

DEPARTMENT OF THE INTERIOR.

BUREAU OF EDUCATION.

FLOWER GROWING FOR SCHOOL CHILDREN IN THE
ELEMENTARY GRADES.

This circular is intended for teachers who are conducting home-garden work. Its purpose is to show how children can be taught to make homes attractive through the growing of flowers.

CUTTINGS.

Herbaceous plants, such as geraniums and carnations.—The cuttings should be from 3 to 4 inches long, and should be selected from the vigorously growing side branches containing flower buds. The cutting is severed from the plant by a smooth horizontal cut, made with a sharp knife, just below a leaf. In herbaceous plants roots develop at the nodes, and any portion of the stem left below this point is nonfunctional and decays. To guard against too rapid transpiration, remove the lower leaves close to the stem and cut the upper leaves in halves. The cuttings should be kept in water until they are placed in the sand.

Place the cuttings 2 to 3 inches deep, in rows, in flats filled with coarse sand free from organic matter. Press the sand closely around them. Never thrust the cuttings into the sand. The rows should be just far enough apart to keep the cuttings from touching. As far as possible, plant but one variety of cuttings in a flat. The sand should be kept moist, not wet, and the cuttings shaded from the direct rays of the sun until a callus is formed and roots started on each, when they should be transferred to small pots. The cuttings grow faster if they are put in small pots at first and transferred to larger pots as the roots become crowded, instead of being put in large pots at the beginning. A good potting soil is made of one-third sand, one-third leaf mold, and one-third garden soil. (For the making of flats, see School Home-Garden Circular, No. 6.)

Rose cuttings.—Rose cuttings should contain about four buds and should be from 3 to 4 inches long. They should be selected from wood that is nearly matured. The lower cut should be made just under a bud and the upper cut just above a bud. In preparing cuttings of woody plants, the lower cut should be made as nearly *horizontal* as possible without splitting the stem. The thorns and lower leaves should be removed and the upper leaves cut in halves. The cuttings should be kept in water until they are placed in the frame to root.

A frame of any desired length and breadth should be made. It should be 1 foot high and placed over a pit 18 inches deep. Fill 3 inches deep with coal cinders, 2 inches with leaves, and 1 foot with soil made of equal parts of coarse sand and good garden soil. Pack the soil *thoroughly*; then add 4 inches of coarse sand, and water well. (For location and construction of frame, see School Home-Garden Circulars, Nos. 5 and 6.)

The cuttings should be placed 2 to 3 inches deep in furrows made in the sand with a dibble. The sand should then be pressed firmly about them. Never thrust the cuttings into the sand. The rows need to be far enough apart to prevent the cuttings touching. The cuttings should be shaded in such a way as to insure ventilation, and the soil should be kept moist but not wet. The following spring, or possibly the same fall (depending upon the time the cuttings were made), they will need to be transplanted to a nursery row, where they should remain for one or two years, when the plants will be large enough to transplant to permanent places.

Hardy shrubs, such as forsythia, spiraea, grapes, dogwood, high bush cranberry.—The cuttings should be from 6 to 9 inches long and should be selected from strong, healthy, mature wood of the current year's growth. The lower cut should be made just under a bud and the upper cut just above a bud. To prevent drying, the cuttings should be planted as soon as they are made. Prepare the soil thoroughly; make a V-shaped trench 6 to 9 inches deep by driving a spade into the soil and pulling it back before lifting it out. Put 1 to 2 inches of sand in the bottom of the trench, and place the cuttings 3 inches apart against the side of the trench so that only the top one or two buds of each are above the ground. Put 1 to 2 inches of sand around the base of the cuttings; then press the soil firmly about them. The cuttings should be rooted in a well-drained section of a garden where they will not interfere with the regular garden operations of the following year. In some locations a winter protection of leaves or coarse stable manure will be needed. Over-protection does more harm than good. The next fall the cuttings will be ready to move to a nursery row, where they should remain one or two years, when the plants will be large enough to transplant to permanent places.

In sections of the North, where the soil freezes to a depth of 6 inches and over, root the cuttings by placing them lower end up in a trench 18 inches deep. Pack sand closely around the cuttings and fill the remainder of the trench with soil. Then mulch with 1 to 2 feet of straw. The following spring transfer the cuttings to a V-shaped trench and proceed as described above.

Time to root cuttings.—Cuttings of herbaceous plants can be rooted at any time, cuttings of roses from June to October, depending upon the location; and cuttings of hardy shrubs any time from August to the following spring, after the wood has matured.

MAKING AND MANAGING FLOWER BORDERS.

Planning the border.—Except for sweet peas, all flowers needed for picking purposes should be grown in the flower borders in the back yard. Sweet peas should be planted in rows in the vegetable garden. The attractiveness, as well as the usefulness, of the flower borders depends upon the choice and arrangement of flowers. The flowers should be chosen as to height of plants, color of blooms, and season of blooming. The tallest plants should be placed at the back of the border; for a border 6 feet wide, none of the plants need be over 5 feet. There can be a riot of colors if the flowers are arranged in clumps of two to three throughout the entire length of the border and if white flowers are used freely between shades that clash. In a well-planned flower border some flowers should be in bloom every month during the growing season. A surprisingly large number of individual plants of each variety will be needed. During the first year the borders may be made most attractive with annuals alone. After the first year hardy perennials might predominate, with enough annual flowers to fill up the spaces and hide the soil. The following well-tried, old-fashioned flowers will give the best satisfaction.

Annual flowers.—African daisy, ageratium alyssum, annual phlox, aster, balsam, calendula, calliopsis, candytuft, cornflower, cosmos, castor beans, feathered cockscomb, larkspur, love-in-a-mist, marigold, mignonette, nasturtium, petunia, poppy (Shirley and California varieties), stock, sweet pea, sunflower (red and "cut-and-come-again" varieties), verbena, and zinnia.

Annual vines.—Balloon vine, cypress vine, Japan hop, moon flower, Japanese morning glory, scarlet runner bean.

Biennials.—English daisy, pansy, fox glove, Canterbury bells, hollyhock, Sweet William, wall flower.

Perennials.—Anemone, hardy aster, bleeding-heart, carnation, chrysanthemum, columbine, coreopsis, crocus, daffodil, dahlia, delphinium, gaillardia, gladiolus, golden glow, iris, lily, mallow, oriental poppy, peony, phlox, pink, platycodon, tulip, scabiosa, Shasta daisy, snap dragon, snow drop, violet.

Securing plants and planting borders.—The annual flowers should be started in flats in March and transplanted to the borders in April, where they should be placed far enough apart in the clusters to prevent crowding. Poppies should be planted directly into the border and thinned later, for they do not transplant readily. The low-growing plants used for the edges may also be planted directly into the borders. In order to extend the flowering period late into the fall, fall flowers should be planted. Cosmos, for example, may be planted in July in the South. (For directions for transplanting, see School Home-Garden Circular, No. 6.)

Satisfactory plants of biennial and perennial flowers can be grown more cheaply than they can be purchased. There is also the advantage of having the plants on hand when they are needed. The seeds of biennial and perennial plants should be planted in seed beds in the spring after danger of frost is past and the plants transferred to the flower borders in the fall. Biennials need to be sown every year to provide flowers for the following year. The clumps of perennials can be divided to make new plants to fill in the places of those that die.

Many desirable bulbs can be secured at a reasonable price if they are purchased in quantities. Spring flowering bulbs are planted in the fall. Summer flowering bulbs are planted in the spring. They should be planted to a depth equal to twice their diameter. Like the plants, bulbs should be planted in clusters throughout the entire length of the border.

Preparation of soil.—To grow well, flowers need a deep, mellow, rich soil. In order to secure these conditions the soil should be prepared at least 15 inches deep and thoroughly mixed with a 1-foot layer of well-rotted manure or compost. The top soil should be made fine and level. (For further directions on preparing the soil, see School Home-Garden Circular, No. 7.)

Care of the border.—Until the plants are large enough to shade the soil and crowd out the weeds, the border should be hoed just as the vegetable garden is. In long periods of drought the border should be watered thoroughly. Evening is the best time to water. An occasional thorough watering does more good than more frequent light sprinklings. To keep the borders attractive there should always be a supply of new plants to take the places of those that die and of the annuals that have finished blooming. Likewise all flowers should be picked as soon as they fade in order to stimulate further bloom, for when a plant produces seed its duty is accomplished and it dies. The bulbs should be removed after the foliage dies down, and new plants should be put in their place.

Every three years the flower borders should be spaded, well manured, and replanted.

PLANNING AND PLANTING FRONT YARDS.

The day has passed when a shrub can be planted anywhere in the front yard. There is a particular place for the shrub, or it is out of place. L. H. Bailey says: "Where to plant is really more important than what to plant."

Aside from the ever-present necessity of neat and clean grounds, the attractiveness of the front yard is dependent upon three principles: (1) "Tying" the house down to the ground with occasional shrubs and vines so placed that they will not crowd each other but will break the severe line between the house and the lawn. (2) Choosing and arranging these shrubs with one, two, or three kinds as a basis. (3) Leaving the centers in lawns free of unnecessary walks, drives, piles of stones, or pieces of statuary.

A home could be attractively planted with either of two groups of plants—those that are not native and, therefore, must be purchased or grown from cuttings, and those that are native and easily available. The native plants are to be preferred, since they not only decorate the home but attract the birds by providing shelter and food throughout the winter months.

I. A suggestive list of the plants that are not native is given herewith:

Shrubs.—Abelia, althæa, barberry, deutzia, forsythia, hydrangea, Japanese quince, dwarf euonymus, lilac, privet, roses, spiræa, snowball, syringa, weigelia.

Vines.—Boston ivy, clematis, English ivy, wistaria, climbing roses, climbing euonymus.

II. The following list does not begin to exhaust the desirable native plants of the South. Similar lists could be made for other sections. Native flora should be studied with this purpose in view.

Shrubs.—Azalea, arrowwood, black haw, coral berry, dogwood, elderberry, high-bush cranberry, indigo, Indian currant, laurel, rhododendron, sweet shrub, sheep berry, sweet pepper bush, wild rose, witch-hazel.

Vines.—Greenbrier, honeysuckle, trumpet vine, Virginia creeper, wild grape, yellow jessamine.

Trees.—Dogwood, hackberry, Hercules club, holly, red cedar, service berry, wild cherry, wild crab, fringe tree.

Transplanting.—Many shrubs are stunted by careless planting. The hole in which the shrub is to be placed should be deep enough so that good loam may be filled in for the new roots to feed upon and the shrub placed at the same depth it was before. It should also be wide enough for the roots to be well spread out. The shrub should be placed erect and the soil thoroughly packed around the roots. To balance the loss of roots, half of the branches should be removed at time of planting.

Pruning.—The shrubs and vines used to beautify the home should require very little care or attention other than the removal of old, dead, broken, or rubbing branches.

Shrubs in the back yard to be used as screens or to supply flowers should be pruned as follows: Spring flowering shrubs, such as forsythia, should be pruned immediately after blooming. Summer and fall flowering shrubs, such as roses, should be severely pruned in the early spring before the buds open.

REFERENCES.

United States. Department of Agriculture. Farmers' Bulletins:

157. The Propagation of Plants.

181. Pruning.

185. Beautifying the Home Grounds.

195. Annual Flowering Plants.

494. Lawn Soils and Lawns.

750. Roses for the Home.

Magazines: The Garden Magazine. Home and Garden.