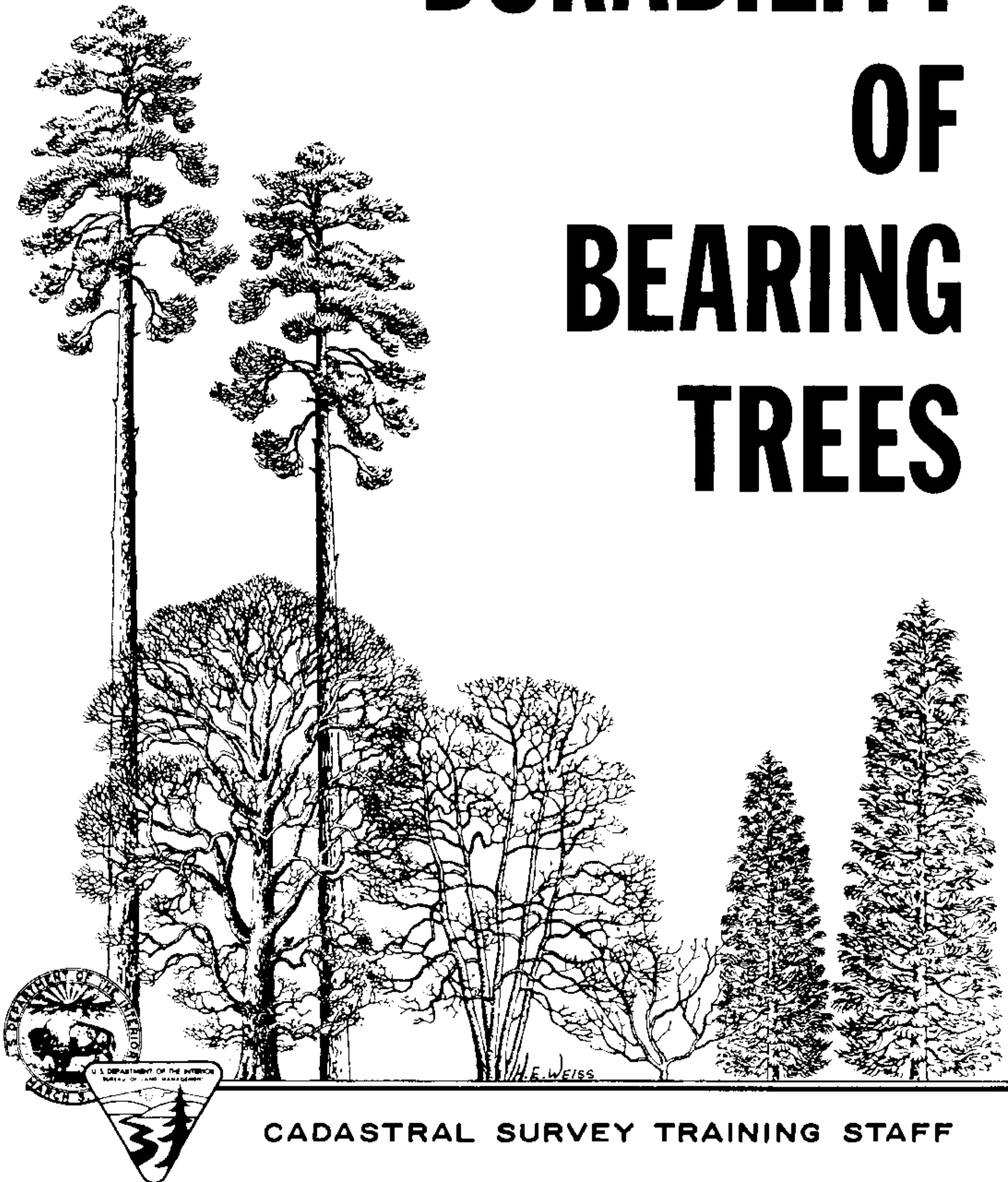


DURABILITY OF BEARING TREES



CADASTRAL SURVEY TRAINING STAFF

INTRODUCTION

This booklet is prepared as a guide, to aid in the search for old bearing trees as well as in marking new trees.

TREE SPECIES AND GENERAL DURABILITY

It is impossible to make a firm statement concerning the durability of trees by type or species. Generally speaking the most durable trees are the non-resinous conifers: yew, cedar and redwood. The hemlocks are non-resinous but are very inferior to the previous three. Next in order are the resinous conifers: pines, firs, spruce and tamarack or larch. But lodgepole pine is inferior in most cases to fir and white fir inferior to spruce. The deciduous hardwoods are the least desirable: maple, alder, birch, willow. Exceptions are some of the desert species, such as ironwood, and the white oak and live oak types.

The durability of a tree when marked for a bearing tree is of great importance to the Cadastral Surveyor. The original bearing trees are one of the primary methods used to determine the position of an original corner point. The surveyor must be able to identify the many tree species for which he is searching, not only by the proper common name but also by the common name used by the original surveyor. He should know what to expect in his search because of the widely divergent growth habits, growth rate, life span and resistance to decay of the many tree types. The methods of blazing and marking the trees by the original surveyor will play a large part in the search also. When marking new bearing trees judgement must be made in selecting the most durable species available and proper method of marking to prevent excessive injury, or even destruction of the tree.

When marking a bearing tree be sure of the identification and enter the correct common name in the field notes. Distinguish between the various species in the tree family. There is a world of difference between a Ponderosa pine and a Knob cone pine; or a California live oak and a California black oak!!

EFFECTS OF MATURITY

The normal life span of a tree is of primary importance. The black locust is highly resistant to decay but has a normal life span of only about 100 years, though some may attain a greater age. On the other hand the wood of Douglas-fir is considered only moderately resistant to decay but the tree may live over a thousand years (left unmolested) and is known to be an excellent bearing tree. Another contradictory example is the California black oak; this tree may live to over 300 years of age, yet is so susceptible to decay when injured that it is a poor choice for a bearing tree. Thus the life span is only an indication of what may be a good tree for witnessing a corner.

When searching for original bearing trees the size at maturity, expected life span, and growth rate are very important. If a tree which has an expected life span of 200 years and 24 inches diameter at maturity was marked when 20 inches diameter the tree was already near maturity. The blaze would be slow to heal, decay sets in and the tree soon dies, falls and disappears. If the field notes call for a mature tree the chances of recovery after 100 years or more are then greatly reduced.

In some cases the season of the year when marked is important. With deciduous hardwoods the dormant season is the most desirable time for blazing. The wound has a chance to heal and harden before insects and fungus are active and attack. In the northern states this will play a part in recovery possibilities. A tree marked in fall or winter would be more likely to survive than one marked in spring or summer. This will be especially true of trees with a high sugar content in the sap, such as maple and birch.

METHOD OF BLAZING

The methods of blazing and marking by the original surveyor are also very important. If the original surveyor made large blazes, cutting deeply into the tree, the loss is much greater from decay. If the blazes were made high on the tree logging will remove the entire blaze. Fortunately many of the original surveyors used a "double blaze"; the township, range and section on a blaze at breast height and a smaller "BT" blaze nearer the root crown. When logged the lower blaze frequently remains on the stump. The smooth barked trees and those with very thick bark were often bark scribed. The bark scribing expanded on the smooth barked trees as they grew and may be hard to detect though readily apparent to the experienced eye. On thick barked trees the bark was smoothed enough to scribe but no penetration made into the sapwood. This scribing may appear as disjointed lines or even be mistaken for worm or beetle "tracks". Sometimes the bark scribing is all but lost in the roughened and maturing bark.

The surveyor must keep an open mind at all times when searching for the original trees. He must consider not only the species of tree, time of year, size of tree, type of scribing, growth rate, life span and site location but also the characteristics of the original surveyor and the instructions which he had been given to govern his work.

When selecting new trees to mark for bearing trees at a corner several things must be considered. Is the tree young or near maturity, resistant to decay, long lived, well formed, suppressed by other (though inferior) trees, in a good location not subject to undercutting by a stream, large enough to receive all the marks and in good location in reference to the corner? Often there is very little choice, but when there is, all aspects should be considered. It is a well established fact that a large Douglas-fir stump, with the bark removed, is superior to poor trees such as dogwood or cascara, and in most cases young alder.

The blazes should also be kept as small and narrow as possible, consistent with the amount of scribing required. The blaze should be smooth at the edges and carefully done to avoid breaking the bark loose from the cambium layer. This is especially important when blazing trees such as birch, aspen and spruce. The bottom of the blaze should be smooth and well drained to avoid accumulation of sap, water, and dirt. This can frequently be done with an upward stroke of the axe at the bottom of the blaze. On many species of smooth barked young trees bark scribing is preferred. If the only suitable trees available are too small to accept all the marks making a small "BT" blaze at the root crown and marking the tree only "BT" is better than taking no tree at all. Manual requirements should always be fulfilled when possible but should never be used as an excuse to avoid marking bearing trees.

Much of the work performed by the Cadastral Surveyors today is dependent resurvey of intermingled ownership. An original bearing tree marked before the land was patented remains Federal property. But trees now standing on private lands are private property. Permission should always

be acquired before marking privately owned trees, particularly highly prized trees such as walnut or hickory. Never use an ornamental tree in someone's yard!! Painting is recommended. When injured by blazing and scribing the tree is opened to attack by insects, bacteria and fungus. If the wound is painted with a special tree wound paint, manufactured for this purpose and available in aerosol spray cans, the tree is protected until it can heal the injury. Painting is essential on many trees to prevent swift loss to decay.

Many trees, such as lodgepole pine, aspen and alder, grow in dense stands when young. They carry on a continuous battle of "survival of the fittest". When injured by blazing, the tree must attempt to heal the wound and is then less able to survive the battle. When marking such a tree it is recommended that the tree be freed from its close competition. This is done by cutting down, or "ringing" the close neighbors in a thinning process, called releasing. Releasing gives the bearing tree the advantage in the battle for sunlight, water, air and nutrients. Releasing is not always possible or prudent; on private lands the landowner may willingly give permission for cutting of survey lines or marking bearing trees, but would object to releasing. Dense thickets of hawthorn or vine maple make releasing nearly, if not totally, impossible at times. It should be done however, whenever ground conditions dictate or permit.

ARRANGEMENT OF LIST

This list is prepared by the common name of the tree. The common names are listed in capital letters. Many trees are very similar in appearance or durability and are listed together in the interest of simplicity and brevity. This should not be construed that the names are interchangeable. Following the common name is the scientific name, always the genus and in most cases the species. Next is given a list of other common names which may have been used by the original surveyor in his field notes. The original surveyor may have called for a redwood where none exist, the tree was actually an incense-cedar. Or he may have called for a hackmatack, the tamarack in Minnesota, when the tree was really a western larch. These other names are cross-referenced in the index.

Following the other names is a grading ranging from unsuitable or very poor up to excellent. A tree graded very poor should be used only as a last resort and probably be supplemented with a mound of stone or other accessory. These grades are given as an aid in making the decision about which tree(s) should be used to witness a corner. The scale is generally based on young, vigorous trees and not mature or old growth trees.

Following the grading is a written narrative of what is known of the particular species, both as an original bearing tree and recommendation for use as a new bearing tree.

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DOUGLAS-FIR (*Pseudotsuga menziesii*)

ROCKY MOUNTAIN DOUGLAS-FIR (*Pseudotsuga glauca*)

Other names: Fir, red fir, Douglas spruce; occasionally misnamed "pine".

EXCELLENT

In California, Oregon and Washington the Douglas-fir is the "first choice" bearing tree. It heals rapidly, is long lived and very durable. Douglas-fir bearing trees have been found with from 2" up to 50" of overgrowth, perfectly healed. When logged or wind thrown, the stump or log will last for many years, with a slow rate of decay. If the heartwood is rotted away the scribing frequently remains, backcast (in reverse) in the pitchy overgrowth. Frequently on the badly rotted stumps the thin shell, or a fragment, of the scribed face will remain.

Many surveyors scribed the larger trees on a bark blaze, or "bark scribed". If fire or man has not destroyed the bark this bark scribing is readily seen, even after 120 years. If the tree has died these scribe marks may still be found among the pieces of "flaked" bark around the base of the tree. Many of the line blazes were also made in the bark and are hard to detect. The blazed trees may show a noticeable scar or none at all, except the "flat" spot at the upper end of the blaze where the surveyors axe entered the bark.

In the Rocky Mountain region the Douglas-fir is smaller than on the Pacific slope, seldom exceeding 36" diameter. The bark is thinner and therefore was seldom, if ever, bark scribed. The blaze usually has a noticeable scar. The original surveyors "snow blazed" the tree more frequently also.

When available the Douglas-fir should always be the "first choice" of bearing trees. Select healthy trees, 8" to 12" in diameter. Blaze just deep enough to penetrate the sapwood, and as low to the ground as possible. Paint the wound immediately for the pitchy sap oozes quickly. If the large old growth tree must be taken in the Pacific slope region, bark blazing would be acceptable, or even preferred, to avoid extensive damage to the tree; but use sound trees, without broken tops or evidence of a fungus growth called "conk". In clear cut logging areas the Douglas-fir stump, with the bark removed, is a better selection than many of the more inferior hardwoods or the true firs (*Abies*).

PONDEROSA (YELLOW) PINE (Pinus ponderosa)

JEFFREY PINE (Pinus jeffreyi)

SUGAR PINE (Pinus lambertiana)

Other names: Pine, yellow pine, bull pine, blackjack pine,
pitch pine; pondosa, for Ponderosa and Jeffrey.

VERY GOOD

Ponderosa Pine is found in all of the western states, east into South Dakota. Jeffrey pine (nearly identical to Ponderosa) and Sugar Pine are found only in California and Oregon. All make very good bearing trees. They are frequently found completely healed but usually with a noticeable scar. In dry soil conditions the Ponderosa Pines are often found as much as 100 years after marking with the blaze only partially healed, the scribing weathered, decayed and nearly gone. Fires may destroy the scribe marks on these open blazes without killing the tree. If logging has not destroyed all traces of the trees, the recovery rate is better than 75%, and if the original tree was not already mature when marked. Sugar pine is becoming rare in any substantial quantity because of its high value for lumber. When marked as bearing trees they heal about the same as Ponderosa, but often more conspicuous on a mature tree as the bark is of a finer more regular texture. When marked as a young tree, scars tend to disappear due to flaking of the bark as is the case with most pines. Because of their often huge size the original surveyors sometimes bark scribed the sugar pine, but as with the Ponderosa the bark flakes off and bark scribing is soon lost.

When marking these trees keep the blaze as narrow, short and low to the ground as possible, to prevent total loss of the marks to loggers. Paint immediately.

EASTERN WHITE PINE (Pinus Strobus)

Other names: Pine, northern pine, soft pine; may appear
as "black pine" or "conk pine"

EXCELLENT

In the Eastern States and Great Lakes Region "Paul Bunyan" logged the white pine. It was one of the more widely used bearing trees by the original surveyors in Minnesota, Michigan and Wisconsin. The blaze is usually completely healed but noticeable, and covered with a heavy pitch layer. Most trees were snow blazed as well. Fire hardened trees will last for many years. If dead the surrounding wood seems to decay readily but the pitch face will retain the scribing indefinitely. Logging and fire are the most probable causes of loss.

When marking the white pine keep the blaze narrow, low, and only deep enough to make a smooth blaze for scribing. Paint immediately.

RED (NORWAY) PINE (*Pinus resinosa*)

Other names: Hard pine, pitch pine, yellow pine, pine

EXCELLENT

The Norway is one of the "hard" pines and has a superficial resemblance to the Ponderosa Pine. The Norway is found only in the Great Lakes and Northeastern States. This tree is at least as durable as the eastern white pine. They are found intermixed, though the Norway will survive under more adverse conditions and is more resistant to fires. The dead and fallen tree, or the sawed stumps, decay slowly. The blaze face pitches over, heals rapidly and may have little or no discernible scar after 75 or more years. Even though the bearing tree may have been logged the pitch face and overgrowth with reverse scribing will remain until destroyed by means other than decay.

Since this tree is heavily logged the blaze should be kept low, with the "BT" close to the ground. Paint the blaze immediately before pitch begins to flow.

JACK PINE (*Pinus banksiana*)

Other names: Pine, scrub pine, black pine; maybe confused with lodgepole pine

VERY GOOD

The Jack pine looks somewhat like the lodgepole pine of the Western states but is found only in the Great Lakes Region. The wood is hard, resistant to decay when dead and fallen. The blaze is seldom found completely healed but the scribe marks may sometimes still be read after being burned and charred. Burned out stumps may still show the scribe marks, in reverse on the overgrowth of larger trees. When logged for pulp the stumps are usually cut very low to the ground. Slash burning may destroy all traces of scribing on the face. The burned stumps are like a "pine knot" and last indefinitely but are easily removed, like "pulling a plug", from the sandy soil.

The Jack pine grows in dense stands on sandy soils. When marking for a bearing tree keep the blaze low and narrow. Paint thoroughly. Release if necessary and possible.

WESTERN WHITE PINE (Pinus monticola)

Other names: Pine, Silver pine, white pine, Idaho pine;
may have been confused with larch

FAIR

The wood is soft, light weight and is logged for mill work and matches. The tree is very susceptible to blister rust. It is primarily a tree found in Northern Idaho and Western Montana though it does grow in Eastern Oregon and Washington and in the Sierra in California. It is inferior to the Ponderosa pine as a bearing tree. The original blaze may be completely healed but with a noticeable scar. The wood is soft and scribe marks weather badly on open blazes. When dead and fallen the wood decays rather slowly and retains the "pitch face" similar to the Ponderosa. The recovery rate is better than with Lodgepole but less than Ponderosa which may be an aid in determining which tree to use when a choice may be had.

If taken for a bearing tree, keep the blaze minimum in size, deep enough to penetrate the soft sapwood, and well drained. Paint thoroughly. If in dense stands release if permissible.

WHITE BARK PINE (*Pinus albicaulis*)

LIMBER PINE (*Pinus flexilis*)

Other names: Pitch pine, scrub pine, pine

GOOD

Found only in the Western States, these trees are soft pines which grow only at higher elevations near timberline and on open ridges. They are usually stunted and twisted in form. They are slow growing and the blaze is seldom healed. They are very similar in appearance and no distinction can be made between them for durability as a bearing tree. The scribe marks may be completely weathered away on the open blaze. When dead they resist decay very well. Since they are of no commercial value and grow at high elevations there is no loss to loggers and very little by fire.

These may be the only trees available in the area in which they grow so should be used for bearing trees when no other better tree exists. Keep the blaze as small as possible and well drained. Paint thoroughly to reduce weathering.

LODGEPOLE PINE (*Pinus contorta*)

KNOBCONE PINE (*Pinus attenuata*)

Other Names: pine, black pine, scrub pine,
shore pine, coast pine, tamarack
pine, may have been called jack
pine.

FAIR

The lodgepole pine is widely distributed from Colorado thru Wyoming and Montana and westward into Oregon, Washington and Northern California. Along the Pacific coast it is called shore pine and in California tamarack pine. The tree usually grows in dense stands on poor or sandy soils. After a fire the lodgepole pine reproduces profusely. The tree grows rapidly when not suppressed by competition, the wood is hard and the tree normally has a long life, up to 400 years or more. It is the only native pine in Alaska and is more "scrubby" there and less desirable as a bearing tree.

The original blaze is seldom completely healed and when found the tree is frequently dead or dying. In dense stands the dead tree may remain standing for 20 years or more and harden. When in contact with the ground it decays more quickly than most of the other pines and care must be taken when examining the fallen trees to prevent destroying the scribe marks because there is less resin and seldom a good pitch face.

The knobcone pine is found only in Southern Oregon and in California. It also reproduces heavily on burned over lands but is more scrubby and less durable than the lodgepole.

The original surveyors seldom identified these trees, the notes only calling for a "pine".

If more durable trees are not available keep the blaze face as narrow, as short as possible, and into firm wood. Paint thoroughly. Release in dense stands.

APACHE PINE (*Pinus engelmannii*)

CHIHUAHUA PINE (*Pinus leiophylla*)

UNKNOWN

These hard pines occur only in Southern Arizona and Mexico. Nothing is known of them specifically as bearing trees. In the dry climate in which they occur they should be satisfactory. Being somewhat smaller and twisted in form than most other pines it is probable that the blaze should be kept to a minimum and painted thoroughly to forestall weathering.

BRISTLECONE PINE (*Pinus aristata*)

FOXTAIL PINE (*Pinus balfouriana*)

Other Names: hickory pine, pine

GOOD

The bristlecone pine is one of the oldest living trees and is protected in Nevada. It occurs from Colorado, westward into California. The foxtail pine is found only in California but the two trees are very similar in appearance. They are usually stunted and twisted in form. They are very slow growing, are windfirm and when dead and fallen decay very slowly. They retain the "pitch face" similar to the ponderosa pine. The blaze is seldom healed over completely and when it is the scar is very noticeable.

If using for a bearing tree keep the blaze small and paint thoroughly.

COULTER PINE (*Pinus coulteri*)

DIGGER PINE (*Pinus sabiniana*)

Other Names: bigcone pine; gray pine, pine,
nigger pine, pitch pine.

GOOD

These two trees occur only in California and are very similar in appearance. They are in the "hard" pine class and should be good bearing trees. Being stunted and twisted in form only, the better formed tree should be selected if a choice is available. The blaze should be kept small and deep enough to penetrate the sapwood. Paint theroughly.

PINYON (*Pinus edulis*)

SINGLELEAF PINYON (*Pinus monophylla*)

Other names: pinyon pine, nut pine, pine, pinyon

GOOD TO VERY GOOD

The pinyon is found from southern Wyoming to New Mexico and westerly into Nevada. The trees are usually small but are long lived, up to 300 or more years, and are relatively free from serious diseases. It is slow growing and hardy on poor site conditions. The original blazes may be covered with the resinous sap, which is thick and gummy, but are seldom completely healed over. When dead and fallen they decay slowly. The recovery rate is reported to be very good in all states except New Mexico, where pinyons are considered less desirable.

When marking the pinyon keep the blaze narrow, just into the sapwood and smoothy drained. Use the best formed specimens available, 6" to 8" in diameter. Painting the blaze is recommended but not essential.

The seeds, or nuts, of the pinyon are picked for eating and the sap can be chewed as chewing gum.

WESTERN HEMLOCK (*Tsuga heterophylla*)

MOUNTAIN HEMLOCK (*Tsuga mertensiana*)

Other names: hemlock, gray fir, silver fir, Alaska pine; also alpine spruce, and may have been confused with spruce or fir.

FAIR TO VERY GOOD

The western hemlock is found from northwestern California north to the Kenai in Alaska along the Pacific slope and in northern Idaho. Mountain hemlock is usually confined to the higher open ridges near timberline or deep snow regions. Locality determines the durability of the tree. In the rain forest conditions the blaze is usually decayed though the tree is still alive and relatively sound. In ideal conditions it has been found completely healed and the blaze undiscernible, but this is rare. Stumps rapidly decay to a mulch. Fire will completely consume a dry stump, dead or fallen tree. The butt of the larger trees are frequently deeply fissured making detection of the blaze difficult before opening. The hemlock is thin barked and probably was seldom bark scribed.

Mountain hemlock is more durable in the drier and alpine environment and has been found with the blaze face intact with scribing weathered. There is no "pitch face" on either hemlock.

When used for a bearing tree keep the blaze small and well drained. Blaze through the sapwood and keep the bottom of the blaze higher than on most other trees. Young trees 8" to 12" are usually best. If a large hemlock is used select an outer "rib" of the swelled butt for the blaze. Western hemlock frequently takes root in an old stump or log and large roots reach down to the ground level. A large root seems to be more durable than the tree proper. Hemlock knots are very hard and will damage an axe when chopping into them and may break the scribe also. Paint the blaze thoroughly to protect against decaying fungus.

EASTERN HEMLOCK (*Tsuga canadensis*)

Other names: hemlock, hemlock spruce, spruce pine.

EXCELLENT

A tree found in the Great Lakes and northeastern states, the eastern hemlock is a much more hardy tree than its western relative. The bark is much thicker and the tree is relatively free from loss by decay and fungus. It may reach 600 years of age and worst enemies are logging and fire. If the tree has died and fallen the dried blaze face may still remain. The rolled stump is reddish brown and discolors the soil. A stump hole may be 12" to 18" deep with a row of hard hemlock knots where the log has decayed. The wood decays quite rapidly but wet ground conditions will preserve the stump. The inner bark is a reddish cinnamon color which would aid in identification. The sound wood in a decaying tree is very hard and ill-smelling.

When marking for a bearing tree select the younger trees 6" to 12" diameter and avoid the knots with the blazing for they are very hard, like flint. Keep the blaze small, well drained, and paint thoroughly for there is no resin flow from the hemlocks. The sap is watery.

WESTERN LARCH (*Larix occidentalis*)

EASTERN LARCH or TAMARACK (*Larix laricina*)

Other names: larch, tamarack, hackmatack, juniper

FAIR TO VERY GOOD

The western larch occurs in eastern Washington and Oregon to Idaho and western Montana. The eastern larch or tamarack is native to the Great Lakes region from Minnesota to Maine and in interior Alaska. Both species shed their needles in winter and appear dead during the dormant season. The western larch prefers moist soil but grows on dry slopes. Tamarack is usually found in swampy lands. Both trees are cut for lumber but are used extensively for fence posts and even for shake roofs.

Western larch is usually found with the blaze only partially healed, but may be completely healed under ideal conditions, with no noticeable scar. It is a dependable bearing tree and is nearly always recovered, even if dead, fallen or stumped. The blaze may be decayed to some extent but with some scribing remaining. The wood decays quite slowly. The tamarack is more rot resistant than the western larch. Both trees grow in dense stands and many fallen trees may require examination. Because of the wet conditions that both trees prefer they are not lost to fire to any great extent, but fires will completely consume a dead tree.

Select young trees 8" or larger. Alaska reports problems with carpenter ants. Do not use trees that have a hollow sound when struck, or if there are ants in or near the larch. Keep the blaze narrow, well drained and through the sapwood. The larches are more long lasting if blazed when the sap is flowing, and more resistant to infection and attack by insects. Paint the wound thoroughly. Release if in a dense stand.

SITKA SPRUCE (*Picea sitchensis*)

Other names: yellow spruce, silver spruce, coast
spruce, spruce.

GOOD

The Sitka spruce is found from northern California to the Kenai peninsula in Alaska, along the Pacific Coast. Old growth trees will range up to 8 ft. in diameter and the characteristic "swelled" butt is even larger. The blaze is frequently decayed on the original bearing-trees and may be healed or deep within the overgrowth though still open. A Sitka spruce, marked at 16", has been found with 48" of overgrowth, perfectly preserved, under an ideal growing condition. This is the exceptional situation however. When dead and fallen the log, or stump, decays rapidly. The scribe marks are usually weathered or only fragmentary.

Avoid the large old growth trees in favor of the young and healthy specimens, 10" to 14" in diameter, if possible. The bark is thin and should not be bark scribed. Blaze into the sapwood with as small a blaze as possible and keep it well drained to avoid water accumulation. On larger trees blaze a buttress root which will survive longer if cut by logging. Paint thoroughly.

ENGELMANN SPRUCE (*Picea engelmanni*)

BLUE SPRUCE (*Picea pungens*)

Other names: spruce, silver spruce, white spruce; may
have been confused with hemlock.

FAIR TO GOOD

Engelmann spruce occurs from eastern Oregon and Washington eastward through Idaho and Montana and Rocky Mountain region. Blue spruce is confined to the Central Rocky Mountain area. Though two distinct species they are very similar in durability as a bearing tree. The wood is soft and decays quite rapidly. They are usually found with the blazes decayed, only partially healed and little trace of scribe marks. These trees favor moist stream bank areas, are long lived (300 or more years) and grow slowly. They are subject to windthrow and the wood rots quickly once on the ground. Though resinous they do not produce a good pitch face to protect against decay of the blaze. Few are ever found with the blaze completely healed and protected.

Though not a "first choice" these spruces are better than aspen and birch with which they are usually found. Select young, healthy trees, 6" or larger. Use a narrow blaze, well drained and paint thoroughly. Release if necessary but these trees do tolerate considerable shade.

BLACK SPRUCE (*Picea mariana*)

WHITE SPRUCE (*Picea glauca*)

Other names: swamp spruce, bog spruce; skunk spruce,
Canadian spruce

POOR TO GOOD

These spruces are found in the Great Lakes region, through Canada, and are most prevalent in the interior regions of Alaska. Black spruce grows profusely in swamps, bogs and muskegs, and may be the only tree available in those locations. It is a slow growing tree and may be only 5" or 6" diameter when 400 years old. The white spruce favors wet conditions but does grow on higher lands and is usually larger than the black spruce and may be cut for lumber. It grows faster but has a shorter normal life span.

The original blazes on these spruces are seldom healed over. Fire may burn the open blazes with little trace of scribing remaining though it may be detected by side lighting. The bark is thin, the wood is soft and decays rapidly when on the usually wet ground. The root system is shallow and leaves no stump hole. Very few of these trees are recovered in the Great Lakes region, indicating they are not desirable bearing trees, if better species are available. Alaska finds them to be better than tamarack, birch or aspen.

Select trees at least 4" to 6" diameter. Keep the blaze small, just large enough to accommodate the required scribe marks. Blaze carefully to avoid separating the bark from the cambium layer, and smoothly drained at the bottom. Paint thoroughly but not excessively. Releasing may be necessary in dense stands. Prune off the lower limbs to a height of about 4 feet on the smaller trees.

INCENSE-CEDAR (*Libocedrus decurrens*)

WESTERN RED CEDAR (*Thuja plicata*)

PORT-ORFORD-CEDAR (*Chamaecyparis lawsonia*)

Other names cedar; sometimes confused with redwood.
by Species: Arborvitae, shinglewood, red cedar.
 Lawson cypress, Oregon cedar.

VERY GOOD

Incense cedar is found in Oregon and California. Western red cedar occurs from northwestern California to southeastern Alaska and in northern Idaho and western Montana. Port-Orford-cedar is confined to southwestern Oregon and northwestern California. Though distinct species they are similar in durability. The wood is soft but decays very slowly. The trees are long lived, possibly up to 1000 years. The Port-Orford-Cedar is subject to a disease which has not yet been controlled so should be avoided as a bearing tree.

The original blazes are seldom found completely healed, are usually open with the face weathered. The scribing is hard to detect but can often be seen by side lighting even on fire charred wood. The wood is very soft and seems to retain the impression caused by scribing, as much as the scribe marks themselves. The sawed stumps and fallen logs are very impervious to decay and a cedar stump, with the bark removed, would be preferable to the more inferior hardwoods, such as alder.

Select young trees, 10" to 15" diameter. Blaze a little higher than usual and deep enough to make a smooth face, about 1/2 inch beyond the cambium layer, using a sharp axe. Use a very sharp scribe, for the soft wood tears easily.

The Indians used the cedar bark for making baskets, and removed sections of bark similar to a very large blaze. Caution should be exercised to avoid believing such a tree was an original bearing tree.

ALASKA-CEDAR (*Chamaecyparis nootkatensis*)

Other names: yellow cedar, yellow cypress, Alaska
cypress, Sitka cypress

VERY GOOD

Alaska cedar is found from Oregon to the Kenai in Alaska but is primarily an Alaskan tree. It grows to a very large size, up to 6 or 7 ft. in diameter with an enlarged butt, and may live over 1000 years. It is logged extensively.

Like the other cedars the wood is soft but is yellow in color with a distinct "cedar smell". The heartwood is almost immune to decay. The original blaze is usually only partially healed with the scribing weathered away, unless small trees were marked.

Select young trees, 12" to 16" diameter, if possible. Keep the blaze as narrow as possible and cut the bottom upward with a clean stroke to improve drainage of rainwater. Blaze to firm wood, 1/2 inch below the cambium layer and use a sharp scribe to avoid tearing the wood. Painting the blaze may reduce or retard weathering.

NORTHERN WHITE-CEDAR (*Thuja occidentalis*)

EASTERN REDCEDAR (*Juniperus virginiana*)

Other names: arborvitae, swamp cedar, white cedar,
tree-of-life; red cedar, red juniper

VERY GOOD

The white cedar is found in the Great Lakes region and the redcedar from the Great Lakes throughout the eastern states. Both are slow growing, long lived trees, 300 years or more. The white cedar is subject to heart-rot in the older or dead trees. The bark is fibrous giving them a shaggy appearance. White cedar favors a wet or swampy growing condition and is less subject to loss by fire. Though usually hollow the white cedars are one of the most likely of the original bearing trees to be found in the Great Lakes region. If still standing the blaze may be nearly or completely healed. When fallen they decay very slowly and the wood has a distinctive "cedar smell". These trees leave little or no stump hole.

Select young trees, over 8" diameter. Do not use hollow old growth white cedars. Keep the blaze narrow and well drained. Paint thoroughly to retard weathering.

ROCKY MOUNTAIN JUNIPER (*Juniperus scopulorum*)

WESTERN JUNIPER (*Juniperus occidentalis*)

ALLIGATOR JUNIPER (*Juniperous deppeana*)

Other names: juniper, cedar, western cedar, redcedar

VERY GOOD TO EXCELLENT

There are at least 10 species of juniper in the United States. These three usually develop into tree form. *Juniperous scopulorum* is called Rocky Mountain Red Cedar in the San Juan Islands of Washington State but is usually found in the Rocky Mountain region. Western juniper occurs from California and Nevada, into Oregon and Idaho. Alligator Juniper, so called because of its bark pattern, is found in Arizona and New Mexico, and is used extensively for fence posts, as are the other tree formed species. These trees grow in dry conditions and are very hardy. They grow very slowly and may attain an age of 1000 years.

Original blazes are seldom more than partially healed. The wood is quite hard and scribe marks are usually badly weathered from exposure to wind and sun. Side lighting may be required to detect scribing. Unless killed by fire, cutting, or "chaining", the recovery is almost assured. When dead these trees are almost impervious to decay.

Choose the tree formed specimen if available. Avoid marking limbs if possible. Blaze through the thin sapwood and apply ample pressure when scribing for the wood is hard. Painting is recommended to reduce the effects of weathering.

UTAH JUNIPER (*Juniperous osteosperma*)

ONE-SEED JUNIPER (*Juniperous monosperma*)

COMMON JUNIPER (*Juniperous communis*)

Other names: Utah cedar, juniper, pasture juniper.

GOOD

These junipers are most commonly found in a sprawling form, with little if any trunk. They branch out in clumps very near or at the ground, but do occasionally form a trunk for 3 or 4 feet.

Utah juniper occurs from New Mexico and Arizona to Montana and and westerly into Nevada. One-seed juniper is found in Utah, Colorado, Arizona and New Mexico. Common juniper is widespread throughout the western states. The Utah juniper most frequently occurs in tree form.

Since the original surveyors did not distinguish between the junipers little is known about any difference in durability of various species. It is reasonable to assume that the tree form would be more durable but more likely to be cut for posts or firewood. The sprawling form may be more likely to be "chained" to improve the range.

If using one of these junipers for a bearing tree, select the better branch and keep the blaze a little higher than usual and as narrow as possible. Do not thin out the other branches more than necessary. Paint to reduce weathering.

PACIFIC YEW (*Taxus brevifolia*)

Other names: western yew, yew; sometimes confused
with hemlock)

EXCELLENT

This small and rather rare tree is found only along the Pacific Coast from northern California into southeastern Alaska, and west of the Cascades. It is the best possible bearing tree but is seldom found near a corner. It thrives in dense shade along stream banks but may be found on higher ground in dense forests. The original surveyors sometimes confused it with hemlock perhaps because of the somewhat similar needles, and habitat.

If the original notes call for a yew it will almost surely be there unless destroyed by fire, logging and road construction. The blaze is usually only partially healed with the scribe marks still visible. It is a very slow growing tree and seldom exceeds 10" or so in diameter. If dead and fallen the wood is nearly immune to decay.

If a yew is found near a corner use it for a bearing tree over any other. Keep the blaze as short and narrow as possible to prevent excessive injury to the small tree. Scribe carefully. Painting may help prevent weathering of scribe marks.

NOBLE FIR (*Abies procera*)

GRAND FIR (*Abies grandis*)

WHITE FIR (*Abies concolor*)

PACIFIC SILVER FIR (*Abies amabilis*)

Other names: fir, red fir, white fire, white balsam,
balsam fir, silver fir, yellow fir, larch.

POOR TO GOOD

Noble fir is found in the Cascade Mountain region of Oregon and Washington; grand fir in western Oregon and Washington, northern Idaho and western Montana; white fir from California and Oregon to Colorado and New Mexico; Pacific silver fir is confined to the Cascades in Oregon and Washington and northward into southeastern Alaska. These trees vary in size and occurrence but are very similar in durability.

None of the true firs (*Abies*) are desirable as bearing trees. The original blazes are usually decayed and little or no scribing remains, though the tree may be alive and otherwise healthy. In the Rocky Mountain region they are not logged to any great extent so this may be a redeeming feature. It is seldom that these trees are found completely healed. When dead and fallen the wood usually decays rapidly. Unless windthrown they leave little or no stump hole. There is seldom a good pitch face on these trees. Stumps quickly decay to a mulch.

If nothing better is available select young trees, over 6" in diameter. Release if in dense stands. Keep the blaze as small as possible, well drained, and only as deep as required to obtain a smooth face. Paint the wood immediately and thoroughly before the heavy sap begins to flow. Though resinous the sap is watery and good drainage of the blaze should be provided.

SUBALPINE FIR (*Abies lasiocarpa*)

Other names: fir, alpine fir, balsam, balsam fir,
white fir, corkbark fir.

POOR TO FAIR

The alpine fir is found in the Cascades in Oregon and Washington, north into Alaska and in the Rocky Mountain Region from Idaho and Montana to Arizona. As the name implies, it prefers high elevations up to timberline. It is usually stunted in form but grows to 100 feet tall at lower elevations and may be confused with white fir or Engelmann spruce. The alpine fir is very slow growing, may reach an age of over 200 years and is not as subject to logging as other species. Of the true firs the alpine fir is the best of the species as a bearing tree.

The blazes on the original bearing trees are almost never healed over, the scribing is either badly weathered or decayed. The tree is usually located in areas of deep winter snow which may protect it from insects but creates other problems. An open scar may either indicate a bearing tree or just a bruise from a rock fall or snow slide injury. Examine the edges closely for the tell tale scribe marks.

Like the other firs, select the young tree, 6" or larger and as well formed as is available. If possible select trees that allow blazing on the downhill side facing the corner. Keep the blaze as small as possible and the bottom cut on an upstroke of the axe for good drainage. Paint thoroughly.

RED FIR (*Abies magnificia*)

SHASTA RED FIR (*Abies magnificia shastensis*)

Other names: fir, red fir, Shasta fir; sometimes
confused with Douglas-fir.

FAIR

These trees are found only in southern Oregon and northern California. They may extend into Nevada in the Sierra. The red firs are seldom properly identified and are usually called just "fir" in the original field notes.

There is little difference in the durability of these trees over the other fir species. They are generally longer lived, over 200 years, and attain larger size, up to 5 or 6 ft. diameter. The growth rate is usually faster, so healing would occur sooner than on the other firs. Little is known of the red firs marked by the original surveyors because of questionable identification.

Select trees without evidence of heart rot. Painting is almost essential for all true firs.

BALSAM FIR (*Abies balsamea*)

Other names: balsam, eastern fir.

POOR

The balsam fir is found from Minnesota to Maine in the Great Lakes region. It is short lived, seldom over 100 years of age. The bark is thin and usually covered with resin blisters. The wood decays rapidly when in contact with the ground. Any injury to the tree causes rapid infection and decay. The possibility of finding an original balsam fir bearing tree marked 100 years ago are very remote. The one tree reported as found had died and was lodged in an elevated position not in contact with the ground. The wood is coarse grained and soon disintegrates.

If no better tree is available select the healthiest looking young tree 5" or so in diameter. Do not use old growth trees. Bark scribing is recommended. The bark scribing rapidly fills with pitch which should afford protection.

REDWOOD (*Sequoia sempervirens*)

GIANT SEQUOIA (*Sequoia gigantea*)

Other names: sequoia, may have been confused with cedar.

EXCELLENT

The *Sequoia* genera are California trees but the redwood is found in southern Curry County, Oregon. The original surveyors sometimes confused redwood with cedar and vice versa.

Redwood is probably the best bearing tree to be found anywhere. It's only real competition for the honor would be Pacific Yew and Arizona Ironwood (*Olneya tesota*), but all are rare trees. If a redwood bearing tree was called for in the field notes it will be there, or the stump if the tree has been logged. The blaze may be partially or totally healed, depending on the size of the tree when marked. The larger trees (over 6 ft. in diam.) heal slowly, whereas the smaller trees are usually healed over, unless in a suppressed location. The scribing may be weathered and indistinct because the wood is very soft. The wood is highly resistant to decay even when buried in the ground.

When marking a redwood, blaze through the thick and fibrous bark with a little larger than normal blaze. Make the letters larger than normal and use a sharp scribe to avoid tearing the soft wood. Painting is optional.

if still alive, the blaze will be completely healed over. Stumps will last for 20 years or more after cutting and may have sprouted new trees. Care should be exercised to avoid mistaking beetle "tracks" for scribe marks. The "whorly" grain is quite pronounced for 2 or 3 inches out from the blaze face.

When marking one of these trees blaze through the sapwood but no deeper. Keep the blaze as low as possible and well drained. Paint thoroughly.

NORTHERN RED OAK (*Quercus rubra*)

BLACK OAK (*Quercus velutina*)

Other names: oak, red oak, gray oak; yellow oak

GOOD

The red oak is found from Minnesota to Maine and throughout the eastern states. Black oak occurs from southern Wisconsin and Iowa throughout the east and south. They are both in the "black oak" group and are less desirable and durable as bearing trees than are the white oaks. The trees may live to 200 years if not cut for lumber. The red oak is more resistant to decay, is straight grained and very hard when dead and dry. The wood will burn like coal and leave very little ash.

Though slow growing trees the original blaze would be well healed on a live tree. The chance of finding a living tree after 100 years is very remote, because they were usually mature when marked. The stumps rot away leaving a large stump hole which may contain pieces of root and wood. Once begun, the decay rate is rapid. Look for second growth, or young trees to indicate the possible position of the original tree.

Keep the blaze as small as possible, just deep enough to penetrate the thin sapwood, well drained, and near the ground. Paint thoroughly.

NORTHERN PIN OAK (*Quercus ellipsoidalis*)

PIN OAK (*Quercus palustris*)

SWAMP WHITE OAK (*Quercus bicolor*)

Other names: oak, jack oak; swamp oak, water oak
Spanish oak; white oak.

POOR

Northern pin oak is found on higher, drier soil conditions in the Minnesota, Wisconsin and Michigan region. Pin oak and swamp white oak prefer the low, moist and swampy areas of the central and eastern states. The pin oaks are of the black oak group. None are desirable bearing trees and the possibility of finding a live original bearing tree of these species is very remote, if not impossible. They are generally rapid growing and have a life expectancy of 100 years or less. When dead and on the ground the wood decomposes quickly, usually leaving a pronounced stump hole. Little more is known of the longevity of the original trees because of infrequent recovery.

Avoid using these trees for corner accessories. If nothing better is available, keep the blaze small, through the sapwood, well drained and paint thoroughly. Avoid mature trees.

OREGON WHITE OAK (*Quercus garryana*)

CALIFORNIA WHITE OAK (*Quercus lobata*)

Other names: garry oak, white oak, oak.

VERY GOOD

Oregon white oak is found in Oregon and Washington, *Q. lobata* only in California. They are very similar in appearance and durability as a bearing tree. Unfortunately they grow intermixed with the black oaks and the original surveyors did not distinguish them, calling all "oaks". The white oaks have rounded lobes, the black oaks toothed lobes on the leaves. The white oaks are slow growth, decay resistant and reach ages of 500 years or more.

When found the white oak is usually completely healed after 50 years or so. The blaze may not be apparent, except by closely observing the difference in shading of the bark. White oaks have been found with over 12" of over-growth over a perfectly healed blaze. The "whorly grain" may disappear after only 3" or 4" of overgrowth, so don't stop too soon when opening a suspected bearing tree. After being cut down the stumps decay rather rapidly and sometimes only a shell remains. There is usually a pronounced stump hole.

Select young trees, 8" to 10" diameter. Keep the bottom of the blaze at the root crown, well drained and smooth at the edges to avoid separating bark from cambium layers. Paint thoroughly. Do not bark scribe.

CALIFORNIA BLACK OAK (*Quercus kelloggii*)

Other names: oak, black oak

POOR

This oak is found only in California and Oregon. It probably reaches ages in excess of 300 years and up to 3 ft. in diameter. The wood is very porous and decays quickly.

The black oak bearing tree is almost always decayed. Though the tree may be alive, the original blaze will appear as a deeply rotted hole in the tree. On rare occasions, there may be some fragments of scribing remaining, near the edges of the overgrowth. If the tree has died it decays rapidly, and only the shell of the stump or portions of the root crown remains. Unfortunately many of the "oak" bearing trees marked by the original surveyors were black oaks, but there is no certainty of this, from the record. Careful search must be made, for the white oak may be present and deceptively healed.

Avoid black oak bearing trees if possible. If there is no choice, use young trees, 8" or larger. Use a narrow blaze, minimum in length, well drained, bottom at the root crown. Paint thoroughly. Bark blazing or scribing not recommended.

CANYON LIVE OAK (*Quercus chrysolepis*)

CALIFORNIA LIVE OAK (*Quercus agrifolia*)

INTERIOR LIVE OAK (*Quercus wislizenii*)

BLUE OAK (*Quercus douglasii*)

Other names: live oak, hollyleaf oak, maui oak, oak

VERY GOOD

These trees are confined to California. All are very similar in appearance and size. The live oaks are evergreen. The blue oak is deciduous, i.e., the leaves fall in winter. The live oaks listed here are only a few of several species found in California. These live oaks are impressive trees up to 4 ft. or more in diameter and live up to 300 years of age. The blue oak is not as large, up to about 24" diameter and a life expectancy of about 250 years. The bark is thick and rough, over a thick sapwood on these trees. Large mature trees are frequently hollow with heartrot. Under average to good conditions these trees are fast growing. In poor soil and dry slopes they may be scrubby brush.

Original bearing trees of these species have been found with completely healed blazes, difficult to detect in the rough bark. Trees that were large when marked are usually rotted out and hollow, but reverse scribing is often found in the overgrowth, inside the hollow tree.

Avoid marking large trees of these species. Choose young trees, 10"-12" diameter. Blaze carefully with a narrow blaze to firm wood, smooth at all edges to avoid water or sap accumulation. Paint thoroughly.

GAMBEL OAK (*Quercus gambelii*)

Other names: Rocky Mountain white oak, oak.

POOR

This "white oak" is found in the Rocky Mountain states from Wyoming to Arizona and New Mexico.

The tree is usually scrubby and more in the class of brush than a tree. It seldom reaches more than 12" diameter and about 35 ft. high. The tree usually dies and decays quickly. If found, the original blaze is usually decayed. If overgrown and healed it is difficult to identify in the thickets in which it grows. The question becomes "which half dead, scarred or decayed tree is the bearing tree"? The result is that extreme care must be taken not to overlook the original bearing tree in the corner search. Recovery rate runs about 50% in Arizona.

Do not use the gambel oak unless nothing else is available of better quality. Then select the best formed specimen as large as is available. Keep the blaze small, probably only a "BT" blaze would be best, and paint thoroughly. Release from a dense thicket. Use a mound of stone as an additional accessory.

TANOAK (*Lithocarpus densiflorus*)

Other names: tan bark oak, oak.

POOR TO GOOD

Tanoak is found only in southwestern Oregon and northern California. The bark of this tree was once used for tanning leather. It is a comparatively short lived tree. It grows rapidly and is very subject to decay. Tanoak is not an oak at all though it does bear an acorn.

If the original tanoak bearing tree was blazed and scribed the blaze is usually rotted, though not always. Under ideal conditions the blaze may be healed, with a noticeable scar. When rotted out the scribing is usually gone. Many of the original trees were bark scribed. If the smaller tanoaks were bark scribed the scribing will have enlarged as the tree grew and appear as unconnected sections, similar to a "dashed line". The tree may be covered with moss, which when carefully removed will reveal the bark scribing.

If dead or fallen, the log decays rapidly, to a soft mulch. Extreme care must be taken when searching the fallen log to avoid destroying the scribing.

If tanoak must be used for a bearing tree, select the better trees available, 6" or more in diameter. Bark scribe without blazing. On larger trees, with thick bark, smooth the bark without cutting through into the sapwood and scribe the "bark blaze". In dense stands release the bearing tree, if possible.

SUGAR MAPLE (*Acer saccharum*)

BLACK MAPLE (*Acer nigrum*)

Other names: hard maple, rock maple, maple

VERY GOOD

These hard maples are found from Minnesota and Iowa to the New England states. They reach an age of up to 400 years. These are the "best" of the maple family in terms of bearing trees.

In ideal conditions the blaze will heal quickly, often before decay sets in. There are no reports at this time (1972) of the recovery rate or other information concerning these trees as live original bearing trees. A decaying stump usually has the bark gone and the wood turns black. The stumps do not decay uniformly but do leave a distinct stump hole.

Keep the blaze as short and narrow as possible, smooth at the edges and smoothly drained. Paint thoroughly.

RED MAPLE (*Acer rubrum*)

SILVER MAPLE (*Acer saccharinum*)

Other names: scarlet maple, soft maple, water maple,
white maple, maple.

POOR TO FAIR

These are the soft maple group found throughout the Great Lakes region, central and eastern states. They are rapid growing and short lived, seldom reaching more than 100 years of age.

There is little if any chance of finding a live original bearing tree. The original surveyors marked nearly mature trees which are now gone. The stump decays rapidly but usually leaves a distinct stump hole. New trees frequently sprout from the old stumps. A clump of maples may be a clue to the position of the original bearing tree.

The bark of the young red and silver maples is smooth. If better trees just aren't available it is suggested that young, smooth barked trees be selected and bark scribed. Use larger than normal letters and scribe deep enough to prevent disappearance of the scribing as the tree matures and bark roughens. Paint to prevent fungus infection.

STRIPED MAPLE (*Acer pensylvanicum*)

MOUNTAIN MAPLE (*Acer specatum*)

Other names: Maple, scrub maple, moosewood;
possibly vinemaple

VERY POOR

These maples are similar to the vinemaple of the Pacific States. They grow through the Great Lakes and Eastern States in moist stream bottoms and swampy areas. They are more brush than trees.

There is no record of these trees ever being recovered, if ever marked, as an original bearing tree.

Do not use these maples for bearing trees. It would probably be a waste of time. Other, better, trees are always available where they grow.

BIGTOOTH MAPLE (*Acer grandidentatum*)

Other names: Maple

POOR

The bigtooth maple is a soft maple found in the Rock Mountain Region from Western Wyoming to New Mexico. It does not attain a large size, is rapid growing and short lived. Usually found along streams. The leaves turn bright red in the fall.

There is no report of recovery of this maple, if used, as an original bearing tree.

If this maple must be used for lack of better trees, use a young tree, 6" or larger. Use a narrow blaze, smooth at the edges without separating bark and cambium layers. If the tree is smooth barked use bark scribing. Paint thoroughly in either case.

BIGLEAF MAPLE (*Acer macrophyllum*)

Other Names: Oregon broadleaf maple, maple

FAIR

This tree is found only in California, Oregon and Washington. It is the only tree sized maple found naturally along the Pacific slope. It grows rapidly when young, reaches ages of up to 300 years and 4 feet in diameter.

The original blaze on this maple is frequently decayed completely away. The blaze may overgrow with the face decayed. It has been found with some scribe marks near the edges and in the overgrowth. The young trees are smooth barked and some of the original surveyors bark scribed them. Moss removal is difficult but must be done to insure a thorough search, and does pay off with recovered corners. When dead the maple decays rapidly. These maples "stool" out from the root crown of old stumps, usually with the shell or definite hole of the old stump in the center of the clump. Matching up these clumps for bearing and distance may lead to a recovered corner. There is no general rule concerning these trees. Each corner is a problem in itself.

Select the best available tree when maples are all there is. Bark scribe or use a shallow bark blaze if possible, though usually difficult to do. When blazing the wood, keep the blaze small as possible, drain well and paint thoroughly. Select 8" trees or larger, with the least number of "sucker" limbs. Blaze between the suckers for best results.

VINE MAPLE (*Acer circinatum*)

ROCK MOUNTAIN MAPLE (*Acer glabrum*)

DWARF MAPLE (*Acer glabrum*, var. *douglasii*)

Other names: Maple, Douglas maple

POOR

Vine maple grows only on the Pacific slope from Northern California through Washington. Rock Mountain or dwarf species are found throughout the northwest and Rock Mountain Region. These maples are often called one for the other for they are usually small, not over about 6" diameter, and grow in dense thickets. They are more brush or shrubs than trees.

The vine and dwarf maple is almost never found if used by the original surveyor for a bearing tree. This writer has found only one vine maple in over 20 years of searching for corners and it was rotted all the way through. Searching for these species is very difficult in the dense thickets in which they grow. The trees decay rapidly when injured, so the question becomes one of "which rotted tree is the bearing tree?"

These trees should not be used except as a last resort. Select the straightest and largest available. Bark scribe if possible. If blazing is necessary keep it small, marked "BT" only, and bark scribe the "X". Paint thoroughly.

BOX ELDER (*Acer negundo*)

Other names: Ash-leaf maple, maple

VERY POOR

This tree is found from the Rock Mountain Region and throughout the Eastern States. Though in the maple family it is much less desirable as a bearing tree. It grows very fast, does not live more than about 40-50 years and decays rapidly from any injury. The wood is pithy and soft, soon decaying to a mulch when dead.

Though the original surveyors undoubtedly marked this tree for a bearing tree none is known to have been recovered. The normal life span and rapid decay precludes the possibility of finding a box elder.

Not recommended. If nothing else available use a small (BT) blaze only and paint thoroughly.

RED ALDER (*Alnus rubra*)

WHITE ALDER (*Alnus rhombifolia*)

Other names: Alder, Oregon alder, western alder; may
have been confused with mulberry by some
surveyors

POOR TO FAIR

Red alder occurs from coastal California northward into Southeastern Alaska. White alder, a similar but smaller tree, in California, Oregon, Washington, and Idaho. The alders are rapid growing, short lived trees, seldom exceeding 80 years of age. Surveyors from the Eastern States sometimes confused red alder with black mulberry in Alaska, where there are no mulberry. The alders reproduce profusely on logged over lands and when young are usually in dense stands. Natural thinning takes place in about 15 years. Dead trees decay rapidly.

If blazed and scribed the alder is usually rotted. The decay may be deep and the wound nearly healed on the larger trees. The recovery rate of alder bearing trees is low because of the rapid decay. Some of the original surveyors bark scribed the alders, so this possibility cannot be overlooked. Moss removal is difficult, but can be done by vigorous rubbing, to reveal the bark scribing, which may appear enlarged and as a dashed line. If dead and fallen the wood decays rapidly to a mulch. The shell of the decayed stump may remain, infrequently.

When using the alders for bearing trees, select young trees, 6" to 8" in diameter and bark scribe them. If large trees MUST be used, smooth with a bark blaze but do not penetrate into the sapwood with the blazing. Release the younger trees if at all possible.

THINLEAF ALDER (*Alnus tenuifolia*)

SITKA ALDER (*Alnus sinuata*)

MOUNTAIN (GREEN) ALDER (*Alnus crispa*)

Other names: Alder, mountain alder, scrub alder

VERY POOR

These are scrub alders found throughout most of the northern portions of the adjacent states and south into California along the Pacific slope. They are found all over Alaska as well. These alders seldom reach tree size, are more shrubs than trees, are short lived, not over about 40 years, and decay quickly when injured. There is no reported recovery of an original bearing tree of these species.

Do not use for a bearing tree except as a "last resort". Use a mound of stone as an additional accessory. If using as a bearing tree, see comments made for the red and white alders for marking recommendations.

WHITE ASH (*Fraxinus americana*)

BLACK ASH (*Fraxinus nigra*)

GREEN ASH (*Fraxinus pennsylvanica*)

Other names: Ash, red ash, swamp ash, water ash; may have been confused with basswood.

FAIR TO GOOD

The white and green ash are found throughout the eastern half of the adjacent states. The black ash is a northern tree of the Great Lakes Region and Northeastern states. White ash and green ash are very similar, often being called one for the other. They favor upland areas. Black ash is usually found in low or stream bottom terrains. All are rather fast growing but hardy hardwoods. The white and green ashes are the longer lived of the group and more resistant to decay. None have a life expectancy of more than 100 years.

There are no reports of recovered, live, ash bearing trees marked during the original surveys. The white and green ash stumps have thick and rough bark. The wood is brownish in color. Black ash retains a lighter color, has open pores and the bark turns powdery in fine scales. All ashes decay rapidly when cut. The stumps often sprout new clumps of trees which may be matched to locate a corner.

The ashes are relatively thin barked. Blaze carefully to avoid separating the bark from cambium layers, well drained and small as possible. Release if in dense stands. Paint thoroughly.

SINGLEAF ASH (*Fraxinus anomala*)

VELVET ASH (*Fraxinum velutina*)

Other names: Ash

POOR

These shrub-like trees are found in the Rocky Mountain Region from Utah and Wyoming to Arizona and New Mexico. They seldom reach tree size, are hardy in adverse climatic conditions but are relatively short lived and decay quickly when dead. The singleleaf ash prefers dry hill sides whereas the velvet ash prefers the stream bottoms and canyons.

There is no report of recovery of an original bearing tree of these species of ash.

Not recommended to be used for a bearing tree because of small size and rapid decay.

OREGON ASH (*Fraxinus latifolia*)

Other names: Ash; may have been confused with cherry

FAIR

The Oregon ash is found from California to Washington. In Oregon it occurs frequently in wet lands where it develops into a full sized tree. On dry hills this ash is usually poorly formed.

Apparently very few of the original surveyors marked Oregon ash. It is not commonly found and may have been called cherry. This writer has searched for cherry bearing trees when there were none in the vicinity but ash was.

However, no bearing tree was found to prove the theory. The few ashes that have been found were only partially decayed with the blaze nearly healed. The wood seems to decay more slowly than alder or cherry when on the ground.

Be sure of the identification before marking an ash. Keep the blaze narrow and well drained. Paint thoroughly. If the bark is smooth, bark scribing would be recommended over blazing.

MOUNTAIN ASH (*Sorbus americana*)

SITKA MOUNTAIN ASH (*Sorbus sitchensis*)

GREENE MOUNTAIN ASH (*Sorbus scopulina*)

Other names: none, other than mountain ash, or ash.

VERY POOR

The *Sorbus* genera are small shrub like trees found in the northern part of the adjacent states and Alaska. They seldom reach tree size. They are hardy shrubs, smooth barked, with white flowers and red berries. The wood decays quickly.

None of these species have been recorded or recovered as a bearing tree, thus no report.

Do not use as a bearing tree unless nothing else is available. Bark scribing is probably the only way to mark a mountain ash if it is utilized. Painting would be a must.

EASTERN COTTONWOOD (*Populus deltoides*)

PLAINS COTTONWOOD (*Populus sargentii*)

Other names: cottonwood, eastern poplar; plains poplar.

POOR TO FAIR

These cottonwoods are found throughout the eastern and plains states as the names indicate. They are separate species but very similar in appearance, and are generally just called cottonwood. These trees are rapid growing, reach sizes of up to 6 ft. diameter and have a life expectancy of about 125 years. Like all cottonwoods they thrive only along stream banks and river bottoms. The wood is soft and watery, very heavy when green but usually punky when dead or dying. The wood decays rapidly once on the ground.

These cottonwoods grow so rapidly that they will heal over almost any injury within a few years when young and vigorous. The blaze face will often be rotted out behind the overgrowth but scribing may be found in reverse. If a 10" or 12" tree was originally marked the face may be behind 2 ft. or more of overgrowth with no evidence of the blaze in the rough bark. Once mature, death and decay set in rapidly, the tree soon disappears but if windthrown leaves a large stump hole. The principle objections to these trees is the short life and rapid decay of dead wood or injuries.

Select young trees, up to 10" diameter. Keep the blaze as small as possible and smoothly drained at the bottom. Release if in dense stand. Paint the blaze thoroughly.

NARROWLEAF COTTONWOOD (*Populus angustifolia*)

FREMONT COTTONWOOD (*Populus fremontii*)

Other names: cottonwood, polar

POOR TO FAIR

The narrowleaf species is found throughout the Rocky Mountain region. Fremont cottonwood is the largest deciduous tree in Utah and is found from there throughout the southwest. These cottonwoods are two distinctly different trees. They grow in moist soils along stream banks and bottoms or along canal banks. The Fremont is the larger and more durable of the two.

Don't use these cottonwoods for bearing trees unless nothing more durable, such as pines or juniper, etc., are available. If used keep the blaze as small as possible and smoothly drained. Paint thorough. Use a mound of stone for an additional accessory.

BLACK COTTONWOOD (*Populus trichocarpa*)

BALSAM POPLAR (*Populus balsamifera*)

Other names: cottonwood, tacamahac, poplar,
balm-of-gilead, balm, bam

POOR

Black cottonwood is found from California to the Kenai in Alaska and east into Idaho and western Montana. Balsam poplar grows in the Great Lakes region, through Canada and all over the interior of Alaska. These trees are very similar in appearance and growth habits. They grow in wet or swampy lands. The black cottonwood is usually the first thing to grow on flooded areas or on gravel bars built up in rivers. They oose a sticky and unpleasant smelling sap from the buds.

These trees are seldom found if they were marked during the original surveys. They disappear without a trace. On the rare occasion that it is found the wood is deeply decayed. The wood is very soft, heavy with water and is spongy when dead. It decays within a year or two when on the ground.

Do not use for a bearing tree except as a last resort. Bark scribe the younger trees with still smooth bark. Use a bark blaze, just deep enough to smooth for scribing on older trees. Alaska reports these trees more durable if "meat" scribed during the dormant season, then blaze to firm wood. In all cases painting is essential.

QUAKING ASPEN (*Populus tremuloides*)

BIGTOOTH ASPEN (*Populus grandidentata*)

WHITE POPLAR (*Populus alba*)

Other names: aspen, popple, poplar, quaker.

POOR

Quaking aspen is found throughout the western states, Great Lakes region, northeastern states and interior Alaska. It is the most wide-spread of the populus genera. Bigtooth aspen is a tree of the Great Lakes and northeastern states. White poplar is an imported tree that has "gone wild" in many parts of the country and, when young, looks very similar to the aspens. All of these trees are short lived, soft, and decay rapidly when dead. The normal life span does not exceed 100 years. Aspen usually grows in dense stands and often reproduces as "suckers" from the roots of the parent tree. The bark on all but the largest trees is smooth. The aspen are used for pulpwood in the Great Lakes region.

When bark scribed the original bearing trees have been found in good condition. When blazed decay soon destroys the tree. In dry conditions the blaze may harden before disease attacks. Dead trees are often held up by the densely growing neighbors and thus be well preserved for considerable time. Once in contact with the ground the wood rapidly decays and there is little chance of recovery. The aspen often leaves a distinct stump hole. Stool growth may also be a clue to the original tree position.

If aspen must be used for a bearing tree select the healthiest, more dominant tree, 6" to 8" diameter, bark scribe with larger than normal letters, to avoid tearing the bark. Bark scribing may be done with the sharp point of a pocket knife, cut into the bark without removing any of the bark as with the normal scribe. This leaves a thin line and when healed does not flake off. Release from dense stands. Do not use large aspen as they are usually near maturity. Paint the scribing.

PACIFIC MADRONE (*Arbutus menziesii*)

Other names: madrone, mathrone, madrona, laurel

POOR

The Pacific madrone is found in California, Oregon and Washington. It is seldom a well formed tree, grows in dense stands, and has a reddish-orange bark that "sheds" or sloughs from the tree in thin layers. The tree is evergreen. It is a medium to slow growing tree and may have a life expectancy of 100 years in good conditions. The tree is prone to injury and decays rapidly when dead. Easily fire killed, the tree reproduces primarily from sprouts and forms clumps around the old stump.

The madrone decays badly when blazed. It is seldom that an original madrone bearing tree is found with any scribing remaining. On a hot and dry south slope the dead tree may be hardened and somewhat preserved. Madrone has the habit of stooling out from the dead stump, similar to the broadleaf maple. The stools can sometimes be "matched" if there is some method of pinpointing the locality of the corner. Very few of the original surveyors bark scribed the madrone, but this possibility should not be overlooked. Madrones do not "moss over" because of the "sloughing off" of the thin layers of bark. The wood decays rapidly when in contact with the ground and becomes a mulch making the recovery of a fallen bearing tree almost impossible.

Do not blaze the madrone. Bark scribe deeply enough to penetrate the bark, so that the scribing is into the sapwood. Make the letters large enough to avoid tearing the bark. Paint the scribe marks thoroughly. Release if in very dense stands.

ARIZONA MADRONE (*Arbutus arizonica*)

Other names: none known except madrone

Durability Unknown

The Arizona madrone is found only in Arizona and Mexico. The bark is a reddish brown, turning gray on older trees. The tree is usually a shrub or twisted, small, evergreen tree.

Nothing is reported on this tree. Either it was never used by the original surveyors, was incorrectly identified, or perhaps is not long lived enough to remain.

Since this is a smooth barked tree and is of the genus *arbuta* the probability is that it would be about equivalent to Pacific madrone. Most desert shrubs are hardy or they could not withstand the climatic conditions. If this tree were used to witness a corner it is also probable that bark scribing would be best.

PACIFIC DOGWOOD (*Cornus nuttallii*)

RED DOGWOOD (*Cornus stolonifera*)

Other names: dogwood

NOT RECOMMENDED

The Pacific dogwood is found in the forests of the Pacific slope, California to Washington. This tree has medium to large white blossoms. The red dogwood is more of a brush or shrub than tree, found along streams throughout the northern and western states and into the interior of Alaska. The blossoms are white in small clusters. Though listed here, the red dogwood has never been known to have been marked as an original bearing tree.

The Pacific dogwood, like the cascara, is about one step above no bearing tree at all. When blazed or injured the tree decays rapidly and dies. When the wood comes in contact with the ground, it rots to a mulch in about 2 years. There is no known recovery of an original dogwood bearing tree.

The dogwood is not recommended as a bearing tree. A sawed Douglas-fir stump, with the bark removed would be preferred and would last much longer. If there is no other choice, use bark scribing and avoid any other injury to the tree, however slight. Do not snow blaze and take care when tagging. Paint the bark scribing.

CHINQUAPIN (*Castanopsis chrysophylla*)

Other names: chink, chinkapin, perhaps chestnut

FAIR

The western or golden Chinquapin is found only in California, Oregon and Washington. It is a medium slow growing tree, up to 24" diameter and may exceed 200 years of age. The bark is smooth on younger trees but thick on large trees. The chinquapin bears a nut similar to chestnut in a spiny cover. A chinquapin burr is not to be set upon!

The chinquapin must be considered a little better than a poor bearing tree, primarily due to the recovery possibilities. The blaze is usually decayed but not so severely as the alders. They have been found with the blaze only slightly decayed, nearly healed, with scribing partially legible. When dead and fallen the wood decays more slowly and may remain firm for several years. There is no record of a bark scribed original chinquapin bearing tree but the possibility should not be ignored. Examine all trees of this species carefully in the vicinity of a corner.

If a chinquapin must be used, choose a young tree, 6" or more in diameter and bark scribe. Keep the blaze as small as possible, just into the sapwood and smoothly drained if blazing is required. Paint thoroughly in either case.

OREGON MYRTLE or (*Umbellularia californica*)

CALIFORNIA LAUREL

Other names: myrtle, bayberry, pepperwood, laurel, bay,
waxmyrtle.

FAIR

The California laurel has many common names but is called myrtle in Oregon, which name is used here. The tree is found only in California and southwestern Oregon. This tree is slow growing, hard, thin barked, up to 4 ft. or so in diameter and may live to over 200 years of age. The leaves have an unmistakably pungent, almost acrid, odor when crushed. Cutting through dense young myrtle can induce severe headaches due to the pungent smell. This tree is highly prized for its very hard, heavy, and beautifully grained wood, from which novelties, tables, gun stocks, etc. are made. The tree is very subject to decaying fungus, or conk, when injured.

As an original bearing tree, the blaze is usually decayed. The tree decays readily whenever injured and usually has several decayed places on a tree of any size. This confuses the issue, for a rotted hole will be no indication that it is in fact a blazed bearing tree. The dried and seasoned heart wood is very hard, but the sapwood decays quickly. A mirror is a useful tool in searching for a myrtle bearing tree. Shine sunlight into the open holes or hold the mirror down inside the holes when searching for the "reverse" scribing in the overgrowth. A flashlight would be helpful in densely forested conditions. Do not cut into the tree until you are reasonably certain it is in fact a bearing tree and then only enough to verify that it is. The myrtle is becoming rare enough that indiscriminate cutting should be avoided.

When marking a myrtle for a bearing tree, keep the size of the blaze to a minimum but through the sapwood, and paint it thoroughly to forestall decay. Avoid marking large trees.

CASCARA BUCKTHORN (*Rhamnus purshiana*)

Other names: Cascara, chittum, shittum, shittumwood,
bearberry, bearwood

VERY POOR

This small tree is found in California, Idaho, Oregon, and Washington. The cascara seldom exceeds 8" diameter, is thin barked, with soft wood, and a life expectancy of only 40 or 50 years maximum. The tree is commonly peeled for its bark, used in making laxatives. Commercial peelers usually leave some bark near the base of the tree, the peeled tree dies and then stools out into a new clump of cascara. A cascara clump may be a clue to the position of an original bearing tree but this has not been proven for no original cascara bearing tree has ever been recovered. The wood decays immediately once on the ground.

Do not use cascara for a bearing tree. Any reasonably sound Douglas-fir or cedar stump would be a much better accessory to a corner.

WILLOWS, including BLACK, RED, PACIFIC, PEACHLEAF,
CRACK, SCOULER (Salix species)

Other names: None other than willow

POOR

Of the willow family these species sometimes reach tree size, up to 20" or 24" diameter. All willows look pretty much alike to most surveyors. The original surveyors merely called them all willow so they are grouped here. The willows named here are thought to be the most hardy. Some may live up to 150 years of age. The Black Willow of the Eastern States grows to tree size and is logged for lumber. It rarely exceeds 70 years of age. The wood of willows is soft and fibrous, decaying rapidly once dead. The willows require a moist stream bank type environment.

Very few original willow bearing trees have been found. If blazed, the scribing is rotted away and the tree may have a decayed hole completely through the trunk. This writer has seen only one willow that was bark scribed. The letters BT were in the bark near the base and a large decayed hole above. Willow clumps will frequently be found at the record position of a willow bearing tree when the corner has been positively located by other evidence. It can be assumed that the clumps were stools of the bearing tree.

Do not mark willows for bearing trees except as a last resort. A sound Douglas-fir stump with the bark removed would be preferred. If willow must be used try bark scribing if the bark is smooth enough. If not, keep the blaze as small as possible; "BT" only might be best. Paint thoroughly.

DESERTWILLOW (*Chilopsis linearis*)

Other names: none known

POOR TO FAIR

The desertwillow is usually a shrub, but does reach 12" diameter in ideal conditions of ample moisture. This "tree" is found only in the southwestern area of the country. It has a life expectancy of about 50 years, therefore a large desertwillow is probably near maturity. The wood is soft and close grained.

There is no record of recovery of an original desertwillow bearing tree. Either none was marked or they have disappeared since being marked. The original surveyors in the southwest often used desertwillow for corner posts however. Many of these dried and shrunken corner posts have been recovered on the desert after 100 years.

There doesn't appear to be any really good reason not to use desertwillow for a corner accessory. If carefully blazed, marked and painted it would be better than no bearing tree at all. A mound of stone would serve as an additional accessory if no other trees of better species were available. Utah finds the desertwillow acceptable as a bearing tree.

HACKBERRY (*Celtis occidentalis*)

NETLEAF HACKBERRY (*Celtis reticulata*)

Other names: hard hack, sugarberry, nettletree, false elm, palo blanco.

FAIR

The hackberry is common throughout the midwest and lower Great Lakes region. The tree is found in the western states but infrequently. It is found in Utah and Wyoming and in eastern Oregon and Washington, in the canyons along major streams. The tree is medium slow growing, the wood is hard, and may live to 150 years or more. In the midwest it grows to 24" diameter. In the west it is usually scrubby in form and only about 12" diameter, 15 to 20 ft. in height. The bark is rough with a thin sapwood.

There is no report of the hackberry as an original bearing tree. It was undoubtedly so utilized but may have been misnamed in the field notes. Though the wood is hard the trees are easily killed by fires and are also used for firewood and fence posts.

This tree should be a fair bearing tree. This writer has used it because nothing known to be better was available. Keep the blaze small and narrow, smooth at the edges, smoothly drained and well painted. The wood is hard to scribe neatly.

OREGON CRAB APPLE (*Malus diversifolia*)

PRAIRIE CRAB APPLE (*Malus ioensis*)

Other names: wild crab, crabapple, crab

POOR

Oregon crab apple grows in dense thickets along creek bottoms of the Pacific slope, from northwestern California to the Kenai peninsula in Alaska. The prairie crab apple is a tree of the central states and Great Lakes region, found in pastures, along streams and edges of the forest. Both species are slow growing, hard, with thin bark and thick sapwood. They seldom exceed 8" or 10" diameter and probably do not live beyond 50 years of age. These trees are usually considered an undesirable, thorny, brush when growing in the wild. Both trees decay rapidly once dead and on the ground.

Very few original crab apple bearing trees have been found, probably due to rapid decay of the blaze and the dense growth making identification of the bearing tree very difficult. The few that have been found were completely rotted out and identification could only be ascertained after positively locating the corner point from other bearing trees.

Crab apple is not recommended for a bearing tree except as a last resort. If necessary to utilize, keep the blaze small, probably just "BT", and paint thoroughly. Releasing is advised but may be impossible in the dense thickets.

HAWTHORN (Crataegus, many species)

Other names: thornapple, haw

POOR

There are too many species of hawthorn (or thornapple) to list here. All are scrubby trees, usually no more than 6" in diameter. They usually grow in dense thickets mixed with vine maple and crabapple on the Pacific slope. In the Great Lakes and eastern portion of the country they occur as single trees in open pastures and borders of woodlands. They are thorny, have hard wood, are short lived and decay quickly when dead.

The original surveyors may have called hawthorn "crabapple," or vice versa. The sapwood is thick under a rough bark. The wood is hard to cut but decays quickly when dead and on the ground. Original hawthorn bearing trees are seldom found and when they are the blaze is badly decayed, with little or no scribing remaining. Identification of the bearing tree is had by reference to another before it can be certain the particular hawthorn is the bearing tree searched for.

Avoid marking hawthorn for a bearing tree. If nothing better is available bark scribe if possible, or keep the blaze small, (a "BT" blaze size is recommended over a full compliment of markings) and paint the wound thoroughly. Release if possible, but this is usually difficult in the dense entanglements.

PIN (FIRE) CHERRY (*Prunus pensylvanica*)

BLACK CHERRY (*Prunus serotina*)

BITTER CHERRY (*Prunus emarginata*)

HOLLYLEAF CHERRY (*Prunus ilicifolia*)

Other names: cherry, wild cherry

VERY POOR TO GOOD

The pin cherry is found in the northern part of the country from Wyoming and Idaho to Maine. Black cherry is a tree of the Great Lakes region and eastern half of the country. It reaches tree size of 24" or more and an age of up to 300 years. The black cherry is logged for commercial lumber and veneer. Bitter cherry is the cherry of the Pacific Northwest. Hollyleaf cherry is a tree of southern California, with holly like leaves but is usually a shrub. The fruits of the black cherry and pin cherry are used to make jelly, wine and brandy. Of this group, only the black cherry is believed to be a good bearing tree.

There is no report of a recovered original cherry bearing tree. Cherry rots quickly once dead and on the ground. Except for the black cherry it is doubtful that any one has ever recovered an original cherry bearing tree. The trees are thin barked, with thick sapwood, easily injured by fire, and injuries decay quickly.

If nothing else is available and cherry must be used bark scribe the tree. Do not snow blaze, and tag carefully. Paint the scribe marks. If blazing must be done use a "BT" blaze only.

AMERICAN PLUM (*Prunus americana*)

CANADA PLUM (*Prunus nigra*)

Other names: wild plum

VERY POOR

The American plum occurs from Wyoming and Colorado and eastward throughout the eastern part of the country. Canada plum occurs in the Great Lakes region to Maine. Both are usually shrubs, rarely becoming tree size. As a small boy in northern Minnesota this writer had to pick wild plums for making jelly and jam but cannot recall ever seeing a plum tree more than 6" in diameter. They bear good eating fruit but would be very poor bearing trees.

There is no report of any recovery of an original wild plum bearing tree.

These species are not recommended as corner accessories. Something better will always be available.

ELDERBERRY (Sambucus, several species)

Other names: elder

UNSUITABLE

Some species of the elder family is found in all the adjacent states and parts of Alaska. Of course none occur in the open desert regions. All are shrubs more than trees but at least in Oregon and Washington they were frequently used by the original surveyors for bearing trees. The wood is soft, pithy and when dead decays almost before your eyes. There is no known record of anyone ever finding an original elderberry bearing tree.

Unsuitable. Do not, for any reason, use elderberry for a bearing tree. The only use known is that the blue elderberry makes real good wine. Red elderberry is toxic and when eaten induces a good case of diarrhea!!!

WATER(RED)BIRCH (*Betula occidentalis*)

Other names: birch; may have been confused with alder.

VERY POOR TO GOOD

The water birch is usually a small shrub-like tree found throughout the Rocky Mountain region and westerly into eastern Oregon and Washington. It usually grows along stream banks, may reach 12" diameter, and an age of 100 years. The bark is dark, thin, and does not have the "birch bark" appearance of white birch. The wood decays rapidly when dead and down. New trees often "stool" out in clumps from the old stump. This tree may very easily have been confused with alder by the original surveyors because of the similar appearance. The wide variance in grading, from very poor to good, is due to the wide range of opinion in reports. Montana considers this tree very poor, whereas Wyoming reports it as good. Growing site and climatic conditions would be a determining factor on the desirability of water birch as a bearing tree.

There are no reports of water birch as an original bearing tree.

If nothing better is available the water birch could be used. Bark scribing is the best bet. Select the better, well formed tree, 6" or so in diameter. If blazing is necessary keep the face a minimum in size, through the sapwood, and paint thoroughly.

PAPER BIRCH (*Betula papyrifera*)

YELLOW BIRCH (*Betula alleghaniensis*)

Other names: canoe birch, white birch, silver birch;
gray birch, swamp birch, birch.

FAIR

Paper birch is found throughout the Great Lakes region, and extreme northern portion of the adjacent states. It is one of the most common trees in interior Alaska. Yellow birch is a tree of the Great Lakes region and northeastern states. Both are considered short lived trees. Paper birch may reach 140 years of age and yellow birch up to 200 years. Both are rapid growing with a thin, "papery", bark, and reach 12" to 24" in diameter. Though the wood is hard it decays very rapidly when dead. The stumps decay to a mulch and leave little or no stump hole, though portions of the bark often remain. Both trees stool into clumps. The yellow birch often takes root in old hemlock stumps, forming a raised root system, similar in type to the western hemlock. Yellow birch is the more durable of the two. If windthrown there is usually a fair sized stump hole remaining.

The original bearing trees of these species are sometimes found. If still standing the blaze is badly decayed with little or no trace of scribe marks. In ideal site conditions the trees have been found alive but mature and in poor condition. Do not discount the possibility of finding an original birch because they have been recovered. Careful examination and search would be a must. Matching rotted stumps and clumps of birches could pay off with a recovered corner.

If using these birches select young trees, blaze very carefully to avoid separating the bark at the edges (they peel easily). Blaze to firm wood, use a sharp scribe and paint thoroughly. If a tree less than 6" is taken use bark scribing but the scribing would have to be deep into the bark and carefully done to avoid tearing. Larger than normal letters would probably be best.

AMERICAN ELM (*Ulmus americana*)

SLIPPERY ELM (*Ulmus rubra*)

ROCK ELM (*Ulmus thomasii*)

Other names: white elm, soft elm, water elm; gray elm
red elm; cork elm, elm.

GOOD TO VERY GOOD

The elms are trees of the Great Lakes region and eastern half of the adjacent states. They are medium to rapid growing trees, favor bottom lands, grow to 3 ft. or more in diameter and have a life expectancy of 150 to 300 years if not logged or killed by Dutch elm disease. Elms usually grow from seed but are known to grow up from root suckers of a dead or logged tree. These trees will completely heal an injury but a noticeable scar usually remains in the rough bark. Once cut or dead and fallen the wood decays quickly, both heart and sapwood. In low land conditions the growth rings are usually wide-spaced, curl and break off. The wood immediately under the bark is dark while the inner core is lighter in color.

There are no reports of recovered original elm bearing trees. They were used extensively by the original surveyors.

If an elm is used for a bearing tree, blaze through the bark just deep enough for a smooth face. Take care not to separate the bark from cambium layer. Smoothly drain with an upward axe stroke to prevent accumulation of the watery sap. Keep the bottom of the blaze high enough to prevent coverage by high water in swampy areas. Paint the blaze thoroughly.

SHAGBARK HICKORY (*Carya orata*)

BITTERNUT HICKORY (*Carya cordiformis*)

Other names: hickory, shagbark; bitternut, pignut,
pecan, swamp hickory

VERY GOOD

There are many species of hickory but the two listed here are found throughout the lower Great Lakes states and eastern half of the country. These hickories are moderate to fast growing trees, reach up to 3 ft. in diameter and an age of 200 years, if not cut or fire damaged. If fungus infection is not severe these trees will completely heal an injury in 25 or 30 years, with little trace of a scar in the rough bark. When dead and fallen the wood decays rapidly, and more so if in wet land conditions. There may be little or no trace of the rotted stump.

Hickories were a favorite bearing tree of the original surveyors. At this time (1972) there is no report of the characteristics of a recovered original hickory though many must have been by sheer weight of numbers. Since the trees are desirable as lumber, veneer, handles, etc., most large trees have undoubtedly been cut.

Select young vigorously growing trees, keep the blaze narrow, smoothly drained, and use a sharp scribe. Paint thoroughly.

AMERICAN BASSWOOD (*Tilia americana*)

Other names: basswood, linden

VERY GOOD

The American basswood or linden tree grows throughout the Great Lakes region, Minnesota to Maine. The tree prefers sandy glacial soil. Basswood is rapid growing, reaches as much as 3 ft. in diameter and up to 140 years of age. The tree is highly prized for lumber and is used as shade trees on city streets. The tree blooms in spring with white blossoms which bees turn into the most delicious honey. The Indians used the tough and stringy inner-bark to make rope. This tree sprouts profusely. Every old stump has a clump of new basswood trees which sprouted from it, forming a natural perpetuation of a tree's location. Young trees have a smooth green bark. Mature trees are protected by a rough and fibrous bark.

The original surveyors often bark scribed the young basswood. As the tree grew the bark scribing disappeared in the rough bark and would be very hard to detect. Dead and fallen trees decay quickly but the sprout clumps of new trees show where the original tree stood in most cases.

Select young and vigorous trees and release from a dense stand. Bark scribe through the bark. Avoid blazing but if necessary keep the blaze small, narrow and smooth at all edges. Paint thoroughly, whether bark or meat scribed.

MOUNTAIN-MAHOGANY (*Cercocarpus ledifolius*)

Other names: mahogany

GOOD

There are several species of mountain-mahogany but the curlleaf mountain-mahogany discussed here is the most wide spread. This tree is found in the more arid areas from the Rocky Mountains, west into eastern Oregon and Washington. Mahogany is a very slow growing, shrubby, tree, with very dense and hard wood. It is usually twisted and ill formed, up to 10" or 12" in diameter, and is believed to have a life expectancy of up to 200 years. The bark of this tree is rough, over a thin sapwood. When dead the wood decays very slowly, becomes brittle and breaks into pieces more than decaying.

Unfortunately few of the original surveyors marked mahogany. When found the original blaze is only partially healed, even after 100 years. The scribing is badly weathered and hard to detect. The wood is so hard the scribing was probably very shallow originally. If a mahogany is called for search all trees carefully and the broken pieces on the ground. Searching for an obscure mahogany is a laborious task.

Choose the straightest and best formed mahogany without dead limbs or forks if possible. Blaze through the thin sapwood and use ample pressure when scribing. More than a few scribes have been broken on mountain mahogany!! Keep the blaze as narrow as possible. Painting is recommended but not essential.

BLACK WALNUT (*Juglans nigra*)

BUTTERNUT or WHITE WALNUT (*Juglans cinerea*)

Other names: walnut, American walnut; oilnut.

EXCELLENT

These trees are found in the midwest, eastern and lower Great Lakes portion of the country. They are very similar in appearance but the black walnut is the better bearing tree for it grows rapidly, reaches diameters of 3 to 5 ft. and an age of more than 200 years. The heartwood of black walnut is highly decay resistant and will remain for years buried in the ground. Butternut is a fast growing smaller tree, lives only about 75 years and decays quickly when dead and fallen. Both trees bear a very hard nut. The wood is highly valuable for lumber.

There are no reports of recovery of an original walnut bearing tree. Though both trees will heal a wound completely and would likely remain, any tree 100 years old would have been cut for lumber by this time.

Where the walnuts grow they are probably on private land and permission would be required before being used for bearing trees. The same caution would apply before cutting into a walnut suspected of being an original. These are highly prized trees.

SYCAMORE or PLANETREE (*Platanus occidentalis*)

Other names: buttonwood, buttonball

VERY GOOD

This sycamore is a tree of the eastern half of the adjacent states. It grows very rapidly, reaches 8 ft. or more in diameter and lives in excess of 200 years. The bark is a whitish brown, flakes in thin scales, is thin on young trees but thick and rough on old trees. This tree grows in bottomlands and along stream banks like the cottonwood but should not be confused with that species. Some species of sycamore are found in Arizona and California but ~~the~~ do not reach sizes nearly as large as the planetree discussed here.

There are no reports of recovery of an original sycamore bearing tree. Undoubtedly many exist.

When marking a sycamore select young trees, for large ones are probably near maturity. Blaze to firm wood, well drained and paint thoroughly. Do not bark scribe.

AMERICAN BEECH (*Fagus grandifolia*)

Other names: beech, beechnut, white beech, red beech

FAIR

The beech is an eastern states tree, extending as far west as Wisconsin in the Great Lakes region. This tree is slow growing, reaches 2 or 3 ft. in diameter and up to 300 years of age. The bark is smooth, bluish-gray in color and thin. The beech heals slowly when injured. The tree does reproduce as suckers from the parent root system. The beech nut is formed in a bur which looks very much like the chinquapin bur of the Pacific coast.

There is no report of a recovered beech bearing tree. Many were marked by the original surveyors. The beech is the tree specifically mentioned as the tree type which should be bark scribed in the earlier instructions by surveyor's general. The beech is susceptible to many killing fungi. The wood decays quickly. Though original trees must still exist today the older and larger trees have probably disappeared.

The instruction to bark scribe beech bearing trees still applies. Select young trees however because larger trees are subject to butt-rot, etc. Paint the scribe marks.

RED MULBERRY (*Morus rubra*)

Other names: mulberry

GOOD

The red mulberry is a shrubby tree of the eastern states. It is found from South Dakota, south to Texas and throughout the east. This tree is usually scrubby in form, reaches 18" in diameter, age unknown, and has very decay resistant heartwood. The tree is used for fence posts because of its durability in that use. The tree is slow growing, with very dense, hard, wood.

There is no report of original mulberry bearing trees.

If the mulberry is used for a bearing tree, select a well formed specimen if available. On younger trees the bark is thin and could be bark scribed. If blazed keep the blaze small, into the heartwood. The wood is hard so use a sharp scribe. Paint thoroughly.

BLACK LOCUST (*Robinia pseudoacacia*)

HONEY LOCUST (*Gleditsia triancanthos*)

Other names: locust, false acacia; thorn tree

GOOD

These locusts are considered trees of the eastern states but have been introduced into parts of the west, where they thrive, even in arid conditions. The locusts are relatives of the catclaw acacia, are similarly thorny and bear a "pea pod" shaped seed pod. Both trees are rapid growing with very decay resistant wood. The black locust may reach an age of 100 years, the honey locust not much over 50 years. Locust is used for fence posts.

There are no reports of recovered locust bearing tree. The original locusts would most likely all be gone because of the short normal life span.

If better, more long lived, trees are available do not use the locust for a bearing tree. It is rated good here because of the slow decay of the wood generally. If used, choose young trees, keep the blaze small, into firm wood, and well painted. Release if in dense stands.

BLUE PALOVERDE (*Cercidium floridum*)

YELLOW PALOVERDE (*Cercidium microphyllum*)

Other names: paioverde, green-bark acacia; possibly
acacia

FAIR

The paioverde is found in the southern California and Arizona desert regions. The tree is slow growing, reaches 15" or more in diameter and is believed to be long lived. The bark is smooth, over a thick sapwood. When the bark is injured the tree decays quite rapidly. Paloverde is usually found along washes. Larger trees are usually infested with mistletoe.

When found the paloverde usually has a decayed hole in place of the original blaze. When dead and fallen the soft wood becomes brittle and breaks up, turning punky and disappears. The original surveyors in the desert seldom marked bearing trees and few paioverde have been found as a result.

This tree is usually runty and ill-formed but in good conditions does form a short trunked tree. Bark scribing is almost a must. If a large tree must be taken, keep the blaze to a minimum in length and width. Paint thoroughly.

MESQUITE (*Prosopis juliflora*)

SCREWBEAN MESQUITE (*Prosopis pubescens*)

Other names: desert mesquite

FAIR TO VERY GOOD

The mesquites are found in the southwest, Utah, Nevada, New Mexico, Arizona and California. They are a "desert" tree, slow growing, hard, durable, 1 to 3 ft. in diameter, and live in excess of 125 years. The screw bean mesquite, often called desert mesquite, has long, very sharp, thorns. The regular mesquite thorns are only an inch or so in length. Usually these trees are scrubby and are hard to get into when cutting survey line through them. Mesquites reach their largest size near washes or in bottom lands, such as along the Colorado or Gila Rivers. On mature trees the bark is rough and fissured. The seed pod is like a bean or pea pod.

Original mesquite bearing trees are often healed and difficult to identify. When the blaze is still open the scribing is usually weathered and illegible. The wood is hard and will last for years after the tree has died. If not cut for firewood the original mesquite will most likely to be there.

Choose the younger and better formed mesquite. Do not cut off more limbs than necessary to get at the trunk. Keep the blaze to a minimum, through the thin sapwood and use a sharp scribe with ample pressure. Paint thoroughly.

CATCLAW ACACIA (*Acacia greggii*)

Other names: Cat's claw; possibly acacia

POOR TO FAIR

The catclaw is a small shrubby tree found in the arid regions of the southwestern states. It seldom reaches tree size and may not live much over 100 years. The tree bears bean like seed pods and has vicious, fishhook type, thorns. Anyone ever entangled in a catclaw is unlikely to forget the experience. The wood is very dense, hard and heavy. The sapwood is thin. Catclaw can grow in the most adverse conditions and is often the only "tree" around.

There are no reports of recovered original catclaw bearing trees. Perhaps none of the original surveyors bothered to make the effort and suffer the scratches and torn clothing.

Catclaw should be a fair bearing tree if not too old and ready to die. If a young tree is found, of scribbing size, it should be used. The worst problem is getting into the trunk for blazing. Keep the blaze small, (probably just "BT" size) into the dark wood, and paint thoroughly.

CROWN-OF-CHRIST or ALLTHORN (*Koeberlinia spinosa*)

Other names: none reported

VERY GOOD

Allthorn is a spiny shrub found in Arizona and New Mexico. Usually growing in dense thickets, the shrub is nearly leafless, is very hard and does not reach tree size very often.

Arizona reports that very few were ever taken as bearing trees. Of those that were all that have been recovered were found with open blaze and scribe marks legible.

Keep the blaze small, probably only a "BT" blaze, and paint the wound to reduce weathering.

MEXICAN (ARIZONA) IRONWOOD (*Olneya tesota*)

Other names: ironwood

EXCELLENT

The wood of this desert tree is probably the most durable of any. It is found only in southern California and Arizona. The ironwood is very slow growing, long lived, (there is no record of how long it may last) is usually short trunked, with thin bark, thin sapwood and a very hard dark heartwood. The limbs are thorny, as are most desert trees, but not as bad as the mesquites. Great care must be taken when cutting ironwood to avoid breaking the axe blade. Dead trees shed the bark and remain indefinitely without decaying. The wood is "worked" to make novelties with the same tools used to shape petrified wood.

The original ironwood bearing trees heal very slowly and are found with open blazes and scribing legible. The original surveyors often marked limbs because of the short trunk. Unless cut for fire wood (it burns like hard coal) or other man-caused loss the ironwood bearing tree will be there.

Select the best formed tree or best fork if there is no trunk. Blaze carefully and use a sharp scribe with care to avoid breaking the tools. The younger trees are easier to work with. Painting is not required.

CALIFORNIA BUCKEYE (*Aesculus californica*)

Other names: buckeye; possibly horse chestnut

POOR

The California buckeye is found only in that state but is closely related to the other species found in the eastern states. This buckeye is a fast growing tree, usually little more than a shrub, with a smooth grayish-brown bark. This tree is very hardy in its arid habitat, may reach 8" in diameter and has a life expectancy of not over 100 years. Injuries to the bark decay rapidly.

When an original California buckeye bearing tree is found the blaze is usually decayed with little or no evidence of scribing. When dead the wood quickly decays. This tree was not marked by very many of the original surveyors.

If the buckeye must be used, (for lack of something better) use only young trees and bark scribe them. Paint the scribing thoroughly.

JOSHUA-TREE (*Yucca brevifolia*)

Other names: yucca, yucca cactus, palmetto

GOOD

The Joshua-tree is found in southern California and Arizona. A few stray into Nevada and Utah but are stunted and more of a cactus in those areas. Nothing else looks like a Joshua-tree, unless it is palms or palmetto. This tree grows to 2 or 3 ft. in diameter and may live up to 300 years. The trunk is usually covered with the shaggy, dead leaves. The wood is soft and fibrous. This tree is hardy, slow growing and is seldom windthrown by even the most severe desert storms.

There is no report of recovery or characteristics of original bearing trees of this species. The Joshua-tree was used by the original surveyors in the California desert, have been recovered, and were sometimes called palmetto.

Where the Joshua-tree grows it is usually the only tree available. Blazing and marking is difficult. Use a very sharp axe. Trim away the dead leaves. Blaze carefully with the axe blade nearly parallel to the trunk to avoid "gouging" and going too deep. Use a very sharp scribe and large letters to avoid tearing. Though difficult to do a neat job, it can be done. Paint the blaze to prevent decay and weathering.

SAGUARO CACTUS (*Cerceus giganteus*)

Other names: tree cactus, giant cactus

GOOD

The Saguaro cactus is of course not a tree at all but grows to 3 ft. in diameter and 60 ft. tall, which is much larger than the "trees" that grow in most of the desert. Saguaro cactus is found in southern Arizona and a few in southern California. As with any cactus, it is covered with sharp spines which grow from the ribs in clusters.

This writer has seen saguaro cactus used as "bearing trees" in the original surveys. The blaze was always decayed to a large hole and if ever scribed there were no marks remaining. The cactus was still alive and relatively sound.

If nothing else is available the saquaro cactus can be used for a bearing tree. Unless the cactus is full of water and swelled out to reduce the height of the "ribs" it is almost impossible to bark scribe. When such is possible, bark scribe with quite large letters, well spaced. If bark scribing isn't possible do not blaze, instead just tag the tree. The very presence of the saquaro cactus would serve as an immovable accessory for perhaps 200 years or more, or until destroyed by man.

OCOTILLO (*Fourquieria splendens*)

Other names: none known

FAIR

Ocotillo is a many stemmed desert plant found in southern Arizona. It is not a tree nor a cactus. The "wood" is quite hard, the stems stool out near the ground, are about an inch in diameter, and are thorny. The "trunk" may be up to 5" or 6" in diameter and 10" long before branching out. When dead or uprooted the ocotillo stems remain attached to the trunk for several years before breaking apart.

This writer has found original ocotillo "bearing trees" marked near the turn of the century. They were blazed just barely above the ground and marked "BT" only. There wasn't room for any other marks. The marks were weathered but legible.

Often times the ocotillo is the only thing available to mark as a corner accessory. In this case use it. Blazing is difficult. Use a sharp hatchet and make a small blaze. Mark it BT only with letters as small as possible. Painting wouldn't be of much use but certainly wouldn't hurt anything either.

MANZANITA (Arctostaphylos - species)

Other names: none other than manzanita

POOR

There are many species of the genus Arctostaphylos. Some grow to tree size of 10 to 12 ins. diameter and 15 to 20 feet tall. Manzanita is not a tree but it was marked by the original surveyors as a bearing tree. Some species of manzanita is found in most of the western states. The larger types are common in southwestern Oregon and in California. It grows in poor soils, in dense thickets, and is susceptible to fire. The wood is very hard and brittle, with a reddish brown, smooth bark.

Very few original manzanita bearing trees have been recovered. Only the larger, mature stems were marked and they decayed quickly from the injury caused by blazing. When found the manzanita is usually dead and decayed; very difficult to identify in the dense thickets. Careful search must be made to prevent overlooking the original bearing tree.

Manzanita is not recommended as a corner accessory. If nothing else is available, use bark scribing on the best developed and straighter stem. Paint thorough. Use a mound of stone as an additional accessory.

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The common name of a tree as used in this list appears in capital letters.
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