

UNITED STATES SCHOOL GARDEN ARMY
DEPARTMENT OF THE INTERIOR

U · S · S · G

BUREAU OF EDUCATION
WASHINGTON

A MANUAL FOR SCHOOL-SUPERVISED
GARDENING *in the* NORTHEASTERN STATES
PART TWO: FLOWERS



ADMINISTRATIVE OFFICIALS.

FRANKLIN K. LANE,
Secretary Department of the Interior.

PHILANDER P. CLAXTON,
Commissioner Bureau of Education.

JOHN L. RANDALL, *Director.*

REGIONAL DIRECTORS.

CLARENCE M. WEED,
Northeastern States.

FREDERICK A. MERRILL,
Southeastern and Southwestern
States.

LESTER S. IVINS,
Central States.

CYRIL A. STEBBINS,
Western States.

ETHEL GOWANS,
Specialist in Field Demonstration.

REGIONAL AREAS.

Northeastern States: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia.

Southeastern States: Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee.

Southwestern States: Missouri, Arkansas, Louisiana, Kansas, Oklahoma, Texas, Colorado, New Mexico.

Central States: Ohio, Indiana, Illinois, Kentucky, Michigan, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Nebraska.

Western States: Montana, Idaho, Wyoming, Utah, Nevada, Arizona, Washington, Oregon, California.

A garden for every child—every child in a garden.

A MANUAL FOR SCHOOL-SUPERVISED GARDENING IN THE
NORTHEASTERN STATES.

PART TWO—FLOWERS.

Lesson 126—CHINA ASTERS FOR EXHIBITION.

The locally raised lot of floral exhibition offers proof for the best display of China asters. Thousands of members of the United States School Garden Army will be called upon to care for

A MANUAL FOR SCHOOL-SUPERVISED GARDENING IN THE NORTH-
EASTERN STATES.

PART TWO—FLOWERS.

CONTENTS.

- | | |
|--|--|
| Lesson 126.—China Asters for Exhibition. | Lesson 140.—Planting Tulips Indoors. |
| Lesson 127.—Making Flower Pictures Indoors. | Lesson 141.—A Pot of Crocuses. |
| Lesson 128.—Flowers for Thanksgiving. | Lesson 142.—The Story of My Hyacinth. |
| Lesson 129.—Colchicums: The Flowers that Bloom in the Bag. | Lesson 143.—Hurrying Up Jack-in-the-Pulpit. |
| Lesson 130.—Making Flower Pictures on the Walls. | Lesson 144.—Asparagus for Indoor Beauty. |
| Lesson 131.—Growing Geraniums from Cuttings. | Lesson 145.—The Madeira Vine. |
| Lesson 132.—Little Gardens Indoors. | Lesson 146.—Annuals, Biennials, Perennials. |
| Lesson 133.—Ordering Bulbs for Forcing. | Lesson 147.—Growing Your Own Plumose Asparagus. |
| Lesson 134.—Planning a Bulb Sale. | Lesson 148.—Bringing in the Spring Wild Flowers. |
| Lesson 135.—Bulbs for Christmas Presents. | Lesson 149.—The Hardy Annuals. |
| Lesson 136.—The Sweet-scented Jonquil. | Lesson 150.—Sweet Alyssum. |
| Lesson 137.—Planting Tulips Outdoors. | Lesson 151.—On Double Tulips and Other Flowers. |
| Lesson 138.—Hyacinths for Winter Beauty. | Lesson 152.—Ferns to Grow Indoors. |
| Lesson 139.—Growing Bulbs in Fiber. | Lesson 153.—Using the Japanese Flower-holders. |
| | Lesson 154.—The Beautiful Gladiolus. |

Lesson 127—MAKING FLOWER PICTURES INDOORS

By growing flowers in the windows in a classroom should make a picture to which the eyes and hearts of the school and neighbors are attracted. Flowers in the window of a school is very easy if the soil is prepared with care and attention. It becomes increasingly difficult as one grows older and more experienced. It is all in the way the flowers are to be raised. The first step is the choice of the right kind of soil and of the right kind of water. The second step is the choice of the right kind of seeds and the third step is the choice of the right kind of water. The fourth step is the choice of the right kind of soil and the fifth step is the choice of the right kind of water.

THE MANUAL FOR SCHOOL SUPERVISORS ADMINISTERING IN THE NORTH
EASTERN STATES

PART TWO - CONTENTS

CONTENTS

Lesson 10 - Planning for the future	Lesson 17 - The school's physical plant
Lesson 11 - The school's budget	Lesson 18 - The school's financial management
Lesson 12 - The school's personnel	Lesson 19 - The school's health and safety
Lesson 13 - The school's community relations	Lesson 20 - The school's public relations
Lesson 14 - The school's evaluation	Lesson 21 - The school's research
Lesson 15 - The school's professional development	Lesson 22 - The school's continuing education
Lesson 16 - The school's leadership	Lesson 23 - The school's future

A MANUAL FOR SCHOOL-SUPERVISED GARDENING IN THE NORTHEASTERN STATES.

PART TWO—FLOWERS.

Lesson 126: CHINA ASTERS FOR EXHIBITION.

Practically every fair or floral exhibition offers prizes for the best displays of China asters. Thousands of members of the United States School Garden Army will be called upon to compete for these prizes. A few suggestions as to the selection and arrangement of the displays may be helpful.

There are several types of China asters, each so different from the others that it is practically a separate king of flowers. The most important of these types are:

The Comet type, including the astermums and the Mikado asters.

The late-branching asters.

The Victoria asters.

The King asters.

The single asters.

To get the most beauty from a display of China asters the first requirement is to have each type separate. A few flowers of the Giant Comet varieties or the late-branching varieties displayed by themselves are much more attractive than a mixture of different sorts in the same vase or flower jar.

The next requirement in such a display is that each flower shall be as perfect as possible. All the types named above, except the single asters, require that the flowers shall be so completely double that the center is hidden by the petals. This is the point first considered by good judges, and the gardener who wishes to win a prize should be sure that every flower is perfect in this respect—showing none of the yellow disk florets in the center because they are wholly hidden by the petals.

The size of the flowers is also likely to be considered by the judges. One should, of course, take the largest blossoms, with as long stems as possible. The size can be increased by choosing certain growing buds on the plants and pinching off the buds below. This is called "disbudding." It is generally practiced by florists who desire large flowers of almost any kind.

Many prizes are lost every year because the conditions laid down in the premium lists are not followed. Always study the premium lists and arrange the displays according to the requirements. If six flowers are called for, show six, not five or seven.

Lesson 127: MAKING FLOWER PICTURES INDOORS.

Any adequate display of cut flowers in a receptacle should make a picture in which the lines and colors of the stems and blossoms form the dominant center of interest. Success in the making of such a picture is very easy if one will be content with simplicity and naturalness, but becomes increasingly difficult as one strives after complexity and artistic finish.

In all pictures certain harmonies are to be desired. In flower pictures the chief of these are the harmonies of line and of color. The harmonies of line are determined by the habit of growth of the plants used and the forms of the leaves and blossoms. The simplest way to secure beauty in this respect is to confine the display to one type of flower and see that the lines of the stems and blossoms conform to the lines of the receptacle. Thus a few large roses

on long straight stems may be displayed to great advantage in a tall cylindrical vase while smaller roses on shorter fragile stems are much more effective when shown in low broad rose bowls.

Harmony of color in a flower arrangement requires simply that the flowers placed together shall not be of discordant tones, and that they shall combine attractively with the color of the receptacle. The latter is indeed of greatest importance in the making of the flower pictures, for if not simple in form and modest in color it will spoil the beauty of any flowers with which it is used.

Pottery jars and vases useful as flower receptacles may be had in an almost bewildering variety of sizes, shapes, and colors and at a great range in price. The more costly forms are not by any means always the most beautiful and one can often get for a few cents jars of good form and color that serve admirably for holding flowers. By a little searching of the city shops one can find good flower jars at prices to suit almost any purse.

Before starting on such an errand, however, it is well to have in mind some very definite ideas of the good and bad points in a receptacle for cut flowers. Although most people seem to think that any old thing from a water pitcher to a fruit jar will answer for this purpose, there is really as much opportunity for discriminating taste as in a picture. The receptacle is indeed to be used as a part of many pictures in which the glowing tones of living tissues are to be the medium of expression, and it is highly desirable that its form and color combine with the flowers it holds in a harmonious composition.

As regards form two chief types of flower receptacles are needed in any home where cut flowers are tastefully arranged—the tall and slender and the short and broad. The first are necessary to display the graceful lines of lilies, irises, gladioli, and other slender long-stemmed flowers; the second to show to advantage roses, peonies, asters, sweet peas, and other short-stemmed blossoms. Of course various intermediate forms can be used to advantage for such flowers as daffodils and other types of the narcissus, but in general the most useful jars belong to the tall or the broad type.

The commonest fault with the tall flower jars is their lack of an adequate base, a fact which leads them to fall over too easily. In selecting the vase this is an important point to bear in mind. In general the base should be broader than the top, for when in use the flowers projecting high above it make any top heaviness more pronounced and trouble results.

The cylindrical forms are among the most useful of the tall flower jars. They are found in a great variety of sizes and decorations and may be used to advantage with many kinds of flowers. Such cylindrical jars are very effective when filled with lilies or other large, long-stemmed flowers.

Lesson 128: FLOWERS FOR THANKSGIVING.

When school opens in September flowers are so abundant that we are likely to forget how soon Jack Frost will come along and spoil their beauty. But he comes just the same, and before Thanksgiving he leaves us only brown and blackened stems. So if we want flowers to decorate the dinner table on Thanksgiving Day, we had better prepare for them at least by the first week in October.

The paper-white narcissus is the easiest flowering bulb to have in blossom for Thanksgiving.

TO GROW IN WATER.

Find an old ginger jar, a hyacinth glass, an empty olive or pickle bottle, or anything that holds water and has a good space for the roots. Fill this with water, set the bulb on top so that the water touches the bottom of the bulb. Set it away in a cool, dark closet for two weeks, keeping the water at the right level. Then bring to the light and warmth in a window, in a room that does not get too hot. Leaves will soon come out of the white sheaths, and the flower stalk will appear a few weeks later.

TO GROW IN PEBBLES.

Instead of a jar in which one bulb sets upon the top, choose a broad bowl. Fill with small clean pebbles, and water, and set several bulbs down among the pebbles. This may or may not be placed in a cool closet for two weeks. The bulbs will come along nicely if not forced too rapidly.

TO GROW IN FIBER.

Many of the seed houses are offering at small cost a specially prepared fiber for the growth of bulbs. Choose a small water-tight flower jar of dull color. Fill the jar half-full of this fiber, place one or more bulbs in the jar, fill in around them with more fiber, and add water enough just to soak the fiber. Invert the jar to pour off the extra water. Set away in a cool closet for two weeks, then bring to a light room for growth.

Lesson 129: COLCHICUMS: THE FLOWERS THAT BLOOM IN THE BAG.

There is a strange flower called Monarch of the East that grows from a very large bulb which you can buy of the seed houses. The bulb looks something like a flat turnip. The curious thing about it is that it sends up a large flower stalk without even being planted. It looks very strange to see the bulb resting on a table where there is no soil and yet blossoming just as if it were planted in the ground.

There is another kind of bulb which is easier to get that insists on blossoming before it is planted. It is one of the most interesting kinds of flowers you can have around in the fall. You should get it as early as possible or it will bloom in the bag at the florist's shop. You should be able to buy the bulb for about 5 cents and you will get more fun out of it than any 5-cent prize package you ever bought. This strange plant is called the Autumn Crocus by most people, though the wise men have a special word for it—*Col-chi-cum*. The bulbs are quite large, and each one will send out one large beautiful blossom after another for two or three weeks. The blossoms look like the crocus flowers we see in early spring.

When you get the bulb you do not even need to plant it but can leave it on the table anywhere and the blossoms will continue to come. As the last blossom fades it is worth while to plant it in a good-sized flower pot, because then you can see it send up the green leaves and you will know that the flowers are naturally followed by the leaves.

Instead of planting in a flower pot and keeping it in the house, you can plant the bulb in the garden outdoors. In the latter case the leaves will probably not come up until the warm weather of next spring. If there is no florist's shop in your town send to some seedman for a bulb catalogue and look for Autumn Crocus in the list of bulbs. The sooner you get these bulbs the more enjoyment you will have, for they often begin to blossom late in August.

Lesson 130: MAKING FLOWER PICTURES ON THE WALLS.

A flower exists as an expression of beauty. But its beauty cannot be expressed unless it has room to show itself. One of the easiest ways to find space in a crowded schoolroom is to use the wall vases or wall pockets for holding either cut flowers or living plants. You can thus get the effect of a living picture against a background where it shows to advantage.

These wall vases are now offered for sale in many of the shops of the larger cities. They vary greatly in form, size, color and decoration, but all have a hole on one side near the top by means of which they can be hung upon a hook in wall or doorway. Consequently one can use them as jardinières for living plants or fill them with water to hold cut flowers, displaying the combination of flowers and receptacle in much the same way one hangs a picture upon the wall.

There is practically no limit to the variety of cut flowers that may be displayed to advantage at different times in these receptacles, provided one has several varying in shape and size. From spring till fall the spirit of the outer season may be suggested on the walls indoors by

utilizing flowers from garden, field or forest. The early daffodils are particularly pleasing and suggestive when shown in a wall vase against a harmonious background. This is also true of the beautiful Poets Narcissus. A little later the decorative blossoms of the various sorts of Iris become available, to be followed by the beautiful show of June roses, the delicate glory of the poppies, the stately elegance of the lilies, the graceful charm of the sweet peas, the profuse bloom of the China asters, and the bizarre beauty of the cactus dahlias.

Outside the garden one can also find a wealth of display for the walls. The blossoming trees in spring and summer and the glory of the foliage in autumn yield rich treasures for the taking. So also with the wild flowers in the fields and woods.

While these pottery wall pockets seem primarily intended for flowers or foliage, they may often be used to advantage as receptacles for growing plants. They are especially useful for plants that grow in water, like the familiar tradescantia or for plants that thrive with an abundance of water like the so-called Umbrella Plant or Umbrella Palm—really one of the moisture-loving sedges. By selecting those with comparatively small root development, they may also be used as receptacles for pots of fine-leaved foliage plants—like some kinds of decorative asparagus or for trailing vines.

These hanging receptacles are especially effective for developing plants of such spring flowering bulbs as jonquils, hyacinths, and daffodils. To watch the blossoms of these open from day to day against a richly toned harmonious background is a real delight.

One thing is made necessary by the use of these wall pockets for plants and flowers, namely, a plain background that will harmonize with many colors. An ornately figured wall paper interferes seriously with the beauty of the display.



Marigolds in a Japanese wall pocket.

Lesson 131: GROWING GERANIUMS FROM CUTTINGS.

It is much more fun to grow your own geraniums from cuttings than to buy them ready grown from the florist. Even when started late in winter or early in spring they may be set out of doors and allowed to develop through the summer to make good plants to bring in for the winter window garden. To start the cuttings

is a simple matter if you only go at it in the right way. During the last two years I have had some experiences in learning the right way.

Many people advise starting the cuttings in garden loam or potting soil. I placed a lot of geranium cuttings in a plant box filled with loamy soil, and another lot in a box beside it filled with sand.

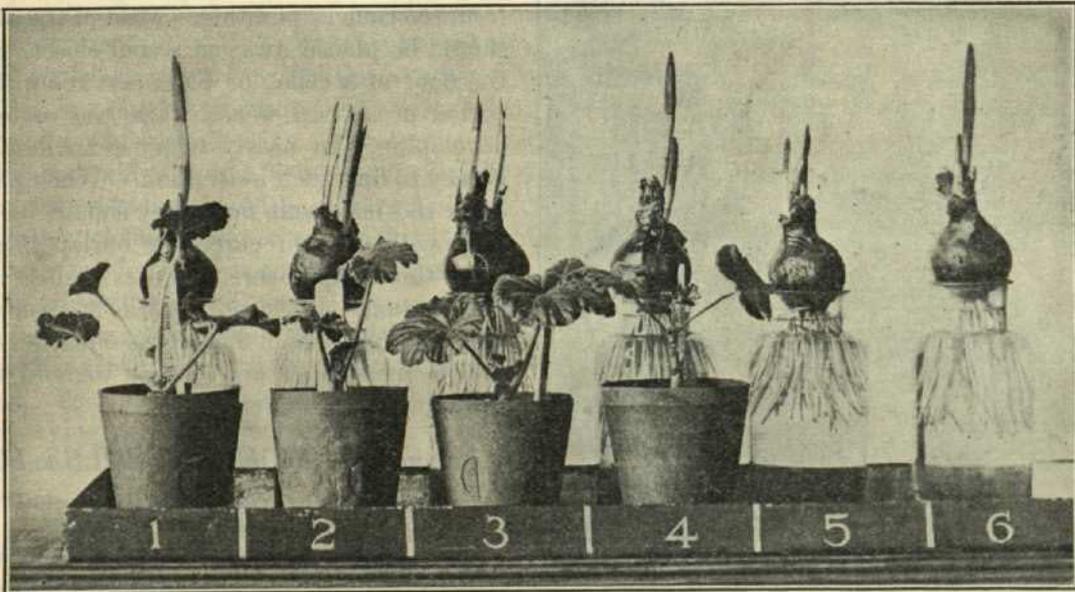
More than half the cuttings in the loam box rotted off; practically all the cuttings in the sand box lived. Other experiences of other people led to the same conclusion, as does the universal practice of commercial florists.

A year or two ago I had the idea that geranium cuttings started in the house should be kept in the shade. I presume I got the notion through seeing papers protecting the cutting benches in greenhouses. I tried it and lost practically all the cuttings; a friend who started a lot in the same room at the same time and left them exposed to the sunshine from an east window saved nearly all of his. Several experiences since have convinced me that there is little danger of too much sunshine in ordinary houses during the seasons when cuttings are to be started indoors.

It is sometimes stated that it makes little difference whether slips are cut off just below a joint or node or at any place between the nodes. I have tried a great many each way and am convinced that the percentage of success is higher when the cutting is made just below the joint, to take advantage of the sturdy tissues there present. The general practice of greenhouse men points to the same conclusion.

I found a commercial florist allowing his geranium cuttings to wilt and dry at the cut end before inserting them in sand. He said he obtained better results by so doing. I tried it and found that a short exposure to the air after the slips are cut off was apparently desirable, but that it was not advisable to leave them exposed 24 hours in the dry hot air of a house room. The cut tissues begin to heal over when exposed for a short time and seem to be less liable to rot off when placed in the sand of the cutting box.

One of the commonest troubles with beginners is that of keeping the sand too wet. The surface should be dry rather than moist, but the rest of the sand should be slightly moist. When too wet many of the slips rot off.



Geranium cuttings and paper-white narcissus bulbs growing in a tray on a window shelf. Each space is for one pupil.

The age of the part of the branch used for cuttings has much to do with success. Good, firm tissue, neither too soft nor too hard is needed. Young branches from window plants are generally good. In the case of rose geraniums the older hollow stems will seldom take root. If you have some geranium plants stored in the cellar, prune them severally, plant thickly in a window box in a sunny window, and you should soon have plenty of good slips available.

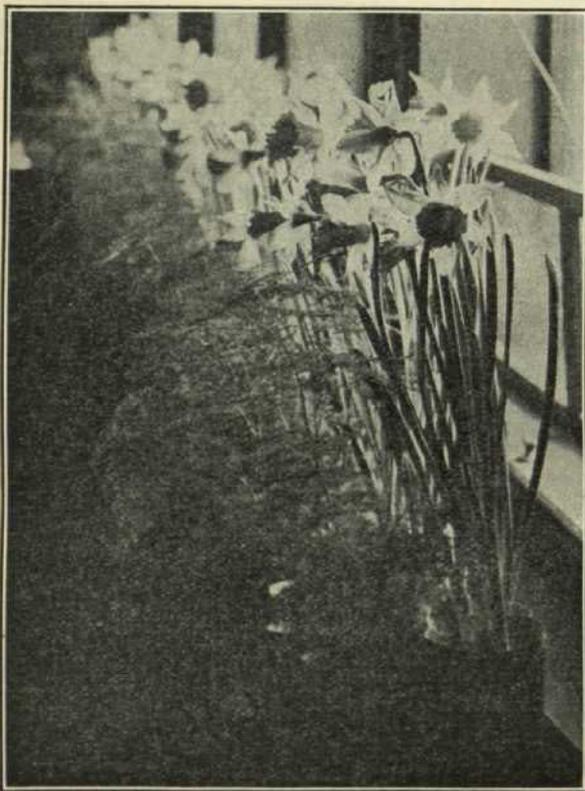
Lesson 132: LITTLE GARDENS INDOORS.

In a large proportion of modern school buildings it is easily possible to have pupils care for growing plants in the schoolroom. By a little planning each pupil may have a succession of growing plants on window shelves, so arranged that there shall be individual care and responsibility, with the personal interest that comes from such ownership.

On these shelves are placed zinc trays as wide as the shelves, with sides about an inch high. If the windows are wide, it is desirable to have two trays to a window. The front of the trays is divided off into spaces by chalk lines, each space being numbered consecutively to include the pupils in the room. Each pupil is given one of these numbers and assigned the corresponding space. It then becomes a simple matter for each to conduct the gardening

operations and to care for his own plants. On these trays are placed paper flowerpots in which the pupils grow various foliage and flowering plants, seedlings of various sorts, tree cuttings, and a great variety of spring flowering bulbs.

The success of this work depends largely on the use of paper flowerpots. These have the advantage that evaporation takes place chiefly from the surface of the soil rather than the sides of the pot, as is the case with the ordinary pottery flowerpots. On this account one can grow plants in the schoolroom in 3-inch paper pots, where it would be out of the question to do so in pottery pots of this size. The paper pots also have the advantage that the sides can be pressed in where crowding is necessary, so that more of them can be used on the trays than would be possible with the pottery makes. Two kinds of these pots are on sale by the larger seed houses.



A second-grade schoolroom in early spring. Each daffodil was planted and cared for by a pupil.

The most successful results of indoor gardening come from the growing of the spring-flowering bulbs. Some of these, especially the French-Roman hyacinth and the paper-white narcissus, may be kept in the schoolroom from the time of planting. Most of the others should be placed away in a cool closet, or on the floor of a cellar or basement room, for a period of several weeks while the roots are developing. In nearly every schoolhouse it is easy to find such a situation. When placed upon the basement floor they should be covered with an old carpet or burlap bags to keep the temperature uniform and prevent evaporation. It is not at all necessary to bury the bulbs and flowerpots outdoors or in cold frames unless one desires to hold them back for spring flowering.

Lesson 133: ORDERING BULBS FOR FORCING.

There is a great difference in the usefulness of various varieties of spring flowering bulbs for indoor forcing. Some sorts are much easier to bring into blossom in the schoolroom or the home than others. These are of course the ones which it is best for a beginner to buy.

So in making out the order for bulbs to use for the schoolroom, look up the following varieties in the bulb catalogues. They will be found the least expensive and as a rule the most satisfactory for this purpose.

Paper-white narcissus—	Grandiflora.	Crocus—	King of the Blues.
French Roman hyacinth—	Early White.	Crocus—	Madame Mina.
Polyanthus narcissus—	Chinese Lily.	Crocus—	King of the Whites.
Trumpet daffodil—	Trumpet Major.	Dutch hyacinth—	Grand Maitre.
Trumpet daffodil—	Golden spur.	Dutch hyacinth—	Bismarck.
Trumpet daffodil—	Emperor.	Dutch hyacinth—	Isabella.
Trumpet daffodil—	Empress.	Dutch hyacinth—	Johan.
Jonquil—	Campernelle-Rugulosus.	Dutch hyacinth—	Baroness Von Thuyll.
Star narcissus—	Stella.	Dutch hyacinth—	L'Innocence.
Star narcissus—	Mrs. Langtry.	Poets narcissus—	King Edward.
Star narcissus—	Sir Watkin.		

All of these bulbs will readily be found listed in any of the bulb catalogues of the larger seed houses. They are much cheaper by the hundred rate than by the dozen, so that a combined order sent in by one or more schools will yield much more beauty for the money expended than the order of one person, who can use only a few bulbs of each sort. Most dealers will grant the hundred rate on orders of 50 bulbs of one kind.

Lesson 134: PLANNING A BULB SALE.

Every autumn there is a chance in a great many places for a company of the School Garden Army to make a little money with which to buy tools, or bulbs, or seeds, by having a sale of such winter-flowering bulbs, as crocuses, hyacinths, daffodils, jonquils, paper-white and poets narcissus, and various other sorts.

At the usual retail rates of the florist's shops these bulbs are rather expensive, and in many places there are no florist shops where they are sold. They may be bought, however, of the great plant houses by the hundred or thousand, at prices very much lower than those of the retail florist. But of course most people want only a few of each kind of bulb, so that the higher prices must be paid, and the average housekeeper without experience in the matter is at a loss as to the varieties to order, and the number of each for adorning the home.

Here is a good opportunity for a wide-awake company of the School Garden Army to hold a bulb sale, which shall bring profit to the school and pleasure to the buyers. In almost any neighborhood there would be little difficulty in planning a sale at which several thousand of the less expensive bulbs should be disposed of. With such an order any of the seed houses would give the school the benefit of wholesale rates, which are decidedly lower even than the ordinary retail rates per hundred and thousand as given in the catalogues.

The successive steps in such an undertaking are simple. First send for the bulb catalogues of half a dozen seed houses, whose advertisements are to be found in the magazines. Send for these catalogues and make out a list of the less expensive varieties that are recommended for forcing. Then make an estimate of the probable sales. Send your list to two or three seed houses saying you are going to sell your bulbs for the benefit of the School Garden Army, and ask for an estimate of cost. Order the bulbs only of a reliable house, and choose for the sale a Friday afternoon with the understanding that it will be continued Saturday or the following week, so that the news may spread, and bring more customers.

Lesson 135: BULBS FOR CHRISTMAS PRESENTS.

The best time to plan for Christmas presents is early in October. And some of the best things to arrange to give to your friends are the growing bulbs planted in flower pots or good flower jars. The paper flower pots are especially good because they cost so little and are so easy to handle and to place inside a flower jar when the plant is ready to bud and blossom. If you start the bulbs then, they will be of a good size to give at Christmas. Some kinds may be made to blossom then while others will be only in bud, but those in bud are all right for presents, because the one you give them to will have the pleasure of seeing the buds grow into blossoms. A great English writer, John Ruskin, once said that this watching of buds change to blossoms is one of the greatest pleasures we can have.

If you plant bulbs of the white narcissus and the French Roman hyacinth as directed in Lesson 128 and keep them in a cool place about three weeks, you will have them ready to blossom about December 20, so they will be right for Santa Claus to carry.

Try planting bulbs in bowls in fiber. Fiber may be bought for a few cents from any dealer in seeds. After the roots are started bring out the bowl to a warm, light room, and watch the leaves grow and the flower buds develop. Such bowls are very nice for Christmas presents.

The true jonquils are easy to grow. You can buy a dozen bulbs for a quarter. Send for the Improved Campernelle jonquil. In some catalogues it has a long name—*ru-gu-lo-sus*.

Plant three bulbs in a 3-inch pot. Cover the bulbs with soil to near the top, and firm it down with your thumbs. Add water and set away in a cool, dark closet or on the cellar floor. Keep the soil moist, but not too wet, for the next six or eight weeks. Then bring them to the window shelf of a warm room, and watch the leaves grow and the blossoms come out. Notice the fragrance of the flowers.

Lesson 136: THE SWEET-SCENTED JONQUIL.

The sweet-scented jonquil is a delightful spring flowering bulb which is not grown to the extent that its attractiveness deserves. It is a true jonquil, being perhaps the typical member of the group to which this name is properly applied. The daffodils are often incorrectly called jonquils, although they really belong to an entirely different group.

The bulbs of the sweet-scented jonquil are quite small, so that the plant blossoms later in the spring than do some of the other forms of the genus narcissus which have much larger bulbs. Before blossoming each bulb develops a great mass of roots under ground and a considerable number of long, rounded, rushlike leaves above ground, these being of an extraordinarily rich, dark green color, with a shining, glossy surface.

The flowers are borne at the tip of a slender round stalk that rises from the midst of the leaves, and bears from one to three blossoms, the latter being held one over the other in a very attractive manner. These flowers are of a rich deep yellow color, the length from the base of the ovary to the end of the crown being about $1\frac{1}{2}$ inches, and the expanse of the petals being 1 inch. The cuplike crown is of a slightly deeper yellow than the petals.

The most attractive feature of these flowers is found in the extraordinary odor which gives them their name. Of all the members of the great genus narcissus, none have an odor that appeals so generally to people as does that of this little blossom, and the plant would be worth growing for the odor alone, without reference to the very attractive form and color of the flowers.

The bulbs of the single sweet-scented jonquil are listed by the seedsmen at 75 cents per hundred, so that anyone who wishes can easily have them either for planting out of doors or for forcing in the house. In the former case the bulbs are to be put in the garden or the flower border in September or October and will come into bloom the following spring. In the latter case the bulbs are to be planted in boxes or flower jars during October and November and put away in a dark cellar where they will have coolness and moisture and left for six or eight weeks.

A charming jar of these flowers which was in blossom in the latter part of March was planted with half a dozen bulbs on November 29. It was placed in an unheated cellar, where it was left until January 13. The leaves were then 3 or 4 inches high and the plant was brought into a moderately heated and lighted room, where early in March the leaves reached a length of 12 to 16 inches and the central flower stalks grew to a height of 10 inches, coming into blossom about the middle of March and different flower stems continuing the bloom for fully a month.

Lesson 137: PLANTING TULIPS OUTDOORS.

Everyone admires the beauty of the tulips in spring.

To have such beauty for your school or your home you must get busy in autumn. For the tulip is a spring-flowering bulb that sends out its roots in September and October and thus gets ready to push up its leaves and buds in April. The first part of October is an excellent time to get the bulbs in the ground.

The tulips are the most showy spring-flowering bulbs. They are admired by every one and may be grown in a great variety of situations. They answer very well for a formal flower bed or for an informal border, though it is best to choose different types of tulips for the two situations.

The formal bed should be planted with the early flowering single tulips, while the informal border should be planted with the longer stemmed cottage garden tulips or even better, the splendid Darwin types.

In either situation the tulips have the great advantage that they can be left undisturbed for several years. The leaves ripen off in May or early June in plenty of time to fill the space with China asters or other annual flowers that make an attractive showing for the rest of the season.

The most satisfactory way to plant the bulbs is to shovel out the soil to a depth of 4 inches. Then rake the bottom off level, set the bulbs firmly on this level surface, pushing each down just enough to hold it erect. Then put the soil back in place, being a little careful at first not to disarrange the bulbs. Smooth off the top and your tulip bed is safely planted.

This is a little easier than the usual way of pushing each bulb down, and the bulbs are more likely to be at a uniform distance from the surface. It is also easier in this way to arrange the varieties as you want them.

For planting in a regular flower garden where a bedding effect is desired the single early tulips should be chosen. These begin to bloom about the first week in May and make the most brilliant showing of the spring flowers. There are about three different heights—tall, medium, and dwarf. This fact should be remembered in planting the bulbs. A good way is to select a tall variety for the center of the bed, with a medium sort next to it and a dwarf one for the outer border.

Here is a list of good varieties of moderate price:

TALL VARIETIES.

Canary Bird. Yellow.
Crimson King. Bright crimson.
Duchesse de Parma. Red and yellow.
White Swan. Pure white.

MEDIUM VARIETIES.

Bacchus. Crimson.
Chrysolora. Golden yellow.
La Reine. White and rose.
Princess Marianne. White and pink.

DWARF VARIETIES.

Cottage Maid. Rose and white.
Goldfinch. Pure yellow.
Rose Grisdelin. Rose with white flush.
Dusart. Brilliant scarlet.

In many home grounds the most satisfactory places to grow tulips are in border gardens along walks, driveways, walls, or shrubbery. For these the later single tulips called the Cottage Garden or May-flowering tulips are very desirable. The bulbs of these are moderate in price, being available in quantity for about a cent apiece. The stems are long and the flowers are beautiful in form and color. They blossom shortly after the daffodils and remain in bloom for a long time. Here are the names of some of the best varieties:

Picotee or Maidens Blush. White with pink border.
Le Reve. Beautiful old rose.
Bouton d'Or. Golden yellow.
Salmon Queen. Salmon and buff.
Vitellina. Primrose yellow.

Last of all and best of all come in the giant Darwin tulips. These have longer flowers, longer stems, and more beautiful colors than even the Cottage Garden sorts. They bloom late in May at a season when there are not many garden flowers in blossom, and they attract general attention by their size and color. The massive flowers are held erect 2 or 3 feet from the ground and persist in beauty through several weeks.

These Darwin tulips in particular are effective along a border beside roses or other shrubs. They are tall enough to make an effective showing in positions where smaller tulips would seem out of place. The bulbs may be left undisturbed for several years and the flowers will come up each year almost as well as the first season.

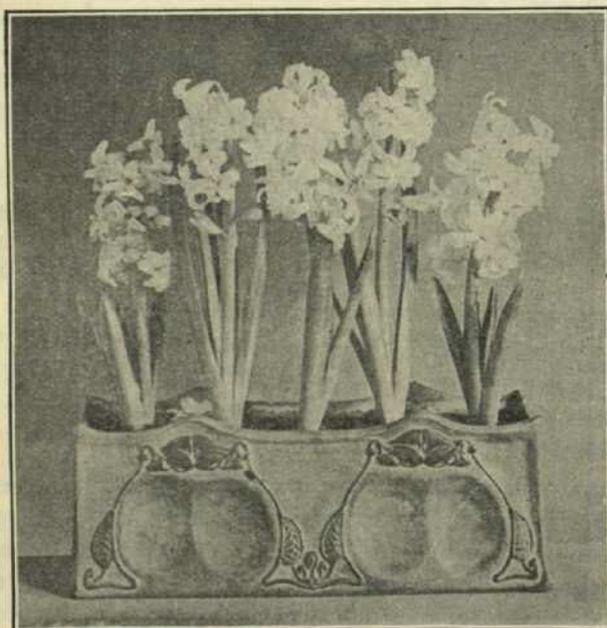
These giant Darwin tulips are more expensive than the other sorts. At retail, single bulbs are listed at 5 cents each or 40 cents a dozen, but in quantities of 50 they can be bought for about half these prices.

Some of the best varieties of moderate price are these:

- Clara Butt.* Salmon and pink.
- Dream.* Delicate lilac.
- Glory.* Scarlet with blue center.
- Gretchen.* Blush rose.
- Loveliness.* Rosy carmine.
- Pride of Haarlem.* Brilliant red.

Lesson 138: HYACINTHS FOR WINTER BEAUTY.

Hyacinths are perhaps the most beautiful flowers you can grow indoors for winter blossoms. The large hyacinth bulbs cost more than other bulbs, but they are worth it. If you can not buy them of a local florist, send for the bulb catalogues of the firms whose advertisements you will find in the magazines. Then select such varieties as these:



Hyacinths in a flower box.

- Gertrude.* Rose color.
- Gigantea.* Blush pink.
- Moreno.* Bright pink.
- L'Innocence.* White.
- Grand Maître.* Lavender blue.
- Daylight.* Primrose yellow.

Order the single rather than the double flowered varieties. They are more satisfactory for use indoors. The cost of these bulbs depends upon the size. The larger the bulb the better the flower spike. Good bulbs for forcing can generally be bought at retail for 10 cents each. In choosing them select those which are firm when pinched between thumb and finger and which show a healthy bud at the top. All you need to do to give this bud a chance to grow is to give it water and air and a temperature which at first is cool but not freezing. So it happens that you can grow hyacinths in water, in soil, or in fiber.

IN WATER.

There is a peculiar interest in growing hyacinths in hyacinth glasses. To see the long white roots projecting downward to the bottom of the glass gives one a better idea of the plant's growth than to just imagine them hidden in the soil. The cleanliness of the method is also in its favor; there is no dirt and no drip. The little water garden can be placed on a polished table or shelf with no danger of injuring the surface.

Two forms of these hyacinth glasses are in general use: One, the Belgian, is tall with straight sides; the other the Tye, is broad with rounded sides. They cost at retail about 20 cents each. There is no difference in their value for growing bulbs.

The use of the glass is very simple. Select a large, firm hyacinth bulb; fill the glass with clear water; set the bulb in the top of the glass and then place in the cellar, or in a dark, cool place where there is no danger of freezing. Leave the bulbs there until the long roots fill the glass, and the *crown of leaves has broken apart*. This is important. If taken out too soon failure is likely to result. Then bring to a light, cool room and watch the growth of leaves and flowers.

IN GARDEN SOIL.

To grow hyacinths in garden soil, select a flower pot of somewhat larger diameter than the bulb. Fill it with soil to within 2 inches of the top. Set the bulb on the soil and fill in around it. Water thoroughly and place on the cellar floor or a shelf. Throw over it a piece of burlap or old carpet and leave it for six or eight weeks while the roots develop and the *crown breaks apart*. Water it once a week or so, as needed. Then bring it to a cool, light room, where it will soon send up leaves and flowers.

IN FIBER.

The special advantage of growing hyacinths in the prepared fiber now offered for sale by most seed houses is that you can have the flowers in attractive water-tight flower jars that can be set on the dining table or mantel without injury to the surface.

Fill the receptacle nearly full of fiber, put the bulb in and fill around it with more fiber. Then saturate the fiber with water and set away in a cool, dark place for six or eight weeks. When the crown breaks apart bring to the light of the living room.



Hyacinths with crown of leaves broken apart.

Lesson 139: GROWING BULBS IN FIBER.

One of the newest and best methods of having beautiful flowers in the schoolroom or home during the winter months is to grow the spring flowering bulbs in the coconut fiber, which is now sold by practically all seedsmen and many florists. It is simply a mixture of ground coconut fiber with charcoal, shells, and possibly a little commercial fertilizer added. It is not expensive, and may be used over and over again if one desires.

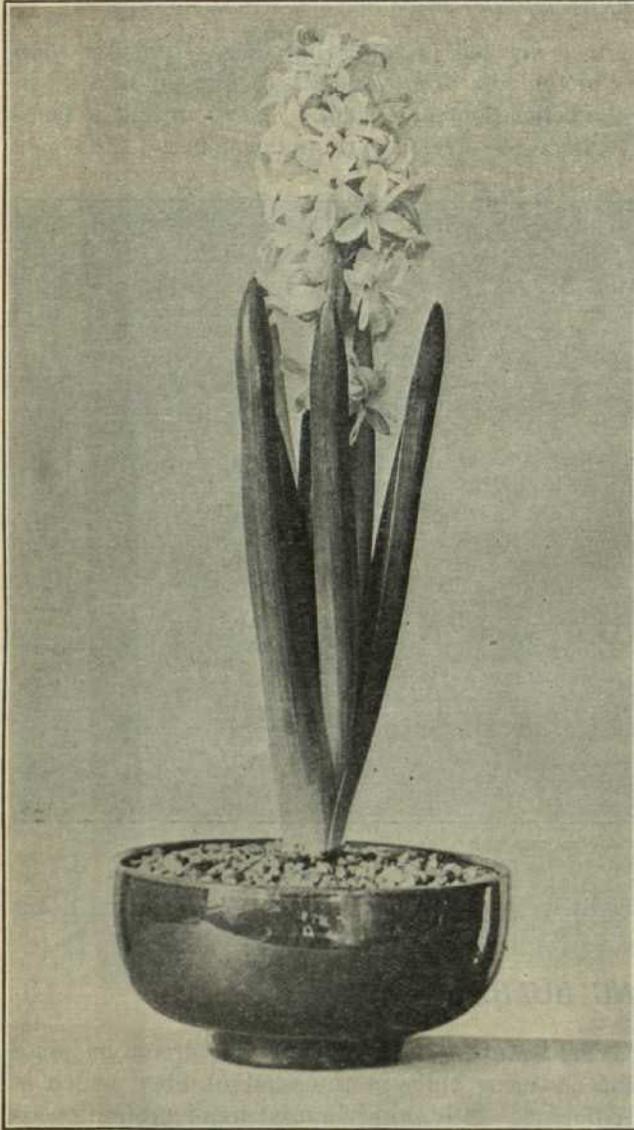
With half a peck of this fiber and a few bulbs you can easily have beautiful, fragrant blossoms from Thanksgiving until Easter, and you can grow them about as well in water-tight flower jars as the florist can grow them in the most approved conditions of his greenhouse. Being in these water-tight receptacles, you can place the flowers wherever you wish with no danger of the water leaking out to injure the space on which the jars are resting.

The growing of the bulbs in this fiber is a very simple process. Choose a flower jar or rose bowl, and put a little fiber in the bottom. Then place one or more bulbs on it. Fill it with more fiber, and soak with water. After an hour or so, turn the jar on its side long enough to drain out any surplus water. Then set it away in a cool closet or cellar for a few weeks to get a

good start of the roots before the leaves begin to grow. When the roots are thus well developed, bring the jar to the warmth and light of the schoolroom or a living room, and watch the development of leaves and flowers.

In the order of blossoming, the most desirable bulbs to buy for this purpose are these:

Paper-white narcissus, Single Trumpet daffodil, French Roman hyacinth, Chinese lily narcissus, jonquil, Star narcissus, crocus, Dutch hyacinth, and Poets narcissus.



Hyacinths in fiber with pebbles on top.

The bulbs on this list will give a great variety of beautiful blossoms through all the weeks of winter. They can be bought at any of the seed and bulb houses at prices ranging from 1 cent apiece for the crocuses to 8 or 10 cents for the largest Dutch hyacinths. Most of them, however, cost but 2 or 3 cents each.

This fiber is commonly offered by the seedsmen at 50 cents a peck. Half a peck will serve for many bulbs.

Lesson 140: PLANTING TULIPS INDOORS.

From the point of view of their culture the spring-flowering bulbs may be divided into two groups—those which may be kept in a warm room from the time of planting and those which require a period of root development in a cool place.

The first seem to be those bulbs like the paper-white narcissus bulbs, the Chinese lily narcissus, and the French Roman hyacinth, which are not hardy outdoors at the north and are presumably natives of warmer climates. The others are hardy outdoors where under normal conditions of their growth their roots develop in the cool soil throughout the autumn until checked by winter freezing. Consequently when we wish to force them indoors we must give them this opportunity for root development before we force them into flower.

One advantage of placing the bulbs away in a cool cellar is that they can be brought out in succession, so that one planting may serve for months of flowering. Most bulbs are ready to bring up as soon as they show a good growth of roots, but the Dutch hyacinths must be left down until the crown of leaves at the top has broken apart. Otherwise there is danger that the flower stalk will not lengthen as it should.

When thus stored away, the soil must be kept moist. Evaporation is not rapid, so that watering once or twice a week is usually sufficient. In many cases it is a good plan to cover the pots with a piece of burlap or old carpet.

Tulips are a bit more difficult to bring into flower successfully than some of the early flowering daffodils. They are likely to thrive best in a bulb pan, which is simply a wide shallow flower pot that you can get at any florist's.

In such a bulb pan, 8 inches across the top, one can plant nearly a dozen tulip bulbs, and set them away in a cool basement for six or eight weeks while the roots develop. Then they should be brought to a warm light room, where the leaves will soon push upward to be followed a little later by the flower stalk in the middle. If desired, when the buds begin to open the whole group may easily be removed from the bulb pan and transferred to an attractive flower bowl or window box.

For indoor use the early flowering varieties are most likely to give satisfactory results. The Duc van Thol group include many colors, which make attractive displays for window and table decorations throughout the winter. They are the easiest to force into bloom.

In addition to the early blooming Duc van Thol varieties one can get very satisfactory results with such sorts as these: Queen Victoria, a pure white variety; Primrose Queen, a very beautiful yellowish sort faintly edged with rose color; Montresor, a large clear yellow flower; Crimson King, a showy scarlet crimson variety. The sorts just named blossom at about the



Root growth of tulips in a bulb pan.

same time, closely following the Duc van Thol. The following sorts blossom still later: Lady Boreel, a pure white flower; Prince of Austria, orange red; Thomas Moore, a beautiful apricot tint; Yellow Prince, a sweet-scented golden-yellow sort.

Lesson 141: A POT OF CROCUSES.

Crocus bulbs are cheap. You can buy them for 1 or 2 cents apiece. They will give you much value for your money, and that is what money is for—to get the greatest value out of it. When you buy a cent's worth of candy it soon is gone, and you have nothing to show for having had the penny. But when you buy a crocus bulb you will have the pleasure of seeing it grow for many weeks and of seeing some beautiful flowers come from it. Then if you keep it in good condition it will furnish you with more bulbs to grow next year. So that your penny invested in a bulb may give you value in return for many years. Is that not a good way to spend money?

If your crocus bulb is large, plant one in a 3-inch flower pot. The paper pots are best. If they are small, plant three in a 3-inch pot. Cover with about half an inch of soil, water and set away in a cool place. The cellar floor or the coldest closet you can find where it does not freeze in winter will be all right. Crocus bulbs require a long time for their roots to grow. It is best to leave them in the cool place for 10 weeks. Water often enough to keep the soil moist—perhaps once or twice a week. Then at the end of the 10 weeks bring them to a warm, light room and watch the leaves and flowers grow.

As soon as the shoots start, look at them carefully to see if any aphids (plant lice) are there. If you see these little greenish insects, hold the plant sideways under a faucet and wash the insects off with running water. A small paint brush will help to dislodge them.

Lesson 142: THE STORY OF MY HYACINTH.

One fine day in November I was given a large hyacinth bulb. It was of the variety called Enchantress.

I planted the bulb in fiber in a pretty flower bowl. I moistened the fiber with water, so that it was damp all the way through. Then I covered the top of it with a layer of small pebbles because the pebbles are more attractive to look at than the fiber.

When my bulb was thus planted I set it away in a cool closet in the basement, so that it might send out roots and get ready to bloom. I left it there for about three months thus giving the roots a fine chance to grow.

During these three months I watered it carefully so that the fiber would be kept moist but not wet. I found that my bulb had sent up a crown of thick leaves, which was broken apart at the top. Then I knew it was time to bring my bulb to the warmth and light of the school-room, so I brought it in and placed it on the table where I could watch it grow.

The leaves continued to grow quite rapidly, and in two or three weeks I saw a flower cluster coming up in the middle of them. I watched it as it gradually grew above the leaves, and was delighted to see each little bud open into a beautiful fragrant blossom. At last there was a spike of flowers each shaped like a little bell and giving off a most delightful fragrance.

My hyacinth remained in bloom for nearly two weeks and every one said when they saw it, "What a beautiful flower!"

Lesson 143: HURRYING UP JACK-IN-THE-PULPIT.

Every boy and girl knows Jack-in-the-Pulpit as one of the most interesting of the spring wild flowers, but many of them do not know how easy it is to have these flowers in blossom at home or in the school during the winter months.

If in October or November you will go to the places where Jack-in-the-Pulpit preaches, you will find it easy to dig for the round bulbs or corms, which are waiting to grow next year. You can bring a few of these to school to plant them out in a window box, or in some flower pot, covering each bulb with an inch of soil.

Now water your little garden enough to keep the soil thoroughly moist, and watch for the coming up of the green sheath.

In a short time, you will see this curious light sheath pushed through the ground, and you can watch it grow on from day to day. It will become several inches high before the narrow light leaves first show.

A little later the interesting flower will come from between the leaves, and will unfold rapidly. It is easy to have a Jack-in-the-Pulpit to preach you a Christmas sermon, for this is one of the simplest plants to grow indoors, and it reaches its full size in a little more than a month from the time of planting.

You will probably be more successful if you let your bulbs freeze up at least once before you plant them. The reason of this is that these bulbs out of doors would of course be frozen many times during the winter before they started to grow in spring.

You should not be satisfied with simply growing one of these flowers, for it is one of the most interesting forms of plant life, and you will find in the wild flower books some interesting information about its structure.

Lesson 144: ASPARAGUS FOR INDOOR BEAUTY.

You can generally get at a greenhouse for 10 or 15 cents a beautiful little plant which the florist calls the asparagus fern. When you look at it you will easily see that it is not a real fern. It is really an asparagus plant, related to the asparagus that grows in our gardens. A better name for it is the Plumose Asparagus.

When you get the plant it will probably be in a small clay flowerpot. These little pots are all right for the greenhouse, where they can be sprayed with water once or twice a day, but in our homes the water dries up so fast through the sides of the pot that it is hard work to keep the roots moist. So it is better to transplant your little asparagus into a larger pot that holds more soil. This larger pot may be either an ordinary clay flowerpot or a paper flowerpot such as you can get at the florists. I like the paper ones better because they take up little room and do not dry out so fast. One of them can easily be placed in a small flower jar, so the plant can be kept on your desk or shelf or on the dining table.

Get your larger pot ready by putting a little flat stone or piece of broken pottery over the hole in the bottom. Then put in about an inch of soil to cover the bottom. Now turn the pot in which the asparagus is growing upside down, holding your fingers beside the stems. Tap the edge of the pot gently against a table or other wood. The roots will loosen and come out. Set the mass of roots on the soil in the bottom of the new flowerpot and fill in the sides with more soil, leaving at least half an inch space between the top of the soil and the top of the flowerpot. This is to hold water when you water the plant. Now water the plant and set it in your window garden. Never let the soil dry out, but also never let the water stand so the soil is saturated with no chance to drain off. Your plant will grow rapidly and soon become a thing of great beauty.



Plumose asparagus in a paper flower pot.

You can get another kind of ornamental asparagus which the florists call *Asparagus Sprengeri*. This is an awkward name to use, so we will call it the Thick-leaved Asparagus. Its leaves are much thicker than those of the Plumose Asparagus and it is really not so attractive as that variety. But it is a good plant to grow because it lives in our homes under conditions that kill many other plants. It has thickened roots that seem to serve as reservoirs for water, so it does not dry up quickly even if you forget to water it every day. But you better not try it in this way, as like all living things it thrives best with loving care. This sort is especially good to use in hanging baskets.

Lesson 145: THE MADEIRA VINE.

If you look in the index of one of the new seed catalogues for Madeira vine you will find a reference to the page where the potato-like tubers of this plant are listed for sale. They are likely to be priced at 5 cents each, or about 35 cents a dozen. Send for at least one and plant

it in a flowerpot or window box filled with good garden soil. Get more than one if you have money enough.

Perhaps your mother has one of the beautiful pottery wall pockets that are now on sale in many stores. These are made so that each can be hung on a hook in a side wall. If you fill such a wall pocket with good soil and plant one or two Madeira tubers near the top you will soon have a beautiful growth of vines hanging down from the margin. Such a decoration is unusual in the home and will attract much attention. Place it, if possible, near a sunny window.

In such a wall pocket that has no opening at the bottom to let the surplus water run out you will have to be careful not to put in too much water at a time. If you have the soil saturated the roots will die.

Lesson 146: ANNUALS, BIENNIALS, PERENNIALS.

The flowers which we grow in our gardens may be divided into three groups according to their length of life:

If the plant blossoms and sets seeds the same season that the seed is planted, and then dies, we call it an Annual or a one-year flower.

If the plant does not blossom and set seeds until the second year after the seed is planted and then dies, we call it a Biennial or a two-year flower.

If the plant blossoms and sets seeds the first or second year after it is planted and then continues to live for many years, we call it a perennial or a many-year flower. In most cases these perennials do not blossom until the second season after the seed is sown.

The annual flowers are commonly grouped under three headings according to their injury by frost—hardy, half-hardy, and tender.

The young plants of the hardy annuals will endure severe frosts without injury, so that the seed may be sown outdoors very early in spring or even during the previous autumn. The poppies are an example of this group.

The young plants of the half-hardy annuals will endure slight frosts, but require partial protection until well established. The pansies are an example of this group.

The young plants of the tender annuals are very sensitive to frosts and must not be planted outdoors until danger from frosts is past. The nasturtiums are examples of this group.

You will easily see that if you are to become a really good flower gardener, you will need to know to which of these groups any particular flower that you wish to plant belongs. In many seed catalogues you will find statements as to hardiness, and it would be a good plan for you to make out a list under each heading and show it to your teacher. Be sure the words are all spelled correctly and that the list is neatly written or printed.

Lesson 147: GROWING YOUR OWN PLUMOSE ASPARAGUS.

The beautiful foliage plant which the florists call the asparagus fern is easily grown from seed. The small plants you buy at the greenhouse or flower shop have been started from seed some months earlier.

The name asparagus fern is of course a misnomer. The plant is not a fern at all, but a true asparagus, closely related to the familiar vegetable of our kitchen gardens. The true ferns reproduce by means of tiny spores which develop slowly and require better conditions and more care than the average amateur can give. The name Plumose Asparagus is really to be preferred, or perhaps fern-leaved asparagus.

This asparagus blossoms and bears seed in much the same way that the garden asparagus does. The seeds are small, round, and black and may be purchased of any of the larger seed houses. The most desirable seeds are those grown in greenhouses, as the plants from them are more likely to do well under indoor conditions. The seeds cost 25 cents a packet, naturally being more expensive to produce than ordinary flower seeds.

After you have received the packet of seeds, soak them in tepid water for a day or so until they become swollen. Then plant an inch deep in a window box filled with good garden soil. They will come up as slender stalks before long, and these stalks will soon spread out to form attractive little plants with the same characters as the larger ones. As the weeks go by new stalks will appear from the roots, so that in a few weeks you will have a lot of vigorous seedlings that are of greatest interest.

In May when danger from frost is past transplant these asparagus seedlings to a partially shaded place in the outdoor garden where the soil is rich. Give water and tillage through the summer as you would for any other plants and in September you will have as attractive a set to transplant to window boxes or flower pots for indoor growth as you could wish. The plants should be as good as those you can get from the florists, and to the owner they possess a greater interest in that they represent the months of watchful experience in growing them.

These plumose asparagus plants will thrive either in a sunny window or in one with little sunshine. They are particularly useful for fern dishes, placing several of them together in one receptacle when they are transplanted from the outdoor garden.

After the transplanting, a few of the stalks are likely to begin to drop their leaves. Cut such stalks off close to the ground. New ones will soon appear.

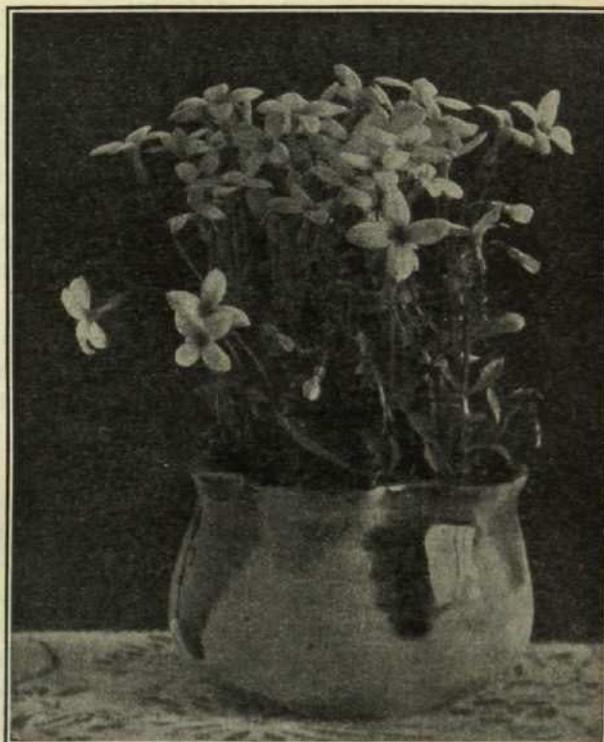
Lesson 148: BRINGING IN THE SPRING WILD FLOWERS.

Some very interesting little gardens may be made in spring by transplanting to suitable receptacles some of the early wild flowers. Such displays are particularly helpful in adding interest, because they bring into the school a suggestion of the beauty of the outer world. For this reason also they are desirable for the home, helping when displayed in living or dining room to link our lives with the spirit of the passing season.

The chief factor in the availability of wild flowers for this purpose is that of ease of transplanting without a check to growth. A plant with a shallow, compact root system which is easily dug up and reset in a flower bowl is ideal for this purpose. Availability is often determined by the accident of situation. A plant which has found a place for itself in a shallow depression on a ledge or in the top of a stump may often be taken up almost as easily as a potted geranium may be taken from a flower pot. Such a plant is of course very easy to transfer indoors.

Over several great regions in the United States, the Bluets or Innocence is found in one variety or another. In New England and the North Atlantic States the common species is *Houstonia coerulea*, but in other sections other species occur. This is one of the earliest wild flowers, growing in masses which are readily taken up by the roots and transferred to low, broad flower jars, where the plants will continue to open their interesting little flowers for several weeks. These flowers are sensitive to weather changes. In a moist, cool atmosphere they turn downward on their stems to turn up again in sunshine.

Some of the early violets, particularly those growing along the mossy borders of ponds and streams, are also easily taken up without injury to the roots. The sweet white violet is



Bluets in a flower bowl.

one of the most abundant kinds in such situations and is likely to be especially prized for its delicate perfume. It has smooth round leaves and so is readily distinguished from the lance-leaved violet which occurs in similar situations. The interesting bird's-foot violet is found in dry, sandy soils, but carefully selected specimens may be successfully taken up during rainy weather.

It is nearly always true that wild plants with thick succulent roots can be transplanted after growth begins more successfully than those with only fibrous roots. Even if there is a temporary wilting, the plant is likely to recover soon because of the supply of stored-up nutriment. The bloodroot is a good illustration of this. So when you dig up the roots soon after the frost is out of the ground, be careful not to break off the leaf or flower buds and you may hope to have the blossoms expand indoors with as much beauty as they do in the spring woods outdoors. No other wild flower has quite so pure a white, and one must always marvel at the sudden color transmutation of the blood-red sap as it reaches the glowing petals.

Set the bloodroot plants in soil or fiber in an attractive receptacle and watch the dropping away of the deciduous sepals, the opening and passing of the spotless petals, the development of the poppylike seed pod, and the lusty growth of the splendid leaves. Each phase is full of interest and challenges interpretation with pencil and brush. At last the plants may well be set out in a corner of the garden where they will be easily accessible another spring.

Squirrel corn and Dutchman's-Breeches are two other early wild flowers which sometimes are found growing in situations where they may be taken up with little disturbance of the root system. They are beautiful and interesting flowers, related to the familiar Bleeding Hearts of our gardens.

The common Anemone, or wind flower, and its cousin, the Rue Anemone, are likely to have their roots so deep in the soil that removal is difficult, but occasionally in rich leaf mold or in rocky pockets one can find specimens which are easily transplanted. The delicate flowers are well worth watching near at hand where one can see the opening of the fragile buds. The same is true of the Hepatica, or liver leaf, often the earliest of all these harbingers of spring.

The wild Columbines are native to rocky ledges, where they often have a precarious root-hold, from which they are readily dislodged with roots intact. Get the plants from such situations before the buds have developed into flowers and you can set them into attractive flower jars, in which they bloom profusely. Leaves, stems, buds, and blossoms are of exquisite delicacy of line and texture and serve admirably for drawing studies. Such flowers that bloom indoors are really more beautiful than they are when left outdoors to be buffeted by wind and rain. In the East, the Canada Columbine is the common wild species, with beautiful tones of red and yellow. Farther west, various other sorts occur.

If you have a broad low flower bowl, 8 or 10 inches in diameter, take the bowl with you on a stroll along some brook where the yellow roots of the goldthread penetrate the moss in all directions. Take up moss and all and place carefully in the bowl, putting in first a little leaf mold from beneath the trees. Take it to school and keep the moss moist but not too wet. The interesting white flowers will soon develop, and are likely to puzzle you if you attempt to distinguish their various parts. For in structure these blossoms are unique; you easily see the white petal-like sepals, the many small stamens, and the large pistils with curved ends for receiving pollen. But where are the petals? They have been transformed into curious nectar cups that attract insects which carry pollen, and you will easily find them from this hint.

By taking a good-sized flower jar to a corner of the woods where the Jack-in-the-Pulpit is beginning to send up its curious flower stalks, one can readily get a most interesting little garden for indoor showing. A large proportion of these plants are readily taken up, bulb, roots, and all, and transplanted into leaf mold in the jar. Place four or five in a jar 6 or 8 inches wide and carry to school or home carefully. They will flower for weeks, and even after the flowers go by, the leaves and fruits will be of much interest. The whole composition is an admirable model for drawing, and the individual parts of the plants make excellent bases for decorative studies.

Various other spring wild flowers may be brought indoors in a similar way. Those I have mentioned are the most available in eastern regions, though by no means all that may be utilized to advantage, while in other regions there are many other species awaiting similar attention.

Lesson 149: THE HARDY ANNUALS.

The hardy annuals are those flowering plants that are not injured by the frosts of spring and autumn. On this account many of them will seed themselves from year to year, when once started continuing to come up season after season, though unless given proper care they are, of course, likely to become crowded and dwarfed. They are the easiest to grow of all the annuals and yield the most satisfaction for the amount of care given to them. As a rule they have a long period of blossoming and many of the flowers are of exquisite beauty.

The most important of the hardy annuals for use in American gardens are these: Bachelor buttons, or cornflowers; Calendulas, or pot marigolds; California poppy, or Escholtzia; China asters; cosmos; Gaillardias; poppies; sunflowers; sweet peas.

These hardy annuals are especially desirable to use in border gardens to fill in the gaps between the perennials. There are many varieties of each of them, and it is well worth while to make a study of these varieties, as they are pictured and described in the seed catalogues, before ordering or planting the seeds. As soon as the frost is out of the ground one can get the garden ready for these hardy annuals. Many of them grow much better if planted early than when planted late, so that the soil should be thoroughly prepared as soon as it is in condition to work.

Lesson 150: SWEET ALYSSUM.

The sweet alyssum is one of the most satisfactory annual flowers to plant along the border of your flower garden. The clusters of small white flowers on the ends of the branches are so abundant as to make a great display of white. Their delightful fragrance also makes them attractive and they continue in blossom for a long time.

The sweet alyssum grows very readily from seed sown direct in the garden outdoors. If you plant the seed rather early in spring, the plants will begin to blossom early in summer and continue to blossom until frost. You may sow the seed in a seedbed if you wish, and transplant the young seedlings to the flower border. If you sow the seed direct in the flower garden, you will need to thin the plants so that they are three or four inches apart.

If you will look in the seed catalogues, you are likely to find several varieties of sweet alyssum listed. One of these has the suggestive name Carpet of Snow, because it makes such a fine display of white flowers. The dwarf forms are especially desirable for use along the borders of the flower gardens.

Sometimes the sweet alyssum plants may go to seed and stop blooming. If this happens, pinch off the ends of the plants so that new branches will be sent out to produce more blossoms.

The structure of the flower of sweet alyssum is worthy of notice. If you look carefully you will see that there are four white petals arranged in a cross in the same way that the petals of the radish flower or the mustard flower are arranged. So it will be easy to believe that the sweet alyssum belongs to the mustard family, which is technically called Cruciferae.

If you want some sweet alyssum blossoms in a window box after frost, sow some seeds in a seedbed outdoors early in September and then transplant the seedlings to your window box in October.

Lesson 151: ON DOUBLE TULIPS AND OTHER FLOWERS.

Every natural flower is an expression of wonderful laws of beauty which man is only just beginning to understand. The lines and colors are perfection. Then gardeners come along and take these simple natural flowers and try to improve them.

They give the plants rich food and abundant water and get the stamens to change to petals, thus producing a double flower, which generally is much less beautiful than the single type from which it came.

It must be an uneducated or a perverted taste that prefers the mussy blotches of color made by the double tulips to the beautiful symmetry of the single sorts. A double rose has excuse for being—the type of the flower will bear the multiplication of the petals without losing all significance—but for a double tulip or a double sweet pea there is no excuse except the greed of dealers, which is indeed no excuse.

My observations indicate that the vogue of the double tulip is largely due to the undeveloped tastes of the florists and so-called landscape gardeners who attend so largely to the home grounds of our citizens. These people want to give their customers a run for their money and so plan a blotchy bed of many forms and colors that is an offense to the eye of every intelligent beholder. Incidentally these mixed fancies come cheaper because they can be made by the use of the cheapest qualities of mixed bulbs.

Over in England there used to live a man who loved flowers greatly. His name was Forbes Watson, and he wrote a beautiful book called "Flowers and Gardens." It is one of the best books on flowers that you can read.

Here is a little paragraph about single and double flowers which is worth reading over and over again:

In conclusion, then, I think that the gardener does wrong in too frequently driving out the single flower by the double, especially when, as in double anemones and hollyhocks, the gain is very paltry in comparison with the loss. He is wrong, moreover, when he creates what can only be felt as deeply degraded flowers, like the double tulips, narcissuses, and violets, these last being only valued for their superior fragrance; or when he aims at great size without due regard to its effect upon the highest beauty of the plant; or when he seeks after tawdry variations of color. He acts as a true artist, on the other hand, in creating those full, rounded Rubens-like forms, whenever they are really noble; or in obtaining any worthy gain, whether by increasing the size of the blossoms or intensifying their natural brilliancy of color, even at some cost to the perfect harmonies of the plant; or in creating such strange loveliness as that of those double carnations, where the edge of each creamy petal is drawn with a narrow line of pink, all the rest of the blossom being left as spotless as the snow; or lastly, in improving, and here with scarcely any drawback, the various kinds of fruits.

Lesson 152: FERNS TO GROW INDOORS.

Ferns are among the most beautiful and interesting plants you can grow indoors. You can get the small ferns in the 3-inch pots at the florists for about 10 cents each, and then you can transplant them into larger pots or into decorative window boxes and watch them as they grow in size and beauty.

If you are making baskets out of reed or other materials you can make very attractive combinations by placing the growing ferns in hanging baskets or other forms of basketry. And if you are making metal or other chains you can make your own chains for suspending the hanging baskets.

THE HOLLY FERN.

The holly fern is one of the commonest and hardiest of house ferns. It is excellent for fern dishes if small plants are chosen. The green of the young leaves of this variety is much fresher and more attractive than that of the older leaves. Two or three young plants may be placed side by side in a fern dish or other shallow receptacle.

The crested holly fern is an improved variety in which the edges of the leaves are cut into many divisions that give the plant a very decorative effect.

THE PTERIS FERNS.

Pteris is a Latin word. It is pronounced Teris. There are many small ferns which you will find in the plant catalogues under the name. One of the best of these goes by the Latin name *Pteris wilsoni* and is commonly called the crested fern. It is fine for a child to grow in a paper flower pot or a good fern dish. The roots do not take up much room in comparison to the leaves. Each leaf breaks apart at the tip into a number of fingerlike branches that give the plant an interesting appearance.

The white-lined fern is another of this Pteris group that is attractive and easy to grow. It has long, slender leaves or fronds with pretty white lines running along the principal veins.

THE BIRD'S-NEST FERNS.

The florists have lately revived a fern which in recent years at least has had very little attention. It is the bird's-nest fern, a native of the Far East that has long been known in England and America to a few fern lovers. The casual observer would scarcely think of it as a fern at all, for it looks more like a miniature banana plant. There is a cluster of thick, broad smooth margined leaves that rise around a central mossy space the size of a silver dollar so that as you look down upon the plant the suggestion of a bird's nest seems very appropriate.

The bird's-nest fern is an attractive study in the harmonies of line. Whether seen from above or below the central vein of each leaf projects in a long prominent rib raised in a way that would show a triangle in cross section. This really gives to the midrib the effect of three nearly straight lines. From each of these side lines a vast number of straight veins run in through the blade to the margin, these veins showing plainly because of the depression between them. The veins end in the smooth margins which give another effect of line. The blades are slightly wavy so that the brilliant yellow green color is reflected in varying degrees of light and shade. The plant should be grown in a receptacle that emphasizes the element of line.

Most ferns require good drainage. So the pots or boxes in which they grow should have some broken pieces of pottery above the hole in the bottom. The paper flower pots are excellent for growing the small ferns in, and are easily placed in other receptacles as they take up so little room.

Garden knowledge consists chiefly of two things—knowing garden plants and knowing how to make them grow. One of the best ways to learn about garden plants is to send for the catalogues which you will find advertised in the magazines and then study the pictures and descriptions. You can order the plants by mail by writing a letter and inclosing stamps to pay the price.

Lesson 153: USING THE JAPANESE FLOWER HOLDERS.

One of the most distinctive features of the Japanese methods of flower arrangement is that each unit of the display stands apart from the rest. There is no indiscriminate massing, even of flowers of the same kind; each is given an opportunity to reveal its own peculiar beauty.

Another feature of these Japanese arrangements is the use of broad low flower bowls from which the plant stems seem to rise as if they were growing in the garden. The way in which this is accomplished is likely to be a mystery to the uninitiated observer, but is readily understood by looking into the receptacle, for there one will find the interesting flower holders or *nedomés* universally used by the Japanese. These are of rust-resisting metals and are either of various geometrical designs or of curious animal forms, especially aquatic animals like fishes and turtles. The outline only is suggestive of the animal, the main part being divided into sections for holding the flower stems. In the case of fish designs two fishes may be fastened side by side with the flower holding cylinders between.

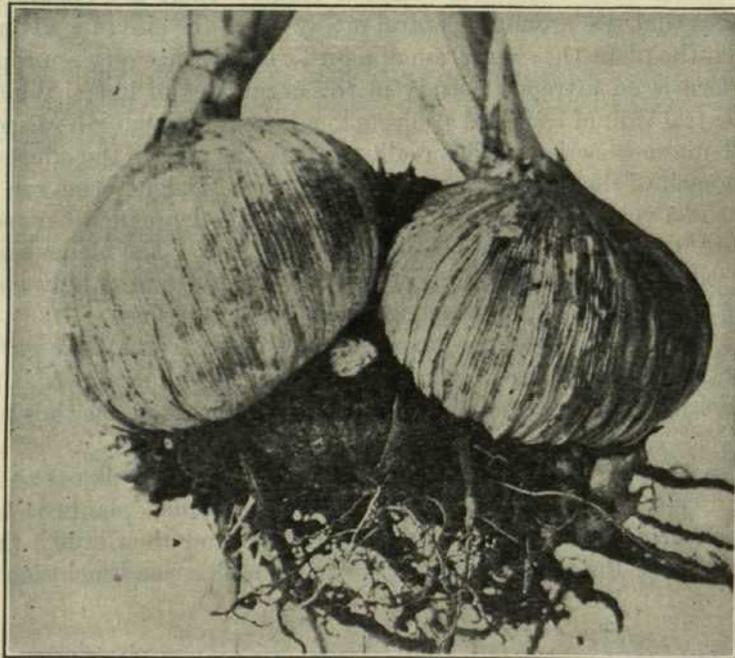
To one provided with a few of these holders and some wide flower bowls of attractive forms and colors the arranging of cut flowers becomes a new and most fascinating art. The possibilities of reproducing some of the outdoor effects seen in the garden are limitless and the

increased attractiveness of the cut flowers almost beyond belief. From early spring until late autumn one can bring indoors the most exquisite outdoor beauty and have it displayed in a way to suggest the grace of natural growth.

An interesting way to arrange plants that naturally grow in or near lakes or streams—like the irises, daffodils, Poets Narcissus and other water-side flowers—is to partly fill a wide flower bowl with attractive stones or coarse gravel. Then place in position two or three aquatic animal holders, like the fish, turtle, or alligator designs. Now fill the bowl nearly full of water and thrust the stems of the cut flowers into the right sized holes.

The holders of geometrical design may be completely hidden by covering with clean sand to fill the bottom of the dish. This will often help also to hold the flower stems more straight. The sand in turn may be practically hidden by the water that fills the flower bowl.

In any such naturalistic arrangement of cut flowers one must, of course, utilize the leaves as well as the blossoms of the plants displayed. There is one great advantage in this method, for it enforces a consideration of the elements of beauty in the plant which is too likely to be overlooked in carrying out our usual method of thrusting masses of cut flowers into vases.



Gladiolus cormus formed on top of old one.

Lesson 154: THE BEAUTIFUL GLADIOLUS.

The gladiolus is one of the most satisfactory bulbs for the boy's or girl's garden. The bulbs cost but little, they are easy to grow, they multiply so that one has new bulbs to plant another year, and the great spikes of flowers are beautiful, either in the garden or the home. They require so little room that they may be planted almost anywhere, and they make a most effective showing either in beds alone or mixed with other plants in the border garden.

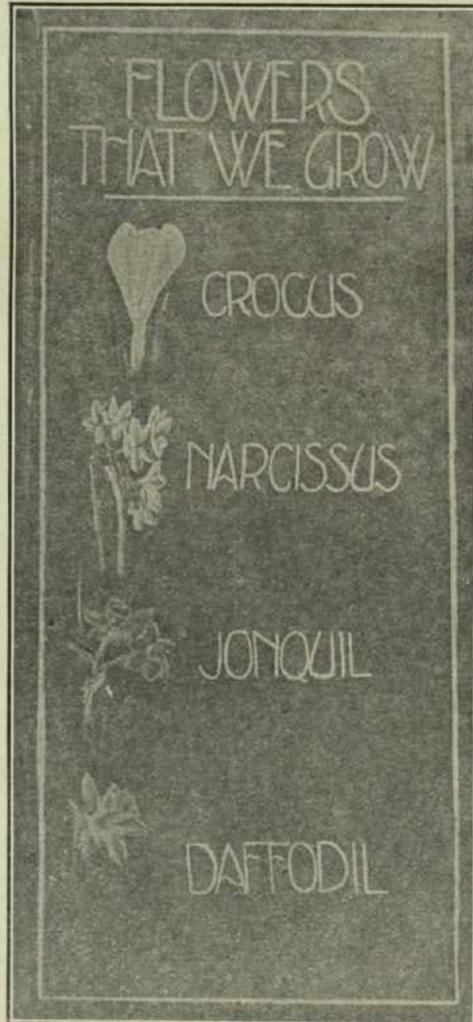
You can get gladiolus bulbs for a few cents apiece from the local florist or from the seed and plant houses that issue seed catalogues. Buy your bulbs of specialists if you can.

You can grow the flowers in almost any good garden soil if it is not sour. A moist, sandy loam is best. If it is very rich it is liable to be sour and you will do well to work in some finely ground lime or bone meal. About the 1st of June is a good time for the main planting of gladiolus bulbs. If you have many bulbs it is desirable to plant them in sets about 10 days apart, from the 20th of May until the end of June. This will give a succession of flowers for a long period.

The planting of these bulbs is very simple. Dig a little hole 5 or 6 inches deep for one of the larger bulbs, 4 or 5 inches deep for one of the smaller ones. Be sure you have them right side up; you can tell by the bud at the center. Now place the bulb in the bottom of the hole and cover it with soil. Set the bulbs about 6 inches apart. After the plants come up they require very little attention, except to keep the soil surface stirred to prevent the growth of weeds and to save the moisture in the soil. Unless the season is very dry it is seldom necessary to water the bed, but if this is done give it a good soaking rather than a mere wetting of the surface.

There are two great groups of bulbs as regards their structure. Some are scaly and others are solid. The onion and the hyacinth are examples of scaly bulbs. The crocus and the gladiolus are examples of solid bulbs, or corms, as the botanists call them. New corms are commonly formed on top of the old one, as you will easily see when you dig up your gladiolus roots in October. You will also find on some bulbs a lot of little bulblets or cormels around the outside. Save both the bulbs and bulblets, keeping them in a frost-proof cellar over winter to plant another spring.

If you cut a gladiolus stalk when the first flowers are opening and place it in a jar of water, the buds above will open just as if it had been left on the plant. On this account these flowers are especially desirable for house decoration, as they will continue to show beautiful blossoms for weeks after they are cut.



Blackboard panel for garden stories. Drawn by Emily Jack, Lowell Normal School.

