

THE CULTIVATED EVERGREENS

A HANDBOOK OF THE CONIFEROUS AND MOST
IMPORTANT BROAD-LEAVED EVERGREENS PLANTED FOR
ORNAMENT IN THE UNITED STATES
AND CANADA

EDITED BY
L. H. BAILEY

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EDITOR'S PREFACE

TO MAKE a book of the cultivated evergreens requires that experts be consulted. The present volume is, therefore, a compilation of articles written by several persons, on a projected plan, brought together and edited in one office. Those familiar with these subjects will recognize the names and appreciate the value of their contributions: Ralph S. Hosmer, Professor of Forestry and head of the Department of Forestry, New York State College of Agriculture, Cornell University; O. C. Simonds, landscape-gardener and author of the book, "Landscape-Gardening"; John Dunbar, Assistant Superintendent of Parks and Arboriculturist, Rochester, N. Y.; George P. Brett, president of The Macmillan Company, interested in the planting of evergreens on his estate in Connecticut; Henry Hicks, nurseryman on Long Island; Frederick Ahrens, propagator, Park Department, Rochester, N. Y., and long engaged in the same work with the old firm of Ellwanger & Barry; E. Bollinger, of the Robert Douglas' Evergreen Nurseries in Illinois; W. T. Macoun, Dominion Horticulturist, Ottawa, Canada; Ernest Branton, horticulturist in southern California; C. R. Crosby, Professor of Extension Entomology, New York State College of Agriculture, Cornell University; J. B. Palmer, Instructor in Entomology, New York State College of Agriculture, Cornell University; F. Dickson, Instructor in Plant Pathology, New York State College of Agriculture, Cornell University; Alfred Rehder, of the Arnold Arboretum of Harvard University, author of many contributions on the botany of woody plants; Frederick V. Coville, Botanist, United States Department of Agriculture, who has given special attention to the

cultivation of certain ericaceous plants; Ralph W. Curtis, Professor of Ornamental Horticulture, New York State College of Agriculture, Cornell University.

The subject of evergreens possesses no close cohesion, although it is recognized as a department of knowledge and practice in horticultural usage. The subject suggests coniferous plants, and these are the ones here chiefly intended. The reader must understand that the phrase "coniferous plants," or *Coniferæ*, as currently used, includes other species than those that bear true cones; some of them, as junipers and yews, yield soft berry-like fruits. These plants agree in certain essential floral or sexual characters, rather than merely in the fact of bearing cones, as also in anatomical structure and evolutionary history; they are properly known as gymnosperms.

In the northern part of the country there are no evergreen trees aside from the gymnosperms, but there are a good number of broad-leaved non-deciduous species of the stature of shrubs and subshrubs. The more prominent of these plants are covered in the book. They are mostly "flowering evergreens," being attractive by their blossoms as well as by their foliage; these are various heaths, rhododendrons, laurels, and their kin, and honeysuckles. Others are typically "berry evergreens," as hollies, cherry-laurels, viburnums, cotoneaster, and pyracantha.

It is fifty-five years since "The Book of Evergreens," by Josiah Hoopes, nurseryman and "member of the Academy of Natural Sciences of Philadelphia," was published in New York. It was long indispensable. A half century has brought us into a new atmosphere. The list of evergreens now has many names strange to that day. The knowledge of insects has vastly increased; and the science of plant pathology has come into being. In those days the best that could be said

of one of the most "mysterious causes of death in the Coniferæ," the blight, was this sentence: "The most rational cause that we can assign for the appearance of blight in the family of Conifers, is that due to a too luxuriant growth." If we complain of the difficulties in these days, we are also to remember that our resources are great and our hope should be controlling. We should like to know what particular shortcoming is ours, as it will be adjudged in the years to come.

We need a book on the horticultural evergreens, with results of careful experience. The Editor hopes that this volume will be useful.

The interest in evergreens, particularly in the more durable conifers, is a subject particularly suited to the substantial amateur. The slowness and regularity of growth, the abiding quality in the round of the twelve months, the element of stability in these plants, appeal strongly to the person who has arrived at a settled purpose in life, who has an estate to develop, and whose sentiments are established. We easily reflect our human qualities into them. There is no haste in their nature, no radical change of purpose in their character. They have a strong juvenile habit and quality, and then they age gradually into a picturesque maturity, each one with outstanding individuality. They are not unduly elated over the advent of spring; they are patient in the adversity of midsummer; they withstand the buffet of winter. They cover the margins of the landscapes and inclose the property securely, giving it a serene atmosphere. They typify the strength of strong men and women as they grow old with the advancing years.

The love of the conifers is no passing fancy. It is not subject to change in fashions. What a man plants today will give him joy as long as he lives, and the trees will carry his memory to his children's children; "he shall grow like a cedar in Lebanon."

When you travel over roads in the wooded hills you come now and then to an opening margined with evergreens. You stop, and enter the place with reverence. You feel a mystery in it. Instinctively you expect strange bird-notes. You sit on a mound, in a quiet reflective mood. You note that some one has built a cooking-fire in the place; the stones still show the marks, and ends of old embers are left. You see evidences that others beside yourself have worshipped there; this gives the spot a human interest. You want to transport this quiet retreat to your own estate.

But perhaps you have no extensive premises to develop. Yet you are interested in the trees you see here and there. You would plant two or three trees in your small area, hoping that they may attain something of the character you see in the wood. They will aid to give your enclosure seclusion. They will provide greenery in the winter. You will note how they respond to the changing seasons, being interested all the more, perhaps, because the response is not violent. The interest does not inhere in showy and transient bloom. The soft growth of the spring shoots is as good to you as flowers. Indeed, few flowers are more beautiful than the annual tender new growth of several of the firs and many of the spruces.

Or perhaps you have only a small city space unadapted to evergreens, or even no land at all. In that case, the range of the native evergreen landscape is yours to explore and enjoy as you will; and you will want to know the kinds, that your appreciation may have direction.

Although to the unpractised eye most evergreens look alike, yet there are clear distinctions in leaves, and the identification of them cultivates the discriminating faculties. The cones and berries are a never-failing source of interest. Specially so are the seed-bearing cones of pines and spruces and the other true

conifers, unlike the fruits of other kinds of plants. In pines, the cones do not mature till the second or even the third year, and in some species they persist till the enlarging limb grows them into the solid wood. This deliberate and durable quality is quite in keeping with the character of the tree itself. These cones are of comely shape, so much so that from early times they have been used as suggestion in the forms of art, and the shape has become an inheritance in literature.

The planter's interest in evergreens is of two kinds—to grow a collection of different genera and species, to incorporate them as parts in a landscape picture. These two purposes are often in conflict, although either one is legitimate. The happiest result is no doubt a thoughtful combination of the two efforts, unless one desires to make only an arboretum; and yet the arboretum may itself have an artistic quality.

L. H. BAILEY.

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THE CULTIVATED EVERGREENS

CHAPTER I

THE CONIFEROUS EVERGREENS IN THE LANDSCAPE

AN EVERGREEN is a plant that holds its green foliage when dormant. It is the prevailing opinion, no doubt, that an evergreen plant is one that is always green; but all plants are so colored in the growing state, and one that grows year in and year out is necessarily continuously green. In this sense, palms are evergreens; so are meadow and lawn grasses when winters are mild; and so are begonias and tomatoes when cold does not kill them. The true evergreen, however, is the one that remains verdant even though it is not growing, and in spite of winter or frequent frost. It is not deciduous; and, moreover, its foliage remains green rather than brown and sere.

The representative evergreens are the conifers, although not all conifers are evergreen. Some of them are deciduous, as the bald cypress and larches. The conifers, or Coniferæ, comprise a mighty group in the vegetable community, agreeing not primarily in the fact that so many of them are evergreen, but in certain clear botanical structure as explained in Part II. They yield great products for the use of man in timber and resins; and their ornamental value is outstanding. They may well be treated as a unit, either from the forestry side or from the horticultural use. The latter utility is intended in this book; but it is first important to appreciate the coniferous forest, against which so much of our civilization is set.

Appreciation of the forest is essential to the best under-

standing of evergreens. The forest is their natural habitat. In the open, the trees attain a different character, to be sure, and this character is to be assumed as the one natural to the species; yet the forest has a community character of its own and illustrates the features of close plantation as compared with isolated trees. Both of these adaptabilities of the species should be understood. Moreover, the forest has a place in the association of the human race that must not be overlooked; and in these later times, when the great forests are constantly receding, we should make a special effort to keep green the memory of the woods.

THE BACKGROUND OF THE FOREST.—HOSMER

Among all the trees of the forest, the conifers are the most important from a commercial standpoint. The reason for this is not far to seek. The trees belonging to the coniferous genera—the pines, spruces, firs, cedars, and hemlocks—furnish the material most in demand for construction of all kinds, and also for a great variety of minor uses in which the demand is for strength combined with relative lightness. The so-called “softwoods” are more easily worked and usually are cheaper than are the broad-leaf species, or “hardwoods,” at least in the grades suitable for building purposes. It is not strange, then, that in considering the direct economic value of the forests of the United States, those in which conifers predominate are given first place.

Forests are of use to man in three principal ways: They supply timber, wood, and other forest products. They safeguard the catchment basins of streams needed for human use and so tend to maintain regularity of stream-flow. Also they serve as centers for many forms of recreation. Forests have a direct relation to human health. This is most noticeable in the

case of coniferous forests. Highly beneficial results often attend a sojourn in a locality in which there are pine or spruce forests. Forest sanatoria, such as those established by the states of New York and Pennsylvania, are usually in sections in which the conifers predominate.

From the standpoint of timber supply, the coniferous species furnish approximately seventy per cent of the timber cut each year in the forests of the United States. Of minor uses, fifty per cent of the box material comes from the two main divisions of the pine family—the white and the yellow pines. Spruce is the best material for the cheap production of paper. In the southern states, long-leaf pine is the chief source of turpentine and naval stores. The uses are manifold to which the wood of the conifers is put. Wood, and, in large part, coniferous wood, is at the foundation of the prosperity of the nation.

The coniferous forests of the United States form a part of the great belt of conifers that characterizes the North Temperate Zone. This belt stretches from Alaska across Canada and the United States and is found again in Scandinavia, northern Europe, Russia, and Siberia. In the United States, coniferous species are the commercially important trees in four of the five natural forest regions: the Northern Forest, the Southern Pineries, the Rocky Mountain, and the Pacific forests. The fifth region is that of the Central Hardwoods.

The Northern Forest includes the North Woods of New England and New York, the pine lands of the Lake States, and the area lying at the higher elevations southward along the Appalachian Mountain ranges. The more important conifers of the Northern Forest are white pine (*Pinus Strobus*), red pine (*P. resinosa*), red spruce (*Picea rubra*), hemlock (*Tsuga canadensis*), and cedar (*Thuja occidentalis*). Although at the higher elevations there are pure stands of conifers, the typical

Northern Forest is a mixed forest of conifers and broad-leaf trees. White pine is, or was, the outstanding species. Its tall bole, large size, and easily worked wood marked it from colonial times as, perhaps, the most prized American timber tree. The original forest has now disappeared, except for a few small isolated stands. However, white pine reproduces easily, both naturally and artificially, and grows rapidly, so that in the Northeast it has come to be the principal species used in reforestation.

The Southern Pineries, as the name implies, is essentially a coniferous forest. It extends along the Atlantic seaboard from New Jersey southward to the Gulf States. Long-leaf pine (*Pinus palustris*) is the tree of first importance, both for its lumber and for its turpentine. Three other pines are also to be noted: short-leaf (*P. echinata*), loblolly (*P. Tæda*), and Cuban or slash pine (*P. caribæa*). In the swamps of the South is found the bald-cypress (*Taxodium distichum*).

In the Rocky Mountain region the species of commercial importance are the western yellow pine (*P. ponderosa*), lodge-pole pine (*P. contorta* var. *latifolia*), Engelmann spruce (*Picea Engelmanni*), and the mountain form of Douglas fir (*Pseudotsuga taxifolia*). In the "Inland Empire" of Montana and Idaho, the western white pine (*P. monticola*) is an important timber tree. Regulated grazing plays an important rôle in the national forests in this region.

The Pacific forest comprises the Pacific Coast states. In Washington and Oregon the most important trees are Douglas fir, western hemlock (*Tsuga heterophylla*), several true firs (*Abies*), western red-cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), and western white pine. In California the species that stand out are redwood (*Sequoia sempervirens*) near the coast, sugar pine (*Pinus Lambertiana*), and western yellow pine

in the Sierras. The largest and highest, as well as the oldest trees in the world, the "big trees" (*Sequoia gigantea*), are found on the Pacific slope.

The foregoing list enumerates but a few, of course, of the total number of conifers in the several forest regions. In general, the forests of the United States fall into two main classes, the eastern and western forests. East of the Great Plains, broad-leaf species are found in mixture with conifers. There is usually much undergrowth. In the West the forests consist of practically pure stands of conifers, for the most part, except in the Pacific Northwest, of open character and free from undergrowth.

Without the lumber yielded by the coniferous forests, the United States could never have achieved the rapid material progress that has characterized the growth of the nation, especially since the Civil War. The rapid expansion of the Mississippi Valley States was made possible in no small part by the pine forests of Michigan, Wisconsin, and Minnesota. Likewise, southern pine has played a great part, just as now Douglas fir is coming to be one of the most used woods. The coniferous forests have been a great heritage, but, unfortunately, they have been misused and until very recent years no thought has been given to their replacement. The forest has been treated as a mine, not as a crop. The American people will have reason to regret their short-sightedness.

The Pacific Coast forests now constitute the last great storehouse of virgin softwood timber. When that supply is exhausted, the needs of the nation can be met only from second-growth forests. Furthermore, four-fifths of the standing timber that remains is privately owned and as yet but little of this area has been brought under scientific forest management. This gives point to the movement for an adequate national

forest policy that aims to bring about the wise use of all forests, both publicly and privately owned, to the end that the people of the United States may have a continuous supply of wood and of other forest products, adequate for their needs, in perpetuity.

THE CHRISTMAS-TREE PROBLEM.—HOSMER

Of all that the forest yields to man, perhaps no gift is more prized than is the Christmas tree. To the children the tree, with its gay decorations, its glittering lights, and at the top the bright star, is the center of the Christmas celebration. To their elders it brings but little less pleasure. In many families the Christmas tree is allowed to stand for a week, or even until Twelfth Night, all the while continuing to give joy to young and old. It is an indispensable part of the happy Christmas-tide, and, even when dismantled, it may still serve out-of-doors as a feeding station for the birds. Without a tree the Christmas festivities are not complete.

Just how far back in history the Christmas-tree custom goes, no one knows. It is probably of very ancient origin, possibly a survival from the Scandinavian mythology that preceded Christian times. But whatever its origin, the custom is now so wide-spread and deep seated that it has a recognized place in every Christian country. The United States leads the world in the use of Christmas trees. Over five million trees are needed each year to supply the demand in American homes. The following statement is designed to show that the use of trees for this purpose is a legitimate and, if properly conducted, a wise use, and that the purveying of Christmas trees rests on a basis of sound economics as well as on sentiment.

Many different kinds of trees are used in the United States as Christmas trees, but practically all are conifers. In the

Northeast the favorite is the balsam fir. This comes near to being the ideal Christmas tree. As a small tree it is usually symmetrical, with long, horizontal, spreading branches. Its needles are pleasantly fragrant and persist indoors longer than do those of most other evergreens. Spruce comes next in importance and makes a very good substitute for balsam fir. The species most employed is the red spruce, but the introduced Norway spruce is also to be commended. The other native species, the black and the white spruces, are also used.

In the Southern and Central States red-cedar is often used as a Christmas tree. It has a conical form and develops a dense and attractive crown. Where the firs and spruces are not easily obtainable, pines are not despised. In parts of the South the scrub pine is much in demand. In the southern Appalachians, Fraser fir makes a good Christmas tree.

In the Rocky Mountain States, Douglas fir, Engelmann spruce, and, in places, lodge-pole pine find favor; on the Pacific Coast, white fir, incense-cedar, and western hemlock. Local custom and availability have much to do with the kinds and species which are used as Christmas trees. Santa Claus seems as well satisfied with one kind as another.

Northern New England, northern New York, and Canada are the source of supply for the cities of the Atlantic seaboard as far south as Baltimore and even Washington. Michigan, Wisconsin, and Minnesota furnish the markets of Chicago, St. Paul, and the cities of the Plains States. The arrival of the "Christmas tree ship" is a looked-for event in Chicago harbor.

Christmas trees vary in size from three to five feet up to thirty-five feet or more. The small sizes up to eight to ten feet are tied in bundles. Large trees are shipped as individuals. Prices in the eastern city markets range from twenty-five to fifty cents up to \$40 or \$50, but as the Christmas-tree trade is

now conducted, the owners of the land from which the trees are cut seldom make much profit. When carload lots are shipped, particularly if the trees are graded as to size and condition, the returns may be worth while. There is, however, considerable risk in the Christmas-tree business, especially when a local market is overstocked. Each year after Christmas many perfectly good trees are hauled to the city dump to be burned. To be assured of a reasonable return, the rational procedure for the Christmas-tree owner is to find a market in a neighboring town or city and supply the retail stores directly. By this method he will probably gain much more than when the trees are handled by a series of middlemen.

Very commonly the question is raised as to whether the cutting and use of Christmas trees is not a great waste, and whether steps should not be taken to discourage or prohibit it. In the opinion of the United States Department of Agriculture, the custom is so old, so well grounded, and so venerated, that even if it were economically somewhat indefensible, these aspects would and should continue to outweigh economic considerations. But, say the foresters, the cutting of trees for Christmas is proper and wholly justifiable. No other use to which these trees could be put is any more worthy than to make them add to the joy of mankind through their use by children on this great festival of the year. True conservation of the forest is not found in abstaining from the use of trees, but in a rational system of forest management. The Christmas tree is a legitimate by-product of the forest. If the spruce and fir trees that are so used were left standing, to be cut later for the manufacture of paper pulp, it is wholly pertinent to inquire whether the joy of a group of children in their Christmas tree does not outbalance the value of a page or two of the comic section of a Sunday supplement.