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PLANTING HOME GROUNDS



ALFRED MAC DONALD



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PLANTING
HOME GROUNDS.



The American Elm—The most beautiful Tree that grows

Planting Home Grounds

The Beautifying of Home Grounds by the Planting of Trees, Shrubs, Plants and Flowers Suitable for Southern and Central Kansas and Vicinity.

By ALFRED MACDONALD,
Director of Parks and Forestry,
City of Wichita, Kansas.

Published by the
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Wichita, Kansas

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To

MR. L. W. CLAPP

A Faithful and Untiring
Worker that the Beauty
and Handiwork of Na-
ture May Make Happy
the Lives of Men, this
Little Book is Gratefully
Dedicated.

PREFACE.

THIS little book has been published by the Board of Park Commissioners of the City of Wichita for the purpose of helping the people of Wichita and Central Kansas in the beautifying of their home grounds by the planting of trees, shrubs and flowers.

There are really but a limited number of trees and plants which are entirely adapted to conditions existing here. The hot dry periods during our summer months are especially adverse for the kinds of trees and shrubs which thrive so well in the North and East, and the extreme and sudden changes of temperature in the winter are fatal to those which do so well a short distance south of here.

There is little horticultural literature available which applies specifically to local conditions.

In the improvement of the public parks in the City of Wichita the Board of Park Commissioners has used numbers of different kinds of shrubs in various kinds of soils and under many different conditions. In the operation of the Forestry Department the Board has directed the planting of shade trees in every part of the City. In the Municipal Nursery and Park Greenhouse thousands of ornamental plants and shrubs have been propagated.

The results of these experiences have determined certain kinds of trees and ornamental plants which do well here, and the conditions under which they grow best. To disseminate such information and make it available to as many people as possible is the aim of this publication.

Every tree, shrub and plant described and recommended herein has been grown in Wichita under the direction and observation of the writer. It has not been the intention to publish a complete list of trees and ornamental plants which do well here, and doubtless there are a number of successful ones which are not included. Rather it has been the intention to describe a few which have proven successful, and in some cases condemn others which are frequently planted but which are not adapted.

The writer wishes to acknowledge that this book has been made possible through the efforts and cooperation of Mr. L. W. Clapp, President of the Board of Park Commissioners of the City of Wichita. A great deal of the information contained herein has been obtained through association with Mr. Clapp, who has been a pioneer in this City in the beautifying of home grounds, and the leader in Wichita for the expansion of Park, Forestry and Recreational facilities.

Especial thanks are also due Messrs. Don S. Gray, C. A. Seward, W. A. Vincent, and Walter J. Parrott for their help and information.

For many of the illustrations in the book the writer is indebted to the following:

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The scientific names used herein follow the Standardized Plant Names of the American Joint Committee on Horticultural Nomenclature, and The Standard Cyclopedia of Horticulture by L. H. Bailey.

ALFRED MACDONALD.

Wichita, Kansas,
February 1, 1924.

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CHAPTER I.

ARRANGEMENT OF HOME GROUNDS.

THE principle that one should follow in planning the arrangement of his home grounds should be to have the grounds appear as natural as possible. Nature plants her shrubs in groups and masses, for in groups plants and shrubs can best protect one another against the elements. Nature's lawns are great open areas with trees and shrubs grouped about the borders in curved contours.

So in arranging the planting of home grounds, shrubs should always be planted in groups and masses and not as isolated specimens. Lawns should be open and ex-



“Nature's Lawns are great open areas with trees and shrubs grouped about the borders.” (Sim Park, Wichita.)



“The charm of the Lawn is its spaciousness and appearance of expanse.”

pansive with shrubs and trees grouped in the background and about the edges. Straight lines should be avoided in the arrangement of shade trees and shrubbery outlines.

LAWNS.

The chief charm of the lawn is its spaciousness and appearance of expanse. In arranging the lawn as an approach to the house on an average City building site of 50x140 feet one must very carefully avoid the introduction of any feature which will reduce this appearance of expanse.

Single and isolated shrubs and flower beds placed on a lawn tend to reduce this appearance of expanse and spaciousness, as do urns or pieces of garden furniture, especially when such features are placed in the center of the lawn area.

The larger the expanse of unbroken lawn the more extensive the grounds will appear.

ARRANGEMENT OF SHADE TREES.

In the case of the ordinary City building site shade trees may be very properly planted in the parking. In fact one of the reasons for providing the parking in the platting of a City is to provide a space for shade trees. The planting of shade trees in the parking is a considerate arrangement, for trees so planted not only furnish shade to the premises in front of which they are planted, but they also provide protection from the hot sun for pedestrians on the sidewalk and for everyone who uses the street.

In the platting of most of our Southwestern Cities fairly adequate parking areas have been left between the street and the sidewalk for shade trees. But where the parking is very narrow (less than 5 feet) it is generally advisable to plant the shade trees just inside the property line. Under such conditions this arrangement is perhaps



“Shade Trees planted in the parking provide shade for everyone.”

better for the development of the tree than cramping the roots in a narrow space between the street and sidewalk. Such an arrangement will not make the lawn appear foreshortened nor detract from its appearance or spaciousness providing the trees are placed close to the walk.

To properly locate shade trees on one's premises requires considerable thought and study. One must keep in mind that when he plants a tree he is making an improvement which is to last for years, longer probably than he will live. The result of hastily and carelessly locating shade trees may be keenly regretted in the years to come.

In the case of an ordinary City building site shade trees which are set inside the property should generally be planted at the side of the house or somewhat in the background. A shade tree should never be planted in the geometrical center of the lawn, for such an arrangement is unnatural and reduces the appearance of expanse of the lawn. Shade trees should not be arranged in straight rows inside the property or along the property line. Such an arrangement is unnatural and presents an incongruous appearance.

A shade tree should never be located in such a position that the house will appear as if it had been divided into two equal parts by the planting of a shade tree squarely before the middle of it.

The general tendency is to plant shade trees too close together. In the case of Elm, Hackberry, and Locust, 40 feet apart is the proper distance. Pin Oak may be planted as close as 35 feet. Many persons plant shade trees as close as 25 feet apart, with the expectation of removing every other tree when they commence to crowd. In principle this plan is not bad practice, providing one has the moral courage to remove the surplus trees at the right time.

Persons who wish to have a blue grass lawn should



“In the Winter when other trees are bare and brown, evergreens are most cheerful companions.”

plan the arrangement of their shade trees so every portion of the lawn will be shaded from the hot sun especially during the late afternoon. In so locating shade trees to protect blue grass one should always keep in mind that the trees should be located South and West of the area to be shaded.

A convenient method of locating shade trees is to place stakes at the locations where one believes the trees should be planted, and then move the stakes about in various locations until a satisfactory grouping has been arranged.

ARRANGEMENT OF EVERGREENS.

There is no class of trees or shrubs which will give as much pleasure all the year round as evergreens. Evergreens are bright and cheerful companions when other trees and shrubs are bare and brown. During the long,

cold Winter they give an eternal promise of the Spring that is surely coming. It is true that the initial cost of evergreens is greater than most trees and shrubs, but once planted they are long-lived and give an appearance of permanence.

The low growing varieties of evergreens may be arranged in groups as shrubs are arranged, especially in the nature of a foundation planting. The taller varieties such as Pine, Cedar and Arbor Vitæ may be arranged as single specimens and located on the premises in the same way that shade trees are located. In such cases the taller evergreens should not be placed in the center of the lawn, but should be placed at the rear or at the side of the house.

A mistake frequently made in the planting of tall evergreens is to plant too many on a small area of ground. Too many tall evergreens about one's home may give a sort of dismal, depressing appearance.



“Groups of low-growing evergreens are very pleasing as a foundation planting.”

ARRANGEMENT OF SHRUBS.

Shrubs should be planted in groups and masses and are especially attractive when planted close to buildings and near foundations. Masses of shrubs thus planted against foundations are called Foundation Plantings.

In the arranging of shrubs in masses the tall varieties should be located in the rear of the group and the small ones in the foreground.

Low growing perennials, such as Iris, Gaillardia, Hardy Phlox, and other flowering plants may be planted in front of the shrubbery masses and set in about the shrubs. They give color and life to the shrubbery masses when planted among the shrubs.

Early flowering Tulips are also very attractive when planted in front of shrubbery masses, and placed here and there beneath the shrubs in the front of the group.



“Shrubs should be planted in groups and masses, especially close to foundations and buildings.”

THE FLOWER GARDEN.

The flower garden should be placed in the rear or at the side of the house. The flower garden should be a place of privacy and seclusion. The hurly-burly rush of street traffic, with its consequent noise and dust, is not at all consistent with the peace and tranquility of plants and flowers.

The kinds and shapes of flower gardens may be infinite in their variety. Every home owner has his own tastes about flowers and the selection and arrangement of flowers in the garden is one phase of the beautifying of home grounds which may be left to each individual's inclinations.

The perennial flowers of our grandmother's garden are today, as then, the most satisfactory of garden flowers.



Utility buildings are easily transformed into a feature of the home landscape by a composition back ground of trees and a partial screen planting of low growing evergreen and deciduous trees with shrubbery and perennials. Building above includes garage, laundry, clothesyard, pump house and irrigation tank; Right margin, elms; Left, Scotch pine; Central background, honey locust and linden; Front, scarlet thorn, Austrian pine, persimmon, deutzia and weigelia; with fore-setting of anchusa, delphinium, iris, hardy pinks and in spring tulips and daffodils.

Perennials come up year after year without replanting, and we learn to look for them and to love them as we love old friends.

Mixtures of annuals and perennials make a desirable flower garden. The perennials give a characteristic of permanence. Many perennials bloom in the late spring or early summer. Most annuals commence to bloom about the time the perennials are through blooming.



Illustrating a side lawn planting of deciduous trees, shrubbery and tall perennials flanking the open grass space, and a foreground section of boundary line planting of oriental poppy, hemerocallis, funkia and speciosum lilies under the partial shade of a friendly pine tree.

Judicious combinations of both annuals and perennials in the same flower bed will insure blossoms all summer until frost.

SCREEN PLANTING

A very pleasing use of trees, shrubs and flowers is in screening from view unsightly corners or buildings on one's home grounds. Evergreens are especially suitable for this purpose for they are green and dense all the year.

A list of deciduous plants suitable for screen plantings is presented elsewhere in this book.

Utility Buildings may be transformed into a feature of the home landscape by a background of trees, and by such an arrangement of shrubs and plants that the buildings and utility features will blend into the surroundings.



"A pleasing use of trees and shrubs is in a mass planting to screen from view buildings and unsightly corners."

CHAPTER II.

*DECIDUOUS TREES.

American Elm. *Ulmus americana.* (White Elm, Water Elm)—The most beautiful tree that grows. A hardy, rapid growing tree, excellent for street and parking planting. Two types are found here—the common vase type which branches 15 to 25 feet from the ground into a majestic broad-spreading top; and the spreading type which branches low with a broad flat top often with contorted twisted branches. Height 80 feet. (See frontispiece for illustration.)

Honey Locust. *Gleditsia triacanthos.*—A native tree with fine pinnate leaves, and generally with stout sharp thorns on the trunks and larger branches. Resists drought and is suitable for dry and sandy soils. Should not be confused with the Yellow or Black Locust which is not desirable. There is a thornless variety of Honey Locust which is recently becoming quite popular. An excellent shade tree. Height 80 feet.

Pin Oak. *Quercus palustris.*—A beautiful symmetrical tree with the upper branches starting at right angles to the trunk, and with thin, delicate, deeply-cut leaves. Of all the Oaks the Pin Oak is the easiest to transplant. The foliage turns a beautiful deep red in the Fall and persists into the Winter. Height 60 feet.

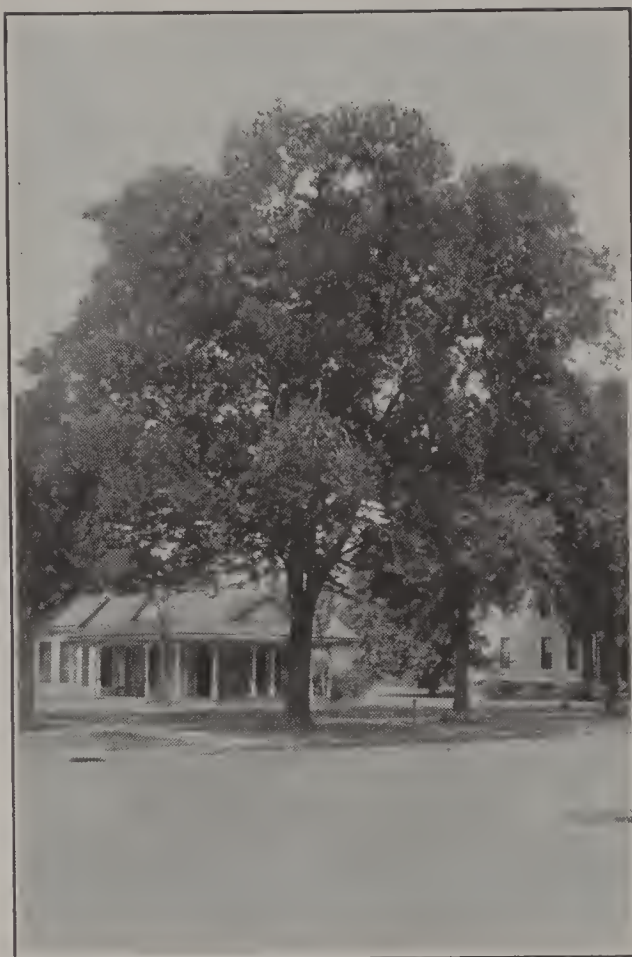
*Deciduous: Trees which lose their leaves in Winter.

*In these descriptions the height indicated is the average height that such a tree will attain when mature.



Pin Oak.

Hackberry. *Celtis occidentalis*. (Nettle Tree, Sugar Berry)—A hardy native tree. The Hackberry resembles the Elm somewhat but has a more upright habit of growth than the Elm. The leaf of the Hackberry is smaller and more pointed than that of the Elm. The bark on old trunks develops characteristic ridges and excrescences. Rivals the Elm as a street tree. Endures drought. Sometimes difficult to get started. Height 70 feet.



Hackberry.

*DECIDUOUS TREES FOR SPECIAL LOCATIONS AND PURPOSES.

Ailanthus. *Ailanthus glandulosa*. (Paradise Tree, Tree of Heaven)—A rapid growing tree which will thrive in the poorest soil where other trees fail. Has tropical-looking foliage resembling that of sumach. Excellent for quick effects, for screens, and for narrow parkings. Short lived, about 20 years. Height 40 feet.

Ginkgo. *Ginkgo biloba*. (Maidenhair Tree)—The sole surviving species of a family of trees which in past geological time flourished over much of the earth. Now practically extinct in the wild state. A most picturesque

*The trees described in this list should be planted only after a careful study of their characteristics and a thorough consideration of the location where they are to be planted.

and rare tree with peculiar fan-shaped leaves. Free from insect pests and diseases. Long lived, several hundred years. Height 70 feet.

Bungei Catalpa. *Catalpa bignonioides var. nana.* (Umbrella Catalpa)—An unusual dwarf type of tree with a slender stem and a round, dome-shaped head with large soft leaves. Can be obtained in 6, 7, 8 and 9-foot heads, i. e., distance above the ground that head starts. The 8-foot head is the best for general uses. Suitable for small lawns, formal gardens, and places where space will not permit a larger tree. Will grow in almost any soil. The top is subject to damage by storms. Not long lived, 10 to 15 years.

Linden. *Tilia.* (Lime, Basswood, Whitewood)—A noble tree of rounded, pyramidal form casting a dense shade. The leaves are heart-shaped. A profusion of sweet, yellow flowers appear in June. Requires special care and



Umbrella Catalpas in a sunken garden.

attention when young. Prefers heavy soils. The European Linden (*Tilia vulgaris* or *Tilia europaea*) is the most desirable. Height 70 feet.

Russian Olive—See “Shrubs”.

Red Bud—See “Shrubs”.

Sycamore. *Platanus occidentalis*.—A hardy native tree growing wild in our river bottoms. Its white bark gives it a very picturesque appearance in groups of other trees. Prefers heavy or moist soil but it will survive in dry soil. It has a disagreeable characteristic of often dropping its leaves in midsummer, especially when planted in dry locations. Height to 90 feet.

A European species of Sycamore, *Platanus orientalis*, is being tried in this section, which is said to not have the objectionable characteristic of dropping its leaves in summer.

White Oak. *Quercus alba*.—The most magnificent of American trees. Requires a large open space to reach its full development. Slow growth. Rather difficult to transplant. Foliage assumes a deep red color in the Fall, and persists into the Winter. Prefers heavy soil. Height 80 feet.

Bolleana Poplar. *Populus bolleana*. (Bolles' silver poplar)—Assumes a tall spire-like form similar to the Lombardy Poplar. The leaves are glossy green above, silvery white beneath. Superior to the Lombardy Poplar where a tall, narrow tree is desired. A rapid growing, unusual tree, well adapted to this climate. The Bolleana Poplar may be planted in rows at the rear of the premises or along the property line to screen from view unsightly buildings or other features. Height 60 feet.

DECIDUOUS TREES WHICH ARE OFTEN PLANTED BUT WHICH ARE NOT RECOMMENDED BECAUSE OF CERTAIN OBJECTIONABLE CHARACTERISTICS.

White Ash. *Fraxinus americana*.—A beautiful tree with glossy green foliage but badly attacked here by boring insects. Height 60 feet.

Box Elder. *Acer negundo*. (Ashleaf Maple)—Should not be planted in this section because of its short life, susceptibility to insect attack, and soft wood.

Cottonwood. *Populus deltoides*.—One of our most common native trees but not desirable for City planting. Too tall for ordinary streets. The wood is soft and brittle, and the roots clog sewers, water pipes, etc. Badly attacked by borers. The pistillate tree is especially objectionable because of its characteristic of shedding cotton in the summer. Height 80 feet.

Carolina Poplar. *Populus eugenei*.—Much like the Cottonwood except that it does not bear cotton. Badly attacked by borers. Not recommended for City planting.



A Kansas prairie production of a natural planting. Comprises margin of pond reaching to a pergola blending into the trees beyond, a bit of road from the street, ampelopsis covered wall with hybrid lilacs and perennials in front; low hanging horizontal limb of an old redbud tree across the sky line finishes the picture.

Lombardy Poplar. *Populus nigra italica*.—A rapid growing tree with a spire-like form. Generally short lived here because of attacks by borers. The Bolleana Poplar is suitable for such purposes as the Lombardy Poplar is generally used.

Soft Maple. *Acer dasycarpum*.—Suitable only for large lawns and open areas where the roots can spread. Rapid in growth for a few years, but generally short-lived. Attacked by scale. Not recommended for street planting.



Austrian Pine.

CHAPTER III.

EVERGREEN TREES.

EVERGREENS are most cheerful Winter friends and are best appreciated at the season when other plants and trees are bare and brown. Evergreens should always be purchased balled and burlapped, (B. & B.) which means that the trees are dug with a ball of dirt left about the roots, securely held by burlap.

*EVERGREENS FOR GENERAL PLANTING.

Austrian Pine. *Pinus nigra.* (Black Pine)—A dense, dark evergreen which becomes a hardy, massive tree. Endures drought conditions, will grow in sandy and poor soil, and will survive in the City where smoke, gas, and other conditions are fatal to most evergreens. The best tall evergreen. Height 80 feet.

Scotch Pine. *Pinus sylvestris.*—A picturesque evergreen with bluish green foliage. Not as dense as the Austrian Pine, and not as well adapted to City conditions. Height 60 feet.

Chinese Arbor Vitae. *Thuja orientalis.*—A hardy evergreen with bright green foliage and broad-spreading pyramidal habit of growth. Suitable in a group with the Red Cedar. Very hardy. Requires full sunlight. Height 25 feet.

*The height indicated is the average height when the tree is mature. It does not necessarily indicate the maximum height of certain individual specimens.

Red Cedar. *Juniperus virginiana*.—The commonest of ornamental evergreens here and the most satisfactory. Broad-spreading columnar habit of growth. Will endure drought, and will grow in poor and sandy soil. Also suitable for partially shaded locations. Foliage turns a purple color in winter. The Platte River type is the most satisfactory. The Red Cedar is especially desirable for screen plantings to hide unsightly landscape features. It is also planted extensively for wind-breaks. Height 40 feet.



Red Cedar.

Savin Juniper. *Juniperus sabina*. (Dwarf Juniper).—A dwarf evergreen suitable for foundation plantings and in the front of groups of taller growing evergreens. Fine, dainty foliage. It will spread to 6 or 8 feet in diameter. The Savin Juniper is very hardy and will grow in rather poor soil. Recommended for mixing with shrubs in mass plantings. Height 5 feet.

Japanese Trailing Juniper. *Juniperus japonica*.—A unique, creeping evergreen, very hardy, with bluish-green foliage. Will make a plant 4 or 5 feet in diameter. Good ground cover. When well established it will stand heat and drought. Height 1 foot.

OTHER EVERGREENS SUITABLE FOR THIS CLIMATE BUT
RECOMMENDED ONLY FOR SPECIAL PURPOSES.

Jack Pine. *Pinus banksiana*.—An evergreen of rather scraggly growth. Said to be quite successful in sandy soil in this section. Has little to recommend it for ornamental planting, except, perhaps, its picturesque habit of growth. Height 60 feet.

Silver Cedar. *Juniperus virginiana glauca*.—A form of the common Red Cedar, described previously. This tree has bluish silvery foliage. Desirable in a group with other evergreens and especially with the Red Cedar. Height 25 feet.

Pfitzer's Juniper. *Juniperus chinensis Pfitzeriana*.—A low, broad evergreen of a somewhat stubby habit of growth with blue-green foliage. Branches grow horizontally forming a flat spreading top. Height 12 feet.

Tamarisk-Leaved Juniper. *Juniperus sabina tamariscifolia*.—A very beautiful, trailing form of the Savin Juniper. Has delicate bluish foliage. Sometimes known as Gray Carpet Juniper. Grows very well here even in poor soil. Height 2 feet.

THE FOLLOWING EVERGREENS ARE SOMETIMES PLANTED
BUT ARE NOT RECOMMENDED.

Colorado Blue Spruce. *Picea pungens*.—Often injured by the hot weather.

Fir. *Abies*.—Not adapted to this hot climate.

Irish Juniper. *Juniperus communis hibernica*.—Often damaged by hot weather.

White Pine. *Pinus strobus*.—Suitable only for sheltered locations and for fairly heavy soil.

CHAPTER IV.

DECIDUOUS SHRUBS.

Althea. Hibiscus syriacus. (Rose of Sharon)—A hardy, flowering shrub, upright and somewhat tree-like in



Flower of a Single Althea.

habit of growth. One of the few shrubs that blossom in the late summer. Flowers are violet, red, purple, pink and white, depending upon the variety. Both single and double flowered varieties. Will endure heat and drought. Sometimes injured by severe winter weather. Height 5 to 10 feet.

VARIETIES: *Boule de feu*—flowers double, deep red.
Duchesse de Brabant—double lilac flowers.
Comte de Hainaut—flowers double, delicate pink.
Jeanne d'Arc—double white flowers.
Lady Stanley—double flowers, whitish pink.

Coral-Berry. *Symphoricarpos vulgaris*. (Indian currant. Red Snowberry. Buck-brush)—A native shrub and excellent for ornamental purposes. Flowers are inconspicuous. Most striking characteristic is the quantities of bright red berries which persist until late winter. Will grow in both sunny and shaded locations. Height 3 to 4 feet.

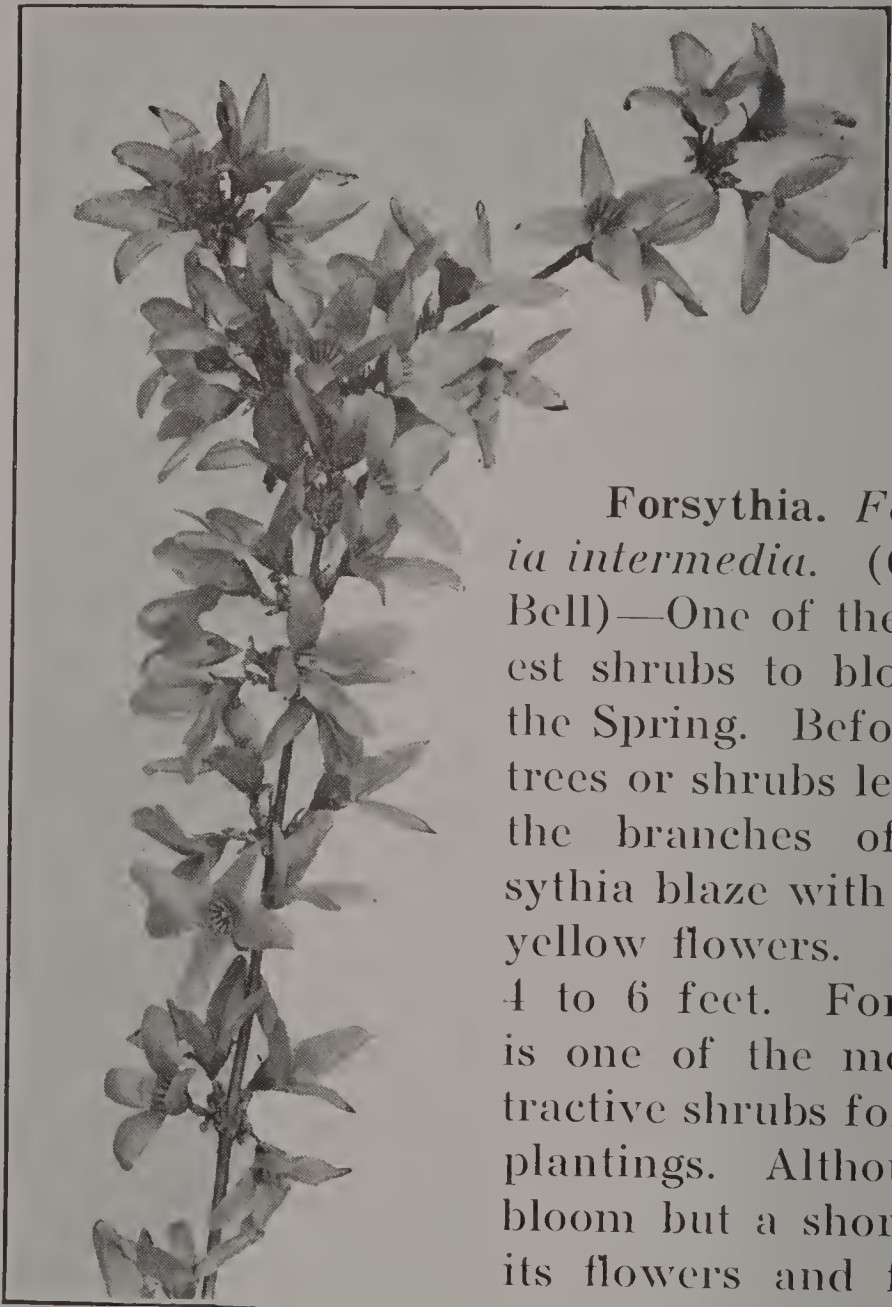
Elder. *Sambucus canadensis*. (Elderberry).—An attractive, native shrub with rather coarse foliage. Great, handsome, white flowers in June and July, followed by clusters of purple berries. Very hardy. Height 6 to 8 feet.



Elder.

Golden Elder. *Sambucus nigra aurea*.—A variety of Elder with bright yellow foliage. When planted among other shrubs the yellow leaves make a delightful contrast. Flowers are like the common Elder. Height 6 to 8 feet.

Cut-Leaf Elder. *Sambucus nigra laciniata*.—A variety of Elder with deeply cut fern-like leaves. Very delicate and attractive. Flowers like common Elder. In mass planting the lace-like leaves make a delightful contrast with the foliage of most other shrubs.



Flower of Forsythia.

Forsythia. *Forsythia intermedia*. (Golden Bell)—One of the earliest shrubs to bloom in the Spring. Before any trees or shrubs leaf out, the branches of Forsythia blaze with bright yellow flowers. Height 4 to 6 feet. Forsythia is one of the most attractive shrubs for mass plantings. Although in bloom but a short time its flowers and foliage harmonize with most shrubs.

Drooping Forsythia. *Forsythia suspensa*.—A drooping and trailing variety suitable for covering banks and drooping over walls. Flowers are like *Forsythia intermedia*. Height 3 to 5 feet.



Bush Honeysuckle.

BUSH HONEYSUCKLE.

The Bush Honeysuckles represent some of the hardiest and best shrubs for this section. They have dainty, fragrant flowers in the Summer, followed by bright, conspicuous berries.

Tartarian Honeysuckle. (*Lonicera tartarica*.)—The most common bush honeysuckle. Bears a profusion of dainty flowers in May and June, followed by bright red berries in the late summer. One of the best shrubs for this climate. Height 6 to 8 feet.

Belle Honeysuckle. *Lonicera bella albida*.—Similar to Tartarian honeysuckle. Very vigorous and hardy. An excellent shrub. Height 6 to 8 feet.

Morrow Honeysuckle. *Lonicera morrowi*.—Similar to *Lonicera tartarica*. Dense in growth. White flowers in May and June. The Morrow Honeysuckle is very hardy and attractive. Height 4 to 6 feet.

M o c k O r a n g e.
Philadelphus coronarius. (Syringa)—An old-fashioned shrub with white, fragrant flowers. A long-lived, hardy shrub. Blooms in May and June. Height 6 to 3 feet.

L a r g e Flowered Syringa. *Philadelphus grandiflorus*.—Similar to *Philadelphus coronarius* but with larger flowers. Both species of *Syringa* are among the hardiest of the long lived shrubs which thrive in Kansas. Will endure drought after it is well established.



Mock Orange.

Lilac. *Syringa vulgaris*.—An old-fashioned garden favorite with purple, blue, white and pink flowers in May. The Persian lilacs are among the most attractive and

bloom when the plants are quite young. There are many hybrid varieties representing various shades of color. Height 6 to 20 feet.

Matrimony Vine. *Lycium chinense*.—While generally considered a climber or vine, Matrimony Vine makes an excellent low shrub. Flowers are inconspicuous, but the shrub bears quantities of crimson berries in the Fall. Endures drought and is excellent to cover banks. Berries are said to be poisonous if eaten. Height 4 to 5 feet.

PRIVET.

Perhaps the Privets are best known as hedge plants. There are some varieties, however, that are among the best shrubs we have for mass planting. The leaves of most species remain on the plants into the winter, giving them an appearance of evergreen shrubs. The flowers are generally inconspicuous. The fruit is a black berry.

Amoor River Privet North. *Ligustrum amurense*.—The best shrub for low, formal hedges. This shrub is hardy and endures adverse conditions. Will grow in partial shade. Height 5 to 6 feet.

California Privet. *Ligustrum ovalifolium*. Used for hedges but is not as satisfactory as Amoor River Privet for it sometimes winter kills. Foliage dark green. Leaves persist into the winter. Height 5 to 6 feet.

Ibotan Privet. *Ligustrum ibota*.—Excellent when mixed with other shrubs. Has dark green foliage, changing to a rich purple in the Fall. Inconspicuous flowers. Does well in partially shaded locations where other shrubs fail. One of the best shrubs for this climate and not as popular as it deserves to be. Height 6 to 8 feet.

Regals Privet. *Ligustrum ibota regalianum*.—Similar

to Ibotan Privet but smaller, with horizontal branches. Foliage like Ibotan Privet. Will grow in partial shade. Foliage turns a rich purple in Fall. A very desirable shrub. Height 4 to 6 feet.

Red Bud. *Cercis canadensis*. (Judas Tree)—A native shrub or small tree. Blossoms in early spring, before any leaves appear, with a profusion of rose-pink flowers. The heart-shaped leaves make the foliage very attractive. Very hardy. Will grow in partial shade. Height to 20 feet.

Russian Olive. *Eleagnus angustifolia*.—A large shrub or small tree with silvery white foliage. Inconspicuous fruit and flowers. Stands drought. One of the best tall shrubs for this section. Very desirable as a wind-break. Height to 20 feet.

ROSES.

The successful culture of roses is a form of horticulture for the expert. It requires care, patience and a comprehensive knowledge of conditions influencing rose growth and development. There are hundreds of varieties. The subject of rose growing and the number of varieties are too extensive for anything except a superficial discussion in this little book. Only a few hardy varieties are described. For description of Climbing Roses see "Vines and Climbers."

Prairie Rose. *Rose setigera*.—A native, trailing variety with clusters of single flowers of a deep rose color. A very hardy rose. Height 5 feet.

Paul Neyron.—Has enormous flowers of a cerise red color. Bright glossy foliage. Blooms from June until October. Mulch in the Fall as a protection against cold.



Rugosa Rose.

Japanese Rose. *Rosa rugosa*.—One of the best roses for massing among shrubs. Large single flowers in mid-summer. The fruit is bright red in color and is especially attractive in late Summer. Prefers a rather heavy soil. Susceptible to Rust. Very hardy. Height 4 feet.

Frau Karl Druschki.—Large white flowers. Quite hardy. Blossoms in June.

Madam Hillingdon.—A yellow rose which is said to do well in this section.

Gruss an Teplitz.—Showy flowers of a dark rich crimson. The first blossoms appear in June and this rose generally continues blossoming all Summer. Mulch in the Fall for protection against cold.

Spirea. *Spirea Vanhouttei.* (Bridal Wreath)—A hardy shrub with prolific quantities of white flowers on drooping branches in May. Excellent for planting about porches, foundations, etc. Endures drought. Spirea is one of the most conspicuous of Spring flowering shrubs. It is adapted to almost every soil condition. Height four to six feet.



Spirea Vanhouttei (Bridal Wreath)

Sumac. *Rhus glabra.* (Smooth Sumac)—Slender shrub, often with single stalk. Reddish brown seed spikes

persist during the Winter. Foliage colors a dark red in Fall. Very hardy. Height 10 to 12 feet.

Cut-Leaf Sumac. *Rhus glabra laciniata*.—Similar to Smooth Sumac but with deeply cut foliage. Height to 10 feet.

Stag-Horn Sumac. *Rhus typhina*.—A tall shrub or small tree with heavy, tropical-appearing foliage. A rapid grower and very hardy. Suitable for quick effects and for screen planting. Height to 25 feet.

TAMARIX.

Tamarix represents a genus of very hardy and drought-resistant shrubs which are especially adapted to a hot dry climate. All varieties require full sunlight all day. Tamarix will not grow in the shade.

A m u r Tamarix. *Tamarix amurensis*.—The most beautiful of all varieties of Tamarix, and one of the best shrubs for this climate. Beautiful, feathery foliage of a distinctive blue color. Will flourish in hot, dry locations, especially on the south side of walls and buildings where other shrubs burn out. Pink flowers in August and September. A very pretty effect is obtained when the shrub is cut to the ground in early spring. Height 6 to 8 feet.



Tamarix.

Kashgar Tamarix. *Tamarix hispida*.—A dwarf form with silvery blue foliage. Height 4 to 5 feet.

French or India Tamarix. *Tamarix gallica* (or *indica*)—One of the most common varieties of Tamarix. Foliage dull green. Must have full sunlight. Flowers are pink and are borne in profuse quantities from May to September. Height 10 to 12 feet.

African Tamarix. *Tamarix africana*.—Height to 15 feet. Perhaps the most common form of Tamarix found in this section. Bright green foliage. Will often become a small tree. Will not grow in the shade.

*SPECIAL SHRUBS AND BROAD-LEAVED EVERGREENS.

Aralia Spinosa.—(Hercules Club, Angelica Tree, Devil's Walking Stick)—A peculiar shrub, generally with a single stalk, bark covered with short thorns. Immense compound leaves sometimes 3 feet long. Gives a tropical effect when used with other shrubs. Height 10 to 15 feet.

Berberis illicifolia.—A rare evergreen shrub. Leaves resemble those of holly. Foliage turns a most beautiful purple in Fall. Height 5 feet.

Mahonia aquifolium. (Oregon Grape)—An evergreen with leaves like holly. Resembles *Berberis illicifolia*. Requires partial shade. Height 4 to 5 feet.

Paulownia. *Paulownia tomentosa*.—In warm climates Paulownia becomes a large tree, but here it grows from 5 to 10 feet tall each season and kills to the ground in Winter, coming up again the next Spring. It has huge, tropical leaves, and makes a very curious shrub. Should be cut to the ground each Fall.

*The shrubs described in this list are suitable only for special locations and require exceptional care and attention. Not recommended for general planting.

CHAPTER V.

VINES AND CLIMBERS.

Boston Ivy. *Ampelopsis veitchi* or *Ampelopsis tricuspidata*.—A beautiful variety of Ivy adapted to clinging to brick walls, stucco, etc. Plant only on North and East exposures as it is likely to burn out on the South and West.



Boston Ivy.

Boston Ivy has beautiful, dainty foliage and in locations where it will grow makes the most attractive covering for brick walls and stucco of any deciduous vine.

Engelmann's Ivy. *Ampelopsis Engelmanni*.—Similar to Boston Ivy, but with larger foliage and the leaves are closer together. Will cling to brick and stucco on South and West exposures where Boston Ivy burns out. The best climber for walls.

English Ivy. *Hedera helix*.—English Ivy is the aristocrat of vines. It is evergreen, and will cling to stucco, stone and brick. English Ivy will grow here on North exposures when well cared for. It prefers heavy soil. Field grown plants should be purchased, as plants propagated in greenhouses are likely to be tender.

Virginia Creeper. *Ampelopsis quinquefolia*. (Woodbine)—A native vine similar to Engelmann's Ivy, but not as desirable for covering walls. Suitable for growing over pergolas, etc.

Bittersweet. *Celastrus scandens*.—An old-fashioned vine with bright green leaves and clusters of scarlet berries in Fall and Winter. Very desirable for covering pergolas, wire fences, etc. Berries are used during the Winter holidays for home decorations.

Hall's Honeysuckle. *Lonicera japonica halliana*.—A hardy vine with dark green foliage which persists into the Winter and gives the vine a pleasing evergreen appearance. Fragrant white flowers in Summer. Very desirable for covering banks and spots where grass fails to grow.

Kudzu Vine. *Pueraria thunbergiana*.—A most rapid growing vine suitable for quick effects. Will sometimes grow 50 feet in a single season. Good for quick temporary covering for pergolas. Generally dies back during the Winter. For permanence plant Bitter-sweet and Trumpet Vine.

CLIMBING ROSES.

There are a number of climbing roses suitable for covering trellises, fences, arbors, etc. Unfortunately most climbing roses are attacked here by mildew. Climbing roses invariably require spraying several times during the Spring and Summer as a preventive against insects and diseases.



Climbing Rose.

Crimson Rambler Rose.—The best known of all the climbing roses. Clusters of crimson flowers in June and July. A profuse bloomer.

Dorothy Perkins Rose.—One of the most vigorous climbing roses. Clusters of pink flowers in June and July. Bright, shining foliage. Susceptible to mildew.

Climbing American Beauty Rose.—Large beautiful flowers, resembling those of the American Beauty Rose. Blossoms all summer.

Thousand Beauties Rose. (Tausendschon)—Thousands of bright double flowers in various shades of pink. Few thorns. Said to be resistant to mildew.

Trumpet Vine.
Bignonia radicans.—
A rapid growing hardy vine with orange flowers. Excellent for covering pergolas. It is particularly suitable for conditions in Southern Kansas.

Morning Glories.
Convolvus.—An old-fashioned annual climber, very hardy and rapid in growth. Beautiful and delicate flowers in various colors.



Trumpet Vine.

CHAPTER VI.

*ANNUAL AND PERENNIAL FLOWERING PLANTS.

African Golden Daisy. *Dimorphotheca aurantiaca*.—Annual. A very attractive plant with bright, daisy-like flowers the size of a silver dollar. Petals are a golden yellow with a dark center. The plant is a native of Southwestern Africa. It does well in hot, sunny situations, and endures drought. Will bloom up to frost if the flowers are cut when they commence to fade. Grown from seed. Height 12 to 18 inches.

Amaranthus.—Hardy annuals grown for their richly colored foliage. Height 3 to 5 feet. Will grow in poor soil and hot dry locations. Require full sunlight. Grown from seed.

VARIETIES: *Caudatus*. (Love Lies Bleeding)—Blood red foliage, height 3 feet.

Sunrise—Foliage brilliant bronze crimson.

Tricolor—Joseph's Coat. Leaves red, yellow and green.

Ageratum.—Pretty little annuals growing from 6 to 12 inches tall with deep blue flowers. Plants are a sheet of blue from early summer until frost. The "Blue Perfection" variety is one of the best. Grown from seed.

*Annuals are plants which attain full growth from seed, and flower and die in one year.

Perennials last for several years. They generally start blooming the second year from seed.

Anchusa. *Anchusa italica*.—A hardy perennial 3 to 5 feet tall with spikes of pretty, blue flowers in May and June. Large, hairy foliage. This plant is one of the best of the tall-growing perennials. It is especially easy to grow, but it requires a bright, sunny situation for its best development. Grown from seed. The “Dropmore” variety is the most popular. There is no more intense blue to be found in nature than is in the color of the flower of *Anchusa*. *Anchusa* deserves a place in every flower garden.



Anchusa Italica, Dropmore Variety.

Arundo. Reed Grass. Cane. *Arundo donax*.—A tall reed-like, perennial grass resembling Bamboo. Under favorable conditions it will grow 20 feet in a single season. Excellent to screen unsightly buildings or corners. Should be cut to the ground each winter. Requires full sunlight and plenty of water and fertilizer. Grown from bulbous tubers. Can be increased by dividing the tubers every few years. Should be heavily mulched with leaves or manure during the winter to avoid freezing. The cane can be saved each year and when dry they make excellent stakes for supporting such plants as have a tendency to droop.

Canna.—Too well known to require description. One of the best annuals. Grown from bulbs. Most effective when planted together in large beds. To grow Cannas spade beds 2 feet deep, and mix well-rotted manure or fertilizer* with the soil. Plant bulbs 8 inches deep, set 2 feet apart. The plants should be watered freely during the Summer. If the blooming stalks are cut to the ground when the flower starts to fade new blooms will come continuously until frost.

Plants should be cut to the ground after the first heavy frost and the bulbs left in the ground two weeks longer. The bulbs should then be dug and lifted with some of the dirt left on the clumps. The clumps should not be divided and should be stored in a cool, dark place, until Spring. They should be examined frequently during the Winter. If they show indications of drying or shriveling they should be sprinkled with water or covered with moist sand or saw dust.

VARIETIES: *The President.*—One of the best. Bright scarlet flowers all summer until frost. Green foliage. Height 5 feet.

Gladiator.—Yellow flowers. Green foliage. Height 4½ feet.

King Humbert.—Orange-scarlet flowers. Bronze foliage. Height 4½ feet.

Yellow King Humbert.—Yellow flowers. Green foliage. Height 4 feet.

Mrs. Alfred Conrad.—Salmon pink flowers. Green foliage. Height 4 feet.

Bocconia. Plume Poppy. *Bocconia cordata.*—A hardy perennial growing to a height of 3 to 5 feet. Well adapted to this climate. Whitish green foliage and spikes of cream colored flowers in midsummer. Grown from seed.

Under favorable conditions *Bocconia* will multiply rapidly from the root of the parent plant. Sensitive to frost when in leaf.



Canna, The President.

Bachelor Button,
Emperor William,
Corn Flower. *Centaurea cyanus.* — Biennials, but generally classed as perennials as they re-seed themselves year after year. An old-fashioned flower, very desirable for this section. The blossoms are excellent for cut-flowers. Height 1 to 2 feet. Blossoms all summer. Grown from seed. Colors: blue, pink, white, etc.



Bachelor Button.

Castor Bean. *Ricinus.*—A tall-growing annual of tropical appearance with enormous, pointed leaves. Excellent for foliage and screen effects. Requires plenty of water and fertilizer for best growth. Grown from seed. Start indoors in flats or pots for quick results. A very attractive and curious plant. Seeds are poisonous.

VARIETIES: *Bourboniensis.*—Immense green foliage. Height 15 feet.

Cambogensis.—Maroon foliage, black stems. Height 5 feet.

Zanzibarensis.—One of the best. Foliage varies, green, brown and purple. Height to 10 feet.

Chrysanthemum.—Perennial varieties are most satisfactory. They blossom in October and November, when few flowers are in bloom. Flowers in shades of red, orange, white, etc. Grown from seed. (See also Shasta Daisy.)

Calendula. Pot Marigold.—A hardy annual about 1 foot tall, with bright yellow and orange yellow flowers. Blooms all Summer until frost. Well adapted to this climate. Will grow in poor soil. Grown from seed. Many varieties, representing color variations of yellow and orange. The calendula is one of the hardiest and best annuals for this section. Calendula should have full sunlight all day for its best development. It makes an excellent border plant and can be planted late with good chances of success. (The marigold of Shakespeare's time.)



Calendulas, or Pot Marigolds.

Coleus.—Annual plants grown for their brilliant foliage effects. The leaves are brightly colored in various shades of red, yellow, purple and other colors. Coleus grows about 18 inches tall. It requires full sunlight. Most satisfactory results can be obtained by buying plants grown from cuttings. Coleus will grow from seeds, which give interesting variations in shades of coloring.



Long-Spurred Aquilegia.
(Columbine)

Columbine. *Aquilegia*.—Perennial. Height 1 to 2 feet. One of the prettiest perennials. Flowers in shades of blue and yellow. The Rocky Mountain Columbine, with blue flowers, is one of the best. Blossoms from May to August. Grown from seed. Prefers a partially shaded location. Columbine deserves a place in every flower garden. It is one of the inconsistencies of Nature that this shrub which is native to cool mountainous regions should thrive in Kansas.



Coreopsis or Tick-Seed.

Coreopsis.—A very attractive and hardy perennial with bright yellow flowers. If the flowers are cut frequently it will bloom all Summer. Very hardy, and often sows itself about the parent plant. Grown from seed. Height to 4 feet. One of the best perennials for this section. Especially attractive among shrubs.

Cosmos.—Late Summer flowering annuals, with bright daisy-like blossoms of various colors. Suitable for poor and sandy soils. Cosmos is very hardy. The seed should be sown where the plant is to stand as it does not transplant well. Height 4 to 6 feet.

Four O'clocks. *Mirabilis jalapa*. (Marvel of Peru).—A free-flowering annual with flowers of various colors, suitable for poor and sandy soil. Will stand drought. Make a very pretty effect when planted in groups. Will grow under adverse conditions where other plants fail. The flowers remain closed until four o'clock in the afternoon when they open into a vivid mass of color.

Foxglove. *Digitalis*.—One of our best perennials. Spikes of bell-shaped flowers. Blossoms in June and July. Varieties with white, yellow, purple, etc., flowers. Does best in partial shade. Grown from seed. Height 2 to 5 feet.

Foxglove is an old-fashioned plant which deserves a place in every garden. It is easy of culture and is well adapted to this climate. The plant has been appreciated for many years because of the medicinal properties of the leaves. One of the most successful varieties here is *Digitalis purpurea*. It is a native of Great Britain.



Digitalis or Foxglove.



Blanket Flower.

Blanket Flower. *Gaillardia*.—One of the showiest perennials. Bright, daisy-like flowers of gorgeous colorings. Shades of red, yellow, and crimson. Requires full sunlight for best effect. Will grow in poor soil. Flowers all summer. Grown from seed. Height 1 to 2 feet.

Ornamental Grasses.—There are several kinds of perennial grasses which have a pleasing, decorative effect.

VARIETIES: *Pampas Grass*.—A tall grass. Height to 5 feet with great whitish plumes. Buy plants.

Fountain Grass.—About 3 feet tall with spikes of attractive seeds.



Single Annual Dianthus or Pinks.

Cockscomb.—An annual with a peculiar gorgeous-colored flower which resembles a comb of a giant chanticleer. The flowers often measure 12 inches across. Grown from seed. (Really more of a curiosity than a pretty flower).

VARIETIES: *Glasgow Prize*.—Dark crimson combs. Height 2 feet.
Golden Queen.—Large yellow combs. Height 2 feet.
 (There are several dwarf varieties also.)

Hardy Larkspur. *Delphinium*.—Blossoms all summer with spikes of blue and purple flowers. One of the best perennials. Grown from seed. Height 3 to 4 feet. Prefers a partially shaded location. If flowers are cut when they are fading, almost continuous blooming may be obtained to the end of the season.

VARIETIES: *Belladonna* is one of the best. A continuous bloomer with turquoise flowers.

Hardy Pinks. *Dianthus*.—Low growing perennials with bright, fragrant flowers all summer. Grown from seed. Very pretty and dainty. Height 6 to 8 inches.

Varieties of *Dianthus plumarius* represent the most satisfactory kinds.

Sweet William. *Dianthus barbatus*.—An old-fashioned hardy perennial with large richly colored flowers. Should be in every flower garden. Grown from seed. Height 1 foot.

Dusty Miller. White-leaved cineraria.—An annual with silvery foliage suitable for edging beds. Very hardy and endures drought. Used in beds for its foliage effect. A few planted together in a bed gives a touch of white foliage all summer.

Flax. *Linum perenne*.—A perennial with delicate blue flowers in May and August. Buy plants. Height 1 foot. One of the most dainty and pleasing perennials.



German Iris.

Iris. German Iris. Flag. Fleur de Lis.—One of the best perennials. Will grow under adverse conditions. Blossoms in May and June. Flowers of various colors. Clumps should be lifted every few years and divided. Buy plants. May be propagated by dividing the clumps after they are through blooming. There is no flower better suited to this climate than the Iris.



Mallow.

Hibiscus. Mallow. Marsh-Mallow.—A very desirable perennial. Flowers large and showy. Crimson, white, red and pink varieties. Buy roots of named varieties. Height 4 to 6 feet.

Mallow is an excellent perennial for massing among tall shrubs. It has attractive foliage which harmonizes well with the foliage of most shrubs in shrubbery masses. Some varieties of Mallow have flowers which are from five to seven inches in diameter. It is well suited to Kansas conditions.

Hemerocallis. Yellow Day Lily. *Hemerocallis flava*.—A very hardy, old-fashioned perennial. Yellow flowers on stems 2 feet tall. Buy plants. Propagated by division of root clumps. Hemerocallis is a true perennial living year after year in the driest locations and under most adverse conditions. The plants should be lifted every 4 or 5 years and the clumps divided.



Day Lily.

Hollyhock. *Althea rosea*.—A well known, old-fashioned garden perennial. Grows 4 to 8 feet tall. Both single and double flowered varieties in various shades of color. Grown from seed. Subject to rust in Summer.

Lantana.—An annual which flowers all Summer and in early Fall, with various colored flowers. The dwarf forms are most attractive. Height 1 to 2 feet. Grown from seed but often difficult to get started.

Marigold.—The annual dwarf varieties are from 18 to 24 inches tall. Tall varieties grow to 3 feet. Bright yellow flowers all summer. The double African Marigolds are especially handsome. Very well adapted to hot, sunny situations.



Single Fringed Petunia.

Petunia.—One of the hardiest and most satisfactory annuals. Petunias withstand drought and hot winds. They bloom early and continue blooming until frost. Many varieties in various heights and colors. Grown from seed.

Hardy Phlox.—One of the most important perennials. Phlox succeeds in almost any soil and will flower for several successive years. Buy plants. Requires an abundance of water during flowering season. Height to 2 feet.

VARIETIES: *Miss Lingard.*—White, pink eye, early.
Mrs. Jenkins.—White.
Champs Elysee.—Bright magenta.
Rheinlander.—Salmon pink.

Pinks. (See Dianthus).



Platycodon or Japanese Bell Flower.

Platycodon. Japanese Bell Flower. Balloon Flower.—A very pretty perennial well adapted here. Beautiful flowers.

Platycodon is a native of Asia. It requires a light loamy soil and does not do well in very heavy soils or in extremely sandy soils. It will not grow in places where there is poor drainage. Generally grown from seed, although it can be propagated by dividing the roots in the Spring. Height one to two feet.

VARIETIES: *Grandiflorum*.—Large steel-blue flowers. (A most desirable variety.)

Album.—White.

Double.—Large glossy blue flowers.



Mexican Fire Plant.

Mexican Fire Plant. Standing Cypress. *Kochia trichophylla*.—An annual suitable for temporary hedges. Turns a deep red in Fall. Height to 4 feet.

Nasturtium.—There is no annual which is easier to grow or gives a greater return in profusion of bloom than the Nasturtium. Its fragrant flowers present a glorious riot of color until frost. Requires well-drained soil and a sunny position.

VARIETIES: *Dwarf*.—1 to 2 feet tall.

Tall or Climbing varieties.—10 to 20 feet.

Peony. *Paeonia*.—Spring flowering perennials with gorgeous flowers in various shades. Permanent when once planted. There are many varieties representing various colors and heights. Grown from roots which can be purchased in named varieties.

Annual Poppy.—The flower of the poppy needs no description here. Annual Poppies should be sown in early Spring, where they are to stand, as they do not endure transplanting. After they have come up thin to 4 or 5 inches apart.

VARIETIES: *Shirley.*—Single flowers. Various shades of pink, rose, crimson, and red.

English Scarlet or *Flanders.*—The field poppy of Europe and “Flanders Fields.”

King Edward.—Deep scarlet. Also double annual varieties.



Oriental Poppy.

Oriental Poppy.—Flower similar to Annual Poppies, but a perennial. Seed should be sown in early Spring. Plants die back after flowering and reappear in early Fall. During this rest period the roots should not be disturbed.



Pyrethrum.

Pyrethrum. Painted Daisy.—Perennials 18 inches to 2 feet tall with large daisy-like flowers. Blossoms in May and June. Various colors. Requires full sunlight. Very hardy. Grown from seed.

Rudbeckia. Coneflower.—Hardy annuals and perennials. Vigorous growers. Our native “Black-eyed Susan” belongs to this family of plants.

VARIETIES: *Golden Glow*.—Perennial; height 4 to 6 feet. Quantities of golden yellow flowers in August.
Purpurea.—Height 3 feet. Reddish purple flowers. One of the best.

Golden Rod. *Solidago*.—Perennial with golden yellow flowers in late summer. Height 3 feet. Grown from seed.

Sunflower. *Helianthus*.—Both annual and perennial varieties. Will grow in almost any soil. The improved varieties of Sunflower are much different from the wild, native varieties and are specially suitable for this location.

VARIETIES: *Multiflorus*.—Perennial. Double flowers (resembles Dahlia.) Blossoms in August. Height 4 feet.

Sweet Alyssum. (Mad Wort.)—Pretty little annuals 4 to 10 inches tall. Bloom all summer with dainty white flowers. Grown from seed.

Tulips.—A popular Spring-flowering bulbous plant, which is very successful in this locality. Tulips require a well drained soil. The bulbs should be planted in September or October. Plant about 4 inches deep and 4 to 6 inches apart.

There are hundreds of varieties in as many shades of colorings. The numerous varieties are divided into the following groups.

- (1) Early single Tulips. Small brightly colored early blooming varieties.
- (2) Cottage Tulips. Larger and somewhat later flowering than the early Tulips. The most common of all Tulips. Not as large or stately as the varieties described below, but very pleasing and satisfactory.
- (3) Breeder Tulips. Large-flowering, long-stemmed varieties inclined to the darker and more somber shades, such as chestnut, brown and dull red.
- (4) Darwin Tulips. The aristocrats of the Tulip family. Stately plants with large flowers, the latest of all the Tulips to bloom in the Spring. Rich deep colors in crimson, red, purple and white.

Stocks. Gilliflower.—Annual. Height 1 to 2 feet. Large brilliant flowers of various colors all summer. Very hardy.

VARIETIES: *Cut and Come Again*.—10-week stocks.



Helichrysum (Straw Flower).

Strawflower. *Helichrysum*. (Everlasting).—Annual. Height 2 to 3 feet. Bright, attractive flowers all summer. Various colors. When dried the flowers last for months and are very attractive for floral decorations. Grown from seed. A most unique plant and well adapted to Kansas conditions.

Scarlet Sage. *Salvia splendens*.—Annual with spikes of bright scarlet flowers. Grown from seeds or buy plants. Endures drought and hot weather. Height about 2 feet.

Perennial Salvia.—Height 2 to 3 feet. Blue flowers in August and September.



Sedum Spectabile.

Sedum. Stonecrop.—A very attractive, hardy, late-flowering perennial with large red and rose-colored flowers. Height 12 to 18 inches. Buy plants. Propagated by division.

VARIETIES: *Spectabile*.—Bright light green foliage. Showy rose-colored flowers in Fall.

Shasta Daisy. *Chrysanthemum leucanthemum*.—One of the finest perennials. Flowers have glistening white petals and are produced all summer. Grown from seed. Height 2 to 3 feet.



Vinca.

Vinca. (Periwinkle. Old Maid).—There is no better annual flower for this climate. Bright cheerful foliage, and flowers in delicate shades of red, pink, and white. Vinca thrives during the hottest, driest weather. Requires full sunlight. Grown from seed.

VARIETIES: *Rosea*.—Delicate rose, dark eye.
Rosea Alba.—White, crimson eye.
Rosea Alba Pura.—Pure white.

Yucca. *Yucca filamentosa*. (Adam's Needle, Spanish Bayonet)—Very hardy evergreen perennial with sword-like leaves. Will endure drought and will grow in poor soil. Flowers are cream colored and borne on spikes 3 feet tall. Buy plants.



Double Flowered Zinnia.

Zinnia.—One of the most brilliant and attractive annuals. Well adapted for this section. Blossoms all summer. Grown from seed.

VARIETIES: *Double Dahlia Flowered.*—Large flowers. Height 3 feet. Various colors.

Large Flowering Dwarf Double.—Height 2 feet.

Giant Double.—Enormous flowers, 5 to 6 inches across. Height 3 feet.

CHAPTER VII.

PLANTS AND FLOWERS FOR SPECIAL PURPOSES.

TALL SHRUBS, 10 TO 20 FEET WHEN MATURE.

- Lilac. (*Syringa vulgaris*).
- Red Bud. (*Cercis canadensis*).
- Russian Olive. (*Eleagnus angustifolia*).
- Cut-leaf Sumac. (*Rhus glabra laciniata*).
- Smooth Sumac. (*Rhus glabra*).
- Stag-horn Sumac. (*Rhus typhina*).

SHRUBS OF MEDIUM HEIGHT, 6 TO 10 FEET WHEN MATURE.

- Althea. (*Hibiscus syriacus*).
- Elder. (*Sambucus canadensis*).
- Cut-leaf Elder. (*Sambucus nigra laciniata*).
- Golden Elder. (*Sambucus nigra aurea*).
- Golden Bell. (*Forsythia intermedia*).
- Tartarian Honeysuckle. (*Lonicera tartarica*).
- Morrow Honeysuckle. (*Lonicera morrowi*).
- Belle Honeysuckle. (*Lonicera bella albida*).
- Mock Orange. (*Philadelphus coronarius*).
- Syringa. (*Philadelphus grandiflorus*).
- Ibota Privet. (*Ligustrum ibota*).
- Regals Privet. (*Ligustrum Regalianum*).
- Amur Tamarix. (*Tamarix amurensis*).
- French Tamarix. (*Tamarix gallica*).

LOW SHRUBS, 2 TO 6 FEET, WHEN MATURE.

- Coral-berry. (*Symphoricarpos vulgaris*).
- Matrimony Vine.—(*Lycium chinense*).
- Bridal Wreath. (*Spiraea Vanhouttei*).
- Drooping Golden Bell. (*Forsythia suspensa*).
- Japanese Rose. (*Rosa rugosa*).
- Kashgar Tamarix.—(*Tamarix hispida*).

SHRUBS SUITABLE FOR HOT, DRY SITUATIONS, ESPECIALLY
IN LIGHT SANDY SOILS.

Tamarix. All varieties. Height 6 to 10 feet.

Coral-Berry. Height 2 to 3 feet.

Matrimony Vine. Height 3 to 4 feet.

Smooth Sumac. Height 10 to 12 feet.

Russian Olive. Height 10 to 20 feet.

SHRUBS SUITABLE FOR SHADED SITUATIONS

Privet. All varieties. Height 4 to 8 feet.

Coral-Berry. Height 2 to 4 feet.

Red Bud. Height 10 to 20 feet.

RAPID GROWING TREES, SHRUBS AND PLANTS SUITABLE
FOR QUICK SCREEN EFFECTS

Bolleana Poplar. Height to 50 feet.

Russian Olive. Height 10 to 20 feet.

Smooth Sumac. Height 10 to 12 feet.

Arundo. Perennial. Height to 20 feet.

Canna. Annual. Height to 7 feet.

Castor Bean. Annual. Height to 15 feet.

Hollyhock. Perennial. Height 4 to 8 feet.

ANNUALS AND PERENNIALS SUITABLE FOR CUT FLOWERS

African Golden Daisy

Aquilegia

Bachelor's Button

Calendula

Canna

Centaurea

Coreopsis

Cosmos

Delphinium

Dianthus

Digitalis

Flax

Gaillardia

German Iris

Marigold

Nasturtium

Pansy

Pyrethrum

Rudbeckia

Sedum

Shasta Daisy

Strawflower

Vinca

Zinnia

PLANTS AND SHRUBS SUITABLE FOR
ORNAMENTAL HEDGES.

Russian Mulberry. Can be kept clipped at a height of 4 to 12 feet. The best shrub for a tall hedge.

Amoor River Privet. (North). Can be kept clipped at a height of 2 to 6 feet.

California Privet. Same height as Amoor River Privet. Occasionally winter kills here.

Amur Tamarix. Very pretty if permitted to grow in natural form and cut to the ground in April before starting growth. Requires full sun.

Red Cedar. (*Juniperus virginiana*). Very satisfactory as an evergreen hedge. Can be kept clipped at any height from 3 to 10 feet.

Chinese Arbor Vitae. Suitable for an evergreen hedge.

Mexican Fire Plant. An annual suitable for temporary hedges for summer. Height 3 to 4 feet.



Amoor River Privet Hedge.

CHAPTER VIII.

LAWNS AND LAWN GRASSES.

THE two kinds of grasses in general use in Central and Southern Kansas for lawn purposes are Bermuda Grass and Kentucky Blue Grass. Neither are perfectly adapted to this climate, but they seem to be the best we have.

The characteristics of these two grasses are the opposite of one another. Blue Grass prefers shaded or partially-shaded situations—Bermuda Grass must have full sunlight. Blue Grass does best in heavy soils—Bermuda Grass prefers light sandy soils. Blue Grass will endure low temperatures without injury, but burns out during the Summer—Bermuda Grass delights in intense heat, but it may kill out in severe Winters. Blue Grass is green all the year round—Bermuda Grass becomes dead and brown at the first heavy frost.

Where Blue Grass will succeed it makes the most beautiful lawn of any grass. But except on shaded areas Blue Grass will not grow without special care and attention. And unless such care can be furnished, and water applied at the proper time, Blue Grass will not endure the heat of a Kansas Summer.

Bermuda Grass will not do well in the shade. It delights in the hot sun. When Bermuda Grass becomes well established on a lawn it will endure severe drought, and during such periods of drought it will go for weeks without water and care. But Bermuda Grass must be well cared for while it is getting established.

In general it may be said that Bermuda Grass will grow in situations where Blue Grass will not grow, and Blue Grass will grow where Bermuda Grass does not succeed.

Experience has indicated that Bermuda Grass and Blue Grass may be grown together on the same lawn. Bermuda Grass planted on the hot, sunny situations, and Blue Grass upon the shaded portions.

Of these two grasses Bermuda Grass requires less care after it has become well established, provided it is in the open sunlight all day. It makes a heavy velvety turf.

MAKING A BLUE GRASS LAWN.

Blue Grass should be sown in the Fall, preferably in early September. Straight Kentucky Blue Grass seed may be sown, but a mixture of five-sixths Blue Grass and one-sixth White Clover is generally used. The clover is said to protect the roots of the Blue Grass when it is young, and makes a thicker turf.

If fertilizer is needed, well-rotted manure, free from weed seeds, will serve this purpose.* The quantity of manure to be used will vary according to the fertility of the ground, but 1,500 pounds is generally sufficient for a lawn 50x50 (2,500 sq. ft.) The manure should be pulverized as finely as possible and raked into the top layer of soil.

About 5 pounds of seed are required to seed a lawn 50x50. The soil should be well spaded so there are no lumps or clods, and raked smooth. The seed should be sown evenly, preferably when there is no wind, and raked into the soil so it is just below the surface. One-eighth inch below the surface is the ideal depth for lawn grasses.

*There is a fertilizer known as "Nature's Fertilizer," prepared in Wichita which is sheep and cattle manure with the moisture evaporated from it, and treated by heat to destroy weed seeds.

Rolling with a light roller after the seed is sown will help the soil and accelerate germination.

Should dry weather follow the sowing of the seed the new lawn should be watered once or twice a week in the evening.

The seed will germinate in about two weeks. If the mixture of Blue Grass and Clover is used the Clover may appear first.

If one fails to get a good stand of Blue Grass in the Fall after the seed-bed has been well prepared it is sometimes possible to get fair results on patches where the grass fails to appear by sowing the seed broadcast on top of the snow during the early Winter. When sown under these conditions the melting snow will carry the seed into the ground with the moisture, and the grass will start to grow in the early Spring. This method should not be relied upon independently to get a stand of grass—it should be tried only as an expedient when the usual method of sowing and raking the seed in has not been entirely successful.

WATERING A BLUE GRASS LAWN.

The proper time to water the lawn is at night. Where possible, the best method of watering is flooding.

By flooding is meant covering it entirely with water so the soil is saturated for 3 inches or more into the ground. Such a method of watering practiced once or twice a week causes the roots to grow deep, while on the other hand too frequent watering or superficial waterings simply moisten the surface of the ground and stimulate the fine roots to come close to the surface where they may be killed by the heat.

Blue Grass will not survive a Kansas Summer without water every few days except on well shaded areas. If one plants a Blue Grass lawn he must have ample watering facilities.

MAKING A BERMUDA GRASS LAWN.

The very nature of Bermuda Grass is entirely different from that of Blue Grass. Bermuda Grass is a creeping vine-like plant which sends out roots and blades at intervals along a creeping root-stalk.

A Bermuda Grass lawn can be most successfully obtained by planting roots and tufts of Bermuda Grass. It is seldom that one can get a satisfactory Bermuda Grass lawn from the seed. There may also be an advantage in propagating Bermuda Grass from roots of acclimated plants growing locally than from seed, for much of the seed available is of southern origin.

Bermuda Grass should be planted in the late Spring. From May 15 to June 15 seems to be the best time.

The ground should be well spaded, leveled, and raked. If the stand is to be obtained from roots, parallel trenches



“To make a Bermuda grass lawn plant the roots in parallel trenches 2 to 3 inches deep. Make the trenches 12 inches apart.”

2 to 3 inches deep, spaced 9 to 12 inches apart, should be made. The roots should be laid in these trenches, end to end, and covered with soil. The reason for planting in such parallel trenches is to make cultivation and weeding easier later.

If tufts of Bermuda turf are used they should be planted in straight rows; the plants about 9 inches apart and the rows 12 inches apart.

The lawn should be watered heavily after the grass has been set.

A common belief is that once Bermuda Grass is set out it requires no further care. This is certainly erroneous. Constant care is required for the first two months after the Bermuda Grass is planted to assist it in its fight with crab grass and other native grasses. Crab grass and native grasses will certainly kill out the Bermuda Grass when the Bermuda Grass is getting established unless they are kept hoed out.

Bermuda Grass will not successfully compete with the native grasses without help until it has entirely covered the ground.

Most of the failures with Bermuda Grass are due to lack of proper care for the first few months after the grass is planted. It should be watered frequently and should be continually cultivated if native grasses appear.

After the Bermuda Grass has become thoroughly established and the ground entirely covered nothing can compete with it. A well-kept Bermuda lawn is a beautiful velvety carpet of green during the hottest weather. It requires some water to keep it green, but it has the advantage of enduring while the owner is on a vacation or elsewhere. Under such neglect it may turn brown and be apparently dead, but a copious watering will promptly bring it back to its former perfection.

The principal objection to Bermuda Grass is its char-

acteristic of turning dead and brown at the first heavy frost. It invariably kills back to the deeper roots every Winter. Temperatures lower than 5° below zero will often kill out large areas of Bermuda Grass.

A HARDY BERMUDA GRASS.

For the past two years the Board of Park Commissioners has been experimenting with a hardy strain of Bermuda Grass. This so-called "hardy" Bermuda Grass is somewhat coarser than the Bermuda Grass with which we are most familiar, and it has stouter root stalks.

Observations thus far have indicated that this so-called "hardy" Bermuda Grass will very likely endure lower temperatures without injury than the ordinary Bermuda Grass. The tests and trials of this variety have not yet progressed far enough to draw any definite conclusions or to justify any recommendations at this time.

During the Winter of 1924 lawns planted with this hardy Bermuda Grass endured temperatures of 12° below zero, without injury. Many lawns planted to the ordinary Bermuda Grass were seriously damaged by this severe cold.

CHAPTER IX.

THE PLANTING OF TREES, SHRUBS AND FLOWERS.

WHEN your trees and shrubs arrive the roots will doubtless be packed in straw, and the bundles wrapped in burlap. The first thing to do is to get the roots into the ground. Every minute the roots are exposed to the air the life and future growth of the plants are jeopardized.

If you are not ready to plant the trees and shrubs in their permanent location they may be heeled out temporarily until the permanent planting place is ready. Heeling out is really temporary planting.

HEELING OUT TREES AND SHRUBS.

To properly heel out trees and shrubs one should make a shallow trench, 12 to 24 inches deep, at least deep enough to cover the roots with 4 inches of dirt. The straw should be removed from the roots, the bundles cut, and each tree or shrub heeled out separately as close together as possible, but far enough apart so that any shrub or tree may be later removed without disturbing the ones near it.

Shovel the dirt back into the trench and water heavily. The purpose of watering is to carry the dirt down compactly about the roots and eliminate air pockets. Trees and shrubs thus carefully heeled out will keep in good condition for weeks. Should the weather be exceptionally dry they may require water every 30 days.

Although trees and shrubs may keep well when carefully heeled-out, it is best to plant as soon as they are received.

PLANTING SHADE TREES

The best time to plant Shade Trees is in the late Fall or early Winter. Trees planted at this time get their roots well established, in fact the roots may grow somewhat during the Winter.

But Shade Trees may be planted at any time during the Winter or early Spring, when the ground is not frozen and the temperature is above freezing. While Fall and early Winter planting is the best the trees can be planted until April 1st. But the earlier they go into the ground the more satisfactory the results will be, and the better will be their chances of survival.

PREPARING SHADE TREE HOLES.

For the average Shade Tree of 2 inches in diameter a tree hole 4 feet square and 2½ feet deep is the proper size. In locations where the soil is poor or the ground is of a clay or gumbo nature the original soil should be replaced with good loam. The loam used in replacing the original soil should be light and not sticky.

In clay or gumbo soil it is generally necessary to make an exceptionally deep hole, 4 or 5 feet deep, and fill the bottom of the hole two feet deep with rock or broken concrete. The tree should be planted above this rock in new soil. The rock so placed will act as a sort of dry well and will prevent the saturation of the soil about the roots. Where such provision is not made for draining the water away from the tree roots the soil is likely to sour or become saturated with water, which may result in the death of the tree.

CUTTING BACK THE TOP.

The purpose of cutting back the top of a tree when transplanting is to start a symmetrical head, and to re-establish the balance between the roots and the top. When



“Cut back the top by removing one-third to one-half of the branches. Cover the roots with soil and water heavily. Then shovel in the remaining dirt.”

the tree grew in the nursery the roots were of sufficient number and size to supply the entire top with sap. But when the tree was dug up preparatory to transplanting many of the roots were cut away. So, in order to restore the balance between the roots and top, it is necessary to cut the top back so the reduced root system will be able to sustain the top. The proper cutting back generally removes about one-half to two-thirds of the limbs and twigs composing the original top.

Before planting all damaged and broken roots should be cut off so as to leave a clean, smooth cut.

HOW TO PLANT.

The roots must not be permitted to dry out during the interval of removing from the heeling ground and the time of planting.

When the hole has been prepared, set the tree carefully in it so that it is standing in the hole at the same depth as it grew in the nursery. Straighten out the roots when they are tangled, and carefully shovel and tamp the soil about the roots.

When the roots are just covered water heavily. The purpose of this watering is to carry the soil down about the roots, and eliminate air pockets. Then shovel in the remaining dirt, leaving a depression about the tree to catch the rain.

Manure should never be used in the tree holes or about the roots of the newly-planted trees.

WATERING NEWLY-PLANTED TREES.

It will probably not be necessary to water the trees until after the leaves appear. Trees planted in sandy or light soil should be watered about once a week during the growing season, using about a barrel of water each time.



“When planting in clay or gumbo soil put two feet of broken rock in the bottom of the hole to drain the water so it will not stand about the roots.”

Trees planted in gumbo or clay soil are more often killed by too much or too frequent watering than by not enough water. Trees planted in such heavy soils should be watered once every two weeks, using a great deal of water at one time. The watering of trees in heavy soil will have to be determined by the owner—by carefully watching the trees for indications of decline.

During the Summer the space about the trees should be kept cultivated to a distance of 2 feet from the trunk, and grass or weeds should not be permitted to grow close to the tree.

PLANTING EVERGREENS.

Evergreens can be most satisfactorily planted in the Spring.

Evergreens should always be purchased balled and burlapped, (abbreviation B & B), which means that the tree is dug with a ball of the soil in which it is growing surrounding the roots. This ball and roots are bound in burlap.

The hole should be of sufficient size to accommodate the ball with plenty of room on either side. When ready to plant lay the ball in the hole, cut the string holding the burlap, and lay the burlap out on the bottom of the hole. Then proceed as in the case of Shade Trees, but be careful not to break the ball of dirt about the roots. The burlap will rot in a few weeks. But the burlap should never be left about the ball when the tree is planted.



An Evergreen balled and burlapped.

No manure should be put about the roots.

PLANTING SHRUBS

Shrubs should be planted in groups or masses. Before planting, the ground should be spaded 18 inches deep and well-rotted manure, or fertilizer, should be thoroughly spaded in so that it is thoroughly mixed with the soil.

But green manure should not be used in the planting of shrubs for it is likely to burn the roots or cause the soil to sour.

It is difficult to state any rule for the distances apart which shrubs should be placed. In general, however, shrubs which attain a height of 6 to 8 feet should be planted about 5 to 6 feet apart, those growing 3 to 5 feet tall should be set 3 to 5 feet apart.

Before making the holes for the shrubs set stakes in the ground to indicate the position of each shrub and adjust the stakes until the desired arrangement is obtained.

The holes should be large enough to accommodate all the roots with space to provide for the future growth of the roots.

Shrubs should be cut back and thinned out before planting, as in the case of shade trees.

In the planting of shrubs the procedure is much the same as in the case of shade trees. The shrub should be placed in the hole at the same depth it grew in the nursery. The roots should be straightened out so they are not cramped or tangled, and the fine top-soil should be placed about the roots by hand. Care should be taken that no air pockets are left about the roots. When the roots are entirely covered but the hole not entirely filled with dirt, water should be poured into the hole. Then the filling of the hole should be completed with dry soil.

Where the soil is heavy, or of a clay or gumbo nature, it is sometimes too "tight" for the roots to penetrate, and it becomes hard on top. This condition may be corrected by mixing some sand with the soil when it is being spaded



Bright, sun-filled days of the long Kansas Summer afford ideal conditions for success in growing all aquatic and water-margin loving plants. Few localities outside of the Atlantic Coast States between New York and Washington can compete with local results obtainable by application of intelligent treatment. Less care is required by the water garden than for any other garden area.

preparatory to planting, and then after the shrubs are set out the beds may be covered with about an inch of sand, which can be worked into the soil, during the Summer, when cultivating. In a few months the sand will work well below the surface and it will have a remarkably beneficial effect on the shrubs and plants.

PERENNIAL PLANTS.

Herbaceous perennials are handled in very much the same way as shrubs. The tall plants should be arranged in the background and the smaller ones in front. If the beds are to be seen from all sides plant the taller ones in the middle of the bed.

The ground should be spaded to a depth of 2 feet and enriched with well-rotted manure, or fertilizer, well mixed with the soil. If the soil is heavy or tight, sand may be added as in the case of shrubs.

If possible planting should be done a cloudy day. Make the holes sufficiently large to take all the roots without crowding, and loosen enough earth on the sides to provide for future growth of the roots. Put the well pulverized top-soil about the roots, water heavily, and then complete the planting with dry soil.

If a hot spell follows the planting, it is a good plan to cover the ground over the roots with leaves or some other mulch to prevent the soil from baking or drying out.

CARE AFTER PLANTING.

Shrubs and herbaceous plants should be planted close enough so that when the plants reach their mature growth the ground will be almost entirely shaded. Such an arrangement will conserve the soil moisture and tend to keep out weeds.

Watering at the right time is necessary and import-



“Perennials are the most satisfactory of garden flowers.”

ant. But proper cultivation is more important than proper watering. A dust mulch should be maintained on all shrub and flower beds during the summer.

When the beds are watered they should be watered heavily, and thoroughly cultivated the following day. Where the ground is heavy and of a clay or gumbo nature the common mistake is to water too much and too often, thereby damaging the plants. Constant hoeing and cultivation will reduce greatly the amount of water required and is much better for the plant.

CHAPTER X.

PLANTING OF FLOWER SEEDS.

PROPAGATION OF PLANTS.

PLANTS are reproduced in two ways, by seeds and vegetatively.

Vegetative propagation is the multiplication of a plant by taking some portion of its root, stem or leaf and growing a new plant from this portion. "Slipping" house plants is a common form of vegetative propagation.

Some plants have been propagated vegetatively for so many generations that they have practically lost their ability to produce seed. Others can only be propagated true to the type of the parent plant by vegetative means. Hence the recommendation concerning certain Perennials in the lists of flowers that plants be purchased, for only the florist and nurseryman have the facilities for extensive vegetative propagation.

STARTING FLOWER SEEDS IN-DOORS.

The seeds of flowers recommended in this publication can be successfully sown directly out-of-doors, where the description of the seed indicates that the plant is grown from seed. But much quicker and more satisfactory results can be obtained with most flower seeds if they are first started in-doors in pots or flats, except perhaps Cosmos and Annual Poppy, which should be sown directly out-of-doors. Seeds started in-doors a month before the time they are usually planted out-of-doors and later trans-

planted to their permanent location, will result in heavier plants, will give quicker and more satisfactory results, the spacing of plants in the beds can be better arranged, and there will be a more economical use of the seed.

A satisfactory receptacle for starting seeds in-doors is a wooden box 12 by 18 inches and 2½ inches deep. Such a box is called a "flat".

The flat should be filled to about 1 inch from the top with good soil mixed with a little sand, and the seeds scattered over the surface and pressed into the soil to a depth of about four times the diameter of the seed. The dirt should be kept moist (Not wet). A pane of window glass set over the top of the flat with a small space for ventilation left at one corner will accelerate the germination of the seeds. The flat should be kept in a well lighted place, where it will get sunlight all day, especially after the seeds have germinated. The temperature should average 60 to 70 degrees. The glass should be removed after the seeds are above the ground.

When the second leaves appear the seedlings should be transplanted to another flat. The little plants should be about 1 inch apart in the flats. If they are permitted to remain in the flats in which the seeds germinated they are likely to become weak spindling plants.

Before transplanting to their permanent beds they should be "hardened off", that is, the flats should be set out-of-doors during the day for several days and kept in a moderately cool place at night.

After all danger of frost is over (in this section about May 1), the plants can be transplanted to the permanent bed. Preparatory to planting, the ground should be spaded to a depth of 20 inches, well-rotted manure or fertilizer thoroughly worked into the soil, and the top-soil thoroughly pulverized. If possible the bed

should be well watered the night before the transplanting is to be done so the soil will be in the best possible condition to receive the plants.

The following table indicates the number of plants which can be set in a circular bed of a certain size:

Diameter (feet)	6 in. apart	12 in. apart	18 in. apart	24 in. apart
4	50	13	7	----
6	118	30	15	8
8	206	52	25	13
10	325	82	40	20
12	456	115	57	30
14	615	155	78	40
16	810	202	100	50
18	1020	255	126	64
20	1260	315	156	78

A square bed will take about the same number of plants. For an oval bed, add length and breadth and divide by 2. For example, an oval 9 feet long by 7 feet wide will require same number of plants as circular bed 8 feet in diameter.

PLANTING FLOWER SEEDS OUT-OF-DOORS.

Most flower seeds can be safely planted out-of-doors after May 1st. The ground should be prepared as described above, the seeds sowed in drills to a depth of about 4 times the diameter of the seeds, and the soil pressed down well about the seeds.

The plants will perhaps come up too thick for permanent arrangement, and so they should be thinned to the proper distance. While no accurate rule can be given as to the proper distance apart the plants should be thinned the following spacing is about right for most plants:

Height 3 to 6 inches.	Thin or transplant to 4 inches apart.
Height 6 to 12 inches.	Thin or transplant to 6 inches apart.
Height 1 to 1½ feet.	Thin or transplant to 8 inches apart.
Height 2 to 3 feet.	Thin or transplant to 14 inches apart.
Height 3 to 4 feet.	Thin or transplant to 18 inches apart.
Height 4 to 5 feet.	Thin or transplant to 22 inches apart.

This table is prepared for plants of average spread. Tall slender plants such as Hollyhocks should be planted closer than the table indicates. Plants having an exceptionally wide-spreading habit of growth should be planted somewhat farther apart than indicated in the table.

CHAPTER XI.

PRUNING TREES AND SHRUBS.

PRUNING SHADE TREES.

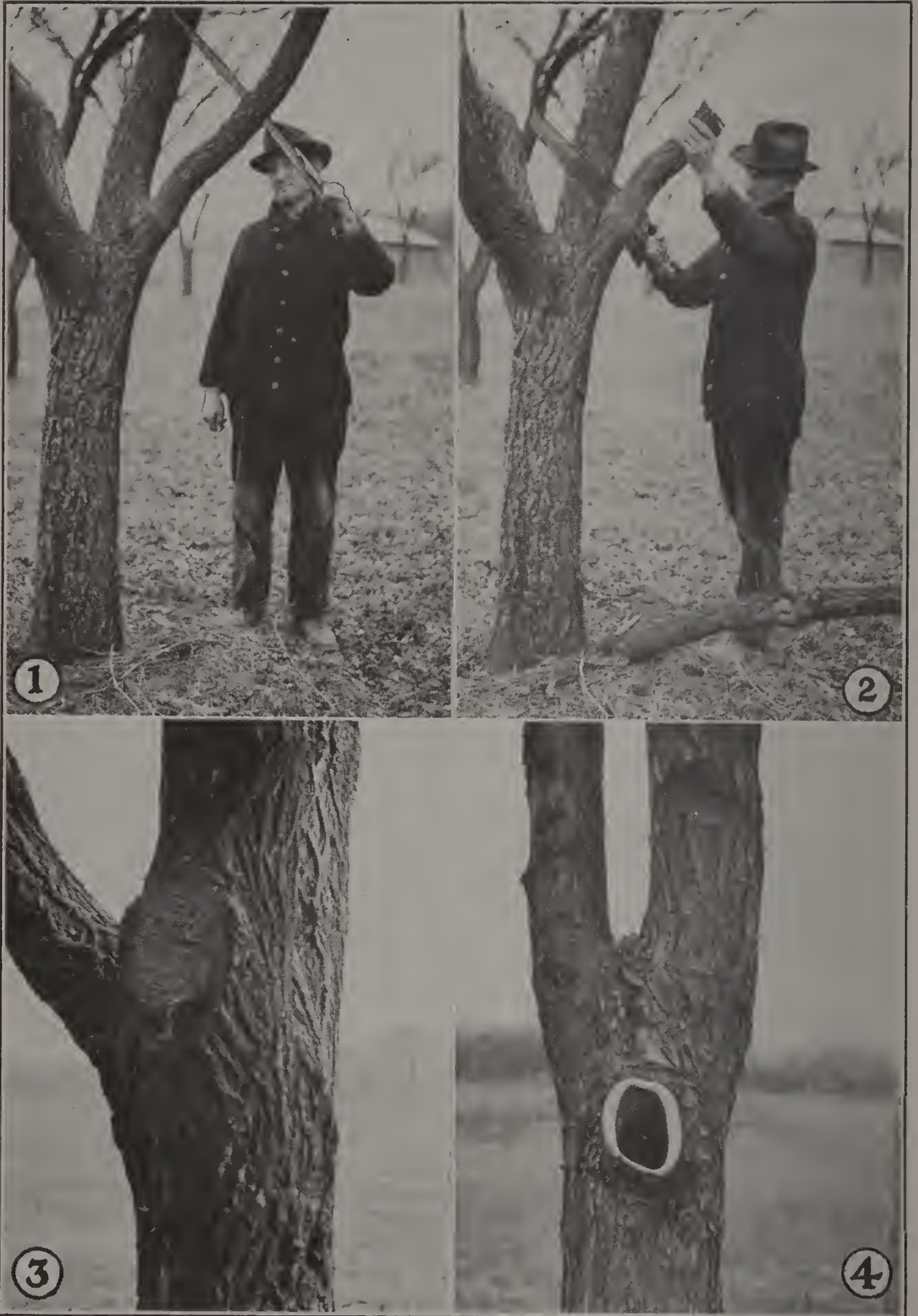
THE best time to prune shade trees is during the early Summer. During the Summer one is best able to distinguish dead twigs and branches from the live ones. The limbs hang lower during the summer due to the weight of the leaves, so it is possible to better determine the amount to be cut off to permit passage under the trees. The cuts heal better when the trimming is done during the Summer.

Heavy pruning and topping should be done only in the early Winter when the tree is dormant. But a tree should never be topped except upon the advice of, and by an experienced man.

Maples and other trees in which the sap runs early should not be trimmed or topped between January and May. When such trees are trimmed after the sap starts to run they will often "bleed" for days.

Next to shaping the tree the principal precaution to be taken in trimming shade trees is to make the cuts properly. All cuts should be made as close to the trunk as possible. Where cuts are not made close to the trunk a stub is left which will soon start to decay. This decay may eventually reach the center of the tree and result in its early decline. The so-called knot holes in wood and lumber are due to the decay of stubs of branches.

Where cuts are properly made (that is, when the limbs are cut close to the trunk and no stub is left) the



PRUNING SHADE TREES.

1. Remove a limb with two cuts. Make the first cut about 2 feet from the trunk.
2. Make the second cut close to the trunk, holding the stub until the limb is severed.
3. Cut completed and tarred. Note that no stub is left.
4. Showing how a cut heals. This picture was taken 2 years after cut was made.

cuts will soon start to heal over, and in a few years the wound will be completely covered.

In the trimming of Maples and certain thin-barked trees care must be taken not to cut too many limbs out of the South and West portions of the tree, otherwise the hot sun will strike the upper part of the trunk and the large limbs which were previously shaded, with a consequent scalding and killing of the bark.

Branches should always be removed with two cuts to avoid tearing the bark beneath the branch when the severed branch falls. The first cut should be made 2 or 3 feet from the trunk. After the limb has been severed the stub can be held while the second cut is made close to the trunk. Sometimes it is better to hold the stub with a rope while making the second cut. This practice of removing branches with two cuts will always result in better cuts and avoid the tearing of the bark when the limb falls.

All cuts larger than a silver dollar should be painted with tar. Thick paint or white lead and oil makes a good protective covering where tar is not to be had. This dressing will prevent decay until the bark grows over the wound.

PRUNING EVERGREENS.

Ordinarily Evergreens require little pruning. The branches of evergreens should be permitted to grow to the ground and evergreens should not be trimmed up as in the case of deciduous trees.

The best way to prune evergreens is to shape the plant by cutting back each protruding shoot, leaving the shorter and weaker branches untouched. The principal trimming should be done in early Spring just before growth starts, but plants can be improved in appearance by slight pruning in the Summer, whenever irregular growth is produced.

PRUNING SHRUBS.

The pruning of flowering shrubs requires much thought, patience and skill. Ordinarily most shrubs need little pruning except the removal of old and dead canes and branches.

Before starting to prune any shrub one should study its shape and habit of growth. Some shrubs have an upright habit of growth, others have a drooping or pendulous habit. The method of properly pruning the former would utterly ruin the shape of the latter.

The directing thought in all pruning should be to influence the plant's growth into its natural form, to so prune that when the work is completed the plant will look as if nothing had been cut out of it. Many shrubs are ruined by clipping the whole shrub across the top as one would a hedge. Shrubs with graceful drooping branches will not stand this sort of treatment.

TIME TO PRUNE SHRUBS.

The time of year to prune shrubs depends entirely upon the species.

Shrubs which flower on the last year's wood should be pruned in the late Spring or early Summer, immediately after they have finished blooming. Shrubs which flower on the new growth should be pruned during the Winter when they are dormant.

If shrubs are not pruned at the right time they may be weakened and their growth impaired. Various shrubs which are appreciated because of their attractive flowers may be so affected by injudicious pruning that they will not blossom for several seasons. Inexperienced persons should not be permitted to prune shrubs except under competent supervision.

The following table gives the time for pruning some of the common shrubs:

PROPER TIME TO PRUNE FLOWERING SHRUBS.

Althea—winter, while dormant.

Coral Berry—January to March, while dormant. Requires little pruning.

Elder—summer, when through blooming.

Forsythia—summer, when through blooming.

Honeysuckle—(bush)—winter, while dormant.

Lilac—summer, when through blooming.

Mock Orange—summer, when through blooming.

Red Bud—late spring, when through blooming.

Russian Olive—winter, while dormant.

Roses—early spring, while dormant, except climbing roses, which should be pruned when through blooming.

Spirea Van Houttei—summer, when through blooming.

Tamarix—cut to 6 inches above the ground in early spring when dormant.

CHAPTER XII.

INSECT PESTS AND PLANT DISEASES.

MOST insect pests and plant diseases are controlled by spraying or dusting the infested plants with certain chemicals. Hand sprayers can be purchased for the spraying of plants, shrubs, and small trees. These sprayers are inexpensive and are a real necessity for every gardener. Your Forestry Department can handle the spraying of larger trees.

APHIDS OR PLANT LICE.

Small, soft-bodied insects, generally not much larger than the head of a pin. Various colors, green, black, blue, purple, etc. They feed by sucking the sap, and when they attack the leaves often cause them to curl up and shrivel. Aphids attack many kinds of trees, shrubs, and plants.

CONTROL: Spray with a solution of 1 pint of "Black-Leaf 40" (Nicotine Sulfate) and 4 pounds of laundry soap to 100 gallons of water (Formula for spraying smaller quantities will be found on the package of "Black-Leaf 40"). Only the insects actually hit by the spray are killed, so the spraying must be very thoroughly done. Several sprayings are sometimes required for effective results.

Sometimes the Aphids can be washed off by repeated applications of a strong stream of water from the garden hose. On small plants a strong solution of laundry soap will often be effective. But Aphides multiply rapidly and if all are not killed there will soon be another infestation.

BAG WORM OR BASKET WORM.

This peculiar insect attacks and often kills Evergreens. It also attacks Maple, Box Elder, and other trees and plants. It spends its life in a sort of a bag about 2 inches long, which it securely fastens to the twigs.

CONTROL: Spray with powdered arsenate of lead, 2 pounds to 50 gallons of water. For small quantities 1½ teaspoons to 1 gallon of water.

BORERS.

These are insects which burrow into and feed upon the inner bark and wood of trees, shrubs, and plants.

CONTROL: Spraying is not effective. All means of control are laborious and tedious. Results may sometimes be obtained by digging the borers out with a knife. A wire hooked at the end may sometimes be inserted into the burrows and the insects crushed.

Carbon bisulphide seems to be the most effective remedy. This chemical is highly inflammable, dangerous, and disagreeable to handle. Saturate a small piece of cotton with carbon bisulphide and insert it into the hole where the borer is working. Then immediately plug the hole with putty. The vapor will generally kill the borer.

CANKER WORMS, MEASURING WORMS, CATERPILLARS.

Most of these pests are leaf feeders and are controlled by spraying with powdered arsenate of lead at the rate of 2 pounds to 50 gallons of water. For small quantities of spray use 1½ teaspoons to 1 gallon of water.

CUT WORMS.

These insects can be controlled by scattering a poison bait about the infested area, prepared as follows: 1 quart bran, 1 tablespoonful of molasses, 1 teaspoonful Paris Green, and enough water to make a thick mash.

GRASSHOPPERS.

Bran 20 pounds, Paris Green 1 pound, syrup 2 quarts, 3 oranges, water 3½ gallons. Mix the bran and Paris Green, dry, in a washtub. Squeeze the juice from the oranges into the water and grind up the peelings and throw in also. Dissolve the syrup in the water and make a thick mash with the bran and Paris Green. Spread this bait about the infested area in the morning. The grasshoppers will feed upon it in preference to most other things.

MEALY BUGS.

Small soft-bodied insects covered with a white waxy secretion; generally found in the axils of the leaves. Often found on plants which have been grown in a greenhouse.

CONTROL: Same treatment as for Aphids.

MILDEW.

A disease attacking Roses, especially the climbing varieties. The leaves shrivel and seem to be covered with a whitish powder. To control this disease measures should be taken just as soon as the leaves appear and before the plant shows any symptoms of being attacked.

CONTROL: Dust the foliage frequently with flowers of sulphur, or spray frequently with Bordeaux Mixture. There is also an insecticide known as "All in One" for dusting, which is effective for most Rose pests.

RUST.

A disease attacking Hollyhocks especially, causing the leaves to turn brown and assume a sort of rusty appearance. Spray with Bordeaux Mixture (which can be obtained at seed stores), mixed according to directions on the package. Spraying should be done as a preventive measure before the disease appears. Several applications are generally necessary.

RED SPIDER.

An almost microscopic mite which attacks Evergreens especially. The trees or plants affected start to decline, for no apparent reason, but a close examination will often reveal numbers of minute mites on the twigs and leaves. There is generally a sort of silvery web over some of the twigs.

CONTROL: Dust with flowers of sulphur. Several applications are generally required for results.

SAN JOSE SCALE.

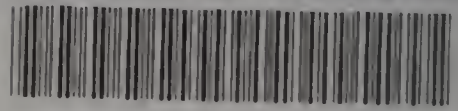
Attacks fruit trees and certain shrubs, causing scale-like spots about the size of a pin-head, grayish-brown in color, under which the insect lives. The damage is done by the insect sucking the sap.

CONTROL: Spray in Winter or early Spring before the buds open, with lime-sulphur solution, mixed according to directions accompanying the package. Spraying must be thoroughly done as only the insects hit by the spray are killed.

WEB WORM (Fall Web Worm).

The caterpillars make a sort of a web in which hundreds may feed. Attacks Walnut, Sumach, Ailanthus, and other trees. Generally two generations a year, one in early Summer, and the second in early Fall. Where there are only a few webs the webs may be destroyed and the caterpillars crushed. Where very numerous spray with arsenate of lead as for caterpillars.

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