oregon Grape), a native of North America. This is one of the best evergreen shrubs to cultivate beneath trees. It not only grows freely, but stands annual pruning from mid-April to May and forms an undergrowth from 2 to 3 feet high. In the full sun, the Oregon Grape is a beautiful evergreen bush 4 to 6 feet or more high and produces racemes of golden-yellow flowers in March and April. These are followed by clusters of blue-black fruits. In winter the leaves turn shades of copper, bronze and vinous red, cut sprays being very valuable for vase decoration. The rich colouring is frequently enhanced by dyeing, in which condition large quantities are sold in Covent Garden Market. There is considerable variation in the shape, size and colour of the leaves, and a number of plants have been given varietal names. At least ten of these different varieties are growing in the Berberis dell at Kew. *M japonica* and *M j var Bealei* are stately evergreen shrubs from 5 to 10 feet in height, of upright habit. They have compound leaves up to 18 inches long, and in February and March bear racemes of fragrant, primrose-yellow flowers. An early-flowering form, *M j var hyemalis*, blooms in January. *M nervosa* is a slow-growing dwarf species, 9 to 12 inches high from western North America, with yellow flowers in April. In autumn the leaves turn a bronze or vinous red.

Culture — The Mahonias grow freely in most well-drained soils. Plant in October or April and May. When necessary, cut out old and worn-out stems and shorten long branches after flowering, during the latter half of April. To increase, sow seeds in a frame in May or June. Division or offsets in early October is a useful method of increase, as the varieties of *M Aquifolium* and *M nervosa* produce suckers freely. The best means of rooting cuttings, which should be 2 to 4 inches
long, is to insert them in winter in a close frame with bottom heat.

**Maidenhair Tree.** See Ginkgo biloba.

**Malachodendron.** See Stewartia Malachodendron.

**Malus.** See Pyrus Malus

**Manzanita.** See Arctostaphylos Manzanita.

**Maple.** See Acer

**Margyricarpus setosus.** Pearl Fruit. (*Rosaceæ*)

This is a prostrate evergreen shrub, a native of Chile and hardy in the British Isles, except in the coldest winters, when protection should be afforded. The delicate foliage is pinnate and evergreen and the inconspicuous flowers in May are followed by little white, pearl-like berries. This shrub is an interesting subject for cultivation in the rock garden.

**Culture** — It likes a sunny position and ordinary gritty soil. Plant in late April. No pruning is required. Increase is by means of seeds sown in a frame in early spring; by layering in autumn, and by cuttings, 1 to 2 inches long, made of the ends of the shoots and inserted in a cold frame or under a bell-glass in August.

**Marsdenia erecta.** (*Asclepiadaceæ*)

This is a deciduous climber, a native of eastern Europe and Asia Minor and the only one of a large genus of some 80 species of tropical and sub-tropical plants which is really suitable for out-door culture in the British Isles. It has twiggy shoots running up to 15 to 20 feet or more in height. The leaves are heart-shaped and corymbs of small white flowers are borne in July, followed by 2 to 3 inch long cone-like fruits.

**Culture** — *Marsdenia erecta* grows in ordinary well-drained garden soil, but is not very hardy and even at Kew the protection of a wall is desirable. Grow the plants in pots until large enough to plant in their permanent positions in March or April. Cut out old stems and shorten long straggling growths in February. Increase by means of cuttings, 2 to 3 inches long, made of the ends of half-ripe shoots and inserted in a close frame in July or August.

**May.** See Crataegus Oxyacantha

**Maytenus chilensis.** (*Celastraceæ*)

This is an evergreen shrub suitable for planting in the south and west of the British Isles. It is a native of Chile, where
MAYTENUS — MELIA

It reaches large tree dimensions, growing up to 100 feet in height. In British gardens it forms a bush some 10 to 25 feet in height. The bushes, with their elliptical, oblong and serrate-edged leaves, and insignificant, greenish-yellow flowers, resemble the Myrtle and are valued as evergreens.

**Culture** — This shrub thrives in ordinary, well-drained garden soil and should be planted in late April. Prune in April or May only to shape the bush and to regulate the branches. Increase by means of cuttings made of the ends of the side shoots, 2 to 2½ inches long, and inserted in a close frame in late summer.

**Medicago arborea.** The Moon Trefoil (*Leguminosae*)

This shrubby Trefoil, which is a native of southern Europe, is on the borderland of hardiness. It requires the protection of a sunny sheltered wall or a sunny bay in the rock garden at Kew. The bushes vary from 3 to 8 or 10 feet high on a wall and have evergreen trifoliate leaves. The yellow flowers, developed in axillary racemes, are borne over a lengthy season extending from June to September.

**Culture.** — The plants thrive best in warm sunny positions and in light loamy soil. Grow in pots until large enough for their flowering positions. Plant at the end of April. No pruning is required, unless it is necessary to cut off frost-damaged shoots, or a little shaping and trimming is desirable in April for wall training. Increase is usual by means of cuttings, 2 to 2½ inches long, made of the ends of half-ripe shoots in July or early August and inserted in a close frame, preferably with slight bottom heat.

**Medlar.** See *Mespilus germanica*

**Melia Azedarach.** Bead Tree (*Meliaceae*)

A very attractive half-hardy deciduous shrub or small tree. It is a native of the Himalayan regions and other parts of Asia, has handsome compound foliage and bears panicles of delicate lilac flowers in summer. It may be grown out of doors in the milder localities of the south and west of the British Isles and is a good subject for a high house wall, where it will grow from 25 to 40 feet high.

**Culture.** — Propagate by means of cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted in summer in sandy soil in a close propagating frame, preferably...
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with slight bottom heat. The trees thrive in ordinary light well-drained garden soil. Plant in late March or early in April. Prune in February only to keep the plants in shape and to thin branches where crowded.

Melianthus major. Honey Flower. (Sapindaceae)
A distinctive and attractive half-hardy evergreen shrub, a native of South Africa and having large bluish-green compound foliage which gives it a strikingly sub-tropical appearance. It grows from 10 to 20 feet in height, or more against a wall, and requires a warm sheltered site in the milder districts of the British Isles. It is a useful wall shrub. On mature specimens the brownish flowers are freely borne in summer.

Culture.—Increase by means of seeds sown in a greenhouse or frame in early spring, or by cuttings, 2 to 3 inches long, made of the ends of side shoots and inserted under a bell-glass in late summer. The Melianthus thrives in well-drained and rather light garden ground. Grow in pots until large enough to plant in the permanent positions in late April. Prune in February or during summer if required to shape the bush and to keep within bounds.

Melicope ternata. (Rutaceae)
This is an attractive half-hardy semi-evergreen or deciduous shrub, some 12 to 15 feet in height, but which in its native habitat, New Zealand, reaches small tree dimensions. It has pretty trifoliate foliage and produces a profusion of inflorescences of greenish-white flowers in June.

Culture.—Increase by means of cuttings, 1½ to 2 inches long, made of the small side shoots and inserted in very sandy soil under a bell-glass in late summer and early autumn; or by layering one or two of the lower branches in autumn. Plant in permanent positions about mid-April. Prune in April only to thin the wood and to shape the bushes. The Melicope thrives in ordinary well-drained garden soil, and in warm, sheltered sites in the milder districts of the British Isles it grows quite well out of doors.

Meliosma. (Sablaceae)
Though not much cultivated, this is a very interesting genus of hardy and semi-hardy deciduous shrubs or small trees, natives of China and Japan, and growing up to from 20 to 75 feet or more in height. They have attractive, ribbed
MELIOSMA — MENISPERMUM

simple or pinnate foliage and in summer produce large panicle inflorescences of small white, or greenish-white, flowers, which mull a delicate hawthorn-like fragrance.

Species — *M. Beaniana*, from western China, grows from 30 to 75 feet in height and has pinnate leaves from 5 to 10 inches long and with from 5 to 13 leaflets. The creamy-white flowers, not yet seen in British gardens, are borne in May. This species is described by Wilson as the handsomest of the genus *M. cuneifolia* (China), with simple cuneate foliage and producing pyramidal panicles of creamy-white flowers with a hawthorn-like fragrance in July, forms a large bush or small tree from 15 to 30 feet in height. *M pendens* (China), which grows from 5 to 15 feet in height, has pendulous panicles of white bloom. *M myriantha*, from Japan and Korea, is a bush or small tree up to 20 feet in height, carries panicles of small yellowish-white fragrant flowers at the end of June and is somewhat tender. *M. Vestchorum*, from western China, makes a tree from 35 to 40 feet in height and has large pinnate leaves sometimes exceeding a foot in length. It bears panicles of small greenish-white flowers up to 18 inches long and 10 inches wide.

Culture — These plants like a sunny position and a fairly good deeply-cultivated loam. Plant in November or late February and early March. Pruning is very seldom required, only possibly to shorten an extra long shoot, which should be done in summer, after flowering. Propagation may be carried out by means of seeds, when available, sown in a cool greenhouse or frame as soon as ripe, by cuttings, about 4 inches long, of semi-ripe shoots taken with a heel in July and placed in gentle heat in a frame, and by layering in autumn.

*Menispermum canadense*. Moonseed (*Menispermaceae*)
A rapidly-growing hardy deciduous climbing plant, a native of North America and related to the Cocculus. It reaches a height of from 10 to 15 feet and its heart-shaped and lobed foliage is attractive, but the plant is valued chiefly for the interesting bunches of black-current-like fruits which follow the summer-borne racemes of small greenish-yellow flowers. It is a useful subject for covering a fence, pergola or trellis.

Culture — Plant from November to March in ordinary garden ground. This plant is easily propagated by means of

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division, preferably early in March. Cut right back annually in February or early March if desired.

**Menziesia.** (*Ernaceae*)
These are interesting deciduous shrubs, natives of North America and closely allied to the heaths. They thrive under similar treatment and conditions in acid soils.

**Species.**—*M. ferruginea* (western states of North America) is a low-growing shrub, 5 or 6 inches high and suitable for the rock garden. It bears small brown, nodding flowers in May. *M. pilosa* [syn. *M. globularis*] (Alleghany Mountains from Pennsylvania to Georgia) is a deciduous shrub, some 3 to 5 feet high, that produces in May as the leaves develop small clusters of yellowish-white flowers.

**Culture.**—These plants thrive in the sun and in peaty loam, and may be easily raised from seed sown under glass in March or April in pots of peaty soil with a thin covering of silver sand, or short cuttings, 1 to 1½ inches long, and made of semi-mature shoots, may be inserted in sandy soil (with peat added, if available) in July or August under bell-glasses. Plant from November to March when soil and weather conditions permit. No pruning is required. For *M. polifolia*, see *Dabæcia*.

**Meratia præcox.** See Chimonanthus fragrans.

**Mespilus germanica.** Medlar. (*Rosaceæ*)
This plant is a native of Europe (possibly Britain) and Asia Minor. It is a deciduous tree, usually between 15 and 25 feet in height, and in late May or early in June carries white or pink-tinted solitary flowers, ¾ to 1½ inches across. The flowers are followed by brown fruits. Several named varieties exist, two of which are cultivated at Kew, *Dutch Giant*, with large leaves and fruits, and the *Nottingham Medlar*, a smaller free-fruited variety. A preserve known as Medlar Jelly is sometimes met with in country districts. The fruits are allowed to remain on the trees until the advent of frosts. They are then stored until over-ripe or bletted. In this condition Medlar fruits are considered a delicacy by certain connoisseurs.

**Culture.**—Increase is by means of seeds sown early in the year in a frame; or by budding named varieties in July in the open air, using the Thorn or Crataegus as a stock. Plant in deeply-
dug loamy ground from November to March. Prune in winter to thin the shoots and to regulate the branches; also shorten long branches

**Metaplexis Stauntonii** [syn. *M. japonica*]. (*Asclepiadaceae*) This is a twining deciduous climber, a native of China and Japan, with heart-shaped leaves and racemes of small rosy-white flowers produced from July to September. At Kew the growths are usually killed to the ground in winter, but it sends up annually trailing stems, some 5 to 6 feet in height.

**Culture** — Increase is by means of seeds, when available, sown in a frame or cool greenhouse early in the year; and by cuttings, 2 to 3 inches long, made of the leafy side shoots and inserted in a close frame in July or August. Plant in ordinary well-drained garden ground in March. Growth is seldom sufficiently luxuriant to call for pruning.

**Metrosideros lucida.** Southern Rata. (*Myrtaceae.*) A beautiful and somewhat tender evergreen shrub or small tree, a native of New Zealand, which may be grown in sheltered situations in the milder localities of the south and west of the British Isles, reaching up to from 8 to 12 feet or more in height in Cornwall. In March and April it produces terminal inflorescences of brilliant red flowers.

**Culture** — Increase is by layering in autumn, or by cuttings, 2 to 3 inches long, made of semi-ripe side shoots and inserted in July or August in sandy peat in a close frame, preferably with slight bottom heat. Plant in late April or May in sandy loam with peat and leaf-mould added. Prune after flowering only to shape the bushes and to thin the branches.

**Mezereon and Mezereum.** See Daphne Mezereum.

**Michelia.** (*Magnoliaceae*) A genus of a dozen or more species of evergreen trees or shrubs, natives of the East and allied to the Magnolias. Only two or three species are sufficiently hardy, even in the sheltered and mild localities of the British Isles, to merit attention. *M. fuscata* is a small and handsome half-hardy evergreen or semi-evergreen shrub, a native of China. It grows from 4 to 8 feet in height and produces fragrant dull, brownish-purple flowers in June and July. *M. compressa* is a large evergreen shrub or tree growing up to about 40 feet high in a wild state, a native of Japan and introduced in 1894.
shining green leaves are obovate and from $2\frac{1}{2}$ to 3 inches long; the fragrant creamy-yellow flowers are up to 2 inches across and open in June.

**Culture**—Plant in late April or early May. Michellas are good subjects for a sheltered south-west or west wall. The most suitable soil is a fibrous sandy loam and leaf-mould with peat added, if available. Increase is by cuttings, 2 to 3 inches long, made of the ends of half-ripe growths and inserted about July in a close greenhouse propagating case with slight bottom heat. No pruning is necessary.

**Microglossa albescens.** Tree Aster (*Compositae*)

This is a very beautiful hardy deciduous shrub, a native of the Himalayan regions, that grows about 3 feet in height or more against a wall. It has long, lanceolate foliage and in July bears on the current year's shoots pale lilac-blue flowers.

**Culture**—Propagation may be carried out by means of cuttings, 2 to 3 inches long, of young shoots inserted in July or August in a close frame with slight bottom heat, or by division of the stools in early spring. Plant in February or March in a well-drained light loamy soil with leaf-mould added. In mild districts fairly hard annual pruning in February is desirable. The annual flowering growths are killed back in most seasons at Kew, so that the annual pruning in February usually consists in the cutting of dead branchlets back to firm living wood and the clearing out of weak side shoots.

**Micromeles.** See Pyrus alnifolia, etc.

**Mimosa.** See Acacia

**Mimulus glutinosus.** Shrubby Mimulus or Musk. (*Scrophulariaceae*)

A beautiful evergreen or semi-evergreen species from California. The bushes grow from 4 to 5 feet, or more in height if planted against a wall in sheltered situations in the milder south-western counties of the British Isles and carry large salmon-yellow or buff-coloured flowers from early summer to autumn. *M. g var puniceus* is a variety with crimson flowers.

**Culture**—The bushes thrive in ordinary well-cultivated garden ground and should be planted in late April or early in May. Prune freely each year in early April to shape the bushes and to thin the shoots if required. Increase is by
MIMULUS — MONKEY PUZZLE

means of cuttings, 2 to 3 inches long, made of the ends of half-ripe growths and inserted in a close frame during July or August, preferably with slight bottom heat.

Mistletoe. See Viscum album.

Mitchella repens. (Rubiaceae)
This is a delightful little hardy creeping evergreen shrub for a moist and partially-shaded position in the rock garden. It is a native of North America and in summer bears small pink Abelia-like flowers.

Culture — Plant about April in a non-calcareous or acid soil of peat, leaf-mould and coarse grit. Propagation is by division of the roots in April. No pruning is required.

Mitraria coccinea. Mitre Flower. (Gesneraceae)
A semi-hardy evergreen climbing shrub, a native of Chile, with bright glossy-green leaves and which, in May, June and July, bears pendant trumpet-like flowers, orange-scarlet in colour and very like those of the Pentstemon. It makes a good wall subject, some 4 to 6 feet in height, when grown in warm, semi-shaded and sheltered situations

Culture — Plant in April in a lime-free soil of sandy loam, leaf-mould and coarse grit, also peat, if available. To propagate, insert cuttings of young shoots, 1½ to 2 inches long, in a close frame in July or August, or divide the clumps in April. No pruning is required, except to shape and cut away worn out wood from old bushes in April.

Mock Orange. See Philadelphus

Moltkia petraea [syn. Lithospermum petraeum] (Boraginaceae). A very attractive small and woody semi-evergreen shrub, a native of Dalmatia and rarely exceeding 2 feet in height. It somewhat resembles the Lavender in its narrow evergreen foliage, and carries during May, June and July light and dark purple flowers very much like those of the Lithospermum. This plant thrives in the rock garden in a position in full sun and in well-drained loam and coarse grit.

Culture. — Sow seeds under glass during March or April and pot off as soon as ready; or take cuttings 2 to 3 inches long, made of non-flowering side shoots during late summer and autumn and insert them in sand in a close frame. Plant in October or April. No pruning is required.

Monkey Puzzle. See Araucaria imbricata.
Morus. Mulberry. (Urticaeae)
The Black Mulberry, *M. nigra*, is an attractive hardy deciduous and slow-growing tree, attaining a height of from 20 to 35 feet or more. A mature tree makes a delightfully picturesque specimen tree for a lawn and is suitable for town gardens and seaside planting. A number of old Mulberry Trees exist, mostly in the London area and the home counties, which are said to be the survivors of considerable numbers planted during the reign of James II, when an effort was made to establish the silkworm industry in England. It is upon the foliage of the Mulberry Tree that silkworms feed, though the leaves of the Common Mulberry, *M. alba*, are not so suitable as those of *M. nigra*. The unattractive male and female flowers are borne in small cylindrical spikes in May. This tree is rarely cultivated for the sake of its fruit, although this is edible and may be made into quite satisfactory jam, jelly or wine. It likes a sunny position in deep well-drained and moist loam. The Black Mulberry is thought to be a native of the Orient. In a large area of the British Isles it thrives in the open, but in the coldest northern counties, shelter is necessary. In tree collections may be included: *M. alba* (25 to 50 feet), the White Mulberry of temperate and sub-tropical Asia; the Chinese Mulberry, *M. cathayensis* (20 to 45 feet) and *M. rubra* (30 to 50 feet), the North American Red Mulberry. Our British climate, however, does not appear to favour their robust development.

Culture.—Plant in November or late in February and early in March, and do not cut away any of the roots, unless broken in lifting, or the tree may be spoiled. Prune and thin the branches in winter, only to keep the trees shapely. The Mulberry is easily propagated by means of cuttings of considerable size inserted in September and October, branches a foot or more in length root with very little trouble in sandy soil in a cold frame. Layers also root readily if put down in October.

Muehlenbeckia. (Polygonaceae)
An uncommon genus of semi-hardy climbing plants of somewhat variable habit, natives of Australasia and South America and with unattractive greenish-white flowers in late summer. *M. complexa*, a slender climbing New Zealand species, 6 to
MUEHLENBECKIA — MUTISIA

12 feet in height, with variably-shaped small deciduous leaves, and *M. varians*, which also runs up to from 6 to 12 feet and has larger leaves, usually shaped something like a fiddle, are good species, as also is *M. axillaris*, a prostrate deciduous species from Australia, which forms a dense mat some 3 to 4 inches high and is useful in the rock garden.

*Culture* — The Muehlenbeckias are hardy in the milder localities of the British Isles and may be increased by means of cuttings, 1½ to 2½ inches long, made of the ends of the semi-mature shoots from July to September, and inserted in sandy soil in a close frame or under a bell-glass, or by layering in autumn; and, in the case of *M. axillaris*, by division in February or March. The Muehlenbeckias thrive in ordinary cultivated garden ground. Plant in February or March, which is also the best time to cut back the wiry interlacing stems when out-growing their positions. The climbing Muehlenbeckias may be planted to trail over the common Holly or Box, but they should not be allowed to grow over shrubs of any value, as they occasionally grow so luxuriantly as to kill their living support.

*Mulberry*. See *Morus*.

*Mutisia*. (*Composita*)

Interesting climbing plants bearing in July and August pretty star-like flowers of various colours.

*Culture* — Provide a compost of two-thirds loam and one-third leaf-mould and ample sand. A little peat mixed with the soil will be beneficial. Plant during February or March in a sheltered border against a house or shed. For preference, let the shoots run up amongst other climbers of the house or train them to wires stretched some 1 to 1½ inches from the wall. Weak and straggling shoots should be cut away after flowering. Water liberally from May to July. Propagate by means of seeds sown when ripe in a cool greenhouse or frame, by suckers taken off in early spring and placed in pots in a frame for a few weeks, or by cuttings of young shoots, 2 to 4 inches long, inserted in gentle heat in summer.

*Species* — *M. Clematis* (Red, July-August, 20 to 30 feet, New Grenada); *M. decurrens* (Orange-scarlet, July, 12 feet, Chilean Andes); *M. ulycifolia* [Holly-leaved Mutisia] (White to Deep Rose, July-August, 15 feet, South America).
ABC OF SHRUBS AND TREES

Myrica. (*Myricaceae*)
Interesting evergreen and deciduous shrubs or small trees with fragrant foliage; but only a few are hardy. Although the flowers are not of much beauty, the shrubs are quite ornamental and in a wild state are to be found along river banks. Nearly all are lime-haters, especially the following species *M. asplenifolia* (syn. Comptonia), the Sweet Fern of North America, where in the eastern states it is abundant in hedge-banks and coppice. It has beautiful, long, fern-like foliage with a sweet bay-like fragrance. This makes a small shrub from 2 to 4 feet in height and carries unattractive brown and green flowers in April and May. *M. Gale* (Sweet Gale), a native of the Northern Hemisphere, including Britain, is a hardy deciduous bush some 3 to 4 feet in height. The dark green, saw-edged and lanceolate leaves are fragrant and the brownish-green flowers are borne in May and June; male and female flowers usually appearing on different plants. A more ornamental, but less hardy species is *M. californica*, the Californian Bayberry, an evergreen growing to a height of from 10 to 12 feet and bearing, in June, greenish flowers.

*Culture.*—All species are peat-lovers, but most will grow, if need be, in a lime-free loam and leaf-mould. Plant the evergreen species in October or April and the deciduous species in November or February and March. The old and dead wood should be thinned out occasionally in spring when new growth is about to begin. Propagate by means of seeds, sown in a frame in spring; by cuttings, 2 to 3 inches long, made of the ends of half-ripe shoots and inserted in a close-frame or handlight in July or August, by means of division in February and March, or by layering in autumn.

*Myricaria germanica.* (*Tamaricaceae*)
A deciduous shrub thriving on sandy banks and in maritime regions. It is a native of Europe and parts of Asia, is allied to the Tamarix and grows 6 or 7 feet tall. The foliage is of loose habit, feathery and greyish in colour. The pinkish flowers are borne in summer.

*Culture*—Plant from November to early March. As a rule prune a little only to shape the bushes after flowering, but when the bushes get wide and gaunt, though it means sacrificing a season’s flowers, prune hard back in February,
leaving spurs, 1 to 1½ feet long, from which new shoots will grow freely. Propagate by means of cuttings, 12 to 15 inches long, made of the ripe new wood of the year with a thin heel of old wood, and inserted in sandy soil on a border outside in October or November.

**Myrobalan or Myrobella Plum.** See Prunus cerasifera.

**Myrsine africana.** (Myrsinaceae) A somewhat rare hardy evergreen, a native of China, South Africa, the Azores and the Himalayan regions. It grows some 1½ to 3 feet in height, has attractive green and narrowly obovate foliage and in spring small brownish-green unisexual flowers borne on different plants. In the case of female plants, when planted in proximity to a male these blossoms are followed by dull-red berries.

**Culture**—Plant in April or early May in well-drained sandy loam and leaf-mould with a little peat added if available. No pruning is required. This plant may be raised from seeds, sown in a cool greenhouse or frame in spring, or from cuttings, 1 to 2 inches long, made of the ends of the half-ripe shoots and inserted in July in a close frame or under a bell-glass in August. It makes a useful subject for the rock garden.

**Myrtle.** See Myrtus.

**Myrtus.** Myrtle. (Myrtaceae) Attractive evergreen shrubs with fragrant glossy dark-green ovate or lanceolate leaves and bearing pretty white blossoms in July. *M* communis (Mediterranean region) is hardy in warm, sunny sheltered situations. At Kew it makes an excellent subject for covering a south wall, where it will run up to a height of from 10 to 15 feet. There is a variegated form, *M. c. variegata* (10 to 15 feet). An attractive small-leaved shrub is *M. lusitanica tarentina* (10 to 15 feet), frequently listed in nursery catalogues as *M. communis var. tarentina* or “Jenny Reitenbach.” These plants require plenty of water in summer. Two Chilean species, *M. Luma* (10 to 20 feet) and *M. Ugni* (10 to 20 feet), make attractive evergreen shrubs in the mild climate of the south and west of the British Isles, notably in Cornwall and Co Wicklow.

**Culture**—Plant in early May in well-drained loam and leaf-mould, the addition of a little peat is beneficial. Prune...
and trim in April or early in May, not in autumn, or severe damage may be done by frosts. To propagate, insert cuttings, 1 to 3 inches long, made of the ends of half-ripe growths in a frame or under a handlight in July; or layer in September.

**Nandina domestica.** (*Berberidaceae*)
A beautiful semi-hardy pinnate-leaved evergreen shrub, a native of China and Japan and growing some 6 feet or more in height. In June and July it bears panicles of white flowers with reddish-yellow anthers, these are followed by red fruit.

**Culture.**—This shrub likes a warm sheltered position, being most at home in the milder localities of the south and west of the British Isles. Plant in late April and in May. The Nandina thrives in sandy loam with leaf-mould and peat freely added. Cut out old shabby growths occasionally in March or April when there is any crowding of shoots. Propagation may be carried out by means of seeds sown in a cool greenhouse or frame in early spring; or by cuttings, 2 to 3 inches long, made of half-ripe side shoots and placed in sandy soil (with peat added, if available), in gentle heat during the summer.

**Negundo.** See Acer Negundo.

**Neillia** [syns *Opulaster* and *Physocarpus*. (*Rosaceae*)
A genus of hardy shrubs allied to the Spireas. They are mostly planted in shrubberies and average from 5 or 6 to 8 feet in height, with the exception of *N. Torreyi*, which rarely exceeds 2 feet. The best known Neillia is *N. opulifolia*, a native of the eastern regions of North America. It grows from 6 to 8 feet high, has attractive saw-edged, lobed foliage and in June produces clusters of small white, pink-tinted flowers. The variety, *N. o. lutea* (6 to 8 feet), has yellow foliage, which is rather showy in early summer. More choice are *N. longiracemosa*, a Chinese species, 5 to 6 feet in height, with slender racemes of charming soft-pink flowers; *N. sinensis*, from central China, a graceful shrub, 4 to 6 feet in height, with slender, spreading branches, bright-green leaves and nodding racemes of pinkish flowers; and *N. thibetica* (5 to 6 feet), also from China, with small pink flowers and attractive foliage. *N. Torreyi*, from Colorado, rarely exceeds 2 feet in height and the foliage has some resemblance to that of the Ribes, but is smaller, the flowers, which appear in May and June, are white, tinted pink.
NEILLIA — NERIUM

Culture — These shrubs thrive in well-drained, but moist ordinary garden soil. Plant from November to early March. The flowers of the Neillias are produced on the previous year’s growths. Thinning and pruning, when necessary, are therefore best done after flowering. When the branches become crowded, cut old worn-out growths entirely to the ground, retaining as much as possible of the healthy young wood. Increase is by cuttings of semi-mature wood, 3 to 4 inches long, inserted in July in a frame, by the removal of offsets from the outsides of the bushes in February or March; and by seeds sown in a frame in early spring.

Nemopanthus mucronata [syn. N. canadensis]. (Aquifoliaceae)
This is the Mountain Holly of the eastern regions of North America and is of botanical rather than of decorative interest. It grows from 3 to 5 feet or more in height. The flowers, which appear in May, have thread-like, greenish-white petals, and in autumn are followed by reddish fruits. Our summers are seldom hot enough to develop the full beauty of this deciduous Holly.

Culture — Plant from November to February in moist garden ground in the sunniest available positions. Thin the branches in winter when crowded. Increase is by seeds sown in early spring in a cool greenhouse or frame.

Nerium. Oleander (Apocynaceae)
The best known of this genus of evergreen shrubs is N Oleander, the common Oleander of the Mediterranean region. It has leaves and stems not unlike those of the Willow, but they are evergreen and, except in sheltered sites in mild localities, this shrub usually requires a greenhouse. It flowers beautifully out of doors in several very sheltered Cornish gardens. There are numerous varieties with single, semi-double and double flowers with white, pale-yellow, pink, rose or rosy-red blossoms. As the Oleander is naturally a tall, loose-growing shrub, some 6 to 15 feet or more in height, plants grown in the open should not be trimmed back too much or bloom will be sacrificed. When very gaunt, prune hard in April and sacrifice a season’s flowers.

Culture — Plant Oleanders in deeply-cultivated loamy ground in late April or May. Prune after flowering to keep
the bushes shapely. The flowers on healthy young plants may fail to develop because young shoots grow just below the inflorescences and take most of the nourishment. The remedy is to remove these young growths as soon as their development is noticed. A novel and quick method of propagation is, in summer, to place cuttings of well-ripened shoots, 3 inches long, in bottles of water, containing a few pieces of charcoal, and to stand these in a sunny frame or in a warm propagating case. When the roots are ½ inch long, pot-up in light soil and "stop" from time to time while the plants are young, to encourage bushy growth; they will, otherwise, become straggly. The ordinary method of propagation is to insert cuttings, about 3 inches long, made of the side shoots in sandy soil in a close frame during August.

**Nesaea salicifolia** (*Lythraceae*)
A small narrow-leaved and semi-hardy deciduous shrub, a native of North and South America and growing some 4 or 5 feet in height in the south and west of the British Isles, but at Kew the stems are killed to the ground during hard winters. From July to September the bushes produce numbers of attractive small yellow flowers.

**Culture**—Nesæas thrive in ordinary cultivated light garden ground. Plant in March. The flowers are produced singly on the current year’s wood and any pruning or thinning of growths necessary should be done in early spring. Propagation is by means of cuttings, 1½ to 2½ inches long, made of the half-ripe side shoots and inserted in July or August in a close propagating frame, preferably with slight bottom heat.

**Nettle-Tree.** See Celtis.

**Neviusia alabamensis.** Alabama Snow Wreath (*Rosaceae*)
This is a distinct and interesting hardy deciduous shrub from Alabama, growing from 5 to 6 feet in height and somewhat similar in form and habit to the Spiræas. The clusters of pretty apetalous flowers, which are produced in April and May, are notable for their prominent greenish-white anthers.

**Culture.**—Propagation may be carried out by means of cuttings, 2 to 3 inches long, made of semi-mature shoots and placed in gentle heat in July, or by offsets taken from the parent plant in February or early March. Plant from
NEVIUSIA — NOTHOPANAX

November to early March in deeply-dug and manured loamy ground. The old wood should be cut out to the ground or shortened back to young wood annually after flowering.

**Nothofagus.** Southern Beech. (*Fagaceae*)

These attractive deciduous and evergreen trees come from South America and Australasia. One or two of the deciduous species, such as *N. antarctica* (100 feet); *N. obliqua* and *N. procera* (100 feet), which come from South America and make large-sized fast-growing trees, are hardy and may be seen thriving in gardens near London. *N. obliqua*, the Roble Beech, is a valuable timber tree in Chile, where it reaches a height of 100 feet or more. At Kew may be seen fast-growing specimens raised from seeds planted in 1902, that are now straight upstanding trees 50 feet in height. The evergreen species from Chile, *N. betuloides* (20 to 50 feet) and *N. Dombeys* (100 feet), are growing outside in sheltered positions at Kew, the evergreen species from Australasia, such as *N. Cunninghamia*, which in Tasmania grows up to 200 feet in height, but in British gardens only makes an elegant small tree, 20 to 30 feet in height, *N. fusca* (up to 100 feet high in New Zealand), *N. Solandra* (40 to 80 feet), and *N. Chifforthoides*, which grows up to 50 feet in height in New Zealand, are only suitable for cultivation outside in the milder parts of the British Isles.

**Culture** — The Southern Beeches thrive best in sheltered situations and in warm lime-free and moist soils, and are best propagated by means of layering in autumn and by means of seeds obtained from abroad, sown as soon as received in a cool greenhouse or frame. With care and attention fair success can be obtained with cuttings, about 3 inches long, made of the ends of the side shoots and inserted about July in a close frame with slight bottom heat, notably with *N. Dombeys*. Plant the deciduous species from November to early March and the evergreen species in late April or in May. Prune during winter to shape the trees, thin the branches and restrict to one leading shoot.

**Nothopanax.** (*Araliaceae*)

Distinctive and striking, but only semi-hardy, evergreen shrubs or small trees with large lobed leaves. *N. arboreum*
is known in its native habitat (New Zealand), where it grows from 12 to 25 feet in height, as the "Whauwhaupaku," and *N. Davdii*, a species from China, which grows from 3 to 5 feet in height, is very suggestive in appearance of the well-known Japanese Aralia, *Fatsia japonica*.

**Culture**—These shrubs thrive in warm sheltered situations in the milder localities of the British Isles and in cool moist, but well-drained soils. Plant in late April or in May. No pruning is required. Increase is by pieces of the stems, several inches in length, with growth buds attached, placed during the summer in the fibre of a close propagating frame with slight bottom heat.

**Notospartium Carmiæælæ.** (*Leguminosæ*)
A lovely semi-hardy deciduous shrub, a native of New Zealand and sometimes known as Pink Broom. It grows from 4 to 6 feet in height and in July is smothered in tiny lilac-pink flowers, similar in form to those of the pea. These are borne on the almost leafless branchlets.

**Culture.**—This shrub thrives in well-drained sandy loam with leaf-mould and peat added and in warm, sunny and sheltered situations. It should be grown in pots until large enough to plant in the permanent positions; late April is the best time for this. Once well established, it is fairly hardy, but is liable to damage by frosts and should, therefore, be protected in cold winters, especially from north and east winds. No pruning is required, and propagation is best carried out by means of seeds sown in a cool greenhouse or frame in early spring.

**Nuts.** The principal nuts cultivated in England for their fruits are Walnut (see Juglans); Cob and Filbert (see Corylus), and Sweet Chestnut (see Castanea).

**Nuttallia cerasiformis.** Osoberry (*Rosaceæ*)
A hardy deciduous shrub, a native of California and growing from 5 to 9 feet high. It has medium-sized, longish oval leaves and in late February and March bears freely racemes of small fragrant white five-petalled, unisexual flowers. Male and female blooms are usually borne on separate bushes, so both should be grown if fruit is desired. The female plant has orange-brown oval-shaped fruit, turning to purple in autumn.
NUTTALLIA — OLEA

**Culture**—Plant from November to early March in sun or semi-shade and in ordinary soil. Thin-out old wood in April after flowering when the shoots are overcrowded. Increase by means of seed sown in early spring in a frame, or by division, removing pieces with roots attached from the outside of the clumps in October or February. Cuttings of semi-mature shoots, 2 to 3 inches long, taken with a heel may be inserted in a close frame in July.

**Nyssa sylvatica.** Tupelo Tree. (*Cornaceae*)
A hardy deciduous tree, allied to the Dogwood and with beautiful glossy foliage somewhat variable in shape and which in autumn turns scarlet and orange, the tree at that time being most striking and conspicuous among hardy trees. The flowers themselves, which appear in June, are more or less insignificant. In the eastern districts of North America it makes a tree of considerable size, 90 feet or more in height, but at Kew it only assumes small tree proportions, growing from 15 to 30 feet in height, and although it will grow quite well in any good lime-free soil it thrives best in moist deep loam and in sunny positions.

**Culture**—Plant in November or early March. No pruning is necessary. Propagate by means of seed sown under glass on arrival from America, or by layering in autumn. The seeds, when obtained from abroad, should be soaked in water for twenty-four hours before being sown. This tree does not transplant well, and should therefore be planted in its permanent position when small. Two other American species, *N. Ogeche* and *N. aquatica*, are in cultivation, but the British climate, at least at Kew, does not appear to suit their requirements.

**Oak.** See Quercus.

**Olea europaea.** The Olive. (*Oleaceae*)
A beautiful semi-hardy evergreen shrub or small tree, a native of Asia Minor and Syria and widely-cultivated along the shores of the Mediterranean. It grows from 15 to 30 feet in height, has long, narrow, oval and greyish leathery foliage, which is silvery on the undersides, and in June and July bears inconspicuous small white flowers.

**Culture**—It may be grown out of doors in a light well-drained loamy soil and in hot, sunny and sheltered situations.
in the milder districts of the British Isles, and thrives on a sunny south wall at Kew. Plant in late April or May. No pruning is required, except to shape the trees, usually when growing against a wall. Late April is the best time to do this. Propagate by seeds, sowing as soon as available, in a cool greenhouse or frame; by layering in autumn; or by cuttings, 2 to 3 inches long, made of the ripened young side shoots and inserted under a bell-glass in August or September.

Olearia. Daisy Bush. (Compositae.)
A genus of hardy and half-hardy evergreen shrubs, natives of Australasia. *O. Haastii* (New Zealand Daisy Bush), the best-known species, is hardy in most parts of the British Isles. It grows from 5 to 8 feet high and carries clusters of white, daisy-like flowers in late summer. The smallish, oval-shaped and leathery leaves are greyish-green above and silvery underneath. Besides being a good plant for the shrubbery, notably in town gardens, it also makes an excellent hedge and looks exceedingly well when massed. *O. macrodonta*, 10 to 25 feet in height, with attractive, holly-like foliage, is an even stronger grower, flowering in June and July. It is exceptionally attractive on a sheltered wall at Kew. There is also a dwarf variety, *O. m. minor* (2 to 4 feet). Among other good species may be mentioned: *O. albida*, a New Zealand species, growing from 10 to 20 feet in height, with clusters of white flowers in July; *O. erubescens*, a distinct evergreen shrub, 6 to 15 feet in height, useful for a sheltered wall; *O. insignis* (syn. *Pachystegia insignis*), one of the most striking species of this family. It is a dwarf shrub here, 1 to 6 feet in height in New Zealand, and sturdily branched, the large obovate leaves being covered with silvery-white pubescence. The large white, daisy-like flowers, 2 inches across, are borne in May and June on stiff stalks. It thrives in sheltered situations in the milder localities of the British Isles, and is a useful subject for seaside planting in the south and west. *O. myrsinoides*, is a rather lax-habited shrub. This fault can be largely corrected by the free pruning of the bushes when small and from time to time subsequently when the flowers fade. The white flowers are freely produced in June. *O. nitida* (syn. *arborescens*) is not quite so hardy as *O. Haastii* or *O. macrodonta*. *O. nummularifolia* is a dwarf species, growing from
Above, *Sorbus aria*

Left, *Sorbus hybrida*
OLEARIA — ONONIS

2 to 10 feet in height in New Zealand, with yellowish leaves. *O. stellulata* (syn. *Gunniana*), which grows from 4 to 8 feet in height, flowers somewhat earlier than the others and is accordingly popular, and useful on a wall in the south-west.

**Culture.**—These plants all like a sheltered situation and a well-drained soil, and are useful subjects for seaside planting. Plant in April or early in May. Do not prune, but merely trim to shape when necessary in April or after flowering, and if in course of time the shrubs become rather stilted and somewhat bare at the base, they should then be cut hard back and will soon “break” again from the older stems and branches. The Olearias are readily increased by means of cuttings made of the ends of the young shoots, 1 1/2 to 3 inches long, and inserted in sandy soil under bell-glasses during August and September.

**Oleaster.** See *Elæagnus*.

**Olive.** See *Olea europæa*.

**Ononis.** Rest Harrow. (*Leguminosæ.*)

This genus includes several hardy, deciduous shrubs, natives of southern Europe, which thrive in sunny positions and in almost any well-drained soil. *O. fruticosa*, which makes a small shrub some 2 or 3 feet in height, has small, trifoliate leaves and from May to August carries pretty purple-pink flowers similar in form to those of the Broom. It is useful alike in sunny borders, in the shrubbery or in rock gardens. *O. spinosa* is a dwarf-growing species not more than 10 inches in height, and carries rose-purple flowers from July to September. *O. Natrix* is also dwarf, only growing from 1 1/2 to 2 feet in height, but the blooms are yellow stained with reddish-brown. These latter two species are excellent subjects for the rock garden.

**Culture.**—Seeds sown under glass, when ripe, provide the best method of propagation. A few young plants should be raised every few years from seeds in preference to keeping old, worn-out stumps. It is also possible to propagate by means of cuttings of ripe shoots, 2 to 3 inches long, with a thin heel of old wood, inserted in September. They should be inserted in sandy soil under glass. Division of roots may also be carried out in March. Plant in March or October. Prune after flowering only to shape the bushes and to thin.

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Opulaster. See Nellia.

Orange. See Citrus.

Oreodaphne. See Umbellularia californica.

Orixa japonica. (Rutaceae)
A deciduous shrub of spreading habit, 5 to 6 feet or more in height and as much or more in diameter. It is allied to the Evodias and is a native of Japan. Male and female flowers, which are greenish in colour, are borne in April and May on different plants.

Culture.—The Orixa thrives in ordinary cultivated garden soil. Plant from November to early March. Prune in winter but only to shape and thin the bushes. Propagation is carried out by means of layering in autumn.

Ornus. See Fraxinus Ornus.

Osmanthus. (Oleaceae)
Hardy evergreen shrubs or small trees, some of which resemble small Hollies. They grow from 4 to 10 feet or more in height. *O. Delavayi, a native of China, grows from 4 to 6 feet in height or more against a wall, and may be grown as a bush or as a wall shrub. It has small, dark-green, leathery, oval and saw-edged foliage and in March and April bears clusters of small fragrant white flowers, these being followed by purple-black fruits. *O Aquifolium (syn Olea ilicifolia), from Japan, is a good slow-growing evergreen shrub or small tree, which reaches a height of from 4 to 10 feet or more. It has spine-edged, glossy-green oval leaves and in late autumn and winter bears small fragrant white flowers, which are followed by bluish fruits. *O. A. var. myrtifolius (4 to 6 feet, Narrow Leaves), *O. A. var. purpureus (4 to 8 feet, Purplish Leaves), and *O. A. var. rotundifolius (4 to 6 feet, Roundish Leaves) are interesting evergreen bushes for the shrubbery border; *O. A. var. aureus is a variety of the above having beautiful golden-margined leaves, while *O. A var. argenteo variegatus and *O A var. latifolius variegatus, both 4 to 10 feet in height, are varieties with silver-variegated leaves. *O Fortunei (a hybrid *O. Aquifolium x fragrans), with rather larger leaves, makes a large and handsome bush up to some 10 feet in height, or more in the south-west of the British Isles. It carries white flowers in September, sometimes followed by large bluish fruit. *O. Forrestii, a newer introduction from
OSMANTHUS — OSTEOMELES

China, 4 to 6 feet or more in height, has attractive spine-edged leaves and creamy-yellow flowers

Culture — Plant in May or September and October in ordinary well-drained soil and in sun or partial shade. No pruning is necessary, but long, straggling shoots should be shortened and crowded branches thinned in May. To propagate insert cuttings of ripened shoots, 3 to 4 inches in length, in sandy soil, with peat added if available, in a frame in September, or layer in autumn.

Osmarea Burkwoodii. (Oleaceae)

A shrub some 3 to 5 feet or more in height, of more than usual interest by reason of its bigeneric origin. It is the result of crossing Osmanthus Delavayi with pollen of Phillyrea decora. The leathery leaves are about 1½ inches long and dark glossy green. The clusters of ivory-white flowers are deliciously fragrant and open in April.

Culture — The plants thrive in good loamy soil and are increased by cuttings, 1½ to 2½ inches long, made of the ends of the side shoots and inserted from July to September in sandy soil in a close frame or under a bell-glass. Plant in late April or May and early October. Prune after flowering but only to shape the bushes.

Osteomeles Schwerinæ. (Rosaceae)

A beautiful evergreen shrub, a native of China, hardy in the south of England, but thriving better with the protection of a wall at Kew. It grows from 5 to 6 feet in height, or more against a wall, has silvery fern-like leaves and in June bears clusters of white flowers similar to those of the thorn. These are followed by oval fruits, at first red and eventually turning deep blue-black. This shrub grows quite well out of doors in warm, sheltered situations and in the milder localities of the British Isles. O S microphylla, some 3 to 4 feet in height, is a dwarf-growing variety and useful for the rock garden.

Culture — Plant towards the end of April in light, loamy ground with leaf-mould added and peat if available. Remove old and worn-out branches if there are any, after flowering, at the end of June. Propagation may be carried out by means of seeds sown when ripe in a cool greenhouse or frame, or by means of cuttings of semi-mature wood, 2 to 3 inches long, inserted in July under glass, and by layering in autumn.
Ostrya. Hop Hornbeam. (Betulaceae)
This genus includes three or four hardy deciduous Hornbeam-like trees growing some 30 to 60 feet in height and bearing pendant clusters of hop-like seeds. O carpinifolia, from Asia Minor and southern Europe, is a typical and attractive species with longish and medium-sized, dark green, saw-edged oval foliage. O. virginiana, from North America, is very similar. The wood of this species, which, on account of its tough nature, is used for tool making, is commonly called the "Ironwood." O japonica is a native of China and Japan, where it grows up to about 75 feet in height.

Culture.—The Hop Hornbeams thrive in good loam. Plant from November to early March. Prune in early winter only to keep the trees shapely and with a good leading shoot. Propagation is best carried out by means of seeds sown under glass when ripe, and by layering in autumn.

Ostryopsis Davidiana. (Betulaceae)
A deciduous shrub up to 6 or 8 feet high and a native of northern and western China. The rounded bush resembles and produces suckers like a small Hazel clump, the suckers providing a ready means of increase. It is an interesting botanical shrub, but of no particular decorative interest. Male catkins and female inflorescences are borne on the same bush. The fruit consists of a conical nut enclosed in a husk.

Culture.—Plant from November to February in ordinary well-drained garden ground. Prune in early winter only to thin crowded branches.

Oxyccocus macrocarpus [syn. Vaccinium macrocarpum]. (Vacciniaceae)
This is the American Cranberry. It is a hardy evergreen prostrate species with small oval leaves and in June produces tiny racemes of pink flowers. These are followed by globular red berries.

Culture.—The plant thrives in moist non-calcareous semi-boggy or acid soil. Plant in early October or late April. No pruning is necessary, unless the growths become a tangle, when they should be thinned in April, removing the oldest stems. Propagation is carried out by means of seeds sown under glass in pots or pans in early spring, by division in February or March, or by layering in autumn.
OXYDENDRUM — PACHYSANDRA

**Oxydendrum arboreum.** Sorrel Tree. (*Ericaceae*)
A hardy deciduous ericaceous tree, a native of the eastern districts of North America and which thrives in a moist, lime-free loamy or peaty soil and in a sheltered position. It grows some 10 to 30 feet high and in July and August carries panicles of small globular white flowers. The red autumn foliage, which is lanceolate, is very lovely.

This is a very useful late summer-flowering tree for lime-free soils, and carries most attractive autumn colour. Though first introduced to British gardens as long ago as 1752, few old trees appear to exist. There is a notably fine specimen at the Knap Hill Nurseries, Woking. When first introduced, the name *Andromeda arborea* was, and sometimes still is, used in nurseries. It is not an easy subject to transplant successfully, and for this reason the plants should be placed in their permanent positions when small.

**Culture** — Plant in February or early March. To propagate, sow seeds obtained from America in a frame in March, layer in autumn; or insert cuttings, 2 to 3 inches long, made of the short side shoots with a thin heel of old wood, in a close frame with slight bottom heat during July. No pruning is required.

**Ozothamnus rosmarinifolius.** See *Helichrysum rosmarinifolium*.

**Pachysandra.** (*Euphorbiaceae*)
Attractive semi-woody and hardy evergreens of dwarf habit. *P. axillaris*, a native of China and growing from 4 to 8 inches high, is a useful subject for the shady part of the rock garden. The white flowers spring from the leaf axils in April. *P. procumbens*, known as the Alleghany Spurge, is a native of the south-eastern districts of the United States of America. The leaves grow at the top of 6 to 10 inch long stems and the pinkish-white flowers develop at the base of these in spring. It is an interesting and useful subject for a shady place in the rock garden. *P. terminalis*, a Japanese species, rarely exceeds 7 or 8 inches in height and when well-established, forms a dense carpet of glossy green leaves from which in late winter and early spring rise spikes of small fragrant greenish-white flowers. It grows well in the shade and in any moist soil. This little plant is a useful subject for covering bare

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ground on sloping banks and is very extensively planted under the shade of trees in North America in much the same way as we use Ivy.

**Culture.**—The Pachysandras thrive in most soils and in sun or shade. Propagation may be carried out by means of division. When the tufted carpets of growths become overcrowded, lift, divide and replant in October or in late April and in May. No pruning is required.

**Pachystegia insignis.** See Olearia insignis.

**Pachystima.** (*Celastraceae*)
Two botanically interesting small evergreen shrubs, natives of North America. *P. Canbyi* is a dwarf evergreen shrub of neat habit, growing 6 to 10 inches in height, having small, narrow oblong leaves and bearing greenish flowers in summer. *P. Myrsimtes*, a rather larger-growing species, has longish, narrow and oblong leathery leaves and from April to June, inconspicuous reddish flowers followed by small oval, white fruits. It grows some 6 to 18 inches in height.

**Culture.**—These shrubs thrive in partial shade or shelter and in moist, non-calcareous loam and peat and are suitable subjects for inclusion in the rock garden. Plant in October or late in April. No pruning is required. Propagation is best carried out by means of cuttings, 1 to 1½ inches long, made of the ends of the half-ripe shoots, and inserted in July or August under a bell-glass, or by layering a few of the outer growths in autumn. Seeds, when available, may also be sown in early spring in a frame.

**Padus.** See Prunus Padus.

**Paeonia chinensis.** (*Rubiaceae*)
This is an interesting, but somewhat rare deciduous climbing plant, a native of China, Japan and Korea and which, in favourable positions on buildings in the south and west of the British Isles, will run up to a height of 15 feet or more. During summer it produces distinctive white, tubular-shaped flowers with purple throats.

**Culture**—Plant in ordinary well-drained soil in April or May. Thin the shoots after flowering. Increase is by cuttings, 2 to 3 inches long, made of the ends of the side shoots and inserted in a close frame with slight bottom heat in July or August; or by layering one or two shoots in autumn.
Paeonia. (Ranunculaceae)

Paeonies are best known because of the herbaceous varieties. There are also several woody species, natives of China, and numerous named varieties of the Moutan Paeony deserving of more attention in shrub borders. *P. Moutan* (Tree Paeony) in happy surroundings, is one of the most showy of hardy deciduous shrubs. The attractive compound foliage sets off to advantage the large and gorgeously-coloured, single or double flowers, which make a brilliant display in May and June. There are many varieties and the colouring is extremely rich, the large showy flowers being purple, crimson, scarlet, rose or white. In a shrub-like form they rise from 3 to 5 feet in height, and spread out in a well-dug rich soil to form clumps, 10 to 12 feet in circumference. The named varieties are usually increased by means of layering in autumn, or by grafting under glass in spring, on seedlings of *P. Moutan*.

**Named varieties of *P. Moutan***—(Single).—(White) *Queen Alexandra*; (Salmon-pink) *Countess of Crewe*; and (Crimson) *Eastern Queen*—(Double)—(White) *Aphrodite*, (Flesh-Pink) *Duchess of Marlborough*, (Rose) *Reine Elizabeth*; and (Scarlet) *Eastern Princess*. Two noteworthy species in cultivation are: *P. Delavayi*, 3 feet in height, with large single crimson flowers with yellow stamens, and *P. D var angustiloba*, very slightly different from the type, also *P. lutea*, 3 feet, a dwarf species with yellow flowers. All these paeonies are quite hardy when once established and thrive in sunny positions in beds or borders sheltered from the north and east. They thrive in a well-dug loam enriched with rotted cow-dung, but they will grow in almost any cultivated ground.

**Culture**—Plant in October and November or in March. Ample water is needed in summer and a sunny site is essential to successful cultivation, though it is better if the early morning sun does not fall on the plants, as in frosty weather it is likely to damage the young shoots. In early spring in exposed gardens protect the shrubs from frosts with straw, bracken or mats. No pruning is required, unless in old clumps the growths become very crowded, then after flowering thin by cutting out a few of the oldest shoots to the ground. *P. Delavayi* and *P. lutea* are readily raised from seeds sown in early spring in a frame or cool greenhouse.
ABO OF SHRUBS AND TREES

Paliurus Spina-Christi. Christ's Thorn. (Rhamnaceae)
An uncommon hardy deciduous shrub or small tree of a thorny nature, a native of southern Europe and western Asia and growing some 10 to 15 feet in height. It has densely packed, ovate foliage and in July and August, produces an abundance of small yellowish-green flowers; these are followed by curious flat, disc-shaped fruits. As indicated in its name, it is widely believed that it was from this shrub that the Crown of Thorns was made.

Culture.—The plant thrives in well-drained ordinary garden loam. Plant from November to March. Prune in winter to shape and thin the bushes, shortening over-long shoots and cutting out weak wood where crowded. Propagate by means of seeds sown in early spring under glass, by root cuttings in February and March, and by layering in autumn.

Palm. See Trachycarpus excelsus.
Panax. See Nothopanax.
Parasyringa sempervirens. (Oleaceae)
This is a Chinese evergreen shrub of recent introduction and allied to the Privets and Lilacs. It grows from 4 to 6 feet in height, has small dark green, leathery leaves and dense panicles of small white flowers in August.

Culture.—The bushes thrive in ordinary garden soil. Plant in October or April and early May. Prune in late April only to shorten over-long branches and to thin-out crowded growths. Increase by means of seeds sown under glass in early spring; by cuttings, 2 to 3 inches long, made of the ends of the semi-ripe shoots and inserted under a bell-glass in August, and by layering in autumn.

Parrotia. (Hamamelidaceae)
P. Persica (Persian Witch Hazel) is a hardy deciduous tree of spreading habit, a native of Persia and growing from 20 to 40 feet high. From January to March, according to the weather conditions, it produces small red flowers on the leafless branches and provides rich golden-crimson-tinted foliage in autumn. P. Jacquemontiana (syn. Parrotia involucrata) is a deciduous tree growing from 12 to 20 feet high and of spreading habit. It has broadly-ovate leaves and in April and May, heads of flowers surrounded with white bracts. It is a native of the western Himalayas.
PARROTIA — PAULOWNIA

Parrotias like a well-drained loamy soil and a sunny sheltered position, and make attractive specimen trees or large shrubs for a lawn.

Culture — Plant for preference during November. No pruning is necessary, but young plants require a certain amount of training or they may become only low-spreading bushes. Propagate by means of seeds sown under glass when ripe, or by layering in autumn.

Parrotiopsis. See Parrotia Jacquemontiana.

Passiflora. Passion Flower (Passifloraceae)

A genus of ornamental twining or climbing shrubs with palmate, five or seven-lobed foliage and beautiful, yet curious, starry flowers, which are produced in great profusion and in succession during the greater part of the summer and autumn. The plants are most effective for draping the fronts of houses, verandahs and bungalows, in sheltered positions in the south and west of the British Isles.

Culture — Passion Flowers grow in almost any kind of soil, provided the drainage is efficient, though sandy loam is best, and it is desirable that they should be given a position against a sunny wall facing south or west. The root-run should be restricted to encourage flowering. P. caerulea, or the "Blue Passion-Flower," a native of Brazil, is the most hardy, and therefore, the most suitable for general planting. It runs up to a height of 25 feet or more, and the mauve-blue flowers, some 3 or 4 inches across, are borne from June to September. The white variety, Constance Elliott, is also recommended. Take cuttings of young shoots, 4 or 5 inches long, and insert in sandy soil in a close frame in July or August, or layer in autumn. Plant out in March or April. Cut back shoots to half their length, or less, in February or March, shorten side growths and cut out all weak wood.

Passion-Flower. See Passiflora.

Paulownia imperialis. (Scrophulariaceae)

A very ornamental round-topped deciduous tree of spreading habit. It is a native of China, grows from 25 to 50 feet in height, has large pale-green lobed leaves and in May carries clusters of fragrant blush-purple gloxinia-like, bell-shaped flowers. It thrives in a moist chalky ground, though it will grow in most soils. The tree itself is fairly hardy, but the
panicles of flower-buds form in autumn and in severe winters are usually damaged by frost, except in the milder districts of the south and west of the British Isles. A tree in the Cambridge Botanic Garden flowers well in most seasons. In Paris the panicles of blue-purple flowers are a feature in the public parks and gardens during May. This Paulownia is a useful subject for sub-tropical gardening. If the stems are cut down to the base each year in March, very vigorous shoots, from 10 to 12 feet high and with huge leaves, are produced in one season. A second species, *P. Fargesii* (40 to 60 feet), from Szechuan, China, bloomed at Kew for the first time in 1929. This tree grows and flowers better than any tree of *P. imperialis* I have seen at Kew, but this may be because it is planted in a very sheltered position in a wood open only to the west.

*Culture*—Propagation is best carried out by means of seeds, which are readily obtained from France, and sown under glass in early spring, or by root cuttings placed in sandy soil in a frame in spring or autumn. The tree of *P. Fargesii* has ripened seeds at Kew and a large number of young trees have been raised from them. Plant in November or late February. No pruning is necessary, unless to thin the branches and to shape young trees in winter.

**Pavia.** See *Æsculus.*

**Peach.** See *Prunus Persica.*

**Pear.** See *Pyrus.*

**Pea Tree.** See *Caragana.*

**Pentapterygium serpens.** (*Vacciniaceae*)

A very attractive but only half-hardy evergreen shrub, a native of the Himalayan regions and related to the Vacciniums. It grows some 6 feet in height, or more against a wall, and produces in April and May numbers of brilliant scarlet flowers, which hang from the undersides of the drooping branches. This shrub is only suitable for culture in sheltered gardens, against walls, in the south and west of the British Isles.

*Culture*—Plant in peaty or lime-free soils in May in very sheltered positions. No pruning is required. Propagate by layering the ends of the branches in autumn, and by cuttings, 1\(\frac{1}{2}\) to 2 inches long, made of the ends of side shoots and inserted in August in sandy peat under a bell-glass.
PENTSTEMON — PERIPLOCA

Pentstemon. Beard Tongue. \textit{(Scrophulanacea\textae)}

This genus includes one or two species of charming semi-shrubby plants, which make ideal subjects for the south-west of the British Isles and that are worthy of inclusion in any collection on account of the striking long tubular flowers, which are borne in summer $P$ \textit{cordifolius}, probably the best known, is a lovely little shrub from California with bright orange-scarlet flowers. It makes a good wall shrub, where it will run up to 5 or 6 feet in height. $P$ \textit{heterophyllus}, also from California, has blue flowers suffused pink. It makes a distinctive little shrub, some 2 feet in height, or more against a wall. $P$ \textit{Scouleri}, from north-western America, is a low-growing species, some 12 to 18 inches in height with pale mauve flowers. These are all excellent subjects for the sheltered, sunny border or rock garden. They thrive in a warm sandy loam with a third part humus in it.

\textit{Culture} —Take cuttings of side shoots (three to four joints of young growth with a heel) in August and insert, 3 inches apart in sandy soil, in a cold frame. Plant out in April. In cold districts they need a sheltered position and protection from frost. Seeds may also be sown under glass in March. Pruning —remove dead ends of shoots in April and thin-out crowded wood, cutting out weak growths.

\textit{Peruphyllum ramosissimum.} \textit{(Rosacea\textae)}

A distinctive and interesting rare hardy deciduous shrub, a native of the western districts of North America and related to the Amelanchiers. It has smallish and narrow oblong leaves and in early summer (April and May) produces little clusters of pretty white orange-blossom-like flowers, followed in favourable seasons by small edible yellow berries. This shrub grows up to 6 feet in height and thrives on sunny slopes.

\textit{Culture} —Propagation may be carried out by means of layering in autumn and by seeds sown under glass in spring. Plant in November, for preference, in a well-drained loamy soil. Prune in winter only to thin and shape the bushes.

\textit{Periclymenum.} \textit{(Woodbine or Honeysuckle)} See Lonicera Periclymenum.

\textit{Periploca gr\ae\ca.} Silk Vine \textit{(Asclepiadacea\textae)}

A hardy deciduous plant, a native of southern Europe and western Asia. It is of twining habit, runs up to a height of
30 feet or more, and in July and August produces several flowered cymes of large, strongly-scented, greenish-yellow flowers, purplish-brown inside. It likes a sunny position in any ordinary garden soil, and is useful for covering bare walls, pergolas and trellis work.

Culture.—Propagation is by means of root division in March or April and by seeds sown in early spring under glass. Plant from November to March, when the weather and soil conditions permit. Thin out the branches when necessary in winter.

Periwinkle. See Vinca.

Pernettya mucronata. Prickly Heath. (Ericaceae)
Very showy berry-bearing hardy evergreen ericaceous shrubs from the Straits of Magellan. They grow from 2 to 4 or 5 feet high, have smallish, tough, saw-edged and prickly-pointed oblong leaves, and following the small white flowers, which appear towards the end of May, carry in autumn large and strikingly handsome pea-like, coloured fruits *P. m. alba* has white fruits; *P. m. atroocccinea*, deep purple fruits, *P. m. lilacina*, pink fruits; *P. m. speciosa*, crimson fruits, *Bell's Hybrid*, large purplish-crimson fruits, and *Daines' Hybrids*, variously-coloured fruits. These shrubs do well in moderate sun and in cool and moist, well-drained peat or lime-free loam with leaf-mould added.

Culture.—Plant in groups (the plants set fruits better when cross-pollinated) in April or October. No pruning is necessary, but it is desirable at intervals to cut out entirely an occasional old and worn-out branch and to shorten the ends of very long branches. This, when necessary, is best done towards the end of April. To propagate, sow seeds in a frame in March; take cuttings of semi-ripe wood about 2 inches in length and insert in late summer in sandy peat in a close frame or under a bell-glass, or layer in autumn.

Perovskia atriplicifolia. (Labatae)
A beautiful aromatic deciduous sub-shrub, a native of Afghanistan, the western Himalayas and Tibet and the districts between them. It is related to the Sage family, grows from 3 to 5 feet in height and has stems clothed with silvery-white, saw-edged and narrowly oval foliage, from which, in late summer rise conspicuous spikes of violet-blue flowers.
PEROWSKIA — PETTERIA

These are covered with down-like powder and mull a fragrant sage-like scent

Culture — This little shrub likes a warm, sunny position, preferably in the milder localities, and a good well-drained garden loam. February and early March are the best times for planting. Whether killed back by frosts or not, the best flower spikes are produced when the growths of the previous year are cut well back each year in February or March, all dead wood being at the same time removed. Propagation is carried out by means of seeds sown under glass in spring; or by cuttings, 2 to 3 inches long, made of the ends of side shoots and inserted in a handlight or under a bell-glass in summer.

Persica. See Prunus Persica.
Persimmon. See Diospyros.
Pertya sinensis. (Compositae)
A slender and upright-growing deciduous shrub, a native of central China, related to the daisy group and botanically interesting. It grows up to about 5 feet in height, has dark green, longish and narrow oval leaves and in June and July produces purplish-pink flower heads.

Culture. — Plant in a well-drained, rather light loamy soil in February or early March, choosing a sunny position. Prune only to shape the bushes after flowering or in early March. Increase by seeds sown under glass in early spring; and by cuttings, 1½ to 2 inches long, made of the ends of side shoots and inserted under a handlight or bell-glass during July or August.

Petteria ramentacea. Dalmatian Laburnum. (Leguminosae).
A beautiful hardy deciduous shrub, a native of eastern Europe and with trifoliate foliage similar to that of the Laburnum, to which it is related. It grows up to some 6 to 7 feet in height, and in May and June produces a mass of racemes of sweetly-fragrant yellow flowers.

Culture — Plant in November or February in sunny positions and in rather light, well-drained soil. Prune after flowering, but only to thin and shape the bushes. Propagate by means of seeds sown under glass when ripe, and by layering in autumn.

Note. — The seeds of this plant, like those of the Laburnum, are poisonous and precautions must be taken accordingly as regards children.
Phellodendron. \((\text{Rutaceae})\)
A genus containing five or six species, varieties and a hybrid. They are hardy ornamental deciduous trees, natives of China and Japan, growing some 15 to 40 feet in height and very similar in habit and appearance to *Ailanthus glandulosa* (Tree of Heaven). The large aromatic pinnate leaves sometimes take on attractive autumn tints and the small and insignificant greenish-yellow unisexual flowers are followed, in the case of female trees when grown in proximity to a male, by black marble-like berries. Among the best-known species are *P. amurensis*, the Amur Cork Tree, 30 to 40 feet (northern China and Manchuria), *P. chinensis*, 25 to 30 feet (central China), *P. japonicum*, 25 to 30 feet (central Japan), *P. Lavallei*, 35 to 40 feet (*P. amurensis* x *japonicum*), and *P. sachalinense*, 35 to 40 feet (western China, northern Japan and Korea). All have long compound glossy foliage.

**Culture.**—They grow quite well almost anywhere in well-enriched soil and are partial to chalk. Plant from November to the end of February, when soil and weather conditions permit. Prune early in winter to shape the trees and to thin-out crowded branches. Propagation may be carried out by means of seeds sown under glass in early spring, or cuttings, 2 to 3 inches long, made of semi-mature shoots with a thin heel of old wood, root readily in late summer in a close frame with gentle bottom heat.

Philadelphus. Mock Orange \((\text{Saxifragaceae})\)
Beautiful hardy deciduous flowering shrubs, often with long arching branches and commonly but wrongly called “Syringa,” the botanical name of the Lilacs. The smell, mulled by the lovely fragrant flowers of some species and hybrids, is considered to resemble that of the orange blossom, whence its name, Mock Orange. In appearance, too, they are also similar. The flowers of most species and varieties are white or yellowish-white, several varieties have large purplish-crimson blotches at the bases of the petals. The broadly-oval, saw-edged leaves, when crushed, have an odour resembling that of the cucumber. Like the Lilacs, the Philadelphuses will grow well in any good garden soil enriched with manure, and they like a sunny position. The shrubs grow from 3 to 15 feet in height and flower in May, June and July. The
following are good species and hybrids  

*P coronarius* (White, 8 to 12 feet),  

*P grandiflorus* (a large white flower without fragrance on bushes up to 12 feet high);  

*P microphyllus* (Small-leaved, 2 to 3 feet, White)  

*P microphyllus* (Small-leaved, 2 to 3 feet, White)  

*P coronarius* (White, 8 to 12 feet),  

*P grandiflorus* (a large white flower without fragrance on bushes up to 12 feet high);  

*P microphyllus* (Small-leaved, 2 to 3 feet, White)  

*P grandiflorus* (a large white flower without fragrance on bushes up to 12 feet high);  

*P microphyllus* (Small-leaved, 2 to 3 feet, White)  

*P microphyllus* (Small-leaved, 2 to 3 feet, White)  

*P microphyllus* (Small-leaved, 2 to 3 feet, White)  

Hybrids—*Avalanche* (Snow-White, 4 to 5 feet),  

*Belle Etoile* (White, Maroon Centres, 4 feet);  

*Glacier* (Double White, 5 to 6 feet);  

*Lemone erectus* (White, 4 to 5 feet),  

*Norma* (One of the Best Single Whites, 10 to 12 feet),  

*Rosace* (Semi-double, White, 5 to 6 feet),  

*Virginal* (White, Double, 2 to 8 feet);  

*purpureo maculatus* (White Petals stained Purple, 4 to 5 feet);  

*Viole Lactee* (Large, Single White Flowers, 2 inches across, 6 to 8 feet).

Culture—Plant from November to March, Thin out the shoots well immediately after flowering. Cut off old wood which has borne flowers, leaving the young lateral growths on the branches. These young growths will then grow vigorously and bear the bloom of the next year. The great thing is to thin out the shoots, removing thin and weak wood rather than trimming them back. If the shrubs are much overgrown, they should be cut hard back in March, sacrificing a season's flowers. To propagate, insert in July, cuttings 2 to 4 inches long, made of the ends of semi-ripe side shoots in a frame with gentle bottom heat. During August and September cuttings may also be placed under handlights or under cloches, and during October or November cuttings, 9 to 12 inches long, may be inserted on a sheltered border outside.

Philesia buxifolia. (*Liliaceae*)

A lovely semi-hardy evergreen shrub, which succeeds outside in the south and west of the British Isles, notably in Cornwall and in some parts of Ireland. It is a native of Chile and usually grows 1 1/2 to 3 feet in height, though it may sometimes make a bigger subject. It has deep green narrow oval leaves, white on the undersides, and in June produces dainty nodding bright red, lily-like flowers from 1 1/2 to 2 inches in length, smaller than the blooms of the *Lapageria*.

Culture—This shrub is a lime-hater and thrives well in a moist, well-drained peaty soil in a sheltered rock garden, or in a sheltered narrow border. Plant in spring. No pruning is required. Propagation may be carried out by means of suckers or offsets in late April, or layering may be carried out in autumn.

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Phillyræa. Mock Privet. (Oleaceæ.)

A genus of handsome and hardy evergreen shrubs and small trees related to the Osmanthus. All, from their dense habit and dark green shiny leaves, form excellently thick bushes and grow freely to from 6 to 15 feet in height almost anywhere, and in almost any soil and position. Most of the plants belonging to this genus are white-flowered and fragrant, but their chief value lies in the leaves rather than in the bloom, which is small in every case and by no means showy or attractive. The flowers may be followed by purple-black fruits in autumn. These shrubs are excellent plants for growing in the shade and under trees, especially *P. media* and *P. decora*, which do well even in a bleak situation.

Culture.—Plant in April and May or in September and October. No definite system of pruning is required, but if the bushes grow too tall and leggy, few shrubs respond so readily to the drastic pruning of long branches back to the old wood about the end of April. Propagate by means of cuttings, 2 to 4 inches long, made of the ends of semi-mature side shoots in late summer and inserted in sandy soil in a frame with gentle bottom heat, or in autumn in a cold frame and under cloches; by layering in September; or by seeds when available.

Species.—*P. angustifolia* (May–June, 6 to 9 feet); *P. a. var. rosmarinifolia* (With Smaller Leaves); *P. decora* (April, 6 to 10 feet); *P. media* (May, 6 to 8 feet); and *P. latifolia* (April, a large bush or small tree, 10 to 20 feet).

Phlomis fruticosa. Jerusalem Sage. (Labiatæ.)

This is a semi-hardy evergreen shrub, a native of southern Europe, with crinkled green sage-like leaves that are white on the undersides. It grows from 2 to 4 feet high, or more under very favourable conditions, and in July, August and September carries whorls of orange-yellow flowers. This plant does well in sunny positions and in ordinary light sandy soil, and is useful for planting near the sea in the milder localities of the British Isles.

Culture.—Plant in April. Cut off the old flower stems in late summer. Prune or shorten long shoots, if necessary, early in April and cut out weak twigs if any. To propagate, sow seeds in a frame or cool greenhouse in March, or take cuttings, 2 to 3 inches long, made of the ends of non-flowering
PLATE 27

Right,
Symplocos paniculata

Below, Symphoricarpos rivularis
PLATE 28

Right, Vitis heterophylla

Below, Vaccinium delavayi
side shoots in July or August and insert in a frame or handlight.

**Photinia. (Rosaceae.)**

A small genus of evergreen and deciduous shrubs and small trees, natives of China, Japan and the Himalayan regions, etc., and closely related to the Thorn and Crab families. The corymbose clusters of white hawthorn-like flowers, borne in spring, are followed in autumn by attractive berries. Good evergreen species are: *P. arbutifolia* (syn. *Heteromeles arbutifolia*), 10 to 20 feet, a Californian species; *P. Benthamiana*, 4 to 6 feet, or more against a wall, a narrow-leaved shrub and a native of China; *P. Davidsoniae*, a large shrub or tree growing in China up to 50 feet high and having striking red young shoots in spring and clusters of red or yellow fruits in autumn; *P. integrifolia*, growing probably 20 to 25 feet in height, under favourable conditions, or more against a wall, a lanceolate-leaved Himalayan species; and *P. serrulata* (Chinese Hawthorn), a tall tree-like species with crimson-tinted young foliage in spring and which in favourable conditions, preferably against a south wall, runs up to a height of 20 to 30 feet. Among the deciduous species are: *P. villosa* (8 to 15 feet), from China and Japan, a lovely small-leaved species richly-tinted in autumn; and its relation, *P. Beauverdiana* (10 to 20 feet), and *var. notabilis* (10 to 20 feet), newer introductions from China.

**Culture.**—All thrive in warm, sheltered situations and in the warmer localities of the British Isles, especially near the sea. They like a well-drained loamy soil with leaf-mould added. Plant the deciduous species in November or March and the evergreen species in late April. Thin and prune the trees and bushes to shape; the deciduous species in winter, and the evergreen species in late April. Propagation may be carried out by means of seeds sown when ripe in the autumn, the pots being plunged to the rim outdoors during the winter and moved under glass in the following spring; by layering in autumn; or, in the case of evergreens, cuttings, 2 to 3 inches long, made of semi-mature shoots with a heel may be placed in gentle heat in July, or under a bell-glass in August or September.

**Phygelius capensis. (Scrophulariaceae.)**

A delightful half-hardy, semi-shrubby plant growing some 2 to 6 feet in height and resembling the Pentstemon. It was
introduced from South Africa, and in August and September produces long erect spikes of scarlet flowers.

**Culture**—This plant likes a sunny sheltered position and a light, well-drained ordinary garden soil and is best when grown in the milder southern and western localities of the British Isles. At Kew the growths are killed back to near the base in most seasons, but if protected with dry litter, new shoots push up freely in spring. Plant in April. Prune in March, cutting out all weak shoots and shortening the ends of strong shoots. Propagation is best carried out by means of cuttings made of the ends of side shoots, 2 to 3 inches long, and inserted under glass in late summer, and by seeds sown under glass in spring.

**Phyllodoce.** (*Ericaceae*)
A race of hardy heath-like plants, sometimes called Bryanthus, and requiring the same treatment *P. empetriformis* (*syn. Bryanthus empetriformis*), a low-growing shrub, 6 to 9 inches in height, from the western districts of North America, has a mass of shiny and dark-green linear foliage and in early summer carries heads of small rosy-purple campanula-like flowers. *P. Breweri* is a Californian species, 6 to 10 inches high, with dark-green leaves and purplish-rose flowers in May. *P. caerulea* is a beautiful little dwarf species, excellent for the rock garden and a native of the cold regions of the northern hemisphere, including northern Britain. It grows up to 9 inches high and in May carries bluish-purple flowers.

**Culture**—These plants like a sunny or semi-shaded position and a moist, but well-drained sandy peat; they will grow quite well, however, in ordinary soil, provided it is chalk free. Plant in October or April. No pruning is required, but dead flower-heads should be cut away immediately after flowering. Propagation is by means of cuttings, 1 inch long, made of short sturdy shoots and inserted in sandy soil (with peat added, if available) in a frame or bell-glass in August; or by layering in autumn.

**Phyllostachys.** Bamboo (*Gramineae*)
A distinctive genus of semi-hardy and hardy bamboos, natives of China and Japan and differing from the Arundinaria group in the construction of their stems, which are more or less zigzag and flattened on one side. The branches, which spring
from each node, are fewer in number. These beautiful woody
grasses are not quite such rapid growers as the Arundinarias,
but thrive under similar treatment. They require shelter from
east winds and thrive best in moist, rich loamy soils. Among
the most attractive species are *P. aurea* (10 to 12 feet), with
bright deep green leaves, glaucous on the undersides, and with
yellowish-green stems; *P. Castellonis* (7 to 10 feet), a some-
what rare species with yellow and green foliage and stems; *P.
flexuosa* (6 to 8 feet), with deep green leaves, glaucous on
the undersides, and green to dark brownish stems; *P. Henonis*
(10 to 12 feet), one of the hardiest and most striking species,
with luxuriant bright green foliage and stems that are green
turning to dull yellow; *P. migra* (12 to 18 feet), one of the
best-known species, with luxuriant deep green foliage and
olive-green stems that gradually change to brownish-black;
*P. Quahion* (15 to 20 feet), a splendid tall species; *P. ruscifolha*
(1 to 2 feet), a striking little dwarf species, and *P viminal-
glaucenscens* (12 to 20 feet), one of the most hardy species, with
bright green stems that turn to a yellowish-green. All are
extremely handsome and deserving of much wider cultivation
than at present.

**Culture** — Plant in May. Cut out old and worn-out stems to
the ground in April. Propagation is best carried out by means
of division in May, which is also the best season for planting.

**Phyllothamnus erectus** [syn. *Bryanthus erectus*]. (*Ericaceae*)
An attractive dwarf evergreen shrub; a hybrid between
*Phylodoce empetrifomis* and *Rhodothamnus Chamaecistus*,
raised about 1845 in the Comely Bank Nursery, Edinburgh.
It grows about 8 or 9 inches in height, has glossy green and
almost grass-like foliage, and in April or May carries clusters
of dainty rosy-pink flowers.

**Culture.** — It likes a cool, moist situation and a peaty loam,
and is excellent for the rock garden. Plant in October or
April. No pruning is necessary. Increase by cuttings, 1 inch
long, made of the ends of the half-ripe growths and inserted
during August under a bell-glass; or by layering in autumn.

**Physocarpus.** See Neillia

**Picea.** Spruce. (*Coniferae*)
Hardy evergreen trees of the Conifer family, which thrive
in well-drained moist loam and in sunny positions. *P. excelsa*
(Common Spruce), with its yellow-tipped needle-like foliage, reaches a height of from 50 to 100 feet and is a good tree for providing screens and shelters in gardens. It is the one most extensively grown for "Christmas" trees. There are numerous varieties, including several good dwarf kinds for the rock garden, such as Clanbrassiliana (2 to 3 feet), Gregoryana (1 to 2 feet), humulis (1 to 1½ feet), Ohlendorfii (1 to 2 feet), pumila (½ to 1 foot), and pygmaea (½ to 1 foot).

*P. albertiana var. conica (2 to 4 feet) is a dainty and slow-growing Conifer for the rock garden and one of the easiest spruces to root from cuttings. P. alba (White Spruce), 50 to 60 feet, a widely-spread tree in N America, does well when massed, even in the colder parts of the country. P. asperata (Western Chinese Spruce), with stiff rigid leaves, was introduced in 1910, and is said to be the most vigorous of the Chinese spruces, exceeding 100 feet in height. P. Morinda (West Himalayan Spruce), which reaches a height of from 60 to 100 feet, is a vigorous and beautiful tree of weeping habit. It makes an excellent specimen tree on a lawn. *P. Omorika (Serbian Spruce), 60 to 80 feet, makes a fine tall, slender tree and the silver-marked foliage adds to its value. It is one of the best spruces for town gardens and beautiful as a lawn specimen for a small garden. P. orientalis (Oriental Spruce), 50 to 60 feet, makes a handsome specimen tree, and is distinguished by its small leaves. P. pungens (Colorado Spruce), 70 to 100 feet, is a well-known species, but exceeded in beauty as a lawn specimen by the variety *P. pungens glauca, 50 to 100 feet, with beautiful greyish-blue foliage—an exceedingly lovely small tree for any garden outside smoke-laden districts. P. sutchensis (Sitka Spruce), up to 100 feet or more in height, is one of the best conifers for wet soils. It is being planted extensively for afforestation.

Culture —Plant in October or April and early in May. No pruning is required. Propagate by means of seeds sown in early spring, preferably under glass, or in the case of certain choice varieties, including dwarf spruces, graft on to seedlings of P. excelsa in a close frame in early spring.

Picrasma ailanthoides. (Simarubaceae)
A somewhat rare, graceful hardy deciduous small tree, a native of Japan and related to the Ailanthus. It grows some
30 feet or more in height, has long pinnate, compound and saw-edged foliage and small insignificant greenish flowers. In its native habitat, it is much esteemed for the beauty of its autumn colouring; which colouring, however, I have not seen it produce in this country.

**Culture** — Propagation is best carried out by means of seeds sown under glass when ripe. No pruning is required, except in winter when it is necessary to keep the trees with a leader and the branches shapely. Plant for preference in November in well-drained loamy soil.

**Pieris** (Ericaceae)

Hardy evergreen and deciduous shrubs, closely allied to the Andromeda. They grow from 3 to 18 feet in height, have shiny, dark green, narrow, oval or lanceolate leaves and from March to May carry showy racemes of small pitcher-shaped flowers, usually white and somewhat resembling Lily-of-the-Valley sprays. *P. floribunda* (syn. *Andromeda floribunda*), a native of the south-eastern regions of the United States, is one of the most popular species and grows from 4 to 6 feet high. It carries upright panicles of white flowers some 4 to 5 inches long. *P. formosa*, a native of the Himalayan regions and China, is not quite so hardy, but in warm and sheltered sites makes a lovely bush or small tree, 6 to 18 feet high, and producing in May clustered panicles of white flowers. It is even more beautiful than the foregoing species. *P. Forrestii* (3 to 5 feet) is a species from south-western China, notable for its brilliant crimson-carmine young shoots in spring and attractive clusters of white flowers in April and May. *P. japonica*, another beautiful species, grows from 4 to 10 feet in height, and its long racemes of white flowers in March and April are more pendulous than erect. There is a most effective variegated form of this latter, *P. j. variegata* (4 to 6 feet). All these are evergreens. The deciduous species are of comparatively little garden value, the most noteworthy being perhaps *P. ovalifolia*, a small tree up to 36 feet in America, which is really semi-evergreen and has tinted foliage in autumn, and *P. Marian*, a somewhat rare deciduous species, which makes an attractive small bush, 3 to 4 feet high. The white flowers, tinted red, do not appear until June. These plants like a moist, peaty soil and sand, and a sheltered position.
ABC OF SHRUBS AND TREES

Culture.—Plant the evergreen species from September to October, and in late April and in May, the deciduous species in November. Thin the branches after flowering when crowded, shorten long shoots without destroying the shape of the bushes and remove dead flowers. Propagate by means of layering in autumn, insert cuttings, 2 to 4 inches long, in sandy peat in a close frame in late summer or under a bell-glass in autumn, and sow seeds in moist sandy peat under glass in early spring.

Pinus  Pine  (Conifera)
A large family of evergreen trees with stiff needle-like foliage, and growing, according to species, from 4½ to 200 feet high. They like a sunny position and will grow in most soils. Pines are much used as screen and shelter trees and as specimens on lawns, except perhaps *P. montana, they should, however, only be planted in fairly large gardens. *P. laricio (Corsican Pine) and *P. L. nigricans (Austrian Pine), two-leaved pines, though slow-growing in the early stages, reach a height of from 90 to 100 feet and are both hardy and vigorous trees, which will grow in almost any position and make excellent shelter trees. The latter is the best pine for chalk soils. As ornamental specimen trees on a lawn the best species are *P. Armandii, a native of western China and a tree from 40 to 50 feet or more in height with leaves borne in fives, *P. Bungeana (Lace-bark Pine), a native of China, grows to a height of from 50 to 80 feet or more and is three-leaved, *P. Cembra (Swiss or Stone Pine), 60 feet in height, has rich green fragrant and somewhat glaucous foliage (leaves in fives); *P. Coulteri (Big Cone Pine), 60 feet high, has long stout leaves borne in threes, and very large elongated cones, up to 1 foot long and 6 inches in diameter, *P. excelsa (Bhutan Pine or Himalayan Blue Pine), 100 to 150 feet, is graceful and fast-growing and has long greyish-green foliage, leaves in fives, and elongated cones; *P. Strobus ("White" or "Weymouth" Pine), 80 to 100 feet, has long glaucous-green foliage and leaves in fives, and *P. sylvestris (Scotch Pine), 90 to 100 feet, with attractive red bark and the leaves carried in pairs. For seaside planting, none is better than *P. radiata (syn. *P. insignis) (Monterey Pine). This reaches a height of 70 feet, and is a fast-growing, three-leaved species that will
PINUS — PIPTANTHUS

thrive in chalk soils and in wind-swept positions. P Larcio and P. L. nigricans, referred to above, and P. montana, a dwarf species mentioned below, are also suitable for seaside planting, as also are P. Pinaster (90 to 100 feet, Two-leaved), the Maritime Pine of the Mediterranean regions and extensively planted in the Bournemouth district; P. Pinea (Stone Pine of Southern Europe and Asia Minor), with leaves in pairs, usually seen in British gardens as a large flat-headed tree of moderate height, 30 to 40 feet, but in crowded woods 70 to 100 feet. The most useful dwarf Pines are *P montana (Mountain Pine), which rarely exceeds 10 feet in height; and P m var. pumilio [syn P. Mughus], a squat spreading bush.

Culture — These trees are best planted in late April and in May or September and October, when from 2 to 3 feet in height. Never plant pines near a smoky city. No pruning is required, only cut out dead wood and double leaders. Propagation is carried out by means of seeds sown in early spring in sandy soil in a frame and lightly covered with soil. Choice varieties are usually grafted in early spring or August on to seedlings of the species in a close frame with or without slight bottom heat.

PIPTANTHUS. Himalayan and Chinese Laburnums. (Leguminosae)

Handsome hardy deciduous or semi-evergreen shrubs, natives of the East and growing from 6 to 12 feet high and more against a wall. They produce at the ends of the shoots, from May onwards, erect clusters of bright yellow flowers, very like those of the Laburnum. P. nepalensis, which grows some 10 to 12 feet in height, or more against a wall, has glossy trifoliate leaves, glaucous underneath, which are lost in very severe weather. P. concolor, a shrub up to 6 feet or more in height, comes from western China and is the hardest species. P. tomentosus, which grows some 10 to 12 feet in height, or more against a wall, is a species from south-western China. The silky-silvery foliage is very attractive.

Culture — These shrubs like a sunny, sheltered position, against a wall in cold districts, and well-drained ordinary soil. Plant in March. Prune in early summer, after flowering, cutting out old wood that has flowered and shortening extra long branches. To propagate, sow seeds in a frame in March,
ABO OF SHRUBS AND TREES

insert cuttings, 2 to 4 inches long, of semi-matured wood with a heel in a frame in late summer, or increase by means of layering in autumn.

**Pistacia.** Mastic Tree. (*Anacardiaceae*)

A small genus of handsome hardy and semi-hardy ornamental deciduous or semi-evergreen shrubs or trees with attractive compound foliage, which in autumn assumes glowing hues. The best-known species are *P. chinensis* (Chinese Pistachio), deciduous, 50 to 80 feet, and with graceful pinnate foliage; and *P. Terebinthus* (Chian Turpentine Tree), deciduous, 20 to 30 feet and a native of the Mediterranean regions. Both of these thrive, with some shelter, in ordinary soil. Such species as *P. Lentiscus* (Evergreen, 20 feet) and *P. vera* (Deciduous, 20 feet) are tender and need wall protection or sheltered positions in the milder localities of the British Isles.

**Culture.**—Plant the deciduous species in March and the evergreens in late April and early in May. No pruning is required. Propagation is carried out by means of cuttings made of semi-mature shoots in late summer and inserted in a close frame, or by seeds obtained from abroad. The seed should be thoroughly soaked before sowing, being planted under glass in early spring.

**Pittosporum.** (*Pittosporaceae*)

An interesting and distinctive genus of semi-hardy and tender evergreen shrubs and small trees, natives of Australasia, China and Japan, the Canary Isles and Cape of Good Hope. They will grow from 3 to 30 feet in height in the British Isles if planted in good loam in warm and sheltered situations in the milder districts, but are not very hardy at Kew, even against sheltered walls. In suitable localities they are useful for seaside planting and in summer produce clusters of small fragrant flowers. *P. bicolor* (3 to 6 feet) has brown and yellow flowers; *P. crassifolium* (10 to 15 feet), the New Zealand "Karo," has brownish-purple flowers, *P. eugemoides* (20 to 30 feet), the New Zealand "Tarata," with greenish-white flowers, has a beautiful variegated variety, *P. e. variegatum* (20 to 30 feet); *P. Ralphii* (8 to 15 feet), is an almost hardy species allied to *P. crassifolium*, but with larger leaves; *P. tenuifolium* (15 to 30 feet), with its chocolate-purple flowers, is the New Zealand "Kohuhu"; and the variety *P. t. Mayi*
PITTOSPORUM — PLAGIANTHUS

is a splendid tall-growing semi-hardy species, some 20 to 30 feet in height, the bright green foliage is extensively grown for market as cut sprays. There is a beautiful variegated variety of this, named "Silver Queen," with silvery-grey variegated foliage. All these species are natives of Australasia. From China and Japan, we have *P. daphniphyllodes* (4 to 8 feet), with long green leaves and yellow flowers borne in terminal clusters, *P. glabratum*, (3 to 5 feet), an almost hardy species similar to the above, *P. pauciflorum*, a Chinese species introduced in 1908 by Wilson and whose chief merit is its hardiness, growing wild as it does at 10,000 feet, an evergreen shrub 3 to 5 feet in height, probably more, and carrying yellow flowers in May, and the almost hardy *P. Tobira* [syn *P. chinensis*] (10 to 25 feet), with its glossy green foliage and orange scented clusters of cream flowers.

There is also a silver variegated variety of this latter, namely, *P. T. variegatum* (8 to 15 feet).

**Culture**—Plant in late April or in May. Prune in late April or May only if the branches require thinning or shortening. Propagation may be carried out by means of seeds sown in a cool greenhouse when ripe, or by cuttings, 2 to 4 inches long, made of semi-mature shoots and placed in gentle heat in July or in a cold frame or handlight in autumn.

**Plagianthus. (Malvaceae)**

A genus of New Zealand trees and shrubs, also known as Hohena and Gaya. They thrive in warm and sunny positions, preferably against walls, and in the milder southern localities of the British Isles in the open and in light loamy soil. *P. Lyallii*, which in its native habitat grows from 10 to 30 feet in height, makes a lovely large, fast-growing deciduous shrub or a small tree in mild districts. It has medium-sized ovate, saw-edged leaves, heart-shaped at the base and tapering to a point at the apex, and in July the branches are literally smothered with clusters of translucent tissue-paper-like blossoms, white with yellow stamens. A second form, *P. L. var. glabrata* (10 to 30 feet), is harder and in some respects finer than the type. Both are useful wall shrubs in cold districts.

*P. betulinus* is an elegant birch-like deciduous tree, some 30 to 50 feet high and of moderate hardiness. It has creamy-white male flowers and greenish-yellow female blooms.
ABC OF SHRUBS AND TREES

**Culture**—Provide exceptionally well-drained beds of light loamy soil that has been well cultivated previous to planting. Plant in March. Prune in March only to suit the shrubs for wall culture. Propagation is usually carried out by means of cuttings, 3 to 5 inches long, made of semi-ripe side shoots taken with a heel in late summer and placed in a frame, or by layering in autumn. Seeds, if available, may also be sown under glass in early spring.

**Plane.** See Platanus

**Planera aquatica.** Water Elm. *(Ulmaceae)*
A somewhat rare hardy deciduous tree, a native of North America and related to the Elm family. It grows some 30 to 50 feet in height and has medium-sized, saw-edged, oval, elm-like foliage and inconspicuous small greenish flowers. This tree grows quite well almost anywhere and in ordinary soil. For *P. Richardii*, see Zelkova.

**Culture**—Plant in November in ordinary, well-drained, loamy ground. Prune in winter, only if required, to thin the branches or to train a leading shoot. Propagate by means of grafting in the open in early spring, using the Elm as the stock.

**Platanus.** Plane. *(Platanaceae)*
These are large hardy deciduous trees, growing from 60 to 100 feet high and thriving in sunny positions and in any well-drained soil, appearing almost to ignore climatic conditions. They make excellent town trees and grow well even in the midst of smoky cities. The leaves are deeply indented, much like those of the maple, each leaf having usually five lobes (rarely three) arranged one at the apex and two on either side. The trees carry very distinct fruits in the form of small round spiky balls, two or several together. *P. acerifolia* (70 to 100 feet), thought to be a hybrid of *P. orientalis* and *P. occidentalis*, is the London Plane and is planted much more freely in the parks, gardens and streets of London than any other tree. *P. orientalis* (60 to 100 feet), known as the Eastern or Oriental Plane, is a more ornamental and pleasing tree than the London Plane and is suitable for pleasure ground and park planting. Plane trees are not great garden favourites, but are very useful for large parks and for growing in streets and avenues. *P. occidentalis*, the North American Button Wood, attains huge dimensions in its native country,
reaching up to well over 100 feet in height, but it fails to thrive under British climatic conditions and I know of no good specimens in this country.

*Culture.*—Plane trees thrive in loamy soils. Plant from November to March. Prune in winter when the wood becomes overcrowded, and to shape the trees. To propagate, sow seeds under glass or on a sunny border outside in March, take cuttings, 9 to 18 inches long, of ripe wood with a heel and insert in sandy soil on a sheltered border outside in autumn; or layer in autumn

**Platycarya strobilacea.** (*Juglandaceae*)
An interesting and rare deciduous shrub or tree of moderate height, perhaps 35 feet. It is a native of China, related to the Juglans (Walnut), has attractive pinnate foliage and bears drooping male catkins similar to those of the walnut. The plant thrives in the open in the milder localities of the British Isles. *P. sinensis*, sometimes given as a distinct species, is probably only a form of *P. strobilacea*

*Culture*—Plant in March in light loamy soil. No pruning is required. Layering in autumn is the best method of increase.

**Platycrater arguta.** (*Saxifragaceae*)
A Japanese deciduous shrub of trailing habit and with oval-lanceolate leaves and white Hydrangea-like flowers in July. It is best suited for culture on a sheltered slope in the rock garden.

*Culture*—Plant in March in light loamy soil. No pruning is required. Increase by means of cuttings, 2 to 4 inches long, inserted in July in a close frame, preferably with slight bottom heat.

**Platyosprion platycarpum.** (*Leguminosae*)
A pinnate-leaved tree said to grow up to 60 feet high in Japan. It is allied to the *Cladrastis* and carries blush-white flowers shaped like those of the pea. I saw a small tree flowering in the Arnold Arboretum in June, which suggests that the tree should be hardy anywhere in the British Isles. A tree at Kew 25 feet high and 30 feet through has not yet flowered.

*Culture*—This tree thrives in light loamy soils and a sunny position. Plant in November. No pruning is required, except in the training of the leading shoot and the regulating of the
branches. Increase by means of grafting in the open in spring on the Cladrastis, the Robinia or the Sophora.

Plum. See Prunus domestica, etc.

Plumbago. See Ceratostigma.

Podocarpus. (Taxaceae)

This genus contains some fifty species, some resembling in appearance the Cephalotaxus, which are chiefly natives of subtropical regions, Australasia, South America and eastern Asia. It includes a few semi-hardy species, which may be grown quite well in our milder localities and in very sheltered positions. *P. alpina*, *P. chilena* and *P. nubigena* are growing outside at Kew, sheltered by yews and cupressus. Podocarpus like a sunny sheltered position and a well-drained peaty soil. The semi-hardy kinds are only suitable for growing in the milder localities of the British Isles. *P. alpina*, a native of Australia and the hardest of all, is a small-leaved and bushy spreading species which makes an ideal subject for the rock garden. Several dense rounded bushes at Kew, some 4 feet high and as much through, are said to be at least fifty years old. Of the semi-hardy species, a few of the best are *P. chilena*, a small tree from Chile, some 25 to 30 feet in height, with long, bright green lanceolate foliage; *P. macrophylla*, a striking small tree or shrub from China and Japan, some 25 to 30 feet in height, with dense spiral formations of bright green leaves with glaucous undersides; *P. nubigena*, 25 feet, from Chile; and *P. Tolara*, from New Zealand. The last-named is a remarkable and interesting species with small, rigid, bronze leaves, irregularly placed along its stems. In its native habitat it assumes tree dimensions, reaching up to as much as 100 feet in height, but here it only forms a fair-sized shrub, some 6 to 10 feet in height in mild districts.

Culture—Plant in late April or in May. Prune in May, only to shape the trees or bushes. Increase by means of cuttings, 2 to 4 inches long, made of side shoots and inserted on a sheltered border under a bell-glass in September, and by seeds when available.

Poliothyrsis sinensis. (Bixaceae.)

A small but interesting deciduous tree related to the Idesia. It is a native of China, grows some 25 to 30 feet in height and carries attractive ovate foliage, heart-shaped at the base and
POLIOPTHYRSIS — POLYGONUM

tapering at the apex. The velvety young leaves take on
delicate tints in spring and are followed in July by panicles
of tiny white unisexual flowers, which presently turn yellow.

Culture.—Plant in March in a light loamy soil with leaf-
mould added. No pruning is required. Increase by means
of cuttings, 2 to 3 inches long, made of the half-ripe growths
and inserted in a close frame with slight bottom heat.

Polygala. Milk-wort. (Polygalaceae)

Useful little evergreens of a shrubby nature, which grow from
6 to 12 inches in height, have small oval box-like foliage, and in
early summer carry pretty flowers similar to those of the pea.

Species and Varieties.—P Chamaebuxus, with creamy-white
and yellow blossoms in April and May, is valuable, so is
P. C. var purpurea, with flowers of purple and yellow. They
are natives of the Alps of Central Europe.

Culture.—These plants thrive in a mixture of cool and
moist gritty loam and peat or leaf-mould, in partial shade
and in sheltered positions. They are excellent for the rock
garden and narrow shrub borders, requiring no protection in
winter. Plant in autumn for preference. Cut off the old
blooms after flowering, no other pruning is necessary. Propa-
gation is by division in autumn or spring, and by cuttings
made of the ends of the shoots in late summer and inserted
under a bell-glass.

Polygonum. (Polygonaceae)

A large genus, including two beautiful hardy deciduous
climbers and wall shrubs *P baldschuanicum, native of
Bokhara, is a most luxuriant and beautiful deciduous climber,
attaining a height of 30 feet or more. It has broadly ovate
leaves and produces in summer and autumn a profusion of
large drooping panicles of cream-pink to white flowers.
P. Aubertii, from western China, is another handsome climber
very similar to the foregoing, flowers tinted pink.

Culture.—These plants grow quite well in ordinary loam,
and in an open position on a wall, pergola, arbour or over
old Yews, Hollies and other trees. Propagate by means of
cuttings of semi-ripe wood, about 3 inches long with a heel,
taken in July or August and placed in sandy soil in a frame,
and planted out in spring. Or, if preferred, mature cuttings,
9 to 12 inches in length, may be inserted in the open in autumn.
No definite method of pruning is necessary. Trim and train in winter little or much to suit the position, cutting away old and weak growths to allow the flowering wood to get plenty of air. It is usual to grow the plants in pots until large enough for planting in permanent positions in March or April.

Pomegranate. See Punica granatum.

Poplar See Populus.

Populus. Poplar. (Salicaceae)

A large genus of hardy, fast-growing deciduous trees, most species and varieties of which have broadly-ovate or heart-shaped, serrate-edged leaves and which are, with one or two exceptions, suitable only for big gardens as they soon assume large proportions and their roots are rampant and hungry. The male and female flowers or catkins are borne on different trees. *P. nigra viahca* (Lombardy Poplar), 70 to 100 feet or more in height, makes its dense and twiggy growth very rapidly and if planted 9 to 10 feet apart, these trees soon form a good screen and shelter. *P. tremula* (Aspen, 20 to 40 feet, over 100 feet in America), commonly known as the Trembling Poplar, because its beautiful heart-shaped and serrate-edged foliage is always in motion, is a very striking tree, useful as a lawn specimen, as also is *P. tremula pendula* (Parasol de St Julien or Umbrella of St Julien), a weeping tree, umbrella-like in shape and reaching to a height of 40 feet. *P. alba* (White Poplar) has the undersides of its roundish leaves a silvery-white and makes a tree from 70 to 90 feet high. *P. a. pyramidalis* (White Boleleana Poplar), which grows from 50 to 70 feet or more in height, is a good upright-growing variety of this. Other good Poplars include: *P. canescens* (Grey Poplar, 80 to 100 feet), *P. monilifera syn deltoidea* (Cottonwood, 90 feet), *P. lasiocarpa* (A very Large-leaved Chinese Poplar, 40 to 50 feet); *P. nigra betulifolia* (Manchester Poplar, 60 feet), a useful town and street tree; *P. serotina* (80 to 100 feet), known in different parts of the world as the Swiss Poplar, the Canadian Poplar and the Black Italian Poplar, which is a male tree said to be a hybrid between *P. nigra* and *P. monilifera*; *P. regenerata*, a female tree with the same parentage, *P. tremuloides* (American Aspen), and *P. trichocarpa* (Western Balsam Poplar), said to grow 150 to 200 feet high in western North America, the most ornamental.
Balsam Poplar for park and avenue planting  *P. Eugenii*, a hybrid of the Lombardy Poplar, of which there are several trees 100 feet in height at Kew, *P. generosa*, of which a tree at Kew has grown 50 feet in height in 14 years and will probably reach 100 feet, and *P. robusta* (*angulata* x *negra var*) up to 100 feet or more in height. Being of very fast growth the hybrid poplars are being extensively planted for the production of cheap timber.

**Culture.**—All these trees thrive in moist loam and in sunny positions. Plant from November to March. Prune preferably from November to January. Few trees can be more freely pruned to suit their positions. To propagate, sow seeds when available; insert cuttings of matured young wood, 1 to 1½ feet in length, in the open in October or November; or take root cuttings. A few may be grafted outside in spring.

**Portugal Laurel.** See Prunus lusitanica

**Potentilla.** Shrubby Cinquefoil (*Rosaceae*)

A useful genus of plants that includes a number of small hardy deciduous shrubs, which grow from a ½ to 4 feet in height and from May to September bear white or yellow single flowers like those of the Strawberry. *P. fruticosa*, a cosmopolitan species native also of the British Isles, is the best known. It forms a compact twiggy shrub some 2 to 4 feet high with small, dark-green, pinnate foliage and with rich large clear yellow flowers. There are numerous varieties of this, including *P. f. Farren*, 1½ to 2½ feet in height, a compact and almost perpetual and free-flowering plant with rich yellow flowers; *P. f. pyrenaica*, another dwarf-growing variety some 6 to 18 inches in height and with lovely rich yellow flowers; *P. f. Vestchii*, 2 to 4 feet in height, a beautiful variety from Hupeh, China and bearing white flowers, and *P. f. Vilnorniana*, a taller-growing variety, 3 to 4 feet in height, with lovely silvery foliage and rich creamy flowers. *P. davurica* is a dwarf shrub not more than 1½ to 2 feet high and bearing white flowers.

**Culture**—All species and varieties do well in sun or semi-shade in the border or rock garden (dwarfs) and love deep, sandy soil. Plant from November to February. Cut out
the old wood to thin-out the bushes in late September or in October. Seeds may be sown under glass in light loam in spring, but it is more usual to propagate by means of division in October and November, or to insert cuttings from 2 to 4 inches in length of semi-ripened shoots in a close frame or under a bell-glass in late summer and autumn.

Prunsepia. (*Rosacea*)
Charming hardy early-flowering deciduous shrubs from China and the Himalayan regions and related to the Prunus group. *P. sinensis*, the best-known species and which comes from Manchuria, is a lovely little shrub some 5 to 6 feet in height, with longish oval or lanceolate foliage and medium-sized yellow flowers borne in March and April. Give the bushes sheltered positions as, unfortunately, they are apt to be damaged by early frost if the shrubs are grown outdoors in the colder districts of the British Isles. The flowers are followed by attractive red fruits. *P. umflora* is a shrub up to about 4½ feet in height. It hails from north-western China and in April and May carries yellow flowers. *P. utahs*, growing some 3 to 5 feet in height, is a newer introduction from the Himalayan regions, bearing racemes of white flowers.

Culture.—Plant in November in light well-drained loam and leaf-mould in sheltered positions with preferably south-west aspects. Remove weak and crowded shoots and shorten very long growths in May after flowering. Increase by seeds sown under glass when available; by layering in autumn; and by cuttings, 2 to 3 inches long, made of the semi-mature side shoots and inserted in a handlight or under a bell-glass in July and August.

Privet. See Ligustrum.

Prostanthera rotundifolia. Australian Mint-bush. (*Labnata*)
An attractive semi-hardy evergreen shrub, a native of Australasia, which grows some 4 to 6 feet in height, or more against a wall, and in spring produces a mass of beautiful purple or heliotrope blossoms. It may be grown outdoors in sheltered situations, preferably against a wall, in the milder localities of the British Isles, but does not like chalk. I have vivid recollections of a plant topping a 10 feet wall in a garden near Penzance.

Culture.—A well-drained sandy and peaty soil suits them.
best. Grow in pots and plant out in April. Prune after flowering only to keep the bushes shapely. Increase by cuttings, 2 to 3 inches long, made of the ends of the young shoots and inserted under a bell-glass in August.

**Prostanthera — Prunus**

**Prumnopitys elegans.** Plum-fruited or Chilean Yew. (*Taxaceae*)

A strikingly handsome hardy evergreen shrub or small tree, some 20 to 30 feet in height and very similar in form and habit to the common English Yew, but with foliage of a brighter green. Male and female flowers are borne on different trees. The Chilean Yew is a very attractive and useful evergreen for a hedge in the favoured gardens of the south and west of the British Isles.

**Culture** — This plant likes a sheltered situation where it is not exposed to cold winds and a well-enriched lime-free, peaty loam. Plant towards the end of April or early in May. Propagation is best carried out by means of cuttings, 2 to 3 inches long, made of mature side shoots of the year with a heel and inserted under a bell-glass or cloche in September. Prune only to shape the bushes in late April.

**Prunus.** (*Rosaceae*)

A genus of beautiful hardy deciduous spring-flowering and fruit-bearing trees and shrubs, including *P. Amygdalus* (Almond), *P. Armenaca* (Apricot), *P. Avium* (Gean), *P. Cerasus* (Cherry), *P. cerasifera* (Cherry Plum), *P. Persica* (Peach), *P. serrulata* (Japanese Cherry), etc. No genus of trees adds more to the beauty of the garden in spring. The trees are, as a group, small, being on an average from 10 to 30 feet (some less, a few more than this) in height. It should be remembered that, with a few exceptions, the flowers are borne on the leafless branches in spring, a good dark green, evergreen background is therefore ideal for setting off the bloom to the fullest advantage and in addition affords some shelter during cold spells when the trees are flowering. Because of their abundant and showy bloom, these trees and shrubs are of the highest value in the garden and pleasure grounds.

*The Common Almond* (*P. Amygdalus*), a native of Africa and the East, is well known for its being one of the earliest of the flowering trees and when in bloom it is literally covered with delicate pink blossoms which appear on the previous page.
A B C OF SHRUBS AND TREES

year's wood before the leaves. It therefore needs a position where it will be protected from biting north and east winds. The Almond thrives in and is a very useful tree for town and suburban gardens. The flowers open in late February or during March, according to the season, and the trees average 20 to 25 feet in height. The broad lanceolate, saw-edged leaves, which fold into two halves like the pages of a book, are a distinctive feature. Plant in November. Prune in April, removing old and worn-out branches and shortening vigorous one-year-old shoots. To propagate, sow stones, 3 to 4 inches deep, in the open in October, or bud in the open on the plum stock during summer. Among the best varieties are P. Amygdalus macrocarpa, 20 to 30 feet in height, with very large flowers of a delicate rosy-pink; P. A. amara (Bitter Almond), 20 to 25 feet, which has white flowers with a rosy tinge in them, P. A. var alba, 20 to 25 feet, a beautiful white variety, and P. A. var praecox, 20 to 25 feet, which flowers 8 to 10 days in advance of the species. Belonging to the Amygdalus or Almond section are P. nana (Russian Almond), 3 to 4½ feet in height, a compact dwarf and bushy shrub, never much over 4 feet in height, which carries a wealth of rose-pink bloom in late February and early March (there is a white variety P. n. alba, 3 to 4 feet, and P. n var georgica, 3 to 4½ feet, deep rosy-pink); and most delightful of all, perhaps, *P. triloba flore pleno, whose branches, over almost their entire length, are clothed in March and April in a mantle of rosy-pink bloom. This tree, which grows from 10 to 15 feet in height, is perfectly hardy, but nowhere does it thrive better than against a sunny south wall, in which position it should be pruned hard back after flowering. Plant in November. To propagate this, bud in the open on the plum stock in summer or increase by cuttings from forced plants grown in pots for greenhouse decoration. Make the cuttings of the half-ripe young shoots, 4 or 5 inches long, and insert them in sandy soil in a close greenhouse propagating frame.

THE APRICOT (P. Armeniaca) — The Apricot, which comes from northern China, has medium-sized roundish leaves, toothed at the margins, and white or pink blooms borne in March. It averages 15 to 20 feet in height. Even more showy for pleasure ground planting is the Japanese Apricot

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*P. Mume.* Two good varieties of this are *P. Mume flore pleno,* 10 to 30 feet, a double form with pink flowers, and *P. Mume albo flore pleno,* 10 to 30 feet, which is a double white; both are very charming.

The ornamental cherries are a very showy group in flower during late March, April and May, and make most attractive garden trees, growing as they do from 10 to 20 feet or more in height. *P. acida semperflorens* (All Saints' Cherry) is a delightful tree which forms a rounded bushy head some 20 feet from the ground. The white flowers appear in April and again later from June to August or September. As its name implies, it flowers almost perpetually throughout the summer months. It is best propagated by means of grafting in the open on *P. Cerasus.* The vigorous and beautiful Double White Gean *(P. Avium flore pleno),* which reaches a height of nearly 40 feet, is a gorgeous sight in May, when the branches carry great pendant clusters of double white flowers, that last for a considerable time. So thick is the bloom that the tree seems to be literally "snowed-under." Propagation is usually carried out by means of grafting on to *P. Avium.* Lovely trees also are *P. Cerasus Rexi flore pleno* (10 to 20 feet), the Double White Morello, and *P. tomentosa,* which bears white flowers tinged with rose in March. The latter makes a bush 5 to 7 feet high and wide. The Japanese Cherries, *P. serrulata,* *P. Lannesiana,* *P. Sieboldii,* and the numerous varieties, which grow from 15 to 20 feet or more in height, are some of the most magnificent of all flowering trees. The blooms often clothe the branches over their entire length in April or May. Some of the best varieties are: *P. Lannesiana var. grandiflora* "Ukon" (Yellowish-green), *P. L. albida* (Pure White Single and Very Fragrant); *P. L. var sirota* "Mount Fuji" (Large Single or Semi-double White); *P. L. erecta* "Amanogawa" (Fastigate Growth, Apple Blossom, Semi-double); *P. serrulata albo-rosea* "Shyrofugen" *(Pale Rose); P. s. var rosea* "Cheal's Weeping" *(A Good Pendulous Variety);* *P. s. var Sekiyama* "Hisakura" *(Deep Pink, Double);* *P. s. var. "fugenzo" [James H. Veitch] (Rose, Double), *P. s. var albo-pleno* (Double Snow-White Flowers on Horizontal Branches); *P. s. var longipes* (Pink tinted, opening to Double Pure White Flowers in Drooping Clusters).
the best late-flowering variety); and *P. Sieboldii (Rose-pink, 
Semi-double), of slow growth, a gem for small gardens. 
Another species that should not be overlooked is P. subhirtella, 
which grows about 20 to 25 feet in height, has saw-edged, 
oval leaves and produces at the end of the young shoots in 
early April clusters of white blooms, tinged pink. Two 
varieties of this are to be recommended P. s. autumnalis 
(Japanese Winter-flowering Cherry), which in warm seasons 
will produce its semi-double, pink-tinted white flowers from 
October to March; and P. s pendula (Rose-bud Cherry), a 
delightful weeping kind. Another good weeping cherry is 
P. Mahaleb pendula (St. Lucie Cherry or Weeping Mahaleb), 
a graceful, showy and free-growing tree, some 18 to 25 feet in 
height, ideal as a specimen on a lawn and bearing racemes of 
small white blossoms that shed a delightful perfume. Another 
fragrant tree is the Yeddo Cherry (P. yedoensis), which has 
white or rose-pink flowers in April and makes quite a large 
tree, eventually nearly 50 feet in height. This is the cherry 
most extensively planted as a street and avenue tree in Japan, 
but it is rather early-flowering for widespread planting in 
British gardens.

THE PEACH (P. Persica).—The Peach, which is a native of 
China and grows some 15 to 20 feet or more in height, comes 
into flower soon after the Almond in March and April. P. P. 
albo pleno is double white, P. P. folius rubris has deep red 
leaves and single pink flowers; P. P. magnifica, with rich 
deep red flowers, is a tree with semi-pendulous branches; 
*P P. roseo flore pleno (Clara Meyer) is double rose-pink; and 
P. P. rubro flo pl, double red David's Peach (P. Davida- 
nana), rose-pink (Feb), grows to a height of from 20 to 25 feet; 
its white variety, P D. alba is exceedingly floriferous and 
charming. All are very beautiful and valuable additions to 
any garden. To propagate, sow stones 3 to 6 inches deep in 
the open in October or bud in the open on to plum stock in 
summer.

THE PLUM — P cerastfera is the Myrobalan or Cherry Plum, 
so much used as a hedge plant (see chapter on Hedges). If 
grown as a tree, it soon reaches a height of from 20 to 30 feet 
and in February and March will carry dense clusters of white 
or rosy-tinted flowers. The popular *P. cerastfera Pissardii

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(*syn P. c. atropurpurea*), the Purple-leaved Plum, is a free-growing and vigorous tree with deep bronze-purple, saw-edged, oval or obovate foliage, which makes it a very ornamental subject for the garden. It is a good town-flowering tree, the flowers are blush-pink. Its variety, *P. c. Pissardii Blireana*, with double pink flowers, is one of the most pleasing trees in this group. *P. divaricata* makes an elegant and graceful tree some 10 to 20 feet or more high, and in March and April bears clusters of small white flowers. It is a charming tree as a single specimen on the lawn. *P. Simonii* (Apricot Plum), 20 to 25 feet in height, is of pyramidal habit, and in April carries a profusion of white flowers. Another good plum is *P. salicina* (*syn P. triflora*), the Japanese Plum. It is a tree between 15 and 30 feet or more in height, and in April is covered in masses of small white flowers.

**THE BLACKTHORN OR SLOE** (*P. spinosa*) — The double form of this, namely *P. spinosa flore pleno*, makes a lovely bush or small tree between 10 and 20 feet in height and in April is covered in clusters of little snow-white double flowers. In the variety *P. s. purpurea* the oval, saw-edged foliage is tinted a bronzy-purple and the flowers are flushed with rose—a delightful and useful little tree.

**BIRD CHERRIES** — These vigorous ornamental trees vary from 20 to 50 feet in height. *P. Padus* (European Bird Cherry), with its saw-edged, ovate leaves, heart-shaped at the base, and clusters of slightly fragrant white flowers in April and early May is distinctly pleasing. The small black fruits which follow are very bitter and of little account. One of the most showy varieties is *P. Padus Watereri* (Knap Hill or Waterer's Bird Cherry). This produces long racemes of single white flowers; there is also a good double form of this *var flore pleno*. Choice varieties are usually increased by means of grafting in the open in spring on to *P. Padus*. A Manchurian species, *P. Maackii*, a tree up to 35 feet high, is conspicuous and valuable because of its mahogany-coloured, flaky bark in winter. It has racemes of white flowers in spring.

**CHERRY LAUREL** (*P. Laurocerasus*). See separate article, *Prunus Laurocerasus*.

**Culture (Prunus Genus)** — All these trees and shrubs do best in a deeply-dug and well-manured soil rich in lime or in
localities with a chalk subsoil. Ground deficient in lime should be well-dressed with old mortar rubble, chalk or lime before the trees are put in.

**Planting**—Plant these deciduous species and varieties from November to March—the earlier the better—in sunny positions sheltered from north and east winds.

**Pruning**—These Prunus flower on growths or shoots and spurs of the previous year. Some have the habit of producing an intermediate kind of shoot, neither quite a shoot nor quite a spur, which is generally called a “stub.” The shoots proper, those which extend from the framework of the tree, usually bear no flower buds and are found in great quantity on young trees. The pruner should select from among them those which he needs to form his tree. Where this is already well-shaped and filled, the shoots may be left untouched, as they will then merely lengthen, but where the tree is thin and “unfurnished,” the tips of some few selected ones should be cut back in order that they may break sideways and fill the vacant places. The useful growths are the “stubs” which do not make long wood. A tree which produces these in numbers is usually free flowering and should be touched as little as possible. With standards, pyramids and bushes, once the tree is properly formed, shoots not wanted for training in to replace old wood should be cut out in winter. In July, all useless side-shoots should be stopped back and in winter the “stubs” should be pruned back to two or three buds. All old, broken and diseased wood must be cut out, the mere process of keeping the tree open usually secures a good supply of healthy ripened wood, and this will produce flower-bearing growths or spurs spontaneously. In the main, pruning the various species of Prunus for bloom should be as for the ordinary fruitering plum trees, but prune out weak wood and dead flower-shoots after flowering.

All trees of this genus “bleed” badly when the branches are cut. When pruning large branches or when using the saw, the wound should always be dressed with tar to stop the issuing out of the sap. When much cutting-back has to be done, November is a good month in which to do the work, as the sap is then at its lowest ebb.

**Propagation**.—To propagate, sow seeds (stones) when ripe on
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a sheltered border outside, and for safety, a few under glass; graft outside when the sap is moving in spring, or bud in the open in summer on stocks already referred to. If preferred, cuttings, 3 or 4 inches long, made of the half-ripe young shoots, of some species, such as P. incisa, P. subhirtella and varieties, and P. triloba fl. pl, may be rooted in July in a close propagating frame.

*Prunus Laurocerasus. (Cherry Laurel)

Popular evergreen shrubs from eastern Europe and the Orient, which grow quickly to a height of from 1 to 25 feet or more, and are useful for evergreen hedges and screens. They thrive in almost any soil, notably in chalk. Distinct and useful forms are: *P. L colchica, 8 to 10 feet, with attractive large foliage and which is free-flowering in open and sunny positions; P. L magnifolia, 15 to 25 feet, a strong-growing, large-leaved variety (leaves 9 to 10 inches long and one-third as wide), P. L parvifolia, a dwarf variety, 1 to 2 feet in height, with distinct lanceolate leaves and a very useful shrub for the front of borders and in shady positions, P. L rotundifolia, 10 to 15 feet, a distinct hardy variety with leaves 5 to 6 inches long and 3 inches wide, and *P. L. Zabeliana, a dwarf spreading variety, 1 to 2 feet high, useful as an undergrowth and an attractive flowering shrub.

*P. lusitanica, the Portugal Laurel, from Spain and Portugal, is a useful shrub some 15 to 25 feet in height, and rarely 40 to 60 feet, with large glossy, dark green, ovate foliage, and which, if unpruned, carries in June, long racemes of small white flowers.

Culture.—Plant both the Cherry Laurel and the Portugal Laurel in April or early October. Prune carefully in May and September with a knife, shears must not be used or the large leathery leaves will be spoiled and become unsightly as they wither. Propagate by means of cuttings, 6 to 12 inches long, made of semi-ripe growths in August and September, or ripened shoots, 12 to 18 inches long, inserted on a border outside in October.

Laurels as Hedge Plants.—Both laurels make fast-growing evergreen hedges, which in a few years will reach a height of from 5 to 10 feet or more. Careful pruning, however, is necessary as above stated. When some years old, cut out old
wood to encourage new shoots to break from the base of the main stems. If neglected, parts will die back and the whole shrub will then have to be cut down almost to the ground. Plant young bushes to form a hedge 2 feet apart during the second half of April or in September and October.

**Pseudolarix Fortunei** [syn. *P. Kämpferi*]. Golden Larch (*Conifera*)

A hardy and attractive deciduous coniferous tree from China, growing from 25 to 70 feet or more high, and thriving in welldrained chalk-free loam in sunny and sheltered positions. In autumn the tufts of linear, needle-like leaves assume a golden hue.

_Culture._—Plant from November to February, the first-named month for preference. No pruning is required, except to keep a leader to the trees in early winter. Propagation is carried out by means of imported seeds sown in a frame whenever available.

**Pseudotsuga Douglasii** [syn. *P. taxifolia*]. Douglas Fir (*Conifera*)

Hardy rapid-growing evergreen coniferous trees, natives of the western districts of America and related to the Abies. They are of attractive habit, with needle-like foliage, and reach a height of between 100 and 200 feet. They thrive in full sun and in any fairly good, cool, moist, chalk-free soil and on account of their rapid growth are excellent timber trees much used in plantations and in landscape gardening, as they are very ornamental, apart from the wood they supply in commerce. In addition to the species or type commonly called the Green Douglas Fir, several forms or varieties are in cultivation: _Var. casia_, the Grey Douglas Fir (100 to 200 feet), has greyish-green leaves and is not so fast in growth; _var. glauca_ (70 to 100 feet) is also slower in growth, it has thicker glaucous leaves and smaller cones; _var. macrocarpa_ (100 to 200 feet) has larger cones. Recently _P. japonica_ (70 to 90 feet), from Japan, and _P. smensis_ (75 to 100 feet), from China, have been introduced.

_Culture._—Plant from September to November and in April. No pruning is required. Propagate by means of seed sown when ripe on a border outside or in pans in a cold frame.

**Ptelea** (*Rutaceae*)

A genus of hardy deciduous shrubs or small trees up to about
PTELEA — PTEROCARYA

25 feet tall, natives of North America and with aromatic, saw-edged, trifoliate leaves and fragrant flowers followed by peculiar flat, hop-like fruits. *P trifoliata* (Hop Tree) is the best-known species. It grows some 15 to 25 feet in height and the small and sweetly-fragrant yellowish flowers, borne in summer in corymbose clusters, are followed by the interesting hop-like seeds or fruits from which the tree derives its name. More recently-introduced species are *P isophylla* (10 to 15 feet), from North America, and *P polyadema* (15 to 20 feet), native of Arizona, northern Mexico and Texas.

*Culture* — These plants do well in almost any light and open position and in well-drained ordinary soil and may be increased by means of cuttings of young shoots about 3 inches long with a heel inserted in late summer in a frame, or seeds may be sown in a frame in early spring. Plant from November to February. Prune after flowering only to thin the branches and to shape the trees.

Pterocarya. Wing Nuts. (*Juglandaceae*)

A small genus of hardy and rapid-growing deciduous trees which resemble in appearance and habit the Juglans (Walnut) group, to which they are, in fact, related. *P caucasica*, a native of the Caucasus, and one of the hardiest and best-known species, makes a fine handsome tree from 60 to 100 feet in height and often wide-spreading in habit. It has large pinnate compound leaves and deeply-indentated bark, being very similar in appearance to *Juglans nigra* (Black Walnut). The small, greenish, unisexual flowers are borne on short male catkins, the longer female catkins are found on the same tree, and the small winged nuts which follow are an interesting feature. This tree thrives in moist loamy soils and is thus a useful subject for growing near the water's edge, and on the banks of ponds and streams. *P c dumosa* is a distinct shrubby dwarf variety from 6 to 10 feet in height. Not so well known are *P rhoifolia*, a species from Japan, 60 to 90 feet in height, with attractive foliage of 19 or 21 leaflets; *P stenoptera* (*sinienssis*), from China, 60 to 90 feet in height, very hardy and notable for the curious and conspicuous membranous "wings" which grow on the main leaf stalks in between the leaflets, also for its extremely rapid growth, and *P. Rehderiana*, a hybrid of fast growth, probably 75 to 100
feet in height, between *P. caucasica* and *P. stenoptera*, with intermediate characteristics.

**Culture**—Plant preferably in November, but also in February, if desired. Prune in late summer, but only when necessary to shape the trees and to thin crowded branches. Propagation may be carried out by means of seeds sown in a frame when available, by cuttings of young side shoots some 3 to 4 inches long taken with heel in late summer and placed in gentle bottom heat, by root cuttings in early spring in a close frame; and by layering in autumn.

**Pteroceltis Tatarinowii.** (*Urticaceae*)

A small semi-hardy (until well-established) deciduous tree growing from 20 to 40 feet high. It is a native of northern and central China, is somewhat similar in appearance and habit to the Celtis, to which it is indeed related, and is chiefly of botanical interest. This tree has saw-edged, lanceolate foliage and the inconspicuous unisexual flowers, which appear in May, are followed by interesting winged fruits similar to those of the elm.

**Culture**—Plant from November onwards in ordinary well-drained loamy ground. In late summer, attend to the leading shoots, remove thin stems where crowded and shorten very long branches. To propagate, insert in late summer cuttings, 3 to 4 inches long, made of half-ripe young shoots in a close frame with slight bottom heat; or layer in autumn.

**Pterostyrax hispidum** (*Styraceae*)

An attractive hardy deciduous shrub or small tree, a native of China and Japan and growing some 10 to 20 feet or more in height. It has large ovate, saw-edged leaves and in June and July produces a profusion of long pendulous racemes of white, scented flowers, which hang beneath the drooping branches and are followed in autumn by attractive seed vessels.

**Culture**—This plant likes a sunny position and a good loamy soil. Plant in November. No pruning is necessary, but if unshapely, shorten long growths and thin crowded shoots after flowering. May be propagated by means of seeds sown in a frame when ripe, also by layering in autumn; and by cuttings, 2 to 3 inches long, made of the half-ripe young shoots and inserted in a close frame in August.

**Punica granatum.** Pomegranate (*Lythraceae*)

A deciduous shrub, from Persia and Afghanistan, which loves a
PUNICA — PYRACANTHA

light rich loam and in the open requires the protection of a warm south wall, except in the south and west of the British Isles. In such a position it will grow, on an average, to a height of 20 feet or more, and from June to September bear showy scarlet or white flowers, either single or double. Fruits occasionally ripen following a hot and sunny summer, but they lack the flavour of those grown in southern Europe.

Culture — Plant pomegranates in late April or May. The waxy blossoms are carried on the vigorous terminal sprays, pruning should, therefore, be limited to cutting out weak shoots and thinning crowded wood in the autumn, leggy branches can be cut hard back into the old wood in February. Propagate by means of seeds obtained from abroad and sown under glass on arrival, by cuttings of semi-mature shoots, 2 to 3 inches long, inserted in slight heat in late summer or taken in September with a thin heel of old wood and inserted on a sheltered border outside under a bell-glass, and by grafting varieties on to seedlings of the type in March in a close frame.

Purshia tridentata. (Rosaceae)
A grey-leaved deciduous shrub, a native of the western parts of North America and growing from 4 to 6 feet or more in height. The leaves are small and obovate and three-lobed at the apex. The small yellow flowers are borne in May.

Culture — Plant in light soil in sunny positions in November. Prune at the end of May after flowering to shorten long growths, when required, and to thin crowded branches. Increase by layering in autumn, or cuttings, 2 to 3 inches long, made of the half-ripe young growths, will root towards the end of July in a close frame.

Purslane. See Atriplex.

Pyracantha. Fire Thorn, Evergreen Thorn. (Rosaceae)
These have been called Crataegus Pyracantha. They are very beautiful evergreen bushes closely related to the Crataegus and often used as climbing shrubs. In autumn, when covered with their beautiful brilliant scarlet, orange or yellow berries, they fully justify their name of “Fire Thorn.” The bushes grow from 6 to 20 feet or more in height, have smallish, narrow oval leaves, usually saw-edged, and from May to June carry masses of white flowers followed by attractive fruits in autumn and winter.
ABG OF SHRUBS AND TREES

Culture—These plants thrive in any good light loam in sunny positions and against walls and fences. If their full beauty is to be retained throughout the winter, the bushes must be netted against birds. Sow seeds when ripe under glass or insert cuttings made of sturdy young shoots, from 3 to 4 inches long, taken with a thin heel of old wood in late summer and inserted in gentle bottom heat, or in October insert the cuttings on a sheltered border outside, covering them with cloches or handlights. The young plants should be grown in pots until ready for planting out in their permanent positions as they transplant badly. Plant in October or April. Prune to shape in early spring, but cut as little as possible, or bloom and berries will be lost. When pruning is necessary, however, cut hard back into the old wood in April, sacrificing a season's flowers and fruits.

Species and Varieties—
P. angustifolia (Orange-yellow Berries, 10 to 15 feet, or more against a wall), a little less hardy than the other species, but a very attractive wall shrub for the average British garden and a beautiful evergreen bush in the south and west of the British Isles; P. coccinea (Bright Red Berries, 10 to 15 feet, or more against a wall); *P. c. Lalandii (Orange-red Fruits, 10 to 15 feet); P. Gibbsii (Large Red Fruits, 10 to 18 feet); *P. G. yunnanensis (Smaller Red Fruits, which ripen late and hang on the bushes until spring, 10 to 18 feet); *P. Rogersiana (Orange-scarlet Berries, 6 to 10 feet); and *P. R var fructu luteo (Rich Yellow Fruits, 6 to 10 feet). All are natives of China, except P. coccinea (S Europe).

Pyrus. (Rosaceae)
A large genus of hardy deciduous trees and shrubs. Most species and varieties bear attractive blossoms and later on handsome fruit. They vary greatly in character, and at first sight some might seem to belong to different genera. Indeed, the older botanists made at least twenty genera, including Pyrus, Malus, Sorbus, Aucuparia and Aria. The majority are trees; only a few are bushes. Few of our spring-flowering trees are more lovely when in bloom or bear more attractive and striking fruits, and for this reason the characteristics of the more valuable species and varieties are given.

Flowering Crabs. P. Malus (Crab Apple).—The most
PYRUS

lovely of all the Pyrus section are the Flowering Crabs, their soft and delicate blossoms and handsome red or gold fruits make them of inestimable value in the garden. Below is given a brief description of some of the best varieties to grow.

*P. arbutifolia*, the Red Chokeberry, is a small and very ornamental bush some 6 feet in height. It carries corymbs of white or white, flushed-pink flowers during May followed by clusters of bright red fruit in autumn, at which time the narrow, oval and saw-edged foliage also turns red.

*P. baccata*, the Siberian Crab, is one of the best of the crabs, both in regard to blossoms and fruits, and is “snowed under” with white, pink-tinted blossoms in April. In autumn the branches are loaded with brilliant red fruit which often remains on the tree until the early spring. This attractive round-headed tree averages 20 to 30 feet in height, and, because of its distinctiveness and beauty, should be grown as a lawn tree in every garden of large size.

*P. crataegifolia*, a native of northern Italy, is a bush or small tree growing up to 7 feet high at Kew. It has hawthorn-like leaves, corymbs of white flowers in June and dull reddish-yellow fruits in autumn.

*P. floribunda*, the popular “Japanese Crab,” is another very lovely tree, rather spreading in habit, reaching some 12 to 15 feet high and nearly or quite as much in diameter. In April and May it is smothered in blossoms, which are crimson in bud but open rosy-pink and as they become older turn pale pink to white. The fruit is not particularly attractive. The variety *P. f. atrosanguinea* has flowers of a somewhat deeper shade and turning to a rosy-pink.

*P. Halliana* (syn. *P. Parkmanni*).—This crab is generally represented in gardens and nurseries by the semi-double variety with dark red buds that open to rosy-pink flowers. It was introduced from Japan about 1863 by Dr G. R. Hall. The single-flowered type is of more recent introduction, coming from western China. It forms an attractive small-round-headed tree, 15 to 20 feet in height, covered with rich rosy-pink blossoms in May.

*P. iowensis*, the Iowa Crab, is a tree growing up to about 30 feet high and having coarsely-serrate and tomentose leaves and in May soft pink flowers up to 2 inches across. It is a
native of the United States. The Bechtel Crab, var. *flore pleno*, the semi-double flowered form, 10 to 25 feet in height, is one of the most distinct of flowering Pyruses. It has large and delicate pink blossoms up to 2½ inches across, these have a delicious fragrance. It is one of the latest crabs to flower, being at its best early in June.

*P. japonica*. See *Cydonia*.

*P. Malus*, the Wild or Common Crab Apple, makes a beautiful hedge-row tree some 30 feet in height, but is hardly good enough for garden culture. Many beautiful varieties and hybrids are available, however, and the varieties. *P. M. coccinea, P. M. pendula and P. M. rosea* (April—May) are quite worthy of notice. *P. M. Paradisiaca* is the Paradise Stock so much used by nurserymen when grafting and budding commercial varieties of apples and the flowering crabs.

*P. M. aldénhamensis* is an attractive tree 8 to 12 feet or more in height and has masses of wine-coloured blossoms in spring and purple-red fruit in autumn. The leaves and young shoots are purple-hued.

*P. M. arnoldiana*, a hybrid of *P. floribunda*, grows from 15 to 20 feet in height and carries on graceful semi-pendant branchlets pink flowers fading to white.

*P. M. Eleyi* (*P. Niedzwetzkyana x P. spectabilis*) is a hybrid with vinous red flowers which open early and blend with the coppery young foliage. It grows from 15 to 20 feet in height. The bunches of wine-red fruits are particularly attractive in autumn.

*P. M. Lemonei* is a purple-flowering Crab even more intense in colouring than *P. M. Eleyi*. It reaches a similar height to *P. M. Eleyi*.

*P. M. Niedzwetzkyana*, the Manchurian Crab, is a conspicuous tree some 15 to 20 feet in height and with reddish-purple blossoms and fruit. The medium-sized, oval and saw-edged foliage also assumes a purple hue as the season advances.

*P. prunifolha* is another tree that can always be relied upon to furnish a good show, both of blossom (white to pink) and fruit (scarlet, crimson, orange, yellow, or greenish, according to variety). It averages about 20 feet in height and is chiefly remarkable for its brilliant fruit in autumn.

*P. purpurea* is a hybrid between *P. floribunda* and *P. Niedzwetzkyana*, some 15 to 25 feet in height. It has attractive rosy-crimson flowers and purple fruits.
PYRUS

*P. Sargentii*, a native of China, is a delightful bush of spreading habit. It grows some 5 to 6 feet in height and the clusters of blossom are white, each individual flower being quite large. The fruit is a brilliant red. Budded on standard and half-standard crab stocks, it makes an attractive and graceful tree.

*P. Scheideckeri*, acclaimed by many people as the best of all the crab apples, forms a compact and round-headed tree some 15 to 20 feet in height. It has saw-edged, ovate foliage, and in May is enveloped in masses of pale rose-pink blossom.

*P. sikkimensis*, the Sikkim Crab, is a very attractive and distinct tree, from 18 to 20 feet in height, and with masses of white flowers in May, followed by pear-shaped fruits. Unfortunately it is all too infrequently seen in our gardens.

*P. spectabilis*, the Chinese Flowering Crab, is quite equal to the best of the Flowering Crabs. It has a spreading head of roundish, saw-edged foliage on a stem 20 to 30 feet or more in height, and in spring is covered with clusters of large deep pink blossoms, which look very like those borne by the ordinary fruited apple tree. As the buds expand, the flowers gradually lose their rosy hue. The fruit is of very little decorative value. The semi-double variety *P. s. flore pleno* is even more attractive, and the flowers last in beauty longer than those of the single variety *P. s. var. Kaido* has larger and richer rosy-pink blossoms, red in the bud. Both of these grow to similar dimensions to the type.

*P. theifera* is a Chinese species with attractive white flowers. In habit the tree, which has stiff and rather spreading branches, is more like a cherry than a crab. It grows up to 25 feet in height.

*P. tornoides*, a distinct Chinese species, makes a small tree up to 25 feet high. It has attractively-lobed leaves, white flowers in May and very pleasing translucent yellow and red fruits.

A number of hybrid Crabs are showy both in flower and fruit. *Dartmouth* has white-tinted flowers and plum-shaped fruits with a purplish-red bloom; *John Downie*, white flowers and conical orange and scarlet fruits, *Veitch's Scarlet*, white-tinted flowers and scarlet fruits. All average up to from 20 to 30 feet in height.
PEARS.—*P. communis* (The Pear). The flowering pears are notable for their masses of white blossoms. They carry heavy crops of pear-shaped fruits in autumn, but they do not possess the rich colouring of the fruits of the Malus section of the genus. *P. communis*, the Common or Wild Pear, makes a graceful tree which grows up to 35 feet in height and in spring is shrouded in masses of white blossom. It is useful for ornamenting park lands and large pleasure grounds.

*P. salicifolia*, the Willow-leaved Pear, is a native of the Levant and forms an attractive and graceful tree, some 15 to 25 feet in height, with silvery leaves and creamy-white flowers in April. There is a charming weeping variety of this.

*P. sinensis*, the Chinese Sand Pear, is a tree some 20 to 30 feet or more in height and has white flowers in early April, followed in autumn by pear-shaped fruits.

MOUNTAIN ASH.—*Pyrus Aucuparia* (Mountain Ash or Rowan Tree).—These attractive hardy deciduous trees are of value both on account of their flowers and because of the wealth of red berries they bear in late summer and autumn. They are quite a distinct section of the genus, and because of the pretty white flowers in April and May and the handsome pinnate leaves and brightly-coloured berries, are a great attraction in any garden and make valuable small trees for town gardens. The type is *P. Aucuparia*, our native Mountain Ash, a handsome tree averaging some 25 to 40 feet in height and with a profusion of white blossom in April and May and clusters of red berries later. There is a variety, *P. A. fructu luteo*, 20 to 30 feet, with strikingly handsome bright yellow fruit. Other good varieties are: *P. A. asplenifolia*, 20 to 25 feet, with foliage so deeply indented that it is quite fernlike, and *P. A. discolor*, 20 to 25 feet. *P. Vilmorinii*, a small tree from 12 to 18 feet high, is a native of western China and has pinnate, fern-like leaves. At first the fruits are rosy-red, but these fade to white, tinted rose. The blossoms are white.

WHITE BEAMS AND SERVICE TREES.—*P. alnifolia*, a native of Japan and Korea, is a graceful tree and, as the name implies, has leaves very like those of the Alder. It reaches a height of from 25 to 40 feet. The berries are bright red and are borne in profusion in May.

*P. Aria* (The Common White Beam) is well worth growing
PLATE 6  CAMELLIA TREES IN FULL BLOSSOM
PYRUS

in the pleasure grounds or hedge rows. It attains a height of about 30 to 40 feet and in May and early June carries flat clusters of creamy-white blossoms. The prominently-ribbed oval-shaped leaves have a bi-serrate edge and are bright green above, but covered with white downy felt on the undersides. They take on lovely orange and brown tints in autumn. The oval and brightly-speckled orange-red berries ripen in autumn and usually last well through the winter. It is a native of Europe (including Britain), Asia Minor and northern Africa. Good varieties of this tree are *P. A. chrysophylla* (30 to 40 feet), *P. A. majestica* (30 to 45 feet, notable for its attractive leaves and larger leaves, these being up to 6 to 7 inches long and half as wide) and *P. A. sulphurea* (30 to 40 feet).

*P. intermedia*, the Swedish White Beam, is an attractive tree, 25 to 45 feet high, with irregularly-lobed leaves which are greyish-white beneath. This tree bears corymbs of white flowers and red fruits. It is a native of Europe, including Britain.

*P. pinnatisfida*, the Bastard Service Tree, is a native of Europe and has attractive leaves that are mostly pinnate. The white flowers are borne in May and are followed by bright red fruits. It makes a tree from 25 to 40 feet high.

*P. Sorbus* [Syn *P. domestica*] (Service Tree) This is a large and slow-growing tree, often attaining a height of 30 to 50 feet. On account of its striking compound, pinnate leaves, very like those of the Mountain Ash (*Pyrus Aucuparia*), it has been used in park plantings. It is a native of southern and eastern Europe. The greenish-brown fruit is borne in clusters of five or six, they are apple-shaped in the variety *P. S. maliformis* (30 to 50 feet), and pear-shaped in the variety *P S pyriformis* (30 to 50 feet). They are, however, not of such decorative value as the richly-tinted foliage in autumn. The white flowers are borne in May.

*P. Torminalis*, the Wild Service Tree, is a native of Europe, including Britain. It grows from 30 to 50 feet high, sometimes more, and has bright green, deeply-cut leaves, and in May bears corymbs of white flowers, these are followed by russet-brown, speckled fruits.

**CULTURE**—Plant from November to early March, preferably in November. Trench the ground 2 feet deep and liberally.
manure it before planting; give also occasional mulches of
rotted manure. The Pyruses thrive especially on chalk or
lime soils, so add chalk to the ground when trenching soils
known to be deficient in lime. Prune in winter to thin and
shape the trees. Propagate the species by means of seeds
sown in autumn, as soon as ripe, preferably under glass, and
the hybrids and varieties by budding in July and grafting in
spring in the open. Use as stock for budding or grafting one
of the common trees in the group, the Crab or Paradise for
the Malus section, *P. communis* for the Pear section, the
Mountain Ash for the Aucuparia section, the White Beam
(*P. Aria*) for the Aria section and the Service Tree (*P. Sorbus*)
for the Sorbus section.

**Quercus. Oak.** (*Cupulfolae*)

A very large genus of hardy deciduous and evergreen trees,
the majority of which are too big and slow in growth for
small gardens; they are, indeed, more suited to pleasure
grounds, parks and woodlands. The massive and stately
forms of a few species, and the brilliant autumn tints of
others make them well worth planting in large-sized gardens,
although it is many years before they reach anything approach­
ing maturity. The curious and interesting fruits, the acorns
in their cup-like holders, form an additional feature. Besides
the deciduous forms, there are evergreen species also very
handsome and ornamental and in the main, like the deciduous
members of the genus, slow-growing trees and bushes. There
are, a few species from Japan which, although large trees
when of ripe years in their native habitat, in the British
Isles rarely attain more than bush form, except in mild districts
in the extreme south and west. All are handsome and
ornamental and, in spite of their slow growth, are well worth
growing where space permits. The evergreen oaks, both in
tree and bush form, make excellent shelter and screen trees
*Q. Ilex*, the Holm Oak, makes a good hedge, as it stands
cutting well. As already stated, the oaks are divided into
two classes, the deciduous and the evergreen, and under these
headings are given details of some of the most desirable and
ornamental species.

**Deciduous Oaks**—*Quercus castaneaefolia*, the Chestnut-
leaved Oak, which grows up to about 100 feet in height, is a
QUERCUS

stately, spreading tree with bright green, longish oval and deeply-indented leaves, very like those of the Spanish Chestnut (*Castanea sativa*). It is a native of the Caucasus. There is a beautiful tree at Kew, 65 feet high.

*Q. Cerris*, the Turkey Oak, a native of south-eastern Europe and Asia Minor, is one of the faster-growing species and is useful for road and avenue planting as it eventually forms a fine tree some 50 to 100 feet in height. The long, oval-shaped leaves are deeply-indented, the lobes tapering to a point, instead of being rounded as in the case of most of the oaks. It likes a chalky soil. There is a handsome variegated-leaved variety, *Q. C. variegata* (50 to 60 feet), which has its leaves edged with silver-white. *Q. coccinea*, the Scarlet Oak of the eastern districts of North America, makes a stately tree some 50 to 75 feet in height and has beautiful red foliage in autumn. Its variety, *Q. c. splendens*, the Knap Hill Scarlet Oak, makes a fine tree reaching a height of 50 feet or more, and in September or October the long, oval, deeply-lobed leaves, which throughout the summer have been a bright polished green, take on most vivid crimson and scarlet hues. *Q. conferta*, the Hungarian Oak, a native of south-eastern Europe, is one of the most desirable and handsome of the large-leaved oaks. This tree reaches from 50 to 100 feet in height. In autumn its large, bright green, obovate and heavily-lobed leaves assume rich hues of yellow and brown.

*Q. Libani*, the Lebanon Oak, a native of Asia Minor, is an outstanding and graceful tree some 30 feet in height. Its long and narrow leaves have numerous small indentations round the edges, similar to those of the common holly.

*Q. Lucombeana*, the Lucombe Oak, a hybrid *Q. Cerris* × *Q. Suber*, is sub-evergreen and forms a large wide-spreading tree 70 to 100 feet in height.

*Q. L. var. fulhamensis*, the Fulham Oak, a seedling from the Lucombe Oak, or a hybrid of the same origin, is a tree some 70 to 80 feet in height and more upright in growth.

*Q. Mirbeckii*, a native of Spain, Portugal and northern Asia, which in thirty years or under will make a handsome tree some 50 to 75 feet in height, is one of the best and most useful of all the oaks, whether deciduous or evergreen. Its glossy, dark green leaves, which are greenish-blue beneath, remain unfaded.
on the tree until the New Year and in mild winters till early spring.

*Q. palustris*, the Pin Oak, is one of the N. American Red Oaks, which in autumn have beautifully-tinted foliage. It makes a graceful tree, 50 to 80 feet in height, rather dense in habit and with deeply-lobed foliage.

*Q. pedunculata*, the Common or English Oak, makes a stately tree, reaching eventually a height of 70 to 90 feet or more. The formation of the foliage is almost too well-known to need description, the leaves being an elongated oval in shape and deeply-Indented. With the appearance of the leaves come the golden tassels or male flowers, followed in due course by the well-known acorns. There are numerous varieties (thirty are grown at Kew), the best of which are *var. Concordia*, the Golden-leaved Oak (30 to 50 feet), with rich golden-yellow foliage; *var. fastigiat*, the Cypress Oak (60 to 80 feet), an attractive pyramidal tree, *var. silicifolia*, the Fern-leaved Oak (30 to 50 feet), with deeply-cut leaves; *var. purpurascens* (40 to 50 feet), with showy, deep purple foliage; and *var. pendula*, the Weeping Oak (20 to 30 feet).

*Q. rubra*, the Red North American Oak, is a majestic tree of spreading habit with large, oval and deeply-lobed leaves, greyish-green on the undersides. It attains a height of from 80 to 90 feet, and the foliage is very striking in autumn.

*Q. sessilifolia*, the Durmast Oak, a native of Europe, including Britain and Asia Minor. It is a fine deciduous tree, growing from 50 to 80 feet in height and carrying larger leaves than those of the Common Oak, *Q. pedunculata*. This tree also differs from that species in having longer-stalked leaves, but stalkless, or nearly stalkless acorns. This handsome species is not so widely grown as it might be.

*Q. Turners*, Turners' Oak, is a hybrid between *Q. pedunculata* and *Q. Ilex*. It makes a tree 40 to 50 feet high and retains most of its leaves until early spring. There are, of course, numerous other deciduous species and varieties, but space will not permit of their inclusion here.

*Culture of Deciduous Oaks*—Plant oak trees from November to March, preferably in early November. They will thrive in most deeply-cultivated ground, including chalk soils, and grow especially well on rich loamy soils. Prune only to thin
and shorten very long branches, with a view to forming a well-balanced tree and to maintaining a good leading shoot to each tree. Sow the acorns in autumn as soon as ripe on a border outside, as under dry conditions they soon lose their vitality. Sow acorns of rare species and varieties singly in small pots in a frame in autumn as soon as ripe, or graft the rare species and varieties on a border outside in spring on the Common Oak, *Q. pedunculata*, and the American Oaks on *Q. rubra*.

**EVERGREEN OAKS** — *Q. ilex*, the Evergreen or Holm Oak, from the Mediterranean region, is a handsome large evergreen tree, reaching a height of from 60 to 80 feet, and is undoubtedly the best of the evergreen oaks for British gardens, except in cold districts. It has a large head, and the long, spreading branches carry masses of dense and small, glossy, dark-green lanceolate foliage. As it stands cutting well, it makes an excellent hedge, and makes an ideal background for an herbaceous border or for flowering shrubs. It is a good screen or shelter tree, forming a most useful wind-break, and grows well near the sea. The dark green foliage shows considerable variation, being often silvery-grey and "felted" underneath. Unfortunately, this tree sheds its old leaves early in June and makes rather a litter when the garden should be at its best; this drawback, however, is more than counteracted by the beauty and usefulness of the tree in winter.

*Q. coccifera*, the Kermes Oak, a native of the Mediterranean region, is interesting as the host plant of the Kermes insect, from which the scarlet dye was obtained before the advent of chemical dyes. It forms a shrub or small tree, 10 to 15 feet high, and carries small holly-like leaves.

*Q. densiflora*, the Tan Bark Oak of California and Oregon, forms a tree 50 feet or more in height and has leathery, oval leaves from 2 to 5 inches long and half as wide.

*Q. myrsinaefolia* (syn. *Q. vibrayeana*) is an attractive evergreen oak reaching up to 50 feet or more in Japan. It has lustrous green, lanceolate leaves.

*Q. Suber*, the Cork Oak, is a small tree not exceeding 25 feet in height, with smooth, leathery, oval leaves. From its rough bark cork is obtained. It is indigenous to southern Europe and northern Africa and thrives in the warmer localities of the British Isles.
Some species of evergreen oaks hardly ever grow very large in the British Isles, unless in the south and west, although in their native land, Japan, they make trees up to 30 feet or more in height. The best of these are $Q. \text{acuta}$ (Akakasi), which grows from 30 to 35 feet high in Japan, but at present is merely a large shrub at Kew. It has leathery, glossy green, oval foliage and does not like chalk in the soil; $Q. \text{cuspidata}$, which also does not like chalky soil, a tree 40 to 50 feet high in Japan, but only a large shrub at Kew; $Q. \text{glabra}$; $Q. \text{glauca}$; and $Q. \text{phillyreaoides}$. The last three all grow some 10 to 30 feet high in Japan, but are usually shrubs in British gardens.

**Culture of Evergreen Oaks.**—Grow young evergreen oaks in pots until large enough for their permanent positions, as they do not transplant readily. Plant when the trees are 1 to 2 feet high in April or May in a sunny position and in deep good loam. Thin out the branches in summer when required. To propagate, sow acorns singly in small pots in a frame, in September or October as soon as ripe. For propagating special varieties, grafting is often resorted to, using $Q. \text{Ilex}$ as a stock. This is best done under glass in spring. Cuttings of Evergreen Oaks made of half-ripe growths, 3 to 4 inches long, with a thin heel of old wood may be rooted in gentle bottom heat in late summer.

**Quince.** See Cydonia

**Raphiolepis. (Rosaceae)**

These are interesting evergreen flowering shrubs, allied to the Photinias, and having thick and leathery, deep green, oval leaves. They grow quite well in ordinary soil, providing the latter is well-drained, but thrive best in a mixture of equal parts of loam, leaf-mould or peat and sand. Although $R. \text{Delacourei}$ and $R. \text{japonica}$ are really quite hardy, it is worth while giving them the protection of a south or west wall in cold districts and wind-swept gardens. The shrubs grow from 4 to 10 feet in height, but when planted against a wall, they will often run up to 10 to 20 feet. The flowers, which are fragrant, are borne in terminal clusters at the ends of the shoots from June onwards and are later followed by round, black berries. The best three are $R. \text{masca}$ (White, tinged with Pink; the least hardy of the three, 4 feet); $R. \text{japonica}$
Raphiolepis — Rhamnus

[syn. R ovata] (White, 4 to 8 feet); and the hybrid, *R. Delacourii [R. japonica x R indica] (Rosy-pink, 5 to 10 feet).

**Culture** — Plant in April or May. Pruning is rarely necessary except on a wall, but when needed, should be done in April. Propagation is usually carried out by means of cuttings, 3 to 4 inches long, made of the ends of the half-ripe side-shoots and inserted in a close frame, preferably with bottom heat, in late summer, by seeds sown when ripe in a cool greenhouse or frame; and by layering in autumn.

**Redbud.** See Cercis.

**Redwood.** See Sequoia

**Retinospora.** See small-growing Cupressus and Thuya

Cupressus obtusa and vars (Hinoki Cypress), C. pisisera and vars (Sawara Cypress), beautiful trees from Japan, are frequently grown under this name, especially the dwarf varieties planted in rock gardens, as also is Thuya orientalis decussata (syn. T. ericoides).

**Rhamnus.** Buckthorn. (Rhamnaceae)

Though botanically a large genus of more than fifty species of hardy deciduous and evergreen small trees and shrubs, comparatively few are of interest or value in gardens. Rhamnus Alaternus, a native of south-western Europe, is a useful evergreen shrub growing from 12 to 15 feet high; var angustifolia (10 to 12 feet) is a smaller-leaved variety of close and dwarf habit, and var. variiegata (10 to 12 feet) is one of our best hardy silver-variegated shrubs. All are quick growers and very hardy, and will live and do well in most soils. The greenish-yellow flowers of R Alaternus, borne in May, are followed by black berries. R. Purshiana, a native of the western regions of North America, is an interesting small deciduous tree growing from 10 to 20 feet high or more in a wild state, and from which “Cascara Sagrada,” the aperient medicine, is obtained. It is equally hardy. R cathartica, a deciduous shrub growing from 10 to 20 feet high, is the Common Buckthorn. It has oval-shaped, saw-edged leaves and carries a profusion of glossy black berries. This tree, which prefers a chalky soil, is a native of Europe, including Britain, and of north-western Asia. Other well-known deciduous species are: R damatica (10 to 25 feet), and R. Frangula (10 to 20 feet, the British Alder Buckthorn).
A B O OF SHRUBS AND TREES

Culture—Plant the evergreen species in late autumn or early spring, and the deciduous species from November to early March. Prune to thin and shape the trees and bushes, the deciduous species in winter, the evergreens in late April. Propagate by means of cuttings of semi-mature young shoots, about 2 to 4 inches in length, taken with a heel and inserted in a cold frame or handlight in August or September; by layering in autumn; or by sowing seed when ripe in a cold frame or cool greenhouse.

Rhaphithamnus cyanocarpus. (Verbenaceae)
A pretty, but somewhat tender, evergreen wall shrub or small tree. It is a native of Chile, and in warm, sunny, sheltered situations in the milder southern districts of the British Isles, assumes tree-like dimensions, namely 10 to 20 feet or more in height. It has small, dark green, ovate foliage and the bright blue berries, which follow the small pale blue flowers in April, are an additional attraction.

Culture.—Plant in well-drained rich loam in late April or May. Prune after flowering only to train against a wall and to shape the shrub. Increase by seeds sown when ripe under glass; by cuttings made of the side shoots, 2 to 4 inches long, preferably with a thin heel of old wood, and inserted in a close frame in late summer or under a bell-glass, and by layering in autumn.

Rhodocistus. See Cistus vaginatus.

Rhododendron. (Ericaceae)
The hardy evergreen rhododendrons are amongst the most handsome and attractive of all flowering shrubs. They are remarkable for the rich and delicate tints of their blooms. The bushes thrive best in positions sheltered from north and east winds and when sheltered from the mid-day sun. Rhododendrons prefer well-trenched and well-drained moist, peaty loam, but will grow in almost any soil deficient in lime or chalk, providing it contains ample decaying vegetable humus, such as leaf-mould, and is sufficiently porous to let the fibrous roots make their way through it. Most species, varieties and hybrids flower from March to June, but a few early kinds bloom from Christmas onwards and several in July and August. Rhododendrons are readily transplanted so long as the ball of earth round their roots is not broken. Where the soil is
RHODODENDRON

clayey and apt to cake, it should be made more porous by the addition of coarse grit or sand. Rhododendrons are surface-rooters and will not thrive on steep, dry, sunny banks, where the roots would parch up in summer. They require some sun each day, however, but the sunlight should be intermittent. Ideal conditions are Oak or Beech woodlands with moist, cool vegetable soil and where sufficient trees have been cut out for ample light to reach the rhododendrons. When liberally supplied with a leafy-mulch to keep the roots cool and moist, the popular hybrids, *Pink Pearl*, *Mrs. E. C Stirling*, *Alice*, *Lord Palmerston* and similar varieties are very extensively planted in the full sun in lawn beds with great success, but even these last longer in flower when partially shaded from the mid-day sun. From the above remarks, it will readily be understood why the bushy species of rhododendrons do so well in open glades and at the edges of a wood, they will not, however, flower entirely under the shade of trees.

For the majority of the bushy species, the atmosphere should be cool and moist. The habit of growth of many of the smaller-leaved bushy species will depend on the situation or climate afforded. When grown grouped together in an exposed site open to the weather, they will form dense, flat-topped masses little more than 1 foot to 30 inches in height; if, however, they are placed in semi-shade and given a moist atmosphere, they will make bushes 3 or more feet in height. The plants referred to are those on the borderline between the large-leaved shrubby evergreen species and the dwarf alpines.

The early-flowering species, varieties and hybrids furnish bloom from December to early March. Chief among these are *R dauricum*, *R mucronulatum*, *R moupinense*, *R Nobleanum*, *R Rosy Bell*, *R Rosa Mund*, and *R praecox*, all hardy plants, but the flowers are easily damaged or ruined by frost. These should be planted in the most sheltered positions available.

When purchasing rhododendrons, it is important to give some consideration to the situation and conditions under which they will have to grow. Care should be taken that those chosen are suitable to the climate and situations. Species of rhododendrons are found in the wild state in such diverse situations and in climates so varied that it is not difficult to
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select species and varieties that will thrive in most gardens, whatever the situation or aspect. There are, for instance, the dwarf alpine species that grow high up on the mountain sides, next we find the azaleas and small-leaved bushy rhododendrons which will grow in open positions, provided the soil is cool and moist; the third group are the bushy evergreens which thrive lower down among other shrubs and trees; then lower down still come the tall tree rhododendrons, the denizens of open but shady glades in the forest. The first class needs but little shade and is excellent for the rock garden, the second class grow and flower freely in sunny, but not dry, conditions; the third benefits from partial shade from strong mid-day sun and is the most useful evergreen group for the garden; the fourth class, or forest kinds, are only suitable for woodland planting and for very sheltered gardens and the mild climate of the south and west of the British Isles.

CULTURE—Planting.—Plant and tread the soil very firmly in October or November, or at any time in winter and spring, up to May, providing the soil is not water-logged and that there is no frost. When planting, add some well-rotted leaf-mould. Fresh stable manure must not be used. Rhododendrons, including azaleas, transplant so readily that it is usual to set the young plants fairly close for immediate effect, and then every third or fourth year for the first few years to replant the bed, border or groups, the alternative is to space out first those to remain permanently 6 feet or more apart, and to plant smaller lime-hating subjects, such as azaleas, kalmias and heaths, to furnish the ground until the rhododendrons require the space.

Pruning.—Do not prune young bushes, merely keep them in shape by means of "stopping" and removing dead blooms immediately after flowering. When it is necessary to cut-back old and straggling plants, the operation is best effected in April when new growth is re-commencing. Top-dress annually between March and May with leaf-mould and old hot-bed manure, spent hops or mushroom bed manure to keep the roots cool during the summer. Water regularly during dry weather, especially if the summer after planting is hot and dry. The foliage may also be sprayed in the evening after hot, dry days.

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Propagation—Seeds, cuttings, layers, grafts and occasionally buds provide ready means of increasing rhododendrons.

Seeds—The species may be increased by means of seeds sown thinly from February to April, in a compost of peat and coarse sand in very carefully-drained pots or pans, in a moist greenhouse frame, or a cold frame, kept close and shaded. Rhododendron seeds are very fine and need no covering with soil. Sometimes a light sprinkling of fine sand is given. Prick off the seedlings about \( \frac{1}{2} \) inch apart when large enough to handle into well-drained pans, using a compost of sandy peat and leaf-mould, this time adding one-third part of lime-free loam if available. Take care not to set the seedlings in too deeply; above all, do not cramp or bend the small straight roots.

Grafting—The large-leaved hybrid rhododendrons are propagated in their thousands by grafting on *R. ponticum* in close frames from about January until May.

Layering.—Though a slower method of propagation, numerous rhododendron specialists propagate or will buy only rhododendrons increased by layering instead of grafting. Practically all rhododendron species and hybrids can be propagated by layering. Autumn is the best time to put down layers of well-matured growths.

Cuttings.—Most species, the azaleas and *R. caucasicum* hybrids, including *Cunningham's White* and *Nobleanum*, may be increased by cuttings made of semi-matured shoots, 3 to 5 inches in length and with a heel, inserted in sandy peat in a frame with slight bottom heat in summer and autumn.

Select, if at all possible, a sheltered position in rather open woodland for the rhododendron nursery; failing this, the nursery garden or reserve border in which the young plants are to be set out should be well-sheltered from north and east winds and the strongest rays of the sun should be warded off by means of hedges or deciduous trees and bushes, the roots of these, however, must not be allowed to sap the goodness from the ground of the nursery beds in which the young rhododendrons are planted. The young plants can be set out 4 to 12 inches apart, according to their size, in the nursery from about the end of April to June. The soil should be deeply-dug and ample leaf-mould or peat, together with a liberal
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dressing of sand, unless the ground is naturally porous and open, should be worked into the top soil. Tread the ground firmly before planting and make the soil firm round the young plants. Water will have to be supplied liberally if the summer proves dry, but a good mulch of well-rotted leaf-mould as soon as planting has been completed, will go far towards keeping the soil moist.

**Species, Varieties and Hybrids** — These are, of course, innumerable, and it is only possible here to mention a few of the most useful in each section

*R arboreum*, a native of the Himalayas, is one of the parents of many of the hardy hybrids, it is itself a semi-hardy evergreen tree or large shrub, some 30 or more feet in height and suitable for growing out-doors in the milder southern and western localities of the British Isles. It has longish, tapering, oblong leaves, glaucous, brownish or silvery on the undersides. The flowers, which appear in early spring, vary from white to deep red.

*R. Augustinum* is a fair-sized evergreen Chinese shrub from 5 to 8 feet in height. The flowers (April-June) are lilac-blue.

*R. A azureum* is one of the best forms with blue flowers.

*R. auriculatum* is a Chinese species said to form a large evergreen bush or small tree, up to 25 feet or more high in a wild state. The large hairy leaves are as much as a foot long and nearly half as wide. It is most interesting because the large white fragrant flowers open in August, and is being used as a parent in the endeavour to raise a late summer-flowering race of rhododendrons.

*R. barbatum*, a large evergreen Himalayan shrub, grows from 10 to 20 feet high and has bright crimson flowers.

*R. calophytum*, a beautiful Chinese species with long and tapering oval evergreen leaves, carries white flowers blotched with crimson at the base. It is quite hardy and grows from 12 to 15 feet or more in height.

*R. campanulatum* is one of the best Himalayan rhododendrons for general garden cultivation. It forms a sturdy evergreen bush, 5 to 10 feet or more in height, and has oval leaves, densely felted on the undersides, and produces in April flowers of varying shades of rosy-mauve and rosy-purple.

*R. cinnabarinum*, a native of Sikkim and Bhutan, is a large
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shrub, 6 to 12 feet in height, with long and tapering oval glaucous evergreen foliage and distinct cinnabar-red flowers in May and June. The variety Blandfordiaeform has red and yellow flowers and variety Roylez, rosy-red blooms. Both grow from 6 to 10 feet in height.

*R. decorum* is a large-leaved evergreen Chinese species, growing 6 to 10 feet or more high and belonging to the Fortune series. The fragrant white or pink-tinted flowers open on the different seedling bushes from early May to the end of June.

*R. discolor* is a most attractive late-flowering species from China. It grows 5 to 10 feet or more in height, has long and tapering oval foliage and large fragrant white flowers in June and July.

*R. Fortune* is a hardy Chinese evergreen species from 8 to 10 feet in height, has oblong tapering leaves and large and fragrant pale pink flowers, turning to white.

*R. Griersonianum*, a species from western Yunnan, is a spreading evergreen bush, some 4 to 6 feet in height, with striking brick-scarlet flowers in June.

*R. Griffithianum* (syn *R. Aucklandii*). In the south and west of England, the west of Scotland and Ireland, but particularly in Cornwall, this species from Sikkim and Bhotan is of outstanding merit. It has large and luxuriant leathery leaves and the great bell-shaped flowers, which appear in April, are 6 to 7 inches across. They open as a pale pink to a pure waxy white and possess a pleasing fragrance. This shrub, which reaches a height of from 10 to 18 feet, is the predominant parent in some of the most popular present-day hybrids, notably *Loder*, *Loder's White*, *kewense*, *Isabella Mangles* and *Pink Pearl*.

*R. hippopheoides*. This charming blue-flowered and small-leaved Chinese shrub, 3 to 4 feet high, is most striking when planted in heath-like masses or as a specimen clump in a fairly large rock garden. It is in flower in April and May.

*R. mucranthum*, a very hardy shrub, some 5 feet or so in height, has small oval evergreen foliage, much like that of the Ledum, and in July produces terminal clusters of tiny white fragrant flowers.

*R. mucronulatum* is a beautiful early-flowering species growing 4 to 6 feet in height and bearing rosy-purple blooms in January and February.

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*R. neriflorum, an evergreen shrub from Yunnan, is of rather close growth. It reaches from 4 to 5 feet or more in height and in April and May carries rich scarlet-crimson flowers.

*R. orbicolare, a dwarf evergreen shrub of rounded habit from western China, attains, when grown in partial shade, some 2 feet or more in height and 4 feet or more in width, and bears very attractive clusters of campanulate flowers that are rich rose-pink in colour.

*R. ponticum, the common woodland rhododendron, is a fine hardy evergreen shrub, 10 to 15 feet in height and with long and narrow oblong leaves. The flowers appear in June, and are of various shades of mauve-purple. It is a most valuable shrub for covert planting, and has been very largely used in breeding the hardy race of large-leaved rhododendrons and is unsurpassed as a stock for grafting.

*R. racemosum, a lovely little shrub from western China, reaches from 1 to 4 feet or more in height, has small obovate or oval evergreen foliage and bears a profusion of tiny pink to white flowers in April and May. Like R. hypophaeodes, already referred to, it is attractive massed or used as a specimen in the rock garden and for lawn beds.

*R. rubiginosum, from Yunnan, is a useful hardy evergreen shrub, 6 to 15 feet in height, with long and tapering oval foliage and bearing in April and May rose-lilac flowers with dark markings. It will grow in chalk soils.

*R. yunnanense, a hardy semi-evergreen or evergreen species from Yunnan, reaches from 6 to 12 feet in height, has long and narrow oval foliage and in May, flesh-pink flowers with dark markings.

ROCK GARDEN SPECIES. (Rhododendrons).

*R. calostrolum is a beautiful dwarf and spreading shrub from north-east Burma, that grows up to 1 foot and sometimes more in height. The flowers, borne in May, are flat or saucer-shaped and rich rose in colour.

*R. chryseum, from Yunnan, is a dwarf and bushy plant, 1 to 2½ feet high, and has pure yellow flowers in May.

*R. ferrugineum, the "Rose des Alpes," is a small-leaved hardy evergreen shrub, a native of the Alps of southern Europe and reaching from 1 to 4 feet high. It has narrow and shining
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oval leaves, and is attractive as a single plant or when grown in a mass. The flowers, which appear in June, are reddish-pink in colour. There is a white variety, *album.*

*R. hippophæodes.* See earlier description.

*R. hirsutum,* found on the Alps of south-central Europe, is a dwarf hardy evergreen shrub up to 2½ or 3 feet high and is useful for ordinary garden soils as it grows on limestone rocks. The flowers, borne in June are rosy-pink.

*R. impeditum,* a species from Yunnan, is a charming dwarf shrub, 6 to 12 inches in height, with small lavender-blue, mauve or purplish-blue flowers in May. Seedlings vary in colour.

*R. intricatum,* from western Szechuan, China, is another hardy dwarf evergreen shrub, 6 to 12 inches high. It is similar to the above, does not grow more than a foot in height, has small, roundish leaves and pale blue flowers that appear two to three weeks earlier than those of *R. impeditum.*

*R. keelticum* is a semi-prostrate shrublet with rose-purple flowers in May, a native of south-eastern Tibet.

*R. ledoides,* from Yunnan, is a lovely dwarf shrub up to 2½ feet high. It carries clusters of rosy-white or pale rose, daphne-like flowers in May.

*R. muliensis,* a native of south-western Szechuan, China, is a useful little shrub, 1½ to 2½ feet high, and is attractive when planted in small groups. It carries small bright yellow flowers in May.

*R. racemosum.* See earlier description.

*R. repens,* found both in Yunnan and Tibet, is a choice creeping species, up to 6 inches or more in height, and carrying tubular crimson flowers in early May.

*R. rupestris,* a species from Yunnan, is a pretty lime-loving dwarf shrub, 1 to 2 feet high. It carries deep plum-purple flowers during the first half of May.

*R. saluenense,* from north-western Yunnan, is a hardy dwarf shrub, 1½ to 2 feet high, with rosy-crimson flowers in May.

*R. scintillans,* a native of Yunnan, is a good dwarf species growing up to about 2 feet high and having small oblanceolate scaly leaves and bearing during the first half of May bright lavender-blue flowers.

*R. telematricum,* a species from Yunnan, is a small-leaved dwarf shrub, up to 3 feet high, with rosy-purple flowers in May.
*R. Williamsianum*, a native of Szechuan, China, is a hardy dwarf shrub of spreading habit, from 1 to 3 feet or more in height. It bears clusters of lovely rose-pink flowers during the first half of May.

**SELECTIONS. (Rhododendrons).**

**LARGE-LEAVED HARDY HYBRIDS:** Alice (Rich Pink, 8 to 10 feet); Britannia (Scarlet-crimson, 5 to 6 feet); Coombe Royal (Delicate Pink, 6 to 8 feet); Doncaster (Bright Red, 5 to 6 feet); Everestianum (Pale Mauve-purple, 6 to 8 feet); Fastuosum flore pleno (Semi-double, Rosy-lavender, 8 to 10 feet); Gomer Waterer (White, tinted Lilac-pink, 6 to 8 feet); Hugo de Vries (Rich Pink, 8 to 10 feet); Loder's White (Large White, 8 to 10 feet); Lord Palmerston (Deep Rose, 8 to 10 feet); Michael Waterer (Scarlet-crimson, 8 to 10 feet); Mrs. E. C. Stirling (Blush Lilac-pink, 8 to 10 feet); Mrs. R. S. Holford (Deep Salmon-pink, 8 to 10 feet); Pink Pearl (Flesh Pink, 8 to 10 feet); and Snowflake (Late, White, 6 to 8 feet).

**EARLY-FLOWERING EVERGREEN VARIETIES.**—Nobleanum (Rosy-scarlet, 8 to 12 feet, Flowering from January onwards or earlier); Christmas Cheer (Pale Rose, 3 to 4 feet); Præcox (Rosy-lilac, 4 to 6 feet; Small Dark Green Leaves); R. venustum (R. caucasicum x R. arboreum) [syn. R. Jacksonii] (Dwarf and Spreading habit, 4 to 6 feet, Soft Pink); Cornubia (Scarlet, 8 to 12 feet, valuable in the south and west of the British Isles); Luscombei (Deep Rose-pink, 10 to 12 feet); Bodartianum [syn. R. Smithii album] (White arboreum cross, 8 to 12 feet); Handsworth Early Red (5 to 6 feet); and Rosa Mundi (Pale Rose, 4 to 5 feet).

**GRIFFITHIANUM HYBRIDS** (which benefit by shelter from cold winds, late spring frosts and hot mid-day sun): Loderi (Pale Flesh to White, 10 to 12 feet); Isabella Mangles (Rich Rose-pink, 8 to 10 feet); Beauty of Littleworth (White, with few Spots, 10 to 12 feet); Dr. Stocker (Creamy-white to White, 8 to 10 feet); and Manglesii (White, spotted Chocolate, 10 to 12 feet).

**MISCELLANEOUS HYBRIDS:** Azaleoides (R. viscosum x R. maximum) (White, tinged with Lilac, Semi-evergreen, 5 to 6 feet, Fragrant, June-flowering); Broughtonii aureum (Azaleodendron Hybrid, Bright Yellow, 3 to 5 feet); Smithii aureum (Azaleodendron Hybrid, Pale Yellow, 4 to 5 feet); Cunning-
PLATE 29
Viburnum rhytidophyllum
Right, Viburnum opulus

Left, Viburnum theiferum
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Ham's White (8 to 10 feet); Cunningham's Blush (8 to 10 feet); and Cunningham's Sulphur (3 to 5 feet). The last three are hardy hybrid rhododendrons, and useful evergreen shrubs for town gardens.

Azaleas.—For garden decoration the horticulturist will always treat the azaleas, which are mainly deciduous shrubs, as distinct from the large-leaved evergreen rhododendrons. However, they are now generally accepted as one family from a botanical standpoint. In a broad sense, one can say that the deciduous rhododendrons or azaleas thrive better in open and sunny positions than do the large-leaved rhododendrons, though the ideal conditions for the azaleas are also positions with some shelter from the mid-day sun, and such as provide a cool and moist root-run.

The following species of azaleas, or deciduous rhododendrons, are worthy of cultivation in gardens, though they are now largely superceded by the named varieties or hybrids raised by cross pollination and selection in gardens over a long series of years.

*R. calendulaceum*, the North American Flame Flower, is a shrub from 6 to 8 feet or more in height and has vividly rich red, orange, and yellow flowers in June; *R. dauricum*, from Siberia, is a bush from 3 to 5 feet high and from January to March bears rosy-purple flowers; *R. Kämpferi* is a deciduous or semi-evergreen Japanese species forming a spreading bush from 4 to 6 feet or more in height and having flowers of rose or rosy-purple in May; *R. luteum* (*Azalea flava*), the common yellow azalea of the Caucasus, is a beautiful late-May-flowering shrub, 8 to 10 feet in height and useful for mass planting on banks and in dells in the open woodland; *R. molle* (*Azalea mollis*), a Japanese azalea with blooms about the middle of May, of rose, orange-red, and rosy-salmon shades, is a beautiful garden shrub, 5 to 7 or 8 feet in height, and is grown by the hundred thousand for greenhouse decoration in early spring; *R. occidentale* (5 to 8 feet), a species from the western districts of North America, has white or pink-tinted flowers blotched with yellow in July and is one of the parents of the race of *occidentalis* azalea hybrids; and *R. obtusum* (2 to 4 feet), the reputed parent, or one of them, of the now very numerous race of *Kurume* azaleas.
These (the Kurume azaleas) are evergreen shrubs of varying heights and with small leaves. They produce quantities of flowers in varying shades of colour during May. A selection of the best varieties should include: *Hinodegiri* (Fiery-red, 2 to 4 feet); *Hinomayo* (Deep Pink, 2 to 3 feet); *Hatsu-giri* (Rosy-Mauve, 2 to 3 feet), *Benmgiri* (Pale Pink, 2 to 3 feet), and *Kirm* (Deep Rose, 2 to 3 feet).

*R reticulatum* (*Azalea dilatata*), a beautiful April-flowering Japanese species from 4 to 5 feet or more in height and with purple, unspotted blossoms; *R sinense*, the Chinese golden-yellow azalea, 4 to 6 feet in height, is used very freely as a parent in the raising of the present-day hybrid azaleas; *R Vaseyi*, an azalea from the mountains of Carolina, grows from 5 to 8 feet high and has pale pink to white flowers opening in early May in advance of the leaves, and *R viscosum*, the Swamp Honeysuckle of the eastern districts of North America, is a bushy shrub from 4 to 7 or 8 feet high, with pink to white flowers that are glandular, hairy and deliciously fragrant.

Nursery catalogues still group the many named varieties in sections, more or less according to their origin, but so much intercrossing and selection has been carried out that the groups are more imaginary than real. The species used in the development of these beautiful hardy deciduous flowering shrubs include: *R calendulaceum*, *flavum*, *molle*, *nudiflorum*, *occidentale*, *sinense* and *viscosum*.

**GHENT VARIETIES** *Coccinea speciosa*, *Emilie*, *Fanny*, *Géant des Batailles*, *Gloria Mundii*, *Ignae Nova*, *Josephine Klinger*, *Nancy Waterer*, *Pallas*, *Sang de Gentbrugge*, *Unique*, and *William III*.

**MOLLIS VARIETIES**: *Admirable*, *Alphonse Lavelle*, *Elizabeth*, *J C Van Thol*, *Mrs L J Endtz* and *W. E Gumbleton*.


**OCCIDENTALIS HYBRIDS** *Exquisite*, *Graciosa*, *Magnifica*, *Rosea* and *Superba*.

**Culture.**—The cultivation of azaleas or deciduous rhododendrons is very similar to that of the large family of evergreen rhododendrons, except that azaleas will thrive in more open and sunny positions than do the large-leaved evergreen.
kinds. The plants grow equally well in a lime-free loam, with leaf-mould added, or in peat. As the masses of fibrous roots lift with large balls of soil, transplanting may be freely undertaken from November to early March, provided the condition of the soil and weather permit. No pruning is required, unless it is occasionally to cut out a piece or two of old and worn-out wood on which there are no new growths. To prevent the production of seeds, the blooms should be picked off when they fade. Seeds sown under glass in cool conditions in February or March, cuttings, 2 to 3 inches long, made of the half-ripe young shoots with a thin heel of old wood and inserted in sandy peat in a close frame with preferably a little bottom heat during July; and layering in autumn all provide ready means of increase.

**Rhodoleia Championii** (*Hamamelidaceae*)
An interesting, but somewhat tender, evergreen from China, reaching up to 10 to 12 feet or more in height and bearing large rosy-pink flowers in early spring. It is only suitable for cultivation outdoors in the milder districts of the British Isles, where it should be grown in warm sheltered situations, preferably against a wall.

**Culture** — Increase by cuttings made of the half-ripe side shoots, 3 or 4 inches long, taken in late summer and inserted in a close frame preferably with slight bottom heat. Plant in April or May in well-drained loamy soil with leaf-mould and peat added. Only prune to shape and thin the bushes when required, this is best done early in May, after flowering.

**Rhodothamnus Chamæcistus.** (*Ericaceæ*)
A charming little dwarf-growing evergreen shrub from the Austrian Alps. From March to May it carries on the current year's shoots small clusters of pale pink cistus-like flowers with long purple anthers. The small glossy-green oval leaves are edged with bristles and the plants, which grow from 6 to 12 inches in height, do best in a well-drained peaty or lime-free soil with lumps of sandstone in it to conserve moisture. These little shrubs are most pleasing subjects for sunny sites in the rock garden.

**Culture.** — Propagation may be carried out by means of carefully removing pieces, with roots attached, from the outsides of the clumps in May after flowering or in September.
Plant during the second half of April. No pruning is required, but if the growths become very crowded, a few of the oldest should be removed after flowering.

**Rhodotypos kerrioides.** *(Rosaceae)*

A distinctive and handsome hardy monotypic deciduous shrub, a native of China and Japan and resembling the *Kerna japonica* in form and habit, and, indeed, sometimes called the White-flowered Kerna. It grows some 5 to 6 feet in height, has saw-edged oval leaves, tapering to a point at the apex, and during summer produces an abundance of large pure white single flowers, very similar in appearance to those of a wild white rose.

**Culture**—It thrives under similar conditions to those advised for the Kerna, in good loam, and may be propagated by means of cuttings, 3 to 4 inches long, made of semi-ripe shoots and placed in gentle bottom heat in summer or in a cold frame in August, also by division or offsets early in November. Plant from November to early March. Cut old flowering wood back to the ground or to strong young growths on the main branches after flowering.

**Rhus.** Sumach. *(Anacardiaceae)*

These are hardy deciduous trees, shrubs and climbers that grow from 6 to 25 feet in height and are chiefly cultivated on account of their decorative foliage, which in autumn assumes the most lovely tints of purple, crimson and orange. *R. Cotinus* (Venetian Sumach), a native of central and southern Europe and sometimes known as The Smoke Bush, is a fine bushy shrub of from 6 to 12 feet in height. From July to September it is loaded with loose, hairy, plumose panicles of small smoke-grey flowers, and in autumn the simple ovate-shaped foliage assumes rich yellow shades. *R. C. var. atropurpurea*, 6 to 10 feet in height, with purple panicles, is often called the Burning Bush. *R. C. var. folius purpureus*, 6 to 10 feet in height, has wine-coloured foliage and is a most attractive shrub. *R. cotinoides*, the Chittam Wood of the southern districts of the United States of America, grows from 8 to 20 feet high and is by many authorities considered one of the most lovely of all autumnal foliage shrubs. Its simple oval-shaped leaves pass through the most glorious shades of scarlet, claret, and orange, and particularly so if the soil in which
the plant grows is rather poor. *R* *trichocarpa* is a Japanese Sumach with attractive pinnate leaves of eleven to fifteen or seventeen leaflets. In autumn the foliage assumes rich orange-scarlet colouring. I have only seen small trees up to 5 or 6 feet high, but Professor Sargent gives the height of native trees as up to 25 feet. *R* *typhina* (Stag’s Horn Sumach) is a rather large shrub or small tree of Eastern North America, from 10 to 25 feet in height. The small greenish flowers, which appear in June, are followed in autumn by brightly-coloured fruits, at which time the saw-edged pinnate foliage also assumes rich shades of orange and red. *R* *t* *var* *lacinata* is an attractive shrub some 10 to 20 feet in height, with handsomely-cut leaves.

**Culture** — The Sumachs all like a sunny position and good loam (except *R. cotinoides*, which gives better results if planted in rather poor soil). Plant from November to February. Cut out old and dead wood when required, and in late autumn or before growth starts in early spring shorten very long growths which are likely to spoil the shape of the trees and shrubs. To propagate, sow seeds in March under glass, insert cuttings, 3 to 5 inches in length, made of matured shoots with a thin heel of old wood under bell-glasses in September, or layer in September, also several by root cuttings in early spring.

**Note.** — Some of these trees and shrubs are poisonous and should never be grown where children are likely to get at them. Gloves must be worn when handling them. *R. Toxochodendron* (syn. *Ampelopsis Hoggu*), Poison Ivy. This resembles in leaf and autumn colouring the Virginian Creeper, and in bygone days must have been rather extensively planted both as a bush and wall climber, for its rich autumn colouring. It makes a bush some 5 to 6 feet in height, but as a climber on trees or against a wall will run up to 30 feet or more. Now that its poisonous (toxic) properties are known, it is not desirable to plant this shrub or climber.

**Ribes.** Flowering Currants and Gooseberries (*Saxifragaceae*) A large genus of spring-flowering shrubs, mostly deciduous, but a few are evergreen. The genus includes the currant and gooseberry and the shrubs mostly range from 3 to 8 feet in height. *R* *alpinum* (Alpine Currant), 6 to 8 feet in height, is widely scattered over the Northern Hemisphere, including
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Britain; *R. aureum, 5 to 6 feet, is the Buffalo Currant of the western regions of North America. Both have saw-edged lobed foliage and carry rich yellow flowers in April. *R. sanguineum (Flowering Currant), 6 to 8 feet in height, has attractive tooth-edged, five-lobed foliage, and bears rosy-red flowers in April; var. atrorubens, 4 to 5 feet, with rich deep-red flowers, is not quite so vigorous as the type; var. Brocklebankii, 2 to 3 feet, has attractive golden foliage; *var. King Edward VII, 4 to 6 feet, with deep crimson flowers, is dwarfer in habit than the type; and var. splendens, 4 to 6 feet, has rich red blooms. The varieties of R. sanguineum are valuable April-flowering shrubs, and are particularly useful subjects for planting in partially-shaded borders and in the open woodland. On dewy mornings and during showery weather the leaves and flowers fill the air with a pleasing perfume.

R. Gordonianum (R. aureum x R. sanguineum), 6 to 8 feet, has red and yellow flowers in April. R. laurifolium is an evergreen species, 2 to 4 feet in height, from western China, of spreading habit and carries greenish-yellow flowers in February and March. A distinct species is R. fuchsioides (syn. R. speciosum), the Fuchsia-flowered Gooseberry, which comes from California. It grows some 6 to 8 feet in height, or more against a wall, has saw-edged, five-lobed (sometimes three-lobed) foliage and in June carries small fuchsia-like flowers hanging under the branches. Though practically hardy, the protection of a wall is desirable for this species in the colder districts of the British Isles. R. m Niger is the parent of the Black currant of commerce; R. vulgare is the parent of the Red and White currants. R. Grossularia, the parent of the Garden Gooseberries, has greenish-yellow flowers.

Culture.—All species thrive in sun or partial shade and in ordinary soil, and are useful subjects for growing near the sea. Plant from November to February. Thin out well and cut away old and weak wood in May after flowering. To propagate, seeds can be sown under glass in February or March, but the Ribes propagate so readily from cuttings and layers that this method of increase is seldom practised. Take cuttings, 9 to 12 inches long, of matured young growths in October and insert on a sheltered border outside, or layer in September.
Robinia. Locust or False Acacia. (Leguminosae)

Beautiful hardy deciduous trees and shrubs coming from North America. They grow from a few feet to 80 feet high, according to the species, variety or hybrid, and in June or July bear drooping racemes of rose or white flowers like those of the pea. The pinnate foliage is also a very ornamental feature. The trees like a well-drained, light soil, and a sunny position. *R. Pseudacacia, the Locust Tree or False Acacia, is the most common of the genus. A native of North America, it is much larger than the other trees of this group and reaches a height of up to 70 feet or more. It has thorny branches, delicate pinnate foliage, and in June carries racemes of white flowers. Of this tree there are numerous varieties, the best and most distinct being var. Bessomana, 40 to 50 feet in height, which carries a dense head of foliage, *var Decaisneana, 40 to 50 feet in height, with deep rose flowers, var inermis, a small mop-headed spineless variety, 10 to 25 feet in height, much planted in London suburban gardens, although it rarely flowers, and var semperflorens, 40 to 50 feet in height, which flowers almost the whole summer through. One of the most attractive species for the garden is R. hispida, the Rose Acacia, a native of the southern regions of the United States of America. This tree grows to a height of 8 or 9 feet, has pinnate foliage and in June and July carries racemes of deep pink flowers. Its *variety macrophylla (4 to 6 feet) is even more desirable, as it bears larger racemes and larger blooms of deeper hued flowers. *R. Kelseyi is an attractive small tree, some 6 to 9 feet in height, from the eastern districts of the United States of America and in June produces rose-coloured flowers. R. viscosa, the Clammy Locust of the southern districts of the United States of America, is a tree 25 to 40 feet in height with pinnate leaves and rose-coloured flowers at the end of June and during July.

Culture—Plant in November. Do not prune, but merely trim to keep the tree in shape and cut out dead wood in late summer before the leaves fall. Propagate by means of seeds sown under glass as soon as ripe, by suckers, or by grafting in gentle heat, or outside, in spring on to the common species, R Pseudacacia.

Rock Rose. See Cistus.
ABO OF SHRUBS AND TREES

Romneya. Californian or Tree Poppy. (*Papaveraceae.*) These are deciduous flowering shrubs or shrubby perennials, coming from California, growing from 5 to 8 feet high and blooming from July to October. *R. Coulteri* reaches a height of from 5 to 7 or 8 feet, has silvery-grey compound leaves and large, snowy-white, poppy-like blooms with golden yellow centres and a delightful fragrance. The flowers are often more than 6 inches in diameter. *R. trichocalyx* has flowers of a similar colour and borne at the same time, but the shrub is not as a rule so tall, rarely exceeding 4 or 5 feet in height. It is, however, equally desirable, and is readily distinguished by the bristly calyx, hence its name. At Kew we find it a freer-growing plant.

Culture.—The Romneyas can be grown in most gardens, except those which are cold and wind-swept. They thrive in the sun and in well-drained sandy and enriched loam, in a sheltered position or under a south wall, either inland or near the sea. Plant in April and allow space to spread. The Romneya is rather difficult to establish, but once settled, it will be a joy for years, and will require but little attention. Cut-out all dead wood in the spring and cut back any weak growths, as the flowers are borne on the new shoots of the current year. In severe winters protect the crowns with dry straw, bracken or sacking. To propagate, divide the roots carefully in April and place in gentle heat in a frame, or strike root cuttings, 2 to 3 inches long, made of the thick fleshy roots, in a frame in the autumn.

Rosa. Wild Rose or Briar. (*Rosaceae.*) The value and beauty of the wild roses of many lands is somewhat overshadowed by the richness and splendour of the hybrid bush and climbing garden roses. Each, however, has a distinctive beauty and value of its own in the garden. The charm and elegance of the wild roses may be fittingly displayed in the shrubbery beds and borders, as specimen lawn shrubs, in the more natural parts of the pleasure grounds and as hedgerow subjects; while the innumerable garden hybrids find a place in formal beds and borders, and the climbers on arches, pillars and pergolas. The flowering period of the various species extends from May to August, many possess a delicious fragrance and distinctive foliage. The beauty of
ROSA

the brightly-coloured hips bespangling the bushes for a lengthy period in autumn must not be forgotten; and the same should be said of their very distinctive habits of growth and their armature when leafless in winter. These characteristics give the wild roses a value at least equal to many hardy shrubs

SPECIES — A selection of the most distinct and useful species may include the following

*R. alpina* (syn. *pendulina*), the Alpine Rose, is a native of the mountains of central and southern Europe. It is variable in size, from 4 to 6 or 8 feet high, and bears pink flowers in June and attractive pendulous bottle-shaped rich red hips in autumn.

*R. arvensis*, the Ayrshire Rose, is a native of Europe, including Britain, and is a distinct species with thin trailing or climbing shoots, 6 to 10 feet or more in length. It carries white flowers in June and dark red oval fruits.

*R. Banksiae*, the Banksian Rose, is a native of China. It is rather tender for general culture in gardens, but is an old and popular favourite for hot sunny walls, where it will reach a height of 30 feet or more. The wild type with white flowers is seldom seen, the varieties cultivated in British gardens, namely: *var. lutea* (Single Yellow), *var. flore albo pleno* (Double White), and *var. flore luteo pleno* (Double Yellow) being varieties that have been cultivated in Chinese gardens for hundreds of years.

*R. canina*, the Dog Rose of our hedgerows, is one of our most attractive wild shrubs and grows 5 to 8 feet or more high. It is a common plant of the North Temperate Zone and bears clusters of pink or white flowers in June and July, these are followed by rich red fruits in autumn. This species is largely used as a stock for budding dwarf and standard garden Roses.

*R. damascena*, the Damask Rose, grows from 2 to 4 feet in height, and is thought to be a hybrid between *R. gallica* and *R. moschata*. It has been cultivated in eastern Europe and the Orient for hundreds of years. The best-known form of the Damask Rose is *R. d. variegata*, the York and Lancaster Rose, which has striped red and white petals.

*R. davurii*, a Chinese species, runs up to from 7 to 10 feet or more in height and bears rose-pink flowers in June and pendulous clusters of large, shining red, bottle-shaped fruits in autumn.
R. rugosa, a Chinese species of elegant bushy habit, forms a large bush 8 or 9 feet high and more in diameter. It has small fern-like leaflets and in May and June carries bright yellow blossoms, followed by black fruits.

R. lutea, the Austrian Briar, and var. pumcea, the Austrian Copper Rose, are natives of the Orient. It is only rarely that this rose, growing 3 to 4 or 5 feet high, develops its wonderful colouring in British gardens and then it is usually against a hot sunny fence or wall.

R. moschata, the Musk Rose, is a species found growing wild in its numerous forms from southern Europe to the Himalayas and China. Several of the most distinct forms have been given varietal names, notably var. Brunonis, var. Pissardii and var. flore pleno. It is a tall-growing climbing rose. Numerous specimens in the Rose Dell at Kew provide a delightful sight in late June and early July, climbing up and over tall rustic poles and a Holly bush 30 feet high. The large clusters of pale yellow to white flowers fill the air with their musky fragrance. The blooms are followed in autumn by quantities of pale orange fruits.

R. Moyesii is the most distinct and valuable of the numerous wild Chinese roses introduced into our gardens during the present century. It forms a bush from 6 to 10 feet in height, and the brilliant ruby or dark wine-coloured flowers, freely borne in June and early July, are from 2 to 2½ inches across. These are followed by quantities of rich red, pear-shaped fruits. The best coloured forms of this rose should be propagated by budding in late July on the Dog Rose, R. canina.

R. multiflora, from China and Japan, is a large bush from 10 to 12 feet high and carries in June clusters of white flowers with prominent golden-yellow stamens. It is one of the parents of the popular race of Polyantha or Multiflora rambling or climbing roses; in which are included the Crimson Rambler and Blush Rambler Roses.

R. omeiensis, the Mount Omi Rose, is a bush or shrub from 8 to 10 feet high and as much or more in diameter. It has elegant feathery leaflets and bears in late May and early June four-petalled white flowers, these being followed by stumpy, pear-shaped fruits varying in colour from red to crimson. One attractive variety has red fruits with yellow thickened
stalks. The variety *pteracantha* is so named because of the large red translucent spines freely borne on the vigorous young shoots.

*R. rubiginosa*, the Sweet Briar, is worthy of a place in every garden, either as a dividing hedge or in the shrubbery border. Growing from 6 to 8 feet or more in height, its fragrant foliage, dainty pale pink blossoms in June and July and the bright-red fruits give it a distinctive value. It is one of the parents of the beautiful Lord Penzance Briars.

*R. rugosa*, a native of China and Japan, is very distinct in habit, forming a sturdy bush from 4 to 6 feet high. It has large, thickish, dark-green leaves, purplish-rose flowers from 3 to 3½ inches across and roundish, bright red fruits an inch in diameter. There are numerous botanical and garden hybrids of this species, notable amongst the latter being *Blanc de Coubert* (Pure White); *Mrs Anthony Waterer* (Dark Red); and *Conrad F. Meyer*, a tall and very spiny pink rose (*R. rugosa* x *Madame Caroline Testout*), a splendid maritime rose.

*R. setigera*, the Prairie Rose of North America, forms growths from 10 to 15 feet in length and is a distinct and beautiful species with corymbs of deep rose blossoms in July and August.

*R. setipoda*, a Chinese species, grows from 6 to 7 feet high and is a vigorous and sturdy bush. The purplish-rose flowers, 2 to 2½ inches across, are freely borne in terminal corymbs in June and early July and give place to large bottle-shaped red fruits.

*R. spinosissima*, the Scotch or Burnet Rose, is a common European species (including Britain) and its habitat extends to northern Asia. It is a dwarf shrub with creeping roots and varies from 1 to 4 or 5 feet in height. The typical wild plants have pink or white flowers, but in gardens the numerous named varieties and hybrids include a wide range of colours and have double and single flowers. There is a famous hedge of these varieties at Dalkeith Palace, Scotland, said at one time to consist of between 80 and 90 varieties.

*R. Webbiana* is a Himalayan rose of distinctive and graceful habit with fern-like leaflets borne on stems up to 5 or 6 feet high. In June and early July it carries pale pink flowers and these are followed by bright red fruits.
**R. Wichuraiana** is a trailing Japanese species with long slender growths, 6 to 8 feet or more in length. Trailing on banks and over tree butts, it does not grow more than 6 or 8 inches high. It has glossy dark-green leaves and bears clusters of pure white flowers in July and August. This is one of the parents of many of our most popular rambler roses, notably American Pillar, Dorothy Perkins and Alberic Barbier.

**Culture** — The wild roses are easy to cultivate in most soils which have been trenched and manured. Wet clay soils can be improved by the addition of leaf-mould with old brick and mortar rubble from a builder's yard. November is the best time for planting, but the bushes move readily from this time to early March when weather and soil conditions are suitable. The pruning of wild roses consists of cutting out old and worn-out growths, either down to the ground or back to strong young shoots on the main stems. Winter, after the beauty of the hips is past, provides the best time to do this work. These roses are increased by cuttings, 6 to 9 inches in length, made of the growths of the year, preferably with a thin heel of old wood, inserted in a cold frame in August and September, or cuttings, 12 to 15 inches long, inserted on a border outside in October and November, by layering in autumn; and by budding on a border outside in late July and August. Experience with individual species will determine the best method. The Scottish roses and a few other species are readily increased by offsets in early November. Seeds sown in a cold frame in late autumn as soon as ripe provide an easy method of propagation, but unless the hips are collected from isolated bushes, the chances are that the result will be hybrids, as no family of shrubs cross-pollinates more readily than does the Rose.

**Rosmarinus officinalis.** Rosemary. (Labiatae)

An evergreen flowering shrub from southern Europe, having aromatic linear leaves felted on the undersides. This plant likes a sunny position and a light, dry soil. It is a good seaside shrub and will, in fact, grow almost anywhere, except perhaps in a few exposed northern gardens and cold, wind-swept areas. It is a good shrub for a dwarf evergreen hedge, growing from 5 to 8 feet high and bearing pale bluish-lilac flowers in April and May. **R. o. prostrata** is a trailing shrub.
suitable for a sheltered site in the rock garden, as it is not quite so hardy as the type. Plant *R o pyramidalis* for a hedge.

**Culture**—Plant in April or early October. Trim to shape by cutting out old wood and shortening long shoots after flowering. To propagate, sow seeds in a frame in March or April, insert cuttings, 2 to 4 inches long, made of the semi-ripe growths under bell-glasses in July and August, or layer in autumn.

**Rowan-tree.** See *Pyrus Aucuparia*.

**Rubus.** Blackberry, Bramble, Loganberry, Raspberry, etc. (Rosaceae)

A large genus of deciduous and semi-evergreen or evergreen shrubs. Not many are worthy of general culture in gardens. The species principally grown are hardy deciduous flowering shrubs or brambles with attractive stems in winter. They grow from 2 to 10 or more feet high, and flower from May to September, according to the species. The ordinary fruiting blackberry, the loganberry and the raspberry are included in the genus. They grow best in an open position and in rich loam. A few of the species of climbing or trailing habit, and those with long slender shoots are valuable for training over arches, pergolas, trellises; several are grown in bush form; a few are selected for the beauty of their flowers; some for the decorative value of their foliage, and others for their white stems so striking in winter when the leaves have fallen. A few of the best species to grow are: *R bisflorus*, the White-wash Bramble, growing from 6 to 9 feet high, a white-stemmed species from the Himalayas that is very attractive in winter, as also is the Chinese variety, *R. b quinqueflorus*, which, in addition to white stems, has attractive yellow fruits; *R. deliciosus*, from the Rocky mountains, a deciduous bush, 6 to 8 feet high with attractive, saw-edged, three-lobed, currant-like foliage and white flowers 2 inches across borne on the previous year's wood in May (this species is best increased by layering); one of the most distinctive of the evergreen species is *R. flagelliflorus*, a climber 5 to 8 feet in height, with large, saw-edged, broad, ovate foliage, heart-shaped at the base and tapering to the apex and felted on the undersides. This bramble bears clusters of white flowers in summer, followed by small edible black fruits; *R. Giraldianus*, a Chinese species with
very attractive white stems, 8 or 9 feet high, and pinnate leaves; *R. laciniatus*, the Cut-leaved Bramble (10 to 20 feet), a garden variety and one of the best climbing edible kinds, with attractive divided leaves and large black fruits in autumn; *R. nigrobaccus*, the High Blackberry of the eastern districts of North America, a deciduous species with stems 5 to 6 feet high terminating in racemes of showy white flowers; *R. odoratus*, deciduous, 6 to 8 feet, with large, lobed foliage and sweetly-scented purple fruits from July to September; *R. thyrsoides fl. pl.*, deciduous (Double White, July and August, 4 to 6 feet), and *R. ulmifolius bellidiflorus*, deciduous (Double Pink, July and August, 4 to 6 feet).

_Culture_—Plant from November to March. Cut-out old and dead wood after flowering. Propagate by means of suckers in the autumn, by division in autumn or spring, or, in the case of true species, sow seeds in a frame in early spring. Brambles may also be increased by layering and by root cuttings placed in early spring in shallow boxes or pots filled with sandy soil in a frame.

The two double-flowered brambles are best propagated by layering in autumn and by cuttings inserted in autumn in sandy soil in a cold frame. Make the cuttings of growths of the year, 6 or 8 inches long, and with a thin heel of old wood. Grow the young plants in pots until large enough to plant in the permanent positions as they do not transplant well.

**Ruscus. (Liliaceae)**

Curious and interesting hardy evergreen shrubs of low-growing habit and semi-woody by nature. The best-known is *R. aculeatus* (Butcher’s Broom), which grows some 2 to 3 feet in height, and has the distinction of being the only monocotyledonous shrub native to the British Isles. It has glossy green, spine-tipped, ovate leaves and small white unisexual flowers that are borne in March, followed in the case of the female form, or the rare monœcious form, by large, bright red berries. The leaves are actually flattened stems, in the middle of which the flowers and the berries are borne. This plant thrives in the shade in ordinary soil and is one of the best shrubs for forming undergrowth in dark places and beneath trees and shrubs. *R. Hypoglossum* is an attractive, dwarf-growing European species, rarely exceeding 18 inches.
RUSCUS — SALIX

in height. It is also valuable to grow beneath trees *R. racemosa*, sometimes included under this group, is really *Danaea racemosa* (Alexandrian Laurel), which see

Culture.—Plant from October to May when weather and soil conditions are favourable. Prune in spring when growths are crowded, cutting out the oldest stems to the ground. Propagation is carried out by means of division of roots or offsets in spring or late autumn, or seeds may be sown in a frame when ripe.

**Ruta graveolens.** Rue (*Rutaceae*)

A hardy evergreen shrub, semi-woody in character and a native of southern Europe. It is usually cultivated on account of its medicinal properties, grows some 2 to 3 feet in height and produces terminal clusters of buff-yellow flowers from June (more or less) to September, which in their setting of glaucous compound foliage are rather attractive

Culture.—This shrub likes a sunny position and sandy loam, and is partial to lime or chalk. Plant preferably in late April. Prune about mid-April sufficient to keep the bushes shapely. Propagation is usually carried out by means of cuttings inserted in a frame in August. Make the cuttings of the half-ripe growths of the year and some 3 to 4 inches long.

**Salix.** Willow. (*Salicaceae*)

A large genus of hardy deciduous trees and shrubs, excellent for growing near ponds or the stream sides in places too damp for ordinary trees. Numerous species are graceful in habit, and have the branches pendulous, semi-drooping or arching, especially in the cases of *S. babylonica*, the common Weeping Willow, 40 to 50 feet in height, with its narrow, lanceolate and serrate-edged leaves; *S. elegantissima* (30 to 50 feet); and *S. vitellina pendula*, the Golden Weeping Willow, a large tree, at times reaching a height of 70 feet. These are among the most ornamental of water-side trees. There are a few species with brightly-coloured stems, the best being *S. vitellina* (Golden Willow), 40 to 60 feet, with yellow stems; *S. v. britzensis* (Cardinal Willow), 15 to 25 feet, with bright red stems; and *S. daphnoides* (Violet Willow), 25 to 40 feet. These are best cut hard back annually at the end of March, and will then throw up a thicket of slender shoots that will be very attractive when leafless in winter. The most attractive in
flower (Palm) are: \( S. \text{ Caprea} \) (10 to 25 feet), and \( S. \text{ cinerea var. Medemii} \) (15 to 25 feet); both are small trees with greyish obovate foliage, downy on the undersides, and producing in March and April the yellow silky catkins so well known as Palm. A number of the dwarf willows are very ornamental in the rock garden and, if possible, should be grown in a site with a northern or eastern aspect. Some of the best for this purpose are: \( S. \text{ Arbuscula} \) (1 to 3 feet); \( S. \text{ herbacea} \) (2 to 4 inches); \( S. \text{ lanata} \) (2 to 2½ feet); \( S. \text{ Lapponum} \) (2 to 4 feet); \( S. \text{ repens argentea} \) (1½ to 2 feet); and \( S. \text{ retusa} \) (3 to 5 inches). Interesting and attractive shrubby willows to plant in the pleasure grounds and by the waterside are: \( S. \text{ Bockii} \), a Chinese species introduced by Wilson, 5 to 8 feet in height, with small leaves and showy catkins; \( S. \text{ Caprea} \) (Goat Willow or Palm); \( S. \text{ cinerea var. Medemii} \), which has most attractive large catkins, often as early as February; \( S. \text{ incana} \) (Hoary Willow), 6 to 10 feet in height, which has narrow leaves resembling Rosemary; and \( S. \text{ gracilistyla} \), 5 to 6 feet in height, which bears very pleasing catkins in early spring and later grey-green silky leaves.

A selection of the best tree Willows should include: \( S. \text{ alba} \) (White Willow), which grows from 60 to 80 feet in height, and the variety \( \text{argentea} \) (60 to 80 feet); \( S. \text{ cærulea} \) (Cricket-Bat Willow), 75 to 100 feet, distinguished by its upright habit and the blue sheen of the leaves; \( S. \text{ fragilis} \) (Crack Willow), a useful specimen tree, 60 to 80 feet in height, of spreading habit and useful for park planting in low ground; \( S. \text{ Salamonii} \) (50 to 60 feet), a natural hybrid between \( S. \text{ alba} \) and \( S. \text{ babylonica} \), a beautiful specimen tree for damp ground, by the lakeside in the pleasure grounds and park; \( S. \text{ pentandra} \) (Bay Willow), readily recognised by its large and somewhat leathery leaves, and which usually forms a large shrub or tree 20 to 40 feet or more high (a tree at Kew is 50 feet high, but this is exceptional); \( S. \text{ viridis} \) (60 to 75 feet), a natural hybrid between \( S. \text{ fragilis} \) and \( S. \text{ alba} \), which is a useful subject for damp woodland planting (the wood is used for bat-making, but is not usually of so high a grade as \( S. \text{ cærulea} \)); and \( S. \text{ magnifica} \), a Chinese species, which, as the name suggests, is a most attractive shrub or small tree quite distinct from any other species. Growing from 12 to 18 feet in height, probably more
PLATE 31

Right,
Viburnum davidii

Below,
Viburnum hupehense
PLATE 32
Wisteria in full bloom
under favourable conditions, it requires much more care and attention in its cultivation than is usually given to Willows. On a border of deeply-cultivated rich soil, I have seen young leaves 9 to 10 inches long and half as wide. The catkins, 6 to 10 inches long, are also attractive.

With one or two exceptions, Willow trees develop male and female catkins on separate trees or shrubs. This fact has resulted in the production of many natural hybrids.

**Culture.**—Plant from November to March. Willows thrive in moist soils, notably in chalk soils, except in light dry conditions. They are particularly happy in moist soil at the water's margin, or if a site near water is not available, in deep loam. Pruning, except when the trees are cut hard back annually as mentioned above, is not often necessary, but dead wood should be cut out. To propagate, take leafless cuttings of matured wood, 12 to 15 inches long, and insert in the open in November and December. In the case of the stronger-growing tree-like species it is possible to take leafless wood up to 3 or 4 years old in rod-like pieces, some 8 or more feet in length, as cuttings, and preferably place at once in their permanent positions at the season named above.

**Salvia. Sage.** *(Labiatae.)*

There are many species belonging to this genus; annuals, biennials and shrubby perennials, some of which are grown in the greenhouse. *S. officinalis* is the sweet herb known as Sage it makes an attractive semi-evergreen shrub some 2 feet in height with long, oblong, tooth-edged foliage, and carries spikes of purple, funnel-shaped flowers from June till early autumn. Several half-hardy sages are grown in sheltered gardens in the south and west, notably *S. Grahamii* and *S. Greggii*.

**Culture.**—The Sage thrives in the sun in sheltered positions, preferably with protection from the north and north-east, and in light ordinary soil. Plant during the second half of April. Cut off the old flowers in autumn. Trim to shape and thin the bushes in early April before new growth starts. Sow seeds in the open in April, or take cuttings in August, 2 to 3 inches long, made of the ends of half-ripe shoots and insert these in sandy soil in a cold frame.

**Sambucus. Elder.** *(Caprifoliaceae.)*

Familiar hardy deciduous shrubs or small trees with compound
ABC OF SHRUBS AND TREES

foliage and clusters of fragrant white flowers in summer. It is a noteworthy and interesting fact that the Elder, through seeds carried by birds, is one of the first shrubs, if not the first, to develop on waste ground. S nigra is the Common Elder, which grows from 15 to 30 feet in height, and bears white flowers in June, followed in autumn by purple or black berries. This is hardly worth growing in the garden, but its two varieties, S n. albo-variegata (silver-leaved, 10 to 15 feet) and S n. folius aureus (golden-leaved, 10 to 20 feet, and a good town shrub) are very attractive. These variegated kinds develop the best leaf colouring when grown in sunny positions, particularly near the sea. S racemosa (Berried Elder), 8 to 10 feet, flowers a month earlier, and in autumn is made conspicuous by its large clusters of scarlet fruits. The varieties, S. r. laciniata (Parsley-leaved Elder), 10 to 15 feet, and S. r. plumosa aurea, 10 to 15 feet, a similar form but with golden-yellow foliage, are also attractive shrubs.

Culture —Plant in groups from November to March in partial shade, and in moist loam, and, although these conditions are ideal, they are not strictly necessary, as these shrubs will grow, if need be, in almost any soil or situation. Except when grown as trees or tall free-growing shrubs, cut well back annually in spring each year to keep the bushes within bounds in the shrubbery borders. To propagate, insert cuttings of well-ripened leafless shoots, some 10 to 15 inches in length and preferably with a heel, on a sheltered border outside from October to December. Seeds may also be sown in early spring on a border outside, but as cuttings root so readily, this method of increase is not much practised.

Santolina. (Compositae)

These are hardy evergreen shrubs, semi-woody or shrubby in character. S. Chamæcyîârissus (Lavender Cotton), a native of the Mediterranean regions, is one of the best dwarf grey-leaved shrubs for mass planting, and has closely-set, small and narrow, saw-edged greyish-white leaves. It grows from 10 to 24 inches or more high, and bears yellow flowers from June to August. S viridis is an evergreen shrub, 20 to 24 inches high, with dark green leaves and produces yellow flower-heads in July. It is a native of southern Europe.
SANTOLINA — SARCObATUS

Culture—The Santolinas thrive in ordinary soil and sunny positions, and are useful subjects for seaside planting. Plant in April. Trim off the old flowering shoots and cut back weak and stragglng shoots in autumn. Hard pruning back to the old wood can be done in April. Both species, but the Lavender Cotton in particular, make attractive dwarf hedges To propagate, take cuttings, 2 to 3 inches long, made of the ends of half-ripe shoots, in July or August and insert in a frame, or divide the roots in April.

Sapindus. (Sapindaceae)
Three species are worth planting in sheltered gardens where uncommon shrubs are cultivated. S. Drummondii (Soapberry) is an interesting and ornamental hardy deciduous small tree, some 20 to 35 feet in height, with attractive pinnate foliage resembling that of the Acacia and, in June, yellowish-white flowers. It is a native of the southern districts of the United States of America. S. marginatus, 15 to 30 feet, is the Wild China Tree of the southern states of North America, and S. Mukorossii is a somewhat rarer evergreen from Japan.

Culture—Plant in sunny sheltered positions early in April in light, well-drained soils. No pruning is necessary, except to keep the trees or shrubs in shape. Increase by means of cuttings, 3 to 4 inches long, made of the half-ripe new shoots of the year, and inserted in July in a close frame with slight bottom heat.

Sapium sebiferum. Chinese Tallow Tree. (Euphorbiaceae)
A somewhat rare and rather tender small deciduous tree, 20 to 30 feet in height, which, in its native habitat, the low-lying parts of western Hupeh and Szechuan, China, is said to take on glorious autumn tints.

Culture.—Plant in late March, preferably against a wall or in a sheltered but sunny dell. Shorten long growths, if any, and thin crowded branches in February. Increase by means of seeds sown under glass when obtainable, or by cuttings made of the half-ripe new growths, 3 to 4 inches long, and inserted in a close frame with slight bottom heat in July in a compost composed of fibrous loam, a little leaf-mould and coarse grit.

Sarcobatus vermiculatus. (Chenopodiaceae)
The Grease Wood of the western regions of North America is a much-branched deciduous shrub up to 6 feet or more in
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height. It has linear-shaped, greyish leaves and in July produces small greenish-yellow unisexual blooms of no floral beauty, male and female flowers being borne on the same twigs. An interesting shrub for seaside gardens.

*Culture*—Plant in November or March in ordinary well-drained garden ground. Prune in February only to shape the bushes. Increase by means of seeds sown under glass in early spring, or semi-ripe cuttings, 2 to 3 inches long, may be inserted in a cold frame or under a handlight in August.

*Sarcococca.* *(Euphorbiaceae.)*
Low-growing evergreen shrubs, natives of China and the Himalayan regions and related to the Box. They have glossy, green, narrowly-oval to lanceolate foliage and bear clusters of small, white unisexual fragrant flowers in winter or spring, according to species. These shrubs grow from 1 to 3 feet in height, and may be planted in the shade and even under the drip of trees in any soil, but prefer a mixture of sandy loam and peat. *S. Hookeriana,* from the Himalayas (2 to 3 feet high, late winter- or early spring-flowering, blue-black fruits); *S. humilis,* from western China (12 to 18 inches, early spring-flowering, blue-black fruits), and *S. ruscifolia,* a native of central China (2 to 3 feet, late winter- or early spring-flowering, red fruits), are the best-known species, and if several are planted close together, the female bushes will bear small egg-shaped fruits following the flowers.

*Culture.*—Propagate by means of division in October or spring, or insert cuttings of semi-matured wood, 3 to 4 inches long, under bell-glasses in sandy soil in late summer. These should be ready for planting out the following spring. When growths are very crowded, cut out the oldest stems to the ground after flowering in spring.

*Sasa.* Dwarf Bamboos now included under Arundinaria and Bambusa.

*Sassafras officinale.* Sassafras. *(Lauraceae)*
A handsome, but somewhat rare, hardy aromatic deciduous tree of pyramidal habit, a native of the eastern regions of the United States of America. The Sassafras grows some 50 feet or more in height, has deep green, glossy foliage, which varies considerably in form, and usually assumes rich red and orange tints in autumn. The small unisexual yellowish-green flowers,
which are borne in May, are insignificant, but the foliage is distinct and attractive, and together with the young shoots, mulls a delightful fragrance. The male and female flowers are usually on separate trees.

_Culture_—This tree thrives in a sunny position in rich non-calcareous light loam and peat or leaf-mould. Plant in early November or during March. No pruning is required except to form leaders to young trees. Increase by means of seeds imported from America, and sown in a frame on arrival, and by suckers lifted from the parent tree in early November or in March. In Massachusetts, I frequently saw it growing in hedges and coppices with suckers growing freely in all directions.

_Satureia montana._ Winter Savory. (_Labiatae_)
A sub-shrubby semi-evergreen herb, a native of southern Europe and northern Africa and growing 1 foot or more high. It has fragrant foliage (used as a herb for flavouring) and pale purplish-white flowers in summer.

_Culture_—Grow on a sunny border in light well-drained soil. Plant in March. Cut out weak growths and ends of shoots damaged by frost in March. Increase by means of division of the clumps in October or early March and by cuttings, 2 to 3 inches long, made of the ends of the young shoots in August and inserted under a bell-glass.

_Saxegothæa conspicua._ Prince Albert’s Yew. (_Taxaceæ_)
An interesting and distinctive evergreen shrub or small tree, a native of Chile and Patagonia and growing 6 to 30 feet or more in height. It has bright green linear, yew-like foliage and unisexual flowers, both sexes being borne on the same plant. The fruits, which usually follow, are sub-globose or cone-shaped and about ½ inch in diameter.

_Culture_—These shrubs grow quite well in warm, sheltered situations and in the milder localities of the British Isles, and may be propagated by means of cuttings, 2 to 3 inches long, made of the side shoots, taken off with a thin heel of old wood, placed in gentle heat in late summer or under a bell-glass on a sheltered border outside from September to November. Plant towards the end of April. The bushes or trees are slow in growth and require no pruning, unless to shorten a long shoot spoiling the shape of the bush.
ABC OF SHRUBS AND TREES

Schinus. (Anacardiaceae)
Interesting evergreen foliage shrubs with yellowish-white flowers borne in June. Three species, all natives of South America, are grown in gardens catering for rare and uncommon shrubs. *S. Bonplandianus* (10 to 12 feet in height or more against a wall) and *S. dependens* (10 to 15 feet) are grown outside at Kew, but frequently suffer damage in winter. *S. molle* (Pepper Tree) forms an attractive pinnate-leaved tree, 10 to 20 feet in height, in Devon and Cornwall.

Culture.—These plants grow in ordinary well-drained garden ground. Plant early in April. Prune in spring only to shape the bushes and to remove dead shoots and ends of branches damaged by frosts. Propagation may be carried out by means of cuttings, 3 to 4 inches long, made of the half-ripe young shoots and inserted in late summer in a close frame with slight bottom heat. *S. molle* may be raised from seeds sown under glass as soon as available after ripening.

Schizandra. (Schizandraceae)
A small genus of hardy and semi-hardy climbing plants flowering in April and May. They make interesting subjects for walls, fences, arches and pillars. *S. chinensis* is a fast-growing deciduous climber from China and Japan, growing 20 to 25 feet or more in height and producing spikes of medium-sized fragrant delicate pink flowers, followed in autumn by small bright red berries. As the plant is dioecious, to obtain fruits, care must be taken to plant both sexes. *S. glaucescens* is a Chinese species, 10 to 15 feet in height, with orange-red flowers and obovate leaves, glaucous on the undersides. *S. grandiflora* (10 to 15 feet) is a species with leathery leaves and pinkish flowers, native to both the Himalayas and western Hupeh. *S. Henryi* (15 to 20 feet) is a vigorous climber with leaves of a more leathery character than those of *S. chinensis*, and angled young stems. Its white unisexual flowers are followed on female plants, by red fruits, which are eaten by the Chinese. *S. propinqua sinensis* is a good hardy variety of an Asiatic species (the species itself is Himalayan), with deep green lanceolate foliage and orange-yellow flowers. *S. rubrifolia* is a species with red flowers from western China, and *S. sphenanthera*, a fairly hardy species from China, has larger foliage and orange-yellow flowers.
SCHIZANDRA — SCIADOPITYS

*Culture* — These plants thrive in sheltered positions and in the milder localities of the British Isles in good loam. Plant in March. Cut out old and crowded branches, if any, in winter. Propagation may be carried out by means of cuttings, 3 to 4 inches long, made of semi-mature shoots and placed in gentle bottom heat in late July or early August, or by layering in autumn. It is advisable to grow young plants in pots until large enough for their permanent positions as, in common with numerous climbers, they do not transplant readily.

**Schizophragma.** (*Saxifragaceae*)
Included in this genus are three interesting deciduous climbing plants flowering in June and July. They are related to the Hydrangeas, but the sterile flowers have one bract instead of four as in the Hydrangeas. The Schizophragmas are useful self-clinging subjects for walls, fences and trees, and are particularly attractive when covering old tree stumps. *S. hydrangeoides*, from China and Japan, sometimes confused with *Hydrangea petiolaris*, is an attractive but less common plant, running up to 30 feet or more in height, with medium-sized, broad ovate and saw-edged foliage, and with numerous large cymes of slightly fragrant small cream flowers. *S. integrifolium*, a native of China, is a fairly vigorous species growing up to 12 feet or more in height, with larger leaves and conspicuous inflorescences of white flowers. *S. i. molle* (12 feet or more) is a remarkable hairy variety of the foregoing.

*Culture* — These plants thrive in moist loam and may be propagated by means of cuttings of semi-mature wood about 4 inches long with a heel inserted under glass in July or August, or by layering in autumn. Plant in early November or in February. No pruning is required, except in training them to clothe the objects against which they are planted.

**Sciadopitys verticillata.** Umbrella Pine (*Conifera*)
An unique but rather slow-growing monotypic hardy evergreen coniferous tree of pyramidal habit. It is a native of Japan, grows eventually some 80 feet or more in height and has remarkably long and stiff, bright green, almost needle-like cladodes arranged in whorls round the stems, similar to the ribs of an umbrella, hence its name. The true leaves are less than \( \frac{1}{2} \) inch long and grow at the apex of the shoots. This
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plant is least satisfactory in dry and very sunny positions, but will grow in any good moist soil, peat or lime-free loam, but does not like chalk.

Culture.—Plant in early October or late April. No pruning is required, except to keep the trees shapely and with a distinct leader. When necessary this should be done in late summer. Propagate by means of seeds sown in a frame in early spring.

Sea Buckthorn. See Hippophae.

Securinega. (Euphorbiaceae)

Interesting botanical deciduous shrubs, the hardy species being natives of north-eastern Asia. They grow from about 4 to 6 feet in height, have bright green foliage and carry greenish-white monoeious or dioecious flowers in August and September. Three species cultivated at Kew are *S. fluggeoides*, *S. japonica* and *S. ramiflora*. All, 4 to 6 feet in height.

Culture.—These plants grow in ordinary well-cultivated garden ground. Plant in March. Prune during the summer only to shape the shrubs. Increase by cuttings made of the half-ripe shoots, 2 to 4 inches long, and inserted in a close frame in July.

Senecio. Groundsel or Ragwort. (Compositae)

A very large genus of beautiful flowering plants including a number of handsome evergreen sun-loving shrubs, natives of New Zealand, some resembling the Olearias in the silvery-white appearance of the foliage and daisy-like flowers. Those noted below grow from 2 to 5 feet in height and in summer carry bright yellow flowers. Except in cold localities, they are quite hardy and thrive in moderately light well-drained loam with a little leaf-mould and plenty of coarse grit. Give them a sunny, sheltered position in the rock garden or in the front of the shrub border. *S. compactus* (2 to 3 feet); *S. Greyi* (3 to 4 feet); *S. Huntii* (4 to 5 feet), and *S. laxifolius* (3 to 4 feet) are the best-known hardy species.

Culture.—Plant in late April and in May. Trim to shape after flowering only when necessary, and cut back more severely every fourth or fifth year, in April, if required. Propagate by means of cuttings, 2 to 3 inches long, made of the ends of the shoots and inserted in August in a cold frame or under a bell-glass in very sandy soil, or by layering in autumn.
SEQUOIA — SHEPHERDIA

**Sequoia.** *(Coniferæ.)*

Two species of hardy and very ornamental evergreen coniferous trees *S. gigantea* (Wellingtonia or Mammoth Tree) and *S. sempervirens* (Redwood), so called on account of its red bark. These giant trees, which in their native habitat, California, reach a height of from 200 to 300 feet, have small attractive, bluish-green linear leaves crowded on the branches, and make beautiful specimen trees for the lawn in a large garden.

*S. gigantea pendula*, a weeping form of the Wellingtonia, which grows up to 50 feet or more in height, is an interesting and distinctive-looking tree.

**Culture** — The Sequoias thrive in sunny, sheltered positions and in well-drained deep loam. Plant in May or September. No pruning is required. Propagation of the species is usually carried out by means of seeds sown early in the year in a frame, varieties by grafting on to seedlings of the type. The sucker-like growths on the stems will root if inserted as cuttings in a close frame in August.

**Service Tree.** See Pyrus Sorbus.

**Shepherdia.** *(Elaeagnaceæ)*

A small genus of botanically interesting hardy shrubs, natives of N. America and resembling in appearance and habit the Elæagnus, to which they are, in fact, related. *S. argentea* (Buffalo Berry), a medium-sized shrub some 5 to 10 feet in height, has inconspicuous, greenish, unisexual flowers in March and these are followed in the case of female plants, when planted in the vicinity of a male, by red oval fruits. *S. canadensis*, which grows from 6 to 7 feet in height, bears small, orange-red, oval fruits.

Both species are deciduous shrubs having male and female flowers on different plants.

**Culture** — Only in warm sheltered situations in the milder districts of the British Isles are the Shepherdias worthy of cultivation. They thrive in a well-drained loamy soil and make good seaside shrubs. Plant from November to March. Prune in summer, but only to shape the shrubs. Increase by seeds sown in a frame when available, and by cuttings, 2 to 4 inches long, made of side shoots and inserted in August in a frame or under a handlight.
Sinofranchetia chinensis. (*Berberidaceae*)
An interesting monotypic deciduous climbing plant, a native of China and in favourable conditions running up to a height of 30 feet or more. It has semi-glaucous trifoliate compound foliage and bears small inconspicuous white unsexual flowers in May, these being followed by bunches of attractive, blush-purple grape-like fruit. A distinctive climber for walls, etc.

*Culture*—Give the plants a deeply-cultivated rich loam. Plant early in March. Prune in March only to shape and train the plants. Increase by layering in autumn. When seeds are available, sow these as soon as ripe in a frame.

Sinomenium acutum. (*Menispermaceae*)
A deciduous twining plant, a native of Japan, Korea and China, which in favourable conditions runs up to a height of 20 feet or more and has bright green stems and attractive large and variably-formed foliage. The tiny yellow inconspicuous flowers in May or early June are followed in autumn by an abundance of showy blue-black globular fruits the size of small peas. It is an interesting and uncommon climber for walls, fences and arbours, and has been called *Cocculus heterophyllus* and *C. variformis*.

*Culture*—The Sinomenium grows freely in ordinary cultivated garden ground. Plant in early November or in February and March. Prune in February only to keep the plants shapely and within bounds. Seeds sown in spring under glass and offsets taken from the parent plants in late autumn or early spring are ready means of increase.

Sinowilsonia Henryi. (*Hamamelidaceae*)
A distinctive and interesting monotypic deciduous shrub or small tree, a native of China and related to the Witch Hazels. In its native habitat it reaches some 20 feet or more in height, has broad obovate, saw-edged foliage and at the end of April or during May, inconspicuous small yellowish-green flowers.

*Culture*—The plants grow freely in a light well-drained loam with a little leaf-mould and peat added. Plant in early November and late February or March. Only prune to thin and shape the shrubs in late summer or early spring. Increase by means of cuttings, 2 to 3 inches long, made of the ends of the side growths and inserted in late July or August in a close frame or under a handlight, and by layering in autumn.
SKIMMIA — SMILAX

Skimmia. (Rutaceae)
Hardy evergreen shrubs of slow growth. They attain a height of from 1 to 4 feet, and in April carry clusters of fragrant white but not very showy unisexual flowers. Their chief attraction consists in the bunches of beautiful red berries in autumn, very like those of the holly; this feature makes these pretty little shrubs very useful for window boxes. Skimmias like a warm, sheltered position and a deep, rather moist and rich loam, but not a hot, dry, sunny position. They will in fact grow quite well in the shade, and are useful subjects for town gardens. The common species is *S. japonica* (2 to 4 feet), which has pale greenish-yellow narrow oval leaves. The male and female flowers are borne on different bushes in this species, and *S. j. fragrans* (2 to 4 feet) is the male form. *S. Fortunei*, a native of China (1 to 2 feet), has male and female organs in the same flowers, so that there is no difficulty with regard to pollination. It differs from the common *S. japonica* in having oval or egg-shaped crimson fruits. *S. Foremanii* (2 to 4 feet), and *S. Rogersii* (1½ to 3 feet) are berry-bearing hybrids between *S. Fortunei* and *S. japonica*.

Culture.—Plant in April or October. To obtain fruits of *S. japonica*, plant at least one male plant to six females. Prune in April, but only when required to thin or shape the bushes. To propagate, sow seeds when ripe under glass; or take cuttings of semi-mature shoots, 2 to 4 inches long, in late July or August and insert in sandy soil in a close frame with gentle heat or under a bell-glass; or layer in the summer.

Sloe. See *Prunus spinosa*.

Smilax. (Liliaceae)
Interesting hardy and semi-hardy evergreen and deciduous climbing plants with attractive foliage. Several are very quick-growing. There are a number of hardy species, more than a dozen being grown in the open at Kew. *S. aspera*, from the Mediterranean regions, which runs up to from 6 to 10 feet in height, has clusters of pale green flowers in autumn, followed by red berries from January to March. It should be planted in sheltered positions, except in the milder localities. Probably the best-known hardy climbing Smilax is *S. rotundifolia* (15 to 30 feet), the North American Horse-Briar, a semi-evergreen with glossy green, heart-shaped foliage, pale green

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flowers in June and blue-black fruits in September and October. It thrives in the open and looks well trained over the stumps of old trees. *S. glauca*, the Saw-briar of the eastern districts of the United States of America (5 to 8 feet), is a strong-growing, partially deciduous or evergreen species with rather large ovate leaves up to 3½ inches long, rich green above and glaucous beneath. It bears green flowers in June and carries plum-black berries in September and October. *S. megalantha*, introduced by the late Dr Wilson from China, is a vigorous free-growing species from 10 to 12 feet in height, with attractive foliage, pale green flowers in May and red fruits in October, and is quite the most useful species as an ornamental climber for arbours and fences.

**Culture** — The Smilaxes thrive in most cultivated soils. Plant in October or early spring. To prune and thin, cut out the oldest shoots from the base in early spring. Sow seeds under glass in early spring when available. The plants throw up new shoots from the base and are readily increased by the removal of offsets in early spring.

**Snowberry.** See Symphoricarpus

**Solanum jasminoides.** Jasmine Nightshade. (*Solanaceae*)
A beautiful fast-growing half-hardy climbing shrub from Brazil, growing 10 to 12 feet or more in height and bearing clusters of white flowers from June to October. It can be grown in light, well-drained loam with leaf-mould and coarse grit added, and should be given a warm and sheltered position against a wall in the southern and western counties of the British Isles. *S. crispum*, a native of Chile, grown under similar conditions, is an attractive semi-evergreen climber running up to 20 feet or more, and from June to September carries clusters of bluish-purple flowers with yellow centres.

**Culture.**—Plant in late April or early in May. Cut back any weak shoots in February. Propagate by means of cuttings of young wood, 2 to 4 inches long, inserted in a frame with bottom heat or under a bell-glass during late summer, and by layering in autumn.

**Sollya.** (*Pultesporaceae*)
Interesting semi-hardy climbing plants, natives of Australia and having attractive foliage and pretty nodding blue, bell-shaped flowers in summer. In warm and sheltered situations in
SOLLYA — SORBOPYRUS

the milder southern districts of the British Isles they may be successfully grown against a wall or fence. *S. Drummondii,* 3 to 4 feet or more in height, with dark blue flowers, and *S. heterophylla* (Bluebell Creeper), 4 to 6 feet or perhaps more in height, with paler blue flowers, are the best-known species.

**Culture**—The most suitable soil is a light loam with peat and leaf-mould added. Plant in April or early in May. Thin and prune in spring when required. Increase is by seeds sown in early spring under glass, and by cuttings, 2 to 4 inches long, made of the ends of the side shoots and inserted in a close frame during July and August.

*Sophora.* (Leguminosae)
Graceful evergreen and deciduous shrubs and trees with pinnate foliage. *S. japomca,* the Pagoda Tree from China and Korea, is a cultivated tree in Japan and is a large deciduous wide-spreading tree some 50 feet or more in height and bearing in September a profusion of creamy-white pea-shaped flowers in panicles. It is a good specimen tree for a lawn. *S. tetraptera* (syn. *Edwardsia grandiflora*), the Houma of New Zealand, is an evergreen or semi-evergreen, according to the amount of shelter available. It bears clusters of golden flowers in August and September and may reach a height of about 20 feet. This tree is only half-hardy and needs the protection of a wall at Kew. *S. tetraptera var. microphylla* has slightly smaller leaflets and flowers. It is sometimes grown as *Edwardsia Macnabiana* and appears to be hardier than the type. *S. vicifolia* is a hardy bush from China, some 6 feet or so in height, which in June carries clusters of blush-white flowers; it makes a delightful shrub for a small garden.

**Culture**—All the Sophoras thrive in sunny positions and in well-drained soil. Plant *S. japomca* in November or March and the other species in spring. Thin-out in summer when necessary, but only to shape and regulate the branches when overcrowded. Propagate by means of seeds sown when ripe in autumn under glass; the bushy species can also be layered in autumn; and cuttings of semi-mature wood about 4 inches long taken with a heel in July may be rooted in a close frame or under a bell-glass.

*Sorbaria.* See Spiraea arborea, etc.

*Sorbopyrus.* See Pyrus auriculans and *P. mahfolia.*
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Sorbus. See Pyrus Sorbus.
Southernwood. See Artemisia.
*Spartium junceum. Yellow Spanish Broom. (Leguminosae)
A beautiful shrub, a native of southern Europe, growing from 6 to 10 feet in height and bearing from June to September racemes of fragrant yellow flowers similar in shape to those of the pea. The blooms are carried right along the slender green shoots, which are but very sparsely clad with small deciduous linear foliage. These shrubs are excellent subjects for growing in and near towns and thrive in sunny positions and in poor dry or sandy soil.

Culture.—Plant in October or April. Cut back long and straggling shoots in March, especially when the plants are young, or they will soon grow tall and straggly. To propagate, sow seeds in pots or shallow pans under glass in February; grow the young plants in pots until ready to be planted out in their permanent positions, as they resent disturbance at the roots and transplant badly. There is an interesting and pretty double-flowered variety, *S. flore pleno, which is best propagated by grafting in spring in a close frame on seedling plants of the species.

Spindle-Tree. See Euonymus.
Spinovitis. See Vitus Davidii.
Spiraea. (Rosaceae)
A large and important genus of hardy deciduous shrubs, natives of Europe, North America and North Asia and ranging from 1 foot to 30 feet in height. The flowering season extends from March to October. White is the predominant colour of the flowers, but there are also numerous species and varieties whose blooms are pink, rose and red. Widely differing in habit, botanical authorities have at various times split the genus, as known at Kew, into five or six genera. To describe their value as garden plants and the methods of pruning, it is convenient to divide them into three sections.

1.—Those flowering before mid-summer and which are best pruned as soon as the flowers fade, the bushes being thinned by means of cutting out the old flowering shoots. This section includes *S. argula, a hybrid Spiræa forming a shrub of twiggy habit up to 6 feet high, with small leaves and in April and May a mass of small white flowers; *S. bracteata, a choice
SPIRÆA

Japanese species, 6 or 7 feet high and with compact rounded clusters of pure white flowers on large arching branches in June, *S. chamædrifolia*, a variable species growing 5 or 6 feet high and with white flowers in May, *S. Henryi*, a Chinese species of spreading growth, 7 or 8 feet high and more in width, with masses of white flowers in early June; *S. media*, a native of Europe and eastern Asia, a bush 4 or 5 feet high, with racemes of white flowers in April (Under the name of *S. confusa* this Spiræa is, or was, imported in large numbers from the continent for early spring flowering under glass); *S. prunifolia* *flore pleno*, one of the most beautiful shrubby Spiræas, growing to a height of 6 to 8 feet and in late April and May the bushes are covered with the small double white blossom (this is one of a number of instances of old cultivated Chinese and Japanese plants being introduced to British gardens years before the wild type was known), *S. Thunbergii*, a native of China and Japan, a dwarf twiggy bush, 3½ to 4½ feet high, one of the first Spiræas to open its pure white flowers in March, *S. Van Houttei*, a hybrid shrub of arching bushy growth, 4 to 6 feet high, with a freedom of small white flowers in May and June; *S. Vestchii*, a tall Chinese species, 8 or 9 feet high, with corymbs of white flowers freely borne in June along gracefully arching branches; and *S. Wilsonii*, another of the newer western Chinese species, with arching branches, 6 to 7 feet high, clothed in June with corymbs of pure white flowers.

2—The late summer and autumn-flowering species and varieties, which flower best when hard pruned each year in February. This section includes *S. Douglasii*, a species from the western districts of North America, growing 5 to 6 feet high and with narrow oblong leaves and terminal panicles of purplish-rose flowers in July and August; *S. japonica*, a native of China, India, and Japan, growing 3 to 5 feet high and with lanceolate leaves and in July and August flat corymbs of rosy-red flowers—this and the varieties flower freely, *(S. j. var. alba* is a dwarf, white-flowered shrub about 2 feet high, *S. j var Anthony Waterer* is a well-known dwarf shrub, 2 to 2½ feet high, with crimson flowers; *S. j var ruberrima* is a shrub 3 to 4 feet high, with deep rosy-red flowers), *S. Menziesii var. triumphans*, a native of the western districts of North
America, a shrub of upright habit, growing 4 to 6 feet high and with pyramidal panicles of rich deep rose flowers in July and August; and *S. salicifolia*, a variable species extending as a wild shrub from eastern Europe to Japan. It is of upright growth, from 4 to 5 feet in height, and carries terminal panicles of pink flowers from June to August (*S. s. var. paniculata* is rather taller, reaching a height of from 5 to 6 feet, and has larger inflorescences of white or pink-tinted flowers).

3.—The Sorbaria, or pinnate-leaved section are mostly tall-growing and flower in late summer and autumn. This section benefits by hard pruning and thinning of the shoots in February. They are most attractive shrubs for waterside planting. In this section may be mentioned *S. Aitchisonii*, a native of Afghanistan, growing up to 12 feet or more in height and producing very large panicles of white flowers in July and August; *S. arborea*, a Chinese species with pinnate foliage said by Wilson to reach a height of 20 feet. The large plumes of cream-coloured flowers are freely borne from July to September; this species requires much space, *S. discolor* (syn *S. armata*), a native of the western districts of North America, not one of the Sorbaria group, but a tall-growing bush 10 to 15 feet high and with a profusion of plume-like panicles of creamy-white flowers in July. (This species is best pruned in August after flowering, cutting out the old flowering wood), *S. Lindleyana*, a Himalayan Sorbaria 12 to 18 feet high, with attractive pinnate foliage and large branching panicles of white flowers freely borne from July to September, and *S. sorbifolia*, a native of northern Asia from the Urals to Japan, a shrub of more upright habit, 4 to 5 feet high and with racemes of white flowers freely borne in July and August.

**Culture**—Spireas thrive in moist rich loamy soil and benefit by liberal mulchings of decayed manure. Plant from November to early March. Most of the species can be increased by means of division or offsets removed from the parent plants in late October or early in March. The spring and early summer-flowering kinds, like *S. arguta* and *S. bracteata*, are readily propagated by layering, also by cuttings, 2 to 4 inches long, made of the ends of the new half-ripe shoots and inserted in late summer in a close frame or under a handlight, and by seeds sown under glass in early spring.
STACHYURUS — STAPHYLEA

Stachyurus. (*Ternstroemiae*)
Early flowering hardy deciduous shrubs, natives of China and Japan. They are of spreading habit and attain to a height of from 4 to 7 feet. The cream or pale yellow flowers, suffused with green, are borne in drooping racemes from 3 to 4 inches in length from February to April. The leaves, which are large, ovate and saw-edged, tapering to a sharp point at the apex and light green in colour, appear when the blooms have faded. These shrubs like a deeply-dug, well-drained sandy loam with leaf-mould and peat added, and a warm and sheltered site for preference. There are two species, *S. chinensis* (5 to 7 feet), and *S. praecox* (4 to 5 feet), with, as far as I can see, no very marked botanical differences.

*Culture*—Plant early in November. Any pruning that is required to shape the bushes should be done after flowering. Propagation may be carried out by means of seeds sown under glass as soon as ripe, by cuttings of semi-mature wood, 2 to 4 inches long and with a heel, inserted in gentle heat in July, and by layering the lower branches in autumn.

Staphylea Bladder Nut. (*Staphyleaceae* )
Hardy deciduous shrubs or small trees, growing from 6 to 15 feet in height, except *S. holocarpa*, which Dr Wilson described as growing up to 30 feet in a wild state. They have attractive compound foliage and flower in May and June. The clusters of bladder-like fruits which follow give the shrubs their name of "Bladder Nut." *S. colchica* (6 to 9 feet), from the southern Caucasus; *S. Coulombei* (8 to 10 feet), a hybrid between *S. colchica* and *S. pinnata* (All with white flowers); *S. holocarpa*, from China (Pink), and *S. pinnata* (10 to 15 feet), a native of southern Europe, are the best-known species. They like a position which is not too sunny and dry and a well-drained but moist deep loam. They make ideal subjects for the mixed shrubbery border.

*Culture*—Plant in November. Do not prune, but merely thin and trim to shape after flowering, unless growing too large for their positions, in which case, cut the long branches hard back in February or early in March. Propagate by means of seeds sown under glass in February, by cuttings of semi-mature wood about 4 inches long with heel inserted in gentle heat in July, or by layering in autumn. The last
method being especially recommended in the case of S. holocarpa.

**Stauntonia hexaphylla.** *(Lardizabalaceae)*

A beautiful, but somewhat tender evergreen twining plant, introduced from Korea and Japan and related to the Holboellia. It runs up to from 15 to 20 feet or more in height, has large compound foliage and in May medium-sized unisexual white flowers, tinged with purple.

*Culture.*—This plant thrives in warm, sheltered situations, in the milder southern districts of the British Isles, preferably against a wall or fence. It grows best in sandy loam with peat and leaf-mould added. Plant in late April or early May. Prune to thin and regulate the branches after flowering. Grow in pots until large enough for the permanent positions. Increase by seeds, when available, sown under glass in autumn; by cuttings, 2 to 4 inches long, made of the side shoots and inserted in a close frame in July or August; and by layering in autumn.

**Stephanandra.** *(Rosaceae)*

A small genus of attractive hardy deciduous shrubs flowering in June and related to the Spiræas *S. incisa*, a native of China and Japan, grows about 5 to 6 feet in height and has graceful triangular-shaped foliage, which in autumn takes on rich tints. The small greenish-white flowers are borne in terminal panicles in June. *S. Tanaka* (5 to 6 feet), a Japanese species, is very similar in form and habit to the foregoing, but has larger leaves and brighter white flowers in June and July.

*Culture.*—These shrubs thrive in moist loam and may be increased in July by means of cuttings, 2 to 3 inches long, made of the ends of the half-ripe side shoots and inserted in a close frame, preferably with slight bottom heat, or by division in early November. Plant from November to March. If shoots are crowded, cut out old flowering growth when the blooms fade.

**Sterculia platanifolia.** *(Sterculiaceae)*

A handsome ornamental deciduous tree on the borderland of hardiness, a native of China, and growing some 50 feet or more in height. It has attractive and large lobed foliage somewhat resembling that of the Maple, and an unusually
smooth trunk. This tree grows quite well in warm and sheltered situations in the milder southern localities of the British Isles. The small yellow flowers are produced in July on a branching panicle a foot or more in length.

**Culture**—Plant in spring in a well-drained loamy soil with leaf-mould and peat added. Prune when necessary in April, but only to keep the tree with a leading shoot and shapely. Increase by means of cuttings, 2 to 4 inches long, made of small side shoots taken with a thin heel and inserted in a close frame in late summer.

**Stewartia.** *Stewartia* (*Ternstroemiacae*)

Hardy deciduous shrubs requiring a sunny situation sheltered from north and east winds. These shrubs thrive in rich, sandy, lime-free loam and leaf-mould with peat added, if available. They grow to a height of from 6 to 30 feet and the large cream-white single rose-like flowers, in July and August, are set off by clusters of yellow or purple stamens.

**Species.**—*S. koreana*, up to 45 feet in Korea; *S. Malachodendron* (*syn S. virginica*), a large bush or small tree up to 20 feet high, a native of the south-eastern districts of the United States; *S. pentagyna*, also from the southern districts of the United States, a spreading bush, 8 feet or more high with large white blossoms, 3 to 4½ inches across; *S. Pseudo-camelia*, a tree up to 50 feet in height in Japan, with white cup-shaped flowers and red, orange and yellow foliage in autumn. At Kew this is a fast-growing species, forming upright bushes or small trees. It flowers and produces seeds annually; and *S. sinensis*, a native of China, 20 to 30 feet in height.

**Culture**—Plant in March when growth is about to recommence. No pruning is necessary unless the bushes are growing a bad shape or the branches are becoming crowded. When required it should be done after flowering. Propagate by means of seeds when available, sown in autumn, as soon as they are ripe, under glass, preferably in a slightly heated greenhouse. The seed being first soaked for 24 hours before being sown; by cuttings of half-ripened wood, 3 to 4 inches long taken with a heel and inserted under glass in sandy soil in late summer in a close frame, preferably with gentle bottom heat; or by layering in autumn.
Stranvæsia. *(Rosaceae*)
A small genus of evergreen shrubs or small trees (Dr. Wilson found trees up to 25 feet), natives of China and the Himalayan regions and related to the Cratægus and Photinia. They have glossy green foliage. In the case of mature specimens, some of the leaves colour in autumn. The clusters of white flowers, resembling those of the Hawthorn, which appear in late spring or early summer, are followed in autumn by coloured berries. Good species and varieties are *S. Davdiana*, reaching up to 25 feet in height in China, with scarlet berries; *S. D. fructu luteo*, 10 to 20 feet, with yellow berries; *S. D. undulata*, 3 to 5 feet, with orange-red berries (all natives of China); *S. glaucescens*, 10 to 20 feet, from the Himalayas, which in warm sheltered situations in the milder southern localities of the British Isles, assumes small tree dimensions (it grows well on a sheltered wall at Kew); *S. salicifolia*, a Chinese species, 6 to 10 feet or perhaps more. This is distinguished by narrow lanceolate leaves and has attractive red fruits.

*Culture*—The Stranvæsias grow well in good well-drained loam with leaf-mould added, and also peat, if available. Plant in late April. Prune towards the end of May when necessary, but only to shape the bushes or trees when required. Propagation is usually carried out by means of seeds sown under glass when ripe in autumn. Cuttings, 2 to 3 inches long, of semi-matured wood, made of the short side shoots taken with heel, in late summer may be inserted in gentle heat or under a bell-glass.

**Strawberry Tree.** See Arbutus.

**Stuartia.** See Stewartia

**Styrax.** Storax. *(Styraceae*)
A genus of beautiful deciduous shrubs or small trees including *S. Hemsleyanus*, an attractive small tree from China growing 12 to 18 feet or more in height, having large, obovate, toothed leaves and in June racemes of pure white flowers; *S. japonicus*, a small but wide-spreading deciduous tree, 10 to 15 feet or more in height, a native of China and Japan and bearing in June and July quantities of pendulous white flowers; *S. Obassia*, an attractive small tree from Japan, 10 to 15 feet or more high, of wide habit, with large and broad oval leaves.
and in June fragrant pure white pendulous flowers; *S. Ventchorum*, a free-growing tree with white blossoms, already 15 feet high at Kew, and which flowered in 1931 (Introduced from Hupeh, China, first in 1900), and *S. Wilsonii*, a dense bushy shrub, 5 to 10 feet in height, from western China, not so hardy as the other species recommended here, but its small snow-white flowers are freely produced in June on a wall at Kew. It is a desirable shrub for the south and west of the British Isles.

**Culture**—The Styrex like a sunny, sheltered position and a moist, cool, sandy loam with leaf-mould and peat added. Plant in November. No pruning is required, except to shape the trees. This may be done in summer. Propagate by means of layering in autumn; by cuttings, 2 to 4 inches long, made of the ends of half-ripe side shoots and inserted in a close frame in July or August; or by seeds sown when ripe in sandy loam in pots under glass. If they do not germinate the first summer after sowing, plunge outdoors in winter.

*Suaeda fruticosa*. Shrubby Goosefoot. (*Chenopodiaceae*.) An evergreen or semi-evergreen shrub, 3 or 4 feet high, a native of Europe, including some parts of our sea coast. It is not a shrub for general culture in gardens, but is a useful subject for exposed seaside gardens and for sandy soils.

**Culture**—Plant in October or April. Prune in April, but only to shape the bushes or cut off dead ends of shoots killed by the winter’s frosts. Cuttings, 3 to 4 inches long, made of the ends of the half-ripe growths, root readily in August or September under a handlight or bell-glass.

**Sumach.** See Rhus.

**Sycamore.** See *Acer Pseudo-platanus*.

**Sycopsis sinensis.** (*Hamamelidaceae*) An interesting and ornamental hardy evergreen shrub or small tree, a native of China and related to the Witch Hazels. It grows some 6 to 15 feet in height, has dark green and leathery, longish, ovate foliage and in February and March produces clusters of small red bracts and yellow stamens. These flowers, unfortunately, are apt to be somewhat obscured by the dense foliage.

**Culture**—The Sycopsis thrives in a loamy soil with leaf-mould and peat, if available. Plant in April or October.
Prune, when required, in late April, to thin and shape the bushes. Propagation may be carried out by means of cuttings, 2 to 3 inches long, made of half-ripe shoots in July and inserted in gentle heat, or under a bell-glass, and by layering in autumn.

**Symphoricarpus.** Snowberry. (*Caprifoliaceae*)

Hardy deciduous shrubs, natives of China and North America, of little floral value. The small and inconspicuous flowers, borne in July and August, are followed by attractive berries. The plants thrive in sun or shade and in moist ordinary soil, growing well near the sea, and are some of the best shrubs for planting beneath trees. *S. racemosus* is the Common Snowberry. It grows from 7 to 10 feet in height, has medium-sized oval-shaped leaves and in June and July small pink flowers, followed in autumn by clusters of round white berries, which remain on the branches long after the leaves have fallen. The variety bearing the largest fruit is *S. r. lactugatus* (7 to 10 feet), and this is, in fact, one of the six best berry-bearing shrubs to plant for winter beauty. *S. orbiculatus* is a bushy shrub, 4 to 5 or 6 feet high, with dark green, oval leaves and small pink flowers, followed by purplish or pinkish-red berries in autumn. *S. o. variegatus* (4 to 5 feet) is a handsome variegated shrub, the leaves being bordered or edged with yellow. An interesting and uncommon Snowberry, introduced from Western China by Dr. Wilson, has plum-blue berries.

**Culture.**—These shrubs thrive in ordinary cultivated garden ground. Plant from November to March. Cut out dead wood and weak shoots annually in March. Every few years, lift the shrubs, any time from November to March when the weather and soil conditions are suitable, and divide the clumps; then replant the younger and more vigorous parts. Seeds sown under glass in early spring also provide a ready means of increase.

**Sympllocos paniculata.** (*Styraceae*)

An interesting deciduous shrub or small tree, a native of China and Japan and the Himalayan regions, growing from 10 to 30 feet in height, and bearing in May and early June panicles of fragrant white flowers. Another name for this tree is *Sympllocos cratagoides*.

**Culture.**—Plant in November or early March in light loamy
SYMPLOCOS — SYRINGA

soil with leaf-mould and peat added. No pruning is necessary, unless needed towards the end of May, just to shape the bushes or trees. It is usually raised by means of seeds obtained from abroad and sown under glass as soon as received.

Syringa. Lilac (*Oleaceae*)

This name, so frequently and erroneously applied to Mock Orange (*Philadelphus*), correctly belongs to the genus of hardy deciduous shrubs better known under the name of “Lilac.” Lilacs grow from 4 to 25 feet in height and mostly bear April and May highly fragrant spikes of blossom—mauve, blush-purple, light or dark shades of wine-red, rose, rosy-mauve, pale mauve-pink or white. They are well known as among the sweetest and prettiest of flowering shrubs that adorn the garden in spring and early summer. The foliage is usually broadly obovate to heart-shaped, each leaf tapering to a sharp point at the apex, except in the case of such species as *S. persica*, which has small lanceolate, lobed foliage, and *S. pinnatifolia*, which has pinnate foliage.

Culture—The lilacs may be grown either as bushes or as standards, and thrive in ordinary cultivated garden ground in the sun, but are greatly improved by the trenching and liberal manuring of the ground. Plant from November to early March. Cut away all suckers from the roots of grafted plants, remove surplus shoots in spring and cut out old and weak wood after flowering so as to allow ample air and light to penetrate to the centres of the plants, in order that the young shoots may be ripened and be able to form flower buds for the next season. Care must be taken to cut the old wood right back to strong young shoots well down the stem. Never trim away the young or half-matured shoots just to bring the bush into shape as this procedure will invariably cause a total lack of bloom in the following year. The flowers are borne the following spring on these new shoots made during summer, and a mulch of well-rotted manure applied after flowering will go far to produce healthy wood. If through lack of space, a bush must be trimmed in, remove the dead flower heads in June, cutting the shoot that has flowered back to the base of the next young lateral springing from it. This lateral will flower the following year. Even if the bush need not be trimmed into shape in this way, the dead flower
heads should always be picked off as soon as they fade. Propagate by means of layering in autumn; by matured cuttings, from 4 to 12 inches long, taken with heel and inserted in the open in October; or by suckers in November if the plants are on their own roots. Seeds of the species may be sown under glass in February; or cuttings of young shoots, 3 to 5 inches long, may be rooted during summer in sandy soil in gentle heat.

Species and Hybrids.—S. chinensis (S. vulgaris x S. persica), the Rouen Lilac, 8 to 10 feet or more high and freely clothed in May with inflorescences of moderate size and of a pleasing deep lavender shade; S. Emodii, the Himalayan Lilac, 12 to 25 feet in height, has large leaves, which are white beneath, and showy pale mauve flowers in June. S. yapomica forms a small wide-spreading tree, 12 to 25 feet in height, with creamy-white flowers in June and July. S. persica, the Persian Lilac, is a bushy species, 4 to 6 feet high, of elegant habit and bearing in May graceful panicles of deep lavender flowers (there is also a white variety alba), S. reflexa, a Chinese Lilac with nodding, rosy-carmine inflorescences; S. Sweginzowii, a Chinese Lilac, with attractive flesh-pink flowers in May on tall bushes 8 to 10 feet high; and S. tomentella (syn Wilsonii), another Chinese Lilac, of strong growth up to 12 feet high with pink flowers in May.

Named Varieties.—(Single) Marie Legraye and *Mont Blanc (White), *Madame Francisque Morel (Lilac), Congo (Lilac-red) and *Souvenir de Louis Späth (Dark Wine-crimson). (Double) Madame Lemozne and Miss Ellen Willmott (Pure White); President Grevy (Lilac); Virginite (Pale Pink); Charles Joly (Dark Red) and Condorcet (Lavender). These beautiful named varieties all attain a height of from 12 to 25 feet.

Taiwania cryptomerioides. (Conifera)
A distinct, interesting and rare evergreen tree, a native of Formosa and somewhat resembling the Cunninghamia, to which it is probably allied. Native trees are frequently 100 to nearly 200 feet high with trunks 20 feet or more in girth. This tree has short cylindrical cones half an inch long. It is only suitable for culture outside in the mild climate of the south and west of the British Isles. A small specimen planted outside at Kew in a very sheltered position died after having the branches cut back several times in winter.
TAIWANIA — TAMARIX

Culture.—This tree likes a warm, sheltered position in well-drained loam. Plant early in May. No pruning is required, but weak wood should be cut out in autumn. Propagate by means of cuttings, 3 to 6 inches long, made of the ends of shoots and inserted in sandy soil under a bell-glass on a sheltered west border or in a close greenhouse frame from July to October.

Tamarisk. See Tamarix.

Tamarix. Tamarisk. (Tamaricaceae)
Pretty and graceful hardy deciduous or evergreen shrubs with small, narrow, scale-like or feathery leaves. They flourish in sandy soil near the seaside, but may also be grown successfully inland. The Tamarisks are very hardy and do well anywhere in light, ordinary soil and in sunny positions, growing very quickly and in 3 or 4 years forming a good thick hedge over 8 feet high.

For this purpose the young bushes or cuttings should be planted about 12 to 15 inches apart.

Species — T. gallica, the common Tamarisk of the Mediterranean region, grows from 8 to 12 feet high, has masses of pink flowers from July to September and in autumn the semi-evergreen lanceolate foliage turns a reddish-yellow and is very attractive. T. jumperina is a species from Eastern Asia, forming a large shrub or small tree 10 to 20 feet or more in height, with attractive foliage and in May pink flowers. *T. pentandra (syn T. Pallas rosea), with its tiny pointed leaves and racemes of delicate rose-pink flowers from July to September, is one of our best late-flowering shrubs. By annual pruning it may be kept as a bush, 4 to 6 feet high, although it will grow much taller if not pruned. T. tetrandra, a bush 8 to 12 feet high, has very small leaves and pink flowers in May. Only T. gallica of those mentioned here is semi-evergreen.

Culture.—Plant in November or February. Prune summer and autumn-flowering species in March, cutting back shoots that have flowered, those that bloom in the spring should have the old wood cut out and overcrowded shoots thinned after flowering. Propagate by means of matured cuttings, 12 to 18 inches long, inserted in November in the open where the plants are to grow permanently, or in a nursery border.

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Tapiscia sinensis. (Sapindacae)
An interesting deciduous tree introduced from China, where it is said to grow from 30 to 75 feet in height. It has large pinnate leaves and in July small yellow fragrant flowers.

Culture—The tree thrives in well-drained loamy soil. Plant in November or early March in sheltered positions. No pruning is required. Propagate by cuttings made of the smaller side shoots, 4 or 5 inches long, taken off with a thin heel of old wood in late July or early August and inserted singly in small pots in a close frame with slight bottom heat.

Taxodium distichum. Deciduous Cypress. (Coniferae)
Hardy deciduous trees growing from 50 to 100 feet high and thriving in full sun near water in moist or swampy ground. The beautiful bright green foliage, made up of a mass of tiny linear leaves arranged spirally round the short stems, takes on attractive bronze-yellow hues before falling in autumn. T. d. mucronatum, the Mexican Cypress, which in its native habitat attains a height of from 100 to 120 feet, is semi-evergreen and is said to be less hardy than the type. Two trees are growing well at Kew, one by the side of the lake and a second by the side of the water-lily pond. T. d. pendulum, some 20 to 40 feet in height, has pendent branchlets.

Culture—Plant from November to March. No pruning is required. Propagate by means of seeds sown, when available, in a frame, in moist peat and leaf-mould. The seeds may be either home grown or imported.

Taxus. Yew. (Taxaceae)
Hardy evergreen trees or shrubs that grow from 1 to 60 feet high and thrive in sun or shade and in rather moist medium loam, though they will grow quite well in ordinary soil. *T. baccata, 30 to 60 feet in height, with its flat, narrow, linear leaves, deep green and glossy above and pale on the undersides, is the Common English Yew. A selection of the best varieties of the Common Yew should include *T. baccata vars. adpressa (12 to 20 feet), a distinct female variety; *adpressa aurea (12 to 20 feet); Dovastomi (10 to 15 feet), a wide-spreading variety with weeping branches; *fassignata (Irish Yew, 12 to 25 feet); and *fassignata aurea (10 to 20 feet), the two latter are useful trees in formal gardens. The variety of T. baccata, T. b. adpressa aurea, the Golden Yew, makes a handsome tree.
TAXUS — TECOMA

or large bush and is much planted as a specimen tree on lawns. *T. b. elegantissima* (10 to 15 feet), is also very ornamental, and so is *T. b. fructu-luteo* (10 to 15 feet), with its yellow fruits in autumn. *Var. pygmaea* (1½ to 2 feet) is a miniature Yew for the rock garden, and *var repandens* (1 to 2 feet), a dwarf spreading variety. *T. canadensis* (3 to 6 feet), the Canadian Yew; *var Washingtoniensis* (10 to 15 feet), a golden-leaved variety with pendent branchlets, and *T. cuspidata*, the Japanese Yew (which, in its native habitat reaches a height of 50 feet, but here is under 20 feet) and *var compacta* (4 to 6 feet) are also useful in the shrub border and for the lawn.

**Culture.**—Plant in May or September. Propagate by means of seeds sown in a frame, by layering in autumn; or by cuttings, 3 to 5 inches long, of young wood inserted in sandy soil in a frame or under a bell-glass in late summer and autumn.

**Hedges.**—The Yew is only rivalled by the Holly for forming compact and durable evergreen hedges. For this reason it is the tree or bush most extensively employed for topiary work.

Yews for hedges should be planted in a single row either in May or September and early October, with 1½ to 2 feet between the plants. Hard pruning, when required, is best done in May and clipping in July and August. For several years after planting the shoots should be topped frequently to encourage bushy formation. The Yew makes a good hedge, 5 to 10 feet or more in height, and can be trimmed to almost any shape desired.

It should not be planted in parks and meadows frequented by cattle or horses, in fact, all cattle will eat the young leaves in spring, and these are very injurious and may prove fatal to them.

**Tecoma.** Trumpet Flower (*Bignoniaceae*)

Beautiful deciduous shrubs of twining habit and with attractive pinnate foliage and large, tubular-shaped flowers. *T. grandiflora*, with flowers in panicles, from China and Japan, and *T. radicans*, having rather smaller flowers, from North America, both with orange-red flowers, bloom from July to September, running up to a height of some 20 to 30 feet or more.

**Culture.**—Tecomas thrive in well-drained, light and well-manured soil. They flower best when grown on warm sunny walls and may also be planted to clothe arbours and pergolas in mild situations. Plant in dry open weather between
November and March Prune annually in winter, cutting back the growths of the year to within about two buds or nodes of last year's wood. To propagate, insert cuttings of half-ripe wood, 5 or 6 inches long, in a frame with bottom heat in late summer, or cuttings of mature wood 1 foot long may be inserted at the foot of a hot south wall in October or November. Also layer in autumn, and sow seeds under glass when ripe.

**Ternstroemia japonica.** *(Ternstroemiaceae)*
An evergreen shrub or small tree, a native of Japan. It grows from 6 to 12 feet in height and has dark green leathery leaves up to 3 inches long and half as wide. The fragrant creamy or yellowish-white flowers develop during July and August. At Kew we class it as one of the shrubs on the borderland of hardiness, but it thrives in a sheltered position and in lime-free sandy loam with leaf-mould and peat added.

_Culture_—Plant in late April. No pruning is necessary, except to keep the bushes shapely. Late April is the best time for this. Increase by means of cuttings, 3 to 4 inches long, made of the half-ripe shoots and inserted in a close frame, preferably with slight bottom heat, in July or in a cold frame or under a bell-glass in August or September.

**Tetracentron sinense.** *(Trochodendraceae)*
An interesting monotypic, deciduous tree, or at first a large shrub, a native of central and western China (Introduced by Wilson in 1901). In appearance it resembles *Cercidiphyllum japonicum*, but has alternate leaves, in *Cercidiphyllum* they are opposite. It grows some 60 feet or more in height, has attractive finely-pointed obovate or heart-shaped foliage and yellow flowers of little beauty, in June or July.

_Culture_—This plant thrives in rather light and well-drained garden ground. Plant in March. No pruning is necessary, other than to shape the young trees. Late summer is the best time to do this. Increase by means of cuttings, 3 to 4 inches long, made of the ends of half-ripe shoots and inserted in a close frame in late summer, and layer in autumn.

**Teucrium.** Shrubby Germander *(Labatae)*.
This distinct genus, which is composed largely of herbaceous plants, includes also one or two species of useful evergreen shrubs, natives of southern Europe *T. fruticans*, which grows some 4 to 6 feet in height and produces pale lavender-
TEUCRIUM — THUYA

blue rosemary-like flowers from July to September, is a distinctive and attractive evergreen shrub which needs a warm, sunny position and the protection of a wall in all districts save those in the south and west of the British Isles.

*T* Marum is a useful little dwarf evergreen shrub some 10 or 12 inches in height and carrying deep pink flowers in August and September. It will thrive in the sun and in gritty loam in the border or rock garden.

*T* montanum, southern Europe, and *T* Polium, Mediterranean Region, may also be included in collections of seaside shrubs.

*Culture.*—A light, sandy loam suits the shrubby Teucriums best. Plant in late April. Prune in April, if required, to shape the bushes or to train to a wall. Propagation is carried out by means of seeds sown in April in a frame; by means of cuttings, 2 to 3 inches long, made of half-ripe young shoots and inserted in a close frame or bell-glass in late summer; or by division of roots in March.

*Thermopsis.* See Piptanthus

*Therorhodion camtschaticum.* (*Ericaceæ*)

A lovely little dwarf-growing deciduous shrub of tufted habit, a native of north-eastern Asia and known in some gardens as *Rhododendron camtschaticum.* It grows but 3 to 6 inches in height and produces in May and June large rosy-red flowers nearly 2 inches across.

*Culture.*—This shrub likes a partially-shaded situation and a mixture of moist, lime-free loam, peat, leaf-mould and coarse grit, and is a useful subject for the rock garden. Plant in October or November. Increase by division or offsets of the tufted clumps in autumn; by cuttings, 2 inches long, inserted in late summer under a bell-glass, and by seeds, when available, sown in early spring in a frame.

*Thorn.* See Cratægus.

*Thuja.* See Thuya

*Thujopsis.* See *Cupressus nootkatensis* *Thuya japonica,* etc.

*Thuya.* (*Coniferae*)

A genus of hardy ornamental evergreen trees with beautiful flat, scale-like foliage of symmetrical growth. *T* dolabrata, a native of Japan, is often seen as a handsome large shrub, but becomes a pyramidal tree up to 50 feet or more in height; *T. d. variegata,* which also reaches up to 50 feet in height, has
cream-white, variegated foliage. \textit{T. japonica} (syn. \textit{Thujaopsis Standishii}), the Japanese Arbor-vitæ, is a tree 18 to 24 feet high, and slower in growth than the three following species.

\textit{T. occidentalis}, the Arbor-vitæ of the eastern regions of North America, is a tree inclined to be of bushy habit and growing up to 50 feet or more in height. It often makes several leading shoots or develops side branches low down, and for this reason is very useful to plant as a shelter belt, screen or hedge. There are a large number of varieties, varying in habit and colour of the foliage; the most distinct are \textit{lutea} (30 to 40 feet, branchlets yellow); \textit{Rheingold} (20 to 30 feet, golden in summer, bronze in winter); \textit{Verveneana} (15 to 30 feet, golden bronze, darker in winter); and \textit{globosa} (2 to 3 feet, a useful dwarf variety for the rock garden).

\textit{*T. orientalis} (Chinese Arbor-vitæ) is of erect growth and dense bushy habit. It makes a handsome specimen tree for a formal garden or a lawn, growing 15 to 30 feet or more in height, less if closely pruned, var \textit{aurea} has yellow-tipped branchlets.

\textit{*T. plicata} (syns \textit{T. gigantea} and \textit{T. Lobbii}) is a fast-grower, which if allowed to develop unchecked, soon assumes large tree proportions. In a wild state the Giant Thuya reaches some 200 feet in height. The varieties include \textit{compacta}, a dwarf, closely-branched bush some 4 to 6 feet in height; \textit{pyramidalis} (up to 200 feet), of upright habit; \textit{semperaureascens} (up to 200 feet), with rich golden new growth; and \textit{zebrina} (up to 200 feet), distinctly marked or barred with green and yellow. They succeed in sunny positions and in most moist soils.

\textit{Culture.—}Plant in May or September and October. No pruning is necessary, unless it is to shorten long side branches growing upwards. Propagate the species by means of seeds sown in a frame in spring, and the varieties by cuttings, 2 to 4 inches long, inserted in sandy soil in a frame in September or October. Variegated forms are often grafted on to seedlings of the species, though this seems neither necessary, or desirable, as I have experienced no difficulty in rooting cuttings of the variegated varieties.

\textit{Thuyas as Hedge Plants—}Thuyas make one of the best evergreen hedges and are often used as a substitute for Yew, as they are of very much faster growth, and both ornamental
and effective. They form excellent shelter belts or screens and are in demand for hedges in formal gardens. Two feet is the best height at which to plant the shrubs, as they then break well from the bottom. Plant from 1½ to 3 feet apart in May or in September and October. The plants should be topped occasionally to encourage bushy growth and laterals must be trimmed in April and August. In five years a good hedge can be grown.

**Thymelaeae.** See Daphne.

**Tilia.** Lime or Linden. (Tiliaceae)

Hardy and ornamental deciduous trees, mostly of lofty growth and valuable for large pleasure grounds, parks, roads and avenue planting.

**Species.**—*T. cordata*, a small-leaved Lime, is a native of Europe, including Britain. It is a slow-growing tree, though ultimately 50 to 80 feet high, and flowers in late July. *T. euchlora*, a hybrid Lime, thought to be *T. cordata* × *T. dasyphylla*, is a tree up to 50 to 60 feet high, somewhat pendulous in habit, with lustrous, green, roundish-ovate leaves and during the second half of July fragrant yellowish-white flowers. It is one of the handsomest of Limes, useful as a street and avenue tree, and valuable because it is not attacked by the aphides, which in summer frequently spoil the beauty of the Common Lime.* *T. petonitoris* (Weeping Silver Lime), a native of eastern Europe, is another beautiful Lime, growing 60 to 75 feet high and with attractive silvery undersides to the leaves. The whitish flowers in late July and early August are very fragrant. *T. platyphyllos* (Large-leaved Lime), a native of Europe, is a handsome vigorous tree, 80 to 120 feet high, has large, roundish, ovate, downy leaves and yellowish-white flowers in June, when it is one of the first Limes to flower. Interesting and useful varieties of this Lime are: *T. asplenumfolia*, the Fern-leaved Lime (50 to 75 feet), and *corallina* (75 to 100 feet), a clean-growing, red-twigged Lime. *T. tomentosa*, the White Lime of eastern Europe, is a handsome tree 60 to 80 feet or more in height with large, dark-green, sub-orbicular leaves clothed with white tomentum on the undersides, and creamy-white flowers in late July and August. *T. vulgans*, the Common Lime, is now thought to be a hybrid between *T. cordata* and *T. platyphylllos*. A commonly-
planted tree, of which there is a specimen at Kew over 100 feet high, but in beauty and value it is inferior to the Limes referred to earlier and marked with an asterisk.

Culture.—All species thrive in sunny positions and in deep, rich soil. Plant from November to March. Thin-out the branches in late summer when overcrowded and stake the leading shoots of young trees when required. To propagate, sow seeds as soon as ripe in shallow boxes or pots and plunge in ashes outdoors during winter, placing them under glass the following spring; or layer in autumn. In tree nurseries "stools" formed by growing the Limes as bushes are maintained for the special purpose of propagating trees by layering.

Tinus. See Viburnum Tinus.

Torreya. (Taxaceae.)
A small genus of strikingly handsome evergreen trees, natives of China, Japan and America and related to the Cephalotaxus. In their native habitats they assume large dimensions, but in the British Isles reach only small tree and, in some cases, shrub proportions. *T. californica* (Californian Nutmeg) makes a fine ornamental tree up to 50 feet or more in height and has long and rigid, sharp-pointed leaves, dark-green on top and scored with glaucous grooves on the undersides. *T. grandis*, from China and *T. nucifera*, from Japan, have similar, but smaller foliage than *T. californica*, and both grow from 10 to 15 feet in height.

Culture.—The Torreyas succeed in sunny and partially-shaded positions. They thrive in well-drained loam and may be propagated by means of seeds sown in a frame when ripe, or by cuttings, 3 to 4 inches long, inserted in a cold frame or under a handlight in September. Plant in October or April and early in May. Prune in late April only to thin and shape the trees if required.

Trachelospermum. (Apocynaceae.)
This is a small genus of charming and attractive evergreen climbing shrubs with leathery, longish, oval leaves and in July and August sweetly-fragrant white or cream Jessamine-like flowers. Being on the borderland of hardiness in the British Isles, the Trachelospermums should be planted against sheltered walls and fences. *T. divaricatum*, a native of China, Japan and Korea, grows some 10 to 15 feet in height, has

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PLATE 7  A GARDEN LANDSCAPE OF TREES AND SHRUBS
TRACHELOSPERMUM — TRICUSPIDARIA

creamy-yellow flowers, and is one of the hardiest species
*T. jasminoides*, a native of China, grows 10 to 15 feet or more
in height, has glossy green foliage and pure white flowers
Its variety, variegatum, 8 to 12 feet, has leaves bordered and
blotted with creamy-white *T. japonicum*, from Japan,
15 to 20 feet, has more leathery and broader leaves and, in
late summer, pure white flowers *T. j. variegatum*, 10 to 15
feet, has lovely variegated foliage. In some gardens the
name *Rhyncospermum* is used instead of Trachelospermum.

Culture — Grow in pots until large enough for their per­
manent positions and plant out in late April. Prune and thin
the growths in spring when new growth is about to recom­
mence. Propagation may be carried out by means of cuttings
made of the side shoots, some 3 to 5 inches long, in a close
frame or under a bell-glass in late summer, also by layering
in autumn.

*Trachycarpus excelsus* (syn. *T. Fortunei*). Chusan Palm.
*(Palmae)*
A striking and unique hardy Palm for British gardens. It is a
native of Japan, has large fan-shaped leaves, measuring 2½
to 3½ or 4 feet across and 1½ to 2½ feet long, and these give
the plant a pleasing tropical appearance. The Chusan
Palm rarely attains to more than 12 to 20 feet in height in the
average sheltered British garden, but in warm situations in
the milder localities, it may run up to double that height.
The clusters of small yellow flowers, borne on large drooping
panicles in summer, are followed by bluish-black, small
damson-like fruits.

Culture. — This palm thrives in well-drained loam with leaf­
mould and peat added and with advantage may from time
to time be top-dressed with well-decayed leaf-mould and cow­
dung. Seeds sown as soon as ripe in a greenhouse provide a
ready means of increase, though at first growth is slow. It is
usual to cultivate the plants in a cool greenhouse for some
years before planting outside in late April or May. No
pruning is required.

Tree of Heaven. See Ailanthus.

*Tricuspidaria*. *(Tiliaceae)*
Interesting and ornamental semi-hardy evergreen shrubs or
small trees, natives of Chile. *T. dependens* is an evergreen

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shrub or small tree in the mild climate of the south and west of the British Isles, growing 10 to 25 feet or more in height and having dark glossy green, oval, toothed leaves and bell-shaped white flowers in late summer. At Kew we find this species harder than *T. lanceolata*. *T. lanceolata*, also known as *Crinodendron Hookerianum*, grows from 10 to 20 feet in height, has long and pointed lanceolate leaves and in May and June produces clusters of bright crimson, pendulous, egg-shaped flowers, more than an inch long, which hang along the undersides of the branches like glowing lanterns. It prefers semi-shade, and is not such a rapid grower as *T. dependens*. In the colder districts of the British Isles, these plants need the protection of a warm wall, but in warm and sheltered situations in the southern and western districts, they will assume small tree dimensions. These shrubs are particularly useful and interesting climbers for a warm and sheltered house wall.

**Culture**—The Tricuspidarias like a cool, moist, non-calcareous compost of peat, loam and leaf-mould. Plant in early May. Prune *T. dependens* in April, *T. lanceolata* at the end of May or early in June, but only to shape the trees or train the growths to a wall. Propagate by means of cuttings of semi-mature shoots, 3 or 4 inches long, inserted in sandy soil (with peat added, if available), in gentle bottom heat in late summer, or by means of layering, which may be carried out in autumn.

**Tripetaleia. (Ericaceae)**

Two species of this rare deciduous Japanese genus are in cultivation at Kew. These are at present quite small shrubs, scarcely more than 1 to 2 feet in height, though they flower and ripen seeds. In their native habitat, however, bushes are said to reach 6 feet in height. They flower in late summer and autumn. *T. bracteata* has pink flowers borne in racemes, which are rarely branched. *T. paniculata* has white flowers tinged with pink and borne in upright panicles.

**Culture.**—Plant in a lime-free compost of sandy loam, peat and leaf-mould in March. No pruning is required. Increase by means of seeds sown under glass, when available, and by cuttings, 2 to 3 inches long, made of half-ripe shoots and inserted in sandy peat under a bell-glass in August.
TRIPTYERYGIUM — TSUGA

**Triptyerygium.** *(Celastraceae)*

A small genus of little-known deciduous climbers from eastern Asia, bearing large clusters of tiny cream-white fragrant flowers. *T. Forrestii*, which runs up to from 5 to 8 feet in height, and is very similar in appearance and habit, except for its winged fruits, to the *Celastrus*, was recently introduced by Forrest from Yunnan, China. The best-known species in cultivation is *T. Regeli* (syn. *T. Wilfordii Regel*), a native of Japan, Manchuria and Korea. It grows from 5 to 6 feet in height, has large leaves and in June and July carries creamy-white flowers followed by interesting greenish-white winged fruits.

**Culture** — The Triptyerygiums grow freely in ordinary well-drained garden ground. Plant from November to March. Prune in winter only to regulate and train the trailing growths. Increase by means of seeds sown under glass when ripe or in spring, by cuttings, 2 to 4 inches long, made of the ends of the non-flowering side shoots and inserted under a bell-glass in August, and by layering in autumn.

**Trochodendron aralioides.** *(Trochodendraceae)*

A handsome and rare monotypic, semi-hardy shrub or small tree reaching 15 to 20 feet in height. Wild trees are said occasionally to reach 50 feet. It is a native of Japan, has beautiful leathery, saw-edged, rhododendron-like evergreen foliage and in April and May produces erect racemes of pretty little clear green flowers.

**Culture** — This shrub grows well in a moist and sheltered situation in good sandy loam and is partial to a peaty soil. Plant early in May. No pruning is desirable or required. Propagation may be carried out by means of cuttings of young shoots about 4 inches long inserted in sandy soil in gentle bottom heat in late summer, or by means of layering in autumn.

**Tsuga.** Hemlock Spruce *(Coniferae)*

These are handsome hardy coniferous trees, natives of China, Japan, N America and the Himalayan regions, and growing from 70 to 100 feet high. They do best in sunny positions, and in moist deep loam, and are suitable for pleasure ground and woodland planting. Two of the most ornamental species are *T. Albertiana* (syn *T. Mertensiana*), the “Western Hemlock” from the western districts of North America, a
beautiful and rapidly-growing tree, eventually reaching a height of 70 feet or more, which has small and glossy linear leaves, dark-green above and whitish underneath, and stalkless little cones up to 1 inch long, and *T. canadensis, the "Common Hemlock" from the eastern districts of North America, with somewhat similar foliage, but with distinct white lines beneath and stalked cones. This latter species likes a chalky soil and eventually reaches a height of 80 feet or more, often branching into several trunks near the base. There are numerous varieties of this latter species including T. c. nana, a dainty dwarf shrub, from 1 to 2 feet in height, for the rock garden; T. c. parvifolia, an attractive small-leaved bush 3 to 5 feet in height, and T. c. pendula, a weeping bush 6 to 10 feet in height, useful as a small lawn specimen T. diversifolia (Japanese Hemlock), which in its native habitat assumes large tree dimensions up to 60 to 75 feet in height, is here a small tree or shrub of slow growth, and makes a neat lawn specimen. It is fairly easy to recognise because of its small and short leaves. T. Patmoniana (Mountain Hemlock), a native of the western regions of North America, is a tree 50 to 80 feet or more in height and with attractive grey-green leaves and the largest cones of the genus. T. Sieboldii, a slow-growing bush or tree at Kew, but reaching a height of from 50 to 100 feet in Japan, has dark, glossy-green leaves with two prominent stomata lines on the undersides

Culture.—Plant in late April and in May or in September and October. No pruning is required, except to shape the trees and bushes. This should be done in late April or early May. Propagate the species by means of seeds sown in a frame when ripe, by cuttings, 1 to 3 inches long, made of shoots near the tops of young trees, and inserted under a bell-glass in August. The varieties may be grafted under glass in spring on to seedlings of the type.

Tulip Tree. See Liriodendron.

Ulex. (Leguminosae)

This is the botanical name for the Furze, Whin or Gorse. There are several species, which are free-flowering evergreen or semi-evergreen shrubs, related to the Broom family. They have spiny, scale-like foliage and bear yellow flowers. The double-flowered furze, *U. europaeus fl. pl*, grows to about 5
feet in height and from March to June bears a mass of lovely
double golden flowers similar to those of the Broom, *U. Gallii*
is a native of western Europe, including the south of England,
and is a dwarf shrub 1 to 2 feet in height and flowering from
August to October; *U. nanus*, also a native of western Europe
including Britain, is a dwarf species flowering from August to
November, and rarely exceeding 18 inches in height. The
gorses are useful for forming hedges in bleak, exposed positions
and in poor soils. When the dwarf furze is used for this
purpose, the best plan is to raise a bank of the height desired,
wider at the bottom than at the top, and to plant the shrubs
along the ridge. The roots soon penetrate into the bank
and bind it together.

*Culture.*—Furze or Gorse will thrive on dry, sandy or
gravelly banks in exposed positions on which few other plants
will grow and is, therefore, of great value in such positions.
These plants do not transplant readily in the open ground
and it is usual to cultivate the plants in pots until large enough
for the flowering positions. Plant out from pots at any time
between March and October in sunny positions. Cut hard
back when overgrown in April. Propagate by means of
cuttings in sandy soil in a frame in August, or by seeds sown
in a frame in March. Because it does not produce seeds the
double variety of *U. europaeus fl. pl.* is propagated by means
of cuttings, 2 to 3 inches long, made of the short side shoots
with a thin heel of old wood and inserted in a cold frame or
under a bell-glass in sand or sandy soil in August.

*Ulmus.* Elm (*Urticaceae*)
Deciduous trees, many being of large size and valuable for
park, avenue and road-side planting. They thrive in almost
any ground, notably in chalk soils, and in practically any
position. The roots spread out through a large area of soil,
and greatly impoverish it. The branches of old trees of the
Common English Elm are liable to fall without warning.
For the above two reasons, apart from their large dimensions,
the Elms are not suitable for small gardens. *U. americana*,
the American Elm, a native of the eastern and central regions
of North America, is a beautiful tree up to 120 feet in height,
in its native habitat, but generally it does not grow well in
Britain. In New England I have seen many fine specimens
with distinctive short trunks and numerous long and wide spreading branches of moderate size. *U. campestris* is the Common English Elm, which grows to a height of from 80 to 100 feet. A variety of this tree, *U. c. variegata* (Variegated English Elm), 40 to 60 feet, has medium-sized, saw-edged, oval-shaped leaves. These are somewhat "lop-sided" at the base and are striped and marked with creamy-white. It is a distinct and attractive tree. *U. c. Louis van Houtte* (Van Houtte's Golden Elm) is another very handsome variety, 60 to 80 feet in height, having bright golden yellow leaves.

*U. major* (Dutch Elm) is a hybrid of *U. montana* and *U. nitens*. There are a number of large specimens 80 to 90 feet high at Kew. *U. montana* (Wych or Scotch Elm) is a handsome and hardy tree growing up to 100 feet or more high, and having "lop-sided," hazel-like, ovate, bi-serrate-edged foliage. There is a fine weeping form of this, namely *U. m. pendula* (Weeping Wych Elm), which rarely exceeds 30 feet in height and makes a delightful specimen tree for a lawn. With a little training this makes an almost perfect umbrella-shaped specimen. *U. nitens* (syn. *glabra*), the Feathered Elm, 80 to 100 feet in height, has smooth, glossy leaves and is also a good species, of which there are pendulous and variegated varieties. Somewhat similar, and by some authorities designated a variety of the foregoing species, is *U. stricta*, the Cornish Elm, a fine pyramidal tree, 80 to 100 feet in height, very popular for avenue and street planting. A useful variety of more erect habit is *U. s. Wheatleyi*, the Guernsey Elm (80 to 100 feet), by many considered the best elm for road and avenue planting. The Elms, as a whole, cannot be recommended for planting in small gardens or even as lawn specimens because they are such gross feeders. The two weeping varieties, however, are worth planting. *U. montana pendula* and *U. nitens pendula* (30 to 40 feet), to which may be added *U. viminalis*, a tree of graceful slender habit, 20 to 30 feet tall and with narrow, fimbriated leaves, and the variety *aurea* (15 to 20 feet), which has attractive golden-yellow foliage.

*Culture.*—Plant from November to March. Thin-out the branches and attend to the leading growths of the trees in the summer, when required. Propagate by means of seeds.
sown when ripe in a frame, by layering in autumn, by grafting in spring out of doors, or by sucker growths removed in late October or early in November.

**Umbellularia californica.** Californian Laurel (*Lauraceae*)

An evergreen tree, or large bush, with longish, oval, glossy green, leathery and aromatic foliage. It rather resembles the Bay Laurel in appearance and degree of hardiness and is sometimes called "Spice Bush." In its native habitat, California, it assumes large tree dimensions of 70 to 100 feet, but in the British Isles rarely exceeds 20 to 25 feet in height. This plant likes a sheltered position, and is a very good evergreen for gardens in the south and west of the British Isles. It bears small, yellowish-green flowers in April, followed by purplish, pear-shaped fruits 1 inch long.

**Culture.**—The Umbellularia grows best in a warm and sunny position and a well-drained, lime-free soil. Plant towards the end of April or early in May. Prune to thin or shape the trees and bushes towards the end of April. Propagation may be carried out by means of seeds sown under glass in early spring, by cuttings, 3 to 4 inches long, made of the ends of healthy side shoots and inserted under a bell-glass in August; or by layering in autumn.

**Umbrella Tree.** See *Sciadopitys verticillata*.

**Vaccinium.** (*Vaccinaceae*)

This is the name of a large genus of deciduous and evergreen shrubby plants which are grown for the beauty of their flowers and for their fruits and tinted foliage in autumn. Most of the *Vacciniums* bear racemes of little bell-shaped flowers in May or June and in height vary from 1 to 10 feet.

**Deciduous Species.**—A selection of the deciduous species should include those mentioned below. *V. Arctostaphylos*, the Caucasian Whortleberry, which grows 5 to 8 or 10 feet high and is distinguished by its large leaves, which turn rich red in autumn; the greenish-white flowers are followed by purple berries. *V. corymbosum* (the Swamp Blueberry of the eastern regions of North America) and its several varieties, are the Vaccinions most commonly cultivated in British gardens. They grow to a height of 4 to 6 or 8 feet, have attractive white flowers in May not unlike those of the Lily-of-the-Valley, followed by blue-black berries and brilliant autumnal foliage.
tints of scarlet, red and golden yellow. \textit{V. Myrtillus}, a pretty little heath-like shrub some 18 inches in height, with small, saw-edged, ovate foliage and in May drooping pink flowers followed by showy, bluish-black, edible, globular fruit. This, the Whortleberry, is also known as the Bilberry, Blaeberry and Blueberry. The Cranberry (\textit{Oxycoccus}) belongs to the same natural order, but to a different genus.

\textbf{EVERGREEN SPECIES.}—\textit{V. glauco-album} is a Himalayan shrub, 2 to 3 feet high, with attractive bluish-white undersurfaces to the leaves, pale pink flowers in July and plum-blue fruits. \textit{V. MORTINIA} is an interesting species from Ecuador, 2 to 4 feet high and with rosy-pink flowers in June, followed by red berries. \textit{V. Vitis-idaea}, the native Cowberry, is an evergreen trailing shrub, 6 to 12 inches high and with small box-like leaves, white or pink-tinted flowers in May and June and later edible red fruits.

\textbf{Culture.}—The \textit{Vacciniums} thrive best in a moist, sandy, peaty or lime-free loam and leaf-mould. Plant out the deciduous kinds in permanent positions in March and the evergreen in late April. Cut out old wood of the deciduous species in winter or early spring, and when necessary thin the evergreen species in late April. Propagate by means of cuttings, 2 to 3 inches long, of semi-mature shoots inserted in sandy peat under glass in gentle bottom heat in late July or August; by offsets, division or root-suckers at planting time; by seeds sown in a frame in autumn when ripe; and by layering in autumn.

\textbf{Vella.} (\textit{Cruciferæ.})

Two species of this interesting shrub are cultivated in the rock garden at Kew. Both are natives of Spain. \textit{V. Pseudocytisus}, the Cress Rocket, is an evergreen shrub, 1 to 2 feet or more in height, with bristly, obovate leaves and in June and July, purple and yellow flowers. It should be given a sheltered position, not being so hardy as \textit{V. spinosa}, a deciduous species, 9 to 12 inches high, with small, greyish-green leaves and in May and June yellow flowers.

\textbf{Culture.}—Plant in sunny positions in March or April, in well-drained loamy soil. No pruning is required, unless it is to cut out an old worn-out branch or two in July from old plants. Increase by cuttings, 2 to 3 inches long, made of the
VELLA — VERONICA

ends of the healthy growing shoots and inserted under a bell-glass in late July or August.

Verbena. See Lippia citnodora.

Veronica. Speedwell. (Scrophulariaceae)
The evergreen shrubs of this genus are, when well-grown, amongst the most valuable of summer and autumn-blooming plants in the milder districts of the British Isles. Their handsome, purple, mauve, red, pink, blue or white spikes of flowers, which are produced in great profusion and succession for months, make them invaluable for growing in shrubbery borders, notably in maritime districts, where, with a dry subsoil and somewhat sheltered and sunny situations, the plants will generally stand uninjured through the winter. They are mostly natives of New Zealand.

Among the most popular species and varieties are V. Andersonii, which grows 2 to 4 feet in height and produces spikes of purple or blue flowers from July to September; *V. angustifolia, a bushy shrub, 3 to 6 feet in height, with long and narrow leaves and from July to October, long thin spikes of blush-white flowers; V. buxifolia, which grows about 2 feet in height, has small, narrow, oblong, glossy-green foliage and clusters of tiny white flowers from June to August; V. cupressoides, a dwarf cypress-like shrub from 1 to 3 feet in height, with small scale-like or narrow, oblong foliage and from July to September violet-purple flowers; *V. elliptica var Autumn Glory, one of the hardiest, which grows from 1½ to 2 feet in height and bears a mass of large, deep violet flowers from July to October; V. Hectorii, a dwarf, conifer-like shrub, 12 to 18 inches high with small, scale-like foliage and pale lilac or white flowers in July; V. Hulkeana, a loose-habited shrub, growing 5 to 6 feet or more in height in Cornwall (at Kew it needs the protection of a warm south wall), its pale lavender-blue flowers are very showy in May and June; *V. salicifolia, a commonly-cultivated shrub in the south and west of the British Isles, and which is a freely-branched bush, 4 to 5 feet or more in height, and carries in late summer and autumn, lilac-tinted white flowers; *V. speciosa and varieties, which grow from 3 to 5 feet in height, and have large, shining, leathery, obovate foliage and from July to September large racemes of attractive flowers [a

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selection of the varieties should include 'Cookiana' (White), "Diamant" (Bright Crimson), 'Gloriosa' (Pink), 'Pink Pearl', 'Purple Queen', 'Simon Delaux' (Crimson), and 'Velv' or 'Royal Purple' (Deep Royal Purple)]; and *V. Traversii, the last species which I shall mention, a most useful town shrub, growing up to 5 feet in height, with small and narrow oblong leaves and bearing in July white flowers. *White Gem is a dwarf variety of V. Traversii, it seldom grows more than half the height of the type. The two latter are harder than most Veronicas.

_Culture_—Plant in April, in well-cultivated garden ground. When desirable, trim annually to keep in shape only, but it is usually necessary to prune hard back every few years, as the bushes become straggly and the old wood is apt to die off. This cutting back is best done in April. To propagate, insert cuttings of matured wood, 3 inches long, in a frame in August or September. The new growths of young plants should be pinched back several times to encourage the formation of strong, busy plants, but no "stopping" must be done after the end of June or the flower spikes will be sacrificed.

_Veronicas as Screens or Hedges in the south and west of the British Isles._—Veronicas make excellent ornamental screens and are very handsome when in flower, V. Traversii being especially useful. Strong bushes may be planted one and a half or two feet apart. The hedge is best planted in April and the shrubs should be between a foot and a foot and a half high when put in. They will take three or four years to make a good screen. Little trimming is necessary, or the floral beauty of the hedge will be destroyed. It must be borne in mind, however, that only in mild districts in the south and south-west of the British Isles are most of the Veronicas sufficiently hardy to admit of their being used for this purpose.

_Viburnum. (Caprifoliaceae)_
A genus of interesting and useful deciduous and evergreen trees and shrubs with white or pinkish-tinged flowers, followed, in most cases, by handsome fruits and brilliant autumn foliage. During the last half century numerous beautiful species have been introduced from central and western China. They thrive in most soils, but prefer a moist, well-drained, deep loam. These shrubs are accommodating subjects and
will thrive in sun or partial shade and wettish ground. The Viburnums are most useful for shrubberies, for the waterside, and a number for lawn beds. Ample space should be given them to develop full beauty of shape. Of these the best known is V. Opulus, our native Water Elder, a bush 8 to 12 feet or more high, with white flowers, shining red fruits and attractive crimson and orange foliage in autumn. The variety V. O. fructu-luteo (4 to 6 feet), has yellow fruit. *V. Opulus sterile is called the Guelder Rose or Snowball Tree, from its white blossoms in June. The flowers grow in cymes, almost globular in form and the foliage assumes orange and red tints in autumn. The maple-like leaves are divided into three or five lobes and the edges are unevenly serrated. This deciduous shrub will reach a height of 8 or more feet and makes an excellent screen for town gardens. V. betulsfolium, V. dasyanthum and V. lobophyllum are three Chinese species, 8 or 9 feet high, with white flowers in June and clusters of attractive red berries in autumn. *V. Carlesii, the Korean Guelder Rose, a spreading bush, which rarely exceeds 4 feet in height, has saw-edged, broadly-ovate foliage and bears in April and May clusters of fragrant pinkish-white flowers. *V. fragrans averages 6 feet in height and produces compact clusters of fragrant, heliotrope-scented, pink or pearly-white flowers, more or less through the winter in mild districts, with the best display in February and March. The two last-mentioned plants are among the best of our hardy fragrant shrubs. V. Laniana, the common Wayfaring Tree (10 to 15 feet), with its saw-edged leaves, broad at the base and tapering to a point, is the well-known deciduous shrub, native to our hedgerows. It is much used as a stock for grafting, especially on the Continent, but this method of propagation cannot be recommended when increase by seeds, cuttings and layering are readily available. V. tomentosum is a Japanese species, growing up to 5 to 10 feet high and with flattened clusters of showy sterile white flowers borne on the wide-spreading horizontal branches in June and bronzy crimson foliage in autumn. Var. Mariesii, 5 to 6 feet, has larger inflorescences and sterile flowers. One of the most beautiful deciduous Viburnums is *V. tomentosum plicatum, the Japanese Guelder Rose, which grows to a height of about 6 feet and
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in May and June bears rounded clusters of pure snow-white flowers. It is a splendid border shrub for small gardens For clothing a warm wall and in well-drained loam, *V. macrocephalum*, a deciduous or semi-evergreen species, 8 to 12 feet in height, or more against a wall, with longish oblong foliage and in May, globular clusters of white flowers, is a delightful subject. *V. Tinus* (Laurustinus) is an evergreen species making a bush 8 feet or more in height. It will thrive in sun or shade under trees and facing north. This shrub begins to flower in late autumn and carries trusses of white blooms all through the winter months, these being admirably set off by the dense, deep glossy-green, oval foliage. It is useful as a hedge plant, except in cold districts, and is, undoubtedly, the most useful evergreen *Viburnum*. *V. rhytidophyllum* grows up to 9 to 15 feet high or more, against a wall. It makes a vigorous bush with large glossy corrugated leaves, grey-felted on the undersides and, in May, bears large flat heads of small white flowers, followed by red fruits, which later turn black. This species is a striking evergreen if given a sheltered position, because of the large leaves in winter. Other good evergreen species are *V. Davidii* (1½ to 2½ feet), with clusters of rich blue fruits; *V. Henryi*, a big shrub (6 to 10 feet), with white flowers and red oval berries, and *V. utile* (5 to 6 feet), with white flowers in May and blue-black berries in autumn.

Culture.—Plant in a sunny position; deciduous species from November to March; evergreens in late April or in May and October. Trim into shape and to keep within bounds annually, and, when necessary, cut out old wood in June or July after flowering, or in winter after the fruits decay (deciduous) and in late April or early in May (evergreen species). Propagate by cuttings, 3 to 4 inches long, of semi-mature wood inserted in a frame in July, layer in October, and sow seeds under glass when ripe.

*Vinca*. Periwinkle (*Apocynaceae*)

Useful and well-known evergreen shrubs of trailing habit that thrive in sun or shade. They are valuable subjects for planting as ground cover under trees, for shady positions in the rock garden, for odd corners, and for growing on banks. The Larger Periwinkle, *V major*, grows to a height of about 20 inches, and the Lesser Periwinkle, *V. minor*, to a height of
VINCA — VISCUM

6 to 9 inches. They have broad, oval leaves, dark glossy green in colour, and from June to September, purplish-blue blossoms. As the name suggests, the flowers of *V. minor* are smaller than those of *V. major*. There are numerous varieties of *V. minor*, including: *var. alba* (White); *var. argentea-variegata* (White Variegations of the foliage); *var. aurea-variegata* (Yellow Variegations of the foliage); *var. azurea* (Sky Blue flowers); *var. flore pleno* (Double, Blue); *var. flore rosco pleno* (Double Rose-pink); and *var. puniceo* (Purple). *V. difforms* is a winter-flowering species, a native of south-western Europe and northern Africa, with pale lilac-blue flowers. The flowers seldom attain their full beauty at Kew, but it is an interesting plant for the warm and sheltered gardens of the south and west of the British Isles.

**Culture**—These hardy ornamental shrubs grow in any well-drained ordinary soil. Plant from October to March. Cut back hard or remove straggling shoots in April. Propagate by means of division in March or October, or take cuttings of semi-ripe wood, 2 to 4 inches long, and insert in sandy soil under a handlight or bell-glass in August.

*Virgilia lutea.* See Cladrasris.

*Virginia Creeper.* See Vitis.

*Viscum album.* Mistletoe (*Loranthaceae*)

This curious and interesting parasite is a native of Europe, including the British Isles. It is readily propagated by means of seeds, January to March being the best time. The fruits can be squashed on the rough bark, but it is better to make an incision in the bark on the underside of a two or three-year old branch of an apple-tree or any of the following trees: the pear, plum, lime, poplar, thorn, ash, plane, sycamore, willow, birch, hazel, elm or maple. Even laurels answer equally well. Into the incision insert the ripe mistletoe berries and carefully tie the bark over with a piece of bass matting or woollen yarn. This experiment often fails, owing to the birds running away with the berries from the place where they have been inserted, for birds are very fond of them, and this is why the incision in the bark should be made on the *underside* of a hanging branch where the birds are not so likely to see it. It is also useless to sow unripe seeds, as is often done in December, the seeds are not ripe until the new
year. Growth is exceedingly slow for the first four or five years, and little cutting will be possible until the end of that period. Male and female flowers are borne on different individuals.

Vitex Agnus-castus. Chaste Tree (Verbenaceae)
This aromatic deciduous shrub or small tree, a native of the Mediterranean area, thrives in ordinary well-drained garden soil, but needs a warm and sunny position and the protection of a south wall, except in the south and west of the British Isles. It reaches a height of from 6 to 10 feet, has digitate leaves composed of five to seven lanceolate leaflets felted grey on the undersides, and from August to October carries clusters of fragrant mauve flowers. \textit{V. Agnus-castus alba} is a white-flowering form. A second species, \textit{V. vitexsa}, the Chinese Chaste Tree, also 6 to 10 feet in height, has deeply-divided compound leaves and violet-blue flowers borne in terminal panicles. In point of hardness, it is on a par with the European species.

Culture—Propagation is carried out by means of cuttings, 2 to 4 inches long, made of the non-flowering side shoots and inserted in sandy soil in autumn under a bell-glass or in a cold frame. Plant in March. Shorten the flowering growths of the previous year fairly hard back each year in February.

Vitis. Vine. (Ampelidaceae)
A useful family of deciduous climbing plants, including the popular Virginia Creeper. The flowers are very insignificant, but this defect is amply compensated for in most of the species by the beautiful leaves which assume most brilliant scarlet, crimson, purple or orange tints in autumn. Their growth, also, in most species, is rapid. \textit{*V. (Ampelopsis) quinquefoh}, which is self-climbing by means of discs on the tendrils, and \textit{V. vitacea}, which differs in the absence of the discs and if not tied, attaches itself for support by means of the tendrils twisting round any object within reach, are both natives of the eastern districts of North America and are favourites for covering ugly walls, sheds, pergolas or arches. The former, as a climber on trees at Kew, reaches up to 60 feet. \textit{*V. Cognetiae}, growing up to 50 feet or more, with large leaves, is known as the Japanese Crimson Glory Vine because of the wonderful crimson and bronze hues it assumes in autumn. Below are mentioned a few other good species.
VITIS

*V* heterophylla (syn *V.* humulifolia), the Turquoise-berried Vine, a native of China and Japan, which grows to a height of 15 feet or more and has handsome foliage and pale blue fruits which develop best on a south wall. *V.* inconstans (*Ampelopsis Veitchii*), up to 50 feet or more, is the most popular of all self-clinging deciduous climbers for walls. It runs up to a height of 50 feet or more, and has richly-coloured foliage in autumn. *V.* i var. Low1'/, (20 feet or more) is a small-leaved form and *V.* i var *purpurea* (25 feet or more) has purplish-coloured leaves in summer. *V.* megalophylla, a Chinese species (20 to 30 feet), has large leaves bright green above and bluish-green on the undersides. *V.* vimfera var. *lacinosa*, the Parsley-leaved Vine (20 feet or more), is a variety of the Common Grape Vine and has deeply-Indented foliage. *V.* vimfera *purpurea*, the Temtuner Grape (20 feet or more), has foliage of a rich deep purple. *V.* (syn *Spinovitis*) *Davidii* is a vigorous Chinese vine with thorny stems, large lustrous dark-green leaves and black fruits. *V.* Henryana, the Chinese Virginia Creeper (25 feet or more), with dark, velvety, green leaves and beautiful crimson tints in autumn, is not so hardy as some of the Vitis, but grows very well on a north and north-west wall at Kew.

**Culture**—These ornamental vines all thrive in deeply-dug, moist soil with a little lime in it. Plant in dry and open weather from November to March. These climbers grow from 10 to 50 feet in height, according to species and environment, and require trimming in winter. Where a plant has filled the space it is to cover, the laterals should be pruned hard back in early winter to two or three eyes from their base, and weak, straggling shoots should be cut back to one bud. Sturdy shoots needed to extend may be cut back by about one-third. Propagation is carried out by means of seeds sown when ripe in autumn under glass; by layering in autumn; by cuttings made of the semi-mature wood, 4 to 6 inches long, with a heel and inserted in a frame in September; by similar cuttings, but 1 foot long, inserted on a sheltered border outside in October or November; or by eyes placed singly in small pots plunged in a close propagating case with bottom heat in early spring. The Virginia Creepers can also be propagated by means of half-ripe shoots, 3 or 4 inches long, inserted in a
close frame, preferably with bottom heat, during July. It is usual to cultivate Vitis in pots until large enough for their permanent positions, as they do not transplant readily.

Walnut. See Juglans.
Wayfaring Tree. See Viburnum Lantana.
Weigela. See Diervilla.
Wellingtonia. See Sequoia gigantea.
Whitebeam. See Pyrus Aria.
Whortleberry. See Vaccinium Myrtillus.
Widdringtonia. Cypress Pines. (Coniferae.)

A small genus of beautiful, but somewhat tender evergreen coniferous trees or shrubs, natives of South and sub-tropical Africa and similar in form and habit to the Cupressus. They have small ovoid or globose cones not more than 1 inch wide and long, in most species less. The trees or shrubs grow quite well in warm, sheltered situations in the mildest southern and western districts of the British Isles. Among the species in cultivation are: W. cupressoides (Sapree Wood), a shrub-like conifer, 6 to 12 feet high and a native of Natal; W. juniperoides (Clanwilliam Cedar), a widely-branched tree, 20 to 60 feet high and a native of the Cedarberg Mountains; W. Schwarzii, a taller and well-branched tree, growing 50 to 80 feet high in Cape Province; and W. Whytei (Milanji Cedar), a large tree up to 140 feet high and with a trunk as much as 15 feet in girth.

Culture.—The trees thrive in a light, well-drained loamy soil with leaf-mould added and peat, if available. Plant in late April or early in May. Prune, when required, in May only to regulate the branches and to shape young specimens. Propagation is by means of imported seeds sown in a cool greenhouse on arrival.

Willow. See Salix.

Wistaria. (Leguminosae.)

A genus of strong-growing deciduous climbers, which are highly ornamental on a house wall, fence, pergola, pillars, arbours, arches, porches or tall rustic poles. The pinnate foliage is attractive, but the great beauty and value of the Wistaria lies in its long drooping racemes of purple, mauve or white flowers, which in form are not unlike the blossoms of the Laburnum. It does well in any good garden soil, but prefers moist, deep
and well-drained loam. With age the plant will run up from 10 to 100 feet or more in height or length, according to species and environment. It blooms in May and early June in advance of the leaves and finishes as the leaves develop. There is often a second period of flowering, but not so free, in August. *W chinensis (sinensis), the Chinese Wistaria (50 to 100 feet) has mauve flowers; there are three or four varieties, one having white blossoms, one double flowers and another variegated foliage. W floribunda (W. multijuga of some gardens and nurseries), the Japanese Wistaria, has racemes of blooms sometimes as much as 3 feet in length. Japanese writers give up to 5 feet as a not unusual length of the racemes on highly-cultivated plants. They can be had with mauve, rose or white flowers. This species runs up to about 25 feet or more, and blooms about 10 days later than W. chinensis. Its white form, *W floribunda or multijuga alba, is the best white Wistaria. W. venusta is a white-flowered species, a native of China and Japan, of more bushy habit. At present this has only reached a height of 4 to 5 feet at Kew, but it will probably grow taller.

Culture—Propagate by means of layering young wood in the autumn, and by grafting in early spring on pieces of thick fleshy roots in a close propagating case with gentle bottom heat. So that Wistaria plants shall not be unduly checked in growth by transplanting, they are usually cultivated in pots until large enough to plant in their permanent positions. Plant in the flowering positions in open weather from October to April, always in sunny positions. Both winter and summer pruning are essential to promote flower buds, and straggling and weak shoots should be freely cut away. Laterals, by frequent pruning in summer, should be encouraged to form spurs along the main stems to bear the bloom. Once the climbers are trained in this way, the young shoots should, in winter (preferably January and February, before the sap rises), be cut hard back to within a couple of inches of the old wood.

Witch Hazel. See Hamamelis
Woodbine. See Lonicera Periclymenum.
Wormwood. See Artemisia absinthum.
Xanthoceras sorbifolia. (Sapindaceae)
A handsome deciduous shrub or small tree, a native of northern
ABC OF SHRUBS AND TREES

China, with much-divided bright green leaves. It is botanically related to the Horse Chestnut (*Aesculus Hippocastanum*) and has somewhat similar fruits. The creamy-white blossoms with crimson markings are borne during May in short erect panicles.

*Culture.—* It should be planted in a sunny but sheltered position with the protection of a south wall in cold districts of the British Isles. In a light, well-drained rich loam, including chalk soils, it grows some 12 to 18 feet or more in height. Plant in November or late February and early March. Prune only to thin crowded branches when grown as a tree or bush, but against a wall prune the strong growths after flowering to fit the position. Propagate by means of seeds sown under glass in autumn, or by root cuttings, 2 or 3 inches long, placed in gentle heat in spring.

*Xanthorrhiza apiifolia.* Yellow Root (*Ranunculaceae*)

A small monotypic deciduous shrub, a native of North America, growing some 2 feet in height and having yellow, spreading roots, from which it derives its popular name. It has deeply-indented pinnate foliage and in March and April pendulous racemes of small, rather insignificant, brownish-purple flowers. This shrub spreads rapidly and is excellent for growing in the shade in moist situations.

*Culture.—* Propagation may be carried out by means of division in early spring. Plant in November or March. Prune after flowering, cutting out old stems to the ground when growths are crowded.

*Xanthoxylum.* See Zanthoxylum

*Xolisma.* See Andromeda, Leucothoe, Lyonia and Pieris

*Xylosma racemosum pubescens.* Tung-ching-Tree (*Bixaceae*)

An attractive, but somewhat rare hardy spiny evergreen shrub introduced by Wilson, which, probably here will only make a shrub some 6 to 10 feet in height, although in its native habitat, China, Japan and Korea, it reaches tree proportions. It has glossy green, roundish, saw-edged leaves and in late summer produces racemes of tiny yellow, scented, unisexual flowers, followed by purple-black pea-like fruits.

*Culture.—* The plants grow very well in ordinary cultivated garden ground. Increase by seeds sown under glass when available, and by cuttings, 3 to 4 inches long, made of the partially-ripened growths of the year and inserted under a bell-
XYLOSMA — YUCCA

glass on a sheltered border in September. Plant at the end of April or early in May. Prune about the end of April only if necessary to thin and shape the bushes.

Yew. See Taxus.

Yew, Irish. See Taxus baccata fastigiata.

Yucca. (Liliaceae)

These are natives of the United States and central America. They are evergreen plants of somewhat tropical appearance, forming conspicuous objects when planted in groups on lawns, banks or in the rock garden. Yuccas are good town shrubs. In the unsatisfactory smoky conditions of Liverpool Botanic Gardens there are numerous beautiful clumps of Y. gloriosa. Yuccas are also useful for winter-bedding *Y. recurvifolia, one of the best species for the garden, has graceful, dark green, narrow and tapering leaves nearly 2 feet in length, and carries greenish-white inflorescences some 3 feet in height in August and September. *Y gloriosa, known as Adam’s Needle, with long, stiff, sword-like leaves, is vigorous and quite hardy. It reaches a height of from 6 to 9 feet and its greenish-white inflorescences of bell-shaped flowers appear in August. *Y. angustifolia is a hardy and usually dwarf evergreen species, with narrow, spear-like leaves which radiate from the crown and form a rosette some 2 feet high. The greenish-white inflorescences of bell-shaped flowers develop in July to a height of 2 or 3 feet. This is an excellent species for a small garden. *Y filamentosa and *Y flaccida are low-growing, tufted plants, with leaves 1 to 2 feet long, increasing in size by sucker growths or offsets. Both have creamy-white flowers on flower stems averaging 3 to 5 feet in height in July and August, and should find a place in the rock garden.

Culture.—Yuccas do best in sheltered, sunny positions and in a well-drained ordinary soil, to which has been added plenty of old brick and mortar rubble. Plant in April or May. The plants are usually met with in the best condition on mounds or slopes of stony, well-drained soil and in sunny positions. They appear to suffer more from damp and wet conditions in winter than from hard dry frosts. Cut away dead leaves in April and dead flowers in October. Propagate by rhizomes found round the bases of the old stems, cut off and potted up in spring in pots filled with sandy soil and brick.
A B C OF SHRUBS AND TREES

rubble; and the dwarf species by division in late April or May. The tops of large plants sometimes break off through their own weight or by the wind. Do not throw these away, but cut off the tops and insert as cuttings under glass. If the old Yucca stems are placed on the moist fibre of a propagating frame, numerous growths will develop and when large enough, these make excellent cuttings.

Yulan. See Magnolia conspicua.

Zanthorrhiza. See Xanthorrhiza apiifolia.

Zanthoxylum. (Rutaceae)

A genus of interesting deciduous or evergreen shrubs or small trees with aromatic foliage. The hardy species are natives of China, India, Japan, Korea and North America. *Z. planispinum*, from China and Japan, reaches a height of 10 to 12 feet and has extraordinary spiny, winged, pinnate foliage, and in June bears a mass of yellowish flowers, followed by small red fruits. *Z. americanum* (Prickly Ash or Toothache Tree) is an ornamental small tree or shrub, a native of the United States and growing some 6 to 8 feet in height. It has large, spiny and much-divided pinnate foliage and in May small greenish flowers and later black fruits. *Z. piperitum* (Japan Pepper) makes an attractive shrub some 5 to 10 feet in height, or a small tree up to 20 feet, and has pretty pinnate foliage, greenish flowers in June, and black fruits later. These shrubs are chiefly grown for their foliage, and thrive in well-drained deep loam.

Culture.—Plant in November or late February and in March. Prune in winter only to thin and shape the bushes. Propagation is usually carried out by means of seeds sown under glass in early spring, by root cuttings, 2 to 3 inches long, placed in sandy soil in a frame in spring, or by cuttings, 3 to 4 inches long, made of the young shoots and placed under a handlight in August.

Zauschneria californica. Californian Fuchsia. (Onagraceae.)

A Californian shrub on the borderland of hardness in the British Isles, and requiring a sunny position and well-drained light soil. It grows from 3 to 5 feet in height and thrives in the south-western counties of the British Isles and in some of the sheltered Sussex gardens. At Kew plants pass unharmed through ordinary winters in the sheltered recesses outside the Temperate House, but in severe weather are killed.
or badly damaged. The bright red flowers are freely produced in loose spikes in late summer and autumn.

**Culture**—Plant in April A little pruning may be done in early spring, shortening the thin branches and cutting out weak twiggy shoots. Increase by cuttings, 2 to 4 inches long, made of the young side shoots in August and September. Insert in sandy soil under a bell-glass or handlight. Propagation may also be carried out by means of division of the roots in March and by seeds sown under glass when available.

**Zelkova.** (Urticaceae)
A small genus of interesting and handsome hardy deciduous trees or shrubs, natives of China, Japan and the Caucasus and closely related to the Elm family. They thrive in well-drained moist loam, and like a moderately sheltered position. *Z crenata* (syn *Planera Richardi*), a native of the Caucasus, is usually seen with a short trunk divided into a large number of tall and very twiggy branches. There are two very beautiful specimens at Kew; the largest, about 70 feet high, is thought to have been planted in 1760. *Z. acumnata*, the Keaki tree, is a large spreading tree with a short trunk and numerous upright and half-spreading branches, and grows up to 100 feet or more in height in Japan. *Z. davidi*, a small much-branched tree or large shrub and a native of northern China, Manchuria and Korea, is readily distinguished from the other Zelkovas, being armed with spines up to 3 or 4 inches long. Some authorities place the tree in another genus, calling it *Hemiptelea Davidi*. Wilson describes it as in frequent use as a hedge shrub in northern China. If trained to a single stem it reaches a height of 10 feet or more. *Z. sumi* is a new introduction from central and eastern China, and of which native trees reach some 50 feet high. It has ovate-oblong leaves prettily tinted with shades of green and red in spring and early summer, at least on the young trees. *Z. Verschaffeltii* is a shrub or small tree of slow growth, a native of eastern Asia and having a bushy head and ovate leaves with coarse, triangular teeth. If trained to a single stem in similar manner to *Z. Davidi* it will reach a similar height.

**Culture**—Plant from November to March. No pruning is necessary except to shape the trees by thinning crowded branches and giving the trees good leading shoots. This should be done in summer. They may be increased by seeds.
sown under glass when obtained, but if these are not available, graft in spring on elm seedlings on a sheltered border outside.

**Zenobia speciosa. (Ericaceae)**

This is a hardy, deciduous or semi-evergreen ericaceous shrub, a native of the eastern regions of the United States of America and which reaches a height of from 3 to 5 feet. It has smallish, glossy green, ovate foliage and from June to August bears, on slender young shoots which spring from the base each year, drooping Lily-of-the-Valley-like flowers of a waxy whiteness. It is a lime-hater, and a most interesting plant for growing in the bog or marsh garden. *Z speciosa var. pulverulenta* (3 to 5 feet) is a variety having its leaves and stems covered with a steely white, mealy dust. It is a very decorative plant in the garden, especially in the winter.

**Culture**—Plant in October or March, preferably in a cool, moist position in peaty soil or in a mixture of loam and leaf-mould (no lime). When the plants need thinning, cut off the old flowering shoots after blooming. Lift and replant, should the stems become weak and straggly. Propagate by means of semi-matured shoots, 3 or 4 inches long, in sandy peat under a handlight or bell-glass in August, by seeds sown in early spring under glass; or by division or offsets in October.

**Zizyphus sativa. Jujube. (Rhamnaceae)**

A small deciduous tree, growing up to 30 feet in height, in this country, but more often a bush with spiny branches. It is a native of the lands stretching between south-east Europe and Afghanistan, and is an interesting subject for the favored gardens of the south and west of the British Isles, requiring a position at the foot of a sheltered south or south-west wall. At Kew, the young growths are killed back in severe winters.

**Culture**—Plant in a light, well-drained loam in March. No pruning is required, except in April to cut out weak crowded shoots and dead wood that may have been killed by frost. Propagation may be carried out by means of cuttings of the side shoots, 3 to 4 inches long, and inserted in a close frame with slight bottom heat in July or August, and by seeds sown under glass when available.

*The names in this section preceded by an asterisk indicate those most suitable to a small garden, or represent the best in the respective genera where only a limited selection can be accommodated.*

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