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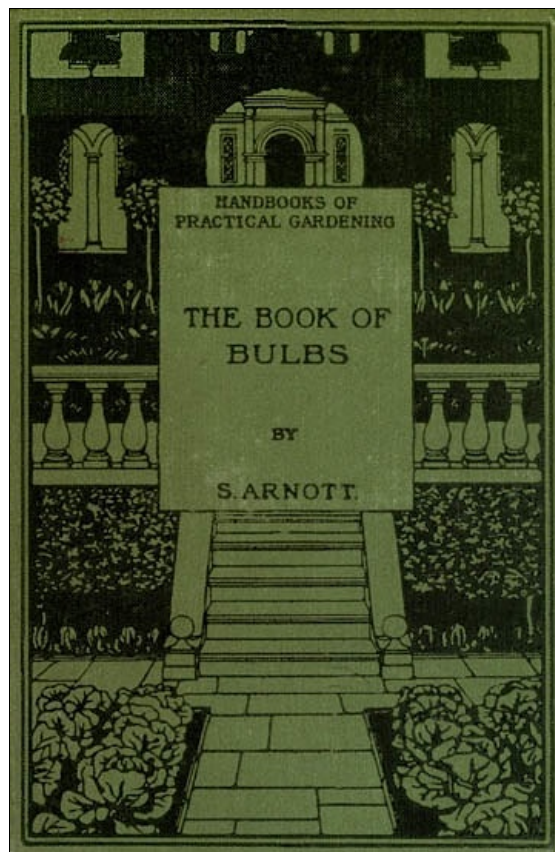
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*** START OF THE PROJECT GUTENBERG EBOOK THE BOOK OF BULBS ***



HANDBOOKS OF PRACTICAL GARDENING—V

EDITED BY HARRY ROBERTS

THE BOOK OF BULBS



EARLY TULIPS

THE BOOK OF BULBS

BY

S. ARNOTT, F.R.H.S.

**TOGETHER WITH AN INTRODUCTORY
CHAPTER ON THE BOTANY
OF BULBS BY THE EDITOR**

**JOHN LANE: THE BODLEY HEAD
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EDITOR'S NOTE

Like many another distinguished gardener, Mr Arnott is a Scotsman, being a native of Dumfries, and now living in the adjoining county of Kirkcudbright. For the last fourteen years his name has been a familiar one to readers of the leading journals devoted to gardening, for he has been a very frequent contributor to *The Gardener's Chronicle*, *The Gardener's Magazine*, *The Garden*, *The Journal of Horticulture*, and other papers. Although not a professional gardener, Mr Arnott is a practical one, for he manages at least the flower department of his beautiful garden almost without assistance; and having spent most of his life amongst flowers—his mother being a great gardener—he is a successful plant grower, as well as an interested one.

Mr Arnott takes an active part in the work of encouraging the gardening spirit among his countrymen, and is a member of the Scientific Committee of the Royal Caledonian Horticultural Society, as well as a member of other leading associations with similar aims.

CONCERNING BULBS

BY THE EDITOR

Anyone who has observed ever so casually the order of flowering of the plants in garden or hedgerow, must have noticed that bulbous plants figure prominently amongst those which flower in the early months of the year. Winter Aconite, Snowdrop, Crocus, Scilla, Chionodoxa, Daffodil, Fritillary, Anemone, and Tulip are among the greatest treasures of the spring garden, and though these are not all strictly bulbous plants, they all have either bulbous, tuberous, or other enlarged form of root or underground stem which serves a like purpose. Even those early flowers, the primroses, are borne on plants whose thick, fleshy, underground parts are almost tuberous in appearance; and it will be found that all the earliest blooming plants of spring are furnished with large stores of nutriment in root or stem. Only by virtue of these granaries of materialised solar energy, accumulated during the spring and summer of the previous year, are plants able to manufacture leaves and beautiful flowers in those early months during which the sun yields little heat and light, so essential to healthy plant life.

In a sense, we may consider bulbs and tubers as functionally equivalent to seeds, for they contain within sundry wrappings a dormant plant and stores of food material, wherewith the young plant may be nourished from the time when growth commences until the plant can fend for itself.

It is easy to understand how great an advantage it may be to a plant, in which cross-fertilisation is essential to racial vigour, to open its flowers before the great armies of floral rivals expose their baits to the gaze of flying insects whose visits are desired. For a like reason, it is advantageous to certain flowers to appear late in autumn after the summer flowers have withered and the competition for insect visitors has abated. These also have usually woody stems, or bulbous or tuberous rhizomes or roots, in which are stored reserves of starch, sugar, and other foods formed in the season of sunlight. Fibrous-rooted plants, on the other hand, for the most part flower between the months of April and September, when the daily hours of sunlight are many.

We commonly speak of the bulbs of crocuses as of tulips or of onions, but morphologically there is a distinction, although functionally there is little or none. If we examine a tulip bulb, we find that it is mainly composed of thick succulent scales which closely overlap one another, in the centre being a flattish axis continuous with the roots below, and with the leaf and flower-bearing stalk above. This axis is part of the tulip's stem, the fleshy scales being morphologically but modified leaves whose basal portions have become swollen with stores of nutriment. After the tulip has flowered, it sets to work to manufacture fresh supplies of food material which is sent down the stem and there accumulated in a new bulb, formed by the development of a bud contained among the scales of the old and now withered bulb of the previous year. These stores will, in the following season, enable the tulip to cut a pretty figure before it or other plant has had time or opportunity for preparing fresh supplies by the aid of the spring-time sun alone.

The so-called bulb of the crocus has a somewhat different structure. The crocus "bulb" does not, like that of the tulip, consist of overlapping scales, but of a more or less homogeneous mass enclosed in a stiff membrane, within which may sometimes be seen two or three smaller membranes of similar structure. From the lower part of the "bulb" issue roots, and from its summit proceed the leaf-bearing and flower-bearing shoots. The crocus "bulb" is not strictly what botanists call a bulb, but is a corm (Κορμός = a stem), the expansion being composed of the swollen base of the stem and not, as with true bulbs, of the leaves—the latter having degenerated into mere membranous sheaths, which have no function beyond serving as protective envelopes for the food store and living nucleus within. As in the case of the tulip, so the crocus, having flowered in the early days of the year, proceeds to make and store up fresh supplies of starch and other food in readiness for the following year. The base of the stem enlarges above the old and withering corm, from which it sucks the remaining nutriment. Fresh roots are formed, some of which, having penetrated the soil to a varying depth, contract in length, and so draw down the new corm to the level of the old.

This contractile power of roots has another office of great interest in connection with bulbs and corms. I have said that new bulbs form around the old exhausted ones by the development of buds in the axils of the leaf scales. It is obvious that in this way overcrowding must result, and that the young bulbs must often fare badly through being obliged to seek nourishment from soil already half exhausted of the elements necessary for the plants' health. But by the development of lateral roots which subsequently contract, such bulbs are often pulled to an appreciable distance from their parent, and thus gradually by yearly steps spread over a considerable area. Kerner quotes an interesting illustration of this process. Some soil containing bulbs of *Tulipa sylvestris* was once put in a garden in Vienna in the middle of a grass plot shaded by maple trees. As the grass was mowed every year before the flowers opened there was no formation of seeds, and the tulips could only multiply by offshoots. After about twenty years, the lawn was covered with tulip leaves, which arose from subterranean bulbs occupying an area ten paces in diameter. Thus, in the time mentioned, the bulbs had spread for about five paces in all directions in

consequence of the pull of the contracting roots.

Indeed, the underground life of bulbous plants, both during their more active stages of growth, and in those times mistakenly spoken of as the periods of rest, is full of interest to the careful observer. That curious process of ripening which is essential to the health of nearly all bulbs is itself no merely mechanical change. Each plant has its peculiar time for bursting through the surface of earth, for expanding its first leaves, and for displaying the glory of its first blooms; and any material hastening of these processes by the artificial application of heat means, except in a few species, subsequent debility to the plant, and, as a rule (though not invariably), diminished character in the flowers thus forced. There are, however, plants, such as Lilies of the Valley, to which the so-called resting stage seems of less duration and importance, and it is such flowers which may be forced under carefully arranged conditions with little ill result.

Among our English wild flowering plants, the principal ones furnished with bulbs or corms are to be found in the orders Iridaceæ, Amaryllidaceæ, and Liliaceæ. Included in the former are the very rare purplish flower known as Columna's trichonema, and the doubtfully native *Crocus sativus*, the autumnal saffron crocus, referred to by Hakluyt at the close of the sixteenth century: "This commodity of Saffron groweth fifty miles from Tripoli, in Syria, on an high hyll, called in those parts Gasian, so as there you may learn at that part of Tripoli the value of the pound, the goodnesse of it, and the places of the vent. But it is said that from that hyll there passeth yerely of that commodity fifteen moiles laden, and that those regions notwithstanding lacke sufficiency of that commodity. But if a vent might be found, men would in Essex (about Saffron Walden), and in Cambridgeshire, revive the trade for the benefit of the setting of the poore on worke. So would they do in Herefordshire, by Wales, where the best of all England is, in which place the soil yields the wilde Saffron commonly, which showeth the natural inclination of the same soile to the bearing of the right Saffron, if the soile be manured and that way employed."

The Amaryllis order contains the Daffodil and the Snowdrop, as well as *Leucojum æstivum*, which is thought by some to be a native species. It is, however, the order of the Liliaceæ to which belong the majority of English bulbous flowering plants. Bluebells, like "heavens upbreking through the earth," purple Fritillaries, yellow Tulips, Stars of Bethlehem with curious greenish flowers, Vernal Scillas, the not-so-pretty *S. autumnalis*, and the Broad-leaved Garlic, whose white flowers are among the most beautiful of all, though the scent of the whole plant is very "grosse and very unpleasant for fayre ladies and tender lily rose colloured damsels which often time profereth sweet breathes before gentle wordes." There are a few other British bulbous and cormous plants scattered among the various orders, such as the Meadow-saffron which is still used in pharmacy, but the greater number are contained in the three orders named.

CHAPTER I

INTRODUCTORY

Value of Bulbs — Bulbs in Grass — Arrangement in Borders — Bulbs for Cutting — Propagating Bulbs — Diseases of Bulbs

BULBOUS AND TUBEROUS PLANTS

Our gardens owe so much of their charm to the free use of plants with bulbous or tuberous roots, that it is unnecessary to impress their value upon the reader. We have only to cast our thoughts upon the many flowers of this character which bloom from the dawn of the year to its close, to recognise their almost transcendent claims upon our notice. In the following pages an attempt has been made to assist those who wish to know something more than they have done about these plants. Much more could have been said, but the scope of the work would not permit of exhaustive details. In addition, however, to the information given in the chapters dealing with the various plants, it is desirable that a few general hints should be given regarding the uses of these plants, and how they may be turned to most account.

BULBS IN THE GRASS

One of the most delightful phases of bulb-growing is that of the cultivation of hardy species in the grass. Nowhere do they look so well as against the grass, whose leafage seems to harmonise so well with the general character of the bulbous plants. In addition to this, many of these bulbous plants will thrive much better in grass than in a cultivated border, where there is often too much bare soil, and where other flowers of encroaching nature can injure them. Nearly all hardy bulbs do well in grass if the place is properly prepared for them by removing a portion of the turf, forking up the earth beneath, and adding fresh soil when it is too poor, and then replacing the turf. One thing must be remembered as a *sine-qua-non*, and this is, that on no account must the grass be cut until the plants have ripened their leaves. This will be shown by the foliage becoming yellow. Neglect of this has been the cause of much disappointment, and it is thus advisable that the bulbs should not be planted where a neatly kept grass plot is wanted early in the year. In planting the bulbs, they ought not to be arranged in regular lines, but in masses or informal groups. As good a plan as any to follow in planting in masses in the wilder parts of the grounds, is to throw the bulbs down from the hand, and to plant them where they fall. A good lesson will be given by a glance at a long-established plantation of Snowdrops or of the wild *Scilla nutans*, where these will be seen to have formed charming groups and masses of greater beauty than any formal arrangement would give.

ARRANGEMENT IN BORDERS

It is more difficult to arrange bulbs in borders in pleasing ways, and in such a manner as to harmonise or contrast in colouring with other flowers in bloom at the same time. One desirable way is not to keep all the early flowering bulbs near the front of the border, as one would naturally do, because of their dwarf habit, but to plant them so as to give balance in the border at the different seasons. Bulbous plants, like most others, look better in groups than scattered singly in lines, and it is wiser, as a rule, to plant a clump of one kind than a mixed mass. One exception, at least, is in the *Montbretias*, which, when mixed, look even prettier than in separate groups of one shade. Colour arrangement is always a troublesome question in planting these flowers, and there is more satisfaction, if harmony instead of sharp contrast is aimed at, by arranging, say, different shades of yellow together, than in working to secure strong contrasting effects. Such a contrast as the white *Galtonia candicans* and *Gladiolus brenchleyensis* is striking at the time, but it is not one on which the eye would love to dwell from day to day and from hour to hour.



SNOWDROPS IN GRASS

BULBS FOR CUTTING

These plants afford an almost endless choice for cutting purposes, although some cannot be cut of great length of stem without destroying the strength of the bulb for another year. The flowers are generally best when cut before quite open, and such flowers will usually open perfectly in water, and will last much longer than if pulled when fully expanded. Where many flowers are used, it is better to grow a stock in the reserve garden or in an out-of-the-way border, to avoid destroying the beauty of the more conspicuous parts of the garden.

PROPAGATING BULBS

The greater number of bulbs are propagated by offsets, produced from the old bulbs, and which are best removed when the foliage has died down. Named Hyacinths are increased by cutting across the base of the bulbs, or scooping out the interior, afterwards allowing the wounds to callous partially. Young bulbs are produced at the wounded parts. Raising bulbs from seeds, although slow, is very interesting work, and ought to be more largely followed for the purpose of obtaining new varieties. Seeds are sown in the ordinary way in pans, and the young bulbs grown on until they attain flowering size, generally from two to five years, according to the genus and the treatment they receive. Liliiums are also propagated by scales of the bulbs, inserted in pots or pans, with a portion of the base attached. These will eventually form little bulbs, to be grown on as in the case of seedlings. Tuberous-rooted plants, like the Anemone, are propagated by division of the tubers.

DISEASES OF BULBS

These plants are subject to a variety of diseases, such as always appear among plants grown in large numbers together. The leading genera, such as the Liliium, the Iris, the Gladiolus, or the Hyacinth, are all affected, and although many remedies have been tried it is difficult to find a cure. I find Veltha gives good results, but where the disease cannot be exterminated by such means it is better to destroy all affected plants, and to give the others fresh soil. A surface dressing of new soil with a little kainit added is beneficial.

CHAPTER II

HARDY BULBS

Aconitums — Alliums — Alstroemerias — Anemones

ACONITUMS

Although the effective Aconitums or Monkshoods of our gardens are usually classed with ordinary herbaceous plants, the best of those with tuberous roots can hardly be omitted from this work. They are of much service in the mixed border or the wild garden, and it is only the poisonous properties of these plants which make one view them with suspicion. They should not be planted where any danger can result to children or to animals. Their nomenclature is very confused but the names below are authoritative. The following are some of the best:— Cammarum, four feet, purple; flaccidum, six feet, violet; heterophyllum, two feet, yellow and blue; japonicum, six feet, flesh; Lycoctonum, a pretty yellow species, four to six feet high; Napellus, very poisonous, in several varieties, four to six feet; paniculatum, three feet; and variegatum, three to six feet, blue, white, or blue and white. All of these grow in any soil and can be planted in spring or autumn.

ALLIUMS

The Alliums can hardly be classed as among the choicest of bulbous plants; but although not among the *élite* of our garden flowers, there are, however, among them some pleasing and useful flowers, and a few remarks upon some of those most easily obtainable may be of service. It may be premised that the Alliums are most suitable for naturalising in grass or in wild gardens, as many of them are so prolific that they are apt to become troublesome in the border. They usually seed very freely and some produce offsets in great numbers, while others, again, form little bulbils on their heads which eventually form separate individuals. Almost all are of easy cultivation, although some of the Central Asian and Californian species need a little protection in winter.

A. acuminatum is a pretty dwarf species with deep rose flowers, and other pretty dwarf forms or species of similar or deeper colour are *Bidwilliæ*, *Breweri*, *falcifolium*, *Fetisowii*, *macnabianum*, *narcissiflorum*, *ostrowskianum*, and *pedemontanum*. A few blue species exist and are generally very pretty, though sometimes tender; of these, *cæruleum*, *cyaneum*, *kansuense*, and *violaceum* may be mentioned. A great many have white flowers and it is among these that we find the most valued of the species. The greatest favourite is *neapolitanum*, so much used for forcing, and which is grown in pots under the same treatment as other bulbous plants. Other pretty white species are *triquetrum*, *subvillosum*, *Erdelii*, and *falciforme*. None of the yellow species are equal to the old *A. Moly*, a bright June flower, but others of worth in their own way are *flavum*, and the straw-coloured *stramineum*. Good tall species, some having ornamental foliage, are *karataviense*, *giganteum*, *sphærocephalum*, *nigrum*, *Suworowi*, and *nobile*. The great drawback of the Alliums is their odour, which is, however, not always perceptible except when the flowers are cut.



ALLIUM TRIQUETRUM

ALSTROEMERIAS

There are few finer or more useful garden flowers than the *Alstroemerias*, whose brilliant colours and uncommon forms are great attractions. As cut flowers they are highly prized. They like a free root run, and a rather light, rich soil. The tubers should be planted in spring, nearly a foot deep, but they are easily raised from seeds sown in gentle heat in spring. Several of the species are too tender for outdoor cultivation everywhere, the hardiest being *A. aurantiaca*, which has yellow flowers of varying shades. *Chilensis* and *peruviana*, or *versicolor*, and *psittacina* of gardens (syn. *pulchella*), are all fairly hardy, *psittacina* possessing a singular combination of crimson and green colouring. *A. pelegrina* and its variety *alba* are exceedingly beautiful, but require frame treatment except in the south. *Diazii*, *Ligtu*, and *hæmantha* (syn. *Simsii*) are very beautiful and more or less hardy according to the climate and soil. Some lime rubbish is often useful mixed with the soil, together with a little peat or leaf-mould.

ANEMONES

The tuberous-rooted Anemones, which alone come under the scope of this work, form a section which embraces flowers of surpassing beauty. Generally dwarf in stature, these Windflowers give us much variety of colouring, from the pure white of *A. nemorosa* to the deep scarlet of *A. fulgens*, with the blues, purples, and other tints of *A. coronaria*, and the bright yellow of *A. ranunculoides*. Usually of easy cultivation, they are among the choicest ornaments of our gardens.

A. apennina, the Apennine Windflower, is a delightful little plant, growing about six inches high and having pretty blue flowers. There are white and rose-coloured varieties. It likes a peaty soil, and prefers shade. It is a charming plant to naturalise in the woods, where it flowers in March and April.

A. baldensis, the Mount Baldo Windflower, is of erect but dwarf habit, and grows about six inches high. It has little white flowers tinged with blue or red, and does well on a rockery in half-shade in sand and peat.

A. blanda, the Fair, or Greek Windflower, is one of the earliest of our flowers in sunny gardens, and frequently opens soon after New Year's Day. It needs a well-drained, warm position, but flowers better on a stiffish soil.

There are several forms of this very beautiful Windflower. That called *cypriana* has flowers which vary from white to lilac and pale blue, and the variety *taurica* has blooms which embrace an even deeper blue among its shades. The variety *scythinica* is one of the choicest. The exterior of the flower is blue, while the inside is pure white. The seeds of *A. blanda* should be sown as soon as ripe.

A. caroliniana, a North American Anemone, now referred to *heterophylla*, grows about nine inches high, and has finely cut leaves and white or purplish flowers in May. It likes a shady place and peaty soil.

A. coronaria is the well-known Poppy or Crown Anemone, which is so wonderfully varied in its form and colouring. We have no more effective flower than this in beds or lines in May. For cutting, its blooms are most useful. This Anemone is best propagated from seed annually. It likes a rich, light soil, and cow manure is the best to apply to it. The "St Brigid" strain is a charming one, and the flowers it produces are of great beauty. Tubers of *A. coronaria* of excellent quality can be purchased at a very low price, and should be planted in a sunny position about three inches deep in October or November. Seeds should be sown in March or April, and should be mixed with dry soil or sand to separate them. The double Crown Anemones are very beautiful, although not so much grown as when they were favourite florists' flowers. They are of almost every colour but yellow. A good white is named "The Bride."

A. fischeriana, a Siberian plant, grows about six inches high, and has white flowers. *A. intermedia* is a new Anemone with yellowish flowers, and seems allied to *nemorosa*.

A. nemorosa, our native Windflower, gives us several lovely forms. The double form, *A. n. flore pleno*, is very beautiful, and there are a few large-flowered forms, besides the pretty *bracteata*, which has ruff-like green bracts round the flower. The variety *rosea* and its double form have rosy flowers, and *cærulea* has pretty blue blooms, but is surpassed by the charming *robinsoniana* of a brighter blue. *Alleni* is even larger and better coloured than the last-named. All these like shade and peaty soil.

A. palmata is a lovely little plant, which grows from six to nine inches high, and has yellow flowers. There is a white variety, and a very rare double one. It likes a moist, peaty soil.

A. ranunculoides is a pretty little native species of the *nemorosa* type, but with smaller yellow flowers. The variety *pallida*, with pale yellow blooms, is very pretty.

A. stellata, or *hortensis*, is a pretty southern Anemone which is not so good in cold districts as *A. coronaria*, although pretty and varied in its colouring. It likes a warm soil and sunny position. There are pretty "Chrysanthemum-flowered" double varieties, and a double red, different from *fulgens* fl. pl., which blooms pretty well, even where the other forms do not succeed. All of these may be grown from seed or by division of the tuber before planting.

A. fulgens is a popular Anemone, because of the beauty of its brilliant scarlet flowers. It is,

however, difficult to induce to flower after the first year, and it ought to have a warm place, where the tubers will get well ripened after they flower. There is a double form, and a recent re-introduction, bicolor, has its blooms scarlet and white in stripes. Aldboroensis and græca are good forms.

CHAPTER III

HARDY BULBS

Amaryllises — Anthericums — Antholyzas — Apios — Arisæmas — Arums — Asphodelines —
Asphodeluses — Belamcanda — Bloomerias — Brodiaëas — Bulbocodiums

AMARYLLISES

The only really hardy Amaryllis is *A. Belladonna*, the Belladonna Lily, which is a very effective plant with silvery rose flowers in late summer or early autumn. The leaves appear in spring, and as the flowers come after these have withered, the Belladonna Lily should have some carpeting plant above the bulbs. It is quite hardy if planted in a warm, sunny position, near a wall, and the tops of the bulbs at least six inches below the surface. It is safer to put some dry leaves or other light material over the bulbs in severe winters, removing this when the leaves come through. It also makes a good pot plant. The form major is even finer.

ANTHERICUMS

Some of the hardy plants cultivated in gardens as Anthericums are now included by botanists in other genera, but they will be more conveniently dealt with together under their popular names in gardens. Several of these are very ornamental plants, with handsome spikes of beautiful flowers. They grow well in common soil, not too dry, and are best planted in autumn or spring, at which times they may be divided when desired. *Liliago*, St Bernard's Lily, grows about one and a half foot high, and has pretty white flowers from May. There is a larger form, called major. *A. Liliastrum*, St Bruno's Lily, now *Paradisea Liliastrum*, and also named *Czackia Liliastrum*, is a still prettier plant, with larger fragrant flowers in the beginning of summer. It is taller than the foregoing. There is a fine variety called major. *Ramosum* (syn. *graminifolium*), is pretty also, though the flowers are smaller than those of *A. Liliago*. It flowers in June, and has white blooms on stems about two feet high, and narrow leaves. *Hookeri*, whose proper name is *Bulbinella Hookeri*, is a good plant for a moist border, and has nice yellow flowers in summer.

ANTHOLYZAS

Antholyzas are effective plants allied to the *Gladiolus* and *Crocus*, and look very striking in the border. Several are hardy in the greater portion of the United Kingdom if planted about three inches deep and covered the first winter with about two inches of cocoa-nut fibre. One of the best is *Antholyza paniculata*, which has scarlet and yellow flowers and blooms in autumn. It has handsome leaves, and grows about three feet high, *Æthiopica*, *Cunonia*, and *spicata* are all effective, but *paniculata* seems the hardest of all. There is a variety known as major. They can also be grown in pots for the conservatory.

APIOS

The only plant of the genus in cultivation is *A. tuberosa*, the Ground Nut, a hardy North American plant of climbing habit, with sweet-scented purple flowers in August. It is hardy in a sunny, sheltered position, and should be planted three inches deep in rich soil in late autumn or spring.

ARISÆMAS

These singular, Arum-like plants grow in rather sandy soil, and prefer partial shade. The hardy species are *ringens* (syns. *præcox* and *Sieboldi*), which has green, white, and purple flowers in spring; and *triphylla*, which has green and brown spathes in June and July. They are increased by seeds or division, and are best planted either early in autumn or in spring.

ARUMS

The favourite flower which bears the name of Lily of the Nile, or Arum Lily, is not an Arum, and will be found spoken of as *Richardia africana*, but there are a few true Arums which may be grown for their singularity, if not for the beauties they reveal to those who examine them carefully. The hardy species like a rich, rather sandy soil, with plenty of moisture in it. They should not be planted out the first season until spring, but may afterwards be left in the open ground. *Dracontium*, the "Green Dragon"; *Dracunculus*, the "Common Dragon"; *italicum*; *maculatum*, our native "Lords and Ladies"; *orientale*; *palæstinum*, or *sanctum* (only hardy in mild places); *proboscideum*, whose true name is *Arisarum proboscideum*; and *tenuifolium* are all hardy.

ASPHODELINES

These fine hardy plants are closely allied to the *Asphodeluses*, and may be grown in deep sandy soil with plenty of water during the growing season. The leading species are:—*brevicaulis*, yellow and green, about one foot high; *damascena*, two feet high, yellow; *liburnica*, two feet high, yellow; and *lutea* (syn. *Asphodelus luteus*), about four feet high, yellow; its double form is desirable. *Taurica* (syn. *Asphodelus tauricus*) has white flowers on stems about two feet high; and *tenuior*, now *cretica* (syn. *Asphodelus tenuior*), has yellow blooms on a stem about a foot high. The most imposing of all is *imperialis*, eight feet, with reddish white flowers.

ASPHODELUSES

Asphodels are useful and ornamental in borders and in wild gardens. When well-grown, plants of *A. ramosus*, the King's Spear, are truly handsome. They like a rich, sandy loam with some manure added, and should always have plenty of water when growing. The principal species are the following:—*acaulis*, pink, flowering in May, an Algerian species and a little tender; *fistulosus*, white, in summer, and one a half foot high; and *ramosus*, five feet high, in summer, with white blooms striped with brown. *Albus* is a form of the last.

BELAMCANDA PUNCTATA

This distinct, Iris-like plant is usually known as *Pardanthus sinensis*, and is too seldom met with in gardens. It is a little tender, but may be cultivated in a sheltered position in light soil. It grows about two feet high, and has orange flowers spotted with brown, and Iris-like leaves. I prefer to plant it in spring.

BLOOMERIAS

Bloomerias are pretty, hardy, golden-yellow flowered plants, which are but little grown, but deserve a place in our gardens. The easiest to obtain is *aurea*, which grows about one foot high and has an umbel of pretty flowers, in July. The only other species, *Clevelandii*, closely resembles it, but has smaller flowers and more slender stems. They like a warm position in rich, sandy soil, and may be planted in early autumn about two inches deep.

BRODIÆAS

The Brodiæas have of late been deservedly coming to the front, and their use adds much to the charms of the garden in June and July, although growers must make up their minds to lose a few the first winter should the season be a damp one. Many are very beautiful, and well repay the little trouble they give. They vary much in height, some sending up tall scapes with many-flowered umbels, while others are quite dwarf. They like a light soil and a sunny position, and ought to be planted about two or three inches deep.

Bridgesii and *laxa* bear some resemblance to each other, and grow from one to two feet high. They have flowers of a purple-blue. *Candida* resembles these, but has paler bluish flowers. *Capitata* is another tall grower with blue flowers, the white variety, *alba*, making a good companion. *Coccinea*, whose proper name is *Brevoortia Ida-Mai*, is a fine plant with tall stems and scarlet, green-tipped flowers. *Congesta* is a tall grower with purple-blue flowers; and other tall species with dark flowers are *multiflora* and *californica*. A pretty section with yellow flowers is made up of *Hendersoni*, with its yellow flowers striped with purple, *crocea*, and *ixioides* and its varieties *erecta* and *splendens*. The latter species is sometimes known as *Calliprora flava* or *lutea*. *Howelli* is a fine species, with a tall stem and porcelain flowers; the variety *lilacina* is pleasing. *Lactea* and *pedunculata* are both good white species, and the late-blooming *Orcutti* has light blue flowers.

A charming set of dwarf forms will be found among *grandiflora*, *Purdyi*, *rosea*, and *stellaris*, with blue or purple flowers; *volubilis* is a curious twining species, which needs support when it makes growth. It grows about five feet high.

BULBOCODIUMS

The only *Bulbocodium* to be met with, except in a few collections, is *ruthenicum*, almost universally known as *vernum*, a pretty early spring flowering plant with rosy purple flowers, and much resembling a *Crocus* in bloom. It thrives in any soil, but should be protected from slugs. There is a variegated-leaved form. These should be planted about two inches deep.

CHAPTER IV

HARDY BULBS

Calochorti and Cyclobothras — Camassias — Colchicums — Convallarias — Forcing Lily of the Valley — Corydalises — Crinum — Crocosmias and Montbretias — Crocuses

CALOCHORTI AND CYCLOBOTHRAS

The Calochortus, with which is now included the Cyclobothra, is one of our most beautiful bulbous plants, its appearance well justifying the names of Butterfly Tulip or Star Tulip applied to it. With a little protection in the way of rough litter, it will thrive outside in mild districts, but those who have any fear for the safety of their bulbs can grow these flowers in frames. They like a raised bed of light, dry soil in which they may be planted in September or October three inches deep, and protected with dry straw or spruce branches. When danger from severe frost is over, this may be removed and plenty of water given. If grown in frames, the lights may be removed at that time. There are now many species and varieties in cultivation, but the following form a good selection for those who wish to begin their cultivation:—*albus*, *pulchellus*, *cæruleus major* (these like a soil largely of leaf-mould, in half-shade), *Purdyi*, *luteus*, *splendens*, and any of the *venustus* varieties, especially those of the "Eldorado" strain. After the leaves die down, the bulbs should either be lifted and dried, or covered with a frame.

CAMASSIAS

The Camassias, or Quamashes, are handsome plants with long leaves and tall spikes of flowers of much beauty, although rather fugacious. The blooms are generally blue, but there is a white variety of the pretty *C. esculenta* and a creamy-white one called *Leichtlinii*. *Fraseri* is very pretty, and *Cusickii* and *Engelmanni* are also worth growing. They like a rather moist, peaty soil and a little shade when they bloom in May or June.

COLCHICUMS

Colchicums or Meadow Saffrons are of much value in the garden in autumn, and in large clumps or masses produce a splendid effect. The few spring species are of less merit and are only desirable for those who like collections of uncommon flowers. They like a rather rich soil, and a sunny position. As the leaves appear in spring, the Colchicums should be grown through grass or other herbage where the flowers can have some support. The best time for planting is immediately after the leaves become yellow. The tops of the corms or bulbs should be about three inches below the surface. Colchicums are very poisonous and must not be planted where there can be any danger of their being eaten for edible tubers. The finest in cultivation are *Bornmulleri*, *Sibthorpii*, and *speciosum*, in several forms, including *maximum*, *rubrum*, and the new white *album*. *Byzantinum* is a good species, and some of the double forms, ascribed to *autumnale*, are possibly varieties of this. These double varieties are very useful, the best being *album fl. pl.*, *roseum fl. pl.*, and *striatum fl. pl.* The ordinary *autumnale*, of which there are several colours from white to purple, is rather weak in the flower-tubes and is much injured by bad weather. Other good Meadow Saffrons are *cilicicum*, *Bertoloni*, *Decaisnei*, *alpinum*, *variegatum*, *Bivoniæ*, and *montanum*. The spring-blooming *crociflorum*, with white flowers lined with violet, is small and much affected by slugs. The new *hydrophyllum*, which likes a damp spot, is a neat little spring species; *luteum*, also blooming in spring, does not appear to be so hardy as any of the others.

CONVALLARIAS

The cultivation of the Lily of the Valley out of doors calls for no special remarks beyond saying that it likes shade and some moisture. It is also desirable to mention that there are varieties with pink flowers; with double white flowers; and with gold-striped leaves. The first of these shows its colouring much better outside than when grown under glass. Fortin's variety and *prolificans* are specially good forms.

FORCING LILY OF THE VALLEY

Lily of the Valley is easily forced, and this can be done either by lifting large clumps or purchasing crowns, and growing them in a hot-bed or by planting them in pans or pots. The crowns should be kept above the soil, and they ought to be kept moist and dark until they have made some growth, when light should be given. For early bloom at Christmas, the crowns ought to be potted in the beginning or middle of November. A temperature of from 65 to 70 degrees is suitable for forcing this favourite flower. Retarded crowns are coming into favour, and give good results with careful treatment. It is inadvisable to put these in heat at first.

CORYDALISES

The tuberous-rooted Corydalises are pretty plants resembling in bloom those of the genus which have a herbaceous habit. The best known are *bulbosa*, known also as *solida* and *tuberosa*, also called *cava*, of both of which there are purple or lilac and white forms. *Halleri* is a pretty variety of *bulbosa*. *C. nobilis*, with yellow flowers, is a handsome May-blooming plant. *Semenowii* and *Sewerzowii* are both good yellow species and *Scouleri* has pale purple flowers and graceful leaves. They like peaty soil and a little shade.

CRINUMS

The Crinums are remarkably effective flowers, and some are perfectly hardy if given a warm position, preferably one in front of a greenhouse or a wall. The best known is *longifolium*, also called *capense*, which has fine fragrant pale rose flowers. The white variety *alba* is also pretty. *Moorei* is hardy if planted as recommended, and *Powellii* and *Powellii album* are equally as hardy as *longifolium*. *Yemense* is a fine white Crinum. Some patience is often necessary until the plants are strong enough to flower. They need copious supplies of water, and should have little litter about them in the first few winters. Their fine leaves are handsome but require a place sheltered from the wind.

CROCOSMIAS AND MONTBRETIAS

These two flowers go naturally together, not only because *Crococsmia aurea* is understood to be one of the parents of the hybrid Montbretias, but also because of the resemblance of their long spikes of bright flowers. The only species of *Crococsmia*, that named above, is a pretty and showy plant, though it is scarcely so hardy as some of the Montbretias and requires protection with dry litter or ashes in some districts when grown in the open. Plant about six inches deep in spring. The form *C. a. imperialis* is very fine and *C. a. maculata* is also worth growing. They all make good pot plants for a cool house.



WHITE CROCUSES IN GRASS

The hybrid Montbretias are now so well known as to need no commendation, and the constant production of new varieties renders it inexpedient to give a list of varieties. While they are perfectly hardy in some gardens, in others they must be protected in a similar manner to the *Crococsmias*. It is also desirable to lift them and replant a few inches apart when they show signs of flowering unsatisfactorily. Otherwise they may be treated like the *Crococsmias*. They like a sunny, but not too dry, place in the garden.

CROCUSES

Crocuses are such brilliant and beautiful flowers that one need not occupy space with their praises. Their use in beds, borders, pots, or in grass is necessary if we are to enjoy our gardens to the full. While the popular Dutch varieties, whose names will be found in any bulb catalogue, will retain their place in the garden, they will be largely supplemented by the different species by whose aid the interest in these flowers will be much increased. By their help we can not only extend the Crocus season, so as to have flowers in autumn and winter as well as in spring, but they will also give us new colours and markings of much beauty. The autumn Crocuses are of much value. The earliest is *C. vallicola*, with creamy flowers, but it is not very hardy and wants a frame. *Speciosus* and its larger form *Aitchisoni* are of great service with their blue-purple blooms. *Zonatus*, *pulchellus*, *iridiflorus*, and *iridiflorus major* are all good, as also are *laevigatus*, *cancellatus*, with its variety *asturicus*, *hadriaticus*, *medius*, *nudiflorus*, *ochroleucus*, *Salzmanni*, and *Tournefortii*. *Sativus*, the old Saffron Crocus, is showy, but is a shy bloomer in most gardens. Its forms, *cartwrightianus*, *elwesianus*, and *Pallasii* are better flowerers. *Scharojani* should have a frame. White varieties of some of these Croci are highly prized.

The winter-flowering Croci are also very beautiful, and with the protection of a little glass over them in bad weather will give much pleasure, especially in December or January, when other outdoor flowers are scarce. *Chrysanthus*, which varies much in colour; *Imperati*, a valuable species; the charming *Sieberi*, *dalmaticus*, *etruscus*, *Gaillardotti*, the yellow *Korolkowii*, *nevadensis*, the orange *suterianus*, and the pretty *suaveolens*, might be included and protected by glass covers from the storms.

Following these come the spring Croci: *aureus*, said to be the parent of the Dutch yellow, giving us shades of some variety; while *biflorus* yields some very beautiful forms, such as *argenteus*, *estriatus*, *Pestalozzœ*, *pusillus*, and *Weldeni*. Then, apart from the Dutch varieties, *vernus* gives a number of forms, *George Maw*, *Leedsii*, *leucorhynchus*, *leucostigma*, and *Petro Polowsky* being among the most distinct of these. *Alatavicus*, *ancyrensis*, *banaticus*, *Balansæ*, *corsicus*, *Fleischeri*, *gargaricus*, *Malyi*, *Olivieri*, *reticulatus*, *stellaris*, *susianus*, the varied *versicolor*, and the charming *tommasinianus* will give many exquisite pictures. These will give little trouble if planted, in early autumn, about three inches deep in rather light, peaty soil. Growing Crocuses from seed is very interesting work, and may be productive of excellent results. Crocuses in pots should be planted close together, and the pots plunged outside until growth begins.

CHAPTER V

HARDY BULBS

Cyclamens — Dicentras — Dieramas — Eranthis — Eremuruses — Erythroniums — Eucomises

CYCLAMENS

The hardy Cyclamens or Sowbreads are charming little flowers which grow well under the shade of trees or in the rock-garden. They like a rich, but light soil, with a few stones mixed with it, and to be planted an inch or two beneath the surface. The earliest and one of the best is *C. Coum*, which has pretty crimson flowers about January. There are a pleasing white variety and a few other colours such as rose and lilac. *Libanoticum* is later and has large flowers and leaves. *Ibericum* succeeds these, and the *Atkinsi* varieties are very beautiful, in various shades from white to purple. *Cilicicum* and *alpinum* are tiny little species with red or white flowers and small leaves, and are best suited for the rock-garden. *Europæum*, red or lilac, in August, is more difficult to grow, but likes shade and partial covering with a low carpeting plant. The best of the late species is *neapolitanum*, or *hederæfolium*, which has prettily marked leaves succeeding the red or white flowers which come in autumn. These plants can be raised from seeds sown as soon as ripe, or in spring.

DICENTRAS

A few of the tuberous-rooted *Dicentras* or *Dielytras* deserve mention here. Among them are *Cucullaria*, white and yellow, and about three inches high; and *spectabilis*, a well-known and handsome plant, which needs shelter from cold spring winds. They like a light, peaty soil and some shade.

DIERAMAS

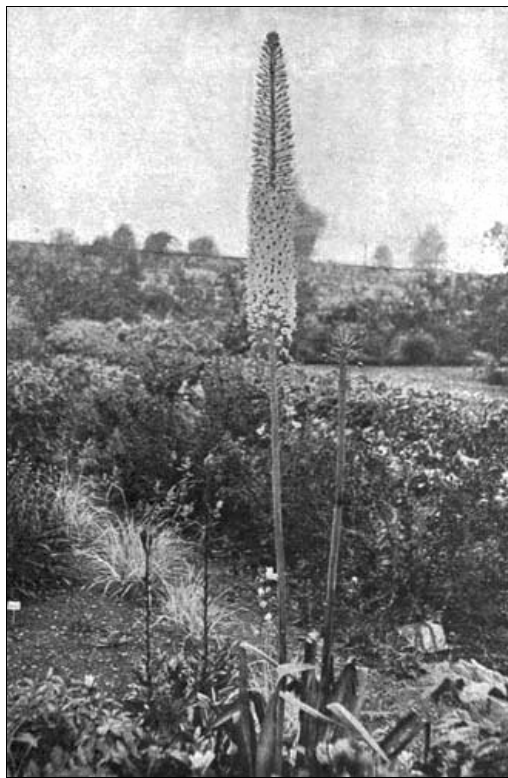
The known species of *Dierama*, known in gardens as *Sparaxis*, are *pendula* and *pulcherrimum*. Both are graceful hardy flowers with long stems, arching over and bearing many loosely hanging bells of various shades of purple, and even white. The one mostly seen in British gardens is *pulcherrimum*, which has stems from four to six feet long; *pendula* being a little less robust. They are rather difficult to establish, and like to be planted under stones. Plant in spring about four inches deep.

ERANTHIS, WINTER ACONITE

The *Eranthis* or Winter Aconite would receive more attention were it not so cheap, but it should be largely planted in moist and shady places, which it brightens up early in the season. Either in the border, rock-garden, or grass, it is very effective when in a mass. It may be grown from seed. The species generally grown is *Eranthis hyemalis*, but recently a species, named *E. cilicicus*, which blooms later, and has deeper coloured flowers, with a less ornamental "ruff," has been introduced. It is scarcely so hardy as *E. hyemalis*. The Winter Aconite will grow in almost any soil which does not become too dry. It should be as short a time out of the soil as possible.

EREMURUSES

The *Eremuri* are among the noblest of our hardy flowers with tuberous roots, and are exceedingly ornamental with their magnificent spikes of flower. They may be planted in autumn or in spring, though the first is the better time, unless the plants are in pots. There is much difference of opinion among growers regarding their requirements in the way of sun or shade. Much depends upon the gardens, and the writer has seen plants equally good with a north or north-west aspect, and in other places with a due south exposure. In the latter case, however, there is more danger from spring frosts. The crown should be about two inches beneath the surface, and the soil should be light and rich, although it may have a hard bottom. Protect with dry litter, and keep a good lookout for slugs when growth begins. Cover if there is danger of frost in spring, and give plenty of water during the growing period.



EREMURUS ROBUSTUS

The best blooming species, and among the most beautiful, is *E. himalaicus*, with white flowers, and sometimes eight feet high, but generally less. *Robustus*, with its variety *elwesianus*, grow taller, and have charming flesh-coloured flowers. *Olgæ*, with whitish flowers, is very beautiful, and *Bungei* is among the best of the yellow species, though *caucasicus* and *spectabilis* are also good yellow Eremuri.

ERYTHRONIUMS

The Erythroniums or Dog's Tooth Violets are delightful little spring flowers, which are becoming increasingly appreciated. All are very beautiful, their marbled or mottled foliage adding to their other attractions. Some of the Dutch named sorts, such as *Blanca*, *Von Humboldt*, *Rubens*, *Rouge Trappeuse*, &c., are of a large size, and are very pleasing. The colours of the common *Dens-canis* vary from white to rose and purple or violet, and all the plants do well in the border, but better still in grass. In warm gardens they do best in shade, but in others they require sun. The American Erythroniums are very beautiful, but should generally have a sunnier place than the others. They like a rather light soil, but *americanum*, which has yellow flowers, prefers one of a heavier nature, and, to induce flowering, should have its roots in a confined space. *Albidum* has whitish flowers; *giganteum* has from one to six whitish flowers with a yellow base and mottled leaves; *grandiflorum* has from three to ten yellow flowers on a stem, and unmottled leaves; and *nuttallianum* has a shorter stem with smaller flowers than the last, of which it is a variety.

Hartwegi, *Bolanderi*, *montanum*, *citrinum*, *purpurascens*, and *Howelli* have all yellow or whitish flowers. Of these, *Hartwegi* is the earliest, and *Howelli* among the most beautiful.

Revolutum, *Johnsoni*, and *Hendersoni* have all exquisite rose or purple flowers. *Propullans* has small rose-coloured blooms. *Bolanderi* is sometimes sold as *Smithii* or *grandiflorum* var. *Smithii*. *Japonicum* and *sibiricum* are fine Asiatic forms of *Dens-canis*, with handsome purple or rosy purple flowers.

EUCOMISES

The curious looking Eucomises are hardier than is generally believed, and may be grown in the border or in front of a greenhouse or stove, with a little covering of litter in winter. Although not showy, they are worth growing for their long spikes of whitish flowers, spotted with rose, and their long mottled foliage. They like a light, but not poor soil. *Punctata* is probably the hardiest, but *regia* and *bicolor* are also hardy if planted about six inches deep.

CHAPTER VI

HARDY BULBS

Fritillarias — Funkias — Galanthuses — Galtonias — Gladioli — Hemerocallises

FRTLILLARIAS

Although many of the Fritillarias are more distinguished for their singularity than for the brilliance of their colouring, there are few more interesting garden plants. The native species, *F. meleagris*, is varied in colour and in depth of markings, and the Dutch have raised some pretty named varieties. The white form, *F. m. alba*, is very beautiful. The varieties of the broad-leaved form of *Meleagris* are but little grown in Great Britain. There are now many pretty species which are quite as easy to grow, but which do not need such a damp position as suits *F. meleagris* best, although it grows in dry soil as well. *Recurva* has beautiful scarlet and yellow flowers, but is difficult to establish. *Aurea*, with yellow flowers and of dwarf habit, is more easily grown, and is the brightest of the yellow Snake's Head Lilies. *Pallidiflora*, with pale yellow flowers, is distinct; and the pretty *armena* gives several varieties with flowers varying from greenish to bright yellow and red. *Walujewi* is very fine; and *Moggridgei* is well worth trying also. *Acmopetala* is a fine, tall species; and such species as *Burnati*, *citrina*, *lanceolata*, *lusitanica*, *lutea*, *oranensis*, *pudica*, *pyrenaica*, *ruthenica*, and *Thunbergii* are all of interest to those who care for such flowers.

The Crown Imperial, *F. imperialis*, is so well known that its noble appearance and its value for the garden need no praise. There are several varieties, which range in colour from pale yellow to deep red. In addition, we have a form, called "Crown upon Crown," which has two tiers of flowers; one with a fasciated stem; and two with variegated leaves, one having white and the other yellow margins, and bands on the leaves. These make fine plants. The smaller Fritillarias should be planted about two inches, and the Crown Imperials about four inches deep. The latter like a good rich soil, and all should be as short a time out of the ground as possible. All can be grown in pots.

FUNKIAS

Funkias, or Plantain Lilies, are among the most ornamental of our hardy flowers, and look exceedingly ornamental in borders or by the margin of water, where their fine leaves are in keeping with their surroundings. They all like some shade, but to induce *F. subcordata* (syn. *grandiflora*) to flower well it should have a warm, sunny place. They are best planted in spring. *F. lancifolia* has pretty leaves and purple flowers. There are several varieties, such as *undulata*, *alba*, *variegata*, and *albo-marginata*. *Ovata* has handsome large leaves and purple flowers, and the variety *aurea-variegata* is particularly fine. *Sieboldiana* has ornamental foliage and pale lilac flowers. It and the variety *marmorata*, with marbled foliage, are fine for groups. *Fortunei* and its variety *variegata* are both splendid plants, and *glauca* is another good species.

GALANTHUSES

The *Galanthus*, or Snowdrop, is one of our chastest and most beautiful flowers, and its pure blossoms are universally appreciated. It is more varied in character and in its time of blooming than many are aware of. The earliest Snowdrops come into bloom in autumn or early winter, and lovers of the flower who wish to grow these interesting varieties, which are forms of *G. nivalis*, the common Snowdrop, will find that *G. corcyrensis* and *G. octobrensis* are those most easily procured. They require a rather light and sandy soil. In their general appearance they closely resemble the common form of *G. nivalis*, but are generally recognisable by the light colour of the line which runs up the centre of the leaf. Others blooming about the same season are *G. Rachelæ* and *G. Elsæ*. These flowers show a tendency to draw nearer to the spring Snowdrops as they become established. There are too many varieties of the common Snowdrop in existence to detail, but one may name *Melvillei*, a splendid flower of great beauty; *poculiformis*, which has the inner and outer segments of almost equal length; *Scharloki*, which has separated spathes and a green spot at the base of each outer segment; and *æstivalis* and *Gusmusi*, two late forms, as representative, if we exclude a number of named varieties which have been raised by Mr James Allen and others. The so-called "Yellow Snowdrops" have yellow instead of green markings and ovaries. The best are *G. lutescens* and *G. flavescens*.

The Italian sub-species *Imperati* gives us some handsome flowers, larger than those of our native Snowdrop; the finest is the variety *Atkinsi*, a noble *Galanthus*. The sub-species *caucasicus* is principally noteworthy as giving us the form *virescens*, which has its flowers all flushed with green outside.

One of the finest Snowdrops is *G. Elwesii*, from Asia Minor, of which there are many local and seedling forms. That sold as *ochrospeilus*, and the large variety named *Whittalli*, are equal to any other of the wild forms. *G. Elwesii* is not long-lived in many gardens. It seems to prefer a rather

moist, peaty soil.

G. latifolius is a very distinct Snowdrop with broad, bright green leaves. Unfortunately, it is rather too delicate for our climate, and the newer *G. Ikarizæ* is preferable. It has handsome bright green leaves, with arching habit, and pretty flowers.

G. plicatus, the Crimean Snowdrop, is troublesome because of the unaccountable way in which it often disappears. It is, however, so fine and distinct, with its revolute leaves, that it should be tried. Hybrids between it and *G. Elwesii* are often hardier than either of the parents. *G. byzantinus* may be a hybrid of this parentage.

It is needless to refer to the cultivation of the Snowdrop further than to say that it seems to do best planted in the grass, and that it is much finer in a rather moist, peaty soil. When grown in pots it should not have much heat.

GALTONIAS

Galtonia, or *Hyacinthus, candicans* is the best of the three species which constitute the genus. It is a noble plant, whose white, drooping bells look remarkably handsome, especially when associated with such plants as the scarlet *Gladiolus brenchleyensis*. It should be planted in spring, about six inches deep. Although hardy in most gardens, in some it must be lifted and stored in winter, or well protected with dry ashes or litter.

GLADIOLI

While the magnificent hybrid Gladioli are not hardy in the greater number of gardens, and are therefore referred to along with half-hardy bulbs, it will be found desirable to attempt their cultivation in warm localities as hardy flowers, planting deeply and giving them a little protection in the way of a mulch of dry litter in autumn, and removing it in spring. We have, however, a few species which are quite hardy, although some are the better of a little protection for the first winter. The hardiest of these is *Gladiolus byzantinus*, a species with small, rosy-purple flowers, but the following others may also be grown as ordinary border flowers: *communis*, *segetum*, *serotinus*, *illyricus*, and *neglectus*. Then the varieties of the early-flowering Gladioli named in catalogues may be accounted almost hardy on light dry soils, especially if protected for a winter after being planted. Such forms as *Colvillei*, *The Bride*, and almost all the other early bloomers are amenable to this treatment. Plant them about six inches deep in a sunny position.



GLADIOLUS "THE BRIDE"

HEMEROCALLISES

The Day Lilies are very ornamental plants, although their usefulness in the garden is reduced by the individual blooms only lasting for the one day. The number available for gardens has been increased by varieties raised by hybridisation and cross-breeding, and some of these are of much value. *Auriantiaca major*, a fine plant introduced within the last few years, is shy in flowering and wants a good soil and a warm, sunny position. It has rich orange flowers. The others grow in a sunny position in ordinary soil. *Dumortieri*, orange, brown outside, grows about one foot high;

flava has pretty yellow blooms, on stems about two feet high, in June; fulva is taller, and has more coppery flowers. There are double-flowered and variegated-leaved varieties of fulva, the form fl.-pl. variegata being very fine. Middendorffii has orange flowers, and is about one foot high; Thunbergi resembles flava, but blooms a month later. Minor, or graminea, is of dwarf habit, and has yellow flowers. Hybrid, or seedling forms of merit are Apricot, Dr Regel, Flamid, Frances, luteola, and Sovereign.

CHAPTER VII

HARDY BULBS

Hyacinths — Hyacinths in Pots — Scillas — Puschkinias — Chionodoxas — Chionoscillas —
Muscaris

This group of bulbs is one of the most valuable, their bright colours and beautiful forms giving the garden much of its attraction in their season.

HYACINTHS

The garden Hyacinths, the offspring of *H. orientalis*, are fine for beds or for groups or lines in borders, although too stiff for planting in grass. They like a good, but light, soil, well enriched with thoroughly rotted cow-manure, and may be planted three inches deep in a sunny position in October. There are so many good varieties that intending growers would do well to consult the catalogues of dealers and select from them. Mixed Hyacinths are sold at a cheap rate.

HYACINTHS IN POTS AND GLASSES

There need be little difficulty experienced in growing Hyacinths in pots, glasses, or jardinets, if proper care is exercised and the bulbs have been properly grown and well-matured the previous season. The pretty early varieties, popularly known as Roman Hyacinths, are very useful, and may be had in bloom at various times by potting at intervals from August onwards, about six bulbs being required for a forty-eight size pot. They like a light rich compost, such as may be made of good fibrous loam, with the addition of well-decayed cow-manure, leaf-soil, and sharp sand; three parts of the first to one each of the second and third being a good proportion. The bulbs should be barely covered, and the pots plunged in ashes and covered with these until the roots have made free growth, when the pots may go into a frame or greenhouse. When the buds show, the pots may be put in bottom heat in a temperature of sixty-five to seventy degrees. The white Roman is the one generally grown for early work, but blush, blue, and straw-coloured forms are also to be had, and form a pleasing change. The large Hyacinths may be grown in a similar compost, although one lighter and richer gives good results. They are potted with the crown just above the surface, and plunged in ashes or fibre in a pit, frame, or open ground. When the spikes show above the ashes they may be taken in and forced if desired. A temperature of about seventy degrees is the highest which should be allowed.

When Hyacinths are grown in water in glasses good sound bulbs must be selected. The water should almost touch the base of the bulb, and a little piece of charcoal should be placed in the glass. After putting in the bulbs the glasses ought to be placed in a cool, dark place, until the roots make their appearance, when they may be brought into the light. Hyacinths may also be grown in moss, Jadoo, and cocoa-fibre and charcoal, and even in sand. Bulbs which have been grown in pots and glasses can afterwards be planted outside.

OTHER HYACINTHS

For early flowering in a sunny place in the rock-garden, the lovely *H. azureus*, or *Muscari azureum*, should be grown. It flowers in January or February, and has spikes of small blue flowers. The form *freynianum* is hardier, but is a little later.

The charming little *H. amethystinus*, with blue flowers, and its white variety *albus*, only a few inches high, are bright May-flowering bulbs for the border or rock-garden. They like a light soil.

The Scillas, or Squills, are numerous and important garden flowers. Our native *Scilla nutans* is pretty in the wild-garden, but it is surpassed by the larger flowers and spikes of *S. campanulata* or *hispanica*, the Spanish Squill, which is very beautiful in the garden or the grass. Like our native *Scilla*, it has sported into several colours, and these show some diversity of quality. The pink and the white varieties of this called *rosea grandiflora*, *Rose Queen*, and *alba compacta*, are all pleasing; as also are *grandiflora*, deep blue; *Emperor*, porcelain, striped blue; and *aperta*, blue, striped white. Less showy, but very delightful, are the early Squills, such as *S. bifolia* and *S. sibirica*. These bloom about March, and give some variety of colour. *Bifolia* is the more variable, and gives us the white variety, *alba*; a flesh-coloured one, called *carnea*; and a pink, named *rubra*. Some new forms, such as *Pink Beauty* and *White Queen*, are not in commerce. The typical *bifolia* and the variety *taurica*, both blue, are very pretty. *S. sibirica* is of different habit, though equally dwarf, and has larger, drooping flowers of a fine blue. The variety *taurica* blooms earlier. *S. sibirica alba* is one of the greatest acquisitions of recent years, and has charming pure-white flowers. It is a gem for the borders or for pots. Slugs are very fond of *S. sibirica*. *S. verna* is a beautiful native Squill, seldom seen in gardens, but its lilac-blue flowers are most attractive. Its white and rose forms are hardly to be met with. *S. italica* is a somewhat neglected April and May

blooming species, with pretty conical heads of light blue flowers. The white variety *alba*, though scarce, is obtainable, and is a charming plant. *Scilla autumnalis* likes a light soil, and a warm, dry place on the rockery. It flowers in autumn, and is worth some trouble to establish for the sake of its blue flowers. The pink form, *japonica*, is desirable.

Ciliaris, *hyacinthoides*, and *peruviana* are highly ornamental in the border, with their large heads of flowers in summer, and their broad foliage; they are, however, shy bloomers in some soils after the first year, and want thorough ripening off after blooming.

A *Scilla* little seen in gardens is *Lilio-hyacinthus*, which has broad leaves, large bulbs with scales, like those of a Lily, and pretty bluish flowers. There is a rare white variety, but the pink form seems to have been lost.

Puschkinias are pretty bulbous plants allied to the *Scillas*, and producing neat spikes of porcelain-blue or whitish flowers lined with blue. They are easily grown on light soil, but require protection from slugs when they first appear. They bloom in March, and there is only one species in cultivation—*scilloides*—the variety *compacta* having a denser spike.

Chionodoxas deserve all the praise they have received, although in our climate they do not come, as a rule, when we have snow, so that the popular name of "Glory of the Snow" is not so appropriate as in their native country. The best known is *C. Luciliæ*, which has blue flowers with a large white eye. The greater number of the others are distinct enough for garden purposes, although classed by botanists as varieties of this species. *Sardensis* is a favourite, with its smaller, deeper coloured flowers, with hardly any white in the centre. *Gigantea* and *Alleni* are nearly alike, but the latter has more flowers on the stem, and is deeper in colour. *Tmolusii* is the latest to bloom of these varieties; it resembles *Luciliæ*, but is of a deeper, more purplish-blue. There are pink, and also white varieties of all these. *Cretica* is the least effective of the genus, with the exception of the scarce *nana*, which is a charming, if not showy little flower, almost white and lined with blue.

The *Chionoscillas* are hybrids between the *Chionodoxas* and *Scillas*, *S. bifolia* being one of the parents of nearly all the forms in existence. These are interesting and pretty in their varied shades of blue or pink. Seedlings from *Chionodoxas* do not always come true to the parent, but may revert to one or other of its ancestors.

Muscaris are so numerous, and many resemble each other so closely, that it is needless to attempt to grow more than a selection. Few are prettier than the common *M. botryoides*, the Grape Hyacinth, which drew from Ruskin words of praise familiar to many. It is very beautiful, and its only fault is its rapid increase. Some of its varieties are prized by those who grow them. The larger of the two white varieties, known as *album grandiflorum*, and *pallidum grandiflorum*, with pale blue flowers, are both pretty.

M. racemosum, the Starch Grape Hyacinth, is also pretty, with its large spikes of deep-coloured flowers; there is a pink form, and a scarce white one is also met with. A fine Grape Hyacinth is *M. conicum*, with brilliant blue flowers in large racemes. *M. Heldreichi* is one of the earliest and best, with its long spike of blue flowers, each broadly margined with white. *M. szovitzianum* is a small, rather light-blue species of considerable beauty. *M. armeniacum* is a good little Grape Hyacinth. *M. latifolium* is very distinct, with its broad leaves.

M. comosum, the Tufted Hyacinth, is an interesting plant, but it is surpassed for the garden by the form *monstrosum*, which has curiously pretty frizzed blooms. It ought to be more grown.

The Musk Hyacinths are worth growing, if for nothing but their odour, although they are pretty as well. They are, however, not satisfactory everywhere, and often fail to bloom after the first season. They should have a warm, dry border, where the bulbs will ripen off well. *Moschatum* and *macrocarpum* are worthy of a trial at least.

CHAPTER VIII

HARDY BULBS

Irises — Kniphofias — Lapeyrousias — Leucojums

IRISES

As a separate volume of this series to treat fully of the Iris is contemplated, only a brief *résumé* of the genus, with a few general cultural hints, are required at the present time.

Irises, which supply plants suitable for almost any position in the garden, are naturally divided into two great groups, the first having a short rhizomatous root-stock, and the other one of a bulbous character. Each of these is divided into separate sections, about which it may be said that no common treatment can be dictated. The sub-genus Apogon, which comprises the beardless Flag Irises, embraces plants which require totally different treatment. Thus, *unguicularis*, or *stylosa*, likes a dry, stony soil, while *sibirica* and others prefer a moist one. The plants of the sub-genus *Pardanthopsis* have flowers like the Apogon Irises, but are without the crest. They generally prefer a moist, well-drained soil. The *Oncocyclus*, or "Cushion" Irises, are much prized for their singular beauty, but are not easily grown in gardens, unless in frames, where they can have a long period of rest before they start into growth in winter, or lifted and dried. This rest should begin immediately after they flower. They like lime in the soil.

The *Regelia* Irises form the link between the last and the Pogon Irises, and should have similar treatment to the Cushion Irises. The *Evansea* section contains some pretty plants, which often do well in dry places. They have a pretty crest on the flower. The plant grown by the Japanese on the roofs of their houses (*I. tectorum*) belongs to this group. *Pseudevansea* Irises have a beard which springs from a rudimentary crest, and otherwise much resemble the *Evansea* section, but few are in cultivation.

The Pogon Irises form the most important section of non-bulbous Irises in gardens, and are distinguished by the beard down the claw and lower part of the blade. They will thrive almost anywhere, but should, as a rule, have sun. They do well on walls and roofs. The familiar "German" Irises will give a good idea of the appearance of all the plants of this sub-genus.

The bulbous Irises are very beautiful, but details as to their treatment cannot be given now. For cutting, the Spanish Iris (*I. Xiphium*) is very useful and it makes a fine bedding or border plant. It prefers a rather dry soil, but should be lifted and replanted every two years or so. The English Iris (*I. Xiphoides*) prefers a stronger and moister soil, and is a beautiful plant in the garden.

I. reticulata and its forms belong to this section and are charming in the garden or in pots, though liable to a troublesome disease, which is best checked by lifting the bulbs and destroying those which are much affected. The sub-genus *Gynandiris* contains only one species, *I. Sisyrinchium*, which is not absolutely hardy and should be grown in a frame. Several of the Juno section, such as *persica*, *alata*, and *palæstina*, are best in frames, but *I. orchoides* is quite hardy and makes a fine border or rockery plant. The *Hermodactylus* section consists of *I. tuberosus*, which is native to some parts of the South of England, and is a curious and interesting species worth a place in gardens.

KNIPHOFIAS

The Kniphofias or Tritomas are among the most brilliant of our garden flowers and are of gorgeous effect in lines or masses in the garden. The greater number are hardy in most gardens, particularly if the crowns of the tuberous roots are planted about three inches below the surface of the soil, and the old leaves fastened together at the top to throw off winter rains. One of the most dependable species is *Aloides* (syn. *Uvaria*) of which there are many varieties varying in colour from pale yellow to deep red. *Grandis*, *nobilis*, and *Saundersii* are all good forms. *Burchelli*, a dwarf species with red and yellow flowers is pretty; *caulescens*, *corallina*, *foliosa*, *Nelsoni*, and *modesta* are also worth growing. *Macowani* and *pumila* are pleasing dwarf species. There are many hybrid forms, such as *Autumn Glory*, *Chloris*, *Clotho*, *Diana*, *Lachesis*, *Obelisque*, *Osiris*, *Pfitzeri*, *Robert Cannell*, and *Star of Baden Baden*. *Rooperi* is an almost continuous bloomer; *Tuckii* is a free flowerer; and *Leichtlini* and the variety *distachya* are distinct Kniphofias. These noble flowers should be planted in spring. They are easily raised from seeds. They like plenty of moisture in summer.

LAPEYROUSIAS

The Lapeyrousias or Anomathecas are brilliant little bulbous plants with blood-red flowers which look remarkably effective in shady places. They are hardy in warm places in light soil, but in cold localities should be grown in a frame. They ought to be planted two or three inches deep and

covered with litter for a winter or two. They produce seeds freely and these should be scattered in suitable places and covered over with a little soil. The one usually seen is *L. cruenta*, but there is also one, called *grandiflora*, with larger flowers.



SNOWFLAKES

LEUCOJUM

The *Leucojum*, or Snowflake, ought to be more largely grown in the flower garden or in grass, where its white, drooping bells look charming. The Spring Snowflake, *L. vernalis*, is among the most beautiful with its large, handsome white flowers, each tipped with a green spot on each outer segment. There are several forms, that sold as *carpathicum* being early and pretty. There are also yellow-spotted forms which are of much beauty, and one of these seems to be the true *carpathicum*. Miss Hope's variety is the latest Spring Snowflake. The Summer Snowflake is less pleasing because of its habit, but it is a pretty and useful flower. There are two or three varieties of *L. æstivum*, one known as *L. pulchellum* being a little earlier than the other *L. æstivum* and having smaller flowers. The autumn Snowflake, *L. autumnale* or *Acis autumnalis*, is an exquisite little bulb with white blossoms, tinged with rose. It flowers in July or August and likes a sandy soil; the others will grow in any good compost. Plant about two inches deep, and as soon as they can be procured.

CHAPTER IX

HARDY BULBS

Liliums — Liliums in Pots — Malvastrum — Merenderas — Millas — Narcissi — Narcissi in Pots

LILIUMS

The Lily is the noblest of bulbous plants, and it is to be regretted that its cultivation often presents insuperable difficulties in many gardens. There are a few species which can be grown almost anywhere, it is true, but the greater number require special conditions of soil or climate. As this noble plant may form the subject of a separate work in this series, I shall only give a brief summary of the leading species and their requirements for the benefit of the general reader.

The easiest to grow in the garden are those which are satisfied with ordinary, well-dug soil, with the addition of some leaf-soil, if it is heavy, or some loam, if light. This class comprises the favourite *candidum*, the Madonna Lily, of which there are several varieties, such as one with a golden margin to the leaves; *spicatum*, also known as *flore pleno*, which has partly double flowers; and *striatum*, with flowers streaked purple outside. There are also *chalcedonicum*, with scarlet "Turk's-cap" flowers and its variety *Heldreichii*; the dark-hued hybrid *dalhansonii*; *bulbiferum*; the pretty *concolor*, with its forms *Coridion* and *pulchellum*; the brilliant *croceum*; *dauricum*, known as *umbellatum* in some gardens; the pretty *elegans* (syn. *thunbergianum*); the good yellow *Hansonii*; and that comparatively new Lily, *Henryi*. In this soil, also, can be grown the exquisite *longiflorum*, with its trumpet-shaped blooms, and its varieties *giganteum*, *eximium* (*Wilsonii* of some), *foliis albo-marginatus*, *Takesima*, *Harrisii*, and *præcox*. The hybrid *Marhan* thrives in the same soil, as also do the typical *Martagon*; the pretty *pomponium*; the strongly-scented *pyrenaicum*; and the ever popular *speciosum* (syn. *lancifolium*), of which there are so many good varieties, such as *album Krætzleri*, *album novum*, *Melpomene*, *roseum superbum*, *cruentum* and *punctatum*. To these may be added the pretty *tenuifolium*; the well-known *tigrinum*, with its forms *splendens*, *Fortunei*, and *fl.* A selection of varieties of *L. elegans* would include such as *Alice Wilson*, *alutaceum*, *atrosanguineum*, *aurantiacum*, *Batemani*, often called *L. Batemanniæ*, *Horsmanni*, *Flore-pleno*, *Prince of Orange*, *Van Houttei*, and *Wilsonii*. There are also a number of varieties of *umbellatum*.

The following Lilies require a deep and well-dug friable loam, lightened with sand and leaf-soil if of a clayey nature:—

Alexandræ, a fine new Lily; the splendid *auratum* with its many forms, of which *platyphyllum*, *rubrovittatum*, *virginale* and *Wittei* may be named; *Bolanderi*; *Brownii*; *callosum*; *columbianum*, *giganteum* and the allied *cordifolium*; the fine *Humboldtii*; the rather unsatisfactory *japonicum*, better known as *Krameri*; *japonicum Colchesteri*; *Leichtlinii*; *Lowii*, *neilgherrense*. *Martagon album*; *M. dalmaticum*; *M. cataniæ*; *nepalense*; *pulchellum*; the pretty new *rubellum*; *rubescens*; *sulphureum*; *monadelphum* or *szovitzianum*—a well proved species—*Wallacei*, and *washingtonianum*. Although these all do with the compost named, unfortunately some are almost impossible to grow in ordinary gardens.

The following like a moist peaty soil, although some can be grown without this, but it is safer to study their likings:—*canadense* with its varieties; *carniolicum*; *Grayii*; *maritimum*; *pardalinum*, with its varieties *californicum*, *Bourgæi*, *Johnsoni*, *minor*, and *Michauxii*; *Parryi*; *parvum*; *philadelphicum*; *Roezlii*; and *superbum*.

In planting Lilies, they should have the crowns from four to six inches below the surface, and should be surrounded with some sharp sand. In heavy soil it is desirable to plant the bulbs on their sides.

LILIES IN POTS

Lilies make beautiful pot plants, and in pots their cultivation is very simple. Fibrous loam, peat, and a little decayed manure and sand will grow them well. It is a good practice not to cover the bulbs too deeply at first, and to add soil afterwards as growth is made and roots formed at the base of the stems. Watering must be carefully applied, so as to give enough without souring the soil. Plunge the pots in frames, and bring them in when growth is so far completed, or place outside in sheltered positions until they show flower. Repotting is best done as soon as the stems are quite withered.

MALVASTRUM GILLIESII

This is a very pretty little trailing rock garden plant, with tuberous roots, and only a few inches high. It likes a sunny place, but must not suffer from drought in summer. The flowers are of a bright crimson-purple. It is hardy in a sheltered rockery.

MERENDERAS

The Merenderas are closely related to the Colchicums, and are amenable to similar treatment. The species grown in gardens are *M. Bulbocodium*, four inches, lilac, blooming in autumn; *caucasica*, blooming in May, and having rosy flowers; and *persica*, which flowers in late autumn and has pale lilac blooms.

MILLA

The Millas are pretty bulbous plants, but the only one worth growing as a hardy bulb is *M. uniflora*, often called *Triteleia uniflora*, which has white flowers, shaded with blue, in spring. The form *violacea* has porcelain-blue flowers striped with a deeper blue. The Milla can be grown in the border or rock-garden, but it likes the edge of a gravel path, where it will soon establish itself. Plant in early autumn with the crown about two inches deep.

NARCISSI

It is impossible to treat properly of the Narcissus in the space available in a work of this character, but as it is proposed to publish a volume devoted entirely to this charming flower, it will be sufficient to give a chapter dealing generally with the flower and its ways.

Generally speaking, the cultivation of the Narcissus out of doors is without difficulty, if we can give it a free, loamy soil, and a pure air. The exceptions are few, except that there are some species which are troublesome, and apparently resent being grown in cultivated ground, and die off there. Some of these will thrive on grass or on rockwork, while they die in the border. The white trumpet Narcissi are among the most troublesome in this respect, and some find it necessary to plant them on grassy banks facing the north. This is not desirable in the north, and it will be well to try various positions before finally giving up the cultivation of the fascinatingly beautiful white trumpet Narcissi. The Hoop-petticoat Narcissi, as the forms of *N. Corbularia* are called, are difficult to establish. Those who wish to attempt them may begin first with *citrina*, the sulphur one. Many find them thrive best planted where the roots can reach water, such as in light, peaty soil, above a milk pan sunk in the soil. The writer has, however, frequently seen plants established in the border or rock-garden. *Triandrus albus*, the exquisite "Angel's Tears," is troublesome to establish also. It ought to be planted in a crevice of the rockery in gravel, sand, and peat. The form *Triandrus pulchellus*, although scarce, is a much better grower. The beautiful little *N. moschatus*, of Haworth, is difficult to grow except on grass; and others which thrive better thus planted than in the ordinary border are named by Messrs Barr. Their list may be safely followed, although one's experience of several is that they grow quite well in a border; much, however, depending upon the character of the soil and how it is drained. The varieties are:—*Achilles*, *Countess of Annesley*, *Spurius*, *Thomas Moore*, *Pseudo-narcissus*, the English Lent Lily, *variiformis*, and *pallidus præcox*. Few of the Tazetta Narcissi are suitable for outdoor culture, although in the milder districts of England and Ireland they may be grown in the open.

As the Narcissus prefers a soil without animal manure within reach of its roots, it is better to cultivate it in land manured for a previous crop, or to add artificial fertilisers, than cow or horse manure. Experienced growers prefer a small quantity of basic slag or bone meal. In light soils a sprinkling of sulphate of potash is applied annually in autumn.

Planting is best done early in autumn, September being a good month, but the varieties of *N. poeticus* should be in earlier if possible. Occasional lifting and replanting is advisable.

NARCISSI IN POTS

In cultivating the Narcissus in pots or boxes a somewhat similar method may be adopted as in the case of Hyacinths in pots, but they will generally stand more forcing. The Tazetta, or Bunch-flowered Narcissi, such as Paper White, are largely used, and can be had very early in bloom.

CHAPTER X

HARDY BULBS

Ornithogalums — Oxalises — Pæonias — Ranunculuses — Romuleas — Sanguinarias —
Sternbergias — Schizostylis — Tecophilæas — Trilliums

ORNITHOGALUMS

The Ornithogalums, or Stars of Bethlehem, are not general favourites in gardens, because of their seeding propensities, which make them difficult to keep within bounds. Several are very pleasing and deserve some attention, because of their white and green flowers. Umbellatum, the common species, is only suitable for the wild-garden, but the little tenuifolium is pretty, as also are fimbriatum and montanum. Nutans is pretty also, but increases too rapidly. Pyramidale is a fine plant about two feet high. They like a sandy soil and to be planted about two inches deep. None of the yellow Ornithogalums are hardy.

OXALISES

The Oxalises, or Wood Sorrels, are bright little plants, although their value is reduced by their flowers only opening in sun. There is a pretty lilac variety of *O. Acetosella*, our common Wood Sorrel, and *Bowiei* and *floribunda*, with rose flowers, are quite hardy in light soil. *Lobata*, a beautiful little yellow species, flowering in October, is also hardy, as well as the exquisite white *enneaphylla*. *Tetraphylla*, *lasiandra*, *l. alba*, and *violacea* may also be tried with every prospect of success. Give a sunny position in light soil, and if planted in autumn cover slightly the first winter.

PÆONIAS

The herbaceous Pæonias, which are such brilliant ornaments of our gardens in May and June, would require more space to do them justice than we can command. They like a rich, well-manured soil, inclining to heaviness and thoroughly trenched before planting in early autumn. After the plants are in position mulch the ground with rotten manure, and when growth is being made in summer give liberal applications of manure water to induce free growth. The crowns should be a little below the surface, and plant if possible where the sun does not reach them until a little before noon. The list of superior varieties is extremely extensive, and those thinking of purchasing Pæonias should either select the plants while they are in bloom, or from the catalogues of dealers who grow these flowers largely. The single forms are very beautiful also, though they hardly keep so long in bloom. Many of the species are also attractive plants, and where there is sufficient space a selection of these should be made and grown. The common Peony of old gardens is *P. officinalis*.

RANUNCULUSES

At one time a favourite florist's flower, the Ranunculus has fallen greatly out of favour, and there are now few named sorts grown. It is, however, well worth growing for its beauty as a garden flower and also for cutting. A bowl of pure white Ranunculi with the foliage of *Heuchera Richardsoni*, or some other dark-leaved plant, is a charming thing, and many equal beautiful effects can easily be produced. The florist's Ranunculus was derived from *R. asiaticus*, and there are flowers of almost all colours among the double varieties which have been raised. A good strain of mixed Ranunculuses will produce many good flowers at a small expense. The principal forms now grown are the Turban or Turkish and the Persian, which are varied in their colours. Those named *R. asiaticus superbus* are large and showy, if a little coarse to those accustomed to the more refined flowers of the others. They can be grown in an ordinary border well manured, and can be planted from October to February. In planting choose a dry day, and keep the crowns two inches below the surface. Care must be taken to keep the crown up, and to cover this with a little sand after planting. Cover with some litter in winter, and water freely when coming into bloom. Lift when the foliage becomes yellow, and dry off in a cool and airy place, storing the tubers in dry sand.

There are a few other tuberous-rooted species of *Ranunculus* worth growing in the garden. Of these the best are the double form of the native *R. bulbosa* which has yellow flowers; *R. chærophyllus*, yellow; *R. monspeliacus*, yellow; and *R. millefoliatus grandiflorus*, the same colour. These are easily grown in the border in ordinary soil.

ROMULEAS

Romuleas are remarkably pretty little bulbs with Crocus-like flowers, from March to July, and grassy leaves. They require warm, sunny spots on rockwork, and in cold localities should be

grown in a frame. They like sandy soil. Among the best and hardiest are *R. Bulbocodium*, with blue and yellow flowers. The variety *pylium* is even prettier. *Columnæ* is pretty with its white flowers. *Clusii*, lavender, and *speciosa*, rosy violet, are both pretty. Plant in autumn two inches deep, and protect in winter.

SANGUINARIAS

S. canadensis, the only species, is a pretty little plant, known as the Bloodroot, Red Puccoon, or Red Indian Paint, and perfectly hardy. It has white flowers with a yellow centre in April, and the leaves are not fully developed until after the flowers. It likes a rich moist soil, but can be grown in the border. The best form is *grandiflora*, and the one called *multipetala* has many narrow petals. There is said to be a pinkish form.

STERNBERGIAS

The Sternbergias are handsome autumn flowers with blooms like a glorified yellow Crocus, which appear before the leaves. The best for the open air is *S. lutea angustifolia*, a narrow-leaved variety of the common *lutea*. Others of much beauty are *fischeriana* and *macrantha*, the latter having very large flowers. In order to make them flower they need a dry, sunny position in soil with limestone or lime rubbish. They should be planted in summer about two inches deep.

SCHIZOSTYLIS COCCINEA

The Kaffir Lily is a valuable late blooming plant in a warm, sunny border, where it blooms in autumn, when its bright scarlet flowers in long spikes are much appreciated. Although it likes a warm position, it must not suffer from drought in its growing period. Plant in spring about three inches deep. It makes a good pot plant for a cool house.

TECOPHILÆAS

The beautiful little *Tecophilæas* are quite hardy in light soils, but are, because of their scarcity, usually grown in frames or in pots in greenhouses. They have pretty Crocus-like flowers of blue and white, and should be planted in rich, light soil in a sunny position, well-sheltered from wind, or in a frame. Slugs are very partial to them, and must be carefully guarded against. The leading species are *cyano-crocus* and *violæflora*.

TRILLIUMS

The Trilliums, or Trinity Flowers, are very ornamental plants, and are so distinct in form that they please everyone. They like shade and a moist peaty soil. *Grandiflorum* is a general favourite, with its large flowers of pure white. There is also a rose-coloured form named *grandiflorum roseum*. Even finer than *grandiflorum* is *sessile* var. *californicum*, which is considerably taller, and has fine white flowers, those of the typical *sessile* being purple. *Cernuum*, *erectum*, *erectum album*, *nivale*, *petiolatum*, *recurvatum*, and *stylosum* are all pretty, the last being the latest to bloom, and well worth growing. Plant in autumn or spring, with the crown one or two inches below the surface of the soil.

CHAPTER XI

HARDY BULBS

Tulips — Zephyranthes

TULIPS

It is a matter for regret that the true beauty of the Tulip has been so long obscured by the manner of its planting in stiff lines or beds, where the flowers stood in almost regimental array, with little but their own foliage to tone down the superfluous brilliancy of the mass of colour. It is emphatically a flower which requires association with other plants to show its true value. Grown in bold clumps in the mixed border, or in irregular groups among the rougher grass, it gives a much better effect. Individually, the Tulips are very beautiful, and their value in pots is of a high degree. Of course those who grow the English florist's Tulip ought to continue to grow them in beds and in lines, so that they can be protected from frost and shaded readily from strong sunshine. For ordinary gardens, however, an informal grouping will be the most satisfactory and pleasing. The species are very varied in their character, and many of the dwarfer are delightful rock-garden plants. A good, loamy soil is suitable for all classes of Tulips, but where it is heavy a little coarse sand may be placed about the bulb. It is well to plant comparatively early, from the beginning of October to the end of November being the most suitable time. In gardens subject to late frosts, it is better to plant in November than in the earlier month. Three or four inches is the depth generally recommended, but on light soil an additional inch may be given. Six inches apart is a good distance at which to plant the bulbs for ordinary effect. The English florist's Tulip ought to have a good loamy soil, the bulbs being planted three inches deep and four apart in lines. The end of October to the middle of November is the best time, but the bulbs should never be planted unless the soil is in a good working condition. Some litter should be put over the beds in severe frosts, and an awning erected over them at the blooming-time to preserve the flowers from rain and strong sun. There are a number of details connected with the florist's Tulip and its cultivation which cannot be given in the space of this work, but Mr Bentley's little pamphlet, entitled "The English Tulip," will give all necessary information not to be found here. The florist's Tulip can be grown in a border, but its effect there is not so good as that of some of the self-coloured flowers.

The early Tulips are the most prized for pot-culture, but the others may be used also, although not generally so amenable to forcing. They should be planted at the rate of from three to five bulbs in a five-inch pot, according to the size of the bulbs. After planting, the pots should be plunged in ashes or cocoa-fibre until they have made root-growth, when they may be brought in as required and subjected to gentle forcing. Watering must be carefully attended to at this time. When a number of flowers are required for jardinettes, etc., the Tulips may be grown closely together in boxes. When they show colour, they may be lifted with roots intact, and planted in moss in the receptacles in which they are required.



TULIPS CARPETED BY ARABIS

The most valuable Tulips for early work are the early Dutch varieties, many of which are very beautiful and embrace much variety of colour. The varieties of Duc Van Thol and Pottebakker are largely used for early bloom, but other good varieties are Bacchus, Canary Bird, Keizerskroon, Mon Tresor, and Proserpine. Following these are the popular Artus, Cottage Maid, Crimson King, and many others. As, however, almost all the bulb-dealers give the blooming periods in their lists, it would only take up space unnecessarily to detail them. A special selection of the best for pot work or for forcing would include such varieties as the Duc Van Thols, Couleur de Cardinal,

Globe de Rigaut, Keizerskroon, the Pottbakkers, Royal Standard, and Samson, all reliable bloomers where they are properly cultivated.

Double Tulips last a little longer in bloom, but they do not lend themselves so well to the decoration of the garden, and many people do not care for their rather heavy-looking blooms. Good varieties for pots and forcing are Artus, Brutus, Duchess of Parma, Proserpine, Rose tendre, Thomas Moore, and Van der Neer. For bedding there are Cramoisie superbe, La Candeur, Murillo, Rex Rubrorum, and Titian, besides a number more. Variegated leaved Tulips are pretty in beds, even before the blooming time, but they are not much grown in this country.

The "Cottage Garden" Tulips grow yearly in favour, and they deserve it because of their beauty and their general hardiness, which enables the greater number to be permanent border flowers. There are a great many of much beauty, and a brief selection is necessarily incomplete. It includes the curious acuminata, Didieri, elegans, Faerie Queen, flava, Gala Beauty, gesneriana, Golden Beauty, Golden Crown, ixioides, macrospila, maculata, Picotee, retroflexa, sylvestris major, vitellina, and York and Lancaster.

The beautiful species of wild Tulips give much variety, and among the desirable plants may be named Batalini, biflora, clusiana, Greigi, kolpakowskiana, Korolkowi bicolor, Leichtlini, linifolia, ostrowskyana, persica, præcox, Sprengeri, and violacea. Many of these are capital for the rock-garden.

The Parrot Tulips are also showy in the rock-garden or for hanging baskets, where the large, fantastic flowers droop over and look very curious with their strange colouring and lacinated petals. They are rather unreliable bloomers.

The Darwin Tulips are very effective and beautiful flowers. They belong to the breeder class of the florist's Tulips, but are of a strain with more brilliant self-colours than the ordinary breeders. They are good growers, and promise to do well as border flowers.

The English florist's Tulip, while very fascinating in its way, is not of so much value for the garden as the self-coloured forms, and there are a good many details to be followed by those who wish to cultivate it as it deserves. These will be found in Mr Bentley's work, already mentioned. These English Tulips are divided into three classes with rectified or variegated blooms, as well as another, which consists of what are known as "Breeders," which, like the others, have a stainless base, but have not developed the markings of the other classes. Bizarres have a yellow ground and yellow base, of various shades, with orange, scarlet, crimson, black, or brown markings on the ground; Bybloemens have a white base and ground, the latter being marked with black, violet, purple, and lilac to lavender; while the Roses, which have a white base and ground, have the markings of pink, rose, scarlet or crimson.

ZEPHYRANTHES

Zephyranthes, or Amaryllis Candida is the only really hardy member of this genus in British gardens which are not specially favoured with a mild climate, and it will seldom prove a permanent success unless planted in dry soil in front of a greenhouse or stove and exposed to the sun. It has beautiful white flowers in autumn, and should be planted about three inches deep in spring.

CHAPTER XII

HALF-HARDY BULBS

Acidantheras — Albuscas — Alstrœmerias — Androstephiums — Besseras — Boussingaultias —
Bravoas — Cypellas — Dahlias — Galaxias — Geissorhizas and Hesperanthas

ACIDANTHERAS

The only species of *Acidanthera* which has been introduced hardy enough to be classed with half-hardy bulbs is *A. bicolor*, a pretty plant with spikes of whitish flowers with the lower segments spotted purple. It may be grown outside in a warm border if treated like a half-hardy *Gladiolus*, or better, under glass as recommended for the *Ixia*.

ALBUCAS

Only a few of the *Albuscas*, which come near to the *Ornithogalums*, deserve cultivation; these can be grown outside in warm districts alone, on a raised bed of rather light soil, in a sunny position, protected in winter by a layer of litter. They are, however, better in the greenhouse or frame. *Aurea*, yellow; *fastigiata*, white; and *Nelsoni*, white, are the best in cultivation. They bloom in summer, and may be planted three inches deep in autumn.

ALSTRŒMERIAS

Apart from the hardier *Alstrœmerias*, which may also advantageously be grown in frames or in cold greenhouses, there are several others which are pleasing occupants of frames and cool greenhouses, from which severe frosts are excluded. The least hardy of all is *A. caryophyllæa*, which should always have a little heat, and does best in a warm greenhouse or stove. Eminently suitable for the frame or the greenhouse without heat are the charming *pelegrina*, white or yellow, striped with rose, and with a yellow spot on its segments; and its white variety, *alba*, a lovely thing. Then there are *Errebaultii*, a pretty hybrid, white, spotted purple; *pulchra*, purple, white, and yellow, with red spots, and *brasiliensis*, with its reddish yellow flowers spotted with brown. At one time these were more grown, and a renewed demand would bring many other species into cultivation. A light rich soil is suitable for all, with plenty of water while growing but very little afterwards.

ANDROSTEPHIUMS

These are pretty bulbous plants resembling the *Brodiaëas*, and hardy if planted six or seven inches deep, but better grown in a frame. They like a sunny position and a light soil. The species are *breviflorum* and *violaceum*.

BESSERAS

Few people know the *Bessera*, which is a pretty little bulbous plant from Mexico, bearing some resemblance to the *Scillas*, but having bright scarlet or scarlet and white flowers. It grows from one and a half to two feet high, and may be treated similarly to the *Babianas*. It is one of the many half-hardy bulbs which might be more widely cultivated with advantage.

BOUSSINGAULTIAS

B. baselloides is a rather pretty trailing plant which gives clusters of white flowers in late autumn. In a few districts it is hardy, but it ought usually to have the protection of a frame in winter, or to have its tuberous roots stored in sand until spring, when it may be planted about three inches deep. It likes a rich, but light soil.

BRAVOAS

Bravo geminiflora, the only one of the three species in cultivation, is hardy in warm places in the south, but for most gardens its proper treatment is that of a frame bulb. It has beautiful orange-red, drooping flowers in July, on stems from one and a half to two feet high. It likes a light, sandy soil, and may be planted about three inches deep in autumn.

CYPELLAS

These are pretty plants allied to the *Iris*, and well suited for growing in pots in the greenhouse as well as for frame cultivation. They may also be planted out in spring, and lifted in autumn and potted. They like a light, sandy soil, and may be planted two inches deep in pots, or three inches

if in a frame. In the latter it is well to give them a little covering in frosty weather. They may be raised from seeds or increased by offsets. Cypellas grow from one to three feet high. The most desirable are *Herberti*, yellow; *peruviana*, yellow, spotted red-brown; and *plumbea* (syn. *Pohlia platensis*), lead-coloured, with a tinge of yellow in the centre.

DAHLIAS

The Dahlia is too extensive a subject to permit of its being fully considered in the limits of this work, but, without entering upon particulars regarding the various sections and varieties of the flower, it may be helpful to give a few broad cultural details for the benefit of those who grow the flower to a limited extent. It is a plant which must have generous treatment, and to give this it is essential that the ground should be deeply prepared by digging, and thoroughly manured with well-decayed manure. The plants may be put out as soon as danger from severe frost is past, and they should be allowed plenty of room. For exhibition purposes from five to six feet apart will be found a suitable distance. The plants should be staked immediately, and covered at nights when there is a prospect of a cold night occurring. Pots filled with moss or hay may be placed on the top of the stakes and examined regularly for earwigs. When the plants begin to make growth, the soil ought to be well mulched with half-rotted manure. Watering should never be neglected, and as the plants grow they must be properly tied to the stakes. Thinning and disbudding are necessary to secure the largest possible blooms for exhibition flowers. These may also require to be shaded and protected from bad weather. When the plants are destroyed by frost in autumn, they may be cut down to within six inches of the surface of the soil, and, after leaving them in the ground for a few days, lifted and stored out of the reach of frost. Dahlias are propagated by seeds, division of the tubers, and by cuttings, the two last being the only way of propagating named varieties. Seeds are sown in pans or pots in March under glass. When the young plants can be handled, prick them out into small pots and grow under glass until large enough to plant out in the beds. Old tubers may be divided if a portion of the crown with an eye or bud is attached to each piece. These must be put into small pots and grown on for a short time. Cuttings are easily struck from February to August. In spring the old tubers are placed in heat with the crowns above the soil, and the shoots taken off when about three inches long, and struck in heat in single pots of light soil. Cuttings taken off in summer and rooted in small pots, form good "pot roots" for planting out in spring.

GALAXIAS

Few people grow these pretty little bulbous plants, which do well in a frame with some protection in winter, although, perhaps, even better in pots in a cool greenhouse. They bloom in May, the clusters of flowers being almost stemless. *Graminea* has yellow flowers, and the other species, *ovata*, has purple-violet blooms. They belong to the Irids. A sandy peat is the soil they prefer.

GEISSORHIZAS AND HESPERANTHAS

These are closely related to each other, and require practically the same cultural treatment. The *Geissorhiza* is a pretty little plant, but both it and the *Hesperantha* seem a little more tender than the *Ixia* and do best with greenhouse treatment. They may be potted and grown in the way recommended for *Ixia* under glass. Both have loose spikes of flowers. They bloom in May or June.

Practically the only *Geissorhiza* grown in Britain is *G. rochensis*, a charming thing, with Tyrian blue flowers with crimson blotches, but *alba*, white; and *violacea*, light blue, are also procurable; while a demand for them would probably bring out *humilis*, yellow; *purpureolutea*, purple-black and yellow; *secunda*, red, rose, and white, with a number of others from South Africa.

The *Hesperanthas* are even less grown, but one may meet with *graminea* and *pumila*, white, and *pilosa*, rose, out of the twenty-six or so species known. Their drawback is that they flower in the evening.

CHAPTER XIII

HALF-HARDY BULBS

Gladioli — Ixias — Sparaxises — Babianas — Morphixias — Tritonias

GLADIOLI

Although there are some districts in which the greater number of the Gladioli may be grown as hardy bulbs and left in the same position for years without removal, in the vast majority of British gardens they are more satisfactorily treated as half-hardy, and are lifted and replanted annually. They are less liable to disease, and less apt to be injured by frost in severe winters. Those, however, who wish to establish them permanently, will do well to plant rather deeper than is usually recommended—say, eight inches from the crowns to the surface of the soil.

The general cultivation of Gladioli is very simple. They may be grown well in any good loam, enriched in autumn by a supply of properly rotted animal manure being dug in deeply. In the case of the pretty early-flowering Gladioli, which are often satisfactory when permanently planted, they are put into the ground in late autumn, and protected with a layer of two inches of dry litter or cocoa-nut fibre. The greater number of the species, like the exquisite hybrid Gladioli, may be planted in April or early May. The corms should be about six inches deep, and are best planted by means of a trowel to form the holes, unless the soil has become too solid, in which case it ought to be forked over before planting the corms. For exhibition they may be planted about six inches apart, but for border decoration they look well in groups of three or five at a closer distance. Many charming effects may also be produced by planting Gladioli in beds, with a groundwork formed by a low plant of contrasting or harmonising colours. Other good effects may also be made by arranging them with other tall flowers. Gladioli should be staked early, and it is desirable to put in sticks when the corms are planted, unless they are in a position where the long stakes will look unsightly. In this case short sticks may be placed where the proper stakes are afterwards to go, so as to avoid injuring the corms when inserting these. They should be timeously secured with raffia or other soft material. Spikes of bloom intended for exhibition ought to be shaded and protected from the weather by a glass fronted box, with the lower portion of the glass shaded by whitening or canvas as the lower blooms open. When the leaves become yellow the corms may be lifted and, after drying slightly in a cool airy place, be stored free from frost until planting time.

The leading section of Gladioli is that formed by the *gandavensis* varieties, charming hybrids, which through a long period have been constantly improved until their almost perfect flowers have been produced. Even the best of the present day are being gradually superseded by novelties, and a selection of a few would only mislead. Named varieties procured from reliable firms will all give satisfaction, and seedlings of great beauty can be bought at a moderate price, and will often give flowers suitable even for exhibition. The scarlet *G. brenchleyensis* is indispensable for garden decoration.

The *Lemoinei* section, from *G. purpureo-auratus* and *gandavensis* varieties, is also very important, though it is not so perfect in form as the *gandavensis* flower. These *Lemoinei* varieties are characterised by fine blotches on some of the segments. They are slightly hardier than the preceding. These are still being much improved.

The *nanceianus* section comprises a number of very showy flowers, particularly suited for garden decoration or for cutting for large vases. The plants are tall, and the blooms are of great size. The *Childsii* varieties are also very effective plants in the garden, and are of fine colours. Several new hybrids are at present in course of improvement and will, in time, add much to the beauty of our gardens.

The species are not much grown, but there will be found among them a number of very pretty plants, which only await a demand to be readily obtainable. I have only space to refer to such as *alatus*, *cardinalis*, *galeatus*, *hirsutus*, *dracocephalus*, *præcox*, *ringens*, *Saundersii*, *psittacinus*, *purpureo-auratus*, and *tristis*, as all being interesting and not devoid of beauty of their own.

The hybrid Gladioli, as well as the species, make good pot plants which may be treated in a similar way to such bulbs as Hyacinths. Named varieties are propagated by offsets, by division of the corms, each portion having an eye attached, and by "spawn," the cormlets at the base of the corms which are grown on until they reach flowering size. Gladioli are also raised from seeds, sown in pans, or in the open ground in spring.

IXIAS, SPARAXISES, BABIANAS, MORPHIXIAS, AND TRITONIAS

For convenience of treatment, these pretty and useful bulbs may well be grouped together. They are possessed of brilliant colouring, and few things are prettier or attract more attention than beds of these flowers. They are also lovely pot plants, and can be well grown in the cool

greenhouse or conservatory. In some places they are hardy and may be left without much attention, but, as a general rule, they need the little care now recommended to bring them to perfection. For their cultivation, a bed with a south aspect, of rich, light loam, raised six inches above the level of the garden, is to be preferred, special care being taken that the drainage is perfect. The bulbs should be planted from October to January, at a depth of from three to four inches, and about three inches apart. If the foliage does not appear until spring, a little dry litter is all the protection required, but should it pierce through the soil earlier, a mat or two may be placed over the bed in frosty weather. When the foliage dies down after flowering, the bulbs may be lifted and dried off. For pot work, from five to six bulbs are enough for a five-inch pot, and loam, leaf-mould, and silver sand form a good compost. The best time to plant in pots is from September to December, and the soil should be slightly moist, but not so wet as to be adhesive. After making the compost firm about the bulbs, place the pots, plunged in cocoa-fibre or ashes, in a cold frame until the plants appear, when water may be given very moderately, and the lights kept off in all favourable weather. When the plants have made some growth, remove the pots to the greenhouse or conservatory, keeping them near the glass and giving a sufficiency of water.

The *Ixia*, or African Corn Lily, is a charming plant, with long racemes of brilliantly coloured flowers, whose dark centres add much to their beauty. Mixed varieties can be bought very cheaply, and will give many beautiful flowers. Bulb dealers also offer named collections at moderate prices. *Azurea*, blue; *Beauty of Norfolk*, yellow; *Conqueror*, yellow; *crateroides*, bright scarlet, and a capital thing; *Donnatello*, scarlet; *erubescens major*, rose-carmine; *Excelsior*, crimson-scarlet; *magnificum*, yellow; *nitens*, magenta; *Queen of Roses*, rose; *viridiflora*, a charming thing, with sea-green black-centred flowers; and *White Queen*, pure white, with crimson centre, are all desirable. *Morphixias* are now included by botanists with the *Ixia*. They bloom rather later. The varieties of *paniculata* should be grown. *Sparaxis* are equally beautiful, but are of dwarfer habit. Among the most useful is *S. tricolor*, which has scarlet flowers with a yellow centre. The others are not so much grown under name as formerly, as mixed varieties are cheaper, and give good flowers. *Fire King* is bright with its scarlet and black flowers, with a yellow centre, and *Angelique*, white; *Garibaldi*, crimson; *Lady Carey*, white, blotched purple; *maculata*, white, purple, and primrose; *Queen Victoria*, white, yellow, and black, are all good.

Babianas are also very beautiful with their dwarf habit, plaited hirsute leaves, and their self-coloured or strongly contrasted flowers. Apart from the species, of which there are upwards of twenty, there are a number of named varieties. *Atro-cyanea*, purple-blue and white; and *rubro-cyanea*, blue and crimson, are both varieties of *B. stricta*. Others worth growing are:—*Attraction*, blue; *General Scott*, lavender; *Hellas*, yellow; *Julia*, white and blue; *speciosa*, mauve; and *villosa*, blue. The plant called *S. pulcherrima* is *Dierama pulcherrimum*, which is named among hardy bulbs.

The *Tritonias* now include *Montbretia Pottsii*, but the plants, forms of *T. crocata*, generally known in gardens by the former name, more resemble the *Sparaxis* in their habit than the popular *Montbretia* of modern times. They are grown like the *Ixia*, but are rather more tender, and do best if kept indoors in winter. They bloom later than the *Sparaxis*, and differ in their leading colours, these being buff, rose, salmon, and orange. Good forms and varieties are *amoena*, yellow; *Bella*, blush; *crocata*, bright orange; *elegans*, orange-cerise; *Eleonore*, buff; and *speciosa*, orange-scarlet. Mixed varieties can be bought cheaply.

CHAPTER XIV

HALF-HARDY BULBS

Ixiolirions — Moræas — Ornithogalums — Oxalises — Phædranassas — Pancratiums — Tigridias
— Zephyranthes — Cooperias

IXIOLIRIONS

Few people seem to grow the Ixiolirions, which are pretty summer blooming bulbs with umbels of lilac or blue flowers on stems about a foot high. This is unfortunate, as they are of pleasing appearance, though it is to be regretted that they are among those troublesome bulbs which are almost hardy, yet not absolutely to be depended upon in our climate. If planted in the open, this ought to be done in spring, and the bulbs lifted in autumn, and stored in dry sand, but it is more satisfactory to grow them in a frame or cool greenhouse in pots of loam, leaf-soil, and sand. There are two species—*montanum* and *kolpakowskianum*, the latter having a smaller bulb and shorter segments. The variety *tataricum* is considered a separate species by some botanists.

MORÆAS

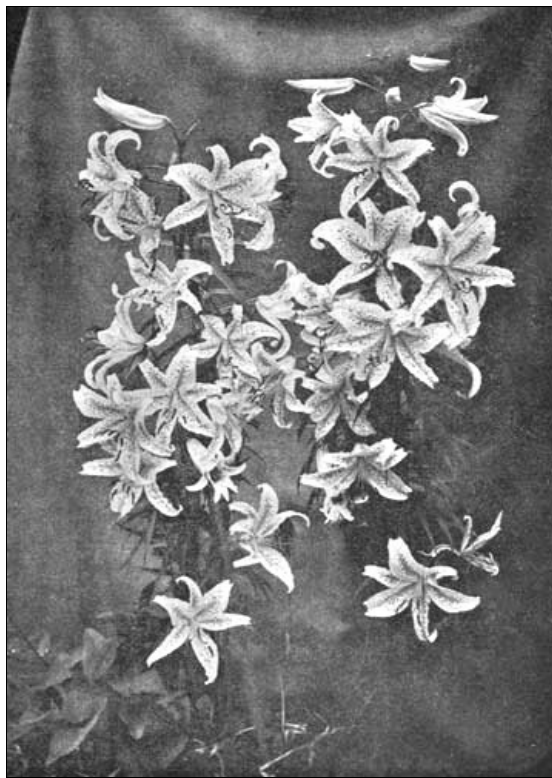
Moræas are charming plants resembling the Irises, and are of bright colours, and generally very fragrant. They should either be grown in a frame with some winter protection, or in a cool greenhouse or conservatory planted out in rather sandy soil or in pots. Out of some sixty species, there are few not worth growing, but corms of only a limited number are purchasable in the ordinary course, and the best of these are named as a guide. They are often found about six inches high, but frequently grow much taller. *Edulis* has bluish-white flowers; *iridioides*, white, spotted yellow; *papilionacea*, pale-blue, spotted dark-blue; *spathacea* (syn. *Dietes Huttoni*), yellow; and *tricuspis*, greyish yellow and brown. *Robinsoniana*, also called *Iris robinsoniana*, needs a greenhouse, and has white flowers and handsome leaves with the habit of *Phormium tenax*. The genus now includes the *Vieusseuxias* and *Dietes*, which are sub-genera.

ORNITHOGALUMS

It is singular that the half-hardy Ornithogalums are so little grown, as they are very easily managed in a frame or unheated greenhouse, and will even do in a warm border in the south. They like a light soil and a sunny position, and to be well ripened after flowering. The prettiest of the half-hardy species are *O. aureum*, yellow; *O. arabicum*, white with almost black centres, a very effective plant; and the pure white *O. revolutum*. They may be planted about three inches deep.

OXALISES

The tender Oxalises or Wood-Sorrels, are deserving of more attention from those who have sunny frames or unheated greenhouses, or even a sunny window, where these flowers can open, for all are sun-lovers. They like a light, rather sandy soil and may be planted in autumn or early spring about two inches deep. They are too numerous to detail, but I may name the following as all worth growing, although the list might be considerably extended. *Arenaria*, violet-purple; *articulata*, mauve; *Barrelieri*, yellow; *elegans*, purple; *hirta*, red; *valdiviensis*, yellow; *variabilis*, white or red; and *versicolor*, white and red. Those named among the hardy bulbs can also be grown under glass.



LILIUM AURATUM

PHÆDRANASSAS

Although generally grown as greenhouse bulbs, the Phædranassas, or Queen Lilies, may be grown in mild districts as frame bulbs, by cultivating them in rather heavy soil, keeping them as dry as possible in winter, and covering the glass of the frame with some canvas or a mat. Some succeed with them in the open, but they there need a position below a south wall and to have some protection in times of severe frost. They are also suitable plants for the greenhouse, where they can be grown in pots and rested in winter. They have umbels of pretty, reflexed flowers, and grow about one and a half feet high. The most suitable for frame cultivation are chloracea, yellow, and sweet-scented; schizantha, vermilion, yellow, and green; and ventricosa, yellow. They may be planted in spring about five inches deep in a frame, or six inches if in the open.

PANCRATIUMS

Although the two Pancratiums named below are hardy in the milder parts of these islands, it is more prudent to treat them as plants which need frame cultivation throughout the greater portion of Britain. A warm, sunny border under a south wall is the place for them in the open garden, and in frames it is desirable to give them a similar position. They should be planted with the neck about a foot deep in the open and two or three inches less when in a frame. They belong to the Amaryllis family and have charming white flowers. The hardiest and most easily grown is *P. illyricum*, but *P. maritimum* has finer flowers. They like a light soil, and plenty of water while in growth.

TIGRIDIAS

Tigridias are among the most brilliant of summer bulbous plants, but though they have been established in some southern gardens, they are not generally hardy in Britain. The greater number in cultivation are varieties of *T. Pavonia* (syn. *grandiflora*) and these are very beautiful, their only fault being the short time the flowers last. The type has scarlet petals and a yellow, crimson-spotted cup, but there are a number of varieties ranging from white, through almost rose to lilac, pale yellow and orange yellow. *Immaculata alba*, *Immaculata lutea*, and the new "Nankin" are among the latest introduced. *Van Houttei* (*Hydrotænia Van Houttei*) has brown and yellow flowers and is rather more delicate, and should have a frame or greenhouse. *Violacea* and *Pringlei* should have similar treatment. All may be potted and grown in a greenhouse if desired. Plant in April or May.

ZEPHYRANTHES

Reference has already been made to *Z. Candida* among hardy bulbs. A few others may now be mentioned for frame or cold greenhouse cultivation. These are strangely neglected by amateurs, as their pretty crocus-like flowers are exquisitely beautiful when open. Generally speaking, I should recommend their being grown in pots in the greenhouse, where they can have a sunny position near the glass. The best of those known for the frame or cold greenhouse are *Andersoni*, which grows about four inches high, and has yellow or coppery flowers about May; *Atamasco*,

white, tinted pink, grows about nine inches high, and blooms about the same time; *carinata*, rose, about one foot high, and flowering in May; *gracilifolia*, about a foot and a half high and blooming about January; *rosea*, six inches high and flowering in May; and *versicolor*, rose and white, about six inches high. These *Zephyranthes* like a turfy loam with a little sand and well decayed manure or peat. They are propagated by offsets and should be repotted occasionally. The night-blooming *Cooperias* require similar cultivation.

CHAPTER XV

GREENHOUSE AND STOVE BULBS

Achimenes — Alocasias — Amorphophalluses — Arisæmas — Arums — Begonias — Bomareas — Caladiums

ACHIMENES

The charming Achimenes is not so much grown as formerly, but it might well become more popular among those who have a warm greenhouse or stove in which to start the tubers, as before coming into bloom they may be taken into the conservatory, where their bright flowers will be much admired in pots, pans, or baskets. They may be planted in equal parts of peat and fibrous loam, with a small proportion of manure, from about the beginning of February until the end of April. They can either be started in the receptacle in which they are to flower or transplanted when an inch or two high, the latter being preferable. A night temperature of about sixty degrees is required, and they should have plenty of water and be regularly syringed to keep off red spider. The points may be taken out to make the plants more bushy. When they come into bloom they should be removed to the greenhouse or conservatory; while in bloom syringing should be suspended. Partial shade is also advisable. Withhold water gradually after flowering, and when the leaves are yellow place the pots in a dry place in a moderate temperature, leaving the tubers undisturbed until they are wanted for starting. There are many varieties, and mixed sorts can be purchased at a low rate.

ALOCASIAS

These magnificent stove plants are much admired for their handsome, often variegated, leaves, and for their striking appearance. They like a compost of sandy loam and fibrous peat in lumps, with some sphagnum and small pieces of charcoal, keeping the soil and bulbs a little above the top of the pots, with a surfacing of cocoa-fibre or sphagnum. The pots can hardly be over-drained, and from a half to two-thirds full of broken crocks is a good proportion of drainage. They require a moist atmosphere and plenty of water while growing; a summer temperature of seventy-five to eighty-five degrees and a winter one of sixty to sixty-five degrees are suitable. A little liquid manure may be given at intervals. They are increased by division of the stem or rhizome, or by seeds. The following selection comprises some of the finest grown:—Chelsonii, cuprea, metallica, hybrida, Jenningsii, Johnstoni, macrorhiza variegata, scabriuscula, Sedenii, thibautiana, and zebrina.

AMORPHOPHALLUSES

These are singular stove plants, allied to the Arums, but of most value for sub-tropical bedding. They must be kept dry and in a warm place in winter, and started in a moist atmosphere and a temperature of from fifty-five to seventy degrees. They are never likely to become popular for ordinary gardens, so that details would be unnecessary here. Campanulatus, Lacouri, Rivieri, and Titanum are the best known species.

ARISÆMAS

These singular, but not showy plants, require somewhat similar cultivation to the Arums, and may be grown in any heated greenhouse in rather light but rich soil. They should have plenty of water while growing. The best species are concinnum, about two feet high; curvatum, about four feet high, and both flowering in June; also galeatum, Griffithi, nepenthoides, and speciosa.

ARUMS

The greenhouse and stove Arums thrive in a warm, moist temperature, and are curiously interesting as well as worthy of being admired for the beauty of their foliage. Rich loam, a little sand, and some thoroughly rotted manure will grow them well. After flowering they may have the supply of water restricted so as to keep them at rest until spring, when they start into growth again. Among the most useful of the greenhouse species are sanctum or palæstinum, spectabile (half-hardy), and spirale.

BEGONIAS

The great genus Begonia would, as regards even the tuberous or rhizotamous-rooted species alone, take up too much space, so that this brief reference must principally deal with the cultivation of the hybrid Begonias, which are for most gardens the most valuable of all. They are standing witnesses to the powers of the skilful hybridiser, and the perfection to which they have

been brought makes any words of praise superfluous. Their value in the garden or under glass is self-evident.



LILIUM CANDIDUM

The Begonia may be readily raised from seeds sown in January or February in a house with a temperature of about seventy degrees, and in pots or pans of fine, light soil. Some sow the seeds before watering, and then water with a fine rose; while others water before sowing and cover the seeds slightly with fine soil, covering the pans with a sheet of glass. After germination watering must be carefully attended to, and many have the best results from plunging the pans in water until it begins to rise through the surface. As soon as possible the young plants must be pricked off in a little heavier, but still free soil, and grown on until fit to put into small pots before transferring to larger ones. If properly grown they will bloom well the first year. Begonias are also propagated by division of the tubers, like potatoes; by cuttings stuck in pots in a bottom heat of about seventy degrees; and by leaf-cuttings on cocoa-fibre or sand.

They like a rich, but not heavy soil, either when in pots or when bedded out, and in the latter position, they should not have too dry a border or bed, and should be freely supplied with water in dry weather. The tubers must be lifted when frost cuts down the foliage and stored away in dry sand, although larger tubers may be stored without the sand if kept free from frost also. They ought to be started in a little heat before planting out, which may be done when the days and nights are warm, according to the district in which the garden lies. The growing of named tuberous Begonias is on the decrease, as so many excellent single or double flowered plants can be raised from seed of a good strain.

BOMAREAS

The Bomareas are among the most ornamental of our greenhouse climbers, but are less grown than their beauty deserves. They are allied to the Alstroemerias, but are of climbing habit. They do best when planted out in the warm greenhouse or stove, but may also be grown in pots. They should have a compost of peat, sand, loam, and leaf-mould, and when in growth ought to have plenty of water, occasionally giving them some liquid manure. They can be grown from seeds or by division of the stems. Perhaps the following are as good as any in cultivation:—

B. Carderi, which has handsome rose-coloured flowers spotted with brown; oligantha, red and yellow; Shuttleworthi, vermilion, yellow, red, and green. Edulis has been longest grown, and has rose flowers tipped with green; the hardiest species is probably B. salsilla, with purple and green flowers. This is hardy in a few districts when other conditions are favourable.

CALADIUMS

Caladiums are among the most useful of stove perennial plants, and their adaptability to growing for table and room decoration adds much to their general value. The beauty of form and the fine colouring of their foliage place them high in the ranks of stove plants. A capital compost is made of turfy loam, turfy peat, and leaf-soil in equal parts, with a little well-rotted manure and some sharp sand. In March or earlier, if they have been long at rest, the tubers are started into growth in a temperature of not less than 60 degrees; when they have made growth, they may be placed in five or six inch pots, and the supply of water gradually increased until it is given freely, with alternate waterings of some liquid manure. They should be kept growing in a high temperature, and then hardened-off in a cooler part of the building preparatory to their removal to the conservatory. When the leaves begin to grow yellow, gradually decrease the water supply, and store for the winter in a temperature of not less than sixty degrees. Do not allow them to become entirely dry. A large number of hybrid Caladiums have been raised, and these, which will be found in the catalogues of leading nurserymen, have almost driven the original species out of cultivation.

CHAPTER XVI

GREENHOUSE AND STOVE BULBS

Clivias — Colocasias — Crinums — Cyclamens — Cyrtanthuses — Eucharises and Urceocharis —
Eurycles

CLIVIAS (*syn.* IMANTOPHYLLUM)

The Clivias and Imantophyllums were formerly kept distinct, but are now combined by botanists, the name Imantophyllum being retained as that of a sub-genus. Both have long leaves in opposite rows and umbels of flowers, which are of various shades of yellow, orange, or scarlet. *C. nobilis* grows about a foot high, and has bright red-yellow flowers. *Gardneri* has fewer flowers (twelve to twenty in the umbel). *Miniata* is the only species belonging to the sub-genus Imantophyllum, and seedlings, or hybrids between it and the other species, have been obtained in considerable numbers. The catalogues of leading bulb dealers may be consulted for the varieties now in commerce. All are ornamental in pots or planted out in beds or borders in airy houses, with a temperature of from fifty to sixty degrees. In spring and summer they should have plenty of water, both at the roots and applied by means of the syringe. A rather lower temperature and less water are desirable in spring. They should have a soil composed of good fibry loam and peat in the proportion of about three of the former to one of the latter, with a little charcoal, bone-meal, and silver sand. *C. miniata* flowers in spring and summer, and the other species in winter and spring.

COLOCASIAS

The Colocasias are very ornamental plants with large handsome leaves, and are related to and require the same culture as the Caladiums. There is considerable confusion in the nomenclature of these plants in gardens, and Caladiums are sometimes found named Alocasias or Colocasias, and *vice versa*. The principal species are *antiquorum*; its variety, *esculentum* (*syn.* Caladium *esculentum*), sometimes used in the south for sub-tropical effect, being planted out in June, and freely supplied with water; and *odorata*.

CRINUMS

We have already referred to the hardy Crinums, but this work would be imperfect without a few details about the stove species, among which are some plants of the highest types of floral beauty. These should have a good soil of fibrous loam, peat, a little sand, and charcoal to keep the compost sweet, as the plants require plenty of water while growing, *C. campanulatum* and *C. purpurascens* especially requiring this, as they do best standing in a pan of water. They are also greatly benefited by syringing overhead. After the flowering period is over water may be reduced. They need large pots or tubs, as they form fleshy roots which should be as little disturbed as possible. There are so many Crinums, that a short selection of well-proved, good species suitable for the stove is necessary. These are—*amabile*, three feet, red; *asiaticum*, two feet, white; *campanulatum*, one foot, red-purple; *giganteum*, three feet, white; *Kirkii*, one and a half feet, white, striped red; *Macowani*, two feet, pink; *purpurascens*, one foot, claret-red; and *zeylanicum*, three feet, white, striped red.

CYCLAMENS

The varieties of *Cyclamen latifolium*, or *persicum*, a plant which has yielded under cultivation so many beautiful flowers, are general favourites, and are so easy to cultivate that they are largely grown for the decoration of glass structures and rooms. There are several methods adopted for raising the fine plants so often seen nowadays, which are generally young specimens grown from seeds. The following plan is followed by many successful growers. The seeds are sown from the beginning of August to the end of November, in pans of fibrous loam, some silver sand, and a fifth of leaf-soil. They are placed in an intermediate house, or a temperature of about fifty-five degrees, and in a little shade until the seedlings have begun to appear, when they may be placed near the glass and pricked off when they can be handled. They may be grown on in a similar temperature during the winter, but a little increase may be given immediately after potting off in February or March into three-inch pots. They should be placed in frames turned towards the north for the summer, receiving a potting into five-inch pots in July, and being kept close for a few days afterwards. After taking indoors they must be near the glass, and syringed frequently to keep off red spider.

Corms which have flowered may be kept, and with careful treatment will flower again, although scarcely so freely as young plants. They may either be planted out in frames for the summer or plunged in their pots, repotting when they show sign of making fresh growth. The large-flowered varieties are very handsome, and the *Papilio*, or Butterfly-formed flowers, and those with crested

blooms are also considerably appreciated by those who like new flowers.

CYRTANTHUSES

The Cyrtanthi are among the neglected bulbs in ordinary gardens, but when bulbous plants once more take their proper place they will be more largely grown. The genus now includes *Monella* of Salisbury and *Gastronema* of Herbert, and the plants have either pendulous or erect tubular flowers, those having the latter being formerly called *Gastronema*. Like many other Cape Amaryllideæ, the *Cyrtanthus* requires to be kept dry in winter, but to be well supplied with water after starting into growth. *Carneus* and *obliquus* must not be dried off. Loam, peat, and sand form a suitable compost. They will grow in a greenhouse in summer, but should be kept in a stove during the winter months. The fragrant *C. Mackenii*, with white flowers, is pretty. *Macowani*, orange-scarlet, and *sanguineus*, bright red, are both fine species, and those desiring a larger number may grow *albiflorus*, white; *carneus*, bright red; *obliquus*, yellow; and *odorus*, red. Others are *angustifolius*, *Huttoni*, *lutescens*, *smithianus*, *Tuckii*, and *ventricosus*.

EUCHARISES AND URCEOCHARIS

The *Eucharis* is such a favourite with everyone that it is a matter of much regret that it has suffered in so many gardens from the ravages of what is known as the *Eucharis mite* (*Rhizoglyphus Robini*), which also affects other bulbs of allied character. There seems little doubt that this is brought about by errors in watering, as the *Eucharis* dislikes suffering from either too little or too much water. It should not have a season of rest from water, as many suppose, but should not be forced into flower more than twice in a year. Clibran's *Eucharis Mite Killer*, used as directed on the package, or a weak preparation of Kerosene Emulsion, are equally effectual, but the Emulsion should not touch the actual roots. So beautiful a plant is worth every attention, as we have nothing among other stove bulbs which can approach its pure white, elegantly formed flowers and dark-green foliage. The *Eucharis* likes a compost of two or three parts of good loam to one of leaf-mould or turfy peat, and a little charcoal to keep the compost sweet. It requires a temperature of from sixty to seventy degrees in winter, rising to seventy-five and eighty degrees in summer. Syringing overhead on bright days is necessary, and a little reduction in the temperature is desirable when the leaves are of full size. Six or eight bulbs may be placed in a ten-inch pot.

The most popular *Eucharis* is *E. grandiflora* (syn. *amazonica*); there is a fragrant variety of this named *E. grandiflora fragrans*, and others are *E. g. Lowii* and *E. g. Moorei*. *Candida* and *Sanderi* are also good species, and hybrid forms, named *burfordensis* and *Stevensii*, are also meritorious. The other species are *bakeriana*, *elmetana* (hybrid), *Lehmanni*, *Mastersii*, and *subedentata*. The hybrid *Urceocharis*, from the *Eucharis* and *Urceolina*, is cultivated in the same way.

EURYCLES

The *Eurycles* is little known in private gardens, but the two species form interesting occupants of the stove or greenhouse, with their umbels of white flowers, and broad, heart-shaped or ovate leaves. *E. amboinensis* is a stove species about two feet high, flowering in March. The other, *E. Cunninghamsii*, likes a warm greenhouse. It grows about a foot high. One part leaf-soil to three of good loam, with a little sand, will grow them satisfactorily. After they have completed their growth water may be diminished, and finally withheld to allow them to ripen.

CHAPTER XVII

GREENHOUSE AND STOVE BULBS

Freesias — Gloxinias — Hæmanthus — Hippeastrums

FREESIAS

Freesias, whose fragrant flowers are so acceptable, are so nearly hardy, that it might, perhaps, have been more consistent to include them among the half-hardy bulbs. They are, however, of so much more value when grown and flowered under glass that we may be pardoned for including them among greenhouse bulbs. They are very cheap, and increase so freely that they might be grown in far larger quantities. A five-inch pot will hold about a dozen of good-sized bulbs, and they may be potted at intervals from the beginning of August for a month or two. They like a light, but rich soil, with the addition of some leaf-mould and silver sand. A depth of an inch is generally recommended, but they are none the worse for being a little deeper. After planting, the pots may be watered and placed in a cold frame, plunged in cocoa fibre or ashes.



WHITE SCILLAS

When some growth is made, they may either be removed to a frame with a moderate bottom heat, or taken into the place where they are to bloom. In a sunny window they may be brought nicely into flower as well as in a greenhouse. They like air, however, when possible. It is essential that they should have plenty of water while in growth. A temperature of about fifty-five degrees is suitable for blooming them in. After flowering, water should be gradually withheld; and when the foliage becomes yellow, the pots with their contents should be thoroughly roasted in the sun. Before repotting, it is desirable to sort them according to size. Some grow Freesias from seed, but they are so cheap, and make offsets so freely, that it is hardly worth the trouble to do so. The seeds are sown when ripe, and gradually grown on until they attain to flowering size. The best of the Freesias is *F. refracta alba*, but *F. refracta*, white and yellow, and *F. refracta Leichtlini*, with creamy-yellow flowers, are also grown.

GLOXINIAS

Gloxinias are so beautiful in their colourings, and are so ornamental, that it is no matter for surprise to find them in most gardens of importance. Nowadays, however, they are principally grown from seed instead of cultivating the old bulbs for successive seasons as was formerly practised. They are easily raised in this way, and the plants produced are more vigorous and floriferous than those produced by old bulbs, or by cuttings or leaves. They can be flowered in about six months from the time of sowing.

Fibrous loam or leaf-soil, mixed with sand and peat, will answer for the seed pans and for the after compost. Seed sown in January or February will give a succession of flower, and later sowings may be made for winter bloom. The seed should be thinly sown and covered with a sprinkling of fine soil. The pans ought then to be placed in a temperature of about 70 degrees, and shaded from strong sun. The young seedlings are very liable to damp off, and must be pricked out into other pans or pots as soon as possible. They will grow quickly in a moist warm house, and, when a fair size, may be repotted, giving a forty-eight size pot for the final shift. They can have then a temperature of sixty to sixty-five degrees. A little manure water is beneficial at intervals, but this, and a moist atmosphere, are prejudicial when the plants are in bloom.

Cuttings of the young shoots taken off when the old bulbs are started are easily struck in a propagating frame, and are afterwards potted and treated like young seedlings. When the leaves are firm, they may either be inserted in fine soil like cuttings with a portion of the petiole or footstalk, or by cutting through the midribs at several places and pegging down the leaves on cocoa fibre or sand in a close frame.

Old tubers of *Gloxinias* should be carefully stored in winter beyond the reach of frost, and started into growth in February in small pots in a temperature of about sixty-five degrees. Until they have fairly begun to grow they should have little water. Similar treatment is suitable for some of the other *Gesneraceous* plants, such as the *Gesnerias*.

HÆMANTHUSES

The *Hæmanthus* is a handsome and distinct-looking plant, but it is seldom that one meets with it in private gardens. Its usefulness is lessened by its handsome leaves appearing at a different time from the flowers, but this fault may be partly concealed by an arrangement of other plants about the pots containing the *Hæmanthi*. A few of the species can be grown in a cool greenhouse, but the greater number ought to be cultivated in a higher temperature. *H. sanguineus* is one of the easiest to grow and the writer has grown and flowered it yearly in a house from which frost was only excluded and where the temperature fell to near freezing point. For the greater number, however, a temperature of from fifty to sixty degrees in the growing season is best. After flowering they should have a short period of rest.

There are a number of very handsome species, among the best being *abyssinicus*, scarlet; *cinnabarinus*, red; *incarnatus*, flesh; *insignis*, orange-scarlet; *Kalbreyeri*, crimson; *Katherinæ*, deep red; *natalensis*, green, bracts, purple; *puniceus*, scarlet; and *sanguineus*, scarlet. *Albomaculatus*, *hirsutus*, and *virescens albiflos* are the best whites.

HIPPEASTRUMS

Under their popular name of "*Amaryllises*," the *Hippeastrums* have for years been increasingly grown by those who desire to make their glass structures gay with bulbous plants which are distinct from the ordinary forcing bulbs of winter and spring. Their deserved popularity has been increased by the wonderful improvements which have been in progress for years among these plants which are naturally beautiful and have such brilliant colouring. Some of the original species are very handsome, but the seedling varieties and hybrids are superior to these. It is generally accepted that these improved *Hippeastrums* are largely due to the hybridisation of some of these species, but there is considerable doubt regarding the parentage of some of these reputed hybrids. However this may be, there can be no two opinions regarding the value and beauty of the plants themselves, with which greenhouses and stoves may be made gay for months at a time.

The greater number of the *Hippeastrums* are easily grown in a temperature of at least sixty degrees, although some even suggest five degrees less. They can, however, take more heat with advantage. This heat is required during the growing season, from February to September, after which they should be kept cooler, and only moist enough to keep the roots alive. During the growing period full supplies of water are required. They like a rather heavy loam, with some charcoal and crushed bones. They should be disturbed as little as possible, so as to avoid injury to their fleshy roots, and to prevent the necessity of re-potting, established bulbs may be top-dressed when being started into growth. Some manure water is beneficial, but not when the blooms show colour. *Hippeastrums* are increased by offsets taken off carefully when the plants are at rest, and also by seeds, which are sown in pots or pans in a temperature of about sixty-five degrees, the seeds having only a slight covering of the sandy soil which should form the compost. When old enough to handle, the seedlings can be placed singly in small pots and grown on in the heat suitable for the larger bulbs. As the newer *Hippeastrums* are very high priced where of good quality, this method of raising from seed is recommended. Plants have been flowered in about two years from seed. There are a good many species and it is only worth while to name such as *Ackermanni*, crimson; *Equestre*, orange; and *vittata*, all of which have given some fine varieties. With regard to the named varieties, we would recommend intending purchasers to consult the catalogues of the leading bulb-dealers, where there may be found varieties at all prices. Unnamed varieties may be obtained at a lower price, but it must be remembered that the newest and best named sorts are necessarily very expensive. *Habranthus* are now included with the *Hippeastrums* and *Zephyranthes*.

CHAPTER XVIII

GREENHOUSE AND STOVE BULBS

Lachenalias — Nerines and Lycorises — Pancratiums and Hymenocallises — Richardias —
Sprekelias — Tuberoses — Vallotas — Watsonias — Zephyranthes

LACHENALIAS

Were the beauty and usefulness of the Lachenalias better known, they would soon become very popular plants for the amateur's greenhouse and window. They may be said to lie on the borderline between greenhouse and frame plants, as only sufficient heat is needed to keep out frost. The popular name of "Cape Cowslips" gives some indication of the appearance of the spikes of drooping flowers, but hardly expresses the singularly pretty colouring, which lies in the yellow or white grounds and the shadings of green, red, or purple, which make such pretty combinations. The Lachenalia, which can be had in bloom from February to May, requires a period of rest, and after flowering the pots should either be placed on a sunny shelf or other dry place, and water gradually withheld as the leaves become yellow. Pot in August in loam, leaf-soil, or peat, and a little manure and sand. Some grow Lachenalias in hanging baskets lined with moss and filled with soil. A good selection may be made from the following, but the newer varieties are well worth having also, although a little more expensive. A selection:—*fragrans*, *lilacina*, *Nelsoni* (hybrid), *pendula*, *tricolor*, *tricolor lutea* (syn. *L. aurea*). New varieties are *Aldbrough Beauty*, *Cawston Gem*, and *Rector of Cawston*.

NERINES AND LYCORISES

The best known of the Nerines is *N. sarniensis*, the Guernsey Lily, which is imported in great numbers in autumn with the flower buds set, and is potted at once to bloom almost immediately. It has been grown by some as a hardy or half-hardy bulb, but its true place in most gardens is in a greenhouse in pots. This is advisable so that it may perfect its foliage. It likes a rich, yet light, soil and careful watering.

It is unfortunate that some of the other Nerines are not more grown, as their brilliant flowers possess all the beauty of the better known *sarniensis*. The handsome scarlet *curvifolia*, with its even finer form, known as *Fothergilli major*, are worth more than the room and care they need. Then the rose-coloured *flexuosa*; the rosy carmine *humilis splendens*; the white and red *pudica*; the rosy-purple *undulata*; and the hybrid or seedling forms, *amabilis*, *carmine rose*; the charming *roseo-crispa*, pink; and *excellens*, bright rose, are all of much beauty. These should have little water from May to August. The Lycorises should be cultivated in a similar manner.

PANCRATIUMS AND HYMENOCALLISES

These closely allied plants require similar treatment, and may be suitably mentioned together. The connection is so close indeed that several of the species of either bear in gardens the generic name of the other. The stove species should always be kept moist, while the plants which do with greenhouse temperature need to be kept dry while at rest in winter. The pots must be large and filled with good loam and leaf-mould, with a dash of silver sand. The bulbs should be just below the surface. A few, which have been also known as *Ismenes*, are understood to be hardy in favoured places. Ordinary stove heat will suit the following:—*Hymenocallises*:—*andrea*, *Choretis*, *expansa*, *lacera*, *ovata*, *macrostephana*, *maculata*, *speciosa*; and *Pancratiums* *verecundum* and *zeylanicum*. For the greenhouse there are:—*H. Amancaes*, *calathina*, *harrisiana*, *littoralis* (syn. *adnata*), *macleana* (the hardiest), *tenuifolia*. In looking over catalogues to order these, *Pancratium*, *Hymenocallis*, and *Ismene* should all be referred to on account of the uncertainty about the nursery names.

RICHARDIAS

These are best known because of the popular *R. africana*, often called *Calla æthiopica*, the Arum Lily, or Lily of the Nile. All the species like a very rich soil, and a plentiful supply of water while growing. *R. africana* can be grown as a hardy aquatic in some warm districts in these islands if the crowns are well below the depth to which the water is frozen. It is, however, most grown as a greenhouse or window plant, especially when white flowers are wanted early. After flowering, it may either be planted out in trenches in the garden, or dried off and started in the same pots. Potting may be done about September, and the plants grown in ordinary greenhouse temperature. *Albo-maculata*, *hastata*, and *melanoleuca* are less beautiful. *Adlami*, *elliottiana*, *Pentlandi*, and *Rehmanni* are all newer and of much beauty, the second and third having yellowish flowers.

SPREKELIAS

Although *Sprekelia formosissima*, known also as *Amaryllis formosissima*, the "Jacobea Lily," is sometimes recommended as a half-hardy bulb, this is of doubtful expediency, and it is better to treat it as a cool greenhouse bulb and to grow it in pots. It is sometimes planted out on a sunny border below a wall in April and lifted in September, but we recommend planting it in turfy loam, well-decayed manure and a little sand, in pots, and treating it like the *Hippeastrum*, but in a rather lower temperature. It grows about two feet high, and has crimson or white flowers about June. There is another named *S. Cybister*, which has red flowers about April.

TUBEROSES

The botanical name of the Tuberose—*Polianthes Tuberosa*—is so little used by those who grow it that it will be more convenient to speak of this most fragrant flower under its popular title. It is everywhere prized, especially when its pure white flowers are produced in winter, when few of similar character for buttonholes and bouquets are readily procurable. Although a plant which can be flowered in the open border if the bulbs are started and grown on for some time under glass, it requires a considerable amount of heat to flower it properly at other seasons. The bulbs should be potted three together in a five or six inch pot in a soil composed of loam and manure or some leaf-soil. The soil should be slightly moist, so as to obviate the necessity of watering before the bulbs begin to make growth. Some plunge in a cold frame until growth begins, but a preferable plan is to plunge in a bottom heat of from sixty to seventy degrees if early bloom is required. Plenty of water should be given when growth has fairly begun, and it can hardly be too strongly emphasised that this and a temperature such as that named for the bottom heat should be maintained for winter-blooming. Potting may begin in November, and may be continued at intervals for two or three months. Old bulbs are not worth keeping. The double form is the more appreciated, and the double African, American, and Italian grown bulbs are all good. The Pearl is dwarf in habit.

VALLOTAS

The Vallota, or Scarborough Lily (*V. purpurea*), is a general favourite for its brightly coloured flowers in autumn, and because of the ease with which it can be grown in a greenhouse or window. It is hardy in a few favoured places, and in some is grown as a frame bulb, but for the greater number of British gardens it is best when grown in a house from which frost is excluded in winter. It should be repotted as seldom as possible, and then the roots should be little disturbed and the plants transferred to a larger pot with the ball attached, only removing some of the soil on the surface to allow of top dressing. The offsets may be removed with a stick. It likes a rich, light soil, and may be potted towards the end of spring. The roots should never become dry. Some give a little liquid manure during summer, and when well grown few plants look more ornamental, with its heads of deep scarlet flowers. There is a larger-flowered variety named major.

WATSONIAS

Although the Watsonias will do if planted out on a warm south border in favoured places in this country, and treated as half-hardy bulbs, intending growers are advised to grow them in pots as greenhouse plants. They have fine branching stems of a height of from two to three feet, and pretty blooms somewhat resembling those of the *Freesia* in form. The corms should be planted in spring, and treated like *Gladioli* in pots. After flowering, water should be gradually reduced when the leaves begin to turn yellow, and the corms either kept dry in the pots or taken out and stored like those of the *Gladiolus*. The most appreciated of the Watsonias are the varieties of *W. Meriana*, the type form having rose-red flowers. The white varieties of this, such as *alba*, *Ardernei*, and *O'Brieni* are all much admired, that called *Ardernei*, which some consider the same as *O'Brieni*, being a special favourite. *W. M. iridifolia* and *W. M. roseo-alba* are also good varieties. Other desirable species procurable are:—*aletroides*, scarlet or pink; *angusta*, scarlet; *coccinea*, crimson; *humilis*, rose-red; and *rosea*, rose-red.

ZEPHYRANTHES

All the *Zephyranthes* mentioned in the chapters regarding hardy and half-hardy bulbs can be grown in the greenhouse, and there are also a few which ought to have a little additional heat, such as that of a stove. *Citrina*, yellow, about six inches high, and blooming in August, is one. Others are concolor, sulphur-yellow and blooming in April on stems a foot high; *pumila*, also known as *Habranthus pumilus*, blooming about September, and having rose coloured flowers; *robusta* (syn. *Habranthus robustus*), about ten inches high and blooming in June; *sessilis*, white and red, with its flowers in April; *striata* is a striped variety of this; *tubispatha* likes stove heat. They grow best in turfy loam, with the addition of some decayed manure or peat and sand.

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