Improving Colorado Home Grounds

Bulletin 445
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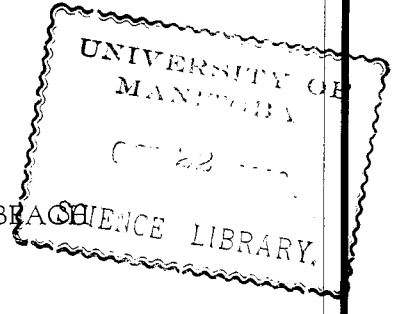
A Guide for the Home Owner



By GEORGE A. BRAGG

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Contents

Tables

Illustrations

Illustrations (Continued)

Improving Colorado Home Grounds

GEORGE A. BEACH

COLORADANS have unusual pride in the appearance of their home grounds. Not only is this true in areas where application of water to lawns and gardens permits adding much of aesthetic value to the home surroundings, but it is true to varying extent in other areas of the state as well. Selection of trees, shrubs, and vines adapted to the locality and use of simple plans for orderly and effective arrangement make it possible for Colorado residents to have the pleasure of homes set in attractive surroundings. The expense, if selections are made

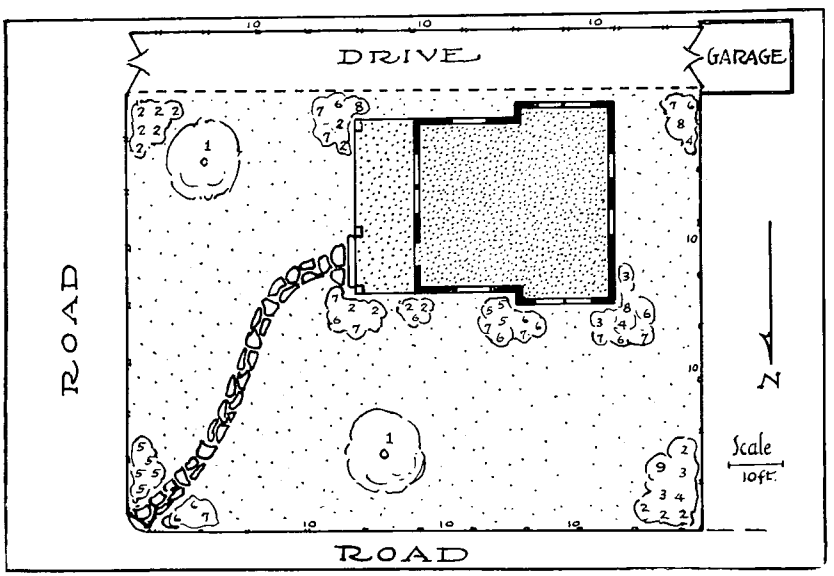

Figure 1.—A plan for planting a rural corner lot. Numerals indicate the location and kind of each plant as follows: 1, American elm; 2, Vanhoutte spirea; 3, mockorange; 4, sumac; 5, Euonymus alatus; 6, Japanese barberry; 7, white snowberry; 8, Tatarian honeysuckle; 9, purpleleaf plum; 10, Engelmann creeper. The locations of doors and windows are shown in the floor plan to aid in planning for bushes of suitable height near them. Stepping stones make a slightly curved path to the corner entrance.

intelligently and upon the basis of the experience of others, need not be great; the time and energy expended will be well repaid by the pleasure which well-planned and well-kept grounds bring to the person who makes a hobby of his home grounds.

Many Colorado home grounds are unplanted, and very few are adequately planted. The expression "improvement of home grounds" is therefore equally applicable to the unplanted and to the partly planted places.

In planning an improvement the outdoor areas should be treated as outdoor rooms, which they really are—some for service, some for convenience of one kind or another, but all usable and useful.

An individual is often judged by his home, whether he rents or owns it, and he can ill afford to neglect giving it an attractive setting. Aside from making a favorable impression, and much more important, is the fact that "it's not a home 'till it's planted." The more pleasant and comfortable a home is made, the less desire young people will have to leave it. By planting to make his home more homelike, one discharges a public duty to the community, at the same time enhancing the financial value of his property by a sum which grows each year to proportions far beyond the initial investment.

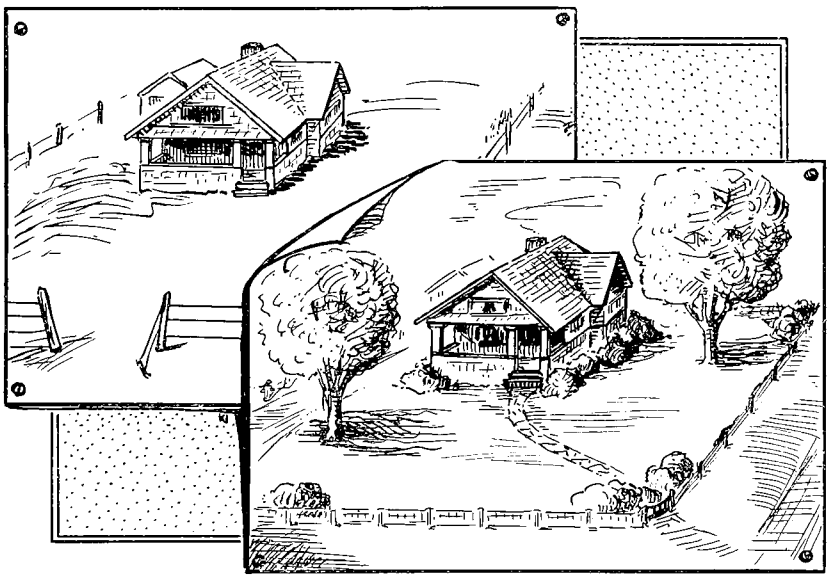

Figure 2.—Contrasting appearance of rural residence grounds at a corner location before and after landscaping according to the plan shown in figure 1.

Planning

Landscaping the small-home grounds is more than the planting and care of ornamental plants. The grading, the location of the house itself and of the walks, drives, fences, and other construction are all parts of the complete landscape plan.

Too often we think of lawns, trees, and shrubs as surrounding a house. In the planned landscape the house should seem to have been set down into a garden which was already there.

Starting with a plan prevents waste of both effort and materials. In the unplanned planting, plants must often be transplanted once or several times before a satisfactory arrangement is obtained. This results in loss of plants in some cases and loss of time in any case. Planning hastens completion of the landscape design—the time when a planting has reached the point of its maximum usefulness.

The whole problem of planning home grounds is seen from a new angle when put on paper. It is like looking down from a tower atop the house: all the grounds, walks, drives, and buildings are visible at once, which frequently suggests methods of development that do not occur so readily to one on the ground.

The first step is to measure the grounds, buildings, walks, and drives. Next, a scale is determined by which an inch on the plan will equal whatever number of feet the paper's size will permit for the total. Actual measurements are then transferred at this scale to the paper

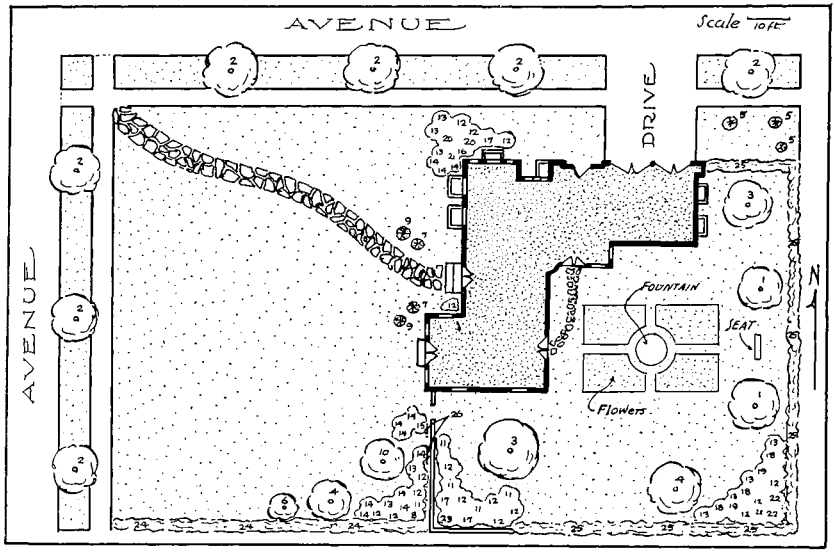

Figure 3.—A planting plan for a corner lot in the city. Numerals indicate the location and kind of each plant as follows: 1, Carolina poplar; 2, American elm; 3, black locust; 4, European weeping birch; 5, Colorado blue spruce; 6, purpleleaf plum; 7, Colorado juniper; 8, Russian-olive; 9, Mugho pine; 10, Bechtel crab; 11, sweet mockorange; 12, Vanhoutte spirea; 13, Froebel spirea; 14, Japanese barberry; 15, American cranberrybush; 16, Tatarian honeysuckle; 17, red-osier dogwood; 18, common snowberry; 19, coralberry; 20, wayfaring-tree; 21, aralia; 22, golden currant; 23, golden willow; 24, amur privet; 25, common lilac and Tatarian honeysuckle; 26, Engelmann creeper.

plan. Still using the same scale, trees and shrubs of any desirable size can then be sketched with light lines in likely places and moved about and "transplanted" with no more trouble than a little erasing.

Of course the problem should be viewed from all angles. Even with a paper plan it is necessary to visualize the appearance of proposed changes as they would be seen from the important viewpoints on the ground.

Figure 1 shows a simple planting plan for a corner. This particular plan was made for a rural development, but the same principles apply to a corner lot in the city. Figures on the plan show the exact location of each plant, and the kind to be used is listed under the same

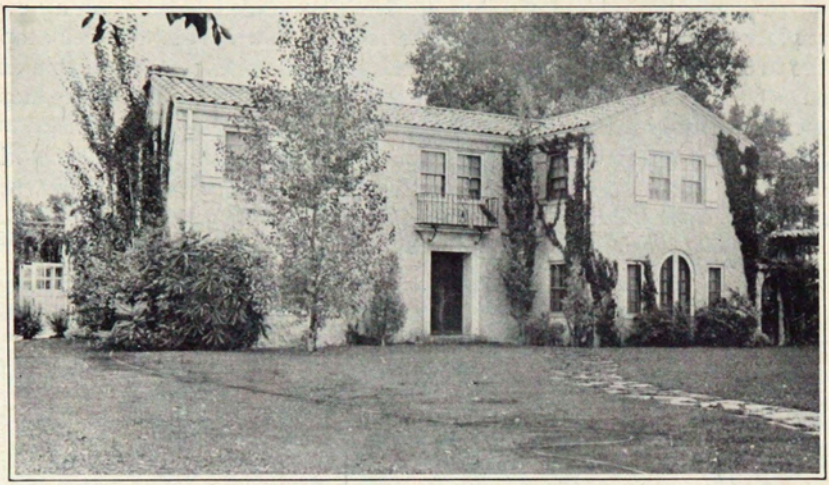

Figure 4.—This picture of the grounds for which the plan in figure 3 was made shows how time alters a plan. Moving and exchanging plants from time to time is necessary if the original plan is to be preserved. The poplar near the house front was not located on the plan; it was set for shade when the planting was new but later outgrew its place.

number in the planting key in the lines accompanying the plan. An irregular outline surrounding a group of figures on the plan indicates an area to be prepared for a shrub group. Trees at the front and sides are indicated by irregular circles approximating the spread of the branches.

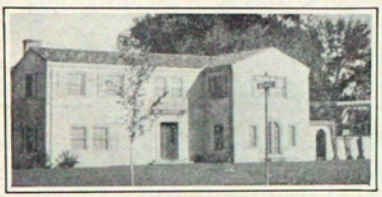

Figure 5.—Residence shown in figure 4; photograph taken before planting of grounds had been completed.

Figure 3 shows the plan of a residential corner; figure 5 shows this planting during its first summer and figure 4 as it appeared several years later. Trees in the parking originally made so little shade for the front or west side of the house that the poplar close to the building was added to provide temporary shade.

A valuable asset in this plan, and one particularly noticeable in the earlier picture, is the large old trees behind the house. Such a background of foliage overtopping the roof adds interest to the front view as well as utility to the rear area.

The farm home, as a subject for ornamental planting, usually has distinct advantages over a similar home in the city, being set back farther from the road and hemmed in less by other buildings. Small lots often dwarf the appearance of a house.

Having made a sketch of the grounds showing buildings and boundaries, the need of certain plantings will be suggested that was not apparent before; likewise the uselessness of some already existing

Figure 6.—An attractive home; no small part of its charm is due to the well-planned grounds.

plantings may be revealed. Simply transplanting a few trees or shrubs, or changing a walk or a drive, will often make a decided improvement in the grounds.

Things to be considered in any plan include: the desirability of outlook, the possibility of protection from winds, and the need of adequate drainage. Perhaps not all these requirements can be entirely satisfied in any one case; but in a climate such as that of Colorado the most used rooms, in general, will be built on the sunny side, and the most desirable views will be open to the most used rooms. Whatever wind shelter is available should be used, and the best possible drainage for grounds in the immediate vicinity of the building should be provided.

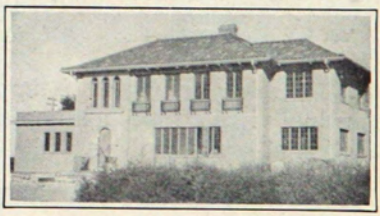

Figure 7.—This is the residence shown in figure 6; photograph taken before attractive plantings had taken the place of weeds shown in the foreground.

While the home builder in the country usually has more latitude in the planning of space surrounding his home and is less hemmed in by his neighbors, the business of farming demands suitable locations for barns, granaries, and sheds. Preparation of a desirable layout for these utility buildings will be assisted by reference to Farmers' Bulletin 1132, a 24-page illustrated booklet entitled, "Planning the Farmstead," published by the United States Department of Agriculture. A copy may be obtained by writing your congressman at Washington, D. C.

Style

As in other forms of architecture, there are styles in landscape design. Such styles may be characteristic of certain climates or communities, or even of certain individuals. There is a widespread tendency to classify all styles as "formal" or "informal." Such classification is quite general but certainly too all-inclusive.

Informal design is also called the "natural style" and is characterized by irregularly curved lines. This type of design conforms most nearly to the arrangement of trees and shrubs as we find them in nature; it is the most economical in first cost and the easiest to maintain. This style is usually best adapted to the needs of the farm or the small city home.

Formal developments are characterized by symmetrical or balanced areas of geometrical exactness, carefully planned grades and terraces, clipped hedges, and statuary and other architectural embellishment. Pure forms of this style are usually confined to large estates and parks.

Features of both informal and formal treatments may often be used advantageously in a single plan. While clipped hedges and garden furniture are formal by nature, they have their places in an informal plan. These features, of course, add to the first cost and to the time required for proper maintenance and so should be used only where there is assurance of time for their proper care. Unkempt formal features become unsightly much more quickly than do informal ones.

Only general rules governing the use of style in design may be given, since each planting is a problem in itself, and the successful one is that which best suits the working and living conditions of the family it serves.

Comfort, convenience, appropriateness, and attractiveness are cardinal virtues in planning any planting, and only a judicious satisfaction of each condition will insure success.

Walks and Drives

There should be as few walks as possible; large, unbroken areas are desirable. Treating walks and drives as a necessary evil, they should be made inconspicuous. Concrete walks tinted with lampblack or other mortar color, stepping stones, and dark-colored brick walks are suggestions. It is well, wherever possible, to avoid straight lines and walks paralleling drives. There is, however, the exception of very small areas in which curved walks are simply an affectation. In such small yards straight walks are best, even though they bisect the entire lawn area. In some cases one tread of a ribbon drive may be made to serve as a walk for part or all the distance to a front entrance. Keeping lawn and garden areas as nearly intact as possible is the main objective in planning walks and drives; incidentally, such planning adds attractiveness and makes maintenance easier.

In curving walks and drives the feature of directness should be preserved. A pleasant curve can often be produced by a deviation of no more than the width of the drive, as indicated in figure 8. To avoid being meaningless, curves should be given an apparent reason for existence. On comparatively flat land this reason may be furnished by a group of shrubs or evergreens or by a tree, and in rolling country by an intervening hill or gulch. On hilly land considerations of road grade enter in, of course; obviously, each case has its own best solution.

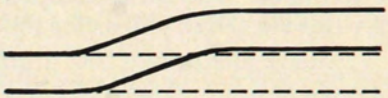

Figure 8.—Producing a pleasing curve in a drive or a walk may be accomplished by a deviation no greater than the width of the drive. The length of the curve, of course, depends on the length of the drive.

An attractive type of gateway is a problem in farmstead design; less often is it a problem in the city, where front fences are usually unnecessary, and where curb, parking, and sidewalk make the approach. Plant groups are much less expensive than masonry for ornamentation of an entrance and may be used either formally or informally. If the pretentious nature of house and grounds warrants such treatment, both masonry and plant material can be used at the entrance way. Where fences are necessary, they can often be made less conspicuous by shrub and tree groups and by the use of vines.

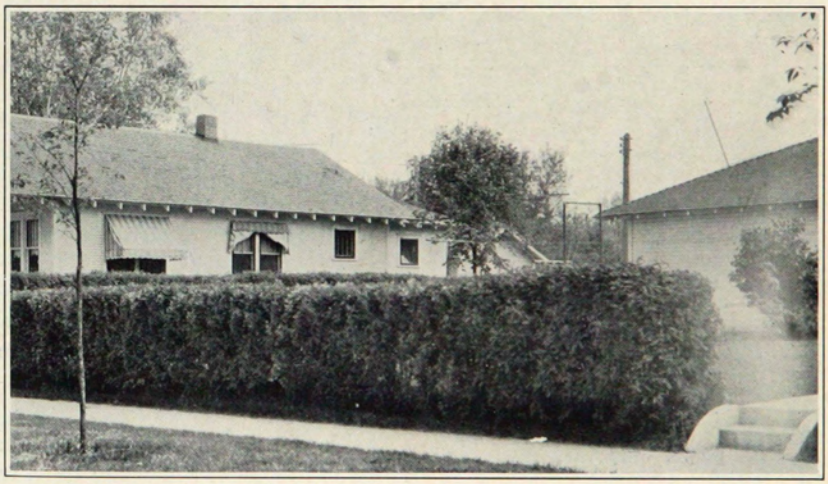

Figure 9.—Caragana used as a trimmed hedge.

Lawn and Garden Areas

The size and shape of garden and lawn areas is largely determined at building time, when house, garage, walks, and drives are located on the lot; subsequent changes are more or less difficult. Where space is

limited, the areas for lawn and garden are often made unnecessarily small by placing the house squarely in the center of the lot, when it might as well be placed to one side of center, or farther back, or both.

An inconspicuous location for the garage is an advantage in the final effect. The garage built into the house is rapidly finding favor for this reason, as well as for that of providing warm storage in winter.

Many plans could best utilize a limited garden space by providing garage entrance from the rear, instead of running a drive from the front for the entire length of the lot. Where it cannot be placed out of sight from the front, the garage should be near the house instead of on the rear of the lot, where it necessitates extra expense for drive construction and sacrifice of space otherwise available behind the garage.

Figure 10.—Many different plants can be used for hedges; the selection depends upon the height, width, and shades of color desired.

In most plans it is desirable to have one part of the grounds set apart for use by family and friends which is not directly open to the public view as is the area between the house front and the street. Some more or less substantial division is necessary to make these public and private areas distinctly separate parts of the plan, just as a wall and a door or a colonnade make the division between a reception room and a living room.

Aside from the public area in front of the house and the private area for family and friends, there is the service area providing space for deliveries and for kitchen accessories not usually kept indoors. Normal use of the service area should not necessitate trespassing upon either of the other areas.

Many plans should provide a play area, with a sandpile or some play apparatus and a shaded spot.

Division of Areas

Some rather substantial material is needed to separate the areas mentioned in the foregoing paragraphs. The location of buildings sometimes accomplishes or helps to accomplish this purpose. Walls, fences, or lattice will make such a division, or it may be done in part or entirely by the use of plant materials.

Where plants are used for this purpose, shrubs usually form the body of the planting. It is often desirable to use small trees and perennials in conjunction. Hedges, both the clipped (fig. 9) and the unclipped (fig. 11), can be used for division planting, or an informal group of different kinds of bushes (fig. 12) will accomplish the purpose.

If a division planting is to be rather tall, small trees should be used with the shrubs. Small bushes and perennials will add a pleasing finish to the front of such a planting and also will hide the more or less bare lower stems of large bushes. Such plantings are less effective as screens in winter, although they divide the areas even then. The use

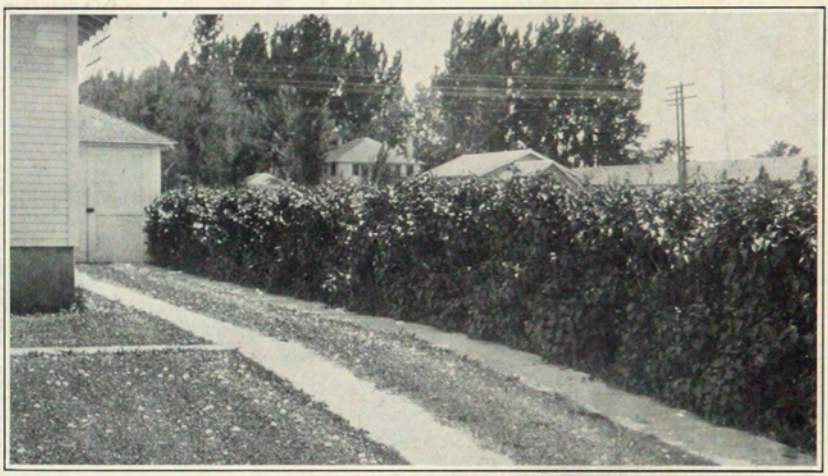

Figure 11.—An untrimmed hedge of common lilac.

of evergreens will overcome this shortcoming; but, outside the gardening season, the screening effect of a division planting is not important.

In this or any other kind of shrub group it is essential to greatest success that the ground between the bushes be spaded and kept cultivated so as to be weed- and grass-free. This not only makes the group more attractive and assures the best of growing conditions but makes maintenance of the adjoining lawn easier by eliminating the necessity of mowing between bushes.

Lawn

Lawn is the ground cover in most ornamental plantings, the foreground over which an array of trees and shrubs is seen, the canvas on which the landscape picture is painted. A good lawn is necessary to display other planting to the best advantage. Dandelions are the most discouraging factor in Colorado lawns, but they should not be given a greater share of blame for untidy lawns than is their due. If grass is kept growing vigorously, mowed often, and edged neatly, a good appearance can be made by lawns despite a great many dandelions.

Lawn making and maintenance in Colorado is discussed in this station's bulletin 442, "Colorado Lawns," available without cost upon application to the Colorado Experiment Station, Fort Collins.

Foundation Planting

Planting shrubs at corners and in angles of a building, or along its walls, is commonly called foundation planting. Figures 1 and 3 show how such groups are designated on a planting plan. As the object of this type of planting is to relieve the angularity and to cover

Figure 12.—A shrub planting for division of areas; this private area at the side of the house is completely screened from view from the public area.

objectionable masonry in foundations, the amount of planting necessary, even on two houses of the same dimensions, depends upon the character of the foundation.

Where the foundation is of unfinished concrete or is otherwise unsightly, a continuous planting is advisable to bridge the gap between the ground and the more attractive walls. Many houses, such as the one in figure 14, appear as though part of the cellar wall was left protruding above ground with the intention of filling in later with soil up to the base of the wall material.

Even though continuous, a foundation planting need not have a monotonous sameness; the top line can be high at the wall spaces and low under windows, and harsh angles can be rounded off by a staggered arrangement of bushes. Figure 15 illustrates the use of a continuous

planting to cover a rather unsightly foundation. In the angle between the house and the porch, the planting appears rather overcrowded. Unless it is desirable to shade these front windows, lower bushes should be used in place of the tall ones. The sumac in the center of figure 14 has outgrown its location; lower, more compact shrubs would better hide this foundation.

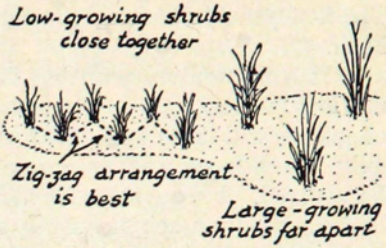

Figure 13.—How to set bushes of varying heights in effective arrangement for foundation planting.

Where foundations are not unsightly, plantings should be confined to groups, with spaces between where the foundation is visible, as in figure 16. A good arrangement of such groups is to have tall, medium,

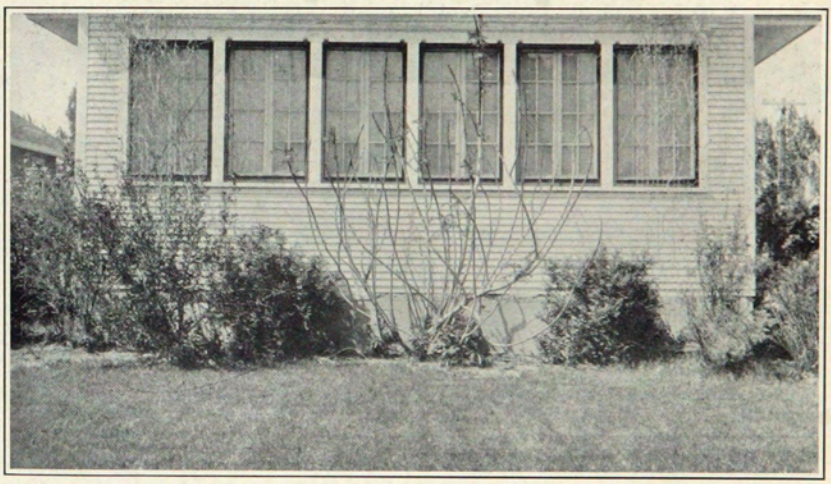

Figure 14.—The sumac in the center is too tall for its location.

and low shrubs set in zigzag fashion in a bed of irregularly curved outline, as illustrated. The group at the left corner of the house makes an excellent background for spring bulbs and annual plants.

Fine-textured bushes, such as the spireas, snowberries, and Japanese barberry, are usually chosen for foundation plantings.

Height of bushes is a particularly important consideration in foundation planting. The simple truth that bushes grow should not be neglected; too often the ultimate height of a bush is not considered at planting time. The tallest shrubs used in a foundation planting should not exceed a height two-thirds the distance from the ground to the eaves. Some shrubs, although answering their purpose well when small, eventually become too large. These should either be avoided in the first place or moved after they outgrow the location.

The honeysuckle bush at the right of the steps in figure 17 is such a bush.

If a foundation planting is to extend under low-silled windows, use low bushes, such as Japanese barberry or snowberry; some kinds of spireas will do as well. Tall bushes are used in foundation plantings only where large wall spaces or bare, unornamented chimneys are to be covered. Frequently, in such places, a vine will serve as well or better. Medium-height bushes, such as most of the spireas, find many uses in foundation planting: under high windows, at corners, and in groups on moderate-sized wall spaces.

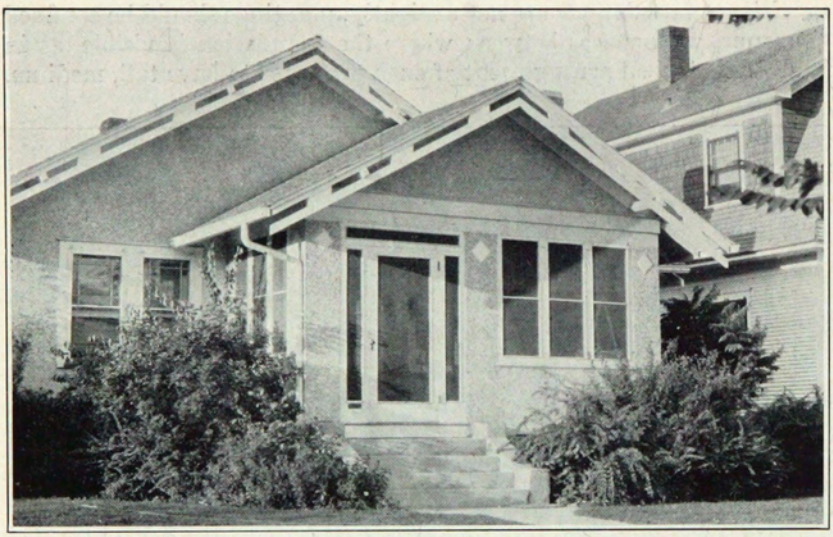

Figure 15.—Continuous foundation planting hides an unsightly foundation.

In some places a walk near the house makes shrub planting difficult because of branches overhanging the walk. In such places the summer spireas, a vine, a climbing rose, or small perennials will answer the purpose.

"Framing" Trees

"Framing" trees are those used literally to frame a landscape picture. This picture may be a particularly desirable view of the house from some point in the approach, or it may be a desirable outlook from the house or the garden to an outside point of interest. A pair of parking trees set a little farther apart than the width of the house answers this purpose by enframing the front view of a house as seen from the street. Outlooks from the house to distant points of interest can be made more prominent by enframing the vista with two or several trees.

The direction of approach necessitates different arrangements for placing trees to enframe views of the house. In figure 1 the two American elms marked "1" on the plan are "framing" trees. Though they are not equidistant from the house-front, they do "frame the picture" because of the direction of approach.

Specimen Trees

A specimen tree is one that is given prominence by its location or by the contrast of its form or color to the surroundings. A specimen should be a particularly fine representative of its kind.

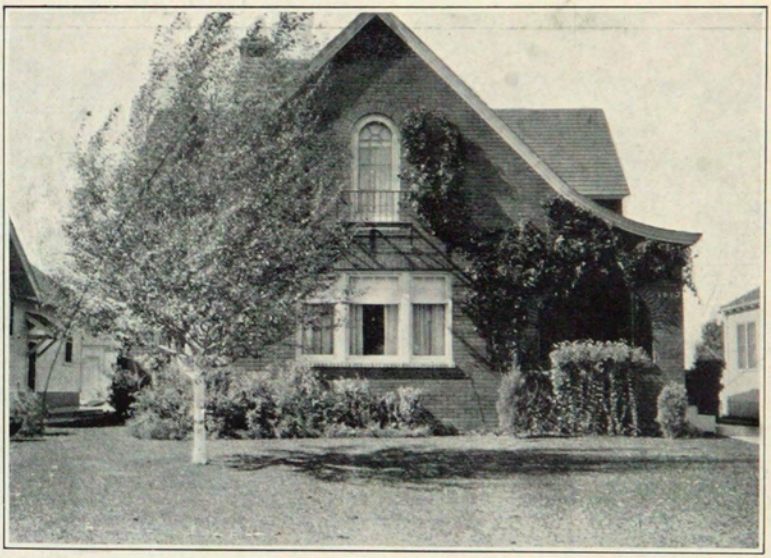

Figure 16.—If the foundation is not unsightly, glimpses of it may be left visible between the plantings.

A good location for a specimen tree is opposite a bay or a promontory in the outline formed by a shrub group or by a perennial border. Specimen trees are often located in large, open spaces of lawn where they are centers of attraction. The birch tree in the left foreground of figure 16 is a well-located specimen tree.

Background Trees

Trees planted behind a house serve the several purposes of accentuating lines in the architecture or contrasting with them, of shutting out objectionable views, or of giving the house the appearance of being nestled in foliage. For a house with a low-pitched roof, a group of from three to five Bolleana or Lombardy poplars (figs. 19, 20) at one side and to the rear will make a striking contrast without

shutting out all the distant view. If this is not a desirable view, a solid row of background trees is in order. Round-topped trees, such as elm, ash, or maple, used in the same background with tall, slender poplars, give an interesting contrast of foliage forms.

To accentuate lines in the architecture, use slender trees with a house of high-pitched gables and round-topped trees with a flat-roofed house.

Garden Accessories

A house on a lot devoid of any other ornament is like the chassis of a car: the necessities are there, and it will "work" without any-

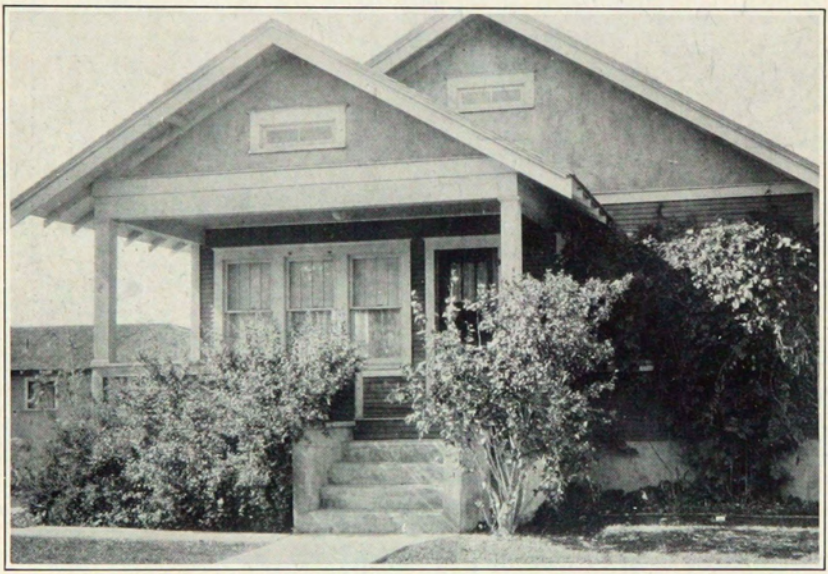

Figure 17.—The honeysuckle bush at the right of the steps is poorly placed.

thing else. Home grounds properly planted with trees, shrubs, and lawn are comparable to the car with standard equipment: it is complete in itself, but there is still room for the addition of accessories, some of which seem necessary to one person and others to another.

Among garden accessories are pools, pergolas, lattice, bird baths, gazing globes, statuary, and garden furniture.

Pools in the small-home garden are usually for fish or water lilies, or for both. The pool may be of formal design—that is, of strict geometrical shape; or it may be informal, having an irregularly curved outline and perhaps a native-stone coping. The type of pool should be appropriate to its surroundings—formal if in a formal setting, otherwise informal or naturalistic.

Pergolas are used for background, for division of large areas, and to connect separate features of a landscape. The pergola is essentially a formal feature and, like other formal features, should bear definite relationship to one or more of the axes of the plan, since axis is the essence of formal design. Axes, briefly, are the center lines of symmetrical parts of the house which, extended over the grounds, suggest logical locations for garden accessories. There are major and minor axes. Center lines of a house are sometimes the major axes. A minor axis might be the center line of a vista from an important window.

The more elaborate garden furniture and statuary are ordinarily used only in a formal plan where, like the pergola, they are definitely related to an axis of the scheme.

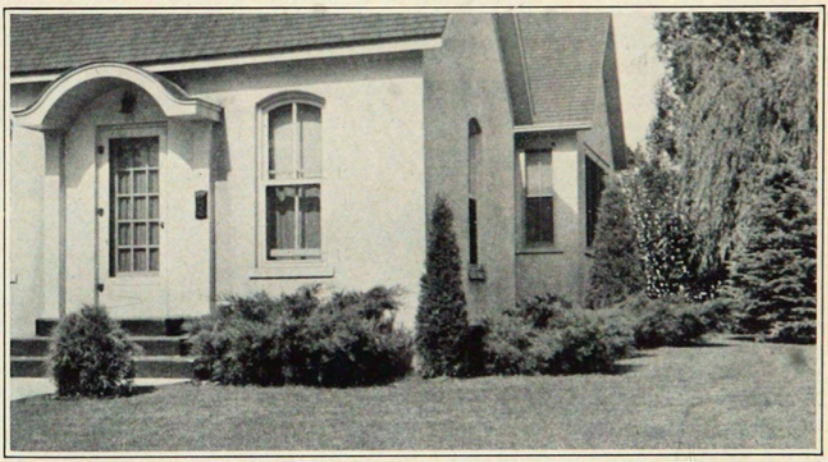

Figure 18.—Evergreen foundation planting; left to right: globe-shape Colorado juniper, savin juniper, pyramidal juniper, two Pfitzer junipers, another pyramidal juniper, Colorado blue spruces at extreme right. Note weeping willow in background.

Lattice, though less pretentious than the pergola, is used for much the same purpose. Both are usually painted white, dark green, or dark brown to blend well with foliage forms.

A bird bath is often included in the informal plan and should be located in a rather secluded spot, as in a bay of shrubbery. Excessive seclusion which provides lurking places for cats, however, should be avoided.

Hardiness

It seems very logical to the uninitiated that definite lists can be made of plants that will flourish in Colorado. Such lists would save poring over everything catalogued in search of hardy varieties. But when the fact is considered that the number of frost-free days per year in various parts of Colorado varies from 59 to 184, it is evident

that "Colorado climate" is far from a specific term. Nor is the degree of cold that a given plant will endure a reliable index of its hardiness. Some plants thrive at cold northern temperatures but would not survive a moderate winter farther south. Such plants winter well under a blanket of snow through severe cold but could not live through a less-intense cold without the snow cover.

Hardiness is such a variable factor that, even in the same yard, differences of exposure, soil character, and plant vitality play larger parts than actual degrees of cold.

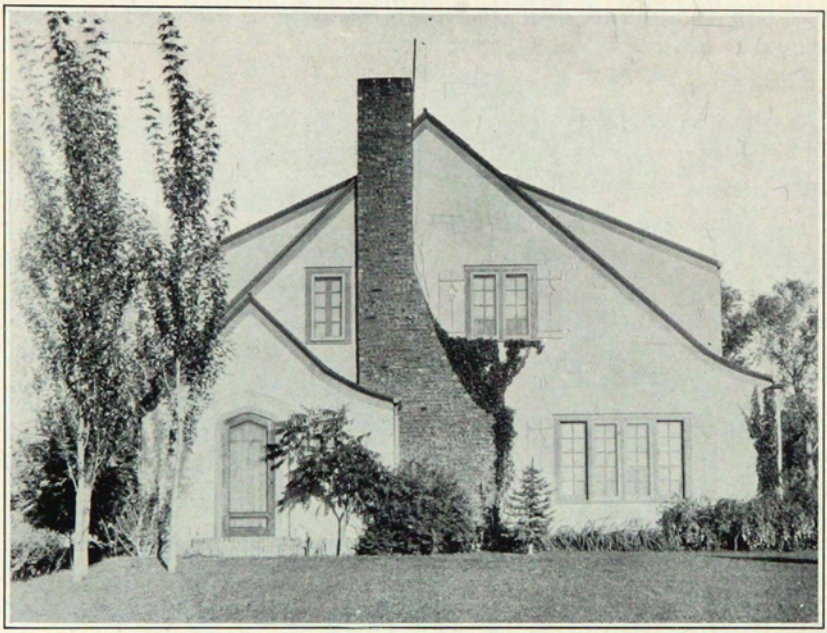

Figure 19.—Bolleana poplars are effectively used in this foreground.

With these points in mind, one has a better conception of what is meant by plants described as "hardy," "half-hardy," and "not hardy," and of what to expect from them.

Related to the subject of hardiness is the preparation for and the care of plants in winter. Occasionally the "hardy" plants winterkill, but this may sometimes be averted.

Rapid wood-growth in fall and consequent failure of the wood to ripen is one of the common causes of winter injury. It cannot always be avoided, as in instances when weather conditions prolong the growing season and then suddenly plunge into winter. In normal seasons most trees and shrubs benefit from a withholding of irrigation in late summer. After growth has practically ceased, however, and before ground freezes, a thorough irrigation is in order, that roots may go

into the winter wet. With this ideal preparation, winter watering is unnecessary, even in very dry winters. In fact, it is usually difficult to get much water to the roots in winter because of frost in the ground which hinders percolation and causes most of the water to run off the surface.

The trimming of trees and shrubs, discussed under "Pruning," page 42, will help to keep them in the healthy condition that resists injury which might otherwise cause winter-killing.

The covering of such plants as roses and raspberries is discussed under "Roses," page 38. This precaution is a good one to take with most "half-hardy" shrubs.

A soil well supplied with humus helps to prevent the damage done by "heaving" due to alternate freezing and thawing of soil. If all the tree leaves shed on our lawns were composted and returned to the soil, another advance would be made in minimizing losses by winter-killing.

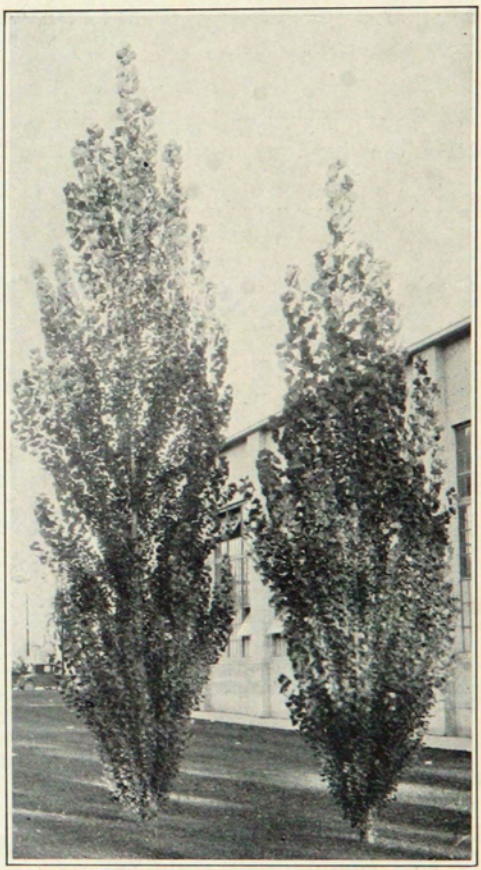

Figure 20.—Mature Lombardy poplars are not too close together when planted from 5 to 6 feet apart; spires of green towering above a house may be had quickly by planting either Lombardy or Bolleana poplars.

Nomenclature

Knowing plants by name seems difficult at first. Some plants are known by many different common names. All plants, however, have one botanical name by which each is recognized the world over.

The following parallel between plant and human names will illustrate: A baby is christened "John Wentworth Jones." His school chums call him "Skinny;" at college he is "Fat Jones;" at the office they call him "J. W.;" and his wife calls him "John." A college friend who has never heard of "J. W.," and one from the office who doesn't know "Fat" Jones, may both be familiar with "John Wentworth Jones."

It is interesting to know nicknames and common names, but to be sure of future recognition one should learn botanical names as well.

The style fixed in the list of "Standardized Plant Names" by the American Joint Committee on Horticultural Nomenclature is followed in this bulletin as to compounding and spelling. Only the recommended common names are given for some of the plants mentioned hereinafter, which is in accordance with the committee's recommendation for horticultural varieties of a species.

Trees

In small yards where trees are needed but space does not permit large-growing ones, there are small and medium-sized trees.

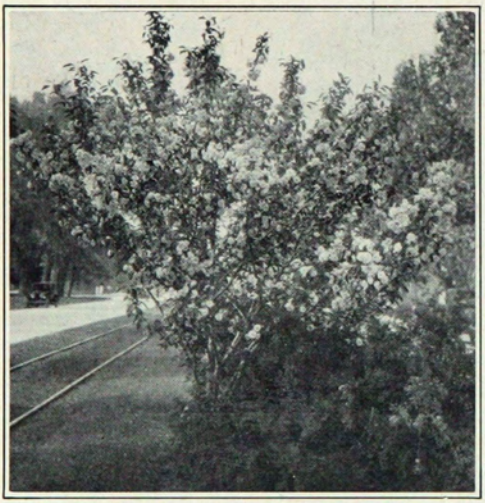

Figure 21.—The Bechtel crab is an excellent small tree.

BECHTEL CRAB, *Malus* (fig. 21), is a good small tree. It has the general characteristics of the apple, except that it has large double blossoms in spring.

AMERICAN MOUNTAIN-ASH, *Sorbus americana*, is another of similar character and smooth bark. This is a small tree, too, though somewhat larger than the flowering crab. It has pinnate leaves; and it bears clusters of white blossoms in summer, followed by red berries that persist all winter, birds permitting. It is often used as a specimen (see "Specimen Trees," page 17) and makes a good companion by contrast to another medium-sized specimen, the European white birch, *Betula alba* (fig. 16). There are weeping forms of both mountain-ash and birch.

HORSECHESTNUT, *Aesculus hippocastanum*, also known as buckeye, is a good, medium-sized tree. It is particularly interesting because of its large leaf buds and flower clusters appearing in spring, followed by the odd fruits from which it derives the name.

RUSSIAN-OLIVE, *Elaeagnus angustifolia* (fig. 22), and SIBERIAN PEA-TREE, HEDGE PLANT, *Caragana arborescens* (fig. 9), are classed both as tall shrubs and small trees. When trained to single trunks, both make good small trees. Both will withstand considerable drought and are recommended for dry-land planting as well as for irrigated ornamentals.

Russian-olive (fig. 22) has silvery-green foliage, an inconspicuous small bloom, and an all-pervading fragrance that makes it deserving of a place in many plantings, if for no other reason. Bark on the older wood is shiny greenish-brown, while twigs are silvery and thorny. The foliage contrasts well with other foliages, making Russian-olive a good background plant.

Figure 22.—The Russian-olive is a shrubby tree with silvery leaves; shiny bark; fragrant and inconspicuous flowers; and inedible, silvery fruits.

Siberian Pea-tree has small, yellow, pea-shaped flowers blooming in early summer; it has leguminous foliage and gray-green bark. Like Russian-olive, this plant is often used for tall hedges.

AMERICAN ELM, *Ulmus americana* (fig. 23), is the most popular of the large shade trees. It was the only widely known species until the recent advent of the much more rapidly growing dwarf Asiatic (Chinese or Siberian) elm. A number of other varieties, such as English, cork, and Moline elms, also do well in Colorado. Moline is vase-shaped and more symmetrical than American. Cork wings on its twigs give this elm its name; it also has a strong central leader which distinguishes it from other elms.

Figure 23.—The American elm is the most popular of large shade trees.

CHINESE ELM, DWARF ASIATIC ELM, SIBERIAN ELM, *Ulmus pumila* (fig. 24), has not been in use long enough in this country to warrant statements as to its length of life, but it is a very rapid grower and a good hedge material. Elms sometimes suffer breakage from early wet snows in fall. Chinese elm, which holds its foliage late in fall,

Figure 24.—Chinese elm; see comments on limitations of the use of this tree under "Chinese or Siberian Elm."

are Norway maple, *Acer platanoides,* and red Schwedler maple. Schwedler maple is a horticultural variety of *Acer platanoides,* having dark bronze-red leaves but otherwise very closely resembling Norway maple.

AMERICAN LINDEN, *Tilia americana* (fig. 25), is another good shade tree. It is a tall, smooth-barked tree with heart-shaped leaves and fragrant, though inconspicuous, bloom in summer.

COMMON HONEYLOCUST, *Gleditsia triacanthos* (fig. 26), is used in dryland planting, as well as in general landscape work, because of its ability to withstand considerable drought. This locust is not subject to the ravages of the locust borer that has killed most of our common locust, *Robinia pseudoacacia.*

SARGENT COTTONWOOD, *Populus* is most susceptible to this damage. Cork elm, with its strong central leader, is least likely to break.

HACKBERRY, *Celtis occidentalis,* is a slower-growing but excellent shade tree. It is similar to elm and is often mistaken for it.

WHITE AND GREEN ASH, *Fraxinus,* are fine shade trees where oyster-shell scale is not prevalent.

SILVER MAPLE, *Acer dasycarpum,* has long been in common use for shade. Other good maples that are slower growing and of harder wood

Figure 25.—Its desirable features make the American linden tree worthy of wider use; its leaves are large and the flowers fragrant.

sargenti (fig. 27), and Carolina poplar are considered nuisances by many persons and regarded as better in cordwood than as shade trees, but they have their places. Where shade is an immediate necessity, they can be used to good advantage by alternating them with slower-growing trees and removing them as soon as the slow growers are well established. Only the "cottonless" trees, those with staminate flowers, should be planted, in order to avoid the nuisance of flying cotton in spring.

LOMBARDY POPLAR, *Populus* (fig. 20), is a very slender, tall tree. These trees can be planted from 5 to 6 feet apart because of their severely upright habit of branching.

Figure 26.—Thornless specimens of the honeylocust are especially good lawn trees.

BOLLEANA POPLAR, *P. bolleana* (fig. 19), is similar in habit and uses to the Lombardy poplar. The bark is smooth and of a sage-green color, with gray bloom. Leaves are shiny green on top and silvery gray underneath.

GOLDEN WILLOW, *Salix vitellina*, is one of a number of different forms of willows used as ornamentals. Some are "weeping" and some upright, and color of twigs ranges from green through yellow to golden and red. While willows will often do well without more water than the lawn requires, they naturally are trees of the lowlands and, having surface roots, are sometimes responsible for the rapid drying of lawn grass under and near the tree.

Figure 27.—The cottonwood is now available in cottonless varieties, but other trees described in this bulletin are better street trees.

Evergreens

Evergreens are an important item on the list of plant materials for landscape work. On large and small areas alike there are many places where the total effect from planting is benefited by the use of evergreens. They are more expensive than deciduous plants but in-

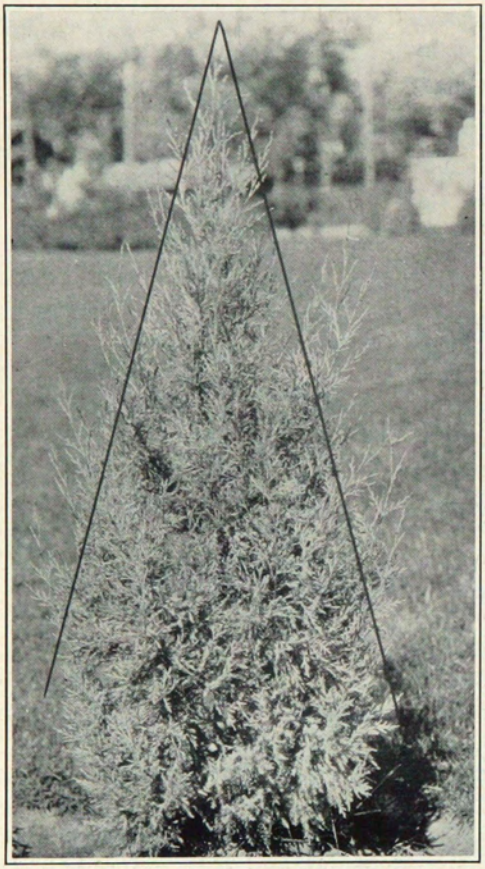

Figure 28.—The lines suggest a method of annual clipping to keep the Colorado juniper from becoming open and coarse.

trinsically more valuable when the fact is considered that they are in full foliage the year round. Even while both are in leaf, there are characters of evergreen for which other plants cannot be substituted.

Grouping from three to five or more of such evergreens as western yellow pine, juniper, and spruce in corners and as backgrounds for other plantings is one important use. Tree evergreens should usually be toward the sides and rear of the grounds (fig. 18), using dwarfs, such as mugho pine and low junipers, in foundation plantings and wherever a house front would ultimately be obscured by tree forms.

NATIVE CEDAR, COLORADO JUNIPER, *Juniperus scopulorum* (fig. 28), more properly called by the second common name, is much used as an ornamental evergreen. Young trees often have the silvery color of Colorado blue spruce. The open, rather scraggly appearance of old trees can be forestalled by clipping the tips of twigs as suggested by lines drawn in the illustration. Such clipping also preserves the conical shape most desired in this type of tree.

DOUGLAS-FIR, RED SPRUCE, *Pseudotsuga douglasi,* is our Christmas tree. It adds variety to an evergreen group but is objectionable on the score that when planted near blue spruce it encourages a plant louse for which Douglas-fir is alternate host. Some individuals of this species also have silver color.

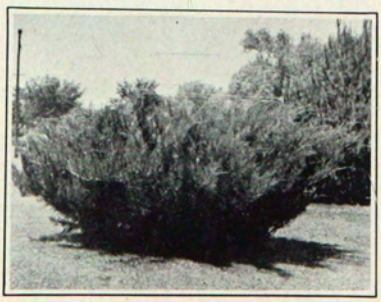

Figure 29.—The savin, a glossy-green evergreen, is excellent for low plantings.

ENGELMANN SPRUCE, *Picea engelmanni,* has a somewhat different branching habit, and some trees have slightly shorter needles than those of blue spruce; otherwise the two are almost indistinguishable.

WESTERN YELLOW PINE, *Pinus ponderosa,* is much used as an ornamental. This is the tree common to Colorado foothills, with the long needles and large, hard cones.

SAVIN, *Juniperus sabina* (fig. 29), is another of the so-called dwarfs, having dark-green foliage and an upright growth of branches which makes it contrast well with the mugho pine.

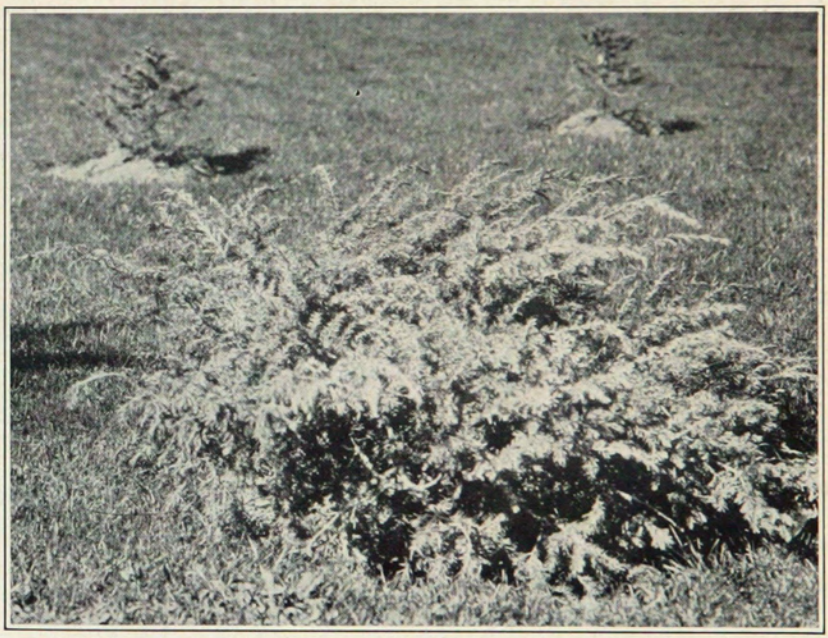

Figure 30.—The Mountain juniper, a Colorado native, is attractive as a low evergreen planting.

MOUNTAIN JUNIPER, *J. communis montana* (fig. 30), is a prostrate native type which makes a good ground cover around or in front of a group of other evergreens. It is not so tall as mugho pine and savin, and often it has the silvery cast of blue spruce.

MUGHO PINE, *Pinus montana mughus* (fig. 31), is a good dwarf evergreen for use in places where medium-sized shrubbery can be used. It can be kept in a compact globe shape by occasional trimming. It is particularly interesting when the elongated, upright, new shoots cover the plant like tiny candles.

SILVER COLORADO SPRUCE, COLORADO BLUE SPRUCE (fig. 32), most commonly called by the latter name, needs no description in Colorado, in whose mountains it is the crowning glory. When planted in groups the silvery color may be emphasized by contrast if some green-needled

Figure 31.—The Mugho pine has good dark-green foliage and is of shrub proportions.

trees are used with the silver-colored spruces.

A number of Colorado native evergreens are not mentioned in the foregoing list, and there are a great many others common to the trade; but those described comprise a representative list of the most hardy and generally well-adapted sorts for the state.

Tree evergreens are often planted in spaces in front of buildings, or in front of shrub groups where there is insufficient room for their full development. Such an arrangement should be only temporary. When they have outgrown their usefulness as "cute little trees" they should be transplanted to a background or exchanged for smaller trees.

Shrubs

Some plants may be classed either as small trees or large shrubs, and several mentioned in the list to follow depend merely upon their training for classification as one or the other.

Height of shrubs, like hardiness and other arbitrary classifications, is a variable quality. There is often much wider variation between two individuals of the same species grown in different environments than there is between species. In view of these limitations, the impossibility of absolute accuracy is evident; but an approximation can of course be given.

Figure 32.—The Colorado blue spruce is the crowning glory of the state's mountains and one of the best of ornamental evergreens.

Under average Colorado conditions of growth, the following shrubs are listed in descending order of their heights:

RUSSIAN-OLIVE, *Elaeagnus angustifolia* (fig. 22), is recognized by its slender leaves of silvery green and the large-seeded white "olives." The fragrance of this shrub in spring makes it worth while in a mixed planting, if for no other reason.

ROCKY MOUNTAIN MAPLE, *Acer glabrum,* is a tall shrub, native

along the streams of Colorado hills and having small leaves of the characteristic maple shape. Its bark is smooth and its branches slender. Its leaves add pleasing variety to a background or divisional planting and are golden-colored in autumn.

SMOOTH SUMAC, *Rhus glabra,* is known to most people by its gorgeous autumn coloring and erect, tassel-like fruits. This shrub suckers freely from the roots, and new plants must be thinned out or the group will be overrun by them.

SHINING SUMAC, *Rhus copallina,* is a similar sumac with slightly different foliage and fruit. A number of other species of sumac are good ornamentals, including a native, *Rhus cismontanus.*

SIBERIAN PEA-TREE, *Caragana arborescens,* already mentioned as a hedge plant (fig. 9) and as a small tree, also makes a good tall bush when untrimmed. It has yellow, pea-like flowers in early summer, leguminous foliage, and an attractive, olive-green bark.

CORAL HAWTHORN, *Crataegus colorado,* also called red haw and thorn apple, is one of a large group of which a half-dozen are native to Colorado. They are so similar that they are difficult to classify, even for botanists. *C. colorado* is a small tree with small, white flowers in clusters, followed by a red fruit in which seeds are surrounded by an apple-like pulp. Branches are armed with stout thorns, hence the name "thorn apple."

COMMON CHOKECHERRY, *Prunus virginiana,* is another native that is useful as an ornamental. While individual shrubs are often unshapely, they are useful in providing variety for a mixed mass of shrubs.

AMERICAN ELDER, *Sambucus canadensis,* is a good shrub to use near a bird bath, since birds are attracted by its large, flat clusters of black berries which follow white flowers blooming in midsummer.

GOLDEN AMERICAN ELDER, *Sambucus,* is the same as that described in the preceding paragraph, except that its foliage is yellow-green throughout the summer, making a prominent contrast to the usual foliage color.

FLOWERING PLUM, *Prunus triloba,* is a tall shrub which blooms early in spring. Its young leaves are red. Our wild species, *P. americana,* is as good in many respects for ornamental purposes.

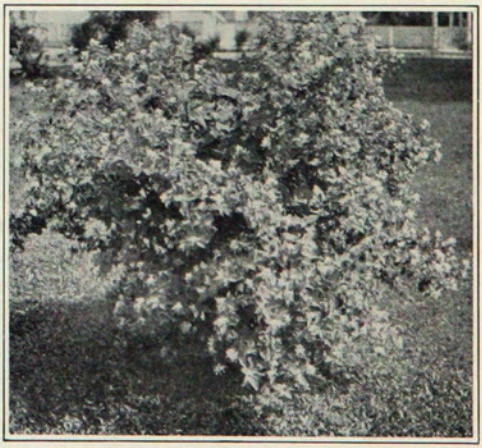

Figure 33.—The Tatarian honeysuckle is a rapid grower and may be obtained with red, pink, or white flowers.

TATARIAN HONEYSUCKLE, *Lonicera tatarica*, the bush honeysuckle (fig. 33), may be had with white, pink, or red flowers. It is among the very first of bushes to put out new leaves and is quite green when other bushes in the same planting are still dormant. It is a rapid grower and one of our most hardy shrubs. The bark is shaggy and silvery gray in color.

COMMON SNOWBALL, with its large, round clusters of sterile flowers, is perhaps the best known of a number of viburnums that make good ornamentals.

AMERICAN CRANBERRYBUSH, *V. americanum*, and European cranberrybush, *V. opulus*, are very similar to common snowball. Just the marginal flowers in each cluster, however, are sterile in cranberrybush so that it has clusters of red berries in late summer.

Figure 34.—The wayfaring-tree, like its close relatives the snowball and the cranberrybush, is an excellent tall bush.

WAYFARING-TREE. *V. lantana* (fig. 34), has clusters of berries of such color when ripening that they bear a close resemblance to the lantana flower.

BLACKHAW, *V. prunifolium*, is a native of Colorado, with some of the characteristics of the haws. It has an oval-shaped, bluish-black, edible fruit. The seed is a flattened pit.

KASHGAR TAMARIX, *Tamarix hispida* (fig. 35), has a feathery foliage resembling that of the junipers, and a feathery blossom. It thrives in dry locations and, though it often winter-kills in Colorado, the new

Figure 35.—An attractive group of tamarix.

growth from roots is rapid, and a good-sized bush will grow in a single season from the old root. Different species bloom at different seasons: *T. parviflora* in spring, *T. gallica* and *T. hispida* in early summer, and *T. amurensis* in August and September.

COMMON LILAC, *Syringa vulgaris,* is a well-known shrub that may be had under variety names with white, blue, violet, or red flowers and many intermediate tints and shades. Owing to its habit of suckering from the roots, it will make a good, thick hedge (fig. 11), but for other uses the suckers should be removed. Many fine hybrid and French lilacs are now available which make fewer suckers. If all the flowers are cut before going to seed, chances are better for next year's bloom.

SWEET MOCKORANGE, *Philadelphus coronarius,* is so named from the resemblance of its fragrant blossoms to the orange blossom. This is a rapid-growing, tall bush, with medium-sized, light-green leaves and tan-to-brown bark.

BUTTERFLYBUSH, *Buddleia,* is classed as a shrub, though its habit in Colorado is more like that of the perennial flowers; *i. e.,* its tops kill to the ground each year. But new growth is rapid, and a medium-to-tall bush grows from the roots in a single season. Summer lilac, another common name, describes the bloom. Flowers come late in summer when few shrubs are showing any bloom, and they are similar to those of the true lilac in color and form.

PERSIAN LILAC, *Syringa persica* (fig. 36), has smaller leaves and more slender branches than common lilac; its flowers are in a little looser panicle, and the bush is smaller. Persian lilac usually blooms by the first or second year after planting, while common lilac sometimes will not bloom for several years.

RED-OSIER DOGWOOD, *Cornus stolonifera,* is a bush taller than medium height, having somewhat the appearance of a willow, though broader-leaved. Its bark, particularly on the younger growth, is bright purplish-red in winter, giving color in the dormant season as do few other shrubs. Small, white flowers in clusters appear in spring and are followed by berries of white to pearl-gray color. Dogwood is a native of our

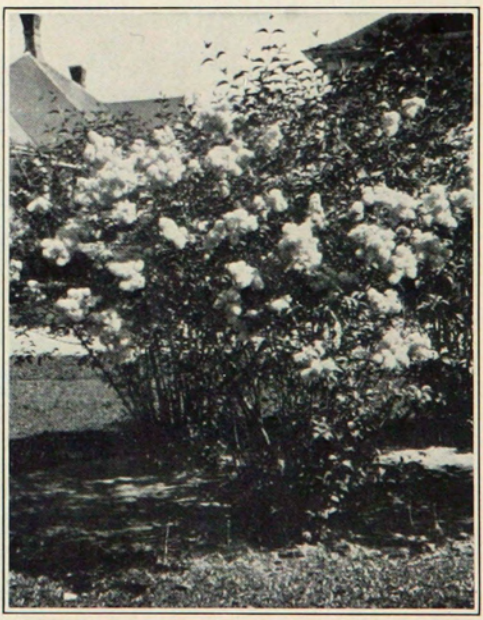

Figure 36.—The Persian lilac is a smaller, finer-textured bush than the common lilac.

Figure 37.—The shredded sumac, similar to cutleaf sumac, has branches resembling a stag's horns.

hills, growing along streams and gulches. Our dogwood differs from the flowering dogwood, *C. florida,* of the eastern United States, which has petal-like bracts surrounding a relatively small flower cluster, the whole giving the appearance of one large, single flower.

SHREDDED SUMAC (fig. 37) and CUTLEAF SUMAC (fig. 38) are lower-growing forms of rhus, with deeply notched leaf margins. One form, *Rhus typhina,* is called staghorn sumac because of the resemblance of its horizontally branched and pubescent stems to a stag's horns in the velvet.

COMMON NINEBARK, *Physocarpus opulifolius,* has bright-green, lobed leaves and clusters of small, white flowers in early summer which resemble those of spirea. Until recently it was listed with spirea, to which it is closely allied botanically. Its older stems appear to have many layers of bark from the shedding of thin strips which are con-

Figure 38.—The cutleaf sumac grows to less height than does the common smooth sumac.

tinuously peeling off. The bush is medium-high and is sometimes mistaken for currant because of its leaf shape.

FORTUNE FORSYTHIA, *Forsythia suspensa fortunei*, is of medium height and has yellow, bell-shaped flowers borne close to the stem in spring, before the foliage appears. Though the bush is usually hardy in Colorado, the flower buds are frequently winter-killed.

Figure 39.—The Vanhoutte spirea is probably the best all-round shrub of medium height for Colorado.

WINGED EUONYMUS, *E. alatus*, is less commonly grown in Colorado than most of the other shrubs described here. Wings of cork along the bright-green twigs give them an interesting and characteristic appearance. It is a bush of pleasing habit and good, bright-green foliage. It is a small-to-medium sized shrub and is rather slow-growing in Colorado.

Figure 40.—The wild rose is one of many native shrubs that make excellent cultivated ornamental shrubs.

URAL FALSE-SPIREA, *Sorbaria sorbifolia*, is so named from the resemblance of its large, fluffy, white flower head to some of the spireas; and its species name is from the similarity of its foliage to that of mountain-ash, *Sorbus* sp. Its flowers come in the summer, and the panicles persist after the flowers are gone. The appearance of the shrub is improved by removing these after they have faded.

BEARBERRY HONEYSUCKLE, *Lonicera involucrata*, is a medium-sized native of our hills that does well under cultivation. It is characterized when in fruit by its shiny, black twin berries on large purplish-red bracts.

VANHOUTTE SPIREA, *Spiraea* (fig. 39), is the most generally known of the long list of spireas. Many know it as bridalwreath. As an ornamental shrub of medium height, it is unexcelled in Colorado. Its foliage is dense and graceful, and the bush is very hardy. It would be a worthwhile shrub, even without the clusters of white flowers which cover it like snow in the spring.

WILD ROSE, *Rosa*, includes a vast number of closely related species, though the group as a whole is easily recognized and needs little description. There are several different species native to the state. Figure 40 shows an example of the dense, well-shaped ornamentals that wild roses may become when cared for properly.

AMUR PRIVET, *Ligustrum amurense*, is commonly used as a hedge plant and is particularly good for low to medium-high hedges. This privet is quite winter-hardy and is similar in appearance to California privet, *L. ovalifolium*.

ARALIA (not approved as a common name by Standardized Plant Names), *Acanthopanax pentaphyllum* (fig. 41), is not so formidable as the first glance at its name makes it seem, when a second look reveals that "*acantho*" means thorny; "*panax*" is the origin of

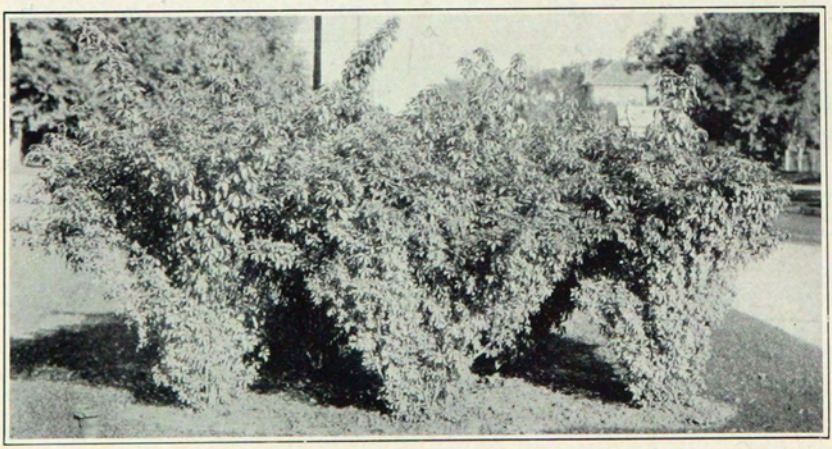

Figure 41.—A group of aralia bushes; note the new leaves at the very bases of the old stems.

"panacea," indicating something of the plant's early significance to man; and "*pentaphyllum*" describes its five-parted leaves. Hence in its name we have a partial description and history of the plant. The illustration shows this plant's unique habit of clothing its older branches with foliage clear to the ground. This shrub is used for its foliage; its bloom is inconspicuous.

BOULDER RASPBERRY, *Rubus deliciosus,* is often called thimbleberry and false raspberry. It has a currant-like leaf and an insipidly sweet fruit shaped like a raspberry. It is common to our lower mountains—a bush of medium height, with showy white flowers like those of the wild rose—blooming in June.

GOLDENTWIG DOGWOOD, *Cornus,* is a lower growing shrub than the red-osier previously described; as it name implies, it has golden-yellow bark, particularly on the younger twigs. A showy contrast may be had by planting red and yellow dogwoods together. They do quite as well in shade as in sun and will thrive on most soils.

GOLDEN CURRANT, *Ribes odoratum,* is a medium-tall bush with wedge-shaped, three-lobed leaves and yellow flowers in spring. The flowers have a spicy fragrance and are a half-inch or more in length and of tubular shape, and some have a small, red line around the center of the flower, near the open end. The currant is reddish-black. This bush is native to the rocky locations in our foothills, where it makes its contribution to the beauty of autumn coloring, as well as adding variety to foliage forms throughout the growing season.

"PEEGEE" HYDRANGEA, the first word being a combination of the initial letters of the words "paniculata grandiflora," now firmly established in the trade as the only common name of the plant, is a hardy hydrangea and once established would probably do well in many places in Colorado where it has failed because of difficulty in getting it started. It has roots that are bare of fibrous branches, making it more difficult to start than many other bushes. If the flowers are cut with long stems, the bush will be left in shape to make large flowers next season. If no pruning is done, more but smaller flowers are formed for next season.

BRIDALWREATH, *Spiraea prunifolia,* has white double flowers, and it blooms about 2 weeks earlier than Vanhoutte spirea, which is often erroneously called bridalwreath. The bush is covered with white by the bloom; but flowers are scattered along the stem in smaller clusters, and the stems do not arch so much as do those of the Vanhoutte spirea. Flower buds and the bush itself are a little more susceptible to winter injury than is the Vanhoutte spirea.

FROEBEL SPIREA is a smaller bush than the Vanhoutte but larger than the Anthony Waterer spirea described later. Its leaves have a bronze-red cast, and its flowers are similar to those of Vanhoutte but are red in color.

Figure 42.—The garland spirea is smaller and earlier-blooming than the Vanhoutte spirea.

GARLAND SPIREA (fig. 42) has small, narrow leaves and blooms early, at about the same time as *S. prunifolia.* The flowers are like tiny apple blossoms in that the outside of the petal is pink, making pink buds that open into white flowers. They are borne in garlands along the stem instead of in clusters.

WILLOWLEAF SPIREA is another medium-high, white-blooming sort, the leaves of which are shiny green and the shape of willow leaves.

VIRGINAL MOCKORANGE, *Philadelphus,* and its named varieties have larger flowers than the sweet mockorange previously described; some of these flowers are double. The bush, however, is smaller; it can be classed as medium-high. Leaves and stems are the same, except for size, as those of sweet mockorange.

ILLINOIS NINEBARK, *Physocarpus intermedius,* is a bush similar to the *P. opulifolius* already described but smaller and common in the lower foothills of our mountains. Some call it wild spirea because of the resemblance to the spireas.

COMMON SNOWBERRY, *Symphoricarpos racemosus* (fig. 43), has snowy-white berries in fall which follow rather inconspicuous pink flowers. It is a good bush for planting under low-silled windows or in front of taller bushes. It does well in both sun and shade and is often used on north sides of buildings, where dogwood is a good medium-to-tall companion for it. *S. occidentalis,* the western snowberry, is a Colorado native, as is also *S. pauciflorus,* the dwarf snowberry.

CORALBERRY, *Symphoricarpos vulgaris,* is sometimes called red snowberry. It is a Colorado native, though less widely distributed than the white snowberry. In foliage and bush the coralberry is very similar to white snowberry, but the fruits on this one are red, with smaller and more numerous berries all along the stems. The foliage of the snowberry and the coralberry resembles closely that of the honeysuckle, of which family they are members.

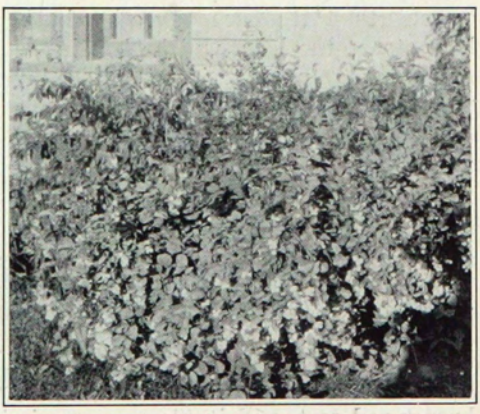

Figure 43.—The common snowberry, a good 2- to 4-foot bush, grows well in the shade.

JAPANESE BARBERRY, *Berberis thunbergi* (fig. 44), should not be confused with *B. vulgaris*, the species which is alternate host for the wheat rust. Rust-spreading kinds are quarantined, but Japanese barberry is not an offender in this respect. It is a small, thorny bush with oval-shaped, glossy leaves. It has a hard, red berry that persists through the winter. With an occasional trimming of the outer twigs, it may be kept in a fine, compact, roundish form.

SHRUBBY CINQUEFOIL, *Potentilla fruticosa*, is a good, native low ornamental. Its leaves are pubescent, grayish-green, and deeply lobed, forming five parts. It is covered most of the summer with yellow flowers like strawberry blossoms.

Figure 44.—This low, thorny ornamental, the Japanese barberry, is not the variety that spreads wheat rust.

MOUNTAIN CURRANT, *Ribes alpinum*, is a low bush similar to the golden currant previously described, except that flowers are pink and smaller, the main difference being that of height.

ANTHONY WATERER SPIREA, *Spiraea*, is representative of a class of small, 2- to 3-foot spireas that bloom in summer on current season's growth. The bloom is clusters of small, red flowers.

Native Shrubs

Native shrubs, of course, are known to be adapted to Colorado conditions. A number of ornamentals common to the trade, or species closely related to them, are Colorado natives. Many of these wildlings make very acceptable ornamentals when given the advantage of care and cultivation.

In the foregoing descriptions those shrubs native to Colorado are so designated. There are many more that show promise and are worthy of trial. The Horticulture Section, Colorado Experiment Station, is now testing at Fort Collins 77 different kinds of trees and shrubs, most of which are natives.

Roses

Roses are as truly shrubs as any of those previously described, but in their outdoor use they are treated more as perennial flowers; *i. e.*, they are most efficiently cared for and give the best mass effects when a number of bushes are planted in a group.

Roses need frequent spraying or dusting for lice, red spiders, and mildew. In winter they need some sort of protection, such as hilling up of soil in the crown. These operations are facilitated by having the bushes grouped together. Effectiveness of the bloom is also increased

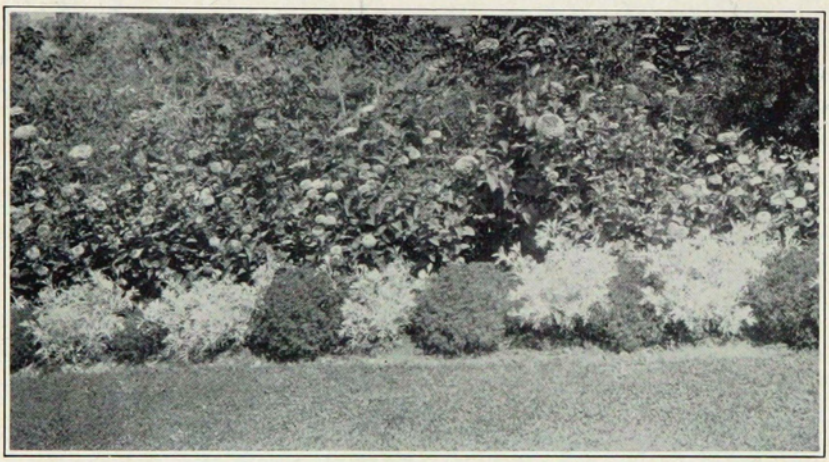

Figure 45.—Annual flowers used to "bolster up" the foliage on a first-year shrub group.

by grouping, because a relatively few long-stemmed flowers can be produced to the plant, and the plant itself is not very ornamental.

Pruning of garden roses should be more severe than the pruning of other ornamentals. They usually do best when cut to within a few inches of the ground each year. Size of bloom and length of stem of roses may be improved by disbudding. This is simply the removing of all buds but the terminal one on each shoot while the buds are small. Length of stem is increased by pinching off even the terminal bud one or more times and letting the next one come to flower.

Roses will reward continuous fertilization and cultivation. Irrigation should be such as to soak the soil deeply and allow enough time between waterings to let the soil nearly dry out.

Hedges

Hedges, particularly clipped ones, seem like roses to make a special appeal to amateurs and to interest many who do not feel the "urge" of other kinds of gardening.

AMUR PRIVET, *Ligustrum amurense,* is perhaps most common of the low to medium-height clipped hedge plants. It is a species hardy in Colorado which is similar in habit and appearance to California privet, *L. ovalifolium.*

To be satisfactory, a clipped hedge must be dense, a quality which requires a good soil and frequent cultivation, watering, and clipping. Plants should be set not more than a foot apart and cut back nearly to the ground, regardless of the ultimate height desired. Successive clippings are then made a few inches higher each time until the desired height is reached.

If a hedge wider than 2 feet is desired, plant a double row of plants, with rows a foot apart and plants in one row opposite spaces in the other.

No one form of clipping is better than another, except that the hedge should not be narrower at the bottom than at the top. If the sides slope, the hedge should be widest at the bottom so as to provide maximum light for all parts of the plants.

No particular skill, other than neatness, is required in trimming a hedge. A well-kept appearance is furthered by frequent clipping during the growing season. Some sort of frame or tight wire should be used as a guide until the shape of the hedge is established.

An informal or unclipped hedge is usually made of some other material, such as Russian-olive and caragana for tall hedges, lilac and Vanhoutte spirea for medium-height hedges, and barberry for low hedges.

Vines

SWEET AUTUMN CLEMATIS, WHITE CLEMATIS, *Clematis paniculata,* has a dense foliage and a twining habit of growth. It will take care of itself on a trellis but will not climb without one. Flowers are small but very numerous, covering the entire vine with a fluffy white, followed by feathery-plumed seed heads.

JACKMAN CLEMATIS, *C. jackmani,* is not so rank a grower and has large, dark-blue flowers from 2 to 4 inches across. It also needs trellising. There are several selections of this type with pink and red flowers.

ENGELMANN CREEPER, *Ampelopsis quinquefolia engelmanni,* is a good, rapid-growing vine that clings to walls or fences and climbs without trellising. By pruning and training, it can be led over a considerable area or confined to certain spaces as occasion demands. Its bloom is inconspicuous, and the small, blue, grapelike fruits that follow have no particular ornamental value; it is essentially a foliage

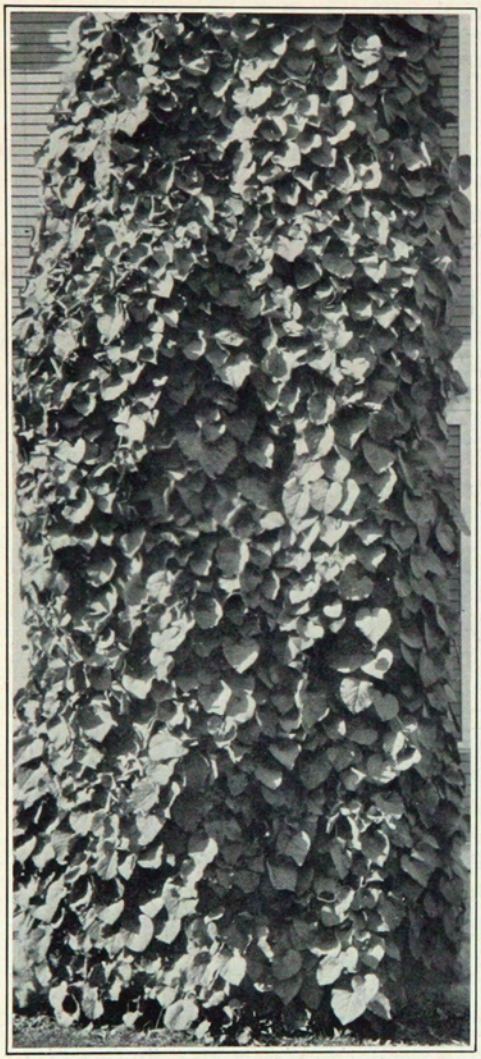

Figure 46.—Dutchmans-pipe is a good vine for covering porches, fences, or walls.

vine. This vine is essentially the same as the common woodbine or Virginia creeper, except that the latter requires support, since its tendrils do not cling to smooth surfaces.

DUTCHMANS-PIPE, *Aristolochia sipho* (fig. 46), will climb wire or twine as does a morning glory. It has very large, heart-shaped leaves and smooth, green stems. It makes a dense covering and receives its name from the odd-shaped flowers which have the form of a long, curved-stem Dutch pipe.

CLIMBING ROSE is a favorite subject for the trellis. The roses should be in a sunny exposure and sheltered from winter wind. Pruning to remove the wood that has bloomed, and selecting only the strongest new canes to save for next season, will keep the plant renewed and vigorous.

RIVERBANK GRAPE, *Vitis vulpina,* or horticultural varieties of grapes such as those described in "Grape Growing in Colorado," Colorado Station Bulletin 424, make excellent cover for arbors and pergolas.

CHINA FLEECEVINE, SILVER LACE VINE, *Polygonum auberti,* is a profuse bloomer; the flowers are in large, loose panicles, giving a misty-white effect in summer.

COMMON MATRIMONY-VINE, *Lycium halimifolium,* is very hardy and will stand more abuse than any other of our vines. Its common name is a rather serious indictment of the state of matrimony, so scraggly an individual is the vine. It is good for trailing over unsightly, low objects but does not climb well.

The foregoing descriptions are of perennial vines, only the more common ones being listed.

Planting

In transplanting a bush or a tree, determine from the stem color where the ground line was and plant an inch or two deeper (fig. 47). If it has not already been done at the nursery, prune the top and branches a few inches as indicated in the sketch. With grafted specimens such as the cherry tree shown, plant deeply enough to put the graft an inch or two under the surface.

Ordinarily only the larger roots of trees need be pruned at planting time. Even the large roots, which are cut short enough when the plant is dug, are benefited by a fresh cut made so as not to shorten them appreciably—just a cross-section slice taken off the end. The digging process removes a considerable amount of roots, and in order to balance this loss some of the tops of the plant should be removed at planting time. Removing from a fourth to a third of the top will enable roots to reestablish themselves more quickly.

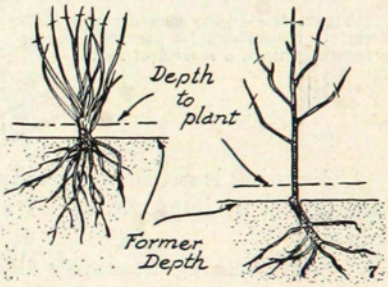

Figure 47.—In transplanting, set the bush or tree an inch or two deeper than previously; prune the tops as indicated.

The hole for planting need be only large enough to accommodate the roots comfortably. If it is much too large or too deep, when watered the plant may settle and be left considerably deeper than was intended.

If there is a difference in quality of soil from the bottom of the hole, make separate piles in digging (fig. 48). Keep roots covered with damp burlap or soil while digging.

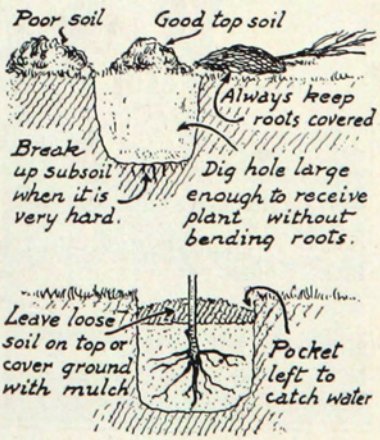

Figure 48.—How to replace the soil in planting.

If soil is exceptionally poor, bring a better top soil from elsewhere for filling around roots. Fertilizer is seldom needed or desirable at planting time but if used should be applied as a topdressing—not around the roots.

Soil is firmed around roots more efficiently by watering before tramping the soil about the plant. The remainder of the soil should be replaced and tramping done last. So much water should not be used in planting that this last tramping makes the job sloppy or muddy on top.

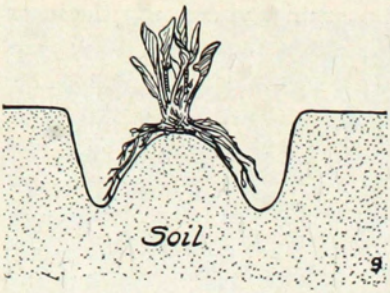

Figure 49.—In the case of plants difficult to transplant, let the roots spread naturally upon a mound of soil.

Figure 49 shows a method of setting plants with sparse or very fine roots to avoid wadding them all together in the center of the hole. A mound of soil is first placed in the center of the hole, high and wide enough that a plant placed on top of it will have a normal spread of roots along the sides of the mound and will stand at the proper depth. Subsequent filling of the hole then will not crush the roots into an unnatural position.

Pruning

Pruning is not imperative in growing ornamentals, but a moderate amount of it improves appearance and lengthens the useful life of plants.

The pruning necessary to maintain neat appearance is simply trimming, a mild form of pruning, and may be done at any time of year. Consider the normal habit of growth of the individual and then cut out or cut back the scraggly, unsightly branches which do not conform to this general shape.

Some bushes, such as lilac and spirea, form seed pods which become unsightly when ripe and dusty. Appearance of such plants is improved by trimming these off, and the sooner it is done the better.

The proper time of year for such trimming as affects blooming, *i. e.*, the removing of parts that would normally bloom the next season, is just after the plant has finished blooming. The part left then will start the formation of flower buds for next season (if other conditions are right), while if the same pruning had been delayed until winter, flower-bud formation on the remaining part could not take place, and a season's bloom would be lost.

Branches of a tree or bush that are destroyed by insects or infected

Figure 50.—An example of tree butchery by incorrect methods of pruning.

with disease should be trimmed out and burned to prevent spread of the pest.

Renewal pruning will increase the useful length of a shrub's life. This is done in the dormant season when leaves are off and consists simply of the removal of old wood to permit replacement by new. One or a few of the oldest stems are cut out clear to the ground each year, giving younger wood a better chance to develop and thus keeping the top of the plant constantly renewed. Obviously the treatment will vary with different kinds of plants, and as in trimming to shape the bush, its normal habit of growth will govern the process of pruning.

Plant Index

(Note—Where only the genus name appears under "Botanical Name," the authority [page 22] recommends use of the common name only.)

Evergreens

Deciduous Trees

Plant Index—Continued

Shrubs

Plant Index—Continued

Plant Index—Continued

Plant Index—Concluded

Vines

Shrubs for Special Purposes

For Dry or Sandy Soils

Siberian Pea-tree
Sumac
Tamarix
Wild Rose

For Shady Places

Dogwood
American Elder
Snowberry
Coralberry
Blackhaw
Privet

For Hedges

Japanese Barberry
Amur Privet
Russian-olive
Siberian Pea-tree
Bush Honeysuckle
Mockorange
Wild Rose
Anthony Waterer Spirea
Froebel Spirea
Vanhoutte Spirea

For Winter Effect

Red-osier Dogwood
Goldentwig Dogwood
Japanese Barberry
Snowberry
Coralberry
Privet (unclipped)
Sumac