

# FLOWER GARDENS FOR COLORADO

BY GEORGE A. BEACH



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COLORADO AGRICULTURAL COLLEGE  
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Most flower beds should be "backed up against something"—not planted in the center of an open lawn.

## FOREWORD

**For Maximum Enjoyment from Your Flower Garden Include Both Annuals and Perennials.**—Most perennials bloom in early spring or late summer, leaving a mid-summer gap in flower production and most annuals bloom in mid-summer. So a variety of continuous bloom requires both.

Until they reach mature size, properly spaced perennials may seem too far apart. Annuals are useful in such places.

Some colors are available only in annuals. What perennial, for instance, could be substituted for the colors of the Zinnia?

**Garden to Suit Your Own Taste.**—The picture your garden makes should, first of all, be pleasing to you, as you see it most often. Make it conform to the tastes of others only insofar as you wish others to take pleasure in your garden.

Our tastes are much alike in many ways. We even change our own tastes gradually when we find they are too different from those of our friends.

Perhaps you have a flower bed bordered with some beautiful rock specimens you collected on a trip. The chief source of your pleasure in them is the fun you had collecting them. A friend, without this personal interest in the rocks, may feel that they are out of place bordering a flower bed. Incidentally, he is likely to take the same attitude toward washtubs and hot-water tanks used for flower boxes, or rubber tires and tractor wheels for flower beds.

**Keep it neat**, first of all, to improve appearance; and, equally as important, to give plants the best possible chance to thrive. Remove superfluous foliage and faded flowers; this will increase general vigor of plants and number of flowers per plant as well as help to check the spread of insects and diseases.

**Be prepared** with a spray outfit and spray materials; they are as necessary as your rake and shovel. If you await an attack before you get this equipment, the pest may get beyond control.

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The author wishes to acknowledge the assistance of William M. Case, extension service horticulturist, for assistance in make-up and illustrations.

# FLOWER GARDENS FOR COLORADO

BY GEORGE A. BEACH, Assistant Horticulturist

Most of us are agreed that trees, flowers and lawns go a long way toward making a house a home, tho many are in doubt as to what, when, how and where to plant.

"Flowers," to many people, mean all plants with ornamental bloom and include the whole range from the tiniest-flowered annual to the 15-foot lilac bush.

For convenience of discussion, this broad classification of flowers can be subdivided into:

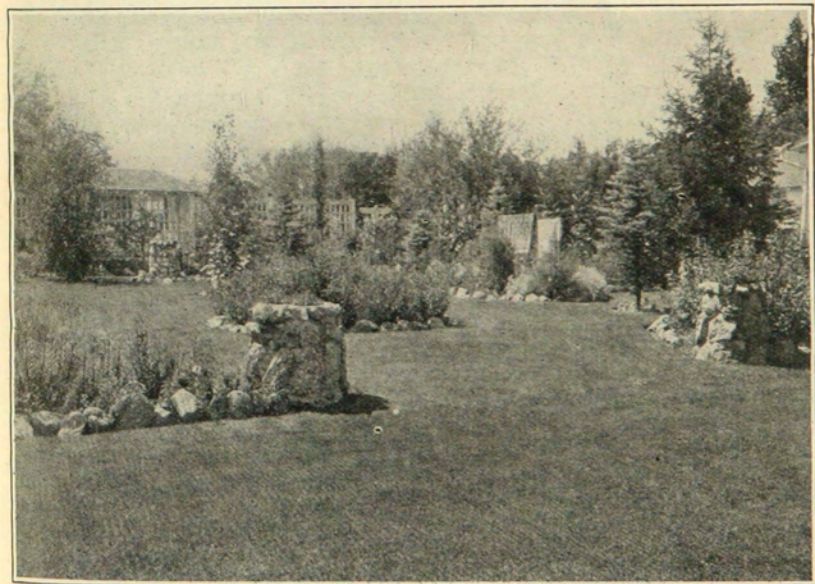
Shrubs (woody tops that live over winter)

Perennials (tops die, roots live over winter)

Annuals (whole plant dies at end of first growing season)

Additional information on farmstead planning is given in the Colorado Extension Service Bulletin 326-A, "Tree Wind-breaks for Colorado."

Colorado Extension Service Bulletin 303-A is an 8-page bulletin on "lawns" for Colorado conditions.



This beautifully kept garden is a joy to the owner, but criticized by many for unwise use of rocks.

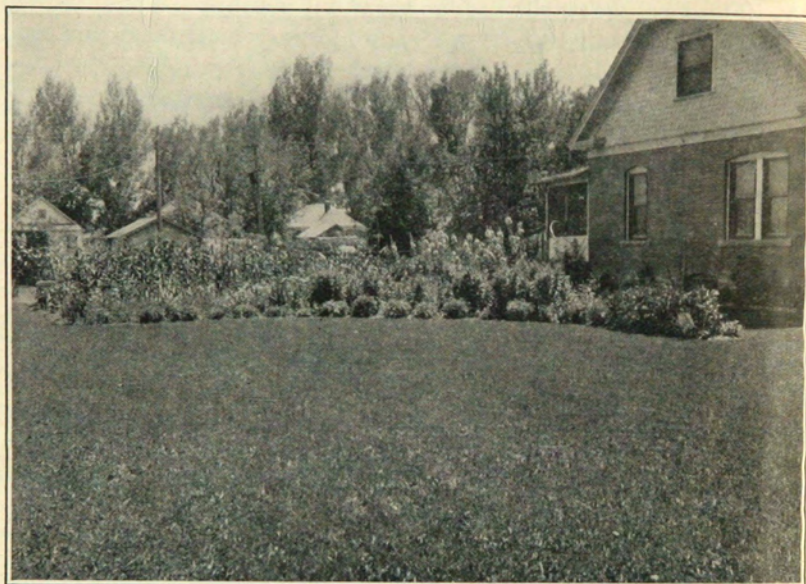
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Masses of color, from groups of plants of the same kind are usually more effective than the same plants scattered spottedly over the same area.



It remains for this publication to discuss annuals and perennials in completion of our first paragraph's objective.

Only an outline of procedure will be attempted here, as books, magazines and catalogs abound with details and descriptions too numerous to even be desirable in a publication of this type.



Landscape effect is accomplished here with annual and perennial flowers grouped in a wide curve, leaving a wide, open lawn in front.

### Uses of Garden Flowers

The two principal ways in which garden flowers are used are for **cut flowers** and for **landscape effect**.

**The cut-flower garden**, which formerly only furnished bouquets for home and friends, is now supplying many roadside stands with decoration and additional products for sale.

**Landscape effect** is the picture formed by uncut flowers growing out of doors.

These two ways of **using** garden flowers require different systems of **growing**, and in some cases even different varieties of flowers. High-quality, long-stemmed flowers are the principal objective of the cut-flower garden. For landscape effect, a mass of flowers, not necessarily with long stems or individually perfect flowers, is desirable.

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Give your flower garden good care and have no more than you can handle—orphaned flower beds are a forlorn sight.



More annuals than perennials are usually used in the cutting garden, while the landscape garden will often be predominately perennials.

Cutting gardens are laid out like vegetable gardens, in rows, enabling the grower to give all plants a maximum of care with a minimum of labor and time.

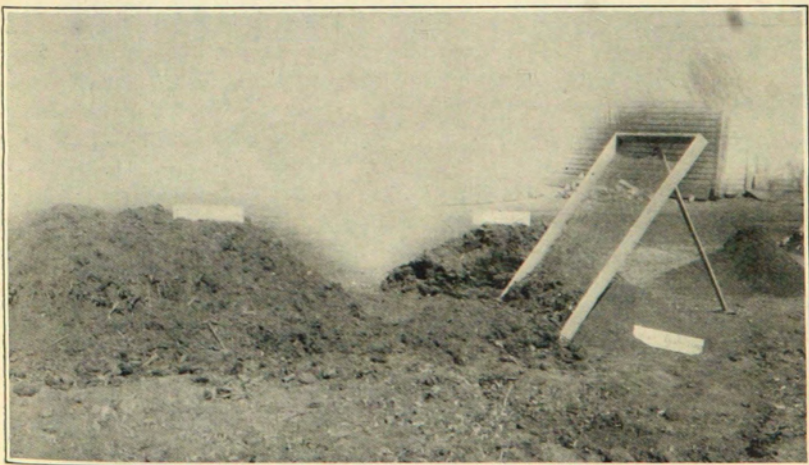
Landscape gardens should make an artistic picture and so are seldom in long, easily-cared-for rows; thus the time and labor items per square foot are greater.

### Soil

**Preparation.**—Spade or plow at least 8 inches deep, even for small, shallow-rooted plants, and deeper yet if subsoil is hard. Take special care in preparing soil for perennials. They stand for several years in the same place so the soil cannot be plowed every year as it is for annuals.

**Manuring** is necessary on most garden soils. Unless your soil is already very rich, use liberal quantities of barnyard manure. Rabbit and poultry manure should be used sparingly as they may cause too sudden growth or burning of roots. If no manure is available, it will help to plow under plants, leaves or grass. Commercial or chemical fertilizers should be used sparingly until a specific need for them has been found.

**Compost** is excellent for top-dressing, and is easily made. Leaves, grass and old plants (if not diseased) are piled with



Left: This year's garden refuse. Center: Last year's. Right: Leafmold for top-dressing and general soil improvement.

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White flowers are important both in landscape and cut-flower arrangements—don't omit white varieties simply because they lack color.

alternate layers of soil and soaked with water. Sods and manure also make fine compost. If your soil is **too sandy, use clay** in the compost pile. If it is **too clayey, use sand**. Keep the pile moist to aid decomposition. Cut the pile down and shovel it into a new one several times during the year, when it can be conveniently handled. About a year after the pile is made, screen it. The screened material is ready for use, and the coarse screenings can be put back into a new compost pile.

Very little garden refuse is left to burn or to be hauled away if you make the compost heap a permanent part of your garden plan. Design the plantings to screen it from view, but, by all means, have it!

**Cultivation.**—Everyone must study his own soil and learn when it can be cultivated to the best advantage. Often in the same small garden, one soil needs to be handled differently than another. In many cases, tho, the secret of successful cultivation lies in the method of watering.

**Watering.**—"The man behind the hose is the man who grows the rose." Rose-growers like to impress their helpers with this bit of wisdom from the very beginning. Simple as watering seems, a life-time of experience is none too much.

After a thoro soaking that will penetrate 2 feet or more, the proper kind of cultivation is possible. When the surface has dried out just the right amount, the cultivator will leave it in perfect condition.

If the soil is "sprinkled" every day, the surface is never in just the right condition to cultivate; it packs and puddles; plants become shallow rooted, lacking in vigor, and are an easy prey to insects and disease.

To wash off the plants, use a forceful spray, holding the nozzle near the ground and pointing upward. This will freshen and clean plants without wetting the soil.

Water when the plants need it. This seems at first like useless advice, but experience has demonstrated its value. The same soil in the shade of large plants or buildings and in sunny spots will have different water requirements. Naturally, then, rules cannot be laid down for different soils.

Most watering should be done while temperature is rising in the morning. It is usually best for foliage to be dry at night. Some diseases are spread rapidly on foliage which is wet at night.



## Seeds or Plants?

Many garden flowers are equally easy to start from plants or from seed. Time is saved by starting with plants—money is saved by starting with seed, except in special cases.

Plants difficult to grow from seed are cheaper when bought from one who specializes in raising them. Some seed produces a mixture of plants, none of which is the same as the parent plant. This type of plant needs to be propagated by some other method than seed. Still others rarely produce good seed and therefore must be propagated by another method.

## How to Buy

Packages of individual plants and small packets of seed are ideal for the home gardener. The best stock, however, is not always in the most attractive package. Buy from your nearest reliable plantsman or seedsman. He is in a better position to recognize quality stock than other merchants who often sell these things as a side line. He is also a better advisor as to kinds and varieties for your particular need.

## What to Plant

The first gardens of civilized people were strictly for utility. Later they became things of beauty. Probably this history in our evolution prompts us to start with vegetables, then to add annual flowers, and finally to use more and more perennials.

If you have never grown flowers before, start in the spring with annuals. Then, in late summer, seed of perennials may be sown in parts of the same bed. These seedlings, sheltered by the annuals, will be ready the following summer for their first year's bloom.

**Kinds.**—The newer kinds of plants and seeds are expensive because of their scarcity. If they are easily grown and propagated, they soon become cheaper. The more difficult they are to grow or to propagate, the costlier they remain.

Altho the satisfaction is **great** in having something new, the **most** satisfaction comes from common kinds. The fact that they are common is proof of their desirability. They must have been relatively easy to grow in order to become "common," and that they continue to be grown is proof that they are still worthwhile.

The common kinds will grow under a wide variety of conditions. Your garden may be better than average in some ways and poorer in others.

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Try not to let your "fireside gardening" in winter outstrip your facilities for giving ample care to the things you buy.

**Varieties.**—No one can give you perfect satisfaction by selecting varieties for you. Study your catalogs, and then, if still in doubt, buy a nursery or seedsman's collection of plants, or mixed seed of the kind of plants you want. Their performance in your own garden will then determine which you want to propagate, and which to discard.

### List of Garden Flowers for Colorado

A complete list of garden flowers for Colorado would be far too large for a bulletin of this type. Our list includes only a few of each class which are generally the most satisfactory. In so short a list as this, however, there is plenty of variety for a small home garden. In fact, few established gardens have all the kinds in this list.

Garden roses really are shrubs, but are included here because they are grown principally for flowers, which makes their care similar in many ways to that of perennials.

**Annuals.**—All these are treated as annuals in Colorado. The ones marked (\*) are perennials, however, and they are the ones to take into the house in pots if you do not like to let Jack Frost have all of your garden in the fall.

|                 | Page       |                    | Page   |
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| Sweet Pea ..... | 11         | Nasturtium .....   | 12     |
| Aster .....     | 12 (*)     | Verbena .....      | 12     |
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| Marigold .....  | 12, 13 (*) | Snapdragon .....   | 12     |
| Petunia .....   | 12, 13 (*) | Four O'Clock ..... | 12     |

### Perennials

|                       |                |                      |        |
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| Phlox .....           | 13, 14, 19     | Painted Daisy .....  | 13     |
| Peony .....           | 13, 14, 15, 19 | Gaillardia .....     | 13     |
| Delphinium .....      | 13             | Coreopsis .....      | 13     |
| Perennial Aster ..... | 13             | Babybreath .....     | 13     |

### Bulbs

|                              |        |                 |    |
|------------------------------|--------|-----------------|----|
| Spring-flowering bulbs ..... | 14, 15 | *Gladolus ..... | 16 |
| Summer-blooming lilies ..... | 15     | *Dahlias .....  | 16 |

### Garden Roses

|                         |    |                   |    |
|-------------------------|----|-------------------|----|
| Hybrid Perpetuals ..... | 18 | Hybrid Teas ..... | 18 |
|-------------------------|----|-------------------|----|

(Catalogs usually mark the first "H P" and the other "H T")

### How Soon Will It Bloom?

Almost invariably this is our first question about a plant unfamiliar to us, be it annual, perennial, shrub or fruit tree.

When seed is planted in the open the annuals bloom the first summer and they will bloom still earlier if started indoors.

Many perennials, if started early enough indoors, will bloom the first summer, but few will do so if sown in the open.

## Annuals

Especially in a new garden we "just can't wait" for bloom. Annuals are the quickest to bloom from seed and most of them are prolific bloomers from midsummer till after frost.

The blooming season of annuals is usually prolonged by cutting the flowers regularly. Seed production is the annual's chief mission in life. Delay seed formation by cutting the flowers, and you encourage them to continue blooming.

**How to Plant.**—How deep to plant, the proper condition of soil and the amount of sun or shade necessary are questions answered in the "Cultural Directions" on each seed packet.

Don't hesitate to try any of the common kinds for fear the demands of these "Cultural Directions" cannot be met in your garden. What your location lacks in one respect, may be more than made up in another. Follow these directions as closely as you can and experience will show what minor changes are necessary to suit your particular conditions.

**Pansies.**—Pansies sown in August and transplanted in October will start at the first sign of spring and make as large plants as those sold by florists and seedsmen in spring. (See also Pruning, etc., page 19.)

**Sweet Peas.**—St. Patrick's Day planting of sweet peas is one of the most persistent garden superstitions. Obviously, if March 17 is the proper date in one place, it cannot be in all the rest of Colorado. The fundamental idea, **early** planting, is right. Peas make their best growth before summer. They will endure frosts and even light freezes, but cold, damp weather while seed is sprouting is particularly bad for them. The ideal date to plant, then, is as early as you can have some assurance of sunny spring days while seed is sprouting.

Another sweet-pea bugaboo is the 2-foot-deep-trench idea. Here, again, the fundamental idea is right—the soil should be thoroly prepared and more deeply than ordinary, but the seed need not be planted more than 2 or 3 inches deep—2 inches in cold, clay soil, 3 inches if it is warm and sandy and the soil should be moist enough to bring the seed up without watering.

Seed planted 2 inches apart will require some thinning if the stand is good. Double rows a foot apart, with the trellis in between, makes a convenient way to handle them.

If you dig the 2-foot-deep trench, dig it in the fall and make it 1½ or 2 feet wide. Mix fertilizer with the soil taken out of the trench and then refill the trench with the mixture. By spring,

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Names of named varieties should be preserved—don't trust your memory too far—have them in your head but also in your garden notes or on labels.

soil and fertilizer will be thoroly composted in the trench and only ordinary seedbed preparation is necessary.

Treating seed with a mercuric-chloride compound obtainable at seed stores is a good precaution against some diseases.

Early flowering varieties make a strong appeal to gardeners who are racing their neighbors for the first bloom, but the largest flowered varieties are the later ones.

A low, chicken-wire entanglement over the peas for the first few weeks is good protection against birds which are famished for this first green morsel to appear in the garden; and, if tidily supported, chicken wire makes a good trellis when they start climbing. Some prefer wires with string between; branches of trees or brush stuck into the ground or even single bamboo poles for each plant.

Spray for aphids or plant lice before you see them—they are probably there anyway, and then continue to search for them—several more sprayings may be necessary during the season.

Have the foliage always dry by night and there will be little danger of mildew.

Pick flowers daily, or they are likely to quit blooming. As with other annuals, their chief mission in life is seed production. Prevent this and you prolong flower production.

**Other Annuals.**—The others on our list of annuals should not be sown in the open until settled weather.

Plants of the common annuals that are already several inches high when danger of frost is past, can be bought from florists and seedsmen. These are planted in March and grown in flats or pots in a greenhouse. This time-saving system is a good one for the home gardener who is willing to take the extra trouble of caring for boxes of seedlings several weeks before they can be planted outdoors.

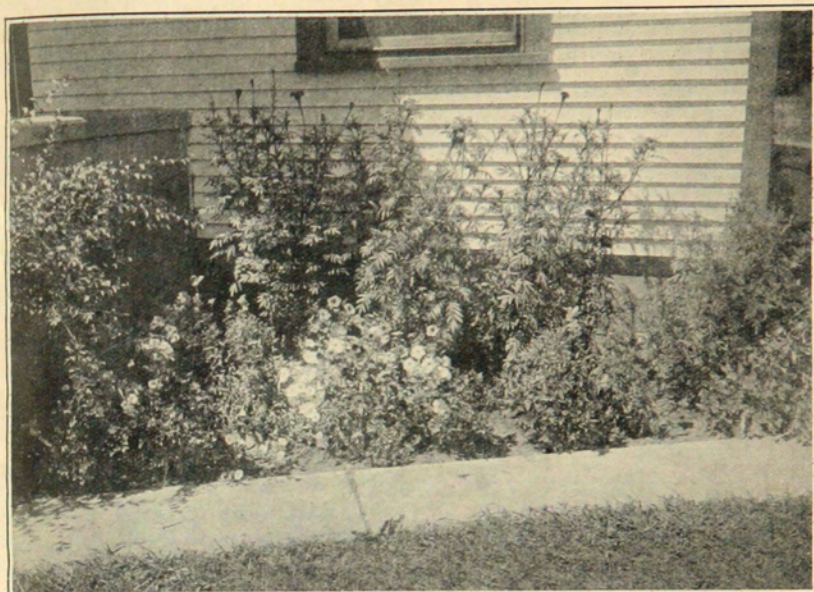
A separate bed for a seedling nursery is a good system for starting extremely small seeds. A space 2 or 3 feet square will grow thousands of seedlings to transplanting size.

A mixture of leaf mould or peat and sand is excellent for covering small seed which have been sown on the surface. It will not crust or dry out rapidly and enough to barely cover the seed is all that is needed.

Thinning, weeding, shading and other special care of seedlings are much more convenient in such a nursery than in the beds where plants are to mature.

Whatever system of starting plants is used, there should always be many times the required number grown. Only in this way can the very sturdiest plants be selected.





African marigold in the rear; petunias in the front. These annuals, set out in mid-June, are serving as shrubbery in late July, when the picture was taken.

### Perennials

Probably the most desirable features of perennial flowers are their permanence and the fact that many of them bloom in spring.

Thousands of amateurs have declared: "I'm going to have nothing but perennials so it will be less work to care for my garden." They are thinking mainly of the fact that perennials start growth automatically in spring. This does relieve the gardener of his annual plowing and planting, but proper year-round care of perennials is as big a job as the growing of annuals.

Perennials require dividing, some every few years, others less often, or some other kind of propagation to prevent old age from robbing them of their usefulness.

**Spring or Fall Planting?**—A blanket recommendation for Colorado is almost as impossible to make as one for the entire United States. This does not seem like side-stepping the issue when one knows that the number of frost-free days per year in Colorado towns varies from 59 to 184.

Knowing the basic facts which apply to plant growth, one can usually tell whether to plant in spring or fall in a certain

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Insects and diseases are necessary evils—be ready for the battle—  
it's a cinch you'll have 'em sooner or later.

locality. Spring planting is the rule with most plants in Colorado, but plants like iris, peonies, oriental poppies and tulips ripen in summer. They are dormant by late summer and in fine condition for transplanting. There should be sufficient open weather to start new roots on transplants before winter sets in. Having this foothold in the soil gives them a much better chance against winter injury.

**Winter Protection.**—Winter protection is simply an effort to keep perennials frozen solid all winter. Alternate thawing and freezing does far more damage to plants than actual cold. Roots and bulbs are often raised and sometimes even pushed entirely out of the ground by alternate freezing and thawing.

Nature's way of protecting plants is to cover their crowns with the plants' own dead foliage and whatever else lodges among their dead stems.

Neatness in our yards necessitates the removal of much of this natural protection, so, to the extent that natural cover is removed, some other protection needs to be supplied. Often, simply cutting dead stems and laying them flat will tidy the flower garden and provide its protection as well.

Whatever cover is used it should be a light, loose material that will not pack too tightly under snow. If it becomes soggy or forms a sheet of ice, it may do more harm than good. Waste evergreen boughs from Christmas decorations make excellent covering material and winter injury seldom occurs before Christmas.

The very hardiest of varieties will sometimes winter-kill, but old age or some other lack of vigor is usually partly responsible.

When growth starts in spring the covering should be partly removed to discourage too rapid early growth and the remainder should be taken off a few weeks later.

**Division.**—A perennial plant that is undisturbed becomes a larger and larger clump each year. This increase in size is slow in some (like peony) and rapid in others (like iris). Every 3 years is none too often to divide the iris, but peonies don't need it oftener than every 10 years. The others on our list (page 10) need division every 3 to 5 years, according to the growth they make.

The best time to divide perennials is the same time of year that you would set out new plants. (See Spring or Fall Planting, page 13.)

Many perennials are divided by simply digging out the clump and splitting it with a spade into a suitable number of smaller clumps; taking care that they're not cut too small to make fair-sized plants. Clumps of iris or phlox can be shaken

and pulled apart so as to make as many new plants as there were stems in the old one. Peony clumps are cut with a sharp knife so as to leave 3 to 5 "eyes" or buds at the crown of each separate piece.

### Bulbs

As to the varieties (see Varieties, page 10) of bulbs for a home garden, few would expect a state experiment station to be able to make authoritative recommendations from such enormous lists of names.

"Standardized Plant Names," by the American Joint Committee on Horticultural Nomenclature, lists the names of nearly 1,000 dahlia varieties, over 1,500 tulips and more than 2,000 glads! And there are many hundreds more in the catalogs of plantsmen and seedsmen.

**Spring-Flowering Bulbs.**—Groups of six to a dozen or more of these in front of shrubbery or in the flower border can be very effective, and they are particularly valuable because they furnish the first bloom of the season, so welcome after the barrenness of winter.

Tulip, narcissus and hyacinth, in the order named, are the principal ones of this group which are useful in Colorado gardens.

They are planted in fall, any time before the ground freezes—usually in October. Tulips should be 5 to 6 inches apart and 4 inches deep to the tip of the bulb. Narcissus and hyacinths, being larger bulbs, should be 7 to 8 inches apart, with the bulb-tip 5 to 6 inches deep.

No manure should be spaded into the ground before planting. Enough bonemeal to whiten the surface and some leafmold are good things to turn under, but not essential.

Tulips planted within a few feet of a south wall will start growing too early and often will be damaged by spring freezes.

Beds in exposed, windy locations should have a little winter protection (see page 14).

When plants begin to crowd and produce abnormally small flowers they need to be dug and the bulbs sorted. The largest sizes can be put back in the same place and the smaller ones grow more rapidly to flowering-sized bulbs. (See Spring or Fall Planting, page 13.)

**Summer-Blooming Lilies.**—These bulbs which flower later in the season are planted correspondingly later. Dealers advise planting some of them in mid-winter when open weather permits. Many can be planted in spring and others should only be moved in late summer, the dealer will tell you when.

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Don't expect too much from perennials, trees and shrubs the first year you have them—much of the first growing season is required for them to get a foothold.

The regal lily has held the center of attention in this class in recent years. It is easily grown and moderate in price. Success with this one usually prompts the home gardener to try others, such as the Madonna Lily, Coral Lily and the Gold Banded Lily of Japan, none of which is particularly difficult to grow.

All those named are "hardy" lilies, which in most of Colorado will survive the winters with a little protection.

**Glad.**—This agreeably short nickname relieves us of remembering which of the two pronunciations, glad-i-oh'-lus or gla-di'-o-lus, is now in vogue. (The former is preferred.)

"Standing room only" is one Colorado grower's way of telling how little space they require. The bulbs (as they probably will always be called) can be planted 4 to 8 inches apart in beds. In the cutting garden make a trench and set double or triple rows with 4 inches between bulbs. Cover them with 4 inches of soil. This depth will keep them from falling over with the weight of the flower spike. Ridging up soil in the row when cultivating will also help. Any good garden soil and plenty of sunshine and water is all they need.

Plant a few every 2 weeks from April 1 to June 1 and they will bloom over a longer season than if all are planted at the same time.

For cut flowers, glads are taken when the first bloom opens, with as long a stem as will leave 4 to 6 leaves to mature the corm. They can be freshened each day thereafter by breaking off faded florets and shortening stems. Besides being valuable as cut flowers, they are excellent for landscape effect.

The corms of this plant must be dug each fall. As soon as foliage begins to ripen (usually in September or October) they should be forked out and the tops cut off close to the corm at once. After drying in some airy place sheltered from rain for 2 or 3 weeks, the old roots will break off more easily than when they are freshly dug. After this cleaning they are stored in any fairly cool cellar or basement in shallow boxes, or hung up in cloth bags.

**Dahlias.**—Dahlias are planted at potato-planting time or later, 3 feet or more apart, according to variety. Clumps from the previous year must be divided before planting. Many people think by planting the entire clump in one place they will have a finer plant. Just the opposite is true. Every normal tuber in the clump will make a full-sized new plant and small tubers often make better plants than large ones. Cut the tubers off the old clump carefully with a sharp knife. Lay the tuber horizontally in a hole 8 inches deep, with the "eye" or sprout on the upper side. Particular care must be taken from digging in fall until



planting time that the necks of tubers are not strained. Cover the tuber lightly at planting time, adding a little water to settle the soil around it and finish filling the hole after sprouts have come thru the first light covering.

They need plenty of sunshine and water, but irrigations should be "soakers," with plenty of time between for cultivation.

Some varieties have a tendency to branch and rebranch so much that they fail to bloom. If some of the rebranching is prevented by pruning, this type will bloom normally. (See Pruning, Training, etc., page 19.)

There are many ways of caring for dahlia tubers over winter. Proper preparation for storage requires that:

1. Clumps be carefully dug so that the necks of tubers are not strained.
2. The hollow stalks are drained to prevent decay starting as a result of water standing in them.
3. All unsound tubers are removed and even small spots of decay cut out of otherwise sound tubers.

The clumps (undivided till spring) packed in paper-lined boxes of clean sand, need no further attention till spring. The sand will quickly dry out itself, but if packed thoroly around all tubers, will keep them plump. The ideal storage space is dry and remains near 40 degrees F. till planting time. If the storage space is very moist, they will keep best when hung up in burlap. The whole object in storage is to keep them plump, free of decay and to avoid sprouting too early.

### Cut Flowers

Good long stems are essential to high quality in cut flowers. Don't be content with short ones. A study of your plants will show you how to lengthen them. What if you do sacrifice quantities of the plant in getting long stems—grow more plants!

The florist's way is the best way to handle cut flowers. Cut them with a sharp knife or scissors, trim up the stems and then put them for several hours in a cool place with water up to their necks! This will fill the stems, leaves and flowers with water and keep them fresh longer after they are put into a basket or vase for display.

Changing the water and snipping off the stems is still the best way to prolong freshness in cut flowers. Aspirin, sugar, salt or ammonia in the water gives too small and inconsistent results to be worthwhile.



A peck or so of leafmold or soil poured into the center of the bush in late November or December is good winter protection. This picture was taken in spring after last year's growth had been cut down to the mounds and drifted leaves removed.

**Roses.**—Everyone appreciates the difference between the flower of the wild rose and the cultivated or garden rose, but many try to grow the latter into the bush form of the wild rose.

The small amount of wood that it is necessary to save each year is shown in the illustration.

The garden rose must have a reasonably long stem and thrifty foliage to make it worth cutting, and the grower of garden roses should strive in every way to produce fine cut flowers. Growing the plant in this way sacrifices much wood but produces the desired results.

It is true there is a difference in the methods of pruning different varieties. Study the varieties you are growing and if you find, as is the case with most of them, that flowers are produced on shoots that come out of 1-year-old wood, then do not try to save wood in the bush which is older than that. A general rule to remember in pruning is that the more-vigorous-growing plants require the least pruning. Roses that make very scant growth need to be pruned severely. This encourages long, new shoots which make quality flower stems.

The most satisfactory roses can be produced by collecting all your garden roses into a single bed in an open, sunny location where the soil is well drained. Hybrid teas need 2 feet of space between plants; hybrid perpetuals, 3 feet. Roses are gross feeders. Give them plenty of manure and when you water the rose bed, soak it thoroly and then do not water again until the soil is quite dry. If growing conditions are as they should be, there is little danger out of doors from black spot or mildew, but

these two widespread rose diseases can be checked by dusting with sulphur.

Plant lice are usually to be found on garden roses and constant vigilance and systematic spraying with a contact insecticide is the only control. A snout beetle which punctures buds is very difficult to control with sprays. Usually, however, a very few of these insects are responsible for what seems to be a plague in the bed. Search for them and destroy the beetles. There are seldom too many to be controlled in this way.

### **Pruning, Training and Disbudding**

We ordinarily think of pruning in relation to fruit production on trees and small fruits, but it is also useful in many ways with flowering plants.

In a general way, pruning is the removal of any part of a plant, but there are different objects in the removal of different parts. Pruning proper, is done to encourage flower production. Disbudding is to discourage flower production by removing certain buds so the remaining ones will be more worthwhile. The purpose of training is to shape the plant.

Study your plants to fix their natural habits of growth in your mind. Then encourage those tendencies which will make the plant most useful to you. Often you can train a plant to a more desirable shape just by removing a few shoots here and there.

In a bed of phlox or pansies, if some plants are cut down to within a few inches of the ground just before they come into bloom, these pruned plants will bloom after the others have finished, thus increasing the usefulness of the flower bed.

Peonies allowed to grow naturally will have many very short-stemmed and small flowers as side branches of the main flower stem. Disbud by removing all the side buds when small and leaving only the large terminal bud and there will be fewer but larger and long-stemmed flowers.

### **Yellow Leaves**

An unhealthy, yellow appearance should not be taken as an accurate symptom of a plant's ailment. Yellowing of foliage is comparable to paleness in the human. It may be caused by a number of things and may not necessarily be due to disease or insect injury.

Yellowing may be caused by too much or too little of certain plant foods. Or it may be the result of poor drainage.

Liberal applications of barnyard manure will correct most deficiencies of plant food. Excesses are usually the results of

faulty drainage. Correcting this condition may necessitate the removal of 2 feet or more of soil, replacing it with new soil underlaid by gravel or cinders.

If you cannot determine the cause of a soil trouble, send for Colorado circular 293-A, "How to Obtain Soil Samples for Analysis."

### **Insects and Diseases**

Every garden will support a share of our enormous insect and disease population unless some prevention is practiced.

Note the kind of damage being done by the insect or disease. If you cannot tell from this what remedy to use, write the Colorado Agricultural College, Department of Entomology, for insect information and the Department of Botany on diseases. If you send samples do **not** put insects in tightly stoppered bottles or in the envelope with your letter. Samples of diseased plants should be large enough to contain some disease-free leaves and stems. Do not send **only** diseased parts.

### **United States Government Bulletins on Garden Flowers**

These are obtainable, free of charge as long as the supply lasts from the Office of Information, U. S. D. A., Washington, D. C., or your congressman. When these two supplies are exhausted, copies may still be had by sending the price as stated to the Superintendent of Documents, Washington, D. C.

#### **Farmers' Bulletins:**

- 750 F. Roses for the home. 5c.
- 1171 F. Growing annual flowering plants. 15c.
- 1311 F. Chrysanthemums for home. 5c.
- 1370 F. Dahlias for the home. 5c.
- 1381 F. Herbaceous perennials. 15c.
- 1406 F. Garden irises. 10c.
- 1495 F. Insect enemies of flower garden. 15c.
- 1547 F. Rose diseases, their cause and control. 5c.

#### **Department Bulletins:**

- 1331 D. Madonna lily. 5c.
- 1459 D. The regal lily. 10c.