

DESCRIPTION AND TREATMENT OF EVERGREENS.

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The subject evergreens is at once of interest, for it suggests trees of durable beauty. Be it in summer or in winter, evergreens stand clothed in their never failing verdure. With the winter snow bearing down heavily upon their persistent foliage, they help to offset the bleak and barren aspect of a lawn or landscape during the winter condition.

The study of this class of trees, then brings us into a broad field. It brings us to the consideration of the Natural Order Coniferae, the genera, which, with their many species, would require pages to tabulate. This treatise, therefore, will be limited to the evergreens represented on our college campus, and the following synopsis, taken from Hoopes "Book of Evergreens", and will be the basis for the present discussion.

" NATURAL ORDER CONIFERAE.- The Pine Family.

" Trees or shrubs with a resinous juice, and mostly linear, scale-formed or awl-shaped, and entire leaves. Flowers, monoecious or dioecious, without calyx or corolla, usually crowded into short, scaly aments.-

"Sub-Order I.- The Pine Sub-Family - Abietineae.

"Fertile flowers in aments, consisting of scales each from the axil of a bract, and bearing at its base two inverted ovules; fruit a cone. Buds, scaly.

"Pinus - (Pine) - 1. Leaves needle-shaped; two, three, or five in a cluster, with a scaly sheath at base.

"Abies - (Spruce-Fir) - 2. Leaves short, needle-shaped, four-sided or flat, scattered on the branches or somewhat two-rowed, not clustered; cones with thin scales.

"Sub-Order II - The Cypress Sub-Family - (Cupressineae.)

"Fertile flowers in aments, consisting of few scales without bract

scales mostly shield-shaped, and bearing one to several erect ovules; fruit a strobile of few scales or berry-like; buds mostly naked.

"Juniperus - (Juniper) - Fruit of few scales, with one or five ovules at the base of each ripening into a drupe-like berry.

"Thuja - (American Arbor Vitae.) - Cone ovate; scales leathery, two-seeded."

With the general characteristics and the main divisions of the order thus laid down, the varieties will next be described, more in detail, in respect to foliage, fruit-production, the hardiness, form of growth, and desirability of the tree, and to what purposes each variety is best suited, First:

Pinus Strobus. - White Pine. -

The leaves, soft, slender, glaucous-green in color, appear five in sheath, and three or four inches long. The sheath, quite long on young leaves, soon sheds, leaving the base bare.

The cones, of which none have been found on the College specimens, are described by Hoope's as "five to six inches long, cylindrical, somewhat curved, slightly dropping, short peduncled, with smooth, their scales devoid of prickles.

The tree is very handsome, and desirable for ornamental purposes. It has a pleasing form, erect and conical, and generally grows well-shaped. The branches appear in regular whorls and are thickly set with bushes of fine slender, soft-feeling leaves, which gives it its graceful appearance. The trunk is straight, regular and covered with a smooth rubber-like and almost glossy bark. Young trees require protection but must at the same time be furnished with abundant sunshine. This pine does not do well in wet undrained soil. It is considered less hardy than some other pines, altho some large specimens now grace the college campus.

" Pinus Sylvestris. - The Scotch Pine.

SCOTCH PINE.

PINUS SYLVESTRIS.



1. FULL SIZE LEAVES. 2. PISTILLATE FLOWERS.
 3. MATURE CONE. 4. STAMINATE FLOWERS.-
 5. SHOOT BEARING YOUNG CONES.

The leaves, two in a sheath, two or three inches long, are rigid, twisted and of light blue-green color. The sheath, which at first extends about half an inch, shreds off, until the persistent part on older twigs is very small.

The cones generally about two inches long are conical in form. The scales, only bluntly tipped, do not recurve considerably upon opening. These cones, as those of the Austrian pine, mature the second year, and are shed soon after that time.

The Scotch pine is with us one of the commonest and most easily cultivated. It is a rapid grower, and generally assumes a good form altho it often shows a tendency to send out double terminals. In general appearance it resembles the Austrian pine but its lighter color and less dense and more twisted leaves offset the somber and burdensome aspect of the latter. The reddish-brown color of the bark on upper part of the main stem and limbs is also a marked characteristic of this pine.

Pinus Austriaca. - The Austrian Pine. -

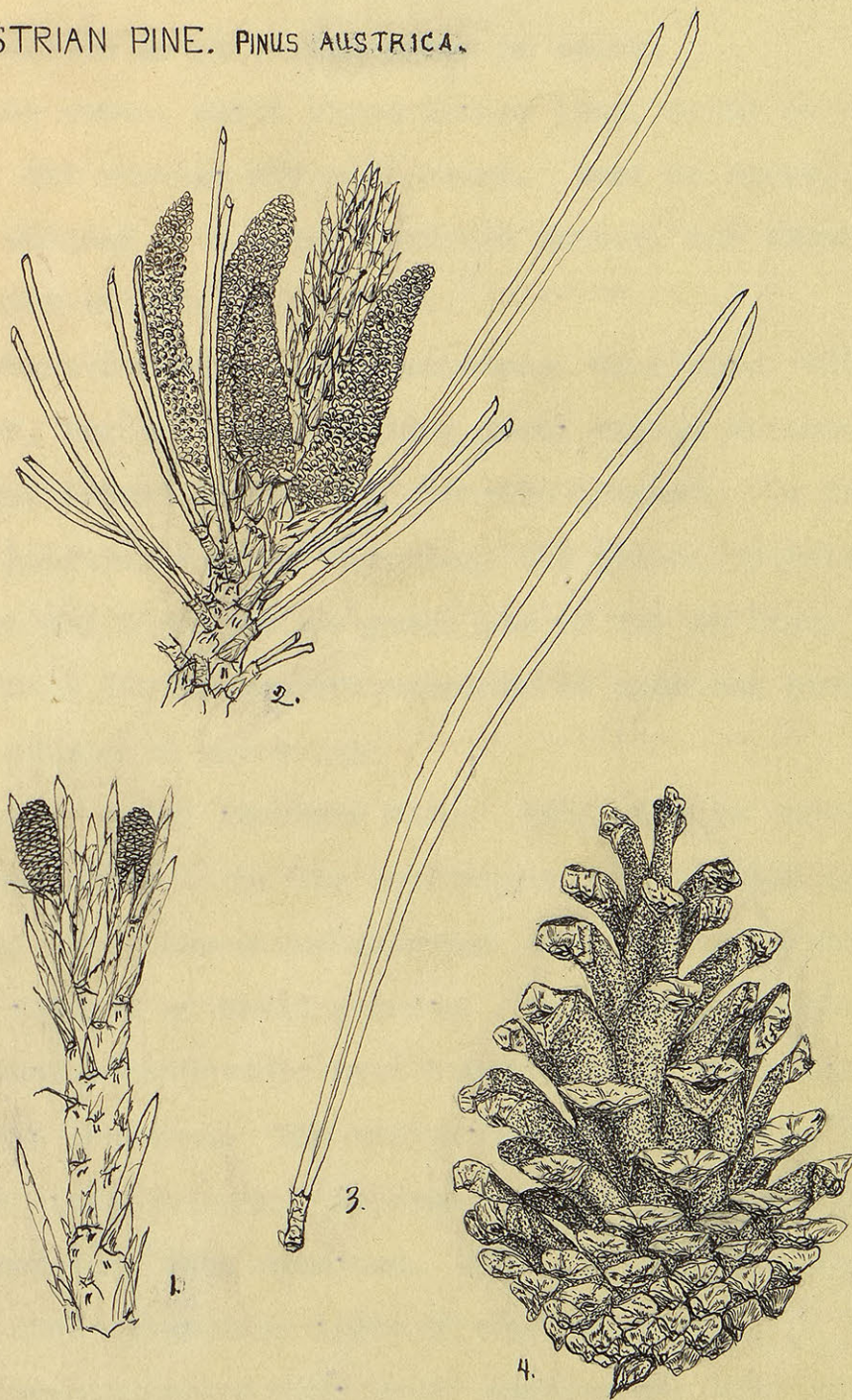
Its leaves, two in a sheath, slender, quite flexible, four to six inches long, have a dark-green hue.

The pointed, conical cones are about three inches long. The scales smooth, with blunt beaks.

As a rapid-growing, hardy, well-formed tree the Austrian probably takes the lead among evergreens. The branches occur regularly, and the dark green leaves persisting for sometime on the old wood, give it a heavy and somber appearance. This somberness and a tendency for the tree to become top-heavy, may, with some, detract from its popularity. It is a pine of great dimensions, that requires ample space for development, and should, therefore, not be introduced on small lawns or cramped places.

Pinus Pungens. - The Table Mountain Pine.

AUSTRIAN PINE. *PINUS AUSTRICA*.



1. BRANCH BEARING PISTILLATE FLOWERS. 2. BRANCH
BEARING STAMINATE FLOWERS. 3. LEAVES, NATURAL
SIZE, TWO IN SHEATH. 4. MATURE CONE.

Leaves two to two and a half inches, two in a sheath, rigid, straight, pale-green or yellowish-green in color.

The sessile cones, about three inches long, occur in whorls of three or four, and persist for many years. Oval in shape, with flat, woody scales, studded with sharp recurved spines, the compact cones defy all ordinary efforts at removal.

For its characteristic picturesqueness, this pine, with its irregular, rugged, low and often leaning form, offers variety from the somber-green and formal Scotch and Austrian (pines). It is further marked by its gnarled, crooked branches, the spring, persistent, sessile cones, and the light yellow-green hue of its foliage. Its grotesque appearances limits its introduction to spacious grounds or the out-skirts of extensive groupings.

P. pumilo. - Dwarf Mountain Pine. This pine is characterised by its low form, produced by the breaking up of the stem into many spreading ones. Its base-diameter often exceeds its height tho this may be partly altered by early pruning. The foliage is quite dense, and persists back considerably upon the old wood. This makes the tree compact and handsome. The writer has been unable to secure any mature cones of this variety. Several young cones, of this year's growth have, however, been examined. They are pretty, purple, oblong little things much resembling those of the Austrian.

For lawn ornamentation this dwarf species has many advantages. Its low, compact, form permits planting where other varieties are too massive. If planted near a building it will not grow up to sweep the roof with its branches, or shut out the sunlight from the in-dwellers. While a pine, it is yet shrubby enough to grow low.

Picea Alba. - White Spruce.

For general ornamental purposes, the white spruce is probably the most satisfactory of its kind. It is a sturdy, erect growing,

TABLE MT. PINE.

PINUS PUNGENS.



1. LEAVES, NATURAL SIZE. 2. SHOOT BEARING STAMINATE FLOWERS. 3. SHOOT BEARING PISTILLATE AMENTS. 4. TWO-YEAR OLD CONE.

preserving a compact, conical form. The branches, tending to be erect, are studded by scattered, rigid, inch long, bright-green leaves. After the new shoots have developed in the spring, their lighter hue makes the tree exceedingly attractive. Cones are rarely produced on the College specimens. The writer detected only one tree with cones on, this spring, and this one has at least a dozen already well-formed.

The cones, when well set, are 1 1/2 to 2 inches long, compact, oblong-cylindrical, with broad, smooth and entire green scales. Cones pendant.

Picea pungens. - Colorado Blue Spruce.

This is one of the prettiest of the spruces. Its handsome hardness has been well established, and this, with its more striking beauty, places it probably in preference to the white. Its destructive characteristics are the pronounced glaucous hue," and a tendency to a stratified arrangement of the branches. Some specimens on the campus show these characteristics markedly, and are indeed beautiful. The form in growth is low and spreading.

In spring, when the young shoots appear some specimens assume the most striking hues. It is then the bluish-white glaucous color is most apparent.

Picea excelsa. -Norway Spruce.

A tree, in the main features, like the White Spruce, with the same four-angled, pointed, green leaves. Yet the comparison does not go far. The leaves of the Norway curve out on the underside leaving this almost exposed. The shoots also tend to be pendulant from the usually horizontal branches. With a tendency to grow pyramidal in form it, often becomes loose and ragged in appearances. This spruce figures least in the writer's estimation.

Pseudo-tsuga Douglasii. - Douglas Fir.

Of this tree nothing but praise can be said. The flattened,

erect, broad, green leaves are well scattered over its gracefully pendant and well arranged limbs. The leaves, about an inch in length are slightly glaucous. In general appearance, the Douglas is less formal and compact than the Piceas. It is open, yet not ragged like the Norway. It is probably the most pleasing of the Abies.

Abies Concolor - Silver Fir.

This variety is represented by one tree south of the Domestic Science Building. On a cursory examination we were inclined to be disappointed and to declare it was not deserving of its name. The old "spray" was similar to that of the Douglas, only a shade lighter. The new leaves were of a sickly pale-green. But a closer examination showed, in the glaucous-lined leaves and the almost silver-white bark, of young twigs, a good reason for the same. The leaves, broad and flat, 1 1/4 inches long, are recurved on the under side. Young shoots make obtuse angles with the main branch, and exhibit a horizontal tendency, verging upon stratification. This tree is said to fill up and assume better shapes as it becomes older.

Thuja occidentalis. - American Arbor Vitae.

The leaves are small, short, appressed, obscuring the branch in young shoots. The cones are small, 2/8 inches, oblong-ovoid, consisting of three pairs of brown, leathery scales. The branches are two-ranked, and flat, as if pressed. The color of the tree, as a whole is a pleasing bright-green. The shape, where one leader only has been tolerated, is perfectly conical. Frequently, however, no good shape is assumed from lack of establishing the above conditions. The Arbor-vitae requires training, and readily responds to the same. Its hardiness is doubtful. Its nativity is in rather moist regions, and experience has proven that for its best development under our conditions, it needs protection against hot summer winds.

On lawns, it is beautiful, and may with propriety be given a prom-

inent place. It is pleasing and unobtrusive in appearance. Where groups of Spruces are set, the Arbor-vitae will stand off as a pleasing variation.

Juniperus virginiana. - Red Cedar.

This tree, at least, is native in Kansas. It adorns our rocky and most exposed bluffs. Notwithstanding this unquestioned hardiness, great ease is required in transplanting to lawns, as will be discussed later.

The cedar grows quite rapidly when young. It serves well in landscape ornamentation. The cedar does well on the lawn, in a shelter-belt, and even in hedges. In the latter use, however, its preferences is much lessened by the eventual dying of lower limbs.

The foliage may be small scales, spiny bracts, or linear, awl-shaped leaves. The color varies from a fresh green to nearly brown. The fruits are blue, glaucous, drupe-like berries.

Juniperus Communis. - Common Juniper.

This shrub grows on the plan of the Dwarf-pine. Its stem divides, the branches spreading horizontally as well as upwards making a low spreading evergreen.

The foliage is much like the Red Cedar. The distinguishing characteristic is its low growth, which admits its introduction where larger growing varieties would not be allowable.

Some general remarks in regard to the treatment and use of evergreens will now be given. We see that the pines, the timber-producing trees, where they are native, attain considerable size, even under our conditions. Yet they must be limited to landscape ornamentation and shelter-belts. And their good qualities for these purposes demand our attention.

For a shelter-belt evergreens surpass deciduous trees in that they resist the effects of the wind equally well in winter. Such a belt, when once established, would be economical either as a shelter

for stocks, or as a saving of fuel. The persistent foliage practically impedes the raging wind, and checks its penetrating power. For these purposes, the evergreens recommend themselves for more liberal planting in rural districts. But in their use as merely ornamental a common mistake must be guarded against. Some people upon receiving a young evergreen for planting, think the dear little thing has to be near a window where it can be under constant observation, forgetting that some day it may be a large tree with its terminal above the house-top. For the short time of a few years this young nursling may be a most beautiful specimen in its place. But as time goes on, it becomes crowded. The lower limbs do not receive sufficient light and die. The branches on house-ward side are checked in their growth and that whole side becomes naked and unsightly. The thing of beauty becomes an eyesore, and, as it shuts out the light from the parlor, the fateful ax is brot into action. Thus, what might by proper foresight have become an enjoyable object for posterity must inopportunately be destroyed. One must use descretion in planting. Plan before-hand in order that posterity may enjoy the fruits of our labors.

On account of the resinous quality of the sap, in conifers, they do not propagate successfully by means of grafting or by cuttings. Propagation by means of seed is the general method. For this purpose, a bed may be laid out four feet wide, on such that a trellis framework for shading may be erected over it. The young seedlings require such protection the first two years. The soil should be loose and rather porous, with a good moisture containing sub-soil. The seed may be sown braod-cast, or drilled in rows and should only be covered lightly. The soil has to be well-drained in order to prevent loss by "damping off."

The second year, the seedlings should be transplanted into rows about six inches apart and two inches in the row. This treatment

should be repeated the third and fourth years and each time more space be allowed. After this time, the little trees may be set in nursery rows.

Early transplanting is resorted to in order to develop a stronger root-system. The young seedling sends out along tap-root which in transplanting is checked to the strengthening of the upper and lateral roots. But the greatest care is necessary in these operations, for, unlike the roots of deciduous trees, the roots of Conifers, when once dry do not revive. Care, then, must be taken that the young rootlets do not even take on the appearance of being dry.

A mistake is often committed of transplanting large trees for "immediate effect." Altho often successful, the chances are more certain and the losses not so great in handling small trees. Where the distance is not great as conditions on our College Campus, the movement of trees, even of considerable size have been resorted to with good success. By this method, the tree to be removed is dug around, leaving a ball of earth, clinging to the base, of sufficient size to prevent any serious loss of roots. This work may be done during winter, and the tree moved while the earth is frozen or after the ball of earth has formed a dry outer crust so as to prevent crumbling as in the spring season. Trees of considerable size may be hoisted upon the transport by means of tackle. In setting the tree, the excavation and all crevices must be carefully filled in order to prevent dead-air spaces where the roots may have their vitality destroyed. The shoots should be pruned after this operation so as to maintain a proper balance between the roots and the top.

"The beauty of young evergreens lies in their symmetry and the preservation of their lower branches." With this fact in view, one can do much, with the aid of pruning-shears, in perfecting the form of young trees. The Cedars, Junipers, Arbor Vitae and spruces should be trained to the conical form. But one leader should be tolerated

and the lateral branches may be pruned to advantage, resulting in a denser and more compactly growing tree. The lower limbs must be maintained. This requires that each tree have ample room and abundant sunlight. Space and sunlight, then, are the prerequisites for the natural and perfect development of a conifer.