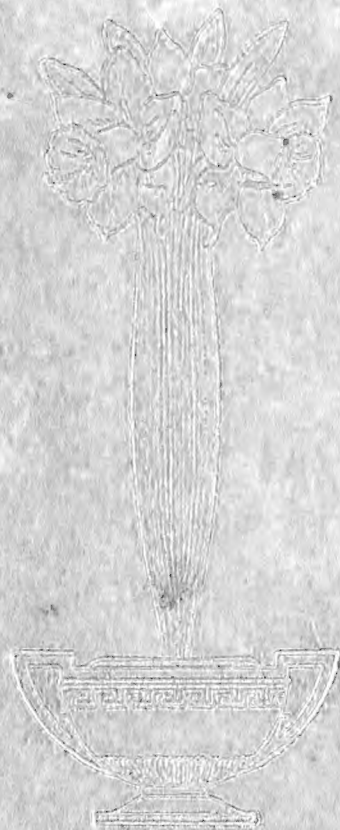


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# GROWING BULBS

By  
MAURICE FULD





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Book F8

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GROWING  
B U L B S



THE TWENTIETH CENTURY METHOD

# GROWING BULBS

FOR

WINTER AND SPRING  
BLOOMING

*By*

*MAURICE FULD*

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1881. Aug. 24. 14.

Dedicated to my best friend,  
who first inspired me with the love of flowers—  
MY MOTHER.

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**I**N submitting to the American Garden enthusiast a thorough treatise on the growing of Winter and Spring flowering bulbs, I do so with the knowledge that this is the first book of its kind ever published wherein the amateur or non-professional gardener can truly find the pathway to a better understanding of this valuable and popular family of flowers.

May the enthusiasm which I have allowed to run rampant from my pen have the result of instilling a greater love for these flowers into the hearts of my readers and may the army of flower-lovers be augmented a thousand fold by those who through coming in contact with this book find the pastime of growing flowers the stepping stone to happiness and joy.

Treating my subject solely for the benefit of the amateur, the suggestions and recommendations as given in this book would not help the person who wishes to grow these flowers on a commercial basis or for profit.

To make this treatise thoroughly practical and easy for reference, certain subdivisions were necessary and I hope will be welcomed as a step in a progressive direction.

This volume contains no reference to bulbs which are commonly cultivated for Summer flowering and which as a rule are planted in the Spring, nor do I claim for my book that it includes every species of the very class which I am describing, for I have intentionally omitted such species as are difficult to grow, or which do not suit the American climate or have become unpopular.

MAURICE FULD.



INDOOR DEPARTMENT

**T**HE dismal, cheerless winter!—an expression frequently heard from the lips of some people, who evidently have never experienced the immeasurable pleasure that would be theirs if they grew a few bulbs to bloom during the winter. We may all love our spring, summer and fall garden, but let me gaze at that first paper-white Narcissus, which I planted in September, and which unfolds about Thanksgiving Day, and I would willingly exchange all other pleasure for it. Nothing can appeal more strongly to my heart than the plant which I set with my own hands and of which I see the constant progress, caring for it daily and watching it advance to its climax—the unfolding and coloring of its buds. Oh, what a world of rapturous joy it spells!—the banishing of gloom, grouch and loneliness, and in their place come sunshine, happiness, joy, health, wealth, the glow in the cheeks, smiles and peace!

There is no reason why with little expense one cannot enjoy a veritable winter garden, where one can roam amongst the flowers as freely as if it were June, and what a blessing it must be to people who are compelled to live in city dwellings and who by this method get all the fun of gardening. This does not mean the preaching of a new doctrine; winter-gardening with bulbs has been practiced even in America as long as bulbs have been known, but the “how” and “when” has never been thoroughly explained in the present-day literature on this subject.

“Success” from the first is a great inspiration to the beginner and encourages him to go deeper into his favorite study; it fills him with enthusiasm to such a degree that he will try his utmost to interest others in the work until the whole universe will be a garden of flowers.

It is my aim to make this story so attractive and so complete that those who read must try the experiment and those who try it must succeed.

# Growing Bulbs for the Dwelling House

**T**HE word "indoor" comprises really two distinct departments; namely, (1) the regular dwelling and (2) the conservatory. The cultures for both vary so greatly that it would be impossible to combine them in one treatise, and for this reason the separation of this chapter. Bulbs can be grown, even for the dwelling, in five distinct ways, namely:

1. In soil and pots.
2. In fibre and vases.
3. In water and pebbles.
4. In moss exclusively.
5. As air plants.

In submitting a detailed story for each, I am simply doing what is absolutely necessary to guide my reader into the path of success, for if failures have existed in the past it has been due to too much taking for granted. As I want this book to serve those who know absolutely nothing on the subject as well as others more experienced, I have another reason for treating my subject thoroughly, and I simply mention this to avoid criticism.

## 1. In Soil and Pots.

This is the universal, most natural, and most successful method. In considering this method the following concrete matters should arrest our attention and consideration: (a) Bulbs, (b) Soil, (c) Receptacle, (d) Storage place for Rooting, (e) The proper place to bring the flower to maturity.

a. **BULBS.**—This word embraces a great family of flowers and is often misused, so in writing this book I have considered it advisable not to change the order of things as they are in general. Many plants which produce rhizomes at their base are called "bulbous" here, as this term is given them in many seed books. The word "bulb" in itself, though, should instantly impress one with confidence, for when we handle a well matured bulb we are holding in our hand a shell containing a completely perfected plant in miniature, where every minute detail is already worked out (this to my mind is the most glorious thing in nature), and all that we have to do is to provide the best possible conditions resembling those of nature to enlarge and perfect what has been prepared for us. For this reason alone a failure with bulbs should be an impossibility. Not all varieties of bulbs can be used for house culture and herein lies the cause of certain failures. To give here a complete list of available varieties is impossible, but under the heading of each class of bulbs I am again referring to this special point, and so in a selection of suitable material for house culture one should read this book through before beginning the task.

The quality of the bulb used for this purpose should be the very best, for you cannot produce good results from inferior bulbs. It is utterly impossible for me to be too emphatic on this point, a point

which at no time has received serious consideration from the American gardening public. This in itself is responsible for the deplorable fact that Holland and other bulb centers on the Continent have for years past used the American market for the dumping ground of all the most undesirable stock. The Hollander will sell you bulbs at as many different prices as you are willing to pay, and I must even allow that he is perfectly honorable about it, for he is frank enough to tell you that you are receiving just exactly what you pay for. Cheap bulbs are always expensive, for they require the same amount of care, labor and time to produce results. It is not to be taken for granted that the largest bulb is the most perfect, for size often is a deceiving point. Plumpness, weight, solidity and age are the factors which sum up "perfection." Some of the finest varieties of Hyacinths never produce extra large sized bulbs, yet the flower produced from what may appear to be a medium sized bulb is larger and superior in every way.

b. SOIL.—The ideal potting soil for most all bulbs mentioned in this book is that taken from a soil heap which has been especially prepared a year or eighteen months before the time of planting. A soil heap is undoubtedly the most necessary, useful and handy material, a requisite which no gardener should be without.

A soil heap is made by using solid layers of the following materials in rotation:

1. Turned-over sod.
2. Good garden soil.
3. Sharp sand.
4. Leaf mould.
5. Decayed stable manure.
6. All kinds of green forage, such as lawn clippings, unusable vegetables, refuse from the kitchen, dahlia foliage and stalks, in fact anything in fresh vegetation that you wish to discard, except diseased plants.
7. Thin dustings of ground bone and lime between every other layer.

In the making of the soil heap layers of sod should be more frequent than the other material. The best time to make a soil heap is in the spring; for fully 12 months it should remain undisturbed, but the following spring it should be completely turned several times to thoroughly mix the different ingredients. Between spring and fall of the second year the heap should be turned at least twice again, and just before use, the quantity required should be thrown through a sieve to remove any lumps or stones.

Wherever the making of a soil heap in advance is impossible the following composition of soil can be used and the mixing of same can take place at the time of potting:

Good live garden loam.....	1/3
Leaf mould .....	}
Well decayed stable manure }	
Sharp sand .....	1/3

People who do not own gardens can purchase the right kind of soil from their seedsman. Reliable seedsmen will furnish the very soil described for the soil heap at a most moderate price.



At no time should anyone resort to use soil which has been used or is spent, for such soil as a rule is void of life and to use it would invite failure from the start. Many people have an idea that they can use the soil which has been in the window-box all summer. Nothing could be more detrimental.

c. RECEPTACLE.—With this method the porous earthen pot or pan is the most satisfactory receptacle to use; but almost every variety of bulb requires a different sized pot, according to the number of bulbs desired in a pot.

There are but few bulbs which look well grown singly in a pot. The following would suit for this purpose: Dutch Hyacinths, Callas, Lilies and Cyclamen. All others look best when grown in numbers in either six-inch or eight-inch or ten-inch pan. If the above mentioned four bulbs were grown singly in a pot, the Hyacinth would require a five-inch or perhaps a six-inch pot; Callas, according to size, require from a six-inch to nine-inch pot; Lilies from a five-inch to eight-inch pot, according to size of bulb, and Cyclamen about a five-inch pot.

The most satisfactory method for a beginner is to first purchase his bulbs and when they have been received to unpack them and lay each sort upon the table so that he can intelligently plan for the size of pot or pan, and then to figure his requirements. No set rule can be given as to how many Hyacinths can be planted in a six-inch pan, for it depends entirely on the size of the bulbs. The knowledge that the bulbs are first size or second size is of no help, for second size bulbs of a certain variety can be larger than first size bulbs of another sort.

The average rule is as follows:

	6-in. pan.	8-in. pan.	10-in. pan.
Allium .....	18	30	50
Anemone .....	4	8	12
Anomatheca .....	12	20	35
Calochortus .....	9	15	22
Crocus .....	12	20	35
Daffodils .....	6	10	15
Dutch Hyacinths .....	4	6	9
Feathered Hyacinths .....	12	20	35
Freesia .....	12	24	35
Grape Hyacinths .....	20	36	60
Jonquils, little .....	12	20	35
Lilies of the Valley.....	12	25	40
Miniature Hyacinths .....	7	12	18
Musk Hyacinths .....	5	9	15
Oxalis, regular .....	10	18	28
Oxalis, Buttercup .....	3	6	10
Polyanthus Narcissus .....	5	9	15
Puschkinia Libanolica ....	12	20	35
Ranunculus .....	4	8	12
Roman Hyacinths .....	5	9	15
Tropaeolum .....	4	7	10
Tulips .....	9	15	22

The foregoing are those classes of bulbs from which the non-professional gardener can select certain varieties for growing in the dwelling house.

To combine several colors or varieties of a certain specimen in a pot is never productive of desirable results; either the combination of colors clash or the varieties do not flower together, or grow of different heights.

There is an intermediate pot between the regular pot and what is known as bulb pan, and it is commercially called "Azalea Pot." Daffodils, which are rather elongated bulbs, do much better in these pots, also Hyacinths, for they allow more play room for roots. Again, fern-dishes, which are very shallow, may be used advantageously for small and flat bulbs such as Crocus, Snowdrops, Grape Hyacinths and Puschkinia.

### The Proper Method of Potting.

With bulbs, soil and receptacle at your disposal you are ready to proceed to pot.

**WHEN TO POT.**—Two-thirds of the success in this method is traceable to timely potting.

Freesias and Callas should be potted in July. Lilies, Oxalis, Roman Hyacinths, Paper-white Narcissus and Alliums in August. All others in September, except Anomatheca and Lilies of the Valley, and these two should be potted in November.

In a complete collection of bulbs there is a great variation of times when they arrive from their original sources, and of course at that time they are in the prime of life. It goes without saying that the ideal time for potting bulbs is immediately after their arrival from their original growing place; I would suggest that when you order your bulbs you instruct your dealer to forward the different items just as they arrive, for then you will at least have favorable conditions to begin with. The longer a bulb remains dormant, the weaker it becomes in constitution. The planting of bulbs for the house after October, with the exception of a few varieties, is a wasteful effort. Have you ever grown Hyacinths where the flower would color while still hidden way down in the foliage, and when you touched the flower it would lift right out and show no connection with the roots? Well, that is one of the results of late planting; the base of the bulb has become so hardened that there is no connection between the roots and the growths. Two-thirds of stunted flowers of Tulips and Daffodils are the result of the same complaint. The following rules for potting should be strictly adhered to:

Variety.	Month.	
	From	To
Freesia .....	July	August
Gladiolus Atroviolaceus.....	"	"
Oxalis .....	"	September
Callas .....	"	"
Lilium Harrisii and its family	"	"
Roman Hyacinths .....	August	October
Paper-white Narcissus .....	"	January
Allium Neapolitanum .....	"	September
Jonquils Campernelle .....	"	October
Dutch Hyacinths .....	September	"

Variety.	Month.	
	From	To
Tulips .....	September	October
Daffodils, Narcissus and Jon- quils other than mentioned before.	"	"
Crocus .....	"	"
Anemone .....	"	"
Small Hyacinths .....	"	"
Puschkinia Libanotica .....	September	"
Ranunculus .....	"	"
Snowdrops and Scillas.....	"	"
Tropaeolum .....	"	"
Anomatheca .....	October	November
Spirea .....	November	December
Gladiolus Nanus .....	"	"
Lily of the Valley .....	"	"
Cypripedium Acaule .....	December	January

Of all varieties mentioned above where no specific variety is given I recommend to select only such sorts that are suitable for pot culture.

**HOW TO POT.**—In the bottom of the pot should first be placed a few pieces of broken crockery to produce drainage. Upon the crockery it is advisable to place a thin layer of Sphagnum Moss (this is the common wood moss) so that the roots do not suffer in case watering is neglected. One or two small pieces of charcoal deposited upon the moss will help to keep the soil sweet. We now fill the pot with soil up to two-thirds of its capacity. We then place our bulbs and it should be borne in mind that the nose or top of certain bulbs should and can protrude from the soil after we are finished potting. Hyacinths, Daffodils and Narcissus are the varieties to which the above rules apply, while all others require that no part of the bulbs is visible, but that does not mean that they should be planted deep, but just under the surface. A finished pot should never have the soil come up to the top, but a playroom of at least one-quarter to one-half inch should be left vacant. This is especially desirable for watering, for otherwise the water would run right off and could not be taken up fast enough by the plant.

Every pot should contain a label stating the name of the variety the pot contains.

Some growers after the bulbs have been placed on the soil use pure sand to fill in between the bulbs, as it will allow the water to flow freely to the roots. Just as soon as a pot is finished it ought to receive a thorough soaking.

This completes the work of potting.

**d. STORAGE PLACE FOR ROOTING.**—With the exception of Freesias and Oxalis, Callas and Lilies, all potted bulbs should be stored away in a dark place for the purpose of making roots. One should not attempt to produce any top-growth before a sufficient amount of root-growth is made to support it. We should at least attempt to provide in this storage place conditions which approach to a marked degree those found in the open garden. How can this be produced? There are several ways. 1. If a cold frame is at hand this is the ideal storing place. Remove sufficient soil to allow for the

heights of pots and pans and cover the ground with a layer of coarse coal ashes. They are splendid for drainage and will keep away field mice, which as a rule are fond of tulips and have been known to destroy them by the hundreds. In placing the pans or pots it is well to remember that those which are taken out first should be placed where they are easily accessible. (See notes, "How long to store.") Finally, all pots and pans should be buried under four to six inches of sand. The available space between sash and sand should be filled solidly with leaves, but not before freezing weather sets in.

Under those conditions one can go to the frame any day in winter (regardless of weather) and easily remove the pots to the house.

Whoever has a garden and loves to grow these bulbous flowers, could not invest in anything more useful and serviceable than a cold frame. A single year's use would repay the entire expense and the frame should last indefinitely. A cold frame would mean absolute success, would save all care for the bulbs from the time they are stored until they are brought to the light and would give maximum results from a minimum of labor.

The frame no doubt is the most satisfactory storage place, but by stating this I do not wish to discourage the gardener who cannot afford a cold frame or who does not possess one. On the contrary, I want to show him a method by which he can find a substitute for a frame. Dig a pit two feet deep, put a good layer of coarse coal ashes in the bottom, place your pots, fill finer ashes between the pots and cover the whole with pure sand to come even with the surface of your garden. When freezing weather sets in cover the spot with manure to a depth of fully 12 inches. In lifting the pots it may be necessary to await favorable weather, which is the only drawback with this method. In digging the pit select a spot where water is not liable to settle.

Both of the foregoing methods are of course designed for such people who are so fortunate as to live in the country and have a garden; but what about the city-dweller who perhaps is more devoted to this class of flowers because it gives him a substitute for a garden, and how willing he is to go to all sorts of trouble to try and raise a few flowers which he can call his own.

The love of growing flowers is born with most of us and when I see this love in people who are by circumstances handicapped to give it full vent my heart goes out to them and I want to help them.

The method hereafter described is perhaps more in vogue than any other and I shall be careful in describing it fully so that the person, who perhaps may live in a single room, may find here the inspiration and the stepping stone to some happy hours, which otherwise might have been desolate and tiring.

A temperature of from 42 to 50 degrees and the exclusion of light are the two most important points, and they must exist to form the real storing place for bulbs to root. Let us consider these two points separately.

The first place we would naturally look to for a steady temperature of from 42 to 50 degrees is the cellar. If the cellar is unheated and air can be admitted to it, that is your ideal spot. But how many cellars are unheated? Very few indeed. In spacious cellars, though, as a rule there are extreme corners, farthest away from the heater, where it is

rather cool. Such a corner can be made to do, provided it is located near the point of ventilation. Sweet, fresh air is as much a food to a plant as it is to a baby. But why resort to the cellar alone? There are other places in a house which perhaps are more suitable. For instance, the attic. If unheated, just right. Perhaps you say, it is too cold at times, for it goes down to the freezing point and lower during cold spells. These are conditions which are much easier to change and control than if the place was too warm. We must never lose sight of the fact that most bulbs are improved by freezing, for that would be the treatment they would receive out-of-doors. If the attic is heated and the heat cannot be controlled, there may be a spare room where the heat is omitted. Not only should the temperature be low, but it should not vary at any time to a great extent. That is the reason why living rooms are not good storing places for bulbs. Invariably we enjoy temperature of 70 degrees during the day and about 50 degrees or less during the night.

There is one rule in growing all plants which if carefully studied and followed must spell "success," and that rule consists of three words: "Keep it growing." As soon as any plant receives a set-back during its process of growing it has a handicap which few plants are ever able to overcome. Like spring gently follows the winter (according to the teachings of science and not to actual experience nowadays) so does a gentle increase in temperature advance the growth of any plant. Once that growth is started the progress must be continuous or failure is the result.

Suppose my reader had at his disposal only a furnished room and his room had to be heated; there are still possibilities of growing bulbs. To begin with, try and live in as cool a temperature as possible. It is much healthier to live in a room of 55 to 60 degrees than in 75 or 80 degrees. This temperature in the storing of the bulbs can be still further reduced for the bulbs by adopting the following suggestion: Secure any kind of wooden box, line it if possible with tin, spread a 3-inch layer of coarse coal ashes in the bottom, place the pots upon the ashes and fill the box entirely with ashes. Do this by the open window so that this preparation is conducted in as cool an atmosphere as possible. Then place the box as far away from the radiator as possible, but not in a place where fresh air cannot reach it. The selection of varieties will also help to greater success. It should always be remembered that it is much easier to grow Dutch and Roman Hyacinths, Jonquils and Daffodils, Paper-white Narcissus than any other bulb, and those persons whose storing conditions are not just ideal would be much better off if limiting themselves to the aforementioned classes.

**IN THE STORING OF BULBS THERE IS ONE PLACE IN USE TODAY WHICH I WISH TO DISCOURAGE, NAMELY, THE CLOTHES CLOSET.** Air, as stated before, is an absolute plant food and in a closet it is always of inferior quality.

**THE ELIMINATION OF LIGHT.**—Exclusion of daylight only is not sufficient—conditions must be similar to the out-of-doors. This can be accomplished in two ways: If the floor is concrete or asphalt, spread ashes or sand upon it to the depth of at least three inches. Upon this place the potted bulbs in single layers and cover them with either ashes or sand to a depth of six inches, so that the pots are en-

tirely buried. If the floor is of wood store the bulbs in a box and line the box with tin, but have ashes or sand below, between and above the pots.

**WATERING DURING STORING PROCESS.**—As stated before, directly after potting, the pots should receive a thorough soaking. If stored in the cold frame or the pit, they require no further looking after until brought to light, but if they have been stored in the house it is advisable to sprinkle either the floor or the box or the surface of the entire lot, or all, at least once a week so that there is no chance for the soil in the pots to dry out. This watering is intended solely to keep the moisture within the pots, not to let it escape. In this weekly watering the purpose in mind is simply to create a moist atmosphere and at no time should the watering be so plentiful as to carry it to the pots themselves. Should the soil become very dry in the pots it would mean a blind bulb, or in other words, you would produce foliage and no flowers. We all have had this experience and invariably we blame the bulbs for it.

**HOW LONG SHOULD WE LEAVE A BULB IN THE STORAGE PLACE IN ORDER TO KNOW THAT IT IS PROPERLY ROOTED?** The time varies greatly and the table below simply gives the minimum amount of time required. It is always desirable to have a succession of flowers of the same kind during the winter, but that does not mean that we have to pot our bulbs at different periods, but the fact is that they all should be potted at one time and that early, but in bringing them to the room as many pots should be lifted as desired at one time. For a continuous succession of bloom, pots should be lifted once a week.

### Time Table for Storing.

Variety.	Limit of Duration.
Paper-white Narcissus .....	6 weeks
Roman Hyacinths .....	8 "
Allium Neapolitanum .....	14 "
Jonquils Campernelle .....	14 "
Dutch Hyacinths .....	14 "
Tulips .....	16 "
Daffodils, Jonquils and Narcissus other than mentioned .....	12 "
Crocus .....	16 "
Small Hyacinths .....	16 "
Puschkinia .....	16 "
Snowdrops .....	16 "
Scilla .....	16 "

**THE PLACE TO MATURE THE FLOWER.**—The change from the storing place to the place where the bulbs are expected to flower, considering light and heat, should be gradual. When they are lifted from the frame or pit they are probably in a frozen condition. It is essential to thaw them out gradually. If they are stored in the dwelling the light should come to them gradually, but one more important point must be considered. Immediately after lifting try to

ascertain if the roots are well developed and have pierced the soil in all directions. This is easily accomplished by carefully turning the pot upside-down, with one hand to hold the bulbs and soil intact and with the other to lift the pot sufficiently to investigate the roots. If the roots are not sufficiently developed, then place the pot back again, for without good roots the result is always indifferent. Many of the bulbs have perhaps made considerable top-growth while in storage and naturally this top-growth is yellow. Two or three days in partial or indirect light will quickly change yellow to green.

The final place where they are to flower should be selected with care. Of course we want them in our living room, where we can enjoy them, but here the conditions best for the plant are not ideal. When they are first brought to the light 50 degrees is the proper temperature and as they progress the temperature can increase to the usual one in a living room. Those who wish to produce the finest flowers would do well to grow them first in a laundry and when the flower-buds show bring them to the living room. The moment they are taken from the storage they require daily attention as to watering, and occasionally an application of liquid food such as dissolved sheep manure. When the bud shows to turn color apply the liquid food daily.

Once in the living room the plant must have direct light, so if placed near the window it is in the best spot, but care must be taken to protect the plants from frost during the night, either by removing them to the center of the room or by covering them with sufficient thicknesses of newspapers.

The unfolding of the flower-bud is to my mind the most inspiring sight, and I should like to suggest to those who have not yet enjoyed it to watch for it when the Hyacinths or Daffodils are at this stage of their life. The Poetaz Narcissii, however, present the most beautiful buds of all.

In conclusion, an appeal to those who are kind of heart. Remember those unfortunates who are ill and bed-ridden. A pot of bulbs, well advanced but where the flowers do not yet show colors, will prove a message of cheer, excelling medicine or any other stimulant, for it strengthens the hope in life—a sure cure for all ills.

## 2. Growing in Fibre and Vases.

This, a unique and original method, means the abolishing of soil and the unsightly pot with its opening at the base for drainage and, of course, the saucer.

In the place of soil the new method offers a fibre prepared from certain plants and mixed with moss, which is absolutely clean and odorless. Once used it can be stored away and re-used for a number of years. It is as light as a feather, retains moisture well and has certain food qualities. For a receptacle we can use any artistic glazed or unglazed china bowl, pottery or glass, provided it is shallow and its shape suits the purpose. This feature in itself produces a far more artistic effect for the sitting room. In these jardinières there is no outlet for superfluous water, an advantage which can only be measured

by the fact that these vases can be placed anywhere about the house, in the drawing-room or dining-room, without fear of any water or dirt coming through the base of the receptacle.

**CULTURE.**—For city dwellers this method proves a revelation and boon. The fibre is so clean that after handling it no dirt has accumulated on the hands.

The prepared fibre, which you receive in dry condition, must first be moistened, when it appears like moss just gathered from the fields. It must not be too wet. Select your bowl or vase for the particular kind of bulb you wish to plant. The smaller bulbs such as Crocuses, Scillas, Grape Hyacinths, Puschkinnias and Snowdrops should be planted in very shallow dishes, while Hyacinths, Tulips and Daffodils require more depth. Never mix the kind of bulbs or colors, but use all one color of one variety in a single dish.

No broken crockery or moss is necessary here, but simply place a few pieces of charcoal in the base and fill with moistened fibre of one to three inches depth according to the height of the bowl. Place the bulbs in position so that their tips reach to within a half inch of the rim, the spaces between and around the bulbs to be filled also with the moistened fibre, but carefully pressed in by hand, not too tight, however. This pressing does not apply to the fibre below the bulbs.

Once potted as mentioned above the vases should be stored in a dark, airy cellar or room regardless of temperatures, but nothing could be worse than to store them in a confined cupboard or a small, dark, airless room.

The only attention we need give them from now on is to see that the compost is kept steadily moist, but on no account should it be sodden or too wet; neither should it ever be allowed to become dry, even for half a day only, for the pores of the roots close up and the bulbs in many cases go blind and are ruined. This happens more frequently with Tulips than Narcissus, the Tulip roots being finer and therefore more liable to injury.

When the bulbs have grown about one inch above the surface they should be brought to daylight (the time that they thus remain in dark storage varies again according to the variety of bulbs) and the vases or bowls can be placed in the window, care being taken, of course, to keep them from frost. Watering now is of utmost importance. The surface of the fibre should always look moist, but if too much water has been given the bowl may be held carefully on its side so that the surplus water can drain away. As the growth increases, more water will be required and all the light possible should be given to insure sturdy foliage.

The fibre is very inexpensive, considering that a certain measure increases one-third in size, for you receive it packed tightly and dry, and when moistened it swells considerably.

This new method was first introduced by the late Mr. Robert Sydenham ("Uncle Bob," as he was familiarly known to the fraternity), at Birmingham, England, and for a decade almost he worked untiringly to perfect this method to such a degree that in England today there are special exhibitions of bulbous flowers grown in fibre. As Mr. Sydenham says, it is the most charming method of growing beautiful spring flowers for house and table decorations.



Although, as mentioned, the fibre has certain food qualities, an additional food in the shape of weak soot water may be given with advantage when the bulbs are coming into bloom.

Some growers recommend the adding of ground oyster shells to the fibre at the rate of eight pounds of shell to one bushel of the dry fibre, but when moistened it will weigh nearly 40 pounds.

### The Ideal Selection of Bulbs to Grow in Prepared Fibre.

I repeat herewith Mr. Sydenham's account, as his experiences are undoubtedly far more valuable than anything I could offer.

**ROMAN HYACINTHS.**—Six or more bulbs in a bowl make a very charming table decoration, and if potted early in September may easily be in bloom by middle of December; if a few are potted every two weeks from the date mentioned a succession may be had for a number of weeks.

**FREESIAS** are delightful flowers. If the small bulbs are potted in August or early in September and kept in a cold frame till well rooted, they may easily be had in bloom in January.

**PAPER-WHITE NARCISSII.**—If potted from August on, fortnightly up to January, a constant procession of flowers may be had from November until March.

**POLYANTHUS NARCISSUS.**—Although the Paper-white belongs to this family, it is rather distinct, for it flowers much earlier and is much freer in bloom.

Some of the other varieties though, notwithstanding their later flowering qualities, are better, more handsome and larger. The varieties which do particularly well are Etoile d'or, Grand Monarque, Grand Soleil d'or and Queen of the Netherlands.

**POETAZ NARCISSUS.**—The new Poetaz family are very charming when grown in fibre. The varieties Elvira, Irene and Alsace have proven the best. They are very delicately perfumed.

**DAFFODILS.**—The following varieties have proven far superior to many of the others which were tried: Obvallaris, Henry Irving, Golden Spur, Emperor, Victoria, Madame Plemp, Vanilla, Madame de Graaf, Mrs. Langtry, Barri Conspicuous, Poeticus Ornatus, Queen of Spain, Sir Watkin, Von Sion and Orange Phoenix.

**DUTCH HYACINTHS.**—All of them grow splendidly in fibre.

**TULIPS.**—Only certain varieties succeed in fibre and these are mentioned forthwith: Yellow Prince, Mon Tresor, Vermillion Brilliant, Prince of Austria, Pottebakker White, Joost V. Vondel White, Keizerskroon, Fabiola and Rose Grisdelin.

**CROCUS.**—All sorts do well but only large bulbs should be used.

**SCILLA SIBERICA,**  
**SNOWDROPS,**  
**CHIONODOXIAS,**  
**PUSCHKINNIAS.**

} These harbingers of spring all do exceedingly well in fibre and if planted in very shallow bowls are a perfect picture.

This method is almost unknown in America, yet there is an enormous field for its adoption. Why is the gardening public so slow to adopt newer and better methods? Is it because they have been dis-

appointed in the past, or is it because they are used to their grandmother's ways? My personal opinion is that those who would profit most by the distribution of horticultural material have done least in the past to disseminate really helpful information which would bring about more love for growing flowers.

### 3. In Water and Pebbles.

One of the easiest methods for a few varieties of bulbs.

The Chinese introduced this method here by showing us their Sacred Lilies and growing them in this fashion.

China bowls, plates or plaques are the most artistic receptacles; the pebbles are used to produce an even bed for the bulbs to sit upon and to hold the bulbs erect. The pebbles should take up a depth of at least one inch and a few pieces of charcoal should be placed underneath them. The bulbs should be set very close, because great masses produces the best effect. Large China plaques which can contain from 50 to 100 Paper-white Narcissus are perhaps amongst the most lovely things in creation when the bulbs are in full bloom.

There are but three classes of bulbs which can be successfully grown in this manner.

**PAPER-WHITE NARCISSII.**—The flower and its form resembles the Chinese Lily and does best of all. The essential points for a successful culture are to keep it cool at all times. With the Chinese Lily as well as the Narcissii the water can cover the bulb, but this is not essential. After planting, place the dish in a dark and cool place for about two weeks, then place in direct light and in as cool a spot as possible. The first flowers appear within eight weeks after planting and for six weeks they are constantly within reach of the eye, watching their daily progress which we imagine goes at the rate of an inch a day. The chaste white blossoms are dainty and cheerful and as a child can grow them successfully they ought to be found in every home, rich or poor.

The bulbs of these Narcissii arrive in August and as a rule few people think of planting bulbs until October; this brings the blooms about December and invariably the very easy manner in which they flower brings on the desire to try once more. But now it is too late to procure any more bulbs. It is advisable therefore to purchase enough in the beginning to cover the wants for the entire winter; but in storing bulbs away for later planting we should spread them on shelves in a cool dry room, otherwise they may be found in such condition later that they are worthless.

**NARCISSUS GRAND SOLEIL D'OR.**—Related to the "Paper-white" it requires much longer time to come into bloom, but being of a golden yellow color, it is much desired and pays for the patience it exacts.

**CHINESE SACRED LILIES.**—The Chinese usually peel the brown skin from the bulb and make a few incisions on the side to allow the new growth to break through quicker. The water should come at least to within the middle of the bulb so that a deeper dish or bowl is necessary. With many people the plants grow too fast with the result that the buds blight and never mature. The reason

for this is, that the bulbs were grown in too much heat. Chinamen grow Lilies to perfection in rooms where there is little or almost no heat at all.

**CROCUS.**—Only mammoth bulbs should be used for this purpose and although they require nearly five months to mature into bloom, the very transformation from the old bulb to the new is a most fascinating process and repays well for the delay in blooming.

## Hyacinths in Plain Water in Bottles.

The French people were the first to adopt this novel method and carried it along to such an extent that they made freaks of the plants by producing a bottle where one bulb would grow upright and another reversed. The latter would be entirely enclosed in a glass holder and supporter. It is a curiosity and freakish to the limit. Fortunately the latter method has never become popular. There are two styles of glasses known as Hyacinths glasses, one about 10 inches high, rather narrow with a mouth for the bulb to rest in; the other shape is rather similar to a water bottle and dwarfed but has the same form of mouth.

For decorative purposes they come in many colors; some growers have advanced the idea that the color of the glass has an effect on the rootgrowth, but I have never been able to verify this statement.

Not all varieties of Hyacinths can be successfully grown in this method, but no one has ever dared to recommend a certain list of sorts which can be relied upon, and as my experiments in this way were not exhaustive enough to assume authority I shall leave this point still unsettled for some future time.

The essential points in this method are as follows: A piece or two of charcoal in the bottom of the glass, good sweet water, to reach within an eighth of an inch of the base of the bulb; the usual method is to bring the water right up to the bulb. The result is an unhealthy rootgrowth, souring of water and decaying of base of bulb.

The glasses must be stored in a cool, airy, dark room (not closet), until the roots have reached the bottom of the glass and until the topgrowth has advanced from three to four inches. I like to see the topgrowth almost perfected in the dark and only then are the ideal results produced; namely, that the spike is far ahead of the foliage and not as it so often is, squatted between the leaves and colored before it matures to its natural form. Many failures may be attributed to impatience on the part of the grower in bringing the plants to the light too soon. It is even much better to leave them in the dark too long. See to it that the water is replenished whenever necessary; change it entirely now and then.

Another practical method of producing the flower spike at the same time as the foliage is as follows:

Prepare a paper cone of dark color, about 10 inches long and place it over the bulb. The light entering from above will draw the growth up simultaneously and when the spike is tall enough the cone is removed. The foliage unfolds and the flowerspike is perfected.

#### 4. In Moss Exclusively.

This method may be adopted particularly well for Lily of the Valley and Crocus. The receptacle may vary as one desires.

**LILY OF THE VALLEY.**—As a rule these arrive the latter part of November or the beginning of December. The bulbs are known as pips. Each pip has its set of roots, usually very long, and the pips are packed in clusters of 25.

If the fresh pips are grown just as they arrive they invariably produce flowers, but no foliage. To produce both at the same time it is necessary to subject the pips to solid frost for at least three days. This can be accomplished by wrapping the pips in moss and burying slightly in the ground out of doors until they have been sufficiently frozen or to pack them in a box and subject them to freezing storage. A frozen Lily of the Valley will often produce its flowers within 21 days after planting. After being frozen they require gentle thawing out. Have a deep pot or other receptacle ready, place a few pieces of broken crockery at the base, add a piece or two of charcoal and then take as many pips as your pot will conveniently hold and spread them out so that there is space between each pip. Previous to this, secure sphagnum moss, which is the ordinary wood or field moss, chop it up to small pieces and pack this moss firmly between the pips until the moss reaches the centre of the pip. Pack your pot into a larger one or put several in a box, pack more moss between the pots and soak it all, then place another pot upside down over them all to exclude light and store them in as warm a place as possible, next to the stove if convenient. See to it that the pots have plenty of water every day. In about five days remove the cover, place pots in deep saucers on top of steaming radiators, water three times a day and soon the leaves and flowers will unfold; place now a cone of brown paper over the pot to draw the flower up high and within a week after this you will enjoy a pot of Lilies of the Valley equal to any you have ever purchased.

**SPRING CROCUS.**—These may be grown in shallow bowls in the manner recommended for water and pebbles, substituting moss for the pebbles. Grow slowly and cool for they require fully five months to produce flowers. Use large bulbs only.

**CROCUS SPECIOSUS.**—This is a fall flowering specie and if planted as the foregoing in September it will be in full bloom sometime in November. The beautiful lavender flowers are not accompanied by any foliage, and if cress is sown on the moss at the time the bulbs are planted the flowers will appear above a beautiful green.

#### 5. As Air Plants.

A very curious and interesting way to grow a few species of bulbs. The reason that these bulbs will produce flowers without either soil or water is that their time of flowering is here and that depriving them of the soil or water does not stop them. The following belong to this curious class of plants:

**ARUM CORNUTUM**, also called "SAUROMATUM GUTTATUM."—A specie of Callas which produce enormous bulbs, rather flat and saucer shaped. The bulbs are obtainable from November on.

Placed in a saucer by the window where they can get all the sunshine the spike will soon peep through the centre and rapidly grow to a height of about 18 inches, when the sheath will unfold, disclosing a flower similar to a Callas of a deep brown, striped and speckled with reddish brown, which of course falls back, but holding the yellow piston rod erect. When opening, the flower gives forth a very strong, unpleasant fragrance, which has often mislead some to call in the plumber for repairs before they could realize what had happened. No foliage is produced with the flower.

**COLCHICUMS** (The Meadow Saffron or Fall Crocus).—Like the foregoing, this bulb produces its flowers without leaves. The bulbs arrive in August and must be purchased for this purpose during this month as they are usually in bloom by September. The white finger-like growth emanating from the center of a large bulb discloses a number of very large lavender-pink Crocus blooms in succession for about two weeks. Several in a dish look mighty attractive. After they have flowered they may be planted in the garden where they will reappear each fall.

## Growing Bulbs for the Conservatory

**C**ONSERVATORIES are as a rule under the care and supervision of skilled, professional gardeners, who no doubt could improve upon my suggestions which follow, but in connection with this treatise I wish to impress forcibly one point; namely, that not all conservatories are under the care of the skilled men, that there are many owners of conservatories who themselves try to master the growing of flowers under glass.

To encourage them and to guide them successfully the following chapter has been embodied in this book.

In addition I like to do justice to some flowers which otherwise could not be mentioned.

All of the bulbs as described fully in the preceding chapter can be grown with greater success in conservatories for light and heat can be controlled and conditions made ideal.

The cold frame as a storing place forms the best connecting link when bulbs are grown under glass. When bulbs are brought in from the frame they are usually placed under the bench first to change the color of the foliage.

The heat must be gradually increased in order to produce the best flowers.

Conservatories permit the growing of many varieties of bulbs which in dwellings cannot be produced. My sole aim in this chapter is to bring these forward and to mention any special features which are necessary to grow these bulbs to perfection.

To facilitate reference to them I give them here in alphabetical order.

## Amaryllis—Hippeastrum Family.

Under this class one could collect perhaps several hundred varieties, but in nearly all seedbooks one can find the following sorts: A. Johnsoni, Prince of Orange, Vittata Hybrids, etc., etc.

It is very essential for the grower to make sure what class of Amaryllis he is growing for otherwise he will soon be in trouble. If at all possible procure growing plants in pots for then you are saving yourself a lot of trouble and you have the advantage of enjoying a prime flower the first winter or spring.

In the spring, after blooming, plunge the pots in the open ground, and water but sparingly, simply to keep them growing. The idea is to keep them in an inactive stage. About September 15th bring them to the conservatory, gradually increase watering and when the buds peep through between the leaves feed with liquid sheep manure.

They love a fairly warm and humid atmosphere and under those conditions produce their best flowers.

If dormant bulbs are secured they must be so potted that only part of the bulb is imbedded in the soil and fully one-half to two-thirds is exposed above the surface; such plants will not produce a perfect flower until the second winter. Keep them in growing condition all the time just as recommended for growing plants.

## Amaryllis Belladonna.

A unique variety or specie of Amaryllis. Secure the dormant bulbs in summer and pot in the manner as suggested above.

In October or November the first growth, namely, the flower-spike will appear, but no foliage. The flowers are of a beautiful shade of pink and in order to make them more attractive it is advisable to plant from four to six bulbs in an eight or ten inch pan and to plant maidenhair ferns between them. This will entirely prevent a leggy appearance of the plant when in bloom. A month after the blooming season the foliage will make its appearance and keep on growing until spring. From that time on watering should be done more and more seldom until foliage dies down, when it can be almost entirely dispensed with. If the space on the bench is acquired during summer the pot with the bulbs can be stored in a slanting position under the bench.

## Bulbous Anemones.

All the following classes, namely: Anemone Coronaria, Anemone Coronaria de Caen and Anemone St. Brigid require a distinct culture, which can be applied to all alike. The bulb has a very peculiar appearance, resembling somewhat a small piece of dried up punk. The average amateur cannot easily detect the top of the bulb and whenever this occurs it is best to set the bulb on its side. These Anemones are mostly grown for cut-flowers and will when more widely known become very popular. They are extremely cheerful and bright.

The bulb should be potted in September by planting several in a large bulbpan or a quantity in seedflats. They must be stored in cold frames, but must not be allowed to freeze. They should not be brought to the conservatory until about March 1st and even then they must always be grown cool. The temperature which suits the violet (about 50 degrees at night and 55 degrees in the daytime) suits these bulbs equally well. In fact, if a house is devoted to violets, the Anemones are best planted between them where they will produce grand results.

But Anemones can be grown with equal success in cold frames entirely. The frame of course must be given up entirely to Anemones or be divided with Ranunculus and early Gladiolus which require exactly the same treatment. Prepare the soil in the frame carefully and provide for perfect drainage. After they have been planted, place the sash over the frame. When freezing weather sets in cover the soil within with leaves right up to the sash and when the weather is extremely severe protect the frame further with mats and shutters.

About March 1st remove the leaves and on bright days between the hours of 10 and 3 open the sash to allow a free circulation of air. Just as soon as the growth commences to appear above the soil, watering must be daily attended to and an application now and then of liquid sheep manure is excellent.

They usually begin to flower early in May and are at their best during that month.

### Anomatheca Cruenta.

This is known as the Red Freesia, as it resembles the Freesia in growth, in foliage and flower.

It is never sold in dormant condition, but the plants are usually lifted from the ground while growing and shipped here in November. They are then potted, a number in a pot, and placed at once in a cool greenhouse, where they slowly grow and where they produce their bright scarlet flowers in March and April.

### Calochortus (Mariposa Tulip).

Although growing wild in California, it requires glass culture in the East and North. The wonderful markings of the flower which resemble those of the better orchids should be an inducement for every flower lover to grow it. The bulbs arrive late and immediately on their arrival should be potted. In growth it resembles a Tulip, but is always weak in appearance. The bulbs after being potted should be stored in a cold frame, but must not be allowed to freeze. In February they are brought to the conservatory where they can finally bloom in a temperature of 60 to 65 degrees.

### Cypripediums Acaule.

This is our native or wild Ladies Slipper. The pips which are usually collected in October or November should be secured from

your seedsman in frozen condition, gently thawed out, potted in a pan and started cool and the heat can slowly but gradually be increased. Under favorable condition the flowers should appear in five weeks. Directly after potting they are best placed under the bench, where they are excluded from the bright light. By planting them at intervals of a week there can be a succession of flowers for several months.

### Darwin Tulips.

I mention them here and not under the heading of "Growing for the dwelling," because I have never seen good results produced from them in the house, but I have seen them in splendid condition, when gently forced in the conservatory. The potting and storing can be the same as for all regular tulips, but when they are brought in from the frame they must not be placed in excessive heat, in fact they do much better when grown entirely at a moderate temperature, such as 55 to 60 degrees. Darwin Tulips look beautiful in pans and they furnish us the rare shades, including purple, mauve and wistaria.

### Gerbera Jamesoni and Its Hybrids.

The Barberton Daisy with its wonderful arrangement of petals and its long, massive stems, has become one of the most select winterflowers, and now that we can have them in almost every shade of the rainbow it is bound to become a general favorite.

During the winter of 1913 and 1914 the better flowers brought one dollar each and all that could be produced found a customer waiting. The flowers after being cut will invariably last from eight to ten days. In order to produce a crop of flowers during the winter the plants must have been dormant for four months previous to planting, which usually takes place in November and December. The best method to grow them is in a solid bench and not in pots. Start them at a fairly cool temperature and on the dry side, that is, water but sparingly until the first growth is through the ground; then gradually increase the heat and the supply of water. The first flowers usually appear towards the beginning of March and from that time on there is a constant succession until June. When they cease flowering, water must be gradually withdrawn until finally they become almost entirely dormant; water should now only be given about twice a month, simply to keep the soil alive. Just as soon as they start again in the fall, give the bed a new topdressing and a mulching of well decayed cow-manure. With every year the plants will increase in size and produce a greater number of flowers.

### Gladiolus Atroviolaceus.

A species which grows wild in the mountains of Egypt. It is collected in the early spring and usually reaches this country in July. The bulbs which are very small should then be potted and stored in a cold frame. Brought to the conservatory in October, good flowers can



be had by Christmas, but they are much better if they are not brought to the conservatory until January and still better results can be had if they are planted directly into the frame and treated like French Anemone.

They then flower in May. The flowers are narrow and small, but dressing the stem closely, they produce in their wonderful shade of blue an effect that is not easily approached by other flowers.

### Gladiolus Nanus.

The fairly small bulbs usually arrive from Europe towards the latter part of October and they can be treated in several ways: 1. If the conservatory has a department which is entirely devoted to Carnations these Gladiolus may be planted between them; they do not interfere in the growth of the Carnation and they like the temperature in which the Carnation is produced. 2. They may be potted or planted in flats and stored away in cold frames or protected pits until February and March and then brought under glass and gently forced. By the above two treatments they usually begin to flower about the latter part of April and are at their best in May. 3. They may be planted out into the cold frame and treated like Anemones and then the flowers are produced in June.

Amongst the newer introductions there are some splendidly colored sorts particularly in shades of lavender and pink.

GLADIOLUS COLVILLI, which is usually classed amongst these, requires the exact same treatment.

### Large Flowered Gladiolus.

There seems to be a tendency of useful summer flowers to become more valuable when the same flowers can be had in bloom during winter or early spring. As a splendid example the Sweet Pea is prominent. Its value as a commercial flower during winter or spring is five to ten times its value in July and so during late years the large flowered Gladiolus has been brought forward to bloom during April and May. Of course it means culture under glass.

In connection with this culture three points must be religiously observed: 1. That the bulb to be used is of proper age, namely, that it has flowered at least two years previously under regular field culture and consequently is a fully matured and very large bulb of its kind. 2. That the bulb is thoroughly cured. This one point seems to have been more responsible for failures in the past than any other thing. Also the culture calls for planting in January. A Gladiolus bulb requires positively a rest of three months before it can be re-grown for another crop of flowers; that would mean that the bulb has to be harvested not later than the end of September. Only bulbs that were planted in April, with the exception of a few quick flowering varieties, as for instance "Pink Beauty" and similar kinds are ready for lifting at that time. Even then the curing of the bulbs must be far more thorough than it usually is if the bulbs are stored for spring planting it may require the spreading of the bulbs on

floors of storage rooms and artificial heat used to thoroughly dry them. 3. That only such varieties are used which are early bloomers, and which are known by past experience to flourish under this culture.

The following varieties may be recommended: "America," lavender pink; "Panama," rose pink; "Pink Beauty," deep salmon pink with blood red blotch; "Mrs. Frank Pendleton, Jr.," delicate salmon pink with blood red blotch; "Mrs. Francis King," flame pink; "Halley," orange pink; "Augusta," white flamed with pink; "May," white striped with pink; "Peace," almost pure white; "Chicago White," almost pure white; "Brenchleyensis," fiery scarlet; "Princeps," true scarlet and white; "Governor Hanley," dark crimson; "Niagara," straw yellow. In under-glass culture the *Gladiolus* requires a cool temperature, and commercial growers usually grow them for economy's sake between Carnations, for the temperature which suits the Carnation also suits the *Gladiolus*. If the grower is anxious to save the bulbs for future plantings he must be careful in cutting the flower spike and see to it that at least one set of leaves remains on the plant after it is cut. Conditions similar as out of door culture for the maturing of the new bulb is also necessary. This often means sacrificing valuable space under glass and it is a question whether it pays. It might be more judicious for the amateur to use new bulbs each season and discard those grown unnder glass when through with them. Attempts are now made to grow the *Gladiolus* in Bermuda, where the flowering season out of doors is in April and such bulbs are cured in July and may be planted in hot houses during August, and of course such bulbs should produce a crop of flowers during the yuletide season.

## Gloriosa.

A flower which is altogether too little known in this country. When a large group of these flowers were exhibited in New York last spring, thousands of flower enthusiasts stood aghast and asked "What is it?"

*Gloriosa* is popularly known as the Climbing Lily of South Africa. In the conservatory it can be put to several uses: 1. To use as a climber over doorways or for a general greenhouse vine. 2. As a pot plant. The culture is the same in each case. The bulb is of distinct appearance, resembling a giant finger. They are dormant during late fall and are best procured at that time. When received place them on dry moss on the bench of the conservatory and watch for the white growth on one end of the bulb. Just as soon as this growth progresses it is time to plant them.

If grown either in pots or for a vine several should be planted, properly spaced, as a single bulb produces a very lonesome effect.

Cover the bulbs not more than one inch and grow in a warm house. Growth is very rapid and the slender stalks must be tied to some support. The flowers appear as a rule within two months after planting and many of them are produced on a single stem. Just as soon as the growth dies back, watering must be almost entirely omitted, and after the new bulb is well matured the roots may be taken from the soil and stored away in a dry spot until fall, for replanting.

### Iris Hispanica (Spanish Iris).

These require exactly the same treatment as the "Gladiolus Nanus," but should be potted or planted in September.

### Iris Hollandica (Dutch Iris).

These are simply an earlier and larger sort of the foregoing and therefore require exactly the same treatment.

### Ixia.

In culture, they require the same as "Iris Hispanica."

### Lachenalia.

A beautiful flower, when grown in masses in a pan. They should be potted in September, stored in cold frames without freezing, brought to the conservatory in January and gently forced.

### Lilium Harrisii.

The original Easter Lily and known also as the Bermuda Lily.

The bulbs of these Lilies usually arrive early in August and should be promptly planted. Try and secure the largest possible bulb, for the larger the bulb, the surer your success. Fill the pot but half full with soil and set your bulb upon it, allowing no part of the top of the bulb to protrude. The top of the bulb should not be above the rim of the pot. The bulb must fit fairly snug in the pot. After potting, place the pot in a frame without the sash and cover lightly with straw; water carefully and regularly every day. It will take from four to five weeks for the bulb to make roots, but they make two sets of roots. In addition to the roots below the bulbs, they produce a set above the crown of the bulb and at the base of the main stalk; when these upper roots have progressed to two or three inches it is time to give the plant a larger pot, but great care must be taken not to disturb the roots below.

The new pot should be so large that the upper roots can be entirely covered and that even then there is plenty of playroom for watering, etc., at the same time. There must be additional space for the roots below as they wish still further increase. They can then be put back again into the frame until the cold weather sets in; after that they may either be brought to a cool spot in the conservatory or they must be well protected in the frame, for any check during their progress now would spell almost certain failure.

In the conservatory they should be grown fairly cool until you can feel the buds by touching the upper part. It is well now and then to dust sulphur between the leaves to keep the plants in healthy,

clean condition. Watering must be religiously observed, but never must it be overdone, for too much water is just as injurious as not enough. When the buds can be felt they can be given more heat. A great deal depends upon when they are wanted in bloom. If they are desired for Easter, grow them steadily up to the time when the buds are almost fully developed. From now on they can either be retarded for a month by placing them in a rather cool and shady place or they can be forced to full bloom in a few weeks by increasing heat and light and water. A feeding with liquid sheep manure at regular intervals will improve foliage and flowers.

### Lilium Longiflorum Giganteum.

Another species of Easter Lily which is grown in Japan. The bulbs arrive late in October and should be potted in the manner suggested for *Lilium Harrisii*, but must at once be placed in the conservatory under the bench. Being started so late they require more heat from the beginning, but otherwise they respond to all treatments as suggested for the Bermuda Lily.

### Lilium Formosum.

Another species of Easter Lily, grown on the Island of Formosa. The bulbs arrive in August and may be treated exactly like *Lilium Harrisii*.

### Lilium Longiflorum.

There are two distinct types of this lily, one is grown in Bermuda, arrives in August and requires the same treatment as *Lilium Harrisii*, the other is grown in Japan, arrives in October and its culture is like that of *Lilium Giganteum*.

LILIUM MULTIFLORUM, LILIUM PLENTIFLORUM and several others are only varieties of *Lilium Longiflorum* and require the same treatment.

### Lilium Candidum.

The Ascension or Madonna Lily. When you buy these insist upon receiving bulbs grown in the northern part of France, for they are the only quality which should be used for growing under glass.

The dealer cannot deceive you, for the right bulb is white in skin, while the inferior kind is pink. These bulbs arrive early in September and should promptly be potted, using Azalea pots and planting from four to six bulbs in the proper size pot.

The pots are then plunged in the cold frame and when freezing weather sets in, they are covered with leaves and the sash. About January 15th they are taken to the conservatory, where they are gradually but gently forced. It is not always possible to regulate their blooming season for Easter, but even if they flower later, they are welcome.

### Lilium Philipinense.

While this lily can easily be forced, I do not recommend it, for the flower is too large for its slender stem and it always has the appearance of being top heavy. Furthermore, the bulb is not easily procurable.

### Lilium Myriophyllum.

A native of China, rather recently introduced here by the eminent Mr. Wilson. A lily, which when more reasonable in price, will outrank all the foregoing for either conservatory or garden use.

The bulbs can be procured in early fall and if treated like *Lilium Giganteum*, but forced only in cool houses, they produce splendid flowers.

### Lilium Sargentei.

A companion to the foregoing variety and requiring the same treatment.

### Lilium Speciosum.

All the sorts of this class can readily be grown under glass for flowering in June.

The bulbs arrive in November and after being potted they are best stored for a couple of months in cold frames, where they must be well protected from frost by sashes and leaves.

Heat must be gradual and gentle at first.

### Cold Storage Lilies.

Cut lilies are constantly in demand and are always welcome, and for this reason cold storage lilies have sprung into existence. By this method cut lilies can be had every day in the year. Cut lilies are a splendid material for large vases. Their chastity and purity add grace and lustre to the most refined home.

The most popular lily of this class is *Lilium Giganteum*, in addition the following varieties may be had: *Lilium Speciosum Roseum*, *Rubrum*, *Meelpomene*, *Magnificum* and *Album*.

The bulbs in order to keep well are especially packed in Japan for this purpose, and when they arrive they are immediately placed in cold storage.

They cannot be purchased in small quantities as a broken box is worthless. Once the original case is opened the entire contents must be promptly potted and immediately placed on the bench for the roots and topgrowth will materialize simultaneously. No time should be lost in opening the shipment when it arrives, for delay in this action does not improve the bulb, but on the contrary it will make it unfit for use. If these bulbs are started during the sum-

mer months they may be placed in the cold frame after potting, where they do better than in the extremely hot conservatory. The crop of a case of cold storage lilies is not produced simultaneously, but one hundred bulbs may extend the flowering season over a whole month. The time required to get a cold storage lily bulb to flower varies with the time of year it is planted. The following is a planting table compiled by the eminent authority on lilies, Mr. Ralph M. Ward.

### Planting Table.

The following dates are approximate only and are given merely as a suggestion. The time is based on the amount consumed by the average grower under average conditions. More or less heat will shorten or lengthen the time in forcing accordingly.

### Lilium Giganteum.

Planting Dates.	Approximate Flowering Time.
January 1st .....	April 15th to 25th
January 15th .....	April 25th to May 5th
February 1st.....	May 5th to 15th
February 15th.....	May 15th to 30th
March 1st.....	June 1st to 15th
March 15th.....	June 15th to 30th
April 1st.....	July 1st to 15th
April 15th.....	July 15th to 30th
May 1st.....	August 1st to 10th
May 15th.....	August 10th to 25th
June 1st.....	August 25th to September 10th
June 15th.....	September 10th to 25th
July 1st.....	September 25th to October 10th
July 15th.....	October 10th to 30th
August 1st.....	November 1st to 15th
August 15th.....	November 15th to 30th
September 1st.....	December 1st to 15th
September 15th.....	December 15th to 30th
October 1st.....	January 1st to 15th
October 15th.....	January 15th to 30th
November 1st.....	February 1st to 15th
November 15th.....	February 15th to 30th
December 1st.....	March 1st to 15th
December 15th.....	March 15th to 30th

The above pertains to Cold Storage Giganteum only. To force other Japanese lilies an additional time of eight weeks should be allowed.

Cold storage bulbs never produce as many flowers as the same sized bulbs of fresh stock.

## Lilies of the Valley.

Lilies of the Valley are grown in Germany and exported to all parts of the world. The single crown or pip is the ideal subject for flowering under glass. There are three distinct strains of these flowers. The "Dresden" Valley is grown near Dresden and should be used first. It requires little or no freezing. All types arrive early in December and "Dresden" is the only kind to use in January and February. The best method is to grow them in solid sand in a deep bench, which can be screened in on the sides and the top to exclude all light, and where they have heat in the bottom. They must be started at gentle heat and same gradually increased until finally they can stand all the heat the conservatory is able to produce. When the foliage and flowers have grown to the desired height light may be admitted and the rather light colored leaves will promptly turn green and the bells pure white. A crop of flowers should readily be produced in 21 days and if plantings are made at regular intervals of a fortnight there should be no interruption of a flowering season.

The "Berlin" pip must be placed in cold storage and should be used between May and September.

The "Hamburg" pip endures cold storage the longest and produces excellent flowers when grown from September until January.

## Nerines.

They are only suitable for conservatory culture and belong to the family of Amaryllis. They are in flowering habit exactly like Amaryllis Belladonna and require same treatment. Try and procure potted bulbs which have flowered the fall previous, for such bulbs are the most valuable.

## Ranunculus.

A great favorite with the Parisians. The flowers resemble the double buttercup, in fact they belong to that family. The culture of these flowers is exactly like that of Anemone Coronaria.

## Sparaxis.

In form they resemble greatly the Ixia and in culture they are identical with it.

## Spirea (Astilboides).

A hardy perennial, which is a splendid flower to force into bloom in conservatories during early spring. The dormant roots are chopped in clumps from the soil and the soil remains on the roots when they arrive here in November. According to their size, they are planted in the most suitable sized pot and stored in the cold frame until Jan-

uary, when they are slowly thawed out and placed under benches to start. Later they are placed in direct light, and if forced in gentle heat (say 55 degrees to 60 degrees in the daytime) they give the maximum of result. Careful but regular watering must be given, because if neglected only for a single day the plant may become stunted and produce an indifferent flower. The newer varieties are exceedingly beautiful and decorative.

### Tropaeolum Juaretti.

A tender miniature vine, which is exceedingly pretty and decorative. The perfectly globular bulb, of which four should be planted in a six-inch pan, produces a very slender vine with beautifully roundish serrated leaves and very small, bright scarlet, Nasturtium-like flower. A slender bamboo rod should be set next to each bulb so that the vine can find a support for its tendrils, but the vine itself should be trained to make circles combining all the supports, for only then can the right effect be produced.

### Watsonia.

The bulb and the growth, as well as flowers and spikes, have all the appearance of a gladiolus. But being a native of the warmer climates of Africa, and as its flowering season is in early spring, it requires culture under glass.

Bulbs may either be potted or planted in open benches about 3 inches below the surface. The temperature for these bulbs must never exceed 55 degrees; they are of easiest possible culture.

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The foregoing constitutes simply a summary of special families or species of bulbs, which are used for growing under glass. Again I want to reiterate that all such bulbs as are suitable for growing in dwellings and enumerated previously should also be added to this list as they succeed even better here than in a dwelling.

Many amateurs live under the impression that bulbs used for forcing or growing in the house can be utilized again if they are cured according to a fashion. This is an erroneous idea.

All such bulbs as are usually recommended for naturalizing might be retained in pots until spring time, when they may be planted in borders, grass or woods, but even then the result is problematical.

At any rate bulbs once forced are worthless for the same purpose.



OUT OF DOOR DEPARTMENT

**W**HEN we speak of out-of-door gardens we mass under one name many different and distinct situations, as the following division will soon prove, but this is really where fully 95 per cent. of all bulbs are used and I am trying therefore to treat this subject perhaps more thoroughly than some might think essential. Again I must emphasize the fact that through this book I am trying to reach the flower-lover who has been groping in the dark in his past experience and if through this treatise I have enabled him to see daylight I feel fully repaid for the extra labor involved.

In the following chapter I have taken the liberty of reprinting extracts from "Studies of Gardening," a book which is now out of print and as no author of it is known I cannot extend the usual courtesy, but will frankly acknowledge whenever I quote.

## The Ornamental Garden

**I**N "Studies of Gardening," a book which evidently has an unknown author and which is now out of print, appears an article entitled, "The Treatment of Bulbs." This article has been written by someone who like myself knows the imperfection of the amateur gardener, sympathizes with him and is trying to help and uplift him. This article is so excellent and timely that I must acknowledge my own inability to improve upon it.

### The Treatment of Bulbs.

Writing lately upon the use of bulbs in the border we said that the secret of that use was to contrast them with plants of a different growth. This is also true, we think, of their use in every part of the garden. The beauty of monocotyledonous plants is usually altogether different in character from the beauty of dicotyledonous plants; more simple, fugitive, and strange. Now the term bulb is a vague one, especially as it is used in nurserymen's catalogues, where it is often applied to any kind of tuberous or fleshy root, whether of a monocotyledonous or a dicotyledonous plant. But in this article we shall use it, not in the narrowest possible sense, but only of monocotyledonous plants with bulbous roots which are dormant for a certain period of the year; and we shall use it thus, not for any scientific reason, but because we wish to suggest certain principles for the treatment of such plants in the garden, based both upon the character of their beauty and upon the habit of remaining dormant for a certain period of the year.

The purpose of the old-fashioned treatment of the best known bulbous plants, such as Tulips, Hyacinths and Narcissi, was to produce a great blaze of blossom for a short time. They were planted by themselves in regiments; and when they were out of flower they were taken up to make room for other plants. This treatment took no heed of their individual beauty of form. Each plant was considered only as contributing to a great mass of color, and certainly these masses of color were very splendid. But a great part of the beauty of a Tulip consists in its form, in the shape of its flower, the manner in which it carries its flower, and the contrast between the shape and carriage of the flower and the shape and carriage of the leaves. All this beauty was lost when Tulips were arranged in regiments. But, on the other hand, it must be admitted that a single Tulip is too small and too simple in its form to produce much effect in any arrangement of flowers; and this is true also of most bulbous plants; besides this, their flowering period is usually short. Therefore, if we are to make the best possible use of their beauty, we must arrange them so that a great part of that beauty may not be lost in a blaze of color, but also so that it may not be frittered away by too scattered planting. The best way to do this is to combine them with plants of a very different habit of growth and character of flowers; and of such combinations there is an infinite variety. We have spoken of the difference in the beauty of monocotyledonous and

dicotyledonous plants. That difference is a fortunate fact in Nature, by means of which she produces some of her most exquisite contrasts; and it is the gardener's business to observe such contrasts and to base his own arrangements upon them. We have said that monocotyledonous plants are apt to be more simple, fugitive, and strange in their beauty than dicotyledonous plants; and the gardener should attempt to contrast simplicity with complexity, fugitiveness with permanence, and strangeness with familiarity. This he may do in many different ways. He may, to take one of the most obvious, plant his Tulips among Pansies or Forget-me-nots, so that they will rise through the contrasting carpet of less simple leaved flowers, as Daffodils rise through the grass. A hundred Tulips all of the same kind so planted will not lose any of their beauty of form, since it will be emphasized by the contrasting beauty of the carpeting plants; and it is only by means of an arrangement of this kind that the true beauty of Hyacinths can be seen. Many people condemn them as stiff; and, indeed, when they are planted out in rows by themselves they are as stiff as a row of Lombardy Poplars. But as the beauty of the Lombardy Poplar only shows itself in contrast with trees of a more spreading growth, so the beauty of the Hyacinth only shows itself in the same kind of contrast. No one would think of growing Bluebells in regiments, because we are all familiar with the manner in which Nature grows them. But the regimental system is even more fatal to the beauty of the garden Hyacinth.

This plan of carpeting bulbs with other plants of a very different habit is now very general, but not so universal as it should be. Many people who are delighted with the beauty of bulbs in the grass will yet grow the same bulbs in beds or borders on the old regimental system, and they do this, probably, because they think it saves trouble to the gardener. It is so easy to fill a bed with Tulips in the autumn and then to lift them when they have gone out of flower to make room for summer bedding. But it is just as easy to combine them with plants such as Pansies, Forget-me-nots, the double Arabis, and many early flowering annuals, which may be removed at the same time to make room for the summer bedding."

Progress in methods of gardening have been exceedingly slow in the past and one would have to expect the impossible if all the recommendations made in the foregoing article were at once adopted universally and the old-fashioned methods entirely discarded.

In view of this fact it is necessary to give here a few of the usual methods adopted in the growing of bulbs in everybody's garden.

### The Average Country Garden.

A flower bed, or what is known as such, is either in the form of a circle, or oblong, or square, or in ornamental shapes as stars, crescents or ribbons.

The circle is more common than others and is usually in the centre of the lawn. There may be several of these in an average garden.

Here we will find during summer our popular tropical bedding plants such as Salvias, Cannas, Geraniums, etc. When frost has

killed the plants (about October or November) more as a rule in November the beds are cleared for the planting of bulbs for a spring display. Hyacinths, Tulips and Daffodils usually vie with each other in these beds.

The first thing I must complain about is this—Why wait until the frost has killed the bedding plants, because bulbs cannot be as good in November as they are in early October and what is more important? How can these bulbs be expected to make a set of roots before winter sets in and this is one of the points required if the full value of the bulb is to be obtained.

I admit it takes courage to destroy an effective bed of flowers if you own them, but it is the old story of eating the cake and still possessing it; it cannot be done. For the sake of one pleasure we must sacrifice another.

Plant as early as possible (September is even better than October) if you want to get real results from your bulbs.

After bedding plants have been removed, cover your bed with a liberal quantity of well decayed cow manure, and if this is not obtainable use "Pulverized Cattle Manure," a very inexpensive and efficient bulb food, and spade the bed then thoroughly and quite deep for the manure or fertilizer must not come in contact with the bulb.

Bulbs must never be planted in beds which are not thoroughly drained or where the water stays long in the spring time, for such conditions spell absolute death to the bulbs.

It is advisable to form the beds sloping from the centre to the edge, for this will cause the surplus moisture to run off, particularly when the snow melts in the spring time.

Instead of using a dibber and planting bulbs in the hole, I suggest a far better method. Make the beds about four inches lower than you have designed it to be when finally finished. On this surface arrange your bulbs either in the form of a design or a combination of color just as you have planned and press the base of your bulbs firmly into the soil so that it stands upright; then cover your bed with pure sharp sand to a depth of four inches. This method has the following advantages: First—Your bulbs are absolutely at equal depths. Second—Under those conditions they must reappear in uniformity. And third—It acts as additional drainage so that surplus moisture finds a ready exit.

The next question arises, how far apart bulbs should be planted? The solving of this question rests entirely with the individual, but this much cannot be disputed if solid effects are desired. Tulips should not be farther apart than four inches; Daffodils, five inches, and Hyacinths, six inches.

The size of the bulbs should also come into consideration. For ordinary garden effect the "Second Size" Hyacinth will answer, but Tulips and Daffodils should be of the largest possible size. As to varieties it is utterly impossible to treat this subject here for it would require a book by itself and the progressive bulb books of the up-to-date seedsmen as a rule contain this information.

Color, height and season of blooming must be carefully considered if more than one variety is combined in a single bed.

In Hyacinths, varieties should be selected which produce an erect spike and not such as are top heavy, and must be supported.

In Tulips, heights and season of blooming are the important factors to consider.

Daffodils should never be mixed in a bed, but only one variety in one place gives the best result.

### The Protection During Winter.

I do not recommend the use of manure such as is commonly practised for this has been the cause of more trouble than satisfaction. The best protection is either dry leaves, salthay or straw pinned down by boughs of evergreens. The latter in itself is sufficient. No protection should ever be given until the cold weather sets in. Protection is not required for the purpose of keeping frost out, but mainly to keep the frost in and its real worth is manifested in March when warm spells thaw the ground and encourage the bulbs to come through, only to be nipped by the first cold night. Do not remove the covering at the first sign of spring nor let it remain too long, but judge by weather conditions.

A sprinkling of pulverized sheep manure over the bed as soon as the covering has been removed will help materialy to improve the size of flowers.

The average gardener is anxious to get more than one season's growth from his bulbs, but he is not willing to do what is asked of him in order to cure the bulbs for another year's effect.

The foliage of the bulbs should have entirely shriveled before the bulbs are lifted and this as a rule takes place in July, but who is willing to wait so long and to look at a barren bed and July is too late to plant out the bedding plants.

If these bulbs therefore are lifted prematurely they can never be expected to give the same results again and I suggest that they are used for naturalizing between shrubbery and that new bulbs are planted annually to dress our ornamental beds.

### The Italian Garden.

Here the use of regimental beds of gaily colored Hyacinths and Tulips and the golden Daffodils find the setting that nature seems to have designed for them. The very fields of Holland with their squares of scarlet and yellow and blue and gold and the tender shades of pink and lavender and white can be duplicated here.

The real effects, though can only be achieved through masses, and quantity counts here more than quality.

Close planting is essential. Color combinations may be suggested, but after all they should be the product of the individual and the expressions of his own taste. A study of varieties, their character, heights, flowering season and color is absolutely essential to create the most pleasing effects.

The carpeting of other flowers through which these bulbous flowers rise add a particular charm to this style of garden and should be universally followed. But another effect I have in mind which the author of "Studies in Gardening" has entirely overlooked. If between the Hyacinths and the Tulips and the Daffodils you plant "Pushkinnias" thickly so as to carpet the unfilled spaces a perfect

carpet of "heavenly blue" will greet your eye the first thing in the spring, long before the leaves of the Hyacinths or Tulips or Daffodils can spoil the effect.

By a careful selection of varieties and material the gay bulb season can be extended from earliest April until early June.

Pushkinnias appear first, then follow in rapid succession Crocuses, Scillas, Hyacinths, the Single Early Tulips, Jonquils, Single Late Tulips, Daffodils, Double Tulips, Poets Narcissus and Darwin Tulips. All these are showy species and fit within the borders of a well designed Italian Garden.

The methods of culture differs from that as described for the country garden, in that the Crocuses and Pushkinnias should be planted but one inch deep.

### The Hardy Border.

Again I wish to submit here an extract from "Studies in Gardening," as follows:

In the herbaceous border, however, the problem of the right use of bulbs is less easy; and yet it is not very difficult. True, there are many bulbs which are best lifted as soon as they die down, and there are others which resent disturbance at the very time when the border may need to be dug over. But both these difficulties may be overcome with a little contrivance and foresight. Take, for instance, the country garden, in that the Crocuses and Pushkinnias should be lifted at least every other year. These may be planted in considerable masses among carpeting plants or in clumps of eight or ten surrounded with plants that will contrast with them; and they may be taken up without difficulty when they have died down, and without injuring the plants about them. The arrangement in clumps is best suited to the taller May flowering Tulips and to other tall bulbs such as the Camassias, English and Spanish Irises, Crown Imperial Lilies, most of the true Lilies, and Snowdrops. Some of these, especially Madonna Lilies, resent disturbance, and it is the bulbs which resent disturbance that we have learned to grow in the most beautiful and rational way. No doubt, if Madonna Lilies could be treated like Tulips, they would often be bedded out like Tulips, and all their beauty would be spoiled. As it is, we grow them in the border and treat them like herbaceous plants, with excellent results. We should extend the same treatment to other bulbous plants, so far as their needs will allow. Thus, the May flowering Tulips should be planted in clumps of eight or ten at regular intervals along a border, and if a hundred or more of the same kind—say, of Gesneriana or Picotee—are then planted in the same border, they will produce a brilliant effect of color just when it is most needed, whether in contrast with flowering plants about them such as Wallflower or Forget-me-nots, or with shrubs not yet in flower, such as Lavender or Santolina. And, if necessary, they may be lifted when they die down, just as Wallflowers and Forget-me-nots are taken up when they go out of flower, and other plants or bulbs may be put in their place.

The contrast between the grey foliage of shrubs, such as Lavender or Santolina or Southernwood, and the brilliant flowers of bulbs,

such as English and Spanish Irises, and some of the smaller Lilies, is always most effective; and the beauty of the contrast depends as much upon the difference of character in the plants as upon difference of color. The bulbs, with their fugitive brilliance, seem to have sought the protection of the more enduring shrubs. And this is not altogether fancy in some cases; for Lilies never thrive so well as when they are close to shrubs, not only because the shrubs protect them from frost when their growth is young and tender, but because they like a very rooty soil. Thus, both for horticultural and aesthetic reasons, it is well to grow Lilies such as *L. calcedonicum* and *L. pomponium* close to shrubs such as Lavender or Santolina or Rosemary; and both the beauty and the health of the Lilies will be improved by the association. Among such shrubs also may be grown the different kinds of Gladioli, particularly the early flowering ones, which should be planted in the autumn and which will get valuable protection from the shrubs when their growth first appears in the winter. The later Gladioli, if so treated, may take the place of Tulips when they are lifted, and shrubs will be much less dangerous neighbours to them than herbaceous plants which, especially in wet summers, often grow with incalculable rapidity. If bulbs are associated with herbaceous plants the best effect will be obtained where there is the greatest contrast of growth. Thus bulbs which throw up tall straight spikes of bloom should not be planted among herbaceous plants which flower in the same way, but rather among plants of an altogether different habit—for instance, Gladioli among Gypsophilas; Madonna Lilies among the lilac flowered Goatsrue (*Galega*); Orange Lilies (*L. croceum*) with *Erigeron Speciosus*; *Lilium Elegans* with *Linum Perenne* or *Nepeta Mussini* (Catmint); Tiger Lilies with *Eryngiums*; Snowdrops with the pink *Lavatera Trimestris*, and so on. But in all such combination care must be taken not to place bulbs too close to some herbaceous plant that will make a strong growth before they do, and so smother them before they have a chance of asserting themselves.

The later and larger growing bulbs are much easier to deal with in the border than the many little bulbs that flower early in the spring and then die down and remain dormant until autumn. It is possible, of course, to lift bulbs like Crocuses, *Scilla Siberica*, *Scilla Bifolia*, the *Chionodoxias*, the *Puschkinnias*, and the *Muscaris* as soon as they are dormant, and to plant them again in the autumn. But it is a troublesome business; and many of them do better if left undisturbed. Yet, though they make the border beautiful in early spring, they leave blank spaces just when it is expected to be fullest. If they are to be grown in the border they can be covered with *Sedum album*, which will not interfere with their growth, and which is green all the winter and very pretty when in flower. In this case they must be planted well in the front of the border as the *Sedum*, if it is to do well and flower, must not be overshadowed by other plants. But, indeed, these smaller bulbs always do best in the front of the border, as they are apt to be forgotten and dug up if they are among large herbaceous plants, and also they do not get the summer sun which most of them need to ripen them. It is also possible, of course, to sow some low growing hardy annual over them, especially over the *Scillas* and *Chionodoxas*, which like to be planted



deep in a light soil. But this is not so easy to manage with Crocuses, which like to be planted just under the surface. The best plan of all, perhaps, with these little bulbs is to plant the Crocuses and Muscaris in the grass, where they will thrive, and the Scillas and Chionodoxas and Pushkinnias on some sunny bank which they can have to themselves. Such a bank may be carpeted with Sedum with excellent effects. Scilla Siberica may also be grown in the grass, where it is not too thick and coarse; but it usually thrives better under a Sedum.

When the foregoing was written the author evidently had not yet recognized the "Darwin Tulip" as the most popular bulbous flower to be used in borders.

It is wonderful how popular this majestic Tulip has become within the last three years and yet one should not be surprised for its merits deserve its popularity. Art shades such as mauve, wistaria, lilac, lavender, bronze and purple are found in all tones among hundreds of varieties offered today.

I shall refrain from suggesting superior up-to-date varieties, for the introduction of scores of novelties each season would make any selection obsolete in a comparatively short time.

Darwin Tulips in the hardy border should be planted with the set purpose in mind never to disturb them unless they have degenerated into poor unsightly flowers; then they should be lifted and discarded and new bulbs should take their place. Before planting Darwin Tulips the spot where they are intended to be planted should be well prepared by removing the soil to a depth of two feet and placing in the bottom a layer of well decayed stable manure, fully six inches deep. The balance of the soil to be replaced should be well mixed with ground bone, but where the bulbs are set the soil must be pure. Darwin Tulips should be set six inches deep so that you can plant annuals such as Lavatera or Gypsophila right over them when they have ceased blooming.

What would otherwise be a barren spot can be a sheet of color for the balance of the season. Next to the "Darwin Tulips" the other classes of late flowering Tulips should be more frequently employed; for instance, the Rembrandt Tulip with its wonderful markings, the Breeder Tulip with its sombre color, the Bybloomen and Bizarres with its fantastic stripes and flakes, the newer sorts of Cottage Garden or May Tulips which are as gay as the "Swiss Sennerin," and last but not least the family or species of Wild Tulips, these more than all the others are by nature fitted for the hardy border for all perennials are only cultivated wild flowers. The Wild Tulips do wonders when they receive a taste of prosperity, and some varieties are without doubt superior in colors, markings and effectiveness to all the cultivated sorts. Tulipa Kaufmanniana, T. Thubergeniana, T. Sprengeri, T. Clusiana, T. Greigi and many others are real jewels among flowers.

The selection for the hardy border is more extensive than for any other purpose in gardening and all of them should be used to make the border truly what it was planned to be, "the roaming place for all hardy flowers."

The list which follows comprises nearly every family of bulbs which can be utilized in the border, and where the culture differs from

what has already been stated it is given under the heading of "Family of Bulbs" with the very variety named.

Allium.

Anemone Apennina.

Anemone Hepatica (prefers shade).

Anemone Nemorosa (prefers shade).

Anemone Pulsatilla.

Bulbocodium Vernon.

Crocus (both spring and fall blooming).

Cyclamen (hardy).

Camassia.

Chionodoxia (Glory of the Snow).

Daffodils (all classes).

Eranthus Hyemalis (Winter Aconite).

Eremurus (King's Spear).

Erythroniums (Dog's Tooth Violet).

Fritillaria Imperialis (Crown Imperials).

Fritillaria Meleagris (Guinea-Hen Flower).

Feathered Hyacinths (Muscari Plumosum).

Galanthus (Snowdrops).

Grape Hyacinths (Muscari Botryoides).

Helleborus Niger (Christmas Rose).

Iris Pumila. Plant in August.

Iris Germanica (German Iris). Plant in August.

Iris Hispanica (Spanish Iris).

Iris Hollandica (Dutch Iris).

Iris Anglica (English Iris).

Iris Sibirica (Siberian Iris). Plant in August.

Iris Kaempferi (Japan Iris). Plant in August.

Lilies. There is almost an unlimited list of varieties suitable for this purpose and as some of them require special culture, I refer to the chapter that deals with the "Family of Bulbs" for further information.

Lily of the Valley. Plant in November.

Musk Hyacinths (Muscari Moschatum).

Montbretias.

Narcissi, all sorts except the Polyanthus class.

Ornithogallum (Star of Bethlehem).

Puschkinia.

Paeonies.

Sternbergia.

Scilla.

Snowdrops. See Galanthus.

Spirea (Astilbe).

Snowflakes (Leucojum).

Tulips. Darwin.

" Rembrandt.

" Cottage or May.

" Breeder.

" Bizarre.

" Bybloomen.

" Species of wild sorts.

" Parrot.

**Trollius.**

**Trilliums.**

Special features of some of the bulbs enumerated in the preceding list exist as to their culture and these are fully described under the respective headings in the chapter of "The Family of Bulbs."

## The Rockgarden.

This style of garden, while yet an unknown quantity in this country, will in the writer's opinion become one of the most popular styles of gardening in the future. Some of the most lovely hardy plants are only at home in the rockery, and this holds particularly true of the smaller bulbous flowers. The well-built rockery can provide every condition these flowers demand; for instance, drainage and protection. The species of wild Tulips also known as Mountain Tulips find here the exact duplicate of their native home and many varieties can be made permanent here. Their season of blooming extends over a long period of time, even of a single variety, so that when planted in clumps one finds some of them in flower, some in bud and some already past.

*Tulipa Kaufmaniana* does exceedingly well here, for it needs sharp drainage. It was introduced only a few years ago and is almost the earliest to flower and the most beautiful of all tulips. Early in April or sometimes in March its blossoms begin to open, at first creamy white and then flushed with pink on the outside, while the inside has a golden centre like that of a water-lily. It seems to withstand the severe weather well and it is not unusual to see its great blossoms open above snow-covered ground. *Tulipa Biflora*, a beautiful little species with several white blossoms on a stalk is another beauty. *Tulipa Lownei*, a dwarf tulip with delicate pink blossoms, and *T. Pulchella*, a pretty red tulip marked inside like a calochortus, seems to thrive here. *Tulipa Linifolia*, rather late, when planted in large clusters appears like a glow of scarlet. All these bulbs look best rising through a carpet of *Sedum*, whose roots are too shallow to interfere with the bulbs and whose leaves are not thick enough to prevent them from ripening well in the summer.

In fact, all the species usually offered may with safety be adopted for the rockgarden.

There is a class of Daffodils that by nature must have been designed for such a garden, for this style of garden demands flowers which are rather prostrate or dwarf in habit of growth, and invariably with such plants the flowers are rather of miniature size.

The following varieties I should recommend: Tenby Daffodil, Princes, Queen of Spain, Cyclamineus, all varieties of *Bulbocodiums*, *Triandus Albus*, *Nelsoni Minor*, *Jonquillas*, *Juncifolius*, *Diomedes Minor*, and *Montanus Pocliformis*. Of Hyacinths the class of *Muscari* are ideal, such as *Grape Hyacinths*, *Feathered Hyacinths* and *Muscari Azureum*, the latter flowering as early as February if weather permits.

Of other suitable subjects I suggest all the following: *Alliums* (all kinds), *Anemone Apenina*, *Anemone Hepatica*, *Anemone Nemorosa*, *Anemone Pulsatilla*, *Bulbocodium Vernum*, *Crocus* (spring and

fall), Hardy Cyclamen, Camassia, Chionodoxia, Eranthus Hyemalis, Erythroniums, Fritillaria Meleagris, Galanthus (Snowdrops), Iris Pumila, Lilium Tenuifolium, Ornithogallum, Puschkinia, Sternbergia, Scilla, Snowflakes, Trollius and Trillium. All of these only look well if planted in clusters of six or more. By distributing these early spring flowers the rockery can be made gayest in April, when most plants are still enjoying their winter slumber.

### The Meadow or Lawn.

Although the selection of bulbs is identical for both situations, we cannot lose sight of the fact that in order to make a bulb mature for another season's blooms the foliage should not be disturbed until at least six weeks have passed after their blooming spell; but we cannot afford to let our lawn be untidy and we must mow it, and in consequence we can use but few varieties of bulbs, and of course only those which either flower very early or which grow very dwarf. For this reason I recommend for lawns as follows:

Snowdrops, Crocus, Scilla Siberica, Grape Hyacinths and Puschkinias.

The old-fashioned way of planting a single bulb with a dibber should be discarded, for not only does it disturb the lawn, but it produces an effect which is entirely too artificial. We must try to have these flowers appear just as they do naturally, in colonies with a few stragglers in the near vicinity; some may appear as if they had wandered away from their family. Such effects are easily accomplished in the following simple manner: Take as many Crocus bulbs as two hands put together will hold and drop them naturally to the ground. The very position which they occupy when they fall to the ground should be their place of planting. Where they are close together employ the spade and lift the sod (nothing more) from one side, put in the bulbs and press the sod back in its original condition. Most of these little bulbs are planted too deep, which accounts not only for the fact that they do poorly, but that they soon entirely disappear. All of these bulbs should be planted in September (not later) if we want them to do well.

The small sized bulbs of Crocus, which are usually offered by seedsmen should never be tolerated in the garden, for their cheapness makes them very expensive. Rather grow fewer, but try and procure the largest bulbs. No other bulb perhaps is used in larger quantities than the Crocus and so we should try to get material which will give us the maximum result. Within the last few years some wonderful new varieties of Crocuses have been introduced, which in size rival the smaller tulips and appear in colors which have never been known before. Antique rose, mauve, lavender and reddish purple are some of the newer shades.

For the meadow, of course I can suggest a much more varied selection not only for spring flowering, but also some which flower in summer and fall. For spring flowering:

Foremost is the Poet Narcissus, almost all of the Daffodils, both single and double (Princeps, Von Sion, Johnstoni, Golden Spur and Palladus Praecox are especially well suited), Tulipa Sylvestris, Grape

Hyacinths, Camassia, Summer Snowflakes, Scilla Siberica, Chionodoxia, Puschkinia, Alliums, Fritillaria Meleagris and Imperialis, Lilies (particularly the native sorts), Iris Siberica and, finally, Colchicums, which here is in its native heath. Meadows as a rule are mown in September and shortly afterwards the Meadow Saffron (Colchicum) bedecks the verdure with its massive flowers of lavender pink.

The suggestion given for planting in lawns might just as well be followed for the meadows.

## The Woods.

Not everyone is fortunate enough to have woodland in the vicinity of the home, but those who have surely can enjoy paradise on earth.

What is more inspiring when strolling through woodland than to have your eyes feast upon an army of blossom, all eager to reach up and greet you? The heart of man must indeed be made of stone if such a sight does not awaken a feeling of enthusiasm, which should find expression only in silent admiration for all that is beautiful in nature.

In certain countries of Europe certain days in the spring are set aside for people's holidays to make pilgrimages to the woods to gather flowers.

"Pfingstmondag" in Germany is religiously observed by almost everybody; cities and towns by noontime are almost entirely depopulated. The family pack up their luncheon, to the woods they go and here they enjoy a day that no king can duplicate. I shall never forget how I used to eagerly wait for the first Lily of the Valley to peep through the ground and then every day I would go to the woods so as not to miss the first flower.

The fascinating feature about flowers in the woods is, that we must hunt for them, for we never know the exact spot from year to year.

Rich indeed is the man who can carpet his woodlands with everything that will grow there, for he will enjoy a reward that cannot be measured by wealth.

No one should undertake to plant here the bulbous flowers unless he is willing to colonize them by the thousands.

In the thickets and the dense woods, we find the Lily of the Valley and the Solomon's Seal. We find the Fritillaria and the Erythroniums, all the Anemones mentioned before, the Scilla Campanulata and the Scilla Nutans, Ornithogallums and Trilliums. Wherever light can penetrate we can mass Snowdrops, Scilla Siberica, Grape Hyacinths, Puschkinias and all of the Daffodils. On the outskirts of woods we can mass our native Lilies, Crown Imperials, Camassias, Daffodils, the Christmas Rose and Iris. Each one finds here shelter, moisture, rest, and can roam at will.

## The Lake and Brookside.

The finest lakeside planting existing today is at the Ames Estate at North Easton. One would imagine that millions of Poet Daffodils

have been employed to create the effect. As far as your eye can reach you behold these clean and happy faces, and when you see the swans majestically glide over the mirrored waters you dream of pictures which then are real. Nothing in my mind can surpass the Poet Daffodils for this purpose.

But clusters of Crocuses, Snowdrops, Puschkinnias and Scillas not too near the edge of the water will enliven the scenery before the Daffodils made their appearance; in fact, all of the subjects as mentioned for meadows or edges of woods can be utilized.

Japan Iris perhaps can portray to us here the landscape of Japan in July, but they should be planted as if nature had put them there.

### The Fall and Winter Garden.

Who wants to think of the last rose of summer, or what gardener is glad when winter comes and he, like his flowers, can go to sleep to await the awakening of nature in the spring?

Who does not cherish the Witchhazel blossom in February or the first Snowdrop in March?

But why not make our gardens richer with flowers that are apt to peep through in the late fall or winter, when the country is barren and we cling to that last rose of summer as if it was the only thing left to us?

With proper selection of material one can have something in bloom from November until April. Start with Sternbergia; planted in October, its bright golden Fairylike flowers cover the ground in November; the Colchicums planted in September are still gay in colors; Crocus speciosus is just coming into bloom and C. Sativus and C. Zonatus follow it in December.

If you have a clump of evergreens facing the south, or you have a warm border on the south side of the house, plant a few bulbs of Crocus Imperati and its blue blossoms will greet you the first sunny days in January and as often in the month as we have sunny days.

If you have a cluster of trees under which the cold winds find no entrance, plant a few clumps of Christmas Roses (Helleborus). Even through the snow they will push their cheery faces of white and say "Hello" to you in February. Other species of Crocus would flower every week in the winter if a sheltered nook, where the sun can reach them, was chosen for them; and so we could make our garden so interesting during the winter that there would be no need of putting it out of our memory for three to four months.

THE FAMILY OF BULBS

**I**N the following chapter it is my intention to bring to the notice of my readers a very complete story of all such bulbs that can be employed in the cultures described in the foregoing pages. I do not plan though to give here an encyclopedia of every existing variety, for many there are which will never be at home amongst the amateur gardeners, for whose exclusive benefit this book is written. To facilitate reference to this list I have arranged it in strict alphabetical order.



## Agapanthus

(African Lily).

**F**ROM a roundish base rise in the centre broad, sword-like leaves fully 24 to 30 inches long, which curve gracefully. During early summer from the centre of the leaves emanate several stout, straight, fleshy stalks to a height of 30 inches, which are crowned with a whorl of lily-like flowers.

It is a plant which is intended exclusively for the conservatory, but when in bloom it is a splendid ornament for the lawn or near the approach to the house or on the veranda.

The culture is very simple. Try and secure growing plants in the fall, place them in the conservatory, but water them only sparingly until the flower-stalk makes its appearance. From now on water must be freely applied and once a week a good quantity of liquid manure as a food will materially help to produce the best flowers. While the flowers are forming the plants must never want for water and a good way is to set the pot or tub into a larger tub and fill the vacant space with water.

When the flowering season has passed the supply of water must be gradually diminished and in winter it should receive just enough to keep the plant in foliage. In case the plants are used for out-of-door decoration they must be brought to the conservatory before there is any danger from frost. The varieties common in use are Umbellatus, blue, and Umbellatus Albus, white. If plants are imported, they arrive in November.

## Allium.

Although the name stands for the word "onion," it has no relationship either in fragrance or appearance. The bulbs as a rule are very small, perfectly round and cream in color. The foliage is narrow, long and grass like, while the flower appears in umbel form on a straight, leafless stalk 15 inches in height. The flowers are very artistic, pleasing and showy.

The variety "Neapolitanum" is grown in France and usually arrives here in August; it is especially suitable for growing in pans for the dwelling or conservatory.

The other varieties are grown in Holland, arrive in September and are grown not only for the house during the winter, but also in borders in the garden, by massing 12 or more bulbs in a cluster and protecting them with leaves to a depth of 12 inches.

There are a number of varieties available, which appear in shades of blue, yellow, white, crimson and pink.

## Alstroemerias.

I simply mention this flower because in foreign catalogues it is offered as a bulb, while in reality it is a perennial plant similar to Hemerocallis. It is used exclusively in the hardy border and produces lily-like flowers of yellow and orange.

## Amaryllis.

Strictly for the conservatory.

From a massive round bulb appear first broad sword-like leaves 18 to 24 inches long, which curve gracefully outward to the right and left. The flower stalk arising in the center is enormously stout, round, leafless and perfectly erect, often rising to a height of 24 to 36 inches, carrying on top from two to six gigantic lily-flowers in many colors: white, pink, scarlet and crimson and many combinations of these colors.

Amaryllis Belladonna flowers in the fall without foliage.

Amaryllis Formosissima has split flowers of crimson.

Amaryllis Hippeastrum is the largest flowering species and is the most showy of all. In this class there are many hundreds of varieties, some of them being as rare and valuable as orchids. When in full bloom, they are gorgeous, either cut or on the plant.

See Culture, "Growing for Conservatory."

## Anemone.

**FRENCH ANEMONE.**—Under this title I gather all the bulbous kinds as:

**ANEMONE CORONARIA** (Poppy Anemone).—A favorite flower with the Parisians. The very pretty cut-up foliage produces a globular plant 6 to 8 inches high and through it appear several slender flower-stems 8 to 10 inches long, crowned with one saucer-shaped single flower in scarlet, white or blue. The beautiful centre of this flower is quite distinctive, as it is formed of small filaments, a feature by which we identify other flowers. These flowers can only be grown in conservatories or cold frames. The type here described has single blooms, while *A. Coronaria* fl. pl. has double flowers.

**ANEMONE ST. BRIGID** belongs to the foregoing in form and habit, but the single and semi-double flowers are larger and have a charm of their own, having beautiful halos around their center.

**ANEMONE FULGENS.**—Of dwarfer growth than the foregoing, but glorying in the shades of brightest scarlet. All of them should be planted in September or October.

The following sorts are known as Hardy Perennials and utilized either in the border or in the rockgarden or in woodlands; many of them are natives of woods. They are all dwarf, with bright star-shaped flowers for early spring.

**ANEMONE APENNINA.**—This species appears in white, blue and lilac.

**ANEMONE BLANDA.**—Blue and white.

**ANEMONE HEPATICA.**—Blue, white and purplish red.

**ANEMONE HORTENSIS.**—Large star-shaped flowers in white, purplish violet, scarlet and crimson.

**ANEMONE NEMOROSA.**—The real Wood Anemone in blue, pink and white.

**ANEMONE PALMATA.**—In yellow and white.

**ANEMONE PULSATILLA** (known as Pasque Flower).—Large leaves and clusters of flowers in blue and white.

ANEMONE RANUNCULOIDES.—The yellow Buttercup Anemone, both single and double.

ANEMONE SYLVESTRIS.—The Snowdrop Anemone in white.

### Anomatheca Cruenta.

(Scarlet Freesia.)

In growth and form of flower it resembles a Freesia, but lacks its perfume and color. The roots, to which green growth is attached, arrive in November and must then be planted at once. These plants can only be grown in conservatories. They appear in scarlet color only.

Arum, see Callas.

### Bulbocodium Vernum.

The Crocus-like flowers appear early in the spring, usually two or three from a single bulb, but without leaves. The color is purple-violet with white spots. It is perfectly hardy, but delights in a sunny position and in sandy soil. It fits in the hardy border in the rockery, along edges of brooks and lakesides and on the outskirts of the woods.

### Callas.

They are botanically known as Richardias and Arum. Almost all can only be used for growing in the dwelling or conservatory. The popular Calla (*Richardia Aethiopica*) are usually grown singly in pots, and a large pot is required on account of the length of the bulb. The newly made growth, which is visible when the bulb is planted (July-August), should protrude above the pot. Callas like a heavy clay soil and plenty of water while they grow; in fact, when they are in foliage it is advisable to use warm water when watering. The bulbs after being potted are placed directly in the spot where they are expected to bloom and no dark storage is required. In conservatories they love humidity and heat, so that they can be placed in the warmest spot. A little feeding with liquid manure will help them. Even amongst the common white Callas there are a number of types and sorts. Before planting always carefully examine the bulb and see that no decay is visible. If decay can be noticed carefully scrape the diseased part and dust with lime and allow it to dry before planting. The common white Calla can be procured in many sizes of bulbs. The largest naturally will produce the largest flowers and the greatest number of them, so that it pays to give a little more for a large bulb. In addition, there is now offered the "Godfrey Calla," a variety which has purer white flowers and is more free in blooming. This variety is best secured in growth. There is still another sort known as "Pearl of Stuttgart." It is dwarf and therefore perhaps better for pot purpose than any of the others, but the former I would prefer for cutting. It grows about 18 inches high and produces several flowers at one time from a single bulb. The flowers

are pure white and the yellow piston in the centre is truly an attraction.

**CALLA ALBA MACULATA** is a flat bulb, which produces foliage liberally, spotted with flecks of white, rather adding to the ornamentation of the plant. The flowers are white and only medium in size. They are easily raised for the dwelling or conservatory and in addition may be kept dormant till spring, planted out near ponds or brooksides, and here they flower continuously all summer.

**YELLOW CALLAS.**—A few years ago yellow Callas were a rarity; today they are available in not less than nine sorts, as follows (most sorts have spotted foliage):

**AURATA.**—Sulphur yellow.

**ELLIOTTIANA.**—A deep golden yellow. When grown for the dwelling or conservatory do not expect flowers until May or June. A better way is to store the bulbs dry during the winter and to plant them in the garden during May. They will flower almost all summer.

**ELLIOTTIANA ROSSI.**—Bright golden yellow with small violet centre.

**GLORY OF HILLEGOM.**—Bright canary yellow with purple blotch.

**HASTATA.**—Yellow with black, showy spots.

**MRS. ROOSEVELT.**—Sulphur yellow.

**PALLIDA.**—Large bright yellow flowers.

**PENTLANDI.**—Golden yellow flowers on red stems.

**SOLFATARA.**—Primrose yellow with a black centre. The most distinctive of all.

**PINK CALLAS.**—Even pink flowers can be had in this family with variety, Rehmanni, which is rather miniature, growing but 12 to 15 inches high, having fair sized flowers of an antique rose shade. Rehmanni Violacea has reddish violet flowers, which are produced in great numbers during the spring months. The bulbs of yellow and pink Callas are not procurable until late in the season and therefore do not bloom until April or May following.

**BABY CALLA.**—The variety "Little Gem" is a white Calla which grows but 12 inches high and produces its flowers in great numbers all winter. I advise securing growing plants instead of dormant roots, as the former produce flowers much sooner. *Arum* is another botanical name for a class of wild Callas growing in Asia. None of them appeals to me as worthy of serious consideration. *Arum Sanctum* is known as the Black Calla on account of its deep purple flowers. *Arum Cornutum*, also known as *Sauromatum*, is simply a curiosity as an air plant and fully described as such in the preceding chapter. *Arum Dracunculum*, known as the Dragon Lily on account of the stems being mottled. There are other varieties which are of still less importance.

## Calochortus.

(California Tulip or Mariposa Lily.)

Although a native of California, they can only be used for out of door culture in localities where the climate is similar. In the East they

are used for growing in the conservatory exclusively. It is too bad that this flower cannot be used for gardens, for in colors and markings it is the equal of the finest orchids and so is the shape of the flower. The plant in itself is rather weak. The thin tulip leaves curl and twist and the extremely slender flower spike, 8 to 12 inches high, produces one or two nodding flowers which in their interior are beautifully marked. Six to twelve bulbs should be massed in a pan and while in dark storage they must not freeze. The bulbs are available in October and the flowers appear in March or April.

### Camassia.

A hardy bulb, native of this country, which is superior to any "Scilla" and can be utilized for the same purpose. In the garden, or border, or in lawn or meadows, near brooks or lakesides, in open spots in woods or on the outskirts of them, simply everywhere, it delights the eye, bedecks the landscape with its graceful heads of blue flowers during the early part of June. The flower spikes are often 12 inches long, so that they can be readily used for cutting. They are absolutely hardy and require no protection. In addition to blue sorts one can also procure white and purple flowering kinds.

### Chionodoxia.

Known as the "Glory of the Snow," evidently on account of its early flowering qualities. In sheltered locations the beautiful bright blue bells are often seen directly above the snow. In form and character it resembles the blue squill; the flower is more loose, the color different; it is equally dwarf and used for all the purposes of the Scilla, as for the dwelling in pans, or fibre, or for the garden in every conceivable location. The bulbs arrive in September and should be planted then.

### Clivia.

Strictly a conservatory plant. The leaves, resembling those of Amaryllis, are very leathery, appear in layers parted to either side by the extremely stout flower-spike leaning at its crown, a gigantic umbel composed of forty or fifty drooping apricot-colored, lily-like flowers. Their treatment in the conservatory is exactly like that of Amaryllis Hippeastrum. Secure these in growing condition during early fall.

### Colchicum.

(Meadow Saffron.)

This flower is put to many uses.

1. As air plant, and described as such under the heading of Air Plants.

2. To be naturalized in meadows, for there is its native home, from which it derives its popular name. The large wild cabbage-like leaves peep through the ground in the early spring, but usually die down and disappear before summer if left alone, and in consequence it suits the meadow, where the grass is not cut until July. During the whole month of October the meadows are aglow with these bright and cheery faces of a gigantic Crocus flower; from a single bulb (usually large) appear as many as twelve blossoms in continuous succession, extending the flowering season for a full month.

3. In the hardy border. Here they should be planted in clumps and, if possible, between Saxifraga, as their foliage resemble each other. One flowers in the spring, the other in the fall.

4. In the rockery combined again with Saxifraga.

5. Under trees, combined with myrtle, where the beauty of the leafless flowers is in the fall enhanced by the carpet of myrtle.

6. In woods, combined with Lily of the Valley, for the foliage in the spring resembles each other and it produces another flower effect in the fall in a spot which otherwise would be barren.

The point of greatest importance to be considered is timely planting. You should order bulbs from your seedsman not later than June and ask for special importation so that they arrive early in August in absolutely dormant condition. If they come with the other bulbs in September they flower in the cases while in transit, and you lose thereby a full season and must wait a whole year for another blossom. Varieties: The common Meadow Saffron is *C. Autumnale* in both lavender and white, both single and double. *C. Bornmulleri* is very large and almost white, but the finest of all is *C. Speciosum*, with delicate pink flowers. These appear in the exact form of a wine goblet. A newer variety of the foregoing in pure white is magnificent, but very costly.

## Crinums.

Are best described as "gigantic, cluster-flowered Amaryllis." The very bulbs often measure a foot through, with noses 3 feet tall. The only variety to which I wish to refer here is *C. Powellii*, known as the Hardy Amaryllis; grows about 18 inches high, has a small bulb and produces from two to three flowers on a spike. They are recommended for borders, should be planted in the fall and protected with leaves during the winter. They can be had in several colors, as light and dark pink, white and white and pink combined on one flower. The bulbs arrive in November.

## Crocus—Spring Flowering.

The most popular of all bulbous flowers, being used for every conceivable purpose.

If wanted for the dwelling it can be grown in soil, in fibre, in pebbles and water and in moss. In the garden there is not a spot where these bulbs cannot be employed. The great mistake made in planting them generally is putting them in too deep. They should never be more than 2 inches below the surface. In very exposed

positions it is well to protect them during the winter with tobacco stems, which also act well as a protection for the lawn.

But the most important point is that the bulbs should be planted in September and only large bulbs employed; a large bulb invariably produces 3 flowers, while a small bulb produces even under favorable circumstances only one flower, and generally none. The reason for early planting is that the bulbs in dormant state will petrify if kept dormant after September and you are apt to plant a stone instead of a bulb.

The newer varieties of *Crocus* are a revelation as to size and color and should be tried by every flower-lover.

### Crocus—Fall Flowering.

While *Colchicums* really belong to this class they are usually separated on account of the distinct shape of the bulb and foliage, and in addition we have real *Crocus* to flower in the fall even later than the *Colchicums*, with flowers and leaves identical with the spring flowering kinds. This class of flowers are indeed very fascinating, for they give us the parting farewell of glorious and enjoyable moments experienced in our season of gardening. With a proper selection their flowering season can be extended right into winter, and through it, and this type of gardening should be more tried and encouraged. All of the fall flowering species produce the flowers in the fall and the foliage in the springtime.

*Crocus Sativus*, *C. Speciosus* and *C. Zonatus* I have found the most satisfactory, and *Crocus Imperali* I recommend as the latest to bloom.

### The Hardy Cyclamen.

One of the most lovely of Alpine flowers which are an unknown quantity in this country. The flowers, which resemble a violet and which are dwarf and small, arise amidst a foliage which is beautiful in itself. They are heart-shape, marked with grotesque designs in white. The bulbs, which are fairly large, are the ideal subjects in a rockery, where they can get a sheltered nook and a well-drained pocket. In such locations they form a glorious picture when in bloom. Some varieties flower in the fall, others in the spring.

FALL FLOWERING.—*C. Africanus*, *C. Cilicicum*, *C. Europaeum* and *C. Neapolitanum*.

SPRING FLOWERING.—*C. Atkinsi*, *C. Coum*, *C. Ibericum* and *C. Repandum*.

Plant bulbs shallow and protect with leaves.

### Cypripedium Acaule. (The Hardy Lady's Slipper.)

Although one of our native perennials, it is very successfully grown as a bulbous flower, similar to Lily of the Valley, for the dwelling or conservatory. Its whole root formation is just like a Lily of the Valley.

Pot the roots in November and store so that they can thoroughly freeze; in fact, they produce good results only when the roots have been frozen.

Bring to the light in March and within four weeks they are in full bloom. From four to six roots should be in a six-inch pan.

## Daffodils.

What a wealth of glorious thoughts enter our minds when we hear the word "Daffodils." When we see the Daffodils in the gardens we say a last farewell to winter, and as April meets May those who have thoughtfully prepared during the fall will glory in their showers of gold, and the smiling, enchanting faces of the ever-rippling Jonquils and Daffodils. The heart of man must indeed be made of stone if a mass of daffodils planted by the woodside, or the brook, in the border or under the trees, near pines, does not make him rejoice anew in the rejuvenation of nature and remember his childhood days when in field and woods he rapturously sought the first flowers of spring. What a wealth of material the Daffodils offer us for the garden, the fields, the woods, the hills and the valleys, and everywhere that we seek the verdure and the golden dewdrops.

Yellow, to the writer, is particularly welcome in the early spring and late in the fall; for it denotes wealth and glory. A season of plenty. Begin with the golden Crocus, follow this with the richest of Primroses (*Primula Veris Superba*), and then feast on one steady succession of the following flowers: Daffodils, Golden Sweet Alysium, S. E. Tulip Ophir d'Or, Late Tulip Flava and Bouton d'Or, Iceland Poppies, Buttercups, *Doronicum* and *Coreopsis*. When the summer is waning greet the most graceful of all sunflowers: *Helianthus Orgyalis*, the pure yellow *Gaillardia*, yellow Dahlias and, last of all, the golden *Chrysanthemum*.

The word "Daffodil" is generally misapplied by the average amateur. Some call all double forms of trumpet *Narcissi* Daffodils, and all single forms Jonquil. While it is the title for both, "Jonquils" is a name which is erroneously applied by bulbmen to a miniature form of trumpet "*Narcissi*," while the word "*Narcissus*" stands with the beginner for nothing more than the Poet *Narcissus*. I have repeatedly observed when Jonquils were asked for in seed stores, that through the clerk's mistake the miniature Jonquils were furnished, with the result that the buyer was disappointed.

I have, therefore, decided on classifying the different *Narcissi* and hope thus to prevent the usual disappointments.

Daffodils are one of the easiest of flowers to grow for the house and conservatory, and particularly if grown in the prepared fibre.

To grow in the garden always combine them with the lovely *Primula veris Superba*, the most wonderful golden Primrose.

There are two sizes of bulbs usually offered and I think an explanation might serve to enlighten the garden public as to their value and use.

**SINGLE NOSED** is a term applied to a perfect bulb, which at no time produces more than one flower spike, but invariably such a spike produces a perfect flower and is by far the most useful mate-



rial if Daffodils are wanted in pans for the dwelling or conservatory. Double nosed is a term applied to the bulb where one shell contains two or more flattened bulbs; such bulbs produce two or more flowers, but thereby, of course, sacrifice size and perfection. In gardens, of course, we seek masses rather than individual perfection, and so the double-nosed bulb perhaps serves better for out-of-doors. For naturalizing indeed I would greatly prefer the double-nosed bulb. Daffodils have been mentioned so much in preceding chapters that the story of their usefulness has not been overlooked. Now as to the classification. They are separated (1) as to the color of the flower, (2) as to the size of their trumpet, and (3) as to their form.

These classifications should be better known by the amateur, for otherwise he cannot make an intelligent selection and might have disappointments which could have easily been avoided.

1. TRUMPET DAFFODILS are all those whose trumpets or crowns are as long or longer than the perianth segments, and these again are subdivided as follows: (a) "Ajax Bicolor," where the trumpets are yellow and the perianths white. (b) "Ajax White," where both trumpets and perianths are white. (c) "Ajax Yellow," where both trumpets and perianths are yellow.

2. BARRI DAFFODILS are distinguished by the fact that the crown or cup of the flowers measures less than one-third the length of perianth segment.

3. INCOMPARABLE DAFFODILS are flowers whose cup or crown measures from one-third to nearly equal the length of the perianth segments.

4. LEEDSI DAFFODILS are recognized by their chalice or short cups. Perianths are white, cup or crown may be white, cream or pale primrose.

5. DOUBLE DAFFODILS are easily recognized, as they comprise all of the double-flowered forms.

6. JONQUILS are quite distinct, as they have fine grass-like foliage and bear two or three miniature flowers on a tall, wiry stem. They are particularly desirable for growing in pans for the dwelling, either in soil or fibre.

7. MINIATURE DAFFODILS, small, dwarf-growing species which adapt themselves ideally to the rockgarden.

8. THE POET DAFFODIL OR NARCISSUS POETICUS.—This is the common garden Narcissus which is usually in the mind of the amateur when he orders simply Narcissus; the seedsman, though, calls everything Narcissus, and nine times out of ten will fill your order with "Trumpet Daffodils." You can avoid this by giving the full name of your class. This class is especially popular for garden use either by naturalizing in grass or in the border or in woods, in fact, everywhere.

9. POLYANTHUS NARCISSUS OR BUNCHFLOWERED NARCISSI.—No variety in this class is hardy and they are therefore used exclusively for growing in the dwelling or conservatory. For this purpose, though, they are unrivalled as to ease of culture and quickness of coming to bloom. The most popular variety in this class is the "Paperwhite," grown in France and usually arriving here in August.

Grown in pebbles and water they are far superior to the well-known "Chinese Lily." In fibre they grow luxuriantly. The other varieties in this class take longer to bloom, but are larger and come in many shades of yellow.

10. POETAZ NARCISSUS.—Rather new; a cross between the two last classes described and possessing characters and virtues owned by both. In size they are equal to the poets, but produce flowers in bunches like the others. They can be grown easily for the dwelling, but are also hardy, so they are the equal of the poets once more. The slight fragrance of the former has been blended with that of the latter, producing a most pleasing odor.

Except where noted, Daffodil bulbs should be planted in September if the best results are expected.

Dog's Tooth Violet, see *Erythronium*.

### *Eranthis Hyemalis*.

(Winter Aconite.)

The pretty yellow star-shaped flowers appear very early in the spring, being unaccompanied by any foliage, which appears later. This is just as early as the Snowdrop and used exclusively for the garden out-of-doors. It is perfectly hardy and requires little or no protection. The bulbs are very small and arrive in September.

### *Eremurus*.

(The King's Spear.)

This indeed is not a bulbous plant, but strictly speaking a perennial, yet as it is offered in bulb books I mention it here. The root, which is formed by a number of long carrot-like fingers extending in all directions, takes up a diameter of at least 18 inches and consequently in planting it a large hole should be dug. It requires shallow planting in well drained soil and protection of leaves during the winter. It may as well be understood that this plant does not do well in all climates and it is much better to experiment with it in limited numbers before planting them in masses. The smooth, round, massive flower spikes attain a height of six to eight feet, of which the upper part is encircled with a mass of tiny flowers, in white, pink or purple. The roots arrive in November.

### *Erythroniums*.

(Dog's Tooth Violet.)

A beautiful native wild flower abounding in woods and shady situations, and for that reason they must occupy a similar place in our garden. Liberal moisture during the growing season and a protection of leaves during the winter are just what they want in order to feel at home. Their popular name is a misnomer, for they have no similarity to a violet.

The variety *Dens canis* prospers best and can be had in blue, white, pink and purple.

## Eucharis Amazonica.

A plant suited only to the conservatory. It resembles *Amaryllis*, the flowers, remarkable for their pure whiteness and their pleasing fragrance, are carried on a stout stem just like the *Amaryllis*, whose treatment should be copied for these.

## Feathered Hyacinths.

(*Muscari Plumosus*.)

A dwarf growing Hyacinth where the flowers are formed of fine filaments, thus producing the effect of a plume. They may be used for the garden border or grown in pans for the dwelling or conservatory. Color, violet blue.

## Freesia.

Can only be used to flower in the dwelling or conservatory and requires a distinct culture for that purpose. The following are the essential points:

1. Plant early in July or August, not later.
2. Use deep pots, for the new roots which form below the others go deep.
3. After being potted do not store, but place in an indirect light in the dwelling or under the bench in the conservatory until growth shows above the soil.
4. Never force, but grow in a fairly cool temperature.
5. Place fine twigs on the edge of the pots to support the fine grass-like foliage.
6. Have patience; the flower does not make its appearance until five months after planting.

The sweet fragrance of the flower endears it to everyone, and now that we have it in all colors it should appeal to every flower-lover. As a rule either one or two flowers open at one time on a stem naturally, but here is a method by which all of them can be made to open at one time.

When the first flower is ready to open on a stem, cut the full stem and put it in a vessel with cold water and place the vessel in an absolutely dark, cool place.

In three days look at your stem again; it will have grown 3 to 4 inches, the flowers will be enlarged and all will be open.

## Fritillaria Imperialis.

(Crown Imperial).

A subject used exclusively for the garden.

The bulb is fairly large, and in the centre where the flower-spike was the year previous is a big hole. It is recommended to plant the bulb on its side, for if planted upright moisture might fill the centre and decay the bulb. The bulbs do not keep well and should be planted not later than September.

Always plant them in masses for that is the only way they look well. The massive flower-spike growing 2 feet high is crowned with

whorls of drooping bells of many shades. They are usually in bloom about the middle of May.

### Fritillaria Meleagris. (Guinea-hen Flower).

An ideal subject for the woods where they delight, but they are equally valuable in other spots in the garden.

The drooping bell-flowers, which are checkered like a chess-board, are carried on slender stems 8 to 10 inches long.

These flowers appear about the end of April, and when the wind moves the bells they present a most fascinating picture. They appear in colors of grey, purple, lilac and white.

### Galanthus. (Snowdrops).

The first sign of approaching spring is when we greet the first blooms of snowdrops in our garden, for often early in March they greet us through the snow. Most of the bulbs no doubt are used for naturalizing in grass or borders or rockery, but they are equally beautiful and fascinating when grown in pans or pots for the dwelling or conservatory.

Grown in soil or fibre and stored in the regular manner as described for Hyacinths or Tulips, they will bloom indoors in January and February, provided they were planted in September. In the garden I like them best, when planted under ornamental trees in great masses.

### Gerbera Jamesoni and Hybrids. (The Barberton Daisy).

This again is not a bulbous plant, but can be shipped in dry roots, which accounts for its mention here.

In a true sense it should be termed a tender perennial, but really can be made use of both for the conservatory or the garden. The dormant roots are received in October or November and when wanted for conservatory should be planted in an open bench, allowing 8 to 10 inches space between each. Water should at first be given but sparingly until the plants show signs of flowering, when they must be watered freely and occasionally fed with liquid manure. A temperature of 60 to 65 degrees suits them best. They will flower uninterruptedly from February until May, and when the flowering period is gone water must be gradually withheld until they require watering but once in two weeks, simply to keep the roots alive in the soil. They can also be grown in pots but produce only half as many flowers.

When wanted for out of door culture the following method should be adopted. Bury the roots when received late in fall in soil in the cold frame, cover with plenty of leaves, place sash on frame and prevent frost from entering the frame.

About May 15 remove the roots from their winter slumber and plant them in a well enriched garden border, giving each plant a foot of space.

Soon they will grow and produce their wonderful flowers continuously all summer.

Beginning September 15, withhold water or better lift the plants with soil attached; carefully dry in the air, but do not expose to the frost, and then store them away again in the cold frame, as in the previous year.

Gerberas, in my estimation, are the most artistic flowers known in the whole floral kingdom. They are extremely valuable as a cut-flower, for as such will often last ten days. They are a great novelty for the garden and will amply repay for the little trouble they cause.

The original species appeared only in an orange scarlet, but now we can have them in nearly all the colors of the rainbow.

### Gladiolus Nanus.

(A dwarf early flowering Gladiolus).

They are popularly grown in conservatories and fully described under that heading, but they may also be successfully grown as a garden plant by setting the bulbs 4 inches deep out of doors and covering them with fully 6 inches of pine needles. This protection must be removed early in the spring and in its place should be put a mulch of dry manure. Treated thus they will flower early in June.

### Gladiolus Atroviolaceous.

A wild species with deep blue flowers which, on account of its quick flowering qualities, is grown in conservatories for winter blooming. The bulbs should be planted in July or August. Its culture is fully described in the chapter of "Growing for the Conservatory."

### Gladiolus—Large Flowered.

See chapter "Growing for the Conservatory."

### Gloriosa.

(The Climbing African Lily).

Used exclusively for the conservatory.

See chapter "Growing for the Conservatory."

### Grape Hyacinths.

(Muscari-Botryoides).

In appearance like miniature Hyacinths, except that the bells on the spike do not open up.

They are used for every conceivable purpose either in dwelling or conservatory and in every department of the garden. They flower very early and appear in blue and white.

### Helleborus Niger. (The Christmas Rose).

Named from the fact that in its native country it flowers at Christmas out of doors. The foliage is very leathery, lobed and is attractive in itself. In our climate the flowers appear during February and March; are borne on very stout stems, single and cup shaped, of a white, tinted outside with either pink or purple.

For culture, see chapter on "The Winter Garden."

If planted in cold frames and protected with sashes, it is absolutely certain to flower. The roots arrive in November.

### Dutch Hyacinths.

There seems to be a diversity of opinion as to the beauty of a Hyacinth. Such attributes as too stiff, too fat, too plump, too stately-like or too monotonous are freely found in books dealing with the subject, and I have often wondered why a real lover of flowers could not see some beauty in all flowers and forget his personal antipathy. We as humans do not differ much from some of the flowers; not all of us are handsome yet we may have virtues totally overtopping all that beauty could endow us with. And so it is with the Hyacinth. She may not have the grace of the tulip, nor the elegance of the daffodil, but she possesses one virtue not shared by either of the others, namely, a delicious fragrance. For that, in my estimation, she might readily be envied by both.

The Hyacinth attracts me to the garden, for it is the first perfume of spring, and it is the only flower which can boast of the power of appearing in the four main colors, namely, Red, White, Blue and Yellow. But, apart from this sentiment, I find a distinctive beauty in that perfect bell, and in the artistic shades of pinks, lavender, violets and buffs which we cannot produce in our gardens unless we employ Hyacinths. There is still another reason why we should welcome them, for they are the first of the showy spring flowers, preceding the tulips and daffodils.

Just as there is a diversity of opinion as to the beauty of this flower, so there is equal disagreement as to what constitutes "the ideal quality" of the bulbs.

Hyacinth bulbs are offered from Holland in the following grades:

1. Mother bulbs.
2. Real first size.
3. Seedsmen first size, which in reality are second size.
4. Second size, named Bedding, which is really third size.
5. Mixtures, which are really fourth size.
6. Dutch Romans or Miniature.

Mother bulbs are the exceptional mammoth bulbs, of which only a few are found in a field, and for which a very high price is asked, which is reasonable and natural. But this does not constitute a proof

that they are the best bulbs to use, and I have the courage to say that they are not. Mother bulbs invariably are overgrown, and instead of producing one perfect spike, they produce two, three or more, but imperfect spikes, and the whole appearance of the plant speaks of too much prosperity.

The perfection of a Hyacinth flower can only be produced through a single spike, growing erect, where every bell is perfect in outline, and as large as it can possibly be grown.

Such bulbs are known as "Perfect First Size." They are sound, plump, heavy and sure to give satisfaction.

Hyacinths are used not only in the garden, but they are undoubtedly the most satisfactory material for pots and pans in growing for the dwelling and conservatory. A single bulb of Hyacinths does not look bad in a 5-inch pot. The miniature Hyacinths are best grown in shallow seed pans. Hyacinths are quite successfully grown in fibre and also in bottles with pure water. Not all varieties will suit, though, for the latter purpose.

In potting Hyacinths remove the little off-shoots at the base of each bulb; it will help to produce a better flower.

### Roman or French Hyacinths.

These are not suitable for garden work, as they are not hardy, but are splendid for growing in pots, pans or flats in the house or conservatory, and by timely planting can readily be had in bloom by Thanksgiving. From a single bulb are produced from three to five graceful, slender flower stems which are dressed with loosely arranged medium-sized bells. Splendid for cutting and exquisitely scented.

### Iris.

This is a large family and to treat it intelligently it is necessary for me to subdivide it into its classes.

### Bulbous Iris.

The following belong to this class: English, Dutch and Spanish. They have narrow grass-like leaves and produce their flowers on slender, wiry stems. All three may be grown either in the conservatory or for the open garden. The culture for the former purpose has been fully described under its respective heading. For growing in the garden select a rich spot, plant the bulbs in September, allowing three to four in space between each bulb and cover with leaves during winter. The Dutch Iris are very similar to the Spanish Iris, but will flower two weeks earlier. The English Iris are not quite as tall, but have broader flower petals and flower long after the Spanish Iris, thereby extending the flowering season. Spanish Irises are a beautiful material for cutting, and as they are exceedingly inexpensive should be grown by the thousand. They usually last two years in the garden.

### Rhizomenous Iris.

**IRIS PUMILA.**—The earliest of this class to flower, growing very dwarf with short leaves like that of the German Iris, with flowers very similar, appearing in early April. On account of its dwarfness it is recommended both for the rockery or as edging plant to hardy borders.

**IRIS GERMAN.**—The well known fleur-de-lis, which is found in almost every garden.

**IRIS SIBERIAN.**—Long, narrow leaves in dense clusters, from which rise far above them a great many flowers, rather small and narrow-petaled, but owing to its freeness of flowering it is very effective.

**IRIS KAEMPFERI** (Japan Iris).—The most magnificent of all Iris and the latest to bloom. The flowers are composed of broad spreading petals (either three or six to a flower), and it is nothing unusual for a flower to measure from 8 to 10 inches across.

All of this class are for garden use exclusively and should be planted in August or September for best results. All except the Japan Iris love a fairly dry situation, but this must have abundant moisture in summer, but not in winter.

### Ixia.

Belonging to the Iris family, but the flowers have no resemblance to it. The upper part of a straight, wiry flower-stem 20 to 24 inches long is dressed with bright-colored, cup-shaped flowers facing all in one direction and being enhanced with attractively colored spots in the centre of the individual bloom.

They are grown in conservatories exclusively and for their culture see chapter "Growing in the conservatory."

### Lachenalia.

A dwarf-growing pot plant, raised in a conservatory. From the centre of a few tulip-like leaves at the base of the plant arises a stout flower-stem which is dressed with long, drooping, tube-shaped flowers. See Culture, "Growing in the conservatory."

### Leucojum, see Snowflakes.

### Lilies.

An unusually large and interesting family of flowers, upon whose beauties, value and culture a whole book alone could be written.

I shall confine myself here to a list of sorts.

1. For the dwelling.
2. For the conservatory. (a) Fresh bulbs; (b) cold storage bulbs.
3. For the garden.

1. **FOR THE DWELLING.**—The *Lilium Harrisii*, or better known as the Bermuda Easter Lily, is the only one suited for this purpose. Plant the bulbs in August and follow culture as given for conservatory.



2. FOR THE CONSERVATORY.—(a) Fresh bulbs. The following varieties are usually grown under glass:

	Season of Planting.
Lilium Harrisii .....	August
“ Longiflorum (Bermuda) .....	“
“ Longiflorum (Japan) .....	September
“ Formosum .....	“
“ Long. Giganteum .....	October
“ Multiflorum .....	“
“ Plentiflorum .....	“
“ Candidum .....	September
“ Auratum .....	November
“ Speciosum Album .....	“
“ “ Roseum .....	“
“ “ Rubrum .....	“
“ “ Melpomene .....	“
“ “ Magnificum .....	“

(b.) Cold Storage Bulbs.

Lilium Long. Giganteum.....	} See culture as given in Growing for the Conservatory.
“ Auratum .....	
“ Speciosum Album .....	
“ “ Roseum .....	
“ “ Rubrum .....	
“ “ Melpomene .....	
“ “ Magnificum .....	

3. FOR THE GARDEN.—In growing lilies out of doors, we should provide above all a good rich soil with perfect drainage. The former is easy to provide, but the latter requires careful attention, for with most lilies it is even necessary to provide the drainage close to the bulb, and this is accomplished by enveloping the entire bulb in sand. Certain bulbs of lilies show the spot where the flower spike was the year previous, and such bulbs are best planted on the side; other bulbs have a loose formation of scales, and these are also best planted on the side. Some of our native lilies, like *Lilium Superbum* and *Lilium Canadense*, love moisture and partial shade, and for this reason may be used for naturalizing on the outskirts of woods or in plantings of *Rhododendrons*. All lilies love a cool soil, and this can be produced by covering the surface with 3 inches of leaf-mould. *Lilium Auratum* of late years is much infested with a disease, which accounts for its short life and indifferent success. The following list can be relied upon to succeed in most parts of this country:

Lilium	NAME.	SEASON OF BLOOM.			COLOR OF FLOWER.	REMARKS.
		HEIGHTS.	BLOOM.			
"	Auratum	4 feet	August	White, with golden band	Plant 12 inches deep.	
"	Patyphyllum	4 "	"	Spotted flowers	" "	
"	Rubro Vittatum	4 "	"	White, deep red band	" "	
"	Wittel	3 "	"	White, band of yellow	" "	
"	Batmanni	2 "	"	Apricot	Plant 6 inches deep.	
"	Browni	2 "	June-July	White, outside brown	Plant 12 inches deep.	
"	Canadense	3 "	July	Yellow, Spotted brown	Loves Moisture.	
"	Rubrum	3 "	"	Inside yellow, outside red	" "	
"	Candidum	4 to 5 feet	June	Pure white	Plant 6 inches deep.	
"	Elegans, see Thunbergianum.					
"	Excelsum	4 to 5 "	June-July	Nankeen yellow	Loves woodland.	
"	Giganteum	10 feet.	July-August	White	Loves moisture.	
"	Grayi	4 "	July	Red, spotted purple	Plant deep.	
"	Hansoni	4 "	June-July	Yellow, spotted black	Does well everywhere.	
"	Henryi	6 to 7 feet.	August-Sept.	Orange yellow	Loves sandy soil.	
"	Kramerl	2 1/2 "	July-August	Delicate pink	Plant deep.	
"	Longiflorum Giganteum	2 to 3 "	July	White	Needs Drainage.	
"	Martagon	3 "	June-July	Light spotted purple		
"	Album	4 to 5 "	"	Pure white		
"	Myriophyllum	3 to 4 "	July	White, outside striped brown	Very hardy.	
"	Pardallinum	5 "	"	Orange, spotted crimson		
"	Parryi	3 "	"	Citron, spotted brown	Loves moisture.	
"	Philadelphicum	1 1/2 "	"	Scarlet		
"	Rubellium	2 "	June	Pink	Plant deep.	
"	Sargentiae	3 to 6 "	July	White, outside brown		
"	Speciosum Album	3 "	August-Sept.	White	Plant deep.	
"	Magnificum	3 "	"	White, spotted flushed red	" "	
"	Melpomene	3 "	"	"	" "	
"	Roseum	3 "	"	"	" "	
"	Rubrum	3 "	"	"	" "	
"	Sulphureum	6 "	September	Rich yellow		
"	Superbum	6 "	July-August	Orange crimson	Very hardy.	
"	Tenuifolium	1 1/2 "	June	Bright scarlet	Plant shallow.	
"	Thunbergianum Elegans	1 1/2 "	June-July	Scarlet		
"	Tigrinum	4 "	August-Sept.	Orange scarlet		
"	Umbellatum	2 "	June-July	Bright crimson		
"	Wallacei	2 "	August	Apricot	Plant deep.	
"	Washingtonianum	4 "	June-July	White, spotted red		

## Lily of the Valley.

Too popular and well known to require description. The culture for the dwelling or conservatory has been fully described under the respective headings. The outdoor culture of this flower has not been mentioned previously and requires a little more detail.

For this purpose purchase field-grown clumps and not pips, as they are far less expensive and are better adapted for natural appearance of the bed. Clumps when set out should not be set more than two inches below the surface. They should be covered with sand or sandy loam instead of with regular garden soil, and leaves should be heaped over a new planting. Plant in November if the clumps are imported, or in October if home-grown. Select a shady spot and, if possible, plant *Colchicums* between them so as to have a double flowering season in the same spot.

## Musk Hyacinths. (*Muscari Moschatum*.)

A miniature species with yellowish flowers, possessing a strong scent of musk. They may be grown in pots for the dwelling or in gardens, as they are perfectly hardy.

## Muscari.

A group of spring flowering bulbs with close clusters of small bells on six-inch stems, which have earned for them the common names of "Grape Hyacinths," "Feathered Hyacinths" and "Musk Hyacinths." See their description under these common names.

## Montbretias.

August flowering, sun-loving bulbs in shades of yellow, orange and red. Their fine foliage and shape of flower make them appear like miniature *Gladiolii*. The free flowered lasting arching sprays produce a most effective picture in the border or open garden. Plants grow from two to three feet high. They must be planted in masses of one color to be effective. Plant bulbs in October, two to three inches deep, and cover with leaves. I do not suggest growing them in pots, but prefer them in the garden only.

## Narcissii, see Daffodils.

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## Nerine.

A species of *Amaryllis*, grown exclusively in the conservatory. The flowers, which appear without foliage late in the fall, are produced in whorls on a straight leafless stalk 18 inches high. For culture see "Growing in the Conservatory."

### Ornithogallum.

A native hardy bulb better known as Star of Bethlehem. Between a great cluster of grassy leaves appear the numerous bright, star-shaped white flowers early in May. They are used in garden for naturalizing.

### Oxalis.

A popular pot plant grown for the dwelling. The branches being of drooping nature it is invariably seen growing in a hanging basket. As its culture is quite distinct from all others, it was not mentioned previously. Secure your bulbs in July or August (not later) and of all varieties except the "Bermuda Buttercup" plant a dozen bulbs in a six-inch pot; of the latter only four. After potting bring right to the dwelling and place in indirect light until the first growth appears, after which full light must be given. Grow always cool. The mistake that is usually made is keeping the pots in dark storage, which invariably spells failure.

### Paeonies.

A hardy perennial plant for the garden and one of the most lovely and showy. It is so well known that no further description is necessary, but I believe a few points about its culture might be of interest.

First.—Paeonies should only be planted in the fall between September and November.

Second.—They require a sunny location and should receive a liberal supply of stable manure about 12 inches below the root.

Third.—The crown of the root should not be more than three inches below the surface.

Fourth.—If a growing plant is set out now it might be left undisturbed in the ground for seven years. After that it should be lifted every third year and divided into four each time.

### Pushkinnias.

If of all the bulbs for growing in masses in the garden I could have but one, I should surely choose the "Puschkinnia," for its color is most lovely, a delicate clear sky-blue, which the Hollander describes as delft-blue. The whole plant reminds you of a miniature hyacinth with hundreds of blossoms on a stalk. The many flowers require a long time to develop, which produces a longer flowering season for this plant. In the past it has been my good fortune to do a great deal to introduce this flower in this country, and yet I am sure there are millions of flower lovers here who have never heard of it. Just try it and sing its praise to others. They are the most inexpensive bulbs on the market, costing less than a cent a piece.

### Ranunculus (Bulbous).

The class called "Turban" is the best of all and more popularly used. These French Buttercups with large double flowers in all colors

remind you almost of roses. They are only suitable for growing in a cold frame or conservatory. See their culture in the preceding chapters.

### Sternbergia.

A variety of *Amaryllis* classed amongst "Fall Flowering Bulbs." In form it is exactly like a Fairy Lily, in color it is golden yellow. The bulbs are planted in the garden in September, the flowers appear in October and the foliage the following spring. Select a sheltered nook and protect the bulbs with leaves during the winter.

### Scilla.

An extensive family of bulbous flowers which are mostly used for the garden, but may also be grown in pans for the dwelling. In order to explain the uses of each class it is necessary to recall them.

*SCILLA SIBERICA*.—Commonly called Blue Squill, used in lawns, rockeries, woodlands and borders. Appears in blue and white.

*SCILLA BIFOLIA*.—Almost identical to the foregoing.

*SCILLA CAMPANULATA*.—Known as Wood Hyacinths, being much taller and having flowers more like Hyacinths. Used almost entirely for naturalizing in woods or hardy borders.

*SCILLA NUTANS*.—The common Bluebell for woodland planting. In form similar to *Campanulata*.

### Sauramatum.

See *Callas* and "Growing as Air Plant."

### Schizostylis Coccinea.

(Kaffir Lily.)

Grown exclusively for the conservatory, as it is not hardy here. Plant six roots in a six-inch pot late in the fall and keep them growing continuously. The flower-spikes, growing two feet high, bear a number of scarlet lily-like flowers the following year.

### Snowdrops, see *Galanthus*.

### Snowflakes.

(*Leucojum*.)

Just an enlarged Snowdrop, but appearing at different seasons. *L. Vernum* flowers in April, *L. Aestivum* during May and June, and *L. Autumnale* in the autumn. They are dainty for rockeries and borders.

### Spirea.

(*Astilbe*.)

Not really a bulbous plant, but offered in all bulb books, which accounts for its mention here. It is utilized in two ways:

1. As a conservatory plant; see culture under that heading.
2. As a hardy perennial for the border. In both instances it should be planted in November, as the flowers appear late in May.

From the centre of a graceful spreading foliage which remains within two feet of the ground arise a number of wiry, straight stems four feet high, which branch freely, producing enormous sprays of plume-like flowers.

### Trillium.

(Wood Lily.)

Especially recommended for hardy border or Woodland planting. Almost the first thing to flower in the woods. The large saucer-shaped white flowers are very attractive and the whole plant grows only about six inches high.

### Trollius.

(Double Buttercup.)

A hardy perennial suitable for borders, rockeries, woodlands or brooksides. The perfect globe-shaped double flowers in yellow or golden are the glow of the garden toward the end of May. The roots should be planted in October.

### Tropaeolum.

A slender vine grown exclusively for conservatories. Fully described in one of the preceding chapters.

### Tulips.

The word alone is sufficient to recall to our minds all the visions of gay loveliness which one can only experience at sight of a glorious display of tulips. Their use through proper selection extends into every department of gardening and so we must consider them in order to make intelligent selection for the purpose in mind.

**GROWING FOR THE DWELLING.**—(a) Single Early Tulips: Not all varieties are suitable for this purpose, but a great many are. If your bulb book does not give you this information, let your seedsman suggest, for he knows which are best for you. This suggestion also holds good with all the other types mentioned here. (b) Double Early Tulip. (c) Darwin Tulips.

**GROWING FOR THE CONSERVATORY.**—All of the foregoing.

**GROWING FOR THE GARDEN.**—Every variety you will find offered.

**FOR THE HARDY BORDER.**—Darwin Tulips, Cottage Garden Tulips, Breeders, Bizzarres, Rembrandt, Bybloemen, Parrots and species.

**FOR THE ROCKERY.**—All the species, for they love such a situation.

**FOR THE MEADOWS.**—*Tulipa Sylvestris*.

**FOR THE WOODS.**—Nearly all of the species.

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## THE CLASSES OF TULIPS.

### Darwin Tulips.

The Tulip of Today and the Tulip of Tomorrow.

No other bulbous flower was ever received with greater acclaim than truly this "Queen of All Tulips." In her royal splendor she outshines all her companions, and with her majestic appearance she wins the admiration of all flower lovers and instant approval of those who see it for the first time.

"Darwins" are a class of Tulips which flower long after the other tulips have flowered, and in the vicinity of New York are at their best between May 15th and May 30th. They are slow in developing and, therefore, last much longer. The truly gigantic flowercups are borne on stout, straight stems, which rise far above a broad foliage and which uncommonly attain a height of two to three feet. The flowers are uncolored and have as their charm a base of a different color. To step into the garden at the noon hour and peek into the cups of Darwin Tulips is a feast to the eye, wondrous to behold, never to be forgotten. In the garden they may be planted as regiments in massive beds, but more artistically in proper color arrangement in irregular groupings as a ribbon to shrub borders or as clumps in hardy borders. They are hardy and may be left in the ground for at least three years in succession. To take their place during summer while they are dormant sow *Lavatera* in their place after the flowers have gone by, and they can then be left undisturbed while no vacancy is formed by their sleep.

For pot culture they are splendid and are just the ideal Tulip to grow for Easter.

### Rembrandt Tulips.

This new class of late Tulips is an offspring of the Darwins. They are identical in character, forms, habits and other virtues, and differ only in one feature, namely, in colorings. All flowers are either striped, feathered, blotched or penciled and are wonderfully beautiful.

In massive clumps in front of shrubbery they are a picture and for cut purposes they excel all other Tulips.

### Cottage or May Flowering Tulips.

A class of Tulips which are fairly tall, are massive in texture, produce enormously large flowers and appear just previous to the Darwins. They may be used for garden bedding or shrubbery. In this class we have all colors and shades, and for this reason many varieties can be used advantageously in blending with Darwin Tulips to create artistic color blendings.

### Breeder Tulips.

Breeder Tulips are a class of out-door Tulips which flower as late as the Darwins, which have tall stems and noble large elongated

flowers of solid art shades, such as purple, maroon, terra cotta, buff and bronze, and as a companion to the gay Cottage Tulips they are unsurpassable. The gardener who loves rare colors in flowers will appreciate these lovely beauties.

### Bizarre Tulips.

One of the oldest races of Tulips grown extensively in France and Holland in the beginning of the seventeenth century, and this class was responsible for the famous Tulip craze in 1635. They are all queerly striped and variegated, flower late on tall stems and all have dark stripes on yellow ground.

### Rose Bybloemen Tulips.

These are very similar to the foregoing, except that the flowers have rose stripes on a white ground.

### Violet Bybloemen Tulips.

Exactly like the preceding class, but the flowers have violet stripes on white ground.

### Parrot Tulips.

A very interesting class of Tulips. Their name has been derived from the colorings of the flowers. They are late in blooming and have flowers with cut and fringed petals. While the flowers are large, the tall, slender stems are not stout enough to support them, and for this reason they are best suited for the shrub or hardy border. Parrot Tulips can never be guaranteed a flower to every bulb, and on account of this should be planted thickly in masses.

### Single Early Tulips.

The gayest of our garden flowers in the early spring. They are used to produce a blaze of blossom for two weeks toward the latter part of April and beginning of May. They are planted by themselves as regiments, and when they have passed by they are taken up to make room for our summer flowers.

This treatment pays no heed to their individual beauty or form. Each plant is considered only as contributing to a great mass of color, and certainly these masses of color are very splendid.

They are now so plentiful and inexpensive that every garden can be made glorious with little outlay.

For growing in pots for house blooming during the winter months this class surpasses all others, and certain varieties are especially suited for this purpose.

Some of the older sorts, such as "Artus," "Jagt von Delft" and others have outlived their usefulness and should not be offered any more.



## Double Early Tulips.

Double Tulips follow the single Tulips in time of blooming, extend the flowering season and last much longer in bloom. Some of the newer sorts are equal to the choicest paeonies, and the writer has often wondered why such magnificent flowers should not be found in every better garden. Many a morning I have spent in silent admiration gazing at these beauties and watching them spread their petals to unfold their grandeur. How well I was repaid for my patience!

We all see much grace in single flowers, but nevertheless I revere the double Tulip when it revels in its blaze of glory.

## Species of Tulips.

Exquisite for their dainty or rich color, their fantastic or rather artistic form and their peculiar charms. Interesting because they are natives of Asia Minor and Central Asia, and found there in the valleys and on the slopes. Valuable because they constitute one of the hardiest classes of Tulips and, therefore, are ideal for hardy borders, rockeries, woods or naturalizing. The petals are usually pointed or reflexed. The foliage differs materially from the regular kinds, as some are almost threadlike. Easy of cultivation, and where ideal conditions exist they will readily increase and be permanent.

The following varieties I recommend:

**AUSTRALIS.**—Yellow shaded brown, sweet scented.

**CLUSIANA.**—One of the daintiest colored and most useful Tulips. The slender stem grows 10 to 12 inches long and carries a long, narrow, lily-like flower of a delicate pink, broadly margined white; inside pure white with violet base. For cutting I do not know of a more exquisite flower or one which would produce a more charming effect. Can be readily forced.

**CORNUTA.**—Narrow twisted flower petals of red and yellow; very odd and artistic.

**FLORENTINA ODORATA (SYLVESTRIS).**—Pure yellow, drooping flowers. Exceedingly fragrant and known also as the sweet wild English Tulip. Fine for naturalizing.

**FOSTERIANA.**—Brilliant vermilion scarlet. Center marked yellow or black. Enormous flowers with long pointed petals. A very striking new species from Bokhara. Flowers late in April.

**GALATICA.**—Light yellow with a bright green base.

**GREIGII.**—A very conspicuous flower of orange scarlet, sometimes showing a tone of deep yellow. Foliage spotted with dark brown. Rather uncertain as to blooming.

**KAUFMANNIANA.**—Palest primrose tinged rosy red on outside. Enormous flower of handsome form with broad, reflexing petals. The earliest of all Tulips, flowering late in March.

**LINIFOLIA.**—Small flowers of brilliant vermilion with extremely narrow willow leaf-like foliage; very interesting.

**LOWNEI.**—Delicate pink with yellow base; a most curious form. Splendid for rockery.

**MARJOLETTI.**—Pale yellow, shaded red at base. Small, but elegant flower.

**MAURIANA.**—Glowing scarlet, yellow base. From middle till end of May.

**OCULIS SOLIS (COTTON TULIP).**—Vermillion, bordered yellow, black base.

**PRAESTANS (SUAVEOLENS).**—Brilliant vermilion scarlet; three to five flowers on a stem.

**SPRENGERI.**—Mrs. Francis King in her description of this flower says: "While among the yellow Tulips, Sprengeri, the latest of all Tulips to bloom, must not be overlooked. To be sure it is not a yellow, it is an orange scarlet and thereby related to the yellows. This Tulip I have growing among close packed roots of a pearl-gray German Iris. The two come into flower simultaneously. The Tulip is quite as tall as the Iris and the two flowers are strikingly good together. Sprengeri grows taller with me than any other Tulip. It is a persistent grower, too, appearing year after year as do almost no others."

**TUBERGENIANA.**—One of the largest flowered Tulips in existence. Brilliant vermilion with sharply defined black base. The flowers resemble a monstrous red lily and when seen at noon present a most marvelous sight. Flowers about May 15th and is showy among lower evergreens. Height, 14 inches.

**TURKESTANICA.**—White, with many flowers on a stem.

**VIRIDIFLORA (THE GREEN TULIP).**—Flowers green edged yellow; large, odd and handsome.

### Watsonia.

Can only be grown in a cool conservatory. In appearance it is very much like a gladiolus. For its culture see "Growing for the Conservatory."













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