HORTICULTURAL MATERIALS IN LANDSCAPE
PLANTING
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GENERAL CONSIDERATIONS OF LANDSCAPE

My thesis, as the title shows, is concerned with "Horticultural Materials in Landscape Planting". First, by way of introduction, and for the sake of understanding clearly just what we are working with, let us go into some general considerations of landscape itself and of landscape planting, and then let us consider in general the characters of the horticultural materials that are used in this planting.

Now for landscape. We should first of all know just what the word means. Landscape may be used to mean a very general view or prospect, or all that can be seen upon the earth's surface; but the word is little used in this sense now. Landscape can also be used in a particular sense, as that portion of territory, and all the objects that it contains, that the eye can comprehend in a single view; this is the sense in which the word is generally used to-day and in which it will be used in my thesis. The principal elements of landscape are atmosphere conditions, irregularities of the earth's surface, water, artificial constructions, herb and shrub ground-cover, and the woods.

The original landscapes are of course the natural ones, untouched and unmarred by man. It is a fact that few seem to realize that these natural landscapes are fast disappearing, and once gone, they can never be replaced. It becomes the duty of each and every person now, not of the landscape archi-
tects alone, to help preserve as much as possible of those natural landscapes, for we need them, as we shall see. For most of us, natural landscape offers a very desirable refreshment and a pleasure favorable to body and mind; it offers some relief from ever-present, man-made conditions, a relief that everyone comes to feel the need of occasionally.

All natural landscapes have certain characters and certain effects that are to be discussed, keeping in mind all the time that much that is said of the natural landscape applies also to the artificial, or man-made landscape.

Every unified landscape has character, and each part of a heterogeneous landscape has character. The term "character" as here used is difficult of definition; about the best one can do is to say that the character of a landscape is "a harmony of characteristics", to use the words of Hubbard and Kimball. (3) The term might best be understood by the use of an illustration. For example, it is evident that a prairie landscape has an entirely different character from a woodland landscape on a city's outskirts; the elements, the qualities, the characteristics of the two landscapes are different, and since these are the things that make up the character, the characters of the two landscapes must necessarily be different. It is difficult to find a name to just fit each specific kind, but it is essential that one see that there are these different landscape characters, so that they may be studied and taken into account. In a natural landscape made up of several parts, each having its own character, there is always a harmonious relationship of these parts, a suggestion that should be taken over and applied when an artificial landscape is to be composed
of several subordinate units of different character; the parts must be harmoniously related.

So much for the character of the natural landscape; but this would be unimportant were it not for the fact that it is the character which brings about the landscape effect, which is the important thing. One looks at a landscape; he reacts to it; this total reaction which he makes to the perception of the landscape is the effect that that particular landscape has upon him. That the landscape effects are as numerous as the landscapes themselves and as the persons who see them is obvious. Furthermore, the identical landscape may well have different effects at different times upon the same observer, depending largely upon the moods and the physical condition of the observer. So we see that the number of landscape effects is infinite.

This subject of the influence of nature upon man is an interesting one. Philip Gilbert Hamerton’s book "Landscape" (3) is quite enlightening upon this subject; the dominant idea of the entire book is the influence of natural landscape on man. Nature seems to have some influence of natural landscape over practically each and every one of us, depending to some extent upon our physical condition. Hamerton, in 1885, said, "With the power of flight, we would lose much of our awe for mountains, their crevasses and precipices ---". Now aviation has given us that power of flight, and to those who have so far been able to take advantage of it, much of that awe has been lost. This makes us wonder sometimes what changes will have to be made in our man-made landscape when aviation becomes the common thing and our landscapes must be viewed from the air as well as from the ground.
We have seen that the whole matter of landscape effect is an individual one, for there are innumerable landscapes, innumerable observers, and innumerable variations in one observer. The differences in the make-up of the minds of various individuals make them differently sensitive to landscape effects, and consequently it is most difficult to pick out any specific landscape effects and give them names. However, this is attempted. Hubbard and Kimball (3) put landscape effects into two outstanding categories, the beautiful and the picturesque, and several lesser categories, including sublimity, desolation, melancholy, gayety, mystery, and effects from transitory conditions. This seems to serve as well as any general classification of landscape effects, while at the same time its inadequacy shows the impossibility of any definite classification. The main idea is to realize that every natural landscape has some effect upon the perceiver, but that this effect will probably never be exactly the same for any two people; indeed, the identical landscape may have widely and profoundly different effects upon any two people. Also, we must remember that the effect of a landscape changes with the point of view, as for example, many elements of a landscape lose their impressiveness as their details become more visible.

In a natural landscape every feature that has a character has its own effect; consequently, a sequence of features produces a sequence of effects, each one influenced by the one just previously perceived.

So much for the natural landscape. Much that has been said applies just as well to the man-made landscape. Just as the natural landscape has character, so has the artificial landscape,
character meaning the total of all its characteristics; each unified artificial landscape has character, and each unit of a heterogeneous artificial landscape has its own character. We must here take our lesson from nature and make these units harmonious.

Closely bound up with character in the artificial landscape is style, which of course is not concerned in the natural landscape. Style means the general mode of execution, both of the architecture and the planting. H.E. Bottomly has written a book on "The Design of Small Properties" (1); his ideal design for the small city lot places the house near the front of the lot, with the living room of the house opening out on the back yard, which is planned as an outdoor living room. A house and planting with this arrangement could be said to be in the style of Bottomly, in contrast to some other style. In gardens alone there are several different styles that may be followed; there is an Italian style, a structure first, usually with much stonework, and planting of secondary importance; in contrast is the English garden, a living garden rather than a garden of stonework, with natural form of primary importance. These examples should suffice to illustrate the meaning of style in landscape; an entire landscape may be in a particular style, or the various parts of it may be in slightly different styles, although the former is usually preferable. We might remember what Voltaire said, "All styles are good, save the tiresome one".

The subject of the effect upon the observer of the man-made landscape is a complicated one, due to the personal element which of course enters in. Every landscape will no doubt be pleasing to someone, but probably no one landscape will ever be pleasing to everyone. The question then, in the face of this
very evident difficulty at the very beginning, is, "When of necessity we must destroy the natural landscape, what shall we put in its place?" The first answer might well be expected to be, "For the best, reproduce the natural landscape". Perhaps, in theory, this is right, but in practice, it is next to an impossibility, for even the most truthful reproduction of a natural landscape fails to produce the same powerful impression that it made in nature. As Hamerton says, interpretation rather than reproduction is to be desired.

But we still have nothing definite to put in the place of the natural landscape that we have destroyed. There are of course a great many kinds of man-made landscapes, as the city home landscape, the country home, the business district, the thoroughfare, and the park. Each as a type must necessarily differ greatly from the others not only in the architectural features but also in the kind of horticultural material, the amount, and the method of using it. Further, each individual landscape within the type must differ from the others, and so must be considered and treated specifically. But we have seen that all artificial landscapes, however different they may be, have their character, style and effects; let us see now what general principles can be applied in the planning of all artificial landscapes.

(1) The planning must be suited to the ground and harmonious with the surroundings. The architectural features must be substantial and located to the best advantage, and the horticultural materials must be adapted to that locality.

(2) The planning must satisfy as far as possible the practical needs for which it is intended.
(3) The architectural and horticultural features must be planned to suit the pocketbook.

(4) The whole landscape must be unified, and yet varied.

(5) Grouping and massing of material is usually preferable in any landscape to dotting small clumps here and there; other principles of good design must also be considered.

(6) Planting and still more planting is not always necessary to the enhancement of a landscape; clearing for views is as necessary as planting; there must be light, breadth, repose and distant views in any satisfying landscape.

(7) The landscape must satisfy in so far as possible the aesthetic desires of those who are to see it. In a general way, we cannot go beyond this, for aesthetic desires do differ so that each landscape must be individually treated in this regard. The magnitude of the undertaking of course affects the problem; it is more difficult to plan a university landscape, for example, which must aim to satisfy hundreds of people, than it is to plan the landscape of one residence, where the aesthetic desires of only one individual or of one family need be satisfied.

It follows from all this discussion that one is fitted to be a successful landscape planner and planter only by extensive and intensive study and training, experience, and a genuine love of Nature. One extreme difficulty encountered by the landscape architect is a difficulty encountered in all the other arts as well, the difficulty of the ready conveyance to others of the emotion experienced by the artist. Also, the difficulty of pleasing someone else is a very real stumbling block in the path of innumerable would-be landscape architects. In planning a
landscape to suit someone else, the landscape architect must first try to discover the effects desired by his client, and then choose such materials for the planting as will most nearly carry out and attain those effects as nearly as he is able to perceive them. The task of the landscape architect is not little one; he must modify the natural scenery so as to produce the best aesthetic effect combined with utility.

In connection with these general landscape considerations, there are several terms used here and elsewhere which should be well understood in all their meanings and uses; some of these are landscape architecture and architect, landscape planting, landscape gardening, landscapist, horticulture and arboriculture.

Architecture means the art of buildings; more commonly, it is used with reference to building houses, offices, bridges, and other structures of civil life, but the work may accurately be applied to building of any kind, even to building with plants. Consequently, landscape architecture is a correct term when used to mean the adaptation of the landscape to human service. Landscape architecture is an art of design, with buildings, walks, drives, gardens, lawns, trees and shrubs the materials with which to work. The landscape architect of course is one whose work is landscape architecture. Robinson (4) said that landscape architecture is a contradiction in terms, and he objected strongly to the use of the words in this way, but the phrase has now come to be extensively and accurately used.

Landscape planting in the strict sense of the word is not as broad a term as landscape architecture. It has to do only with the plant materials, and has to do with the buildings only in so far as the planting is related to them. The landscape planter is of course the one who conceives and carries out the
planting. The word "landscapist" is incorrectly used in this connection; it is accurately applied only to a painter of landscapes.

Landscape gardening and gardener are usually used to mean about the same thing as landscape architecture and architect. Horticulture is a broad term meaning the growing of fruits, vegetables, flowers, and ornamental plants; arboriculture is more specific, being the cultivation of trees and shrubs alone, for either ornamental or timber purposes. Cultivating trees for timber is usually called forestry. An arboretum is a place where trees and shrubs are cultivated for scientific or educationally purposes; dendrology is the study of the trees and shrubs.

In olden times, and in the Old World particularly, landscape architecture, as the other arts, was for the titled and the wealthy alone. But today the trend is different, particularly in America; attempts are being made to have landscape beauty for everyone, to have attractive surroundings for everything and to beautify all outdoors. It is often come to pass that the center of a city, where beauty has been artificially restored by architecture and gardens, is more attractive than the outskirts of the city, where the natural beauty has been ravaged and nothing has replaced it. What we must now do is to continue along the broad path that we have begun, developing the best of artificial beauty wherever natural beauty must be destroyed. Frank A. Waugh (5) has said that the four essentials factors in civil landscape improvements are local initiative, expert advice, time, and money. The local initiative must come first; with that, the advice, time, and money can be found.
Bibliography


GENERAL CHARACTERS OF HORTICULTURAL MATERIALS

By horticultural materials are meant the trees, shrubs, vines, herbaceous flowering plants, and ground-cover plants used in landscape plantings; lower plant forms, the ferns, mosses, lichens and fungi, may occasionally be used to some extent, but usually only in specialized gardens. The landscape designer is for the most part limited in his designs to those plant materials already existing; he cannot create new materials, as can the workers in other arts. However, the number of plants of horticultural value has increased greatly along with the development of landscape gardening, due to discoveries of new species, developments through hybridization and selections, and introductions from foreign countries, until now there is always a large stock of available plant material from which to choose for practically any purpose.

Plants are growing, constantly-changing things. This adds new difficulties, though new possibilities as well, to landscape planning; one cannot expect to sit down with a drawing board and lay out a landscape as he would a nursery garden. The designer must plan a landscape with foresight, seeing the seasonal changes as well as the lifetime changes that his plants will undergo. Time is necessary for the completion of the design and the full development of its beauty. The designer cannot disregard the complex individuality of each plant with which he works. On the contrary, he must recognize these individualities and must give them the greatest possible opportunities for full
expression, for he is dealing with living things; in this does his work differ from that of other designers. Plants are Nature's greatest gift to man, pliable, tractable materials growing to infinite beauty at his desire.

Each species of tree, shrub, and herbaceous plant has some effect upon the observer, and this effect is the result of the character of the plant and the make-up of the observer; both are variable factors. The plant character is the product of two cooperating agents, heredity and environment, and the outstanding characteristics whose total makes up the character of the plant are form, color, texture, and mass.

The form of a plant is the record of all the circumstances through which it has come to its present state and of all the forces, both internal and external, subject to which it has grown; heredity is the most important internal factor, and the amount of available soil moisture, the physical and chemical character of the soil, the wind force and direction, and the conditions of illumination probably the most influential external factors. Form is also somewhat dependent upon the age of the plant, changing with growth from youth to maturity, and from maturity to old age. As we would expect, great variety of form in trees, shrubs, and herbaceous plants results. Practically any plant, unless distorted by crowded conditions or some other unusual influence, will attain an individual and self-sufficient form in a landscape composition; roughly, the various forms may be grouped into rounded, conical, fountain-shaped, pendulous, and irregular forms, though these are a matter of general character as well as of describable shape. In
temperate and cold climates, trees particularly, and shrubs and herbaceous plants to a lesser extent, show wide differences in form from summer to winter, unless they are evergreen; with deciduous trees, the form may be even more manifest after the leaves have fallen, though none the less beautiful.

The achievement of form is sometimes due to topiary work, or the trimming of foliage masses into shapes; it includes pollarding trees, shearing hedges and clipping individual shrubs. William Robinson (4) called yearly trimming and clipping "barber's" gardening, and he considered it all a stupid practice, a waste of the gardener's time, and a destruction of the plant's individuality that should never be allowed. It is said that he never destroyed the true form of any plant in his garden, but did all he could to encourage natural form. To him, a clipped hedge was not be endured, nor a gorseground disfigured by trees false in form. He went farther, to say that tree distortion might have the wrong effect upon young minds, giving children and others wrong ideas of form. We are inclined to-day to consider Robinson's stand as somewhat extreme. We do not approve of carrying topiary work to the extreme of making fantastic oddities of our trees and shrubs, but we do approve of trimmed hedges and to some extent of shaped evergreens in our formal gardens. It is true that plants so treated do cease to express their individuality by form; rather, they express the will of man. However, the general opinion now is that a moderate amount of shearing is all right in formal planting, but that any topiary work beyond a clipped hedge should be indulged in only after due consideration of the appropriateness of the result in
that particular architectural scheme.

Color is a very important character in horticultural materials. As a rule, there is enough natural beauty of color without using the artificial and often ugly variegations of the nursery, for variegation, from the plant aspect, is disease. The foliage color of a plant is dependent upon several features other than the leaf pigments; it is affected by the number of leaves, their compactness, thickness, shadows, translucence, glossiness, whether or not they are the same color on both sides, and the angle at which they are borne. There is a great range in foliage color; even in greens alone there is quite a range. This is a great advantage, for in a broad natural landscape the best effects are usually obtained through contrasting greens with possibly some small brilliant spots of color for accent, and it is incongruous to introduce much brightly colored golden, silvery, and reddish or purplish foliage. Such brightly colored foliage can best be used in beds in enclosed gardens as culminating color spots in a subdued mass, or as individual specimens. In plant color, as color elsewhere, the effects of greatest brilliance are obtained through contrasts with more subdued hues; one should always bear in mind that only monotony and confusion are produced by a great diversity of small color units. In mass planting, color may sometimes be used to give more distant foliage an effect of still greater distance.

Flower color offers a more complicated problem in design than foliage color, due to the difficulty of foretelling whether or not the flowers will be harmonious, but there are several generalizations that may usually be employed. An effect of
bright flower color may be obtained by close massing of flowers as well as by their individual bright color, and more brilliant colors and contrasts may be used if the plantings are to be viewed from a distance. White flowers harmonize with any others, and so may be placed between masses which together would be inharmonious. The relation of each flower mass to the whole scene must be kept in mind, and mass planting used, for one soon learns that too small and too varied color spots do not satisfy. Lastly, sunshine and shade greatly modify the flower colors; all colors tend to harmonize when bathed in intense sunlight or when in dense shade, and almost the greatest possible contrast may be obtained by using red or yellow flowers in the sunlight and blue or purple flowers in the shade.

Plant texture is another character that must be considered in using horticultural materials. By texture is meant the form and arrangement of the smaller parts, and so it results from the size, shape, and surface of the leaves, their attitude and grouping, and the arrangement of the small branches and twigs to effect the whole foliage mass. Texture differs from form and size in that it is a fairly definite thing that can be quite accurately predicted and planned on for desired effects. There must always be good relation between the texture and the mass; in any planting mass, the texture must not be so coarse as to break up the perception of the whole mass into subordinate shapes. It follows that the parts of a unified landscape design must be of similar texture, for great differences destroy any effect of unity.

Trees are perhaps the best loved of all plant materials; some seem to have almost a personality, and are used in landscape to
give personified effects, as the weeping willow and the towering pine. It is a fact that in order to appreciate the value of trees in landscape it is often necessary to have some personal experience with treeless expanses; a solitude is not nearly so lonely if there is a tree, and a group of trees gives us a feeling almost of companions.

In landscape trees may be used either singly, as specimen trees, or in groups of two or more. Humphrey Repton (1) once said that one should never plant a tree without giving it a companion, but we now feel that this is an exaggeration, for there is nothing more beautiful, or perhaps picturesque, in all nature than an isolated tree which has reached the fullest development of all its typical individuality. A specimen tree is properly one that is sufficiently interesting in character to deserve an isolated position which makes it the focal point of attention. Specimens should not be merely objects of interest set apart for one to gaze at in wonder; they should be incorporated in the whole composition as point of harmonious emphasis, not of discordant isolation.

But trees should not be considered solely for their effect as single specimens; grouping is equally important. When trees are grouped, we need not consider groups with an odd number of plants as superior to the even numbers; nature gives us good examples, and we find one type as common as the other. In using nature as a model for grouping we should choose only the most beautiful models; choosing is in itself an art. A group of two trees appears well only when one is distinct from the other in both shape and size, as when one is rounded and the other tall-
A group of three is quite common in nature, but the three are as a rule very dissimilar in either species, shape, or size. When concerned with more than about six trees, it is usually best to consider them as an agglomeration of several smaller groups, so that the mass is broken. This does not mean, however, that the small groups should be distinctly set apart and scattered, taking away all idea of repose and confusing the scene; on the contrary, the small groups should be as inter-related as possible. When isolated groups of trees are used, they will be found to have as a rule less individuality than an isolated specimen tree, and to be more closely related to other groups and masses; however, their position should be influenced by the same general compositional considerations that determine the position of specimen trees.

The main form of any group depends of course upon its relations to the design as a whole. It is impossible to make all groups appear at their best from every angle, so the designer must choose the more important points of view, and be thankful if his results are passable from these points and at the same time not noticeable bad from the less important points.

In order to give harmonious grouping, trees should as a rule be associated with their natural companions. Here again we can get good models from spontaneous mixtures in nature. Of course exotic elements may occasionally be introduced, though much better to be sure in a garden than in a broad landscape. Moreover, the amount of exotic material introduced is to a large extent determined by our purpose in the landscape; if our aim is to interpret a native landscape we will of course be practically confined to native plant materials, while if we are con-
cerned primarily with the compositional design of our landscape we can introduce exotic material, provided that it is congruous and hardy. There may be infinite variety in combinations of trees, but in all combinations the intermingling of branches as well as the general forms should be harmonious, giving the group the entity of a single object, and as perfect balance as we find in nature. This does not mean that the group should appear as an undifferentiated mass; on the contrary, the character of the individuals should be sensed in the mass.

Shrubs, like trees, have two values in the landscape, first as specimens and second as parts of groups or masses making up the design. When used as specimens or in informal plantings, the general considerations discussed for trees hold for them as well, but in formal plantings shrubs may lose most of their individuality and become mere material from which man-determined masses are made. Shrubbery is adapted to very extensive use in landscape architecture; it is particularly adapted to mass use for screen planting, border planting, foundation planting, and replacing grass on surfaces too steep for turf. As a rule, shrubbery masses should be placed on the boundaries, leaving an open space in the center for turf. Of course varied arrangement is desirable, and specimen shrubs may be used freely, in order to avoid monotony, but this variation is much more agreeably obtained through the use of rather broad areas of single species slightly interspersed with shrubs of a different kind, than by an inconsistent mixture of miscellaneous shrubs.

Vines are of great value in landscape architecture, filling
a place that no other horticultural materials can fill. Both woody and herbaceous vines are used, some for their flowers, as climbing roses; some for their fruit, as climbing bittersweet; some for their fragrance, as wild grape; and some as covers for ground, walls, and trellises. These latter uses will be discussed in a later section. It should be remembered when planting vines that they usually grow quite rapidly, and if planted about shrubs and small trees they may overspread and smother the host which is supporting them.

Herbaceous flowering plants have long aroused interest and admiration; their place in landscape is important primarily for their flowers. An herbaceous flower bed has a place in practically every landscape design. Usually these masses are backed by some coarser material, and where naturalistic design is wanted, these flower masses should blend into each other and into the shrubbery just as the shrubbery masses are blended into each other and into the trees. Since these herbaceous plants are desirable mainly for their flowers, attempts should be made to have a succession of plants in bloom and an interesting bed throughout the season. This may be accomplished either by planting perennials throughout the bed in such a way that one after another comes into bloom, or by digging up some plants when they are through blooming, as tulips, and replacing them with later-blooming species. The bed may be arranged either with considerable areas devoted to one plant, or with plants of different blooming times interspersed throughout. But whatever the arrangement, the bed must be designed as a whole, with its dominant and subordinate parts arranged, and allowances made for a sequence of patterns throughout the growing and blooming season.
There are innumerable specializations in herbaceous flower gardens, as wild-gardening, bog-gardening, water-gardening, subtropical-gardening, wall-gardening and others, all of which have a place in particular landscapes, but which are interests too special to be entered into here.

There is another horticultural material of the utmost importance in landscape, though often overlooked because of the very inconspicuousness of it --- the ground cover. Turf is the commonest ground cover, though on steep slopes it is often best replaced by some procumbent shrub or trailing vine. In a natural landscape there is usually an open central feature, as a lawn or meadow, irregular in outline, surrounded by foliage masses of somewhat obscure boundaries; these open spaces are one of the most important elements in landscape design. So we see the importance of ground cover in the natural landscape. Its importance in the formal landscape as well is evident. In fact, no one can fail to see how invaluable grass is in any landscape; this would be a bare-looking world indeed were it not for the ground-cover plants.
Bibliography


THE INTRODUCTION OF FOREIGN PLANTS INTO
THE UNITED STATES

Upon undertaking a study of the foreign plants that have been introduced into the United States, one is immediately confronted by an enormous amount of material. It is truly astounding to discover what a large percent of our best-known and most popular trees and shrubs are exotic species. Alfred Rehder has written a book called the "Manual of Cultivated Trees and Shrubs" (2), with the purpose of presenting the woody plants hardy in temperate North America; the southern limit of the area concerned is approximately a line running from Virginia through western North Carolina, northern Georgia and northern Alabama, central Arkansas, central New Mexico, central Arizona, and then northward through northeastern California and Oregon along the western slope of the Cascade Mt. to northwestern Washington. In this volume, about 2350 species and 2485 varieties are described; these represent 468 genera and 112 families. In addition, 1 family, 30 genera, 1265 species and 507 hybrids are briefly mentioned but not fully described. The author gives the native home of each of these plants, and the date of its introduction into cultivation if known. The attempt made in this section of my thesis is to compile from the Manual, supplemented by Bailey's "Standard Cyclopedia of Horticulture", lists according to countries of these introduced plants. All of the Latin names are according to Bailey. In the following lists, when the name of a country is placed in parenthesis after the name of a plant, it means that the plant is found there in addition to the
country under which it is listed. The following abbreviations are used:

Afgh. — Afghanistan
Afr. — Africa
Cauc. — Caucasus
Eur. — Europe
Himal. — Himalayas
Manch. — Manchuria
Medit. — Mediterranean
Turkestan.

The first list is of plants introduced into cultivation in our country from China. As those of other Asiatic regions, some of these have come directly, and some by way of Europe; the direct introductions have been to a great extent due to the work of collectors sent out by the Arnold Arboretum during the last 50 years, and to the subsequent tests that were made of all material, both seeds and seedlings, sent to the Arboretum grounds. The number of plants from eastern and central Asia is large, for climatic conditions there are similar to ours, and the country has a very rich and varied flora. Following is the list of plants from China:

**Abelia biflora**
- chinensis
- engleriana
- graechneriana
- uniflora
- senesi

**Abies delavayi**
- fargesii
- sachalinensis

**Acanthopanax henryi**
- leucorrhizum
- senticosum (Manch)
- setchuenense

**Acanthopanax sessiliflorum (Manch)**
- simoni
- spinosum
- trifoliatum (Himal)

**Acer barbinerve**
- catalpifolium
- crataegifolium
- davidii
- crijanthum
- fargesii
- flabellatum
- francheti
- fulvescens
Acer griseum
  " henryi
  " laxiflorum
  " longipes
  " mandshuricum
  " maximowiczii
  " oblongum (Himal)
  " oliverianum
  " robustum
  " sinense
  " sutchuenense
  " teamentosa (Korea)
  " tetramerum
  " truncatum
  " wilsoni

Actinidia callosa
  " chinensis
  " coriacea
  " kolomikta
  " melanandra
  " polygama

Actinidia chinensis
  " wilsoni

Alantis altissima
  " giraldi
  " vilmeriniana

Alnus cremastogyne

Ampelopsis aconitifolia
  " delavayana
  " heterophylla

Ampelopsis humilifolia
  " megalophylla
  " micans

Aralia chinensis

Aristolochia maupinensis

Arundinaria nitida

Aucuba chinensis

Berberis aggregata
  " approximata
  " bergmanniae
  " brachypoda
  " candidula
  " caroli
  " diaphana
  " dictyophylla
  " francisci-ferdinandi
  " gagnepaini
  " levis
  " liechtenssteini
  " mouillacana
  " parvifolia
  " poireti
  " polyantha
  " pruinosa
  " sanguinea
  " sargentiana
  " sylvataraerulea
  " tischleri
  " triacanthophora
  " voitcho
Berberis verruculosa
  " wilsonae
  " yunnanensis
Betula dahurica
  " fruticosa
  " luminifera
  " ulmifolia
Buddleia albiflora
  " asiatica (India, Java)
  " davidi
  " lindleyana
  " nivea
  " officinalis
  " stenostachya
Calliscarpa dichotoma (Korea)
  " giraldi
Campsis chinensis
Caragana boisi
  " chamlagu
  " fruticosa
  " pygmaea
Carpinus turczaninowii
Caryopteris mongolica
Castanea mollissima (Korea)
  " vilmoriniana
Catalpa bungei
  " duclouxii
  " fargesii
  " ovata
Celastrus flagellaris
Celastrus hypoleucus
Celtis blandi
  " bungeana
Cephalotaxus fortunei
  " oliveri
Cercidiphyllum japonicum
Cercis chinensis
  " racemosa
Calliscarpa giraldi
Chaenomeles japonica
  " sinensis
Chionanthus retusa
Chrysantherum merifolium
Cladrastis chinensis
  " wilsonii
Clematis aethusifolia
  " armandi
  " brevicaudata
  " chinensis
  " chrysocoma
  " delavayi
  " fargesii
  " florida
  " fusca
  " glauca
  " gracilifolia
  " heracloaefolia
  " lanuginosa
  " lasiandra
Clematis micropetala (Siberia)
  " nutana
  " pavoliniana
  " quinquefoliolata
  " tangutica

Clematoclethra integricalia

Clerodendron foetidum

Clethra fargesii
  " monostachya

Coriaria sinica

Cornus brevicallicornis
  " pancinervia
  " poliphylla
  " wilsomiana

Corylopsis platypetala
  " sinensis
  " veitchiana
  " willmottiae

Corylus chinensis
  " thibetica

Cotoneaster acutifolia
  " adpressa
  " ambigua
  " amoena
  " apiculata
  " bullata
  " dammeri
  " dielsiana
  " divaricata
  " fovoolata

Cotoneaster franchetii
  " harroviana
  " henryana
  " horizontalis
  " hupetensis
  " lucida
  " moupinensis
  " multiflora
  " nitens
  " obscura
  " pannosa
  " salicifolia
  " silvestri
  " zabelii

Crataegus maximowiczii
  " pinnatifida
  " wattiana
  " wilsomii

Cunninghamia lanceolata

Cydonia oblonga

Daphne alata
  " genkwa
  " kamtschatica
  " rotusa

Davidia involucrata

Decaisnea fargesii

Deutzia compacta
  " discolor
  " globosa
  " glomeruliflora
Deutzia grandiflora
  " longifolia
  " mollis
  " parviflora
  " purpurascens
  " reflexa
  " schneideriana
  " setchuenensis
  " vilmorinae
  " wilsoni

Diervilla floridana (Korea)
  " japonica
  " suavis

Diospyros armata
  " lotus

Dipelta floribunda
  " ventricosa

Docynia delavayi

Elaeagnus multiflora

Elsholtzia stauntoni

Enkianthus chinensis
  " quinqueflorus

Eriobotrya japonica

Encomia ulmoides

Euptolema franchetii

Evidia danielli
  " henryi
  " officinalis
  " volutina

Evonymus aquifolium
  " bungeana
  " lanceifolia
  " maackii
  " patens
  " saccharinensis
  " sanguinea
  " sargentiana

Exochorda giraldi
  " racemosa

Fagus engleriana
  " sinensis

Fontanesia fortunee

Forsythia suspensa fortunee
  " viridissima

Fortunearia sinensis

Fraxinus bungeana
  " chinensis
  " griffithi
  " mariesi
  " paxiana (Himal)
  " platypoda

Gaultheria veitchiana

Ginkgo biloba

Gleditsia delavayi
  " heterophylla
  " macracanthha
  " sinensis

Hammamelis mollis
Hibiscus syriacus (India)
Holboellia coriacea
  " fargesii
  " grandiflora
Hydrangea bretschneideri
  " davidi
  " longipes
  " rosthornii
  " sargentiana
  " strigosa
  " villosa
  " xanthochoura
Ilex corallina
  " cornuta
  " fargesii
  " franchetiana
  " macrocarpa
  " perryi
  " szechwanensis
  " yunnanensis
Indigofera amblyantha
  " decora
  " kiriwii (Korea)
  " macrostachys
Itea ilicifolia
Jasminum beesianum
  " floridum
  " giraldi
  " nudiflorum
Juglans cathayensis
Juglans mandshurica
Juniperus formosana (Formosa)
Kerria japonica
Ketolaëoria davidiana
  " fortunei
Koelreuteria apiculata
Kolkwitzia amabilis
Lagerstroemia indica
Larix potanini
Leptodermis oblonga
Ligustrum acutissimum
  " amurense
  " compactum
  " delavayanum
  " henryi
  " quinou
  " sempervirens
  " sinense
  " strongylophyllum
Liquidambar formosana
Liriodendron chinense
Lonicera alsucaoides
  " chaetocarpa
  " confusa
  " deflexicaulx (Tibet)
  " ferdinandii
  " fragrantissima
  " giraldis
  " gymnosamidae
  " henryi
<p>| Lonicera japonica                                                                 | Moniaspernum dauricum                |
| &quot; kochneana                                                                   | &quot;                                   |
| &quot; maackii                                                                     |                                   |
| &quot; maximowiczii                                                                |                                   |
| &quot; supinensis                                                                  |                                   |
| &quot; nervosa                                                                    |                                   |
| &quot; pileata                                                                    |                                   |
| &quot; ruprechtiana                                                               |                                   |
| &quot; saccata                                                                    |                                   |
| &quot; similis                                                                    |                                   |
| &quot; standishii                                                                 |                                   |
| &quot; subaequalis                                                                |                                   |
| &quot; syringantha                                                                |                                   |
| &quot; tangutica                                                                  |                                   |
| &quot; thibetica                                                                  |                                   |
| &quot; tragophylla                                                                |                                   |
| &quot; triphosantha (Tibet)                                                        |                                   |
| <strong>Lycium chinense</strong>                                                           | <strong>Moniaspernum dauricum</strong>          |
| <strong>Magnolia dawsoniana</strong>                                                       |                                   |
| &quot; delavayi                                                                   |                                   |
| &quot; denudata                                                                   |                                   |
| &quot; liliflora                                                                  |                                   |
| &quot; nicholsoniana                                                              |                                   |
| &quot; officinalis                                                                |                                   |
| &quot; sargentiana                                                                |                                   |
| &quot; wilsoni                                                                    |                                   |
| <strong>Mahonia japonicum</strong>                                                         |                                   |
| <strong>Meliosma beaniana</strong>                                                         |                                   |
| &quot; cuneifolia                                                                 |                                   |
| &quot; pendens                                                                   |                                   |
| &quot; voichiorum                                                                 |                                   |
| <strong>Neillia affinis</strong>                                                           |                                   |
| &quot; longeracemosa                                                              |                                   |
| &quot; sinensis                                                                   |                                   |
| &quot; thibetica                                                                  |                                   |
| <strong>Nyssa sinensis</strong>                                                            |                                   |
| <strong>Osteomeles achenicinana</strong>                                                   |                                   |
| <strong>Ostryopsis davidiana</strong>                                                     |                                   |
| <strong>Paonia delavayi</strong>                                                           |                                   |
| &quot; lutea                                                                      |                                   |
| &quot; suffruticosa                                                                |                                   |
| <strong>Parthenocissus henryana</strong>                                                   |                                   |
| &quot; lactevirens                                                                |                                   |
| &quot; thomsoni (Himal)                                                           |                                   |
| <strong>Paulownia targesi</strong>                                                         |                                   |
| &quot; tomentosa                                                                  |                                   |
| <strong>Periploca acpium</strong>                                                          |                                   |
| <strong>Pertya sinensis</strong>                                                           |                                   |
| <strong>Phellodendron amurense</strong>                                                    |                                   |
| &quot; chinense                                                                   |                                   |
| <strong>Philadelphus brachybotrys</strong>                                                 |                                   |
| &quot; delavayi                                                                   |                                   |
| &quot; incanus                                                                    |                                   |
| &quot; magdalenae                                                                 |                                   |
| &quot; pokinensis (Korea)                                                          |                                   |
| &quot; schrenki                                                                   |                                   |
| &quot; sericantus                                                                  |                                   |
| &quot; venustus                                                                   |                                   |</p>
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<td><em>Prunus mira</em></td>
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*Pinus armandi* (Korea, Formosa) | *bungeana* |
<p>| <em>Pinus sinensis</em> | <em>bungeana</em> |
| <em>Pinus yunnanensis</em> | <em>bungeana</em> |</p>
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  " pohuashanensis
  " sargentiana
  " scalaris
  " vilmorini
Spiraea alpina
  " calcicola
  " chamaedryfolia
  " chinensis
  " dasyantha
  " germana
  " henryi
  " longigemmis
  " mollifolia
  " myrtilloides
  " prunifolia
  " pubescens
  " rosthorni
  " sargentiana
  " trilobata
  " veitchii
  " wilsonii
Stackyurus chinensis
Stephylea holocarpa
Stewartia sinensis
Stranvaesia davidiana
Styrax homelyeyana
  " veitchiorum
  " wilsonii
Sycopsis sinensis
Symphoricarpos sinensis
Syringa amurensis
  " Julianae
  " komarovi
  " meyeri
  " oblata
  " pekinensis
  " pimatifolia
  " pubescens
  " reflexa
  " swenginsowi
  " tomentella
  " villosa
  " wolfii
  " yunnanensis
Tamarix chinensis
  " juniperina
Tapiscia sinensis
Tetrastigma obtectum (Himal)
  " serrulatum (Himal)
Thea cuspidata
Tilia henryanana
  " mongolica
  " oliveri
  " paucicostata
  " tuck
Torreya grandis
Tsuga chinensis
  " yunnanensis
Ulmus bergmanniana
  " davidiana
  " macrocarpa
  " wilsoniana
Viburnum betulifolium
  " buddleifolium
  " burejaeticum
  " carlesi
  " cinnamomifolium
  " dasyanthum
  " davidii
  " fragrans
  " harryanum
  " henryi
  " kupshense
  " ilchangense
  " kansuense
  " lobophyllum
  " macrocephalum
  " mongolicum
Viburnum pauciflorum
  " propinquum
  " rhytidophyllum
  " sargenti
  " sympodiale
  " theiferum
  " util
  " veitchi
Vitex negundo (India)
Vitis amurensis
  " betulifolia
  " davidi
  " lanata
  " pentagona
  " piasezki
  " reticulata
  " romaneti
Wisteria sinensis
Xanthoceras sorbilolia
Zanthoxylum bungei
  " piasezki
  " stenophyllum
Following is the list of introduced plants that are native to Japan:

**Abelia serrata**
- **spathulata**

**Abies brachyphylla**
- **firma**
- **homolepis**
- **mariesi**
- **veitchi**

**Acanthopanax divaricatum**
- **innovans**
- **pentaphyllum**
- **ricinifolium**
- **sciadophyloides**

**Acer argutum**
- **capillipes**
- **carpinifolium**
- **cissifolium**
- **crataegifolium**
- **diabolicum**
- **distylum**
- **japonicum**
- **mayri**
- **micranthum**
- **palmatum (Korea)**
- **parviflorum**
- **rufinerve**
- **sieboldianum**
- **tschonoski**

**Aesculus turbinata**

**Alnus japonica**
- **pendula**
- **yasha**

**Amelanchier asiatica (Korea)**

**Aristolochia kaempferi**

**Arundinaria auricoma**
- **chrysantha**
- **fastuosa**
- **humilis**
- **japonica**
- **pumila**
- **veitchi**

**Aucuba japonica**

**Bambusa disticha**
- **fastuosa**

**Benzoin praecox**

**Berberis amurensis**
- **bretschneideri**
- **koreana (Korea)**
- **sieboldi**
- **thunbergi**

**Berchemia racemosa (Formosa)**

**Betula corylifolia**
- **globisepica**
- **grosa**
- **maximowiczi**

**Broussonetia kazinoki**

**Buddleia japonica**

**Buxus microphylla**
Cassapanca japonica
Callicarpa japonica
Carpinus japonica
   " laxiflora
   " yedoensis
Castanea crenata
Cephalotaxus drupacea
Salix japonica
   " mollis
Chaenomeles maulei
Chamaecyparis obtusa
   " pisifera
Chrysantheme nipponicum
Cladrastis platycarpa
Clematis koreana (Korea)
   " paniculata
   " pinnata
   " picrotii
   " serratifolia (Korea)
Clethra barbinervis
Coriaria japonica
Cornus kousa (Korea)
   " officinalis
Corylopsis pauciflora
   " spicata
Corylus sieboldiana

Daphne pseudomozereum
Deutzia gracilis
   " scabra
   " sieboldiana

Diercvilla coraeensis
   " floribunda
   " hortensis
   " praeceps (Korea)
Disanthus cercidifolius
Distylium racemosum
Elagnus macrophylla
   " pungens
Enkianthus campanulatus
   " cernuus
   " porulatus
   " subsessilis
Euptelea polyandra
Evonymus hians
   " japonica
   " oxyphylla
   " planipes
   " radicans (Korea)
   " semiecsera
   " sieboldiana
   " yedoensis (Korea)
Fagus japonica
   " sieboldi
Forsythia suspensa
Fraxinus japonica
   " pubineris
   " spaethiana
Hamamelis japonica
Hedera japonica (Korea)
Hydrangea involucrata
Hydrangea macrophylla
" serrata (Korea)
Hypericum patulum
Ilex crenata
" goniculata
" integra
" latifolia
" pedunculosa
" rotunda
" rugosa (Saghalim)
" serrata
Juglans sieboldiana
Juniperus litoralis
" procumbens
Kadsura japonica (Korea)
Larix leptolepis
Leopoleza cyrtobotrya (Korea)
Leucothoe grayana
Ligustrum acuminatum
" ciliatum
" ibota
" japonicum (Korea)
" ovalifolium
Lonicera gracilipes
" morrowi
" strophiophora
Magnolia hypolouca
" kobus
" parviflora (Korea)
Magnolia salicifolia
" stellata
Meliosma myriantha
Crista japonica
Osmanthus aquifolium
" fortunei
Pachysandra terminalis
Phellodendron japonicum
" lavehle
Photinia glabra
Phyllostachys russifolia
Picea bicolor
" globii
" koyamai (Korea)
" maximowicze
" polita
Pieris japonica
Pinus densiflora
" koraiensia (Korea)
" parviflora
" pualla (N.E. Siberia)
" thunbergii
Platyctere arguta
Podocarpus macrophylla
Polygonum multiflorum
Populus sieboldi
Prunus apetala
" campanulata (Formosa)
" grayana
Fraxinus lannesiana
  " nipponica
  " sieboldii
  " subhirtella
  " yedoensis
Pseudotsuga japonica
Pterocarya rhoifolia
Pyrus pulcherrima
  " sargentii
  " sieboldi
  " tschonoski
Quercus myrsinaefolia
Raphiolepis umbellata (Korea)
Rhamnus costata
  " japonica
Rhododendron albrechtii
  " brachycarpum (Korea)
  " dilatatum
  " indicum
  " japonicum
  " keiskei
  " linearifolium
  " mazzornichi
  " mucronulatum
  " nipponicum
  " obtusum
  " quinquefolium
  " semibarbatum
  " serpyllifolium
  " sublanceolatum
Rhododendron tschonoski (Korea)
Ribes fasciculatum (Korea)
  " japonicum
Rosa multiflora (Korea)
  " watschiana
Rubus ilicifolius
  " kochanensis
  " trifidus
Salix japonica
Sapindus mukorossi
Schizophragma hydrangeoides
Seiadopitys verticillata
Skimmia japonica
Smilax sieboldii (Korea)
Sorbus japonica (Korea)
Spiraea albisepala
  " blumei (Korea)
  " bullata
  " japonica
  " niyabel
  " nipponica
Stachyurus praecox
Staphylea pinnata
Stauntonia hexaphylla
Stephanandra incisa (Korea)
  " tanakae
Stewartia monadelpha
  " pseudo-camellia
Styrax obassia
  " shiraiana
Syringa japonica
Thuja standishii
Thujaopsis dolabrata
Tilia japonica
" maximowicziana
" miqueliana
Torreya nucifera
Tripetaleia bracteata
" paniculata
Trochodendron aralioides
Tsuga diversifolia
" sieboldi
Tsusiophyllum tanakae
Viburnum dilatatum
" erosum

In addition to these plants from China or Japan, there is a list of species that are found in both countries, and it is impossible to determine which is the original home. These are given in the following list, as plants from China and Japan:

Acanthopanax ricanifolium (Korea) Ardisia japonica
Acer ginnala
" nicoense
" trifidum
Actinidia arguta (Korea)
Akebia lobata
" quinata (Korea)
Alangium platanifolium
Alnus hirsuta
Ampelopsis japonica
Aphananthe aspere (Korea)

Viburnum furcatum
" japonicum
" phlobotrichum
" sieboldi
" urceolatum
" wrighti
Vitis coignetiae
Visteria floribunda
" japonica
" venusta
Zelkova serrata
Celtis sinensis (Korea)
Clematis meyeniana
Clerodendron trichotomum
Cocculus trilobus
Cornus controversa
" macrophylla
Corylus heterophylla
Crataegus cuneata
Cryptomeria japonica
Daphne odora
Diervilla middendorffiana
Diospyros kaki
Elaeagnus glabra
" umbellata
Euryonymus alata
" macroptera
Ficus pumila
Gleditsia japonica
Holwingia japonica
Hovenia dulcis (Himal)
Hydrangea paniculata
" petiolaris
Hypericum chinense
Idesia polycarpa
Juniperus chinensis
" rigida (Korea)
Koelreuteria paniculata (Korea)
Leopodeza bicolor
" sericea (Korea)
Leopodeza sieboldii
Ligustrum lucidum (Korea)
Lonicera shanissii
" chinensis
Mandina domestica
Ostrya japonica
Parthenocissus tricuspidata
Phellodendron amurense (Korea)
Photinia villosa (Korea)
Phyllostachys aurea
" mitis
" nigra
Picea jezoensis
Pierocarpa quassioidea (Himal)
Populus maximowiczii
Prunus glandulosa
" uacchi
" maximowiczii
" mucu
" serrulata (Korea)
" scori
" tomentosa (Himal)
Pterostyrax corymbosa
" hispida
Puoraria hirsuta
Pyrus halliana
" ussuriensis
Quercus aliena (Korea)
" dentata (Korea)
Quercus glandulifera (Korea)  Securinega flavescens (Korea)
" mongolica (Siberia)  Sinomenium acutum
" phillyraeoides  Sorbus chinensis (Korea)
" serrata  Spiraea betulifolia
" variabilis  " cantoniensis
Rhamnella fraguloides (Korea)  " thumbergii
Rhamnus crenata (Korea)  Styra japonica
Rhododendron dauricum  Symphosia paniculata (Himal)
Rhododendron koreoides  Taxus cuspidata
Rhus javanica  Thuja orientalis (Korea)
" orientalis  Tripterygium regelii
" succedanea (Himal)  Ulmus japonica
" sylvestris (Korea)  " laciniata
" trichocarpa  " parvifolia (Korea)
" verniciflua (Himal)  Viburnum tomentosum
Rosa roxburghi  Vitis thunbergii
" rugosa (Korea)  Zanthoxylum piperitum (Korea)
" wichuraiana (Korea)
Rubus corchorifolius
" corcanus (Korea)  Sambucus gmeliniana
" crataegifolius (Korea)  There are a few trees and shrubs that have been introduced
" palmatus  into the United States from Siberia. This list is as follows:
" phoenicolasius (Korea)
Sambucus gmeliniana

There are a few trees and shrubs that have been introduced into the United States from Siberia. This list is as follows:

Abies sibirica (Russia)  Carex aurentiaca
Alnus glutinosa (Korea)  " jubata
Berberis sibirica  " microphylla (China)
Carex aquatilis  " spinosa
Clematis songarica
Cornus alba
Crataegus dahurica
  " deungarica
  " sanguinea
Larix dahurica
Populus laurifolia
Potentilla secaloviana
Prunus sibirica (China)
Rhamnus erythroxyylon
Rhododendron parvifolium (Korea)
Rhodothamnus chamaecistus (Alps)
Ribes acicular
  " dikuschka
  " warscewicza
Sedum populifolium
Sibiraea laevigata
Sorbaria grandiflora
  " bellaflora (Japan)
  " serrifolia (Japan)

There is quite a list of plants that have come to us from their native home in the Himalaya mts. of Asia. These can hardly be classified according to countries, as the general region includes parts of China, Central Asia, Afghanistan, India, and the small states of Nepal, Sikkim, and Bhutan. This list of introduced woody plants native to the Himalayan mts.
is as follows:

Abelia triflora
Abies pindrow
  " webbiana
Acer acumatum
  " caucasicum
  " caudatum
  " hookeri
  " sikkimense
  " sterculiaeum
Aesculus indica
Alnus nitida
Andracne cordifolia
Arundinaria anceps

Aucuba hishalaica
Berberis angulata
  " aristata
  " chitria
  " concinna
  " hookerii
  " lycium
  " umbellata
  " virens
Botula alnoides
  " utilis
Buddleia paniculata
Buxus wallichiana.
Caryopteris involucrata
" gerardiana
" tragacanthoides
Cedrus deodara
Clematis acutangula
" connata
" gouriana
" grata
" montana
Cotula nepalensis
Coriaria terminalis
Corylopsis griffithii
Corylus jacquemontii
Cotoneaster acuminata
" lindleyi
" microphylla
" rosea
" rotundifolia
" simoni
Deutzia corymbosa
" otamina
Enkianthus deflexus
Evonymus echinata
" grandiflora
" hemsleyana
" pendula
Fraxinus floribunda, Wall
" xanthoxyloides
Gaultheria nummularioides
" pyroloides (Japan)
" trichophylla
Heteromeles himalaica
Hippophae salicina
Holboellia latifolia
Hydrangea anomala
" heteromalla
" robusta
Hyperticum cernuum
" hookerianum
" lysimachiioides
" reptans
Ilex digyna
Indigofera gerardiana
" heptapotata
Jasminum humile
Juniperus recurva
" squamata
Ligustrum mosoalangianum
Lonicerangustifolia
" discolor
" griffithii (Afghan)
" lanceolata
" myrtillus
" obvata
" purpurascens
" quinquedentata
" rupicola
" spinosa
" tomentella
" 
Hilali-nehale-ch
Hollia thyriflora
Parrotia jacquemontiana
Parthenocissus himalayana
Perovskia atriplicifolia
Philadelphus nepalensis
    " tomentosus
Picea smithiana
    " spinulosa
Pieris formosa
Pinus excelsa
Piptanthus nepalensis
Polygonum vaccinifolium
Prunus corasoides
    " cornuta
    " jacquemontii
    " rufa
Pyracantha crenulata
Pyrus sikkimensis
Rhododendron anthopogon
    " campanulatum
    " glaucum
    " lepidotum
Ribes alpestre
    " glaucium
    " himalayense
    " tenuis
Rosa brunonii
    " macrophylla
    " sericea
    " webbiana
Rubus macilentus
Sarcococca hookeriana
    " saligna
Senecio scandens
Skimmia lauracola
Sorbaria aitchisonii
    " lindleyana
Sorbus cuspendata
Spiraea bella
    " canescens
    " gracilis
    " vacciniifolia
Staphylea emodi
Tsuga dumosa
Viburnum cotinifolium
    " cylindricum
    " foetidum
Vitis flexuosa
From the general region that can be classified only as West Asia, we have received the following trees and shrubs:

- Acer cappadocicum
- Albizzia julibrissin
- Atriplex buxifolia
  - " frutescens
  - " spinosa
- Calophaca wolgarica
- Caragana decorticans
- Celtis caucasica
- Clematis orientalis
- Colutea orientalis
- Cornus australis
- Crataegus tenacifolia
- Danaë racemosa
- Ephedra foliata
  - " nebrodensis
- Evonymus nana
- Fagus orientalis
- Ficus carica
- Fraxinus syriaca
- Halimodendron halodendron
- Hedera Colchica
- Hyssopus officinalis
- Jasminum officinalis
- Liquidambar orientalis
- Lonicera hispida
  - " tatarica (S. Russia)
  - " webbiana
- Lycium ruthenicum (S. Russia)
- Morus nigra
- Phillyrea decora
- Polygonum baldschuanicum
- Prunus armeniaca
  - " cerasifera
  - " communis (N. Afr)
- Pterocarya fraxinifolia
- Pyrus triloba
- Quercus macranthera
- Rhamnus imeretina
  - " opaethulaefolia
- Rhododendron collettianum
- Rosa beggariana
  - " ecae
  - " foetida
  - " hemisphaerica
  - " persica
- Salix modesti
- Syringa caodi
  - " persica
- Tamarix hispida
- Ulmus elliptica
- Viburnum orientale
The following short list is of the introduced woody plants that are native to Turkestan:

- *Atrophaxia muschketowii*
- *Berberis heteropoda*
  - "*integerrima* (Persia)"
  - "*oblonga*
- *Calophaca grandiflora*
- *Coloneaster ignava*
- *Evonymus semenovii*
- *Exochorda korolkowi*
- *Praxinus potamophila*
  - "*raibocarpa*
  - "*sogdiana*

The following are introduced from Persia:

- *Rosa elymaitica*
- *Acer cinerascens*
- *Aethionema grandiflorum*

These woody plants come from the region of the Caucasus Mts:

- *Acer insigne* (N. Persia)
  - "*trautvetteri*
- *Alnus subcordata* (Persia)
- *Berberis sinensis*
- *Betula medwedjewi*
  - "*raddeana*
- *Ceragana grandiflora*
- *Daphne caucasica*
- *Picea orientalis* (Asia Minor)
- *Prunus fonsliana*

- *Lonicera altmanni*
  - "*korokkovi*
  - "*olgae*
- *Lycium turcomanicum*
- *Prunus sweginzowi*
- *Pyrus heterophylla*
  - "*korshinsky*
- *Rosa alberti*
- *Sorbus tianschanica*
- *Ulmus pumila*

- *Lonicera iberica*
- *Parrotia persica*
- *Rosa elymaitica*

- *Quercus pontica*
- *Rhododendron caucasicum*
  - "*smirnovi*
  - "*ungorni*
- *Rosa centifolia*
- *Stephyla caucasia*
- *Tamarix odoesana*
- *Vitis vinifera*
- *Zelkova ulmoides*
We come now to the native European plants that have been introduced into cultivation in the United States. We find these contributions less numerous than those from central and eastern Asia. Since the European countries are small, and each plant is as a rule native to several countries, it is almost impossible to list our introductions according to countries. Accordingly, the following list is of trees and shrubs introduced from Europe:

Abies cephalonica
  " pices
  " pineapo
Acer heldreichi
  " hyrcanum
  " lobeli
  " opalus
  " poronai
Adenocarpus complicatus
  " decorticans
Aesculus hippocastanum
Alnus cordata
  " viridis
Alyssum gemonense
  " saxatile
Amelanchier ovalis
Arbutus unedo
Artemisia abrotanum
  " absinthium
  " arborescens
  " pontica
Berberis cratica
Betula pendula (Asia Minor)
  " pubescens
Bupleurum fruticosum
Calluna vulgaris (Asia Minor)
Calycotome spinosa
Clematis campaniflora
Colutea brevialata
Cornus sanguinea
Coronilla emeroides
  " emerus
Corylus avellana
Crataegus ambiguity
  " nigra
Cytisus ardoini
  " australis
  " decumbens
  " emeriflorus
  " hirsutus
  " leucaenthus
  " nigricans
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<thead>
<tr>
<th>Cytisus purpureus</th>
<th>Genista ovata</th>
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<tr>
<td>&quot; ratisbonensis</td>
<td>&quot; piloca</td>
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<td>&quot; scoparius</td>
<td>&quot; radiata</td>
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<td>&quot; supinus</td>
<td>&quot; sagittalis</td>
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<td>&quot; triangularis</td>
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<td>Daboecia cantabrica</td>
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<td>Daphne alpina</td>
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<td>&quot; arbuscula</td>
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<td>&quot; blagayana</td>
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<td>&quot; cneorum</td>
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<td>&quot; petraea</td>
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<td>&quot; sophia</td>
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<td>&quot; striata</td>
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<td>Erica carnea</td>
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<td>&quot; ciliaris</td>
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<td>&quot; cinerea</td>
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<td>&quot; mediterranea</td>
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<td>&quot; tetralix</td>
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<td>&quot; vagans</td>
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<td>&quot; verticillata</td>
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<td>Fagus sylvatica</td>
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<td>Forsythia europaea</td>
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<td>Fraxinus excelsior (Asia Minor)</td>
<td>&quot; pyrenaica</td>
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<td>Genista aetnensis</td>
<td>&quot; splendida</td>
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<td>&quot; anglica</td>
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<td>&quot; ephedroides</td>
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<td>&quot; germanica</td>
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<td>&quot; hispanica</td>
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<td>&quot; horrida</td>
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<td>&quot; nyssana</td>
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<td>Globularia cordifolia</td>
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<td>Hedera helix</td>
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<td>Helianthemum alpestre</td>
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<td>&quot; appeninum (Asia Minor)</td>
<td>&quot; lasianthus</td>
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<td>&quot; ocymoides</td>
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<td>Hypericum coris</td>
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<td>Iberis saxatilis</td>
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<td>&quot; campoflorens</td>
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<td>&quot; tenoreana</td>
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<td>Laburnum alpinus</td>
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<td>&quot; anagyroides</td>
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<td>Larix decidua</td>
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<td>Lithospermum fruticosum</td>
<td>&quot; nigra</td>
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<td>Lonicera alpigena</td>
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<td>Moltkia petraea</td>
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<td>Ocnie rotundifolia</td>
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<td>Philadelphus coronarius</td>
<td>&quot; ficca excelsa</td>
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<td>Picca excelsa</td>
<td>&quot; enorika</td>
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<tr>
<td>Pinus leudodermis</td>
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<td>Pineus luseederma</td>
<td>Ribes vulgare</td>
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<tr>
<td>&quot; montana mughieus</td>
<td>&quot; montana mughieus</td>
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<td>&quot; pouse</td>
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The following introduced plants are native to a large area including Europe, particularly southern and eastern Europe, and West Asia:

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Populus nigra
Prunus avium
  " cerasus
  " domestica
  " incana
  " insititia
  " mahaleb
  " nana
Punica granatum
Pyracantha coccinea
Pyrus amygdaliformis
  " communis
  " pumila
  " salicifolia
Quercus cerris
  " lanuginosa
  " sessiliflora
Ribes nigrum
  " orientale
Rosa cinnamomea
  " dumetorum
  " gallica
  " glutinosa
  " mollis
  " spinosissima
  " villosa
Salix daphnoides
Sambucus racemosa
Smilax aspera

Smilax excelsa
Sorbus aucuparia
  " umbellata
Spiraea crenata
  " hypericifolia
Tamarix pentandra
Toucrum chaemadrys
  " montanum
Tilia tomentosa
Ulmus glabra
  " laevis
Viburnum lantana
Vinca major
  " minor
Vitex agnus-castus
The following introduced plants have a wide distribution throughout Europe, west Asia, and north Africa:

- Alnus glutinosa
- Ilex aquifolium
- Populus tremula (Siberia)
- Quercus robur
- Rhamnus frangula
- Salix alba
  " purpurea

The following list is of plants native to northern Europe and Asia:

- Chimaphila umbellata
- Clematis alpina
- Cotoneaster integerrima
  " melanocarpa
- Ephedra distachya
- Larix sibirica
- Ledum palustre
- Lonicera caerulea
- Picea obovata
- Pinus cembra
  " sylvestris
- Prunus fruticosa
  " padus
- Sambucus nigra
- Solanum dulcamara
- Taxus baccata
- Thymus serpyllum
- Ulmus foliaceae
- Viburnum opulus

There are several species of woody plants introduced into the United States from the native home in southern Europe and north Africa which might be called the western Mediterranean region. This list is as follows:
Alyssum spinosum  Jasminum fruticans
Calycotome villosa  Juniperus thurifera
Cistus albidus  Lavandula spica
" crispus  Ligustrum vulgare
" hirsutus  Lonicera arbores
" ladaniflorus  " biflora
" laurifolius  Ononis fruticosa
" monspeliensis  Phillyrea angustifolia
" populifolius  Quercus humilis
" salvifolius  " mirbecki
" villosus  " suber
Colutea arboroseaens  Ribes grossularia (Gaue)
Coriaria myrtifolia  Rosa sempervirens
Crataegus oxyacanththa  " sicula
Cytisus multiflorus  Sorbus terminalis
" purgans  Vinca difformis
" saccifolius
Erinacea pungens
Genista cinerea
Helianthemum umbellatum
Iberis gilbraltarica
The three following plants are natives of north Africa, and have been introduced from there:
Codrus atlantica  Quercus castaneaefolia
Ephedra altissima
From the general Mediterranean region, including southern Europe, western Asia, and northern Africa, we have received the following plants:
Duxus sempervirens
Castanea sativa
Celtis australis
Clematis flammula
" vitalba
Cotoneaster racemiflora
Crataegus azarolus
" monogyna
Daphne olearia
Prunus angustifolia
Hypericum hircinum
Juniperus macrocarpa
" oxycedrus
" phoenicea
Lonicera etrusca
Lonicera impéxra
" periclymenum
Pinus halepensis
" pinaster
Prunus prostrata
" spinosa
Quercus cocifera
Rhamnus alaternus
Rhododendron ponticum
Rosa moschata
Satureja montana
Sorbus domestica
Spartium junceum
Tamarix gallica

Southeastern Europe, the Balkan peninsula, and Asia Minor, which could be called the eastern Mediterranean region, has given us the following plants:

Abies nordmanniana
Acer orientale
Aethionema iberideum
Anthyllis hermanniae
Arbutus andrachne
Bruckenthalia spiculifolia
Carpinus orientalis
Clematis ciriíosa
Daphne collina
Hypericum collina
Hypericum olympicum
Juniperus drupacea
" excelsa
Laburnum caramanicum
Ostrya carpinifolia
Phillyrea latifolia
Pinus nigra
Prunus laurocerasus
Salix incana

The following trees and shrubs have been introduced from Asia Minor:
Abies cilicia (Syria)  Cotulea cilicia
Aethionema coridifolium  Daphne pontica
" diastrophis  Fontanesia phillyraeoides
" pulchellum  Holikia caerulea
Alyssum argenteum  Frutus microcarpa
Andrachne colchica  Quercus libani (Syria)
Ampelopsis orientalis (Syria)  Rhannus libanotica
Berberis crataegina  Rosa damascena
Codrus libani (Syria)  " phoenicia

From the island of Cyprus we have received these two oaks:
Quercus alnifolia  Quercus venosa

Only a few trees and shrubs introduced from the southern hemisphere have proved hardy in temperate United States. These have come mostly from the higher mountain regions of South America, Australia, New Zealand, and Tasmania, and may be listed as follows:

**Chile:**

Araucaria imbricata  Eschallonia virgata
Berberis buxifolia  Lycium chilense
" darwini  Pernettya mucronatum
" empetrifolia  " rupicola
" hakeooides  Podocarpus andina
" ilicifolia  " saligna
Coeltrum parqui  Ribes gayanum
Diostea juncea (Peru)  Saxegothaea conspicua
Eucromocarpus scaber

**Peru:**

Buddleia globosa  Margyriocarpus setosus (Chile)
Fuchsia magellanica (Chile)
Brazil:

Colletia cruciata

Australia:

Eucalyptus coriacea

New Zealand:

Corokia cotoneaster
Veronica amplexicaulis
" anomala
" balfouriana
" buxifolia
" cupressoides

Tasmania:

Eucalyptus coccifera
" urnigera

Eucalyptus gunni (Tasmania)
Veronica elliptica
" hectori
" pinguifolia
" speciosa
" traversi

Podocarpus alpina

Bibliography


BOTANIC GARDENS AS TESTING GROUNDS

Botanic gardens are grounds given over exclusively to the growing of plants of all kinds for the purpose of study, with the aim of ultimate advancement and wider diffusion of botanical knowledge. The maintenance of a collection of native and exotic plants is the basis of such a garden. The trend of study at a particular garden may be along all lines, or along such specific lines as adaptability of these plants to particular climatic and soil conditions, their use in landscaping, improvements by hybridization, or simply acquaintance with the various kinds of plants; the scientific and educational possibilities of botanic gardens are inexhaustible.

All modern botanic gardens are as a rule quite similar in general organization, usually having a director-in-chief, a scientific staff, a head gardener, and assistants. Fortunate is the garden that has one truly capable director, under whose guidance is has developed from humble beginnings to inestimable worth.

Some so-called botanic gardens are devoted entirely to scientific research, and in the strict sense of the term could not be included under botanic gardens; such a garden is the Desert Botanical Laboratory of the Carnegie Institute of Washington, which is located at Tucson, Arizona. Another type of so-called botanic gardens includes such gardens as Prospect Park in Brooklyn, where the trees are all labeled; this particular park is said to contain more species of trees, including both native and exotic ones, than are to be found anywhere else in America except in a true
botanic garden or arboretum. But even at this, Prospect Park is little more than a public pleasure park, and cannot be called a true botanic garden. Some gardens may combine the features of a public park with the features of a scientific institution for research and education, and may then accurately be called botanic gardens; such gardens are the Missouri Botanical Garden at St. Louis, and the new Brooklyn Botanical Garden.

There are comparatively few truly botanic gardens in the United States, and the best of these are those developed exempt from government auspices, and either under private control or closely affiliated with a university; in Europe, botanic gardens are much more common, and are for the most part under government auspices. C. Stuart Gager, director of the Brooklyn Botanic Garden, has given the following figures: there are approximately 325 botanic gardens outside of the United States, and about 16 in the United States, of which all are college or university gardens. There is a National Botanic Garden at Washington, D. C., but it has not as yet been developed to the extent of several private or semi-private ones. It is not feasible to think of one National Arboretum in which plants from all the diverse regions of our country can be grown; the conditions are too dissimilar for that. For example, one could never get a true understanding of such desert plants as cacti and yuccas by planting them in a botanic garden in the east; collections of them must be assembled where all factors are favorable to their natural growth. A truly National Arboretum would necessarily consist of a number of well-equipped branch stations in various parts of the country all under one con-
control, one director-in-chief, and probably having one common publication. The garden would need to be permanent; probably affiliation with an endowed university would make more toward permanence than government support and control, due to the evils of politics which, under government auspices, might easily enter into to interfere with the best research work.

An arboretum is a particular type of botanic garden, given over to woody plants alone, and so of course including trees, shrubs, and woody vines. Let us first consider arboretums, since it is the plant materials of the arboretum with which we are most concerned in landscape planting. There are two possible types of arboretums, the large ones intended for nationwide and worldwide benefit, and the smaller local ones. Both are testing grounds for plant materials, but differ from each other in size and in the broadness of their aims. Following are the more important things that we must expect of the large arboretum if it is to go beyond being a mere plant museum and is to be a testing ground for better landscape materials:

(1) There should be a wide range of plants, both native and exotic species, brought together from all localities for the purpose of finding additional species adaptable to the specific locality. The arboretum might well be supplemented by plantings in city parks and university grounds.

(2) Labels bearing Latin names and common names, localities, and planting dates should be permanently attached to every plant or plant group.

(3) There should be sufficient space for one specimen of each
species to reach full development uncrowded by neighboring plants. Preferably, there would also be a group of the same species, showing how crowded conditions influence the development.

(4) The arboretum should occupy land having varied topography, so that each plant may be given the best soil, slope, moisture and exposure conditions for its particular needs.

(5) There should be roads and walks, though comparatively few roads, so arranged that all parts of the arboretum may be reached and viewed.

(6) There should be a definite order in the plantings according to relationships.

(7) The whole arboretum should be planned as far as possible to show beautiful and natural pictures through plant associations, giving pleasing landscape effects.

(8) Preferably, there should be some native growth, some forest with both young and full-grown trees, shrubby growth, and open spaces, all of which will serve as background for the artificial plantings and will help out the total effect.

(9) The arboretum should serve to some extent as a public park, open to all, and a place of both recreation and learning.

The smaller arboretums, those of cities, villages, townships, and perhaps occasionally of individual estates, should come up to approximately the same standards, though on a much smaller scale to be sure. Park commissions, or any bodies having charge of any public grounds, cemetery associations, and numerous other groups might advantageously develop a small arboretum.

The most satisfactory and useful arboretum, large or small, as
yet developed in our country is the Arnold Arboretum of Harvard University. The Arboretum was founded in 1872 by the trustees of the will of James Arnold, who had left his estate of $100,000 to be devoted to the advancement of agriculture or horticulture. It is indeed fortunate that someone was far-sighted enough to see the future value of a large and permanent arboretum for the purpose of scientific research and experiment in arboriculture, forestry, and dendrology, as well as its value as a museum of trees and shrubs suitable to the climate of Massachusetts. At any rate, the legacy was given over to the President and Fellows of Harvard college to develop and maintain an arboretum. The West Roxbury district of Boston was decided upon as the place, and 125 acres were set apart; that has now been increased to 250 acres of natural gardens, with ponds, meadows, hills, cliffs, valleys, and Bussey Brook. In 1882 a contract for 1000 years was made between the university and the city of Boston, by which the Arboretum should have entire control of all grounds and collections and should open them to the public every day of the year, and in return the city should add certain adjoining lands, should build and maintain the walks and drives, police the grounds, and assume all taxes. The Arboretum thus became a part of the park system of Boston. That this contract has been satisfactory, and will continue to make for permanence of the Arboretum, is shown by the remarkable development so far made.

As a testing ground for trees and shrubs, the Arnold Arboretum has reached a high point; it is chiefly through this agency that innumerable plants have been introduced from their native homes, mostly from eastern Asia, directly to American gardens. Let us
see how this great arboretum is organized. It might well be divided into the three following units:

(1) First of all, the Arnold Arboretum is an out-of-door museum, where the public can see in orderly and convenient arrangement all the trees and shrubs that are hardy in the north temperate zone. It contains the largest number of plants from eastern North America, northern Europe, Siberia, China, and Japan to be found in America. So far as conditions will allow, these plants are grouped into genera and families, and attempts made to harmonize the groups with natural surroundings; every attempt is made to keep the grounds in as near their natural state as possible, fitting new plant materials in with the indigenous material. The most outstanding natural feature is Hemlock Hill, where the hemlocks and an occasional white pine, silver maple, or birch are so dense that the sun's rays can scarcely penetrate. Also, there are several old New England trees that have been carefully pruned ever since the foundation of the Arboretum in 1772, and so have been kept in a state of good health. All of the trees planted in the Arboretum have been arranged by genera, and shrubs of the same genera are planted with the trees. The genera are then grouped into families so far as possible, beginning with the magnolias at one gate and ending with the conifers at another gate. The attempt has been made with North American species to plant one specimen where it has room for full and unhindered development, and also to plant a group of the same species to show the habit under different conditions; with Old World species, usually only one specimen is planted. A representative of almost every genus stands near the drive. The shrubs of genera having no
hardy trees are planted in sequence in a series of formal beds known as the Shrub Collection. In addition there are some supplementary collections of large shrub genera planted in sheltered positions, where new species or species requiring special care are planted. The vine collection proper is accommodated by a trellis around three sides of the Shrub Collection; other vines are growing by the low stone wall surmounted by a wire fence which surrounds the Arboretum grounds.

The site of the Shrub Collection has several disadvantages, for it is low-lying and consequently subject to poor drainage and also early and late frosts; it is thus a good test ground for hardiness. The shrubs are planted in parallel beds 10 ft. wide and separated by grass paths 5 ft. wide. The shrubs are planted in a single row down the center of the beds, giving each specimen ample room for development. This arrangement is not beautiful, but it is convenient and useful and serves its purpose. All the species and forms of shrubs from the northern hemisphere that are hardy can here be viewed side by side, and their values appraised by comparisons; there is probably no shrub collection in existence more instructive for students, landscape gardeners, and plant lovers. It is sometimes said that it offers "hardy shrubs for any and every garden and for any and every place in any and every garden".

We are still concerned with the Arboretum as an out-of-door museum. If this is one purpose of it, then the plants should all be well labeled, so that the public can know their names. All large trees are marked with metal labels, 4 inches by 6 inches, brown in color with both the Latin and English names of the plant in black,
nailed at about the height of the eye; smaller plants and those in
the Shrub Collection are marked with similar labels on iron stands
by the specimen. In addition, every important plant in the Arbor-
etum has a small zinc label with its name and record attached to a
branch. There are now between 5000 and 6000 tree and shrub species
and varieties growing in the Arboretum, representing about 87 fam-
ilies and 325 genera from all parts of the northern hemisphere;
plants from the southern hemisphere have been tried, but for the
most part have not proved hardy.

(2) Secondly, the Arboretum incorporates a well-equipped labor-
atory and dendrological station for the scientific study of trees.
Whenever a tree is permanently planted, its location is marked on a
map, and a detailed card catalog with the origin and history of each
plant is kept. This catalog is of additional value since the Arnold
Arboretum is the only place in the country where the behavior of
woody plants over as long a period as 50 years has been recorded.
In addition to the living plant collection, the Arboretum has a
valuable herbarium and library. The herbarium is said to be the
best place to study the forest flora of the Orient, for it con-
tains probably the best representation of Japan's ligneous flora,
and also contains quite valuable Chinese and Siberian collections.
In addition there are large collections of native North American
trees and shrubs, and probably the greatest collection of cone-bearing
plants. In all, the herbarium totals about 250,000 specimens.
The library is unequaled by any other library in America in volumes
and pamphlets relating to arboriculture, forestry, and dendrology;
nowhere else can equal facilities for the study of woody plants be
found. There are approximately 35,500 volumes and 8000 pamphlets, and also about 10,000 carefully catalogued photographs. The Arboretum is not a school of landscape gardening or of forestry, but a station for the purpose of increasing our knowledge of woody plants, with regard to their individual scientific relationships, their economic possibilities, their cultural requirements, and other things; such work is the basis of successful landscape gardening.

(3) In the third place, the Arnold Arboretum is a bureau of publication and exploration. A "Bulletin of Popular Information" is printed, with notes of both economic and horticultural value on hundreds of plants. A quarterly "Journal of the Arboretum" is also published. In addition, from time to time numerous other works have been prepared in the laboratory, herbarium, and library of the Arboretum and published by the Arboretum. Explorers have been sent to every temperate region of the northern hemisphere, the tropics, Chili, South Africa, and Australia in search of living plants and seed. The greatest number of exotic plants has been brought from eastern Asia. These collectors in foreign lands have not only introduced into the gardens of Europe and America large numbers of new plants and plants long lost to cultivation, but they have also established relationships in all countries with the botanic gardens, nurserymen, and other interests. As a result has come extensive exchange through which further exploration and more far-reaching results are made possible.

This is what the Arnold Arboretum has done, and what it is doing. It is nurturing a beautiful collection of woody plants from all parts of the world, studying them for the sake of knowledge, giving
the public access to them, and distributing its surplus materials to other arboreta and botanic gardens, nurserymen, and garden lovers of five continents, and it gives freely of its information to those interested. It has performed a most useful service to horticulture and arboriculture, and there is probably not a park and garden in the United States that has not profited, either directly or indirectly, from the Arnold Arboretum. For example, Berberis thunbergi and Clematis paniculata are only two of the myriad exotic plants which were first raised in America at the Arnold Arboretum, and disseminated from there.

Collections of trees have been made for several hundred years, and since about the middle of the 19th century, arboreta have been made with a scientific purpose. In America, the Arnold Arboretum is by far the greatest institution of its kind. In Europe, the Royal Gardens at Kew, London, contain the largest collection of temperate woody plants, and probably the largest number of species of trees and shrubs which has ever been brought together, and this is made possible by the lenient climate of England. The most complete shrub collection in Europe is at the Fruticetum Vilmorinianum, near the Arboretum National at Les Barres, France, and there is a very valuable collection of tropical trees at the Dutch Colonial Garden at Uitenzorg, on the island of Java.

There are innumerable arboreta, but never too many, for there is always more that can be learned about trees and shrubs and their adaptability to various localities. Nor can there ever be too much public education; every institution of learning and every city, town, and village might profitably have a collection of properly marked
woody plants.

In the strict sense of the terms, a botanic garden has a broader meaning than arboretum, and so is a testing ground for all plant materials with the emphasis usually given to herbaceous plants. Such gardens are equally important with arboretums, and perhaps there is even more need for small gardens of this type than for small arboretums. It is an interesting fact that Canada has realized the value of these small gardens; so-called "demonstration gardens" are being established throughout the Dominion. These are of one or two types, either special gardens, as rose or peony gardens, or miscellaneous gardens, containing both shrubs and herbaceous plants. Both types have the same objects, to bring to the public attention the flowering plants adapted to the various localities, and to encourage the use of them in beautifying the home and its surroundings. These gardens are laid out by horticultural societies in the various localities, and are maintained by membership fees of the societies, in some cases aided by municipal or township grants. All of these gardens are indorsed by the Canadian Horticultural Council, which makes the following requirements:

(1) The gardens must be neat, orderly, and well-marked.

(2) Plants are for the most part donated by nurserymen, and must be marked with the name of the donor.

(3) Plants may be exchanged between gardens, but none may be sold.

If this plan works out as it is hoped, it will be beneficial all around; botanical information will be obtained, horticultural know-
ledge will be disseminated, landscapes will be beautified, business
in the municipalities having gardens will be increased as people
are drawn there, and the nurserymen will profit from increased ad-
vertising and sales.

Of the large botanic gardens in the United States, probably the
most outstanding are the New York Botanic Garden, which is the
largest purely botanical museum in the country, if not in the world;
the Brooklyn Botanic Garden, which is a comparatively young garden,
will no doubt make great developments; the Harvard Botanic Garden
at Cambridge, Mass.; and the Missouri Botanic Garden at St Louis,
Mo., which is commonly called "Shaw's Gardens". In 1859, Henry
Shaw established the garden by a gift of money and land; in 1885
he established the Henry Shaw School of Botany at Washington Uni-
versity. Since that time the school and the garden have been closely
united, with professors of the school acting as directors or assis-
tant directors of the garden. The director is appointed by a Board
of Trustees provided for in Mr. Shaw's will. The Garden is support-
ed entirely by funds left by the founder, and the grounds are open
to the public every day except Christmas, New Year's, Fourth of
July, and Labor Day.

The Missouri Botanical Garden is the only place in the United
States where one can get a thorough course of study in preparation
for taking charge of botanic gardens. It is most essential, if we
are ever to hope to have more and better gardens, that we have cap-
able, trained men at the head of them, men who have had a broad gen-
eral information, and additional specific information in connection
with a scientifically managed garden.
One aim of the Missouri Botanical Garden is to offer such a course; in the combined university and garden it has the facilities. At the university, the student can get courses in the principles of botany, systematic botany, plant pathology, physics, and other related topics, in addition to the general education enabling him to express himself and to instruct others. At the garden, he can get instruction in plant cultivation and propagation, the care and management of greenhouses, labeling, and other specialized work. There is a special vegetable garden where the student may study vegetable growing, and a forcing house, where the work may be carried on throughout the year.

There are approximately 11,000 species of plants growing in the Garden; of these, about 5,000 are hardy, and are planted outdoors, while the remaining 6,000 are mostly tropical and subtropical species which are grown in the conservatories. There is a palm house containing about 150 species, both those of value economically and also those of interest for their unusualness. The conservatory called the Economic House contains a varied collection of tropical plants, as those producing rubber, spices, drugs, oils, perfumes, fiber, tea, coffee, dyes, etc. There is a Cycad House, containing 40 different cycad species, some of which are most interesting and unusual. The Succulent House contains a large collection of desert plants, and the Fern House, through which a stream flows, contains numerous species of ferns and their allies. The main greenhouse range includes a Floral Display House, devoted to various floral displays at different seasons; an Aroid House, housing a collection of epiphytes and terrestrial aroid plants; the Tropical
Fruit House, in which citrus and other tropical fruits are grown; the Bromeliad House, devoted especially to the pineapple and its relatives, and having the vanilla plant and the goose plant as the most interesting specimens; and the Forced Fruit House. The Linneean House is the one greenhouse remaining which was built during Mr. Shaw's lifetime; it now contains coniferous and ericaceous plants. Outdoors, there is a formal garden with three pools of hybrid waterlilies; a Rose Garden, bordered by hawthorns, containing several hundred rose varieties; an Iris Garden, containing the peony and iris collections, and with the Linneean House as the central feature; a large Formal Garden, with a pattern bedding of tropical plants, outlined by a low privet hedge, with flower boxes and vases at the ends of the walks; the Knolls, which is a tract informally planted with trees, shrubs, herbaceous perennials, and annuals, with a series of pools with water plants; an Economic Garden, devoted to economic plants; a Medicinal Garden, in which are to be found over 200 species; the North American Tract, which is a large area devoted to native trees and shrubs which are hardy in St. Louis; and a Test Garden, where the public can see the novelties which are offered each year by growers both in this country and abroad.

All of these collections are open to the public. In addition, there is an herbarium of about 800,000 sheets, a library containing some 50,000 books and pamphlets, a museum containing an exhibit of economic fungi, laboratories, experimental greenhouses, and private growing houses which are used by students and are not open to the public. The School for Gardening occupies the old country residence of Mr. Shaw.
The Missouri Botanical Garden has two extensions. The Gray Summit extension is a 1,600 acre tract on the Meramec River, about forty miles west of St. Louis; the land can be developed into a natural park, which, with the eight large new greenhouses that will house the orchid collection, will make a worthwhile addition to the Garden. The other extension is a tropical station at Balboa, in the Panama Canal Zone. A tract of land was set aside there in 1926, and is maintained under the management of Mr. C. W. Powell. The world-famous Powell collection of orchids, which was given to the Garden, and other tropical acquisitions, will be kept at the Balboa extension.

In all our botanic gardens, our aim should be not only to make them scientific institutions of the highest rank, but to make them beautiful and attractive as well. There are numerous schemes that may be followed in the design, but of course no artificial scheme can ever be as satisfactory as a natural garden, combining tree and shrub growth with herbaceous plants.
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THE USES OF HORTICULTURAL MATERIALS
FOR THE DIFFERENT PURPOSES OF
LANDSCAPE DESIGN

One of the most conspicuous uses of horticultural materials is the planting of street trees. Nothing can add more to a city or town, or, on the other hand, subtract more if poorly executed, than the street tree planting. T. Glenn Phillips (6) gives three types of street planting:

(1) Overarching type, with the trees used to form a canopy over the street.

(2) Avenue type, with straight or formal trees to produce vistas.

(3) Decorative type, where small trees are used, forming decorative lines along facades of buildings.

The choice of particular trees to be used on any street must of course be influenced by the possibilities of the trees under the specific existing conditions, the nature of the street, and the final effect desired. Trees at the best have rather unusual hardships to withstand; they must endure smoke, dust, often lack of water, lack of room for root development, and too much shade. Any successful street tree must have the following qualities, according to William Solataroff (7):

(1) Hardiness and ability to withstand unfavorable city conditions.

(2) Strength to resist wind, snow, and sleet.

(3) Ability to endure transplanting, and to be easily propagated.
(4) Straightness and symmetry, and attainment of the desired form without being constantly pruned.
(5) Adaptability to the requirements of the public use of the highway.
(6) Immunity from insect attack.
(7) Ability to produce an abundance of shade.
(8) Cleanliness of habit.
(9) Longevity. The ideal tree is of medium rapidity of growth, and is long-lived.

The difficulties of listing trees suitable for street planting are evident, for the choice, of course, depends on the local conditions, as before mentioned. In any one locality, the number of trees suitable for street planting is as a rule quite limited. Taylor (9) gives three general lists of street and avenue trees; these lists, with a few additions, are as follows:

(1) Trees entirely hardy under all conditions:

Acer saccharum    Tilia euchlora
Quercus alba    Quercus alba
    " cocinea    " tomentosa
    " rubra    " vulgaris
    " velutina    " glabra

(2) Trees which should be selected with a thorough knowledge of the conditions under which they are to be used:

Acer platanoides    Fraxinus (in variety)
    " pseudoplatanus    Ginkgo biloba
Ailanthus altissima    Liquidambar styraciflua
Celtis occidentalis    Liriodendron tulipifera
Platanus orientalis  Tilia americana  
Phellodendron amurense  " platyphyllus  
Quercus palustris  Ulmus campestris  

(3) Trees which should seldom be used on streets:  
Acer negundo  Populus deltoides  
" saccharinum  " eugenei  
Aesculus hippocastanum  " nigra italic  
Betula (in variety)  Robinia pseudacacia  
Catalpa (in variety)  Salix (in variety)  
Gleditsia triacanthos  Sorbus aucuparia  
Platanus occidentalis  

For the southern states the following species may be added  
to the list of street and avenue trees often used:  
Carya pecan  Quercus nigra  
Cinnamomum camphora  " phellos  
Magnolia grandiflora  " virginiana  
Quercus laurifolia  Sabal palmetto  

The lists are of course not hard and fast set ones; some  
of the trees listed as very undesirable may be among the most  
suitable in certain localities, as Populus deltoides in western  
Kansas, and likewise, some listed as very hardy and desirable  
may fail to flourish under some specific conditions. In general  
the best selection of street trees is little understood in our  
country, and trees are planted without any consideration of their  
adaptability to the local conditions. An example of this is  
the widespread practice of planting avenues of elms and soft  
naples in blind attempts at the reproduction of the beautiful  
canopied New England streets.  

In planting any street, of such length that it passes  
through two or more soils that are quite different, the trees
must be carefully selected with regard to each soil, so that they will not grow more rapidly in one place than in another and so produce an uneven line.

The types of planting desired vary greatly with the kinds of streets to which they are to be applied. For business streets, trees must be used that can grow with very small root space, perhaps under an iron grating, and which can be easily transplanted at maturity, so that dead trees may be replaced. These trees would preferably be rather small trees, with a low head, so that they shade the sidewalks but do not spread and shut out the light and air. Phillips (6) suggests the horsechestnut as a good tree for the business district, though not for residence streets.

For formal avenues, a formal tree planting should be used, probably of mediumsized and not wide-spreading trees, such as the sugar maple. There should be no breaks in the lines of trees.

In residential districts, overarching trees are usually desired. However, the streets should be wide enough or the rows of trees far enough apart so that there is some opening in the middle of the arch for the admission of air and light. The distance apart of the trees in the row of course depends upon the size attained by the tree, and should be such that at maturity the branches meet, but interlace only slightly. Whether the trees are planted on the outside or inside of the sidewalk is a matter for local decision. Three different plans are possible, (1) planting all of the trees on the outside of the walk, (2) alternating, one outside and the next one inside, and (3) planting all of the trees inside of the walk. The first two plans are generally used, and both have proved satisfactory. The third
plan is being tried in a few places; Sacramento, California, is an example. Here, where one Development Co. has tried out the plan quite extensively, the sidewalk is next to the curb and the street, and the trees are planted in a straight line on the private property at a definite distance, usually about 6 ft., from the walk, and about 50 ft. apart on 50 ft. lots and 40 ft. apart on 40 ft. lots, making one tree to a house. On the whole the values of this plan weighed against the disadvantages do not seem great enough to advise the general substitution of this plan for the now accepted one of parkway planting. Sacramento's plan does increase the apparent width of the street, does clear the vista of the street by having all fixtures set inside the sidewalk, and does give more shade to the lawns and homes, but on the other hand there is greater chance for injuries to the trees and negligence in the care of them, there are objections on the part of the home owners to having water-plugs and other street fixtures set on their ground, and there is the possibility of an undesirable hedge-like effect hiding the houses from the street. It is usually desirable to vary the planting of nearby streets in a locality. If this is done, the intrusion of one species into a row of another species at a street intersection can be avoided by not planting either row quite up to the corner. In residential districts, provision must often be made for future widening of the street, and the trees should be set sufficiently far back from the street in such localities.

In planting suburban roads which will eventually become residential streets, the principles applicable to residential streets should be followed. Country roads should be planted as nearly as possible to suggest the natural type of planting.
For yards, any type of horticultural material that is adaptable to the specific conditions and fits into the whole design may be used. In congested city districts, the trees and shrubs that will thrive are more limited in number than in the more outlying and less congested districts, due to the smoke, drought, and soot. As a rule, native plants collected and introduced into congested districts fail to thrive. No trees requiring a great deal of water should be used, and usually smooth-leaved plants thrive better than rough-leaved ones. Coniferous evergreens usually fail in crowded city localities, or thrive poorly and lose their color; when planted, they require much attention, and numerous washings with a hose to prevent the pores from becoming clogged with soot. Taylor (8) lists the trees and shrubs most hardy under adverse congested city conditions: **Trees:**

- *Abies concolor*
- *Aesculus hippocastanum*
- *Ailanthus altissima*
- *Celtis occidentalis*
- *Cordia canadensis*
- *Crataegus (in variety)*
- *Fraxinus (in variety)*
- *Ginkgo biloba*
- *Juniperus virginiana*
- *Picea pungens*

**Shrubs:**

- *Aralia spinosa*
- *Berberis thunbergii*
- *Cornus (in variety)*
- *Evonymus americana*

- *Pinus montana mughus*
- " *sylvestris*
- *Platanus orientalis*
- *Quercus palustris*
- *Robinia pseudacacia*
- *Salix (in variety)*
- *Sophora japonica*
- *Tilia tomentosa*
- *Ulmus campestris*

- *Forsythia (in variety)*
- *Hibiscus syriacus*
- *Ligustrum (in variety)*
- *Physocarpus opulifolius*
Hibiscus (in variety) Syringa vulgaris
Spiraea (in variety) Viburnum (in variety)
Symphoricarpos (in variety)

For planting in parks, any climatically and aesthetically suitable materials may be used, though in the large informal areas indigenous materials are generally preferable to exotic ones.

The foundation planting is an important part of any home landscape. Some foundation planting is always desirable, serving to "tie" the house to the ground. Complete lack of any such planting is not desirable, nor is the contrasting situation, with a solid foundation planting completely around the house. The aim should be not to completely hide the entire house foundation, unless it is extremely ugly. An uneven foundation planting, usually higher at the corners of the house and at points of emphasis, is usually the most satisfactory type. Often only a few different shrubs species are used, and only a few plants of each. From a simple plan foundation plantings vary, up to very elaborate ones, with lower shrubs in the front and higher ones behind, and perhaps herbaceous flowering plants fronting the entire bed. Specimen shrubs may sometimes be introduced into the foundation, but are as a rule better in other beds or isolated.

Hedges play an important part in many landscape designs. Hedges may be either trimmed into a formal line, or may be allowed to attain their natural form. Practically any shrub, and many tree, species may be clipped to form hedges, if they are kept properly trimmed from the beginning, but usually it is preferable to use plants requiring a minimum of shearing.
Evergreens, particularly arbor-vitae and cedars, make very beautiful hedges both in summer and winter, though they are not very satisfactory west of eastern Missouri, since some individual plants are quite apt to die out every year and leave gaps. Broad-leaved evergreens are not satisfactory hedge plants, as they are of too open habit, and do not shear well.

Hedges have several uses in the landscape design. They may be allowed to grow high, to form a dense screen or fence. They are very often kept trimmed to a height of two or three feet and used as demarcation lines between properties, or as borders along walks or driveways, or enclosing a yard. Just how much of this type of hedge is desired in a planting depends upon the individual tastes. Dwarf hedges, only a few inches high, are often used to outline flower beds.

Vine-covered walls and fences may often be used to replace hedges as boundary lines and barriers. As wall covers, Hedera helix, Parthenocissus quinquefolia and P. tricuspidata cannot be surpassed; these are also valuable as covers for walls of houses, and buildings, chimneys, etc.; Hedera helix remaining evergreen all winter. Honey-suckles, Vitisia, Trumpet creeper, and climbing roses are some of the most valuable vines for fence covers, trellises, pergolas, and other structures.

Screens are important in many landscapes, being used to hide unsightly objects, to give background to a house, to afford protection from prevalent winds, and sometimes to add ornamental features. These screens may take the form of vine-covered fences, hedges, or deep border planting. Usually material of as dense a habit obtainable is to be preferred. Sometimes individual shrubs, planted a little distance apart, serve as a screen when viewed so that the row is foreshortened.
The shrub masses and trees enclosing lawns are termed collectively border planting. This material is usually more or less grouped, but may be a continuous border. Here specimen plants may be introduced to the best advantage. In all border plantings it is essential to properly group the tall-growing, medium, and low shrubs so as to have a total effect carrying from the higher ones down to the turf. In border plantings, the texture of the materials used must be taken into consideration; in the refined type of lawn shrubs of rather fine texture are usually desirable in the border plantings, while in broader areas, planted on a larger scale and for mass effects, materials of coarser texture may be used. Evergreens are usually sparingly introduced into border plantings, being of more value as specimens or as screens.

It is always well to keep in mind when using horticultural materials of any kind, that a simple planting and design well-done is much to be preferred to a more ambitious design that cannot be kept up.
Bibliography


COMPARISONS OF HORTICULTURAL MATERIALS
OFFERED FOR SALE BY NURSERIES IN DIFFERENT
PARTS OF THE UNITED STATES

The following comparisons were made from catalogues obtained from nurseries throughout the United States. For the purpose of this paper, the country is divided into five regions, as follows:

(1) Eastern region, including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia and West Virginia.

(2) Southern region, including North Carolina, South Carolina, Tennessee, Georgia, Florida, Alabama, Mississippi, Arkansas, Louisiana, Texas and Oklahoma.

(3) Central region, including Ohio, Kentucky, Indiana, Iowa, Missouri, Kansas and Nebraska.

(4) Northern region, including North Dakota, South Dakota, Minnesota, Wisconsin, and Michigan.


It is interesting to note how there are certain definite nursery centers, as one in the region of New York, Massachusetts, Connecticut, Pennsylvania and New Jersey, another in Tennessee, and another in California. In contrast, there are large areas in which very few nurseries are to be found, due of course to unfavorable climatic and soil conditions which make the business unprofitable.
Catalogs from the following nurseries in the eastern region
were used in compiling the comparative lists in this section of
my thesis:

New York

Hicks Nurseries, Westbury, L.I.
Amawalk Nursery, Amawalk
Chas. C. Curtis Co., Gallicoon
Geneva Nurseries, Geneva

Massachusetts

Bay State Nurseries, North Abington
Framingham Nurseries, Framingham
Cherry Hill Nurseries, West Newbury
Eastern Nurseries, Holliston
Gilette's Fernand Flower Farm, Southwick

Connecticut

Northeastern Forestry Co., Cheshire
Barnes Bros. Nursery Co., Yalesville
Hoyt Nurseries, New Canaan

New Jersey

Hess' Nurseries, Mountain View
Bobbink and Atkins, Rutherford
Lovett's Nursery, Little Silver

Delaware

H. Ernest Conwell, Inc., Milton

Maryland

Harricka's Nurseries, Berlin
Atlantic Nursery Co., Berlin

Pennsylvania

Andorra Nurseries, Chestnut Hill, Philadelphia
Elliot Nursery Co., Pittsburg
Hugh S. Barclay, Norberth
It can be seen from this that the nursery center in the New England states is definitely located, and that Maine, New Hampshire and Vermont farther north and Virginia and West Virginia farther south are entirely away from this center.

Catalogs from the following nurseries in the southern region were used:

North Carolina

Audubon Nursery, Wilmington
E.C. Robbins, Ornamental Nurseryman, Ashford
Rob't. C. Young, Wholesale Nurseryman, Greensboro

Tennessee

Commercial Nursery Co., Decatur
Forest Nursery Co., McMinnville

Alabama

Huntsville Wholesale Nurseries, Huntsville
Rosebank Nursery Co., Huntsville

Florida

Royal Palm Nurseries, Okeechobee
Summit Nurseries, Monticello

The western part of this southern region, including Texas, Oklahoma and Arkansas, is a very poor nursery country.

Catalogs from the following nurseries in the central region were used:

Ohio

Cole Nursery Co., Painesville
Wayside Gardens Co., Mentor

Kentucky

Jacob Schulz Co., Louisville

Indiana

Heller Bros. Nursery, New Castle
W.A. Payne, Terra Haute
Indiana

Vinconnes Nurseries, Vincennes

Illinois

D. Hill Nursery Co., Dundee
Omaha Nursery Co., Omaha
Young's Aurora Nurseries, Aurora

Iowa

Earl C. May Seed and Nursery Co., Shenandoah

Missouri

Neosho Nurseries Co., Neosho
Stark Bros. Nurseries, Louisiana

Kansas

Sam Carpenter Gardens, Oswego
Willis Nurseries, Ottawa

Nebraska

Sonderegger Nurseries, Beatrice

In the northern region, only a few nursery catalogs of any value in this problem were obtainable;

Michigan

The Monroe Nursery, Monroe
The Cottage Gardens, Lansing

Minnesota

The Daniels Nursery, Long Lake
Pfeiffer Nursery, Long Lake

In the western region, California is the only important nursery state. Oregon and Washington offer a little material, but the rest of these states practically nothing. Catalogs from the following nurseries in this western region were used:

California

Armstrong Nurseries, Ontario
California Nursery Co., Miles
California
Howard and Smith, Los Angeles
Paul J. Howard, Los Angeles

Oregon
Rutledge Nursery, Portland

The following lists of plants, compiled from these catalogs, show to be sure the material offered for sale by nurseries in these five regions of our country, but these lists cannot be taken as accurate indexes of the horticultural materials that will thrive in these same regions. Most nurseries aim to satisfy all customers however distant, and so advertise and supply a great variety of materials, and fill orders for plants that are not available in their own gardens by obtaining them from distant nurseries. How extensive this system may be is shown by the fact that nurseries in different states can put out the same catalog; the catalogs of the Willis Nurseries at Ottawa, Kansas, and the Commercial Nursery Co., at Decherd, Tennessee, are identical.

The following lists are made up according to the type of horticultural material; a quite natural grouping is into (1) evergreen trees, (2) deciduous trees, (3) shrubs, and (4) vines. Annual and perennial herbaceous flowering plants are not considered here, for they may be obtained as seeds or bulbs from nurseries and seed houses everywhere. The names in the following list are according to L.H. Bailey’s Standard Cyclopedia of Horticulture. The letters after the names indicate the regions in which the plants are offered for sale, E standing for eastern region, S for southern, C for central, N for northern, and W for western.
(1) Evergreen Trees

Abies balsamea (E,S,C)
" brachyphylla (E)
" cephalonica (E)
" concolor (E,S,C,N,W)
" firma (W)
" fraseri (E,S)
" lasiocarpa (E)
" nobilis glauca (W)
" nordmanniana (E,S,C)
" picea (E,S)
" veitchi (E)

Araucaria bidwillii (W)
" excelsa (W)
" imbricata (W)

Cedrus atlantica (E,S,W)
" glauca (E,W)
" deodara (S,C,W)
" verteilita (W)

libani (S,W)

Cephalotaxus fortunei (W)

Chamaecyparis lawsoniana (S,W)
" alumi (W)
" argentea (W)
" glauca (W)
" lutea (W)
" pendula (W)

" obtusa (E,S)
" aurea (W)
" compacta (E)
" aricoides (W)
" gracilis aurea (W)
" lycopodioides (W)

" nana (E,W)

" pisifera (E,S,C)
" aurea (E,S,C)
" filifera (E,W)
" plumosa (E,S)

" squarrosa (E)

Cryptomeria japonica (S,W)
" elegans (W)
" lobbi (E)

Cunninghamia lanceolata (S)

Cupressus arizonica (S,W)
" funebris (S)
" goveniana (S)
" lucitanica (S)
" macrocarpa (S,W)
" sempervirens (S,W)
" stricta (W)
" torulosa (S)
" majestica (W)

Juniperus chinensis (E,C,W)
" albo-variegata (E,W)
" aurea (E)
" femina (E,S,W)
" macula (W)
" pfitzeriana (E,S,C,N,W)
" pyramidalis (C)
Juniperus communis (E, S, C)
  " aurea (E)
  " depressa (E, S, C, N, W)
  " hibernica (E, S, C, N, W)
  " suecica (E, C, N)
  " depressa (C)
  " excelsa (E)
  " stricta (E, C, N, S)
  " glauca (C, N)
  " horizontalis (E, C, N, W)
  " rigida (E)
  " sabina (E, S, C, N, W)
  " fastigiata (E)
  " tamariscifolia (E, C, W)
  " scopulorum (C)
  " virginiana (E, S, C, W)
  " canariensis (E, S, C, N)
  " elegantissima (E, C)
  " glauca (E, S, C, W)
  " pendula (E)
  " pyramidalis (C)
  " zohrtii (E, S, C)
  " tripartita (E, W)
Libocedrus decurrens (S, W)
  " compacta (W)
Pinus albertiana (E)
  " bicolor (W)
  " canadensis (E, S, C, N)
  " albertiana (E, C)
  " engelmannii (E)
  " excelsa (E, S, C, N, W)
  " compacta (E)
  " aonica (E)
  " maxwellii (E)
  " pendula (E)
  " procumbens (E)
  " jezoensis (E)
  " mariana (E, S)
  " orientalis (E, S)
  " polita (E, W)
  " pungens (E, S, C, N, W)
  " glauca (E, S, C, N, W)
  " kosteri (E, C, N, W)
  " smithiana (W)
Pinus aristata (E)
  " banksiana (E, C)
  " canariensis (W)
  " conbra (E)
  " coulteri (W)
  " densiflora (E, S, C)
  " edulis (C)
  " excelsa (E, W)
  " flexilis (E, C)
  " halepensis (W)
  " jeffroyi (E)
  " koraiensis (E)
  " montana (E, S)
  " mughus (E, S, C)
  " monticola (E)
Pinus muricata (W)
  " nigra (E, S, C)
  " austriaca (E, C)
  " parviflora (E)
  " pinaster (S)
  " pinea (S, W)
  " ponderosa (E, S, C)
  " resinosa (E, C)
  " rigida (E)
  " sabiniana (W)
  " strobus (E, S, C, N, W)
  " sylvestris (E, S, C, N, W)
  " taeda (E)
  " thunbergii (E, C)
Podocarpus elongata (W)
Podocarpus kaempferi (E)
Sciadopitys verticillata (E)
Sequoia gigantea (W)
  " pendula (W)
  " sempervirens (W)
Taxodium distichum (E, S)
  " mucronatum (W)
Taxus baccata (E, S, W)
  " aurea (E)
  " doavastoni (W)
  " erecta (W)
  " fastigiata (E, W)
  " repandens (E, C)
  " washingtoni (E, W)
  " cuspidata (E, S, C)
  " dense (E)
Thuja occidentalis (E, S, C, N, W)
  " columbica (E)
  " compacta (E, C)
  " douglasii pyramidalis (E, C)
  " oilwangeriana (E, S, C)
  " ericoides (E)
  " filiformis (E)
  " globosa (E, S, C, W)
  " hoveyi (E, S, C)
  " lutea (E, C)
  " plicata (C)
  " pumila (E)
  " reidi (E, C)
  " veracissima (E, C)
  " wareana (E, S, C, W)
  " wardi (E, S, C)
  " orientalis (E, S, C, W)
  " aurea (E, S, W)
  " decussata (W)
  " elegantissima (E)
  " moldensis (W)
  " pyramidalis (W)
Thuja " semperauroscens (W)
  " plicata (E, W)
Tsuga canadensis (E, S, C)
  " caroliniana (E, S)
  " diverifolia (E, S)
Ulex europaeus (S)
Deciduous Trees

Acacia armata (W)
" baileyana (W)
" cultriformis (W)
" dealbata (W)
" decurrens (W)
" floribunda (W)
" linearis (W)
" longifolia (W)
" melanoxylon (W)
" podalyriifolia (W)
" pravissima (W)
" prominens (W)
" pycnantha (W)
" verticillata (W)

Acer atropurpureum (E)
" campestre (E,W)
" circinatum (W)
" ginnala (E,N)
" japonicum (S)
" macrophyllum (W)
" negundo (E,S,C,N,W)
" palmatum (E,S,N,W)
" pennsylvanicum (E)
" platanoides (E,S,C,N,W)
" globosum (E)
" schwedleri (E,S,C)
" pseudoplatanus (E)
" rubrum (E,S,C,W)
" saccharinum (E,S,C,N,W)
" schwedleri (E,C)
" tataricum (E)

Aesculus carnea (E)
" glabra (E)
" hippocastanum (E,S,C,N,W)
" octandra (S)
" parviflora (E)

Ailanthus altissima (E,S,C,N)

Albizia glutinosa (E)
" lophantha (W)

Alnus glutinosa (E)
" viridis (S)

Aralia spinea (E,S,C,N)

Betula lenta (E)
" lutea (E,C)
" nigra (E,S)
" papyrifera (E)
" populifolia (E,S,C,N,W)
" laciniata (E,C,N)

Carpinus betulus (E)
" caroliniana (E,C)

Carya laciniosa (N,C)
" pecan (N,C)

Castanea dentata (S,C)
" sativa (W)

Caquarina equisetifolia (W)
" stricta (W)
Catalpa bignonioides (E,C)
  "  " nana (E,C)
  "  " bungei (E,S,C,N,W)
  "  " speciosa (E,S,C,N,W)
Cedrela sinensis (W)
Celtis australis (W)
  "  " mississippiensis (S)
  "  " occidentalis (E,C,N)
Ceratonia siliqua (W)
Cercis canadensis (E,S,C,N,W)
  "  " siliquastrum (W)
Cinnamomum camphora (S,W)
Cladrastis lutea (E,S)
Cornus florida (E,S,C,N,W)
  "  " kousa (E)
Crataegus crus-galli (E,S,C,N,W)
  "  " flavs (E)
  "  " mollis (E)
  "  " oxyacantha (E,C,N)
  "  " phaeoopyrum (E,C,N,W)
  "  " punctata (E)
  "  " succulenta (E)
Cytisus scoparius (S)
Diospyros kaki (E,S)
  "  " virginiana (E,S)
Eucalyptus citriodora (W)
  "  " corynocalyx (W)
  "  " erythronema (W)
  "  " ficifolia (W)
  "  " globulus (W)
  "  " kochmanni (W)
  "  " leucoxylon (W)
  "  " polyanthemos (W)
  "  " pulvulenta (W)
  "  " robusta (W)
  "  " rudy (W)
  "  " tereticornis (W)
  "  " viminalis (W)
Eriobotrya japonica (W)
Fagus sylvatica (E)
  "  " incisa (E)
  "  " purpurea (E,C)
  "  " riversii (E)
Fatsia japonica (E,S,N,W)
Ficus macrophylla (W)
Fraxinus americanana (E,S,C,N,W)
  "  " excelsior (E,S)
  "  " lanceolata (E)
  "  " nigra (E)
  "  " volutina (W)
Ginkgo biloba (E,S,C,N,W)
Cleiditseia aquatic (E)
  "  " triacanthos (E,C,N,W)
Grevillea robusta (W)
Gymnocladus dioica (S,C)
Jacaranda eudolia (W)
Juglans californica (W)
  "  " cinerea (E,S,C,N)
  "  " nigra (E,S,C,N)
  "  " sieboldiana (E,S,N)
Koelreuteria paniculata (E,S,C,N)
Laburnum anagyroides (E,N,W)
Larix dahurica (S)
  " decidua (E,S,C)
  " laricina (E)
  " leptolepis (E,S)
  " occidentalis (S)
Liquidambar styraciflua (E,S,C,N,W)
Liriodendron tulipifera (E,S,C,N,W)
Maclura pomifera (E,S,C)
Magnolia acuminata (E,S)
  " alba superba (E)
  " alexandrina (E)
  " glauca (E,C)
  " grandiflora (E,S,W)
  " kobus (E)
  " lennei (E)
  " macrophylla (E)
  " soulangeana (E)
  " stellata (E)
  " tripetala (E,S)
Maytenus boaria (W)
Melia azedarach (S,W)
Meopilus germanica (W)
Morus alba (C,W)
  "  " pendula (E,S,C)
  "  " tatarica (E,S,C,N,W)
  " multicaulis (W)
  " nigra (S,W)
  " rubra (E,Y)
  " tatarica (E,S)
Nyssa sylvatica (E)
Osmanthus fragans (S)
Oxydendrum arboreum (E,S)
Parkinsonia aculeata (W)
Paulownia tomentosa (S)
Phellodendron amurense (E)
Platanus occidentalis (E,S,C,W)
  " orientalis (E,S,C,N,W)
  " racemosa (W)
Populus alba (C,S)
  "  " pyramidalis (E,C,N,W)
  "  " balsamifera (E)
  "  " berolinensis (E)
  "  " candicans (S,N,W)
  "  " canescens (E)
  "  " deltoides (S,C)
  "  " ogenie (E,S,C,N)
  "  " monilifera (E,S,W)
  "  " nigra (S)
  "  "  "  " italica (E,S,C,N,W)
  "  "  "  " robusta (E)
  "  "  "  " simoni (S,W)
Prunus avium (E,N)
  "  " campanulata (W)
  "  " caroliniana (S,W)
  "  " glandulosa (E,N)
  "  " illicifolia (W)
Prunus laurocerasus camelliaefolia (W)
  " latifolia (W)
  " lusitanica (W)
  " maritima (E)
  " persica (S,W)
  " pennsylvania (C)
  " pissardi (E,S,C,N,W)
  " recorchori (S)
  " sachalinensis (S)
  " serotina (C)
  " serrulata (E,S)
  " sieboldi (C)
  " subhirtella pendula (N)
  " tomentosa (E)
  " triolba (E,S,C,N)
  " plena (S)
  " virginiana (E)
Ptelea trifoliata (E)
Pyrus angustifolia (E,C)
  " arnoldiana (E)
  " atrosanguinea (E)
  " baccata (E)
  " calleryana (E)
  " coronaria (E,S,C)
  " glauccensens (E)
  " lioensis (E,C,W)
  " bechertii (C,W)
  " niedzwetzkyana (E,N)
  " parkmanii (E,C,W)
  " sargentii (E,C)
  " scheideckeri (E,C)
  " sieboldii (E,C)
  " spectabilis (E)
  " theifera (E)
Quercus agrifolia (W)
  " alba (E,S,W)
  " bicolor (E)
  " cocinea (E,S,W)
  " fastigiata (C)
  " imbricaria (E)
  " macrocarpa (E,W)
  " palustris (E,S,C,N)
  " phollos (S)
  " prinus (E)
  " robur (E)
  " rubra (E,S,C,N,W)
  " saper (W)
  " volutina (E,S)
  " virginiana (S)
Robinia hispida (E,S,C,N,W)
  " pseudacacia (E,S,C,N,W)
Salix alba (E)
  " babylonica (E,S,C,N,W)
  " blanda (E,S,H)
  " britzensis (E,S)
  " caprea (E,S,C)
  " discolor (E,S,C,W)
  " elegansissima (E,N)
Salix incana (E, C)
  " salamoni (E, S)
  " viminalis (E, S)
  " vitellina (E, S, C, N)
  " aurea (E, C)
  " brittoniana (E)
Cassafra varifolium (E, S)
Schimus mille (W)
  " terebinthifolius (W)
Sophora japonica (E, W)
Sorbus americana (E)
  " aucuparia (E, C, N, W)
Sterculia acerbifolia (W)
  " diversifolia (W)
Styrex japonica (E)
Tilia americana (E, S, C, N, W)
  " euchroma (E)
  " platyphyllus (E, W)
  " spectabilis (E)
  " tomentosa (E)
  " vulgaris (E, H)
Ulmus americana (E, S, C, N, W)
  " campestris (E, C, W)
  " glabra (C, N)
  " parviflora (S)
  " punila (C, W)
Umbellularia californica (W)
Zizyphus jujba (W)

(3) Shrubs

Abelia grandiflora (E, S, C, N, W)
Aberia caffra (W)
Acanthopanax pentaphyllum (E, C, N)
Aesculus parviflora (E)
Amelanchier canadensis (E, S, N)
  " oblongifolia (E)
  " rotundifolia (E)
Anemone japonica (E)
Amorpha canescens (E)
  " fruticosa (E, S, C, N)
Arbutus menziesii " unedo (W)
Aronia arbutifolia (E, S, C, N)
  " atropurpurea (C)
  " melanocarpa (E, S, C, N)
Asystasia bella (W)
Aucuba japonica (W)
Azara microphylla (W)
Baccharis halimifolia (E)
Benzoin aestivale (E, S, C, N)
Berberis darwinii (W)
  " gagnepaini (E, W)
  " ilicifolia (W)
  " nebulosa (E)
  " sargentiana (E)
  " sieboldii (E)
  " stenophylla (E, W)
  " thunbergii (E, S, C, N, W)
Berberis verruculosa (E)
 " vulgaris (E)
 " atropurpurea (E)
 Buddleia asiatica (W)
 " davidii magnifica (E,S,N)
 " veitchiana (E)
 " globosa (W)
 " madagascariensis (W)
 " magnifica (E,S,C,W)
 Bursaria spinosa (W)
 Buxus japonica (W)
 " sempervirens (E,S,W)
 " fastigiata (E)
 " suffruticosa (E,S,W)
 Caesalpinia gilliesii (W)
 Callicarpa americana (S)
 " japonica (E)
 Callistemon lanceolatus (W)
 " spacious (W)
 Calluna vulgaris (W)
 Calycanthus floridus (E,S,C,N,W)
 Camellia japonica (S,W)
 Cantua buxifolia (W)
 Caragana arborescens (E,S,C,N)
 Carissa grandiflora (W)
 Carmichaelia odorata (W)
 Carpenteria californica (W)
 Caryopteris incana (E,S,C,W)
 Cassia bahamensis (W)
 Cephalanthera occidentalis (E,S,C,N)
 Clematis recta (W)
 " fasciculatum (W)
 Chaenomeles japonica (E,S,C,N,W)
 Chionanthus virginicus (E,S,C,N)
 Citrus limon (S)
 Clethra alnifolia (E,S,C,N)
 Colutea arborea (E,C,N)
 Comptonia asplenifolia (E,S)
 Coprosma baueri (W)
 Coronilla emerus (W)
 " glauca (W)
 Cornus alba (E,S,N)
 " sibirica (E,S,C)
 " amomum (E,C,S,N)
 " mas (E)
 " paucinervis (E,W)
 " racemosa (E,C,N)
 " sanguinea (E,N,W)
 " stolonifera (E,S,C,N)
 Corylus americana (E,S,C,N)
 " avellana (E,N)
 Cotoneaster dammeri (W)
 " acutifolia (E,C,N)
 " adpressa (E)
 " doliolana (E)
 " diversicolor (E,C)
 " foetida (E)
 " fruticosa (E,C,W)
 " frigida (W)
 " horizontalis (E,S,C,N,W)
Cotoneaster hupehensis (E)
- "lucida (E)
- " macrophylla (E,S,W)
- " pannosa (W)
- " racemiflora (E)
- " rotundifolia (E)
- " salicifolia (W)
- " Simonsii (E,S,C)
- " zabeli (E)

Daphne cneorum (E,C,N)

Doeringea salicifolia variegata (W)

Deutzia crenata (E,S,C,W)
- " gracilis (E,C,N,W)
- " lomoeis (E,S,C,N,W)
- " magnaica (E)
- " ombra (E,C,N)
- " candidissima (E,C,N,W)
- " Pride of Rochester (E,C)
- " watereri (E)

Diervilla coccinea (E,S,C,N)
- " candida (E,S,C,N)
- " Eva Madge (E,S,C,N,W)
- " floribunda (E,C,N)
- " japonica (E)
- " sessilifolia (E,C,N)

Diosma alba (W)
- " ericoides (E)

Duranta plumieri (W)

Eleagnus angustifolia (E,S,C,N,W)
- " umbellata (E)

Emilianthus campanulatus (E)

Erica carneae (W)
- " mediterranea (E,W)
- " melanthera (W)
- " persicifolia alba (W)
- " stricta (W)
- " ventricosa (W)

Erythrina cristagalli (W)

Escallonia montevideensi (W)
- " pulverulenta (W)
- " rosea (W)

Eugenia apiculata (E)
- " myrtifolia (W)

Evonymus alata/ Euphorbia pulcherrima (W)
- " americana (E,S,C)
- " bungeana (E)
- " europaea (E,C,N)
- " japonica (E,S,W)
- " radicans (E,C,N)
- " acuta (E,C,W)
- " carrierei (E,C)
- " variegata (E,C)
- " vegeta (E,C,N)
- " sieboldiana (E,C)

Exochorda racemosa (E,S,C,N,W)

Fabiana imbricata (W)

Forestiera ligustrina (C)

Forsythia intermedia (E,S,C,N)
- " uspensa (E,S,C,N,W)
- " fortunii (E,S,C,N,W)
- " sieboldii (E,C)
- " viridissima (E,S,C,N,W)
jasminoides (E, W)
Garrya elliptica (W)
Grevillea banksii (W)
" robusta (W)
" thelemanniana (W)
Nalcesia × camplina (E, S, N)
Hamamelis virginiana (E, S, C, N)
Hibiscus syriacus (E, S, C, N)
Hippophae rhamnoides (E)
Hydrangea arborescens (E, S, C, N, W)
" " grandiflora (E, S, C, W)
" " sterilis (E, S, C, W)
" hortensis (W)
" paniculata (E, S, C)
" " grandiflora (E, S, C, N, W)
Ilex aquifolium (E, W)
" crenata (E)
" glabra (E, S)
" lacigata (E)
" monticola (E, S)
" opaca (E, S, C)
" serrata (E)
" verticillata (E, S, C)
Ilex aquifolium (E, S, C, N, W)
Jasminium discolor (W)
J. thurifera (E)
" grandiflora (W)
" fragrans (E, S, C, N)
" macchi (E)
" Morrowi (E, S, C, N)
" nitida (W)
" pileata (E)
" ruprechtiana (E, S, N)
" standishii (E)
" tatarica (E, S, C, N, W)
Mahonia aquifolium (E, S, C, W)
" bealei (E, S, W)
Malvaviscus arboricola (W)
Malaleuca armillaris (W)
  " decussata (W)
  " hypericifolia (W)
  " wilsonii (W)
Menziesia pilosa (W)
Muchenbeckia platycapha (W)
Myrica cerifera (E,C)
Myrtus communis (W)
  " microphylla communis microphylla (W)
  " salisci (W)
Nandina domestica (W)
Nomophanthis mucronata (E)
Olaria forsteri (W)
  " traversii (W)
Otteomoles scherinae (W)
Pachistoma canbyi (E)
Pachyandra terminalis (E,C)
Pholinia arbutilfolia (W)
  " serrulata (W)
  " villosa (E)
Physocarpus opulifolius (E,C,N)
Phillyrea latifolia (W)
Philadelphus coronarius (E,S,C,N,W)
  " falconeri (E,S,N)
  " lemoinei (E,C,N)
  " virginalis (E,S,C,N)
Pieris floribunda (E,B,C)
Pittosporum crassifolium (W)
  " ougonicoides (W)
  " grandiflorum (W)
  " hetrophyllum (W)
  " phillyraodes (W)
  " rhombifolium (W)
  " tenuifolium (W)
  " viridiflorum (W)
Pterocarya stenoptera (W)
Pseudotsuga malleeriana (W)
Potentilla fruticosa (E,C)
Psidium cattleianum (W)
  " acerifolium (W)
  " cattleianum lucidum (W)
Pinus elata (S,W)
Pyracantha angustifolia (W)
  " coccinea (E,W)
  " " lalandi (E)
  " " wuyuanensis (W)
  " crenulata yunnanensis (W)
Rhododendron amoenum (E,C)
  " arborescens (E,S,C)
  " callosulaceum (E,S,C)
  " canadense (E)
  " canescens (E)
  " carolinianum (E,S,C)
  " catawbiense (E,S,C)
  " dahuricum (E)
  " grandiflorum (E)
  " japonicum (E)
  " kaempferi (E)
Rhododendron loderioides (E,S,C)
Actinidia arguta (E)
  " chinensis (E,W)
  " polygama (E)
Akebia quinata (E,C,N)
Antigonon leptopus (W)
Apicio tuberosa (E)
Arctostaphylos uva-ursi (E)
Aristolochia clematitis (E,C,N) macrophylla (E,S,C,N)
  " tomentosa (E)
Borchemia racemosa (E)
Bougainvillia braziliensis (E)
  " spectabilis (W)
Boussingaultia besseoides (C)

(4) Vines

Stephanandra incisa (E,S,C)
Stewartia pentagyna (E)
Streptocarpus jamesoni (W)
Strobilanthes isophyllus (S)
Symphoricarpos occidentalis (W)
  " racemosus (E,S,C,N)
Symphocactus eriaceus (E) paniculata (E)
Syringa chinensis (E,C)
  " japonica (E,C)
  " josikaeae (E,C)
  " pekinensis (E)
  " persica (E,S,C)
  " villosa (E,C)
  " vulgaris (E,S,C)
Tamarix africana (E,S,C)
  " amurensis (E)
  " hispida (C)
  " indica (E)
Tetraphylla eriocalyx (E)
Teucrium fruticans (W)
Vaccinium corymbosum (E,C)
Veronica buxifolia (E)
  " decumbens (W)
  " imperialis (W)
  " traversii (W)
  " pinguifolia (W)
Viburnum americanum (E,C)
  " dentatum (E,C,N)
  " dilatatum (E)
  " lantana (E,S,N)
  " lentago (E,C,N)
  " molle (E,N)
  " nitidum (E)
  " opulus (E,S,C,N)
  " " nana (E,S,C,N)
  " " sterilis (E,S,C,N)
  " sargentii (E)
  " sieboldi (E)
  " tomentosum (E,C,N)
  " wrightii (E)
Zanthoxylum apiculatum (E,S,C)
Zenia pulvulenta (E)
Campsis chinensis (E,S,C,N,W)
Campsis grandiflora (E,S,C)
" radicans (E,S,C,W)
Celastrus orbiculatus (E,S,C,G)
" scandens (E,S,C,W)
Geranium reniforme (W)

glaucous (E,S,G)
" crispa (W)
" flammula (W)
" jackmani (E,S,C,G)
" paniculata (E,S,C,W)
" virginiana (E,S)

Convulvulus mauritanicus (W)
Dioscorea villosa (S,C)
Epigaea repens (E)
Gaultheria procumbens (S)
Gelsemium sempervirens (W)
Hardenbergia comptoniana (S)
" monophylla (S)
Helianthemum chamissoi (G)
Hedera helix (E,S,C,W)
Hydrangea petiolaris (W)
Jasminum gracillimum (W)
" grandiflorum (W)
" nudiflorum (E,S,C,G)
" officinale (W)
" primulinum (W)

Linaria cymbalaria (W)
Lonicera chinensis (W)
" japonica (E)
" " halliana (E,S,C,W)
" sempervirens (E,S,C,G)

Muhlenbeckia complexa (W)

Passiflora mollissima (W)

Achyranthes terminalis (E)

Fartherococcus quinqufolia (E,S,C,W)
" quinqufolia engelmannii (S,N)
" tricuspis (E,S,C,W)

Vitis aestivalis (E)
" rotundifolia (E)

Vinca major (W)
" minor (S,C)

Lorostera chinensis (S,C,G)
" floribunda macrobotrys (E,W)
" fruticoscens (E)
" multiflora (W)
" sinensis (E,C,N)

The foregoing lists do not by any means include all of the plant materials offered for sale in these nursery catalogues. Each catalog contains a great many names that cannot be checked by Bailey; these are either nursery varieties not included in the Cyclopeda, or are recognized species and varieties that are incorrectly catalogued by the nursery and so cannot be checked with Bailey.
BEAUTY IN THE WINTER LANDSCAPE

The home is as much a home during the late fall and cold winter months as during the spring and summer months, and the landscape planting, for the most pleasing results the year round, must be planned accordingly. The opportunities for pleasing and varied winter effects vary of course with the locality, and in selecting plant materials for the winter landscape, the temperature, moisture and soil conditions, and all the other factors influencing the selection of plants, must always be considered. Upon first thought, one as a rule concludes that the warmer and tropical sections of our country can have beautiful landscaping the year round, while those sections having great temperature changes from season to season have very limited winter possibilities. Yet the real seekers after beauty can find it to some extent and in some form even in the barest of winter landscapes, and it is to pointing out these possibilities that this section is devoted.

Plants are interesting in their form, color, texture and mass, and while their contribution to the winter landscape is as a rule overlooked by the casual observer, it is to be seen for the looking. And one need not be a trained artist to see it. Deciduous trees very often show their character more plainly in winter when the individual peculiarities and distinctive traits of their architecture are not hidden by the foliage; and a tree of interesting or intricate form, snowladden or outlined against a background of white, is as beautiful a picture, though of a different type to be sure, as any blossom-covered cherry tree,
or full-blooming spirea or lilac. Each tree and shrub has its characteristic pattern, of interest in its particular way, giving endless revelations to the student of the winter landscape.

In addition let us mention the added touches of interest and variety that may be introduced into the winter landscape through the careful and conservative use of plants with fruits of peculiarly interesting characters, such as Catalpa speciosa, with long narrow brown pods, Gynoecladus dioica, with oblong thick brown pods, and Platanus occidentalis, with ball-like hanging fruit-heads. Others are:

Asimina triloba
Catalpa bignonioides
Cephalanthus occidentalis
Colutea arborescens
Diospyros virginiana
Ivorynox atropurpurea
Gleditsia triacanthos
Liquidambar styraciflua
Liriodendron tulipifera
Maclura pomifera
Magnolia acuminata
Platanus orientalis
Pyrus baccata (in variety)
Robinia pseudacacia
Staphylea pinnata

" trifolia"

Besides these plants having interesting fruits in the winter, there are several plants which may well occasionally be intro-
duced into the winter landscape to add interest with their large and outstanding winter buds. Such plants are:

- Carya ovata
- Cornus florida
- Fagus grandifolia
- Gleditsia triacanthos
- Populus candicans
- Salix discolor
- Sassafras variifolium

Equally important with other features in the winter landscape is color, invaluable for effectiveness in pictorial composition. Of course when one thinks of winter color one immediately thinks of the narrow-leaved coniferous evergreens, which make up a long list from which some few or many may usually be selected to thrive in any locality. But since these evergreens are so well-known, and so widely used, this paper will pass over them and consider other possibilities in winter color. First come the broad-leaved evergreens, which make up quite a long list. There are several things to be kept in mind however when choosing plants from this list for landscape use. They are usually more expensive than narrow-leaved evergreens or deciduous plants, do not as a rule attain great size, and usually require special care. When a woody plant carries its leaves unchanged into late fall and winter, it is usually due to the fact that the plant is unable to mature its wood during the normal growing season; consequently, the plant must be given special care and not be subjected to too great exposure, for its wood is not yet mature and is still tender when the other woody plants have matured their new growth. Following is the list of broad-leaved
evergreen shrubs that are sometimes used in landscape plantings, those marked with (E) being practically evergreen, even in colder regions; those marked with (S) being semi-evergreen, usually holding their leaves until about the first of January in the colder regions, and throughout the winter in the warm localities; and those that are unmarked holding their leaves until about November in the colder localities, unless the fall is too severe, and holding them even longer in the warmer parts of the country.

Abelia grandiflora (E)
Acanthopanax pentaphyllum
Andromeda glaucophylla (S)
" polifolia (S)
Arctostaphylos uva-ursi
Artemisia abrotanum
" sacrorum
Baccharis halimifolia
Berberis aristata
" buxifolia (E)
" gagnepaini (E)
" julianae (E)
" neuberti (S)
" rehderiana (S)
" sargentiana (E)
" stenophylla (S)
" verruculosa (E)
" wilsonae (S)
" wilsonae subcaulialata (S)
Buddleia davidii
Dumelia landginosa
Buxus japonica (E)
  " microphylla (E)
  " sempervirens (E)
Calluna vulgaris (E)
Caragana maximovicziana
Ceanothus fendleri
Cercocarpus parvifolius (S)
Chaenomeles maulei
Chamaebatiaria millefolium
Chamaedaphne calyculata (E)
Cocculus trilobus
Cornus mas
  " paucinervis
Coronilla emerus (S)
Cotoneaster adpressa (S)
  " dielsiana elegans
  " francheti
  " horizontalis (E)
  " huphensis
  " microphylla (E)
  " rotundifolia (E)
Crataegus arkansana
  " grignonensis (S)
  " oxyacantha (S)
  " persistens
  " sorbifolia (S)
  " succulenta
Cytisus purgans
  " scoparius
Daphne oncorhynch (E)
Deutzia sieboldiana
Diervilla coracensis
  " rivularis
  " sessilifolia
Elaeagnus multiflora rotundifolia
  " umbellata (S)
Ephedra distachya (E)
  " gerardiana (E)
Epigaea repens (E)
Erica carnea (E)
Evonymus bungeana semipersistens (S)
  " europaea intermedia
  " europaea nana (S)
  " nana (S)
  " nana koopmannii (S)
Fontanesia fortunei (S)
  " phillyraeoides
Forsythia europaea
  " viridissima
Gaultheria procumbens (E)
  " shallon (E)
Gaylussacia brachycera (E)
  " dumosa
Genista pilosa
Hippophae rhamnoides
Hudsonia ericoides (E)
  " tomentosa (E)
Hypericum arnoldianum
  " bucklei (S)
Hypericum calycinum (S)
  " galiodes
  " patulum hongyi (S)
Ilex crenata (E)
  " crenata macrophylla (E)
  " glabra (E)
  " opaca (E)
  " pedunculosa (E)
  " serrata
Hylaea angustifolia (E)
  " latifolia (E)
  " polifolia (E)
Laburnum alpinum
  " anagyroides
Ledum groenlandicum (E)
  " palustre (E)
Leiophyllum buxifolium (E)
Leucothoe axillaris (E)
  " catesbaei (E)
  " populifolia (E)
  " racemosa (S)
  " recurva
Ligustrum amurense (S)
  " dolavayamum (S)
  " ibota
  " japonicum
  " ovalifolium (S)
  " vulgare
  " " sempervirens (S)
Loiseleuria procumbens (S)
Lonicera bella

" fragrantissima (S)
" henryi (S)
" iberica
" japonica (S)
" ledebouri
" maacki
" " podocarpa (S)
" morrowi
" mitida (E)
" pileata (E)
" prostrata
" sempervirens
" standishii
" " landifolia (S)
" syringantha (S)
" thibetica (S)
" xylosteum

Mahonia aquifolium (E)
" bealei (E)
" repens (E)

Myrica carolinensis (S)

Pachistima canbyi (E)
" myrsinites (E)

Pieris floribunda (E)
" japonica (E)

Prunus uniflora (E)

Prunus leucocecorus schipkaensis (E)

Pyracantha coccinea (E)
" " islandii (E)
Rhamnus leptophylla (S)
Rhododendron amoenum (S)
  " arbutifolium (E)
  " carolinianum (E)
  " catawbiense (E)
  " caucasicum (E)
  " dahuricum
  " ferrugineum (E)
  " hirsutum (E)
  " kaempferi
  " maximum (E)
  " metternichi (E)
  " micranthum (E)
  " minus (E)
  " myrtifolium (E)
  " poukhanense
  " praecox
  " smirnovi

Ribes fasciculatum chinense
Rosa gentiliana
  " multibracteata
  " rugosa
  " spinocissima
  " watsoniana
  " wichuraiana

Rubus hispidus
  " platyphyllus
  " spectabilis (S)

Salix incana
Sophora viciifolia
Sorbaria aitchisoni
Spiraea blanda
" cantoniensis
" thunbergi (S)
" vanhouttei
Sycopsis sinensis
Symphoricarpos chenaultii
Syringa meyeri
" persica
" pinnatifolia
" wilsonii
" yunnanensis
Vaccinium macrocarpon
" myrsinites
" oxyccoccus
" vitisidaea
Viburnum cotinifolium (S)
" henryi (E)
" lantana
" macrocephalum
" " sterili (S)
" molle
" opulus nanum
" ovatifolium
" rhytidophyllum (E)
" sieboldii (S)
" veitchii (S)
" venosum canbyi
Zenobia pulverulenta (S)
In addition to these shrubs, there are the following partially or totally evergreen climbing vines and trailing subshrubs, often invaluable for wall-coverings, trellises, screens, and various other uses, considered in the section devoted to the use of horticultural materials for the different purposes of landscape design:

- Akebia lobata (S)
- " quinata (S)
- Clematis flammula
- " paniculata
- Evonymus acuta (E)
- " carrierei (E)
- " radicans (E)
- " variegata (E)
- " veleta

Hedera helix (E)
Lonicera giraldii
" japonica (S)
" " halliana (S)
" similis delavayi (S)
Vinca major (E)
" minor (E)

The desire for green color in the winter landscape may be satisfied by the use of evergreens, but usually there are also desires for touches of bright color which must be satisfied. But one should always bear in mind that it is entirely possible to spoil even a winter landscape by overdoing color; here, the pleasing color effects are usually obtained through contrasts rather than through large masses of the brightest winter colors. There are innumerable contrasts obtainable through using shrubbery masses with gray, brown, and purple bark, in addition to the more brilliant red, green, and yellow-branching masses. Following is a list of shrubs having colored twigs or branches.

- Colutea arborescens ------------ Green branches
- Cornus alba ------------------ Blood-red branches
- " " sibirica -------------- Coral-red branches
- " ammonum --------------- Purplish-red branches
Cornus baileyi — Dark red branches
  " obliqua — Purple to yellowish-red branches
  " racemosa — Gray branches
  " sanguinea — Dark red branches
  " " viridissima — Green twigs, branches dark red in winter
  " stolonifera — Dark blood-red branchlets
  " " coloradensis — Brownish-red branches
  " " flaviramea — Yellow branches
Sytisus scoparius — Green branches
Eleagnus argentea — Reddish-brown branchlets
  " macrophylla — Silvery-white branchlets
  " multiflora — Reddish-brown branchlets
  " umbellata — Yellowish-brown, partly silvery, branchlets
Evonymus alata — Branches usually with two or four broad early twigs
Forsythia suspensa atrocaulis — Purple branches
  " viridissima — Green branches
Kerria japonica — Green branches
Prunus uniflora — Light gray branches
Rosa blanda — Reddish-purple branchlets
  " nitida — Reddish twigs
  " palustris — Reddish twigs
  " virginiana — Reddish twigs
  " " alba — Greenish twigs
Rubus coroanus — Stony bluish white, brown branchlets
  " lacinostylus — Glaucescent-white stem
  " neglectus — Upright branches
One particular value of shrubs with colored branches is that they make a consistent mass of color throughout the winter, and such red-branched ones as Cornus alba, stolonifera are often a very cheery sight on sunshiny winter days. There are certain facts to be kept in mind when planting these shrubs for winter color, however. They do not develop their brightest color in dense shade, and also, they are as a rule showier on sunny days, looking their best when the sun is at the observer’s back. Also, the twigs of the first two years’ growth, mainly of the first year, are the most brilliantly colored; for this reason, shrubs with brightly colored bark are often severely cut back every year or two to a height of about three feet in order to develop the greatest number of showy shoots and so give to the entire shrubbery mass a more brilliant color. The red-stemmed dogwoods are very often pruned in this way. This severe cutting-back however sacrifices the natural habit of growth of the plant and the height of the plant to display, and so should be used only after due consideration.

There are a few trees with colored bark that may occasionally be introduced into the winter landscape for the sake of added interest through contrasts. These are:

Acer pennsylvanicum — Striped green, white branches
Betula nigra — Reddish-brown bark
" papyrifera — White bark
" populifolia — White bark
Blacagnus angustifolia — Silver branchlets
Fagus grandifolia — Gray bark
Platanus occidentalis — Whitish bark
" orientalis — White bark
Populus tremuloides ------------ Silverly green branches
Salix alba -------------- Yellowish bark
" vitellina aurca ---------- Golden-yellow bark
"  " britsensis ---------- reddish-bronze bark
Sassafras variifolium -------- Yellowish-green branches

Shrubs with colored berries are usually valuable additions to any winter landscape. They do not as a rule make as brilliant or consistent a color mass dominating the scene as do some of the shrubs with colored branches, but they do give a pleasant touch of color and interest after the leaves have fallen, and just such touches are wanted. These shrubs have certain advantages over others for the winter landscape in that they are cheap, particularly cheaper than evergreens, mature more quickly than evergreens, are fairly permanent, and often have the added value of attracting the birds. Red-fruiting shrubs seem to be the most popular, probably because of the feeling of warmth that the red color gives; the yellow-fruiting varieties of these forms are much less popular. Dark blue, purple, and black-fruiting shrubs are much used, appearing at their best against a background of snow. Symphoricarpos occidentalis, Symphoricarpos racemosus, and Symphoricarpos racemosus laevigatus are much liked for their unusual white fruits, which are very attractive while they last. Following are the lists of shrubs having attractive winter fruits:

**Retaining fruit practically until spring:**

**Red-fruiting:**

Berberis koreana
"  " regeliana
"  " sinensis
"  " thunbergi
Berberis vulgaris
Gaultheria procumbens
Ilex decidua
  " laevisgata
  " monticola
  " opaca
  " serrata
  " verticillata
Pyracantha coccinea
Rhus copallina
  " glabra
  " typhina
Rosa acicularis
  " alba
  " alberti
  " blanda
  " canina
  " caudata
  " coriifolia
  " multiflora
  " nitida
  " palustris
  " rubiginosa
  " rugosa
  " saturata
  " setigera
  " wichuraiana
Symphoricarpos orbiculatus
Viburnum americanum
  " dilatatum
  " opulus
Black-fruit ed: Ligustrum acuminaturn
" " macrocarpum
" ibota
" " regelianum
" ovalifolium
" vulgare
Rhodotypos kerrrioides
Rosa spinosissima

Grayish-white fruited: Myrica carolinensis
" cerifera

Retaining fruit until mid-winter, January or February:

Red-fruited: Aronia arbutifolia
Cotoneaster adpressa
" dielsiana
" divaricata
" horizontalis
" integerrima
" racemiflora
" rosea
" rotundifolia
" tomentosa
Crataegus arkansana
" carrieri
" crusgalli
" fontanesiana
" monogyna
" nitida
" persistens
" phaeogyrum
" pruinosa
" succulenta
Evonymus bungeana

" " semipersistens

Ribes fasciculatum chinense

Black-fruited: Cotoneaster acutifolius

Rhamnus cathartica

" dahurica

" leptophylla

" utilis

Retaining fruit only until November or December:

Red-fruited: Evonymus europaeus

" lanceifolia

Lonicera ferdinandi

" maackii

" " erubescens

" podocarpa

Photinia villosa

Ribes fasciculatum

Symplocos tinctoria (orange)

Viburnum hupchense

" ichangense

" lobophyllum

" sargentii

" theifenum

Black-fruited: Acanthopanax divaricatum

" henryi

" ceciliflorum

Aronia atropurpurea (purplish-black)

" melanocarpa

Viburnum lantago (bluish-black)

" prunifolium (bluish-black)
Blue-fruited:  Chionanthus virginica (dark)
              Symphoricarpos paniculata (bright)
              Viburnum rufidulum (dark)

Yellow-fruited:  Chaenomeles japonica (greenish-yellow)
                " maulei
                Viburnum opulus zanthocarpum

White-fruited:  Symphoricarpos occidentalis
                " albus
                " " laevigatus

There are also a few vines bearing colored fruit which hangs on throughout most of the winter, adding another possibility for the winter landscape. Following are the most important of these vines:

Actinidia arguta ----------------- Greenish-yellow fruit
              " chinensis ----------------- Yellow

Celastrus flagellaris ------------ Greenish-yellow, and orange
              " orbiculatus ------------ Orange-yellow, and scarlet
              " scandens ------------ Yellow, crimson seeds

Clematis epiifolia ------------- Achenes brown, pubescent, plumose styles
              " ligusticifolia ------------- Achenes brown, pubescent plumose styles
              " paniculata ------------- Achenes brown, pubescent plumose styles
              " tangutica ------------- Achenes brown, pubescent plumose styles
              " virginiana ------------- Achenes brown, pubescent plumose styles

Erythrina radicans ------------- Pinkish
              " " carrierei ------------- Pinkish
              " " vegeta ------------- Pinkish
Lonicer a dioica ------------ Red
" prolifer a ------------ Red
Parthenocissus quinquefolia ----- Bluish-black
" tricuspidata ----------- Bluish-black

We have discussed this whole subject theoretically, perhaps one might say. Let us get down to a concrete problem. Kansas is one state that might be expected to offer little in the way of color in the winter landscape. Yet I have said that the real seekers after beauty can find it to some extent and in some form even in the barest of winter landscapes. Let us see what the following photographs from Lawrence, Kansas, show. These photographs are negative prints of the first-hand material, tinted with the material at hand for accurate reproduction.
**FIGURE 1**

*Mahonia aquifolium.* This is a shrub, 3-6 ft. high, with dark-green, stiff and leathery, spiny-dentate leaves which turn purple in autumn and remain all winter. The flowers, which are yellow and in erect fascicled racemes at the ends of the branches, are produced in April and May, and the bluish-black fruit is produced in September. This shrub prefers a partially shaded location, and is hardy as far north as the Canadian border. This photograph was taken January 15, 1928, and shows the reddish-purple color that the leaves are taking on; the more protected leaves remain much greener. (x 2/5)

**FIGURE 2**

*Lonicera fragrantissima.* This is a handsome bush honeysuckle, of medium height, usually not over 5 ft., with short-petioled broad-ovate or obovate leaves, which are dark green above and pale bluish-green beneath. This shrub is half-evergreen in Kansas and in the northern part of its range, holding its leaves until about the first of January, and it entirely evergreen farther south. The early sweet-scented flowers are not very showy. December 14, 1927. (x 2/5)
FIGURE 3

This is an attractive shrub growing to a height of 2-3 ft. The leaves are finely serrate, and remain on the green stems until late winter, turning a yellowish-green. It is an unidentified shrub, perhaps a hybrid privet. It is attractive in winter as a low mass of green. February 5, 1933. (x2/5)

FIGURE 4

Spiraea thunbergii. This is a shrub, usually 3-4 ft. high, with linear-lanceolate, sharply serrate leaves 2-4 cm. long, which turn an orange-brown color in late autumn and remain until January or later. This is one of the early flowering spireas. It is useful in the winter landscape as a low mass of contrasting color. January 3, 1933. (x 2/5)
**FIGURE 5**

*Berberis thunbergii.* When red color is wanted in the winter landscape, this is one of the shrubs most commonly used. *Berberis thunbergii* has another advantage too; it makes a good hedge plant, growing to a height of 5-6 ft. if not pruned, with dense, spiny branches. The fruit is bright red, averaging about 9-10 mm. in length, and remains almost unchanged until the following spring. December 3, 1927. (x 2/5)

**FIGURE 6**

*Berberis vulgaris.* This shrub may grow much taller than *B. thunbergii,* is also spiny, but is not so compact in habit as its Japanese relative. The fruit averages slightly longer, about 13 mm., and is bright red or purplish, sometimes with a pinkish cast and a rather, waxy, translucent appearance, and also remains until spring. January 3, 1928. (x 2/5)
Rosa rugosa. This is one of the many roses that are quite valuable for their winter fruit which hangs on the branches practically until spring. This is an upright shrub, growing to a height of 5-6 ft. Its leaves are rather distinctive, being serrate, lustrous and dark green, quite thick, and rugose above. The large flowers appear during the whole summer. The fruits are quite large, and of a brick-red color. This shrub is quite vigorous and hardy, and at the same time ornamented.
December 5, 1927. (x 3/5)

Hybrid rose. This is another rose with attractive winter fruit, also remaining until late winter. Rosa setigera, the prairie rose, is probably one of the parents of this hybrid. In addition to the fruit, this particular rose also has red stems, a fact that adds to its value for winter color. It is a shrub, growing to 3-4 ft., and is just one of the numerous rose species, varieties and hybrids having attractive winter color. February 1, 1928. (x 2/5)
FIGURE 9

*Rosa corymbulosa.* This rose differs from the foregoing two in that its fruits are in umbel-like corymb. The individual fruits are about 1-1.3 mm. across, are subglobose, and a scarlet color, becoming darker in late winter. The fruits remain on the branches until spring. This is quite an attractive rose both in summer and winter; it is an upright shrub reaching a height of about 5 ft. January 10, 1928. (x 2/5)

FIGURE 10

*Viburnum opulus.* This also is a shrub much used for its cheery-red winter berries. It is rather a tall-growing shrub, reaching about 10 ft. The red berries are subglobose, about 8 mm. across, and borne in cymes; they remain practically until the following spring, though they may shrivel slightly. December 4, 1927. (x 2/5)
FIGURE 11

Evonymus europaea. This is an upright shrub, occasionally a small tree, reaching a height of 10-15 ft. It is inconspicuous in flower, but the bright pinkish fruits with orange aril make it most attractive until about mid-winter. A few leaves also hang on until then. This is on the whole quite an attractive ornamental shrub, and might well be planted more. December 9, 1927. (x 3/8)

FIGURE 12

Symphoricarpos orbiculatus. This is a rather low shrub, 3-5 ft. high, with slender branches. The leaves turn crimson in autumn and persist a long time. The small green flowers in August are inconspicuous, but the fruits remain attractive practically until spring. The fruit is subglobose, purplish-red, 4-6 mm. across, and borne in terminal spikes and in axillary clusters almost the entire length of the branches. February 1, 1928. (x 1/2)
FIGURE 13

Ligustrum vulgare. This shrub grows to about 10 feet if unpruned, and is practically deciduous in the latitude of Kansas. In addition to its value as a hedge plant, it adds interest to the winter landscape with its profusely borne bluish-black lustrous fruits, subglobose or ovoid, 6-8 mm. long, which remain on the branches practically until spring. December 8, 1927. (x 1/2)

FIGURE 14

Rhodotypos kerriformis. This is an upright spreading shrub growing to a height of 4-6 ft. The leaves are ovate to ovate-oblong, acuminate, 4-8 cm. long, sharply and doubly serrate. The showy white flowers, resembling single roses, appear about May. The fruit consists of four shiny black drupes surrounded by the large, persistent calyx; it remains practically until spring. February 5, 1928. (x 1/2)
FIGURE 15

Hydrangea paniculata grandiflora. This is usually a shrub 4-5 ft. high. It is quite conspicuous for its large panicles, 15-30 cm. long, of sterile white flowers with four entire, elliptic sepals which are at first whitish but later become purplish-brown and persist far into the winter. The shrub is quite hardy. It flowers in late summer. January 15, 1928. (x 1/2)

FIGURE 16

Hedera helix. This is a high-climbing evergreen vine, probably the most valuable of all the evergreen climbers for a wall or building cover, as it remains green all winter even in exposed positions, but will not bear exposure to winter sun on the south side of buildings in our climate. It makes a dense growth, giving permanent cover. The leaves are dark green, with whitish veins. February 1, 1928. (x 2/5)
**FIGURE 17**

_Lonicera japonica halliana_. This is a half-evergreen twining shrub quite valuable for fence coverings and similar screens. The leaves remain green until about December, then turn brownish and roll, but remain on the branches for some time. The black fruit also hangs on until mid-winter. January 4, 1928. (x 2/5)

**FIGURE 18**

_Celastrus scandens_. This is the climbing bittersweet, well-known in its wild state. It is regrettable that this beautiful plant is not more used in the artificial landscapes. The small greenish-white flower panicles in June are followed by the handsome yellow fruits which open at maturity disclosing the crimson seeds. The fruit remains beautiful far into the winter, even when branches are cut and kept in the house. December 5, 1927. (x 2/5)
FIGURE 19

Parthenocissus quinquefolia. This is the popular Virginia creeper, much used as a cover for walls and stone buildings as it climbs to quite a height by means of its branches tendrils ending in adhesive tips. The leaves are five-foliate. The flower cymes are usually crowded into terminal panicles. The fruit is bluish-black, slightly bloomy, about 6 mm. across, and persists until late winter. January 15, 1928. (x 2/5)

FIGURE 20

Clematis paniculata. This is a vigorous and quick growing woody climber. In autumn fragrant white flowers are produced in panicles. Its interesting fruit makes this vine quite attractive until about midwinter. The large panicles of brown achenes with long, plumose styles give the whole mass a hazy, delicate appearance from a distance, and an interesting intricacy of design upon close observation. February 1, 1928. (x 1/3)
Salix vitellina aurea. This is probably the best of the willows in this locality for winter color. The pendulous branchlets are a bright yellow throughout the winter. The color shows up at its best against a dark, contrasting background, looking even brighter, if possible. This tree, along with the birches, might well be given much consideration in the winter landscape. February 1, 1928. (x 2/5)

Ferria japonica. This is one of the best known green-stemmed shrubs. It grows to a height of 3-6 ft., making a very compact mass. The leaves are an attractive bright green, and the yellow, rose-like single flowers are very showy in spring. Its green branches are very showy throughout most of the winter. December 14, 1927. (x 1/3)
Cornus alba sibirica. This is quite a well-known shrub, growing to a height of about 9 ft. if not pruned. The branches are reddish in color, and the young growth often a bright coral-red. For this reason the shrub is often kept severely cut back to a height of about 3 ft. in order to develop the greatest number of showy shoots and so give to the entire shrubbery mass a more brilliant color. For a consistent color mass throughout the winter, Cornus alba sibirica and other red-stemmed dogwoods cannot be surpassed. The cymes of yellowish-white flowers in the spring add to the attractiveness of this shrub. January 3, 1928. (x 2/5)

In conclusion, I have in this section tried to show that there really are many possibilities for beauty and interest in the winter landscape, and I have also tried to point out some of the materials that may be used in making the most of these possibilities, with special reference to the vicinity of Lawrence, Kansas. But one must always bear in mind that the good winter landscape must be intensely studied and carefully planned, for the best results are produced through harmony, unity, and contrasts, not through the use of large masses of bright color alone.
Bibliography


THE DEVELOPMENT OF A LANDSCAPE

We are quite apt to underestimate the amount of work required in planning and laying out a landscape; there is more to it than merely laying out the grounds on a drawing board and putting in any horticultural material that pleases the fancy. The ground itself must first be extensively studied, and the soil, slope, drainage, shade, exposure, buildings and plant material already present be taken into account. Not until then can plans be drawn for changes and improvements. Even after this is done, and the plans drawn up, the final result is seldom worked out exactly as first planned. When the actual planting is begun, and as growth begins and goes on, more changes are made, some materials are subtracted and others added as additional possibilities are seen. Then, after the work of the landscape architect is finished, the owner very often makes slight changes, as adding vines and herbaceous flowering plants here and there, to better suit his tastes.

So we see that the first plan of a planting is merely a rough outline of the final result that is to be, and fails to give us a complete idea of the finished planting. The first blue-prints are essential as plans, but here their value ends. Let us take a specific case, and see how the whole development is worked out. At the end of this section is a blue-print of the original planting plan for the home grounds of Mr. W.H. Loomis, Jr., at 55th St. and Sunset Drive, Kansas City, Mo. The ground was previously owned by Mr. Ben E. Hyde, and the
plan was laid out for him by Hare and Hare, Landscape Archi-
tects, of Kansas City, in September, 1914. This blue-print
is self-explanatory. It is interesting to note the plant
materials, as the huge Kentucky coffee tree just east of the
house and the red cedars north of this tree, which were al-
ready present and so were worked into the improvement plans.

The following photographs of the Locas home were taken in
May, 1920. They show the present results of the plan laid out
in the blue-print. The blue-print is marked in black with
numbers corresponding to the photographs and arrows to show
the view that is taken.
FIGURE 1.

This shows the front view of the house, and the shrubbery beds at each side of the steps. As originally planned, these beds were to be composed of Spiraea arguta, pink althaeas next to the steps, and Deutzia gracilis at the end. This planting has been extensively changed. The spirea has been replaced by Berberis thunbergii, which shows in the photograph as low masses by the steps. Just back of each of these masses an addition not provided for in the original plan has been made, a specimen of Thuja occidentalis; these show in the photographs as quite tall, conical trees which do add to the total effect, serving as a partial frame for the door. Deutzia gracilis is planted in the east end of the bed as planned, but some Deutzia scabra watereri has been added. We see in the blue-print that these two shrubs masses are of unequal size. The fact that this gives a pleasing result bears out the principle that the perfectly bisymmetrical plan is not always preferable; it is in fact often said that the greatest beauty is often obtained through some slight variation from perfect symmetry.

In the foreground of the photograph can be seen a part of the American elms, one near each front corner of the house. The foundation planting of the front of the house cannot be seen here as well as in some of the following photographs. The two small dwarf mountain pines shown in the blue-print on either side of the terrace steps are not present now.
FIGURE 2

This photograph shows the southwest corner of the grounds, as seen from 55th St. The corner planting of Ligustrum regelianum is well shown; this is as planned in the blue-print. The planting on the other side of the driveway is shown much better in Fig. 3 than here. Just east of the mass of Ligustrum regelianum, the blue-print provides for a specimen of Magnolia soulangiana; this was either not set out or else was planted and later removed, for it is not present now. The white pine provided for in the original plan can be seen in the photograph, but the pyramidal arborvitae has been replaced by a specimen of Juniperus virginiana. The bed at the corner of the house, by the urn, was planned for Kerria japonica and Desmodium penduliflorum, with some white peonies; now some Evonymus radicans is also planted there. The Boston ivy on the front and side of the house can be seen in this photograph, though it shows up much better in Fig. 4. Part of the Histeria chinensis growing over the porte-cochere can be seen; this was not provided for in the blue-print. The planting just west of the drive, at the base of the pillars, is as planned. The street trees, American elms, can be seen quite well in this photograph.
FIGURE 3

This photograph is taken from the corner of 50th St. and Sunset Drive, and shows the planting on either side of the driveway entrance quite well. The right-hand bed is entirely of Ligustrum rosmelianum. The other bed is changed slightly from the plan of the blue-print. Lonicera morrowi makes up the mass of the planting, but the specimen of Syringa japonica is replaced by Syringa vulgaris, and the plume grass is replaced by Rhodotinus kerroides, which also lines the bed on the inside and hides the bare lower branches of the Lonicera morrowi. This on the whole makes quite a pleasing planting, and also partially screens the driveway and corner of the house from the passerby.

FIGURE 4

This is a close-up of the southwest corner of the house, showing the wall cover of Parthenocissus tricuspidata.
FIGURE 5

This photograph shows the east end of the front yard, as seen from 55th St. The planting here differs little from the blue-print. The two spruces can be seen, and the Austrian pine behind them. Back of these is an effective screen hiding the private garden from view. The screen is practically as originally planned, being composed of Viburnum opulus sterill, Cornus alba sibirica, Berberis vulgaris atropurpurea, Viburnum opulus, Philadelphus coronarius, and Kerria japonica flore pleno; the Kerria is much lower than the others, and is used at the base of the larger shrubs on the side of the planting toward the street. We see here the value that a shrubbery screen may have, for it entirely hides the lily pool and garden from the street and sidewalk, and gives it a pleasing feeling of privacy. In the photograph, the huge native Kentucky coffee tree that is one of the central features of the little garden can be seen above the Austrian pine.

This photograph also shows the east end of the house, with the trimmed mass of Berberis thunbergii. Annuals not shown in the blue-print are seen growing in front of this barberry; the annual bed along the front of the house can also be seen. The specimen of Ulmus americana at the corner of the house shows quite distinctly. The porch, with its planting, and the back wall of the garden can be seen, but are better shown in Fig. 7. In the background of this photograph can be seen the roof of the garage.
FIGURE 6

If one goes around the high screen just mentioned, he comes upon the private garden shown in this photograph. The picture is taken from the terrace of the house, and looks out over the lily pool, the central feature of the garden. The shrubbery seen in the very foreground of the picture is the Berberis thunbergi planted around the corner of the terrace. Beyond the pool is seen the trunk of the large Kentucky coffee tree; this is an old tree that was growing there before the improvements were undertaken, and it has most pleasingly been incorporated into the garden design. Beyond and to the left of this tree is a red cedar; this is not shown in the blue-print, but has been added later. It adds a pleasing touch of contrast to the garden, and also serves somewhat to tie it up with the planting beyond the wall, which is composed for the most part of red cedars that were already growing there. These are shown in the blue-print. The eastern boundary of the garden is a mass of Syringa vulgaris, as originally planned. Day lilies and iris have been planted in front of these lilacs. Growing on either side of the gate are plants of Lonicera Brownii, a hybrid honeysuckle having L. sempervirens as one of its parents; these add a touch of beauty not planned on in the original blue-print. The planting along the south side of the wall is well shown in this photograph. The vines are as planned with roses, Clematis paniculata and C. jackmani, and Parthenocissus tricuspidata. The bed in front of the wall is not shown in the blue-print; it contains peonies, bordered with day lilies, near the gate, and flax farther west.
FIGURE 7

This shows the same garden as seen from the other side. The planting around the porch can be easily made out. Wisteria chinensis, provided for in the original plan, twines around the pillars and over the roof of the porch. Dwarf plants of Viburnum acerifolium have been added at the base of the pillars, with pleasing results. At the extreme left of this picture a small part of the flower bed on the inside of the high shrubbery screen can be made out. This bed contains columbines, day lilies, and peonies. The seat, not shown in the photographs, makes a pleasant secluded spot.

As a whole, this is a most pleasing little garden. The foundation and the two elephants, with the white stonework around the pond, are sure to satisfy anyone who has any desire for formality.
North of the gate into the formal garden, the blue-print shows only a lawn, with red cedars at the south end, a purple plum and a weeping willow on the east line, and a chicken yard and house at the north end. This plan has been greatly modified, as this photograph shows. The picture was taken from a position at the south end of this lawn, looking north toward the chicken house. As one can see, a flower bed, parallel with the east territory line, has been added; this bed is given over to ten roses. At the south end of this bed and near the east boundary, Deutzia scabra watereri, Syringa persica, and Diervilla have been planted; these are not shown in the blue-print. Along the fence on the east side grapevines are now growing. The enclosure at the extreme northeast corner, designated in the blue-print as a chicken house and yard, seems now to be used as a tool house. It is very effectively camouflaged, however, by the vines, which are seen growing on the walls; these are Parthenocissus tricuspidata and P. quinquefolia, and Campsis radicans. The small cement structure seen just in front of the chicken yard encloses an asparagus bed. This was added after the original plan was made, and it seems to be a rather inharmonious note, detracting rather than adding to the total effect. In the whole large plan for beauty and pleasure, this one small touch of utility seems out of place; if this whole northeast corner, called lawn in the blue-print were to be given over to a vegetable garden, the small asparagus bed would not appear so incongruous.
FIGURE 9

This photograph shows the view looking across the tennis court at the north and east sides of the house, the pergola, and the north wall of the formal garden. The vines on the pergola are Wisteria chinensis, and those on the wall, Farthenocissus tricuspidata, and some Celastrus scandens. These plants of Wisteria chinensis are quite beautiful; at the corner of the garage the vine has grown unusually high, and hangs down from the roof. The plantings beyond the pergola are seen to be for the most part low perennials and annuals, as provided for in the blue-print. Hibiscus syriacus and Philadelphus lemoinei are planted in the place devoted to altheas in the original plan.

FIGURE 10

This photograph shows the rear of the house, as seen from the garage court. The planting here is practically as planned. There is a clump of Berberis thunbergii by the back door, and a large specimen of Juniperus virginiana and a smaller Thuja occidentalis. Three conifers were provided for in the blue-print. The back wall of the house is quite covered with Boston ivy. Along under the row of windows shown in the photograph is a bed of lilies-of-the-valley. This is shown in the blue-print, as is also the mass of Hydrangea paniculata just around the corner from the back door. The planting by the wall of the garage court can be seen better in the next photograph.
FIGURE 11

This is the view of the northwest corner of the grounds, as seen from the sidewalk of Sunset Drive. The bed of iris along the driveway is shown at the extreme right of the photograph. The planting at the driveway exit is not shown. It has been slightly changed from the original plan. At the north side there are two red cedars and a white birch, replacing the two American arborvitae and the one red cedar; the planting opposite this, on the south side of the driveway exit, is as planned in the blue-print. The small triangular planting at the turn of the drive is as planned, with Pinus montana mughus and Vica minor.

Several changes have been made in the planting along the west side of the garage court; this is shown in the photograph. Two purple-leaved plums take the place of the two specimens of Vitex agnus-castus. The Lombardy poplar at the south end of the shrub mass and the Catalpa at the north end have been omitted. The general shrub mass is of honeysuckle and spirea as planned. The hemlock tree is quite a beautiful specimen; it is not shown in the photograph.

The planting along the north property line has been changed only slightly from the blue-print plan. Some bridle-wreath spirea has been added at the corner, by the varnish tree, and some Rhodotypos kerrioides near the Russian olive tree, a Scotch pine and a white pine have been added.
We see from these discussions and comparisons that this particular planting has been greatly changed since originally planned. We also see that the blue-print really does not give a very satisfactory idea of the finished result, but is of value only as a plan. This whole situation we may take as indicative of the type of project confronted in laying out any landscape.
Home Ground of Mr. Ben C. Hyde
Sunset Hill—Kansas City, Mo.
Planting Plan

Scale—1 inch = 20 feet

Landscape Architects
Kansas City, Missouri
September, 1914

Home Ground of Mr. Ben C. Hyde
Sunset Hill—Kansas City, Mo.
Planting Plan

Scale—1 inch = 20 feet

Landscape Architects
Kansas City, Missouri
September, 1914

Key:

How Growing
Trees & Evergreens
To Be Planted
Trees & Evergreens
Dozens of Perennials
and Annuals
Vines

A. Amelanchier canadensis (Virginia Creeper)
B. Itea (Boston Ivy)
C. Clematis jackmani (Jackman’s Clematis)
D. Vitis 'punctata' (Punctured Leaf)
E. Lonicer a nitida (Hollyhock)
F. Rose, Baltimore Belle
G. Campanula carpatica
H. Tremonia grandiflora (Chinese Trumpet Creeper)
I. Vitis filipendula (Trumpet Creeper)
J. Vitis 'albicans' (Purple Vine)
K. Vitis 'alba' (White Vine)


Spring Flowering Bulbs to be planted in groups of 10 among the Herbeaceous Perennial Plants: Plant in Autumn; Early Tulips, Arisa, Chrysanthemums, Larkspur, Rocks, Aconites, Siberian Iris, and Primroses. All appear in the Perennial Borders during the Season. Annual Azaleas, Annual Oxyandra, Cosmos, Nasturtiums, Nemophila, Petunias, and Verbena.
SCHOOLS OF LANDSCAPE ARCHITECTURE IN THE UNITED STATES.

During the last twenty-five years especially, numerous courses in landscape architecture have grown up, until now there are approximately fifty institutions in the United States, including universities, colleges, and technical schools, which offer such work. Some of these, particularly the liberal colleges, offer the subject only as "cultural" or "appreciation" courses, several universities have a separated department of landscape architecture, and several professional schools are devoted entirely to the subject; the last two have as their aim the teaching of landscape architecture as a profession. Let us consider the professional side later, and for the present concern ourselves with the presentation of landscape architecture as a cultural subject.

Frank A. Waugh (3) has said, "Landscape gardening should be a cultural subject to a hundred college students for every one who studies it professionally". He goes on to say that as a cultural subject it should emphasize these three ideals:

(1) To make snug, comfortable, and beautiful homes.
(2) To make clean, healthful, and beautiful cities.
(3) To protect and interpret the native landscape.

Furthermore, as a cultural subject, it should "seek to make order and beauty in the home a means of personal enjoyment and personal culture, and to realize the universal and incomparable beauty of the native landscape, making this great beauty a part of every-day life and of personal enrichment".

This presentation of landscape architecture would be a part of a general education. There seems to be no reason why we should
not have such courses in most of our colleges and universities; courses in appreciation of art and in appreciation of music are offered quite universally, and surely appreciation of landscape is as important, or even more important, for the landscape must necessarily be a part in everyone's life. Henry Vincent Hubbard (1) is of the opinion that the ideal arrangement would be to teach landscape architecture as a sister subject with architecture, offered in the department of fine arts, and he suggests the following outline for a single course in appreciation. The course would consist of three lectures and six outside hours a week for an entire year, and would cover the five following divisions:

(1) Materials of landscape architecture.
(2) Theory of design in landscape materials.
(3) Appreciation of landscape beauty.
(4) Historic examples of landscape architecture, their relations to each other and particularly to the circumstances that brought each of them forth.
(5) Landscape architecture in America today --- the ideals of the profession and the appreciation and support of the citizen.

This course as outlined is surely broad enough to instill in the student some general appreciation of landscape architecture. It might seem even more extensive than is necessary for a general "appreciation" course, and no doubt half a year's work with three lectures and six outside hours a week, or an entire year with fewer hours a week, would suffice. However, the outline above must be fairly well covered before any such course can be considered complete.

It is most important that a clear differentiation be made be-
tween the professional and the non-professional or cultural courses, and that the tendency to over-professionalize instruction be guarded against. It is a fact that some schools, particularly agricultural colleges, aim to turn out professional landscape gardeners as fast as possible, and the standards for professional training are thus set much too low. The customary thing seems to be to make the professional landscape architecture course a part of the baccalaureate curriculum, requiring a four-year course of 120 credits, with at least 60 for general studies; at the most only 60 hours are left for landscape architecture and all of the collateral subjects together, which we must agree is a small amount as a basis for immediate professional work. Naugh and Hubbard both agree that the ideal plan would be to devote the four-year course mainly to obtaining the essential background of a general cultural knowledge, and to follow it with a graduate course of perhaps two or three years of study, travel, and apprenticeship in the field of landscape architecture.

The Harvard School of Landscape Architecture follows such a plan. A professional graduate course normally including two and three-fourths years is offered, made up of two lines of study. One line deals with general landscape architecture, and leads to the degree of Master in Landscape Architecture; the other deals with city planning, and leads to the degree of Master in Landscape Architecture in City Planning. In addition, graduates nearly always serve what amounts to an apprenticeship with some reliable firm before undertaking independent practice. At least one year in residence is required for either degree. As a prerequisite for
either course, an A. B. degree or its equivalent is required. The following specific subjects are also required, but lack of preparation in any of them can be made up after entering the school, providing the student has a good A. B.:

1. Acquired power in effective verbal statement.
2. Ability to read French and German prose.
3. Elementary knowledge of mathematics, physics, geology, physiology, history, economics, and civics.
4. Experience in topographical surveying.
5. Some facility in accurate freehand and architectural or engineering drawing.
6. Acquaintance with architectural forms and their use by architects.
7. In addition, for the general landscape course, some acquaintance with soil and plants, a sound elementary knowledge of botany, and familiarity with the common trees and shrubs are quite helpful.
8. In addition, for the course in city planning, some practical courses in civil or sanitary engineering and in the social sciences and municipal administration are to be desired.

To receive the Master's degree in either course, the student must have satisfactory preparation, attain facility of expression in freehand drawing and satisfactory attainment in design, submit a thesis in design, and pass with credit certain specific courses. The courses, for the degree in general landscape architecture, are as follows: (Courses, unless designated as half-year courses, continue throughout the year)
First Year:

Principles of Landscape Architecture, first course
Elementary Landscape Design (Second half)
Elementary Landscape Construction (Second half)
Elements in Horticulture, including Municipal Forestry
Plant Materials, first course
Principles of City Planning, elementary course (First half)
Landscape Topography (First half)
Elementary Architectural Design

Second Year:

Principles of Landscape Architecture, second course (First half)
Intermediate Landscape Design
Advanced Landscape Construction
Plant Materials, second course (First half)
Planting Design in Private Estates

Third Year:

Advanced Landscape Design (First half)
Planting Design of Public Areas

Additional Courses not specified as to year:

Elementary Freehand Drawing
Intermediate Freehand Drawing
Advanced Freehand Drawing (First half)
Modeling (First half)

For the degree in city planning, the following courses are re-

First Year:

Principles of Landscape Architecture, first course
Elementary Landscape Design
Elementary Landscape Construction (Second half)
Elements of Horticulture (First half)
Trees and Shrubs for Municipal Planting
Principles of City Planning, elementary course (Second half)
Elementary Drafting (First half)
Elementary Architectural Design

Second Year:

City Planning Design
Municipal Construction
Planting Design of Public areas, elementary course
Principles of City Planning, advanced course and thesis
Third Year:

Advanced City Planning Design (First half)
Planting Design of Public areas, advanced course

Additional courses not specified as to year:

Elementary Freehand Drawing
Intermediate Freehand Drawing
Advanced Freehand Drawing (first half)
Modeling (First half)
Social Ethics. The Housing Problem and the Social Aspects of Town Planning
Community Recreation, or some other course or half-course of importance to city planners that may be offered in the University and approved by the Council of the School

The regular course of the academic year at Harvard is open to men only, but there is a summer course in horticulture and plant materials that is open to women too. Harvard offers exceptional opportunities for the study of landscape architecture in the examples, both good and bad, accessible in the vicinity of Boston. In addition, there is the Arnold Arboretum, with one of the largest classified collections of living trees and shrubs in the world, arranged in botanical sequence and also grouped for beauty of landscape effect.

Cornell University, in its College of Architecture, offers, along with study designed as basic training preparatory to the practice of architecture and of painting and sculpture as professions, study as basic training for the practice of the profession of landscape architecture. The course leading to the degree of Bachelor of Landscape Architecture normally requires five years' work. This time may be shortened by the presentation of Trigonometry, Advanced Algebra, Physics and Chemistry, as entrance units. Also, the length of time required for the course may be shortened some-
what if the student shows unusual ability, for his advancement is determined by the quality as well as the quantity of his work; but here, as in preparation for other creative professions, crowding of the work is not considered wise. The number of students in the college is limited for effective instruction. In order to receive the degree of Bachelor of Landscape Architecture, courses in Hygiene and Military Drill (or Physical Training), the four subjects listed above, unless presented as entrance units, and the following courses in the curriculum must be completed:

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Total Hours ----------------------------------- 28

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Total Hours ----------------------------------- 20

Summer Session: (Second Summer)

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<tr>
<td>Planting Design</td>
<td>2</td>
</tr>
<tr>
<td>Elementary Surveying</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

### Fourth Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Design</td>
<td>8</td>
</tr>
<tr>
<td>Life and Antique</td>
<td>3</td>
</tr>
<tr>
<td>Planting Design</td>
<td>1</td>
</tr>
<tr>
<td>Earthwork Computations</td>
<td>3</td>
</tr>
<tr>
<td>Concrete Construction</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

### Fifth Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Design</td>
<td>9</td>
</tr>
<tr>
<td>Landscape Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Geology</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

The University of Pennsylvania also offers a five-year course leading to the degree of Bachelor of Landscape Architecture. The aim here is to enable the student to earn the University degree by adding to his professional studies a minor amount of liberal study taken at the University, so that he earns the degree in large part through the professional work of his course. The course is open to both men and women, providing that the proper entrance requirement of fifteen units in acceptable college preparatory subjects has been met. The prescribed course is as follows: (The amount of
work is measured in "units", a unit being sixty actual hours of
work, whether in class meeting, in preparation, or in labora-
tory work)

First Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Landscape Architecture</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Elements of Plant Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscape Architecture Drawing</td>
<td>1/2</td>
<td>1</td>
</tr>
<tr>
<td>Architecture</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Freehand</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Projections, Shaded and Shadows, Perspective</td>
<td>1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Composition</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Literature</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reading and Composition</td>
<td>1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Natural Landscape</td>
<td>1-1/2</td>
<td></td>
</tr>
<tr>
<td>Historic Geology</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Plane Trigonometry</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Phy. Ed. or Military Training</td>
<td>10-1/2</td>
<td>10-1/2</td>
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</tbody>
</table>

Total Units ------------------------------- 31
Professional Units ------------------------ 9-1/2

Second Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice in Landscape Design</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Plant Materials</td>
<td>1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Elements of Architecture</td>
<td>1-1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Design</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Freehand</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Surveying</td>
<td>1-1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Architectural History</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Composition and English Elective</td>
<td>1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Reading and Composition</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Phy. Ed. or Military Training</td>
<td>10-1/2</td>
<td>10-1/2</td>
</tr>
</tbody>
</table>

Total Units ------------------------------- 21
Professional Units ------------------------ 13

Third Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>4-1/2</td>
<td>4-1/2</td>
</tr>
<tr>
<td>Plant Materials</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Construction</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Freehand</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Water Color</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>2-1/2</td>
<td>2-1/2</td>
</tr>
<tr>
<td>Phy. Ed. or Military Training</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Total Units ------------------------------- 24
Professional Units ------------------------ 18
Fourth Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Care of Plants</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Elementary Planting Design</td>
<td>1-1/2</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Construction</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Freehand</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Water Color</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phy. Ad. or Military Training</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
</tr>
<tr>
<td><strong>Professional Units</strong></td>
<td><strong>24</strong></td>
<td></td>
</tr>
</tbody>
</table>

Fifth Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Professional Practice</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Water Color</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Modeling</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>History of Painting</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>History of Sculpture</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
</tr>
<tr>
<td><strong>Professional Units</strong></td>
<td><strong>24</strong></td>
<td></td>
</tr>
</tbody>
</table>

The group from which the electives are chosen is made up of History, English, Economics, Political Science, Life, Historic Ornament, Music, and Aesthetics.

We see from this outline that the five-year course in Landscape Architecture requires 114 units, of which 85-1/2 are professional; an unusually large amount of these professional units seem to be devoted to freehand drawing and water color.

In addition to the regular courses of instruction, parks, gardens, and country estates in and near Philadelphia offer unusual opportunities for study; the University library is well provided with books, photographs, and plates; and the Botanic Garden, the Awbury Arboretum in Germantown, and several large nurseries nearby, offer fields for the study of plant materials.
The University of Illinois offers a four-year course leading up to the degree of Bachelor of Science in Landscape Architecture. There is the usual 15 unit entrance requirement. 130 semester hours are required for the degree, of which 119 are prescribed subjects, leaving 11 hours of electives. The prescribed subjects are as follows: (An hour is one class period a week for one semester or the equivalent in laboratory, shop, or drawing room).

**First Year:**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Elements</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>History of Landscape Architecture</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>General Botany</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Design</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Plane Trigonometry</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Rhetoric and Themes</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hygiene (men)</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Special Lectures</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Elements of Horticulture</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Military Drill and Theory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Hours: 33

**Second Year:**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveying</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Landscape Design</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Frame Construction Details</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Masonry Construction Details</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>History of Architecture</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Special Lectures</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Physical Education</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Military Drill and Theory</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Hours: 15

**Third Year:**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Design</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Trees and Shrubs</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Landscape Construction</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>English Writers of the 19th Century</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Public Speaking</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Special Lectures</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Garden Flowers</td>
<td>16-1/2</td>
<td>16-1/2</td>
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</tbody>
</table>

Total Hours: 32
Fourth Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Design</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Planting Design</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>City Planning</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Special Lectures</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Care of Plant Materials</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Office Practice</td>
<td>12-1/2</td>
<td>11-1/2</td>
</tr>
</tbody>
</table>

Total Hours: 24

In addition to this course in Landscape Architecture, the University of Illinois also offers a four-year course in Horticulture.

Iowa State University offers a four-year course in Landscape Architecture, in the department of Horticulture and Forestry, leading to the B. S. degree. The course may be broadened and liberalized if the student so desires. Fifteen entrance units are required. The prescribed course is as follows: (A credit is equivalent to three clock hours a week in recitation, preparation, or laboratory for twelve weeks).

First Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory Landscape Architecture</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Principles of Landscape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freehand Drawing</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Surveying</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Botany</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>General Chemistry</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Plant Physiology</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>General Plant Pathology</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Farm Forestry</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>College Algebra</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Plane Trigonometry</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education (required)</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>17</strong></td>
<td><strong>13</strong></td>
<td><strong>18</strong></td>
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</table>

Total Credits: 53
Second Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Principles of Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>History of Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>Elements of Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>Surveying</td>
<td>3</td>
</tr>
<tr>
<td>Plant Materials</td>
<td>3</td>
</tr>
<tr>
<td>Architectural Design</td>
<td>3</td>
</tr>
<tr>
<td>General Horticulture</td>
<td>4</td>
</tr>
<tr>
<td>Soils</td>
<td>3</td>
</tr>
<tr>
<td>Fundamentals of Public Speaking</td>
<td>2</td>
</tr>
<tr>
<td>Military</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education (required)</td>
<td>R</td>
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</table>

Total Credits: 48

Third Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>Plant Materials</td>
<td>3</td>
</tr>
<tr>
<td>Planting Design</td>
<td>3</td>
</tr>
<tr>
<td>Landscape Practice</td>
<td>3</td>
</tr>
<tr>
<td>Details of Construction</td>
<td>R</td>
</tr>
<tr>
<td>Advanced Landscape Construction</td>
<td>2</td>
</tr>
<tr>
<td>Freehand Drawing</td>
<td>1</td>
</tr>
<tr>
<td>Perspective Sketch</td>
<td>1</td>
</tr>
<tr>
<td>Technical Journalism</td>
<td>3</td>
</tr>
<tr>
<td>Feature Writing</td>
<td>3</td>
</tr>
<tr>
<td>Mechanics and Heat</td>
<td>3</td>
</tr>
<tr>
<td>Physiography</td>
<td>4</td>
</tr>
<tr>
<td>Constitution and Government</td>
<td>3</td>
</tr>
<tr>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Garden Flowers</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
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</table>

Total Credits: 51

Fourth Year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Landscape Design</td>
<td>4</td>
</tr>
<tr>
<td>City or Town Planning</td>
<td>4</td>
</tr>
<tr>
<td>Suburban and Institutional Planning</td>
<td>3</td>
</tr>
<tr>
<td>Recreational and Regional Planning</td>
<td>3</td>
</tr>
<tr>
<td>Planting Composition</td>
<td>3</td>
</tr>
<tr>
<td>Forest Conservation</td>
<td>3</td>
</tr>
<tr>
<td>General Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>History of Architecture</td>
<td>2</td>
</tr>
<tr>
<td>Roads and Pavements</td>
<td>2</td>
</tr>
<tr>
<td>Engineering City Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 17
Landscape Practice -------------- R
Freehand Drawing------------------ 2
Business Law --------------------- 3
Electives ------------------------ 17

Total Credits ------------------- 51

In addition to these required courses, the student must have at least six months of practical experience in landscape work before receiving the B. S. degree. This requirement should be met before the beginning of the junior year. In this requirement, Iowa State University differs from the other schools we have considered that offer work leading to a B. S. in Landscape Architecture. The graduate college of Iowa State University offers work for the degree of Master of Science in Landscape Architecture. A minimum of 45 hours of creditable graduate work is required, not less than half of which must be taken in residence. There is no set course, as in the Harvard graduate school; the work is chosen courses open to graduates only or to graduates and advanced undergraduates. A thesis upon a chosen subject is required in addition.

Kansas State Agricultural College offers two curricula, one in the Division of Agriculture, and the other in the Division of Engineering. The two courses were first offered in 1924, about the time that landscape gardening was becoming quite a center of attention. The courses have gradually begun to merge more and more until now one can practically cover all of the work in both courses in only five years.

The curriculum leading to the degree of Bachelor of Science in Agriculture, with special training for landscape gardening, is as follows: (A credit is one hour of lecture or recitation work, or
three hours of laboratory work a week for eighteen weeks).

**First Year:**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Rhetoric</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Chemistry</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>General Botany</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Judging Market Livestock</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Judging Breeding Livestock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy Judging</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Elements of Dairying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Geology</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Library Methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture Lectures</td>
<td>R</td>
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**Second Year:**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
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<tbody>
<tr>
<td>Freehand Drawing</td>
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<tr>
<td>Agricultural Economics</td>
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</tr>
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<td>Plant Physiology</td>
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<td>Soils</td>
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<tr>
<td>Farm Poultry Production</td>
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<tr>
<td>Elements of Horticulture</td>
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<tr>
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**Third Year:**

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<tr>
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<tbody>
<tr>
<td>Genetics</td>
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<tr>
<td>Surveying</td>
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<td>History and Literature of Landscape Gardening</td>
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<td>Plant Materials in Landscape Gardening</td>
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<td>Taxonomic Botany of Flowering Plants</td>
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<td>Plant Ecology</td>
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<tr>
<td>-------------------------------------------------</td>
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<tr>
<td>Farm Forestry</td>
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<td>Landscape Gardening</td>
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### Fourth Year:

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<tr>
<td>Agricultural English</td>
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<td>Agricultural Relationships</td>
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</tr>
<tr>
<td>Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>Silviculture</td>
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</tr>
<tr>
<td>Greenhouse Construction and Management</td>
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<tr>
<td>Tree Surgery</td>
<td>2</td>
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<tr>
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<td>2</td>
</tr>
<tr>
<td>Theory and Aesthetics of Landscape Gardening</td>
<td>3</td>
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<tr>
<td>Forcing Flowers and Vegetables</td>
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</tr>
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<td>Freehand Drawing</td>
<td>2</td>
</tr>
<tr>
<td>Spraying</td>
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<td>Civic Art</td>
<td>3</td>
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<tr>
<td>Horticulture Research</td>
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<td>Agriculture Seminar</td>
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The curriculum in the Division of Engineering, leading to the B. S. in Landscape Architecture, is as follows:

### First Year:

<table>
<thead>
<tr>
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<tr>
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<td>Freehand Drawing</td>
<td>2</td>
</tr>
<tr>
<td>General Botany</td>
<td>3</td>
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<tr>
<td>Elements of Architecture</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td>2</td>
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<tr>
<td>Descriptive Geometry</td>
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<tr>
<td>Artillery</td>
<td>1-1/2</td>
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<tr>
<td>Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>Engineering Lectures</td>
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### Second Year:

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<tr>
<td>History of Architecture</td>
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<tr>
<td>Surveying</td>
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<tr>
<td>Chemistry</td>
<td>4</td>
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<tr>
<td>Landscape Gardening</td>
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<td><strong>Total Credits</strong></td>
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<td>Course</td>
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<tr>
<td>Design</td>
<td>3</td>
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<tr>
<td>Shades and Shadows</td>
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<td>Plant Physiology</td>
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<td>General Geology</td>
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<td>Artillery</td>
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<td>Physical Education</td>
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**Third Year:**

<table>
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<tbody>
<tr>
<td>History of Architecture</td>
<td>3</td>
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<tr>
<td>Freehand Drawing</td>
<td>2</td>
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<td>Surveying</td>
<td>3</td>
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<td>Plant Materials in Landscape Gardening-Solilo</td>
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<tr>
<td>History and Literature of Landscape Gardening</td>
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<tr>
<td>Theory and Aesthetics of Landscape Gardening</td>
<td>3</td>
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<tr>
<td>Elements of Horticulture</td>
<td>4</td>
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<td>Civic Art</td>
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<td>Silviculture</td>
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<td>Perspective</td>
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**Fourth Year:**

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<tbody>
<tr>
<td>Plant Pathology</td>
<td>3</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>Highway Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Landscape Gardening</td>
<td>2</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>3</td>
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<tr>
<td>Working Drawing and Specifications</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
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<tr>
<td>Greenhouse Construction and Management-Building</td>
<td>3</td>
</tr>
<tr>
<td>Engineering English</td>
<td>2</td>
</tr>
<tr>
<td>Seminar</td>
<td>R</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

The University of California offers a four-year course in the College of Agriculture leading to a B. S. degree in Landscape Design
The regular fifteen entrance units are required. The curriculum is designed to offer technical instruction to those who wish to become professional landscape architects, and to furnish such instruction as will familiarize students with the fundamentals of the profession to the extent that they may become competent office assistants or reliable superintendents of construction. Since the flora of California is quite different from that of central, northern, and eastern United States, and since there is such variety in soil and climate, special attention is given to training students for practice on the Pacific Coast. 130 semester hours are required for the degree, in addition to matriculation and in addition to English composition. The following courses must be completed:

- Botany ---------------------------------------- 8 Hours
- English ---------------------------------------- 12 Hours
- Art and Architecture -------------------------- 27 Hours
- Economics -------------------------------------- 6 Hours
- Civil Engineering (Surveying) ----------------- 6 Hours
- American Institutions -------------------------- 2 Hours
- Military and Physical Education ---------------- 8 Hours

Total ---------------------------------------- 69 Hours

Summer Practice Course in Landscape Design 6 hours
Courses in the Division of Landscape Design 30 hours

The degree of Master of Science in landscape design may also be obtained at the University of California. The requirements are 20 semester units, including a thesis which may count for not more than 4 units; at least 8 of the 20 units, including the thesis, must be strictly graduate work in the major subject. The work may be chosen from regular graduate and advanced undergraduate courses, or may be special work arranged with the department. The course is thus not a definitely prescribed one.
Cincinnati University offers a course in landscape architecture in the School of Applied Arts, leading to the degree of Bachelor of Science in Landscape Architecture. The emphasis in the course is placed upon architecture, freehand drawing and design, rather than upon too much Horticulture and Botany, though the latter subjects are not eliminated. All plant material is taught by the Landscape Architecture department rather than in the Botany department, for it is considered that the botanist is not concerned with the many horticultural varieties and the introduced plants of great value which form a large part of the materials in any landscape planting. The effort is made to teach the use of plants throughout the teaching of their identification. Fifteen units are required for entrance, of which twelve are specified. Students from other universities may enter the course by examination not later than the beginning of the third year. The course is planned on the basic principle that more theory, more cultural training, and more field value can be obtained from a five-year co-operative course than from a four-year full-time course, since more speed at the end of the five-year course is made possible by the background of experience obtained through contact with real work. Thus the course in Landscape Architecture departs from the traditional lines of such courses in this major way, that the co-operative system is used, whereby the students receive in a five-year course, eleven months a year, the same amount of theoretical training as they usually receive in a four-year theoretical course, and in addition, receive practical training in nurseries, on actual plantings, and in the offices of landscape architects.
The first two years of the course for men correspond to the course in Architecture. Following are the subject covered in the five-year plan, grouped under five heads:

(1) Background:

- History of Ancient and Classical Architecture
- History of Romanesque and Gothic Architecture
- History of Architecture
- History of Landscape Architecture
- Ancient Civilization
- Medieval Civilization
- Modern Civilization
- Historic Literature (3 courses)
- French (2 courses)

(2) Principles:

- Principles of Design (Color)
- Theory of Architecture
- Mathematical Analysis
- Principles of Landscape Architecture
- Surveying
- Topographical Surveying
- Plant Ecology (3 courses, one a laboratory course)
- City Planning
- Plant Physiology

(3) Mediums of Presentation:

- Freehand Drawing (4 courses)
- Elements of Architecture
- Modeling
- Water Color Sketching

(4) Materials:

- Coordination (3 courses)
- Plant Materials
- Garden Flowers
- Horticultural Practices
- Landscape Construction
- Advanced Plant Material

(5) Creative Problems:

- Architectural Design (2 courses)
- Military Science and Tactics (5 courses; required 2 years)
- Landscape Design (3 courses)
- Planting Design
The course for women is on a full-time basis for the first two years; this may be followed by either full-time work for two more years, completing the course in four years, or by co-operative work for three years, completing the course in five years. The course is very similar to that for men in the field of subjects covered.

There are two outstanding schools of landscape architecture in the United States for women exclusively; these are the Lawthorpe School of Landscape Architecture at Groton, Massachusetts, and the Cambridge School of Domestic Architecture and Landscape Architecture at Cambridge, Massachusetts.

There are two programs that may be followed at the Lawthorpe School; one is a three-year course leading to a Lawthorpe certificate, and the other is a longer course, in co-operation with Simmons College, leading to the B. S. degree. Admission is by high school graduation or its equivalent. The three-year course normally requires ten quarterly terms including one summer quarter. The outlined course is as follows, with the subjects and the number of quarters they are required:

Architecture ------------------------- 3
History ----------------------------- 3
Construction ------------------------ 6
Fine Arts --------------------------- 5
Horticulture ------------------------ 9
Design ----------------------------- 7
Thesis ----------------------------- 1

The work of the first two years of the longer course for the B. S. degree is carried on at Simmons College, the required summer quarter and the third year are spent at Groton, and the fourth year again at the College. The prescribed course is as follows:
First Year.

First Term
- English
- History
- Mathematics
- Design

Second Term
- English
- History
- Mathematics
- Housebuilding

Third Term
- English
- History
- Mathematics
- Art

Second Year.

Design
Economics
Hist. of Landscape
Architecture

Graphics
Economics
English
Hist. of Architect-Hist. of Architecture

Summer Term.

Elementary and advanced courses in Horticulture, Design, and other professional subjects are available.

Third Term.

Design (2 courses)
Architecture
Fine Arts
Horticulture

Design (2 courses)
Architecture
Construction
Horticulture

Fourth Year.

Design (2 courses)
Construction
Horticulture
Architecture

Design
Construction
Architecture
Horticulture

The degree of Master of Science in landscape architecture may be obtained by one year of residence at Simmons College and certain practical work in Lawthorpe's Horticultural Department at Groton. The program consists of advanced work based on projects of a semi-public character, special lecture courses, research, reports, and a final thesis.

The Cambridge School differs from Lawthorpe in that it is primarily
for college graduates. The school aims to offer women a thorough professional training in architecture, with particular reference to residential work, and in landscape architecture, with particular reference to general private practice. This purpose is accomplished by two separate three-year curricula leading to certificates. The school aims to be neither purely architectural nor entirely concerned with landscape design, but to train the student in both fields, keeping before her the truth that success in one of these particular fields requires an understanding and appreciation of the other. These two curricula are as follows. The first years of both curricula are identical.

**Architectural Curriculum**
- Architectural History
- Landscape History
- Mathematics
- Graphics, Shades and Shadows, Perspective
- Perspective
- Freehand Drawing
- Architectural Elements
- Architectural Design
- Elementary Planting Design
- Materials in Construction
- Problems in Landscape Construction
- Architectural Construction
- Continuation of Architectural Construction
- Introductory Plant Materials and Horticultural Principles
- Theory of Design
- Architectural Professional Practice
- Architectural Thesis

**Landscape Curriculum**
- Architectural History
- Landscape History
- Mathematics
- Graphics, Shades, and Shadows, Perspective
- Perspective
- Freehand Drawing
- Architectural Elements
- Architectural Design
- Elementary Planting Design
- Problems in Planting Design
- Materials in Construction
- Problems in Landscape Construction
- Landscape Construction
- Advanced Landscape Construction
- Introductory Plant Materials and Horticultural Principles
- Advanced Plant Materials
- Theory of Design
- Landscape Professional Practice
- Landscape Thesis

The Cambridge School also offers a Summer School course of seven weeks, and a three months’ summer travel course in Europe. For the
regular course, numerous local facilities outside the school, as the Boston Museum of Fine Arts, the Arnold Arboretum and Botanic Garden, the Boston park system, and numerous others are available.

By no means all of the schools offering professional training in landscape architecture have been considered, but those are enough to show the trend of the courses in the subject. We find the usual thing to be a four-year course leading to a B. S. in Landscape Architecture. This must result in one of two things, as we see in looking over the courses of study. Either the general broad cultural education must be neglected for specialization in landscape architecture, or else the general course of study must be broader and less time taken for specialization; it is too much to expect to get both in the short time of four years. The solution does seem to be a rather general course leading to an A. B. or B. S. degree, followed by graduate work in landscape architecture. This plan is so far most successfully worked out at Harvard School of Landscape Architecture for men, and the Cambridge School for women. It is no longer denied that women have a place in landscape architecture; a recent bulletin of the Bureau of Vocational Information (2) is quoted as saying, "For the woman of ability who will secure the necessary technical training and experience, in addition to a broad cultural education, there is opportunity for a career in landscape architecture".

We see from this discussion and comparison of courses that there are some important needs as yet unmet in the field of professional instruction in landscape architecture. In the first place, the system of apprenticeship after graduating from a pre-
sribed course of study, or perhaps a part-time system of study
and practical application, should be more widely put into practice.
Secondly, there seems to be a need for a few more graduate schools
of landscape architecture of high standards in other localities
than the East; there should no doubt be at least one such school
in the South; one on the Pacific Coast, probably one in the Mid-
West. However, it might be well to keep in mind Frank A. Waugh’s
opinion, that more professional schools are not needed so much as
higher ideals in the already existing schools.

Bibliography

1. Hubbard, Henry Vincent. The Teaching of Landscape
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   Quarterly Journal of Landscape
   Architecture, October, 1926.

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3. Waugh, Frank A. Instruction in Landscape Gardening in
   American Colleges. Quarterly
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   October, 1926.