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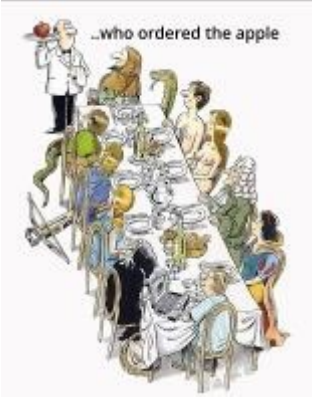


Bob's News & Musings

Spruce for the Rock Garden: Part 1 *Picea abies*

I originally planned to cover this topic in one issue, but once I started I quickly realized I would need too many pages to do a good job. So I divided the selections in half. The rest of the spruce will by in the April issue of this publication.

The spruce I selected range from miniatures globes to conical forms that might benefit from alpine style pruning. A rock garden with all globes does not have very much interest to a gardener.

I'm not going to rehash rock garden basics here. They are covered in detail in back issues of my newsletter. I will mention that the miniature selections of *Picea abies* are susceptible to sun scald, especially when planted in the full sun on a slope. They need some protection from the afternoon sun in the summer.

Many of the plants shown here will be hard to locate. They are all somewhere in America, but most would be in collectors' gardens rather than in garden centers.

Inside this issue:

Spruce for the Rock Garden Part 1 **1**

Conifer of the Month: *Picea englemannii* 'Snake' **36**

Tree of the Month: *Acer palmatum* 'Hana Matoi' **37**

A Western Serial in Three Parts: Aaron Talbot and the Old Apache **38**

Abies concolor 'Morton' **40**

Stack 'em Deep & Teach 'em Cheap, an excerpt **42**

A Bit of Humor **12**

Picea abies 'Brno'

The German plantsman, Gunter Horstmann, introduced many plants during his lifetime. Many of these plants were true miniatures. Some he found as seedlings or witches' brooms while others he obtained from collectors in other parts of Europe. One plant he introduced under the name of *Picea abies* 'Hasin' (page 9) is almost indistinguishable from another plant that originated in the Czech Republic named 'Brno'.

Picea abies 'Brno' originated at Brno Botanic Garden, Czech Republic, as a witches' broom on 'Barryi'. It was found by Karel Kalous in 1980 and introduced by Kalous Nursery, Poplz, Czech Republic. The only information available on 'Hasin' is that it was introduced by Horstmann.

Picea abies 'Brno' is a dense, miniature globe with a flattened top. It grows less than 1" (1.5 cm) per year and may be the size of a soccer ball in twenty-five years. Its foliage is light green with short needles, and the winter buds are prominently displayed, producing a very attractive little conifer for every season of the year.

Plant 'Brno' where it is protected from the hot summer sun. I have seen 'Brno' suffer from sun scald during a summer hot spell, especially if the ground is dry. This problem is not uncommon with most of the densely branched, miniature forms of *Picea abies*. If it is used in a rock garden in the full sun, put 'Brno' on the north side of a large rock for protection. This little prize will never outgrow its location in the smallest garden.

Picea abies 'Clanbrassiliana'

Picea abies 'Clanbrassiliana' was found about 1780 or earlier on the Moira Estate, near Belfast, Ireland, and Lord Clanbrassil brought it to his country residence, Tolleymore in County Down, where the original plant is still growing.

In the mid 1980's, I was visiting public and private gardens in Holland with my very good friend, Dick van Hoey Smith. We spent a day at the Gimborn Pinetum touring the conifer collection. Next to the main path was a specimen of *Picea abies* that was about 8' (3 m) high and looked like a giant, old style honeybee hive. It was a specimen of *Picea abies* 'Clanbrassiliana' that was over one hundred years old. It was nothing like the plant I had in my garden under that name. Upon closer examination I noticed some faster growth at its base that matched the plant in my garden. That was when I discovered that my *Picea abies* 'Clanbrassiliana' was reverted growth and not the true form. Shortly thereafter I was able to obtain scion wood that I could trace back to the Gimborn specimen. Plants from these scions I sold through Coenosium Gardens.

Picea abies 'Clanbrassiliana' is a dwarf form with a habit more or less beehive-shaped. The branches are thin and flexible with an annual growth rate of about 1" (3 cm). Young plants are narrowly conical and very densely branched. 'Clanbrassiliana' is commonly propagated by grafting but will also root from cuttings. Interestingly enough, plants seem truer to form when grafted rather than rooted.

Plant it in full sun to maintain its compactness, and remove any coarse, faster growth that may appear to prevent this growth from dominating.

Picea abies 'Dumpy'

Picea abies 'Dumpy' originated from a witches' broom on a dwarf form of *Picea abies* called 'Pygmaea'. 'Dumpy' grows less than 1" (3 cm) per year and develops into a dense little egg-shaped plant with dark green foliage. It will scorch on a hot summer day in the full sun, a problem with most of the miniature forms of *Picea abies*. It would benefit from mid-afternoon shade in most climates.

Picea abies 'Dumpy' is one of those plants that exhibits a faster growth rate when it is grafted. When it is grown on its own roots from a cutting, the growth rate is less than ½" (1 cm). I grew several grafted as well as a few rooted 'Dumpy's in our gardens. The rooted ones grew much slower than the grafted plants. However, as the grafted plants age, their growth rates slow. Eventually they will be indistinguishable from each other except that the grafted plants will be the size of fifty-year-old cutting-grown plants when they are just twenty years old.

Use *Picea abies* 'Dumpy' in the landscape wherever a dense, small, oval bush is desired. It will never outgrow its spot in almost any garden. The number of *Picea abies* cultivars is intimidating, and more are added every day. This one, however, stands out from "the pack".

Picea abies 'Formanek'

The Czech Republic is a very busy place in the world of conifers. For a number of years Czech conifer collectors have been actively collecting and propagating witches' brooms. I have visited with a number of these collectors several times and discovered that one of the best *Picea abies* selections was made years before any of them were born.

In 1906 a prostrate seedling was selected by a man named Formanek, who put his name on it. Planted at the Pruhonice Arboretum near Prague, Czech Republic, the original plant is still doing very well on a hillside next to the main path.

In 1992 I visited the Pruhonice Arboretum with two good Czech friends. We were there so I could see the most famous plant in their country, *Pinus heldreichii* 'Smidtii'. As we walked along the main path, we stopped at a prostrate *Picea abies* growing down a steep slope. It was the original plant of *Picea abies* 'Formanek'.

A slow growing, prostrate selection that grows about 4" (10 cm) per year, *Picea abies* 'Formanek' is very densely branched and will tend to mound up slightly in the center as it ages. Its foliage is dark green and shows no tendency to burn in the full sun nor to suffer tip blight where it is in contact with the soil.

Use this plant to create a slow growing mat over or around rocks where the rock garden has a slope. My oldest plant is about 3' (1 m) wide in fifteen years.

Picea abies 'Frohburg'

Another prostrate selection that is easier to find, *Picea abies* 'Frohburg' will grow about 6" (15 cm) per year while also maintain ing a completely prostrate growth habit. The plant pictured here is growing down a slope behind *Picea abies* 'Malena' at Coenosium Gardens

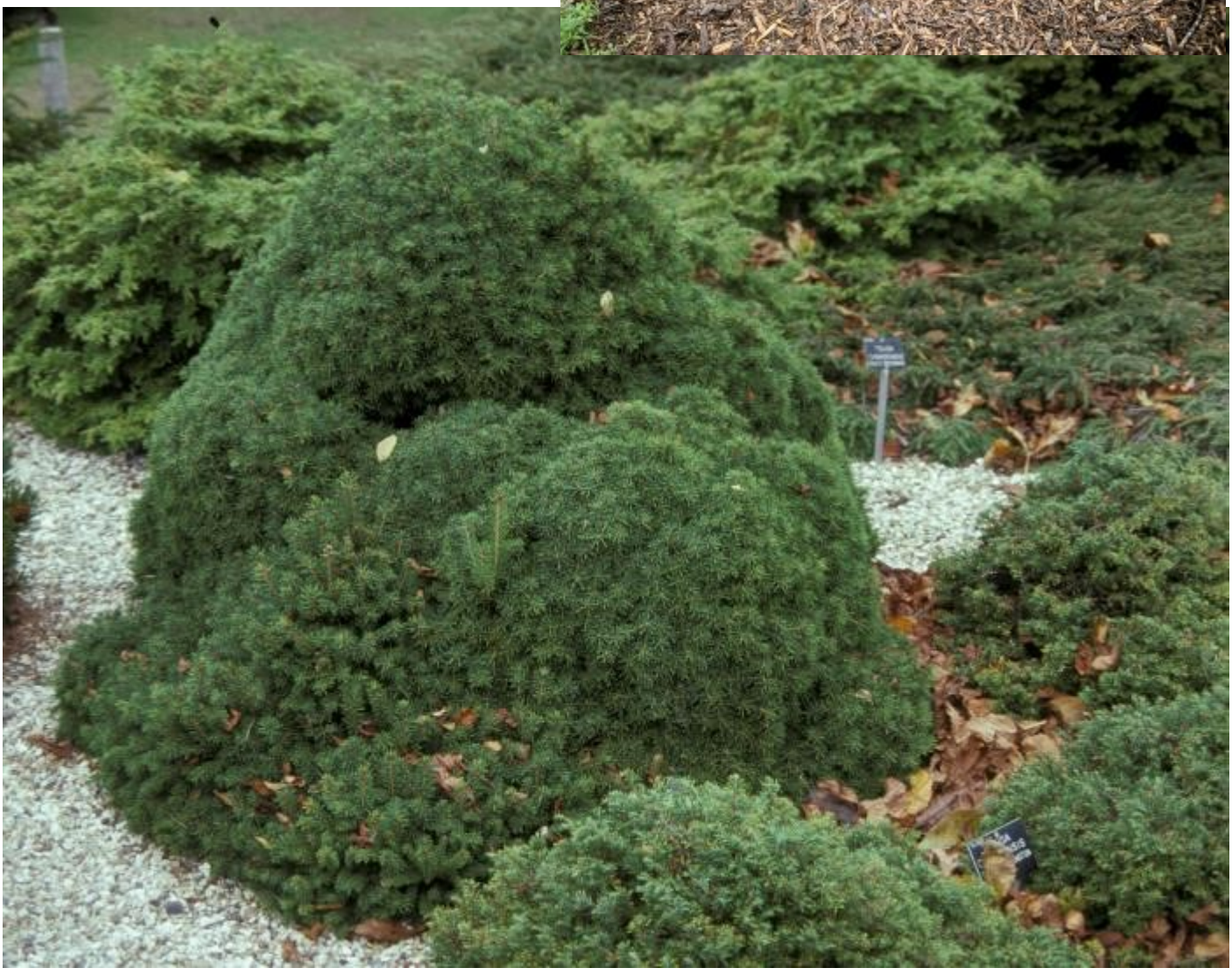
Picea abies 'Gold Finch'

Dwarf and spreading with pendulous branches, this selection is bright yellow and considerably slower growing than 'Gold Drift', its pollen parent. *Picea abies* 'Gold Finch' has not yet started producing cones due to its dwarfness and yellow foliage. It may produce terminal cones as it develops more size. It is a dwarf *Picea abies* 'Gold Drift' and may be staked or grown as a ground cover.

Picea abies 'Gregoryana'

First described in England in 1867, *Picea abies* 'Gregoryana' is a dwarf form that develops into a dense cushion, becoming a conical bush only with great age. It is very similar to 'Echiniformis', and has been regularly confused with it. However, 'Gregoryana' does not have faster growing shoots that alternate with slower growing shoots scattered throughout the plant. It also has shorter needles that densely cover the branchlets and are radially borne rather than flat along the shoots.

Very old specimens will have clusters of globose masses scattered over the plant, producing an irregular outline to what was once a smoothly rounded cushion as seen in this old specimen at Pinetum Blijdenstein in Holland.



Picea abies 'Hasin'

Introduced by Gunther Horstmann at his nursery in Schneverdingen, Germany, *Picea abies* Hasin is a miniature plant with tiny needles and an exceptionally dense branch structure. It grows less than 1" per year.

A great addition to any rock garden, it needs some protection from the afternoon summer sun to prevent needle scald and burnt sections of foliage.

'Hasin' is very similar to Picea abies 'Brno' (page 2), but its winter buds are not as prominent and 'Hasin' is more difficult to grow.

Picea abies 'Hildeburghausen'

Only a few conifers develop into near perfect globes as they grow. *Picea abies* 'Hildburghausen' is one of them. It is a dense, perfectly shaped globe that grows up to 3" (6 cm) per year. Its light green needles stick straight out from the stems. It was first listed by G. Bohme, Germany, about 1990.

It is uncanny that a spruce can develop into a perfect globe every time. Upon close examination I found out why it exhibits this growth pattern. Every terminal shoot grows the same length each year and produces five lateral buds.

Picea abies 'Hildburghausen' can be used in a moderately sized rock garden or as part of a garden border. It does well in full sun .

Picea abies 'Humilis'

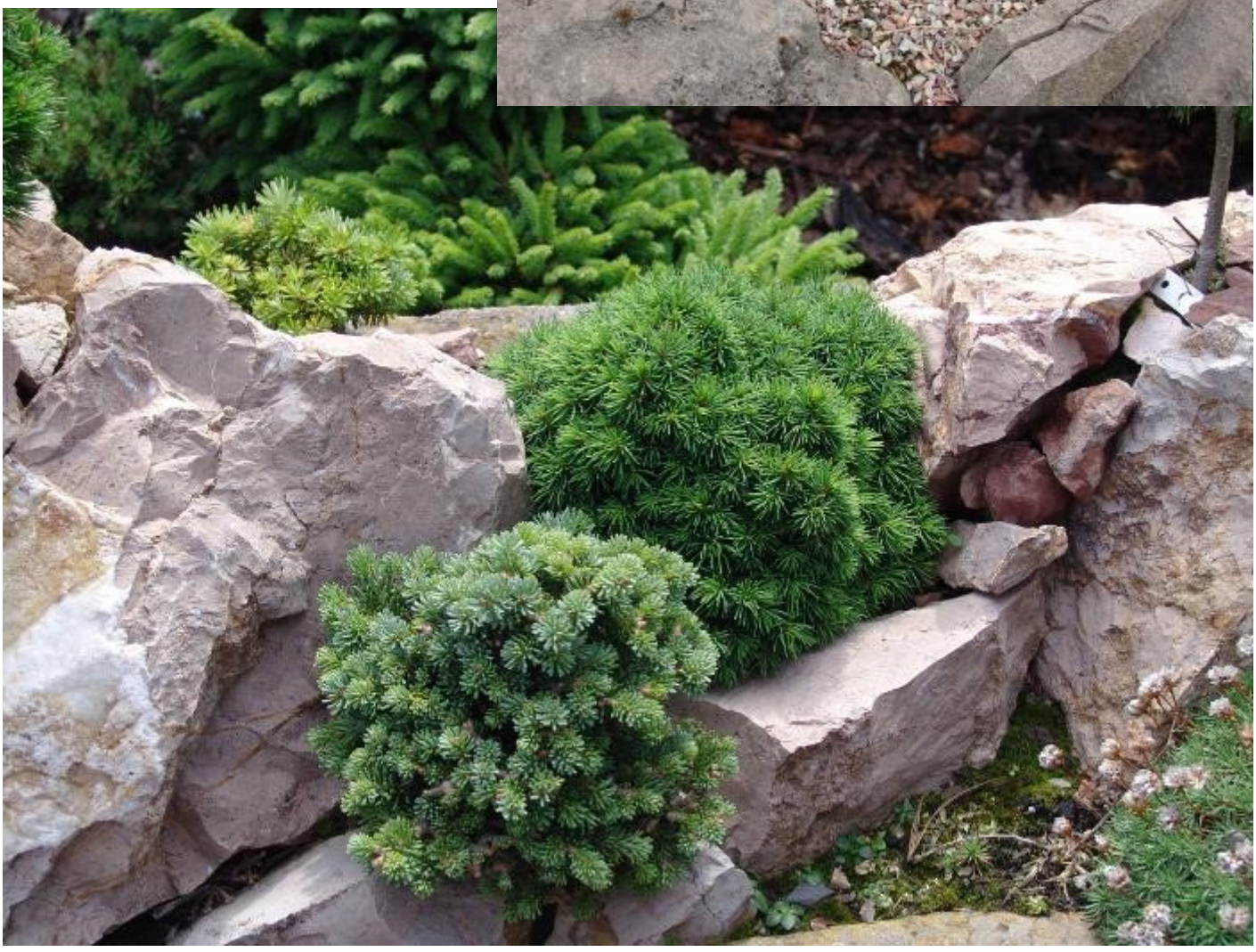
Around since 1891, *Picea abies* 'Humilis' was one of the strangest selections of *Picea abies*. In the Northwest it is dwarf and narrowly conical with an irregular outline. In other parts of the world it tends to be broader and more bushlike. I first saw this plant at Hillside Gardens in Lehighton, Pennsylvania, in the collection of my friend, Layne Ziegenfuss. He told me it was often mislabeled as *Picea abies* 'Pygmaea' even though it was easy to distinguish from 'Pygmaea' due to its unique characteristic of developing three different types of foliage as it grew.

Picea abies 'Humilis' has branches that grow up to 6" (15 cm) per year. These provide open areas in a typical specimen. Other regions of the plant will grow at half that rate and have clumps of buds develop at or near the ends of the shoots. The third foliage type consists of clusters of very short branches that look like witches' brooms scattered around the plant. These growth regions are inconsis tent and can vary from year to year, making for a dwarf plant with considerable interest.

In the Hillier Arboretum near Winchester, England, there is an old specimen of *Picea abies* 'Humilis'. One area of congested growth not only never changed but was tighter than normal. When the small branchlets of this area were propagated, the plants that resulted consistently grew into tiny buns without any reversions to faster growth. Evidently this was a *Picea abies* 'Humilis' with an actual witches' broom (See *Picea abies* 'Wichtel' on page 25).

Picea abies 'Jana'

Originating from a witches' broom in the Czech Republic about 1945, *Picea abies* 'Jana' becomes a dense, miniature ball with a flattened top.



Picea abies 'Lemon Drop'

Dense, dwarf and globose, *Picea abies* 'Lemon Drop' shows a tendency to burn since it has small, thin needles and bright yellow foliage. It grows 1-2" per year and will possibly never bear cones due to its small size and bright yellow foliage. However, as it gets larger, it may be able to produce enough extra food to bear cones.

This selection originated as a seedling from my cross between *Picea abies* 'Gold Drift' and *Picea abies* 'Acrocona'. It has been the dwarfest of the 28 seedlings from the cross. The ones with the brightest foliage have lemon as part of their names.

Picea abies 'Little Gem'

Possibly the most readily available and truly dwarf conifer in North America, *Picea abies* 'Little Gem', is not only well behaved, but is also easy to propagate and grow. Container nurseries in the northwestern United States can take a rooted cutting and grow it to a saleable size in two years. Extensive fertilization coupled with consistent watering will force continuous growth through the summer. Larger cuttings are obtained by using grafted standards for stock plants. The process of grafting plus using large understocks accelerate the growth rate and produce cuttings that are up to three times the normal length. As soon as they are rooted, the cuttings resume the expected growth rate for this cultivar.

Picea abies 'Little Gem' originated as a congested area, called a witches' broom, on *Picea abies* 'Nidiformis' at the F.J. Grootendorst Nursery in Boskoop, Holland, sometime before 1960. It had an irregularly oblately spherical shape with thin, congested twigs throughout the plant. Since the twigs exposed to the light are completely covered with small, thin needles, it has an exceptionally dense coverage of foliage. The growth rate of about 1" (3 cm) per year is dependable and results in a plant that stays reliably dwarf.

Full sun to partial shade works well for *Picea abies* 'Little Gem', but old plants will sometimes suffer sun scorch on exceptionally hot, sunny days. Well drained, moist soils will produce healthy specimens for the rock garden or other garden spots where it is not crowded by perennials. It also does well in trough gardens or other types of planters. 'Little Gem' behaves itself when grafted on a standard. Standards aren't for everybody, but they do allow *Picea abies* 'Little Gem' to be grown among perennials and other types of flowers because the plant is held above the competition and the stem is hardly visible.

Picea abies 'Malena'

Found in 1985 by A.G. Hauenstein, Rafz, Switzerland, *Picea abies* 'Malena' is a dense cushion in the landscape. It is slightly convex in outline and so dense that it feels solid to the touch. The foliage is green with needles that are longer and thicker than expected for such a slow growing plant. It grows about 1" (3 cm) per year and may be about 15" (35 cm) wide in ten years. It does very well in the full sun in well drained soils. My oldest plant never showed any sign of sun scald at my former Eatonville home. It is growing in the full afternoon sun at the top of a dry, west facing slope.

This selection may be used in any full sun location with well drained soil and evidently is resistant to sun scald, which is very unusual for a miniature Picea abies cultivar. *Picea abies* 'Malena' is an excellent addition to the smaller garden and will never outgrow its location.

Picea abies 'Maxwellii'

Early authors described three different dwarf forms of *Picea abies* 'Maxwellii', thereby creating considerable confusion. The true plant of *Picea abies* 'Maxwellii' is a dwarf form that grows into a dense cushion which is much broader than high. There are many short, thick shoots throughout the flat top of the plant with coarse foliage. Lower, along the sides, the growth tends to be more elongated

When propagation material is chosen from this elongated growth, it tends to produce a faster growing selection of 'Maxwellii' that was given the name of 'Pseudo-Maxwellii'.

When we moved to the Northwest, we brought several specimens of *Picea abies* 'Maxwellii' with us. On return visits to the Northeast I was able to obtain additional scion wood from plants at the Arnold Arboretum and the U.S. National Arboretum. None of these plants maintained the character of 'Maxwellii'. They all soon reverted into a fast-growing form similar to 'Pseudomaxwellii'. The climate in the Northwest wrecks havoc on many of the dwarf selections of *Picea abies*. Those that just show an accelerated growth rate tend to resume their normal growth rate when planted in other parts of the country. Unfortunately, *Picea abies* 'Maxwellii' is not one of those plants and I no longer have it in my own collection. However, it is a great dwarf selection for the Northeast and Midwest.

Picea abies 'Nidiformis Kalous'

Originating about thirty years ago in the Czech Republic *Picea abies* 'Nidiformis Kalous' was discovered as a witches' broom on PAN. It may be found under other names as well as *Picea abies* 'Nana Kalous' might be the most common name. I received my stock plant under the name above.

Picea abies 'Nidiformis Kalous' develops into a dense, miniature globe with tiny, light green needles. It is definitely a good choice for the smaller rock garden, along with a myriad of other *Picea abies* miniature balls.

Picea abies 'Pesek'

Picea abies 'Pesek' is not in the literature and a plant that is very hard to locate. However, it is worth the search. The name itself means "little fingers". The individual branches stick out like fingers all over a dense, miniature globe, making it a very distinctive selection of miniature Norway spruce.

Picea abies 'Piskowitz'

Discovered in the Czech Republic over twenty years ago, *Picea abies* 'Piskowitz' is a dense, conical miniature selection that will produce a scattering of longer shoots at its apex. The needles are thin and short and propagation can be difficult when the smaller wood is used.

Whenever a dwarf or miniature spruce is propagated, the smaller wood should be used. Otherwise, the new plants may grow at an accelerated rate and lose their character.

Picea abies 'Pusch'

The Arnold Arboretum, Jamaica Plain, Massachussettes, has an interesting conifer collection with many of the spruce having been planted about 1900. Among these old trees is a specimen of *Picea abies* 'Acrocona'. When I first came across it in the late 1970's, I was struck by the large number of cones. I also found it interesting that the cones were on the ends of the branches. I searched quite a while before I was able to locate and purchase one for my garden.

Picea abies 'Acrocona' is not suitable for the smaller garden. I always felt that this was an unfortunate fact of life, until about 1989 when Dianne and I were visiting Jan zu Jeddeloh in Germany. He was growing a miniature form of Picea abies 'Acrocona', and he had hundreds of them in a small greenhouse. He explained to me that it was discovered as a witches' broom on *Picea abies* 'Acrocona'. In effect, it is a miniature 'Acrocona', making it very suitable for the smaller garden. It had been given the name of *Picea abies* 'Acrocona Nana', which was later changed to *Picea abies* 'Pusch'. It had only recently appeared in Europe, and zu Jeddeloh planned to "corner the market'.

In the spring it develops red cones on most of its branch tips, making a colorful statement in the garden and showing that not only herbaceous plants produce colorful 'flowers'. It develops into an irregular mound when left to its own devices and will take over twenty years to become 2' (60 cm) high by 3' (1 m) wide. The foliage is dark green, and the cones develop normally, gradually turning brown by the fall, but they never develop any size and stay quite small.

Picea abies 'Pusch' has many uses in the garden and does what a conifer should do - produce cones. Plant it in the full sun with well drained soil.

Picea abies 'Tompa'

Picea abies 'Tompa' is an excellent alternative to *Picea glauca* 'Albertiana Conica'. It is dwarf and conical with light green foliage and does not have the aphid problems associated with the dwarf Alberta spruce.

I saw the original plant when I visited the Barabits's Lővér Pinetum in Sopron, Hungary. It will grow about 2" (5 cm) per year with dense, upright branching and full foliage.

Picea abies 'Tufty'

As a conifer collector, I do love growing oddities in our gardens. Many of the "weird" and unusual conifer forms are attractive in much the same way that abstract art appeals to the art fancier. Of course a conifer that is downright ugly does not appeal to anyone. Found by J. W. Archer, Farnham, Surrey, before 1979, *Picea abies* 'Tufty' is an unusual plant that should appeal to most gardeners, especially rock gardeners.

While traveling in England I came across an oddity that takes about ten years to move from being strange to being an asset in the garden. *Picea abies* 'Tufty' is a slow growing, irregularly shaped bush with curved and contorted branches shooting off in all directions. Its basic shape is irregularly globose. Its foliage is light green with thin needles of varying lengths. In fact, the needles found along the new branchlets are nothing more than stubs. Near the ends of the branchlets (what passes for) full length needles are found clustered around the terminal buds.

Young plants are very sparse and open, in spite of high numbers of branches and branchlets. With a growth rate of about 2" (6 cm), it takes about ten years for a specimen to show some density. The sparsity is due to the short needles, not the lack of branches.

Propagation is tricky as the thin needles are resistant to scraping and a cut scion can almost be mistaken for a larch, due to the paucity of foliage. However, not only is *Picea abies* 'Tufty' a conversation piece in the garden, it actually is quite attractive after it fills in and deserves a home in any informal planting.

Picea abies 'Typner'

Discovered as a witches' broom in Holland about twenty years ago, *Picea abies* 'Typner' is a dense, miniature globe with dark green foliage. It grows about 1" (2 cm) per year with small needles.

Picea abies 'Vassar Broom'

Found as a witches' broom by Greg Williams, *Picea abies* 'Vassar Broom' is a trtue miniature with short, thin needles. It must be protected from the hot summer sun due to its extreme foliage density.

It does propagate by grafting fairly easy, as long as the grafter can work with little bits and pieces for scion wood.

Picea abies 'Vermont Gold'

Found by Greg Williams, Vermont, as a bright yellow sport on a specimen of *Picea abies* 'Repens', it was distributed as 'Repens Gold' before it was officially named *Picea abies* 'Vermont Gold'. It is slightly depressed in the center as it grows into a large, tuffet-shaped plant that is much wider than high. It grows up to about 4 inches (10 cm) per year. The foliage is bright yellow and will burn/scald in the full sun during the summer. Light afternoon shade will prevent burning while still allowing the bright yellow foliage color to appear.

Picea abies 'Van Bemmel'

A miniature selection from Holland that was found as a witches' broom before 1990, *Picea abies* 'Van Bemmel' grows less than an inch a year and becomes an irregular globe as it develops.

Picea abies 'Wichtel'

Gunter Horstmann was probably the first plantsman to recognize this fact and introduced propagations from this broom as *Picea abies* 'Wichtel'. At a glance, an old specimen of this cultivar may be mistaken for a moss covered rock. The annual growth rate is so slow that scion wood can only be obtained from young specimens growing in considerable shade. I cannot think of a slower growing conifer. My two oldest plants were twenty years old and about 6" (15 cm) wide and less than that high when they died. One was growing where it was exposed to the afternoon sun and scalded very badly while the other was in too much shade and apparently developed a mold problem.

Picea abies 'Wichtel' is an excellent choice for any size rock garden or even a trough garden. Remember to give it some afternoon shade, or the August sun may burn the center of the plant. *Picea abies* 'Humilis' also has a home in the smaller rock garden but is best used in a larger setting. There are even selections of 'Humilis' found under the names of 'CLU Berry Fast' and 'CLU Berry Slow'.

Picea abies 'Zajecice'

Every once-in-a-while collectors come across plant names that appear to be impossible to pronounce. I added this plant to my collection in the early 1990's when a friend gave me three little pieces of scion wood. I could not say the name but I could see that it must be a very desirable plant.

Later, during a visit to the Czech Republic, I was discussing Czech names with my good friend Jaroslav Kazbal as he took me on a tour of Prague. First, we were talking about street names in Prague. One that sticks in my mind is "The Place Where We Boil Our Enemies". There were other streets with references to blood and cutting off various appendages of one's enemies. Later, at my hotel we discussed plant names. Many of the Czech plants are named for villages where the original broom was found while others are more descriptive. For example, *Pinus sylvestris* 'Ubranky' means "by the gate" and represents the fact that the original plant is growing by the entrance gate to its discoverer's garden.

Picea abies 'Zajecice' is a dense, globose selection with thin branchlets comprising the spring flush of new growth. It grows less than 1" (2cm) per year although as it ages, it does show a tendency to produce scattered branchlets of up to 2" (5 cm) in length. These longer branchlets then produce more typical short growth the following year. *Picea abies* 'Zajecice' maintains its dense growth habit and will be less than 2' (60 cm) in diameter when it is twenty years old.

Its light green foliage has small, thin needles. The outline is irregular due to the two different rates of a typical year's growth. It originated as a witches' broom near Zajecice, Czech Republic. The name means "place with rabbits". The original village was evidently surrounded by rabbits, sort of a Czech Watership Down.

Old Selections of *Picea abies*

During the 1930s, a dwarf conifer book was written by Murray Hornibrook. It was an instant success with anyone interested in this plant group. The first volume of my three volume set: *Special Conifers For Special* Gardens A Historical Perspective includes a chapter on Hornibrook's spruces. The spruces covered are *Picea abies* since dwarf forms of other species were few and far between.

The next six pages look at a few of these spruces that may still be found in garden centers. They are useful for a larger rock garden but would grow too large for a small one in a short period of time.

Picea abies 'Tabuliformis' in the Hillier Pinetum

Picea abies 'Pumila Nigra

There is another selection of Norway spruce that has been around for a very long time. It shares many of the commercial attributes of *Picea abies* 'Nidiformis' and *Picea abies* 'Tabuliformis'. It is a dwarf spruce that is easy to grow from cuttings, it responds well to fertilization and water, and it does well in the landscape. Wholesale nurseries are able to produce it for a low cost and market it as a dwarf conifer.

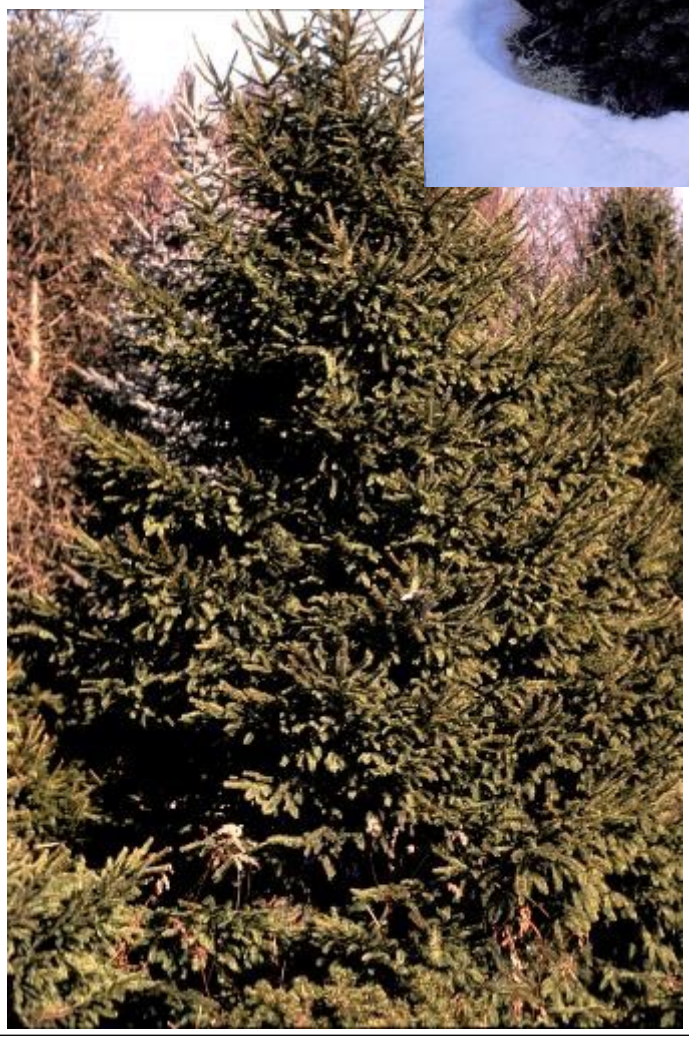
Picea abies `Pumila Nigra', often marketed as *Picea abies* `Pumila', is a dwarf form that grows broad and flat, becoming slightly convex as it ages. The height might reach slightly above 3' (1 m) on very old plants. Its twigs are brown on top and more of an orange on their bottom sides. They are thin and flexible and angled upward at 50o around the margin of the plant. The dark green needles are densely arranged on the branches and feel very stiff. It grows just over 1" (3 cm) per year. Even though it was discovered and introduced sometime before 1891, it has only gotten popular since the 1970's, it should not be very difficult to locate.

Picea abies `Pumila Nigra' has several uses in the landscape. Its low, spreading form and slow growth rate make it ideal for the smaller garden. It does well in the full sun although it may scald during exceptionally hot and dry weather unless it is occasionally deeply watered. The dark green foliage throughout the year makes for a nice contrast with other seasonal colors.

Grafted plants lose all character and become open, fast-growing, and worthless for the landscape.

Picea abies 'Pumila Nigra'

Grafted plants lose all character and become open, fast-growing, and worthless for the landscape. These pictures show a grafted plant and one on its own root. Both are the same age.



Picea abies 'Repens'

Historically confused with 'Procumbens', *Picea abies* 'Repens' develops at a slower rate into a dense, flattened plant. It will mound up in the center as it adds annual layers of new growth. The new growth appears as flattened sprays of foliage since two lateral buds form every year just beneath the end of each shoot. When they grow in the spring, they produce the annual flattened sprays that are a characteristic of this plant., resulting in branches that are layered from the middle of the plant outward, regular, dense and evenly formed.

It is a dwarf conifer but notice how large it can get as shown by this specimen in the Holden Arboretum.

Picea abies 'Tabuliformis'

Picea abies 'Tabuliformis', was found before 1865 in Trianon, Versailles, France. As the name implies, this dwarf selection has a wide-spreading habit, mounding as it ages, but maintaining a flat top at all times. Even as it mounds up, the distinctive layers are easy to see. They develop from the overlapping of shoots forming a dense mat of foliage that smothers the foliage beneath. The thin, flexible shoots are held at a 50° angle to the branches and demonstrate this property throughout the plant.

Although it only grows about 2" (5cm) per year, it does build up layers of branches while developing some width and can outgrow its location if not carefully sited. My first observation of a mature specimen of *Picea abies* 'Tabuliformis' was at the Hillier Arboretum in England where I was actually able to squat under a very old plant directly behind the Hillier home.

Use this selection much as you would use *Picea abies* 'Nidiformis'. They are very much alike, but 'Tabuliformis' does grow faster.

Picea abies 'Nidiformis'

We built a new house in 1974 and I was anxious to landscape it with some nice plants. Being a conifer novice at the time, I had little or no idea what conifer choices were available. I visited a few discount stores and found a number of plants that quickly outgrew their locations. However, I did stumble across a few truly dwarf conifers. One of these was *Picea abies* 'Nidiformis', commonly called the bird's nest spruce. It has been one of the most commonly available dwarf conifers for many years. Not only that, it is also relatively inexpensive to purchase.

I am stretching things a bit when I call *Picea abies* 'Nidiformis' a dwarf conifer. The definition of dwarf is very subjective. It is dwarf compared to the species; however, it can outgrow its location if the gardener is not careful about its siting.

Picea abies 'Nidiformis', discovered before 1904 in the Rulemann Grisson Nursery near Hamburg, Germany, was named by Beissner in 1906. It is called the "bird's nest spruce" because of its dense, broad growth with a nest-like depression at its center. Growing up to 2" (5cm) per year, the branchlets form tight layers, creating an exceptionally dense plant. The branches grow upward at about a 50o angle but have drooping tips while the needles possess sharp, curved hooks on their undersides, quite a unique characteristic.

Since it is easy to root from cuttings and develops rather quickly into a saleable plant, it has been very popular with nurseries since its discovery. Use it in the larger rock garden or any garden setting where a spreading evergreen shrub makes the best impression. It is very hardy and relatively pest free.

Picea abies 'Nidiformis'

Picea englemannii 'Snake'

Whoever thought up the name for *Picea englemannii* 'Snake' must not have been very concerned about coming up with a name that sells plants. However, it is a good descriptive name. Picea englemannii 'Snake' becomes a tree with long, sinuous main branches and very few lateral branches. It looks like someone tied a lot of stiff whipcords to a central trunk. It will grow up to 18 inches (50 cm) per year. Its foliage is bright blue on a rather grotesque tree that every collector would like to have. It was found as a seedling by Dr. Illa Martin, The Netherlands before 1987.

I have found it to be a difficult plant to propagate since it produces such a sparsity of lateral branches. Most of the ones that are produced are too thick to graft properly.

Acer palmatum 'Hana Matoi'

Acer palmatum 'Hana Matoi' is a red dissectum with pink variegation throughout the foliage. It is a great addition to any garden.

Aaron Talbot and The Old Apache (part two)

Eventually, they reached El Paso. They heard about a company of Texas Rangers that was being formed in the area. It was supported by local ranchers and businessmen. The company would operate in the western part of Texas, where the Yankee police and army were seldom seen.

Aaron signed on as a ranger while Red Hawk was appointed a position as a scout. At first, there were some problems in the town concerning Red Hawk. It all concluded the day five scruffy looking men rode into El Paso.

After some time in a saloon, the men came outside looking for some fun. They were carrying several bottles of whiskey, and drinking it like it was water. They were spread along the front of the saloon when Red Hawk rode past. Two of the men moved into his path, causing him to stop for a moment. One of the other men grabbed a rope from his horse and lassoed Red Hawk, pulling him from his pony. The first two grabbed him by the arms before he could do anything.

The men were fixing to hang him when Aaron came out of a building just across the street. He started across the street with his hand on his revolver as three other men carrying rifles followed him out of the same building. They took up positions across the front of the building with their rifles at the ready.

Stopping in front of the drunken men, Aaron said, "You fellas drop that rope and let this man alone. He works for the Texas Rangers."

"There ain't no Texas Rangers," one of the men loudly mumbled.

Another one said, "All I see is an Injun lover. You better move along, or we'll be hangin' you too."

The men started to laugh but stopped when Aaron lifted a double-barreled shotgun from his side and laid it in the crook of his arm.

The three rangers who were backing him up changed their demeanor as they raised their rifles to their shoulders.

One of the drunken men took the rope from Red Hawk's neck and suddenly shoved him toward Aaron while reaching for his gun. He had just cleared leather when a shotgun blast blew him off his feet.

As the others reached for their guns, Aaron shifted his aim toward the man standing by the remains of the dead man. The four men froze and slowly moved their hands away from their pistols.

Pointing toward the dead man, Aaron said, "You all take what's left of that piece of trash and get outta town. If'n you ever come back, I'll shoot you on sight."

The men threw their partially filled whiskey bottles to the ground and picked up the dead man. As they tied his body onto his horse, Red Hawk finished dusting himself off and walked over to one of the men. He stood next to him and waved a scalping knife before speaking directly into his ear, "You will give me back my gun, or I will slit your throat."

The man blanched and shakily took Red Hawk's pistol from his belt and handed it to him. Red Hawk kept staring into the man's eyes as he took the gun and stepped back. Then he turned and walked away as the men all mounted and rode out of town.

As the men rode from town, the bartender came out of the saloon and stood by Aaron. He wiped his brow with a towel and said, "You fellas just kicked open a hornets' nest."

"Why do y'all say that?" Aaron replied.

"Them's Comancheros. They came into town from Mexico on their way north to join up with a big trading party in New Mexico. Then they'll come into Texas to trade with the Comanches."

The other three Rangers had joined Aaron and Red Hawk in front of the saloon and heard what the

Aaron Talbot and The Old Apache (part two)

bartender said. One of the Rangers, a man named Jack Slade, said, "We know who the Comancheros are and what they do."

"Yeah, but you don't know that the man you done killed is the brother of their leader. After they all get together and do their trading, we'll probably be getting a visit from them."

"We'll worry about that when it happens," Slade replied.

"Here's somethin' else to worry about," the bartender said, handing Slade a small sack.

Opening the sack to look inside, Slade said, "We got ourselves a problem."

He emptied the sack onto the boardwalk and threw it aside. Seven scalps lay scattered on the boards.

Red Hawk said, "They Apache scalps. Three from woman, one from old man, and three from children."

Slade said, "I have seen this before. Those men are scalp hunters. They sell scalps in Mexico for bounties, or they sometimes trade them to the Comanche. Either way, the Apaches get all stirred up and go on the warpath. A lot of settlers will die if these scalp hunters are active in Apache territory.

"I notice there aren't any warrior scalps in that bag," Aaron said.

"Nah, women, children, and old men are easier to kill. The scalps ain't worth as much, but there ain't any danger in collecting them."

"Maybe we should follow those four and see where they go."

"You and your friend, Red Hawk, here can do as you please," Slade said, taking a folded piece of paper from his shirt pocket. He slowly unfolded it and continued, "This here is an order telling us to stand down. There ain't no more Texas Rangers, and a company of Yankee cavalry is comin' to El Paso to maintain order."

Aaron looked at Slade and said, "Red Hawk and I left five minutes ago."

An hour later, Red Hawk and Aaron were following the trail left by the four Comancheros. They had hardly gone a mile before spotting a body alongside the road. It was the man Aaron had killed. He had been dumped and stripped of anything of value.

Moving on, the two men took turns as the lead tracker. The Comancheros were easy to follow until they got into Apache territory. Then they became more cautious. The Mescalero Apaches roamed throughout southeastern New Mexico and killed Comancheros on sight.

When they finally came within sight of the four men, it was late on the second day out of El Paso. The men had met with some others and were setting up camp for the night. The two former rangers moved close enough to the men to hear some of their conversations.

The leader was talking to one of the men from El Paso, and he was upset. "You tellin' me that some ranger killed my brother over a damn Injun?" he said.

"We couldn't do nothin' about it. There was too many rangers, and they had the drop on us," was the reply.

"You four know what he looks like? The one what shot Dirk?"

"Yeah, we all saw him."

"So you all can point him out when we ride into El Paso after our business with the Comanche. Right?"

"Yeah. We'll help you kill him."

"Okay, then," the leader said, drawing his pistol and shooting the speaker in the stomach. Then, holstering his gun, he continued, "That was for losing the scalps."

Aaron Talbot and The Old Apache (part two)

The wounded man lay on the ground, moaning while clutching the hole in his belly.

"I ain't gonna put up with your moaning all night. I want to get some sleep. We got a good distance to travel tomorrow."

He pointed at the wounded man and said, "You three been ridin' with him so you can shut him up. Just do it quietly. Then come and get some grub."

One of the men picked up a large rock and caved in the skull of the dying man. Everyone got quiet for just a minute before the rock wielder started to strip the body of valuables. He was unbuckling the gunbelt when the camp was stirred up by the entrance of a Comanche warrior.

He quickly dismounted and gave a brief glance toward the recently killed man as he approached the leader. He said something in his native tongue and pointed toward the north.

The leader turned to his men and said, "Waco, stop playing with that piece of trash, and all of you listen close. Bloody Wolf here found us some scalps to collect. Tomorrow we'll get back the ones that those three gave away."

Aaron and Red Hawk silently backed away and made a cold camp about a half-mile away from the Comancheros. They spent much of the night making plans.

The rising sun saw the two men circling around the Comanchero camp. They planned on setting up an ambush at some point along their route. The idea was to whittle down their numbers before they confronted them in an open fight.

They found a likely position two miles to the northeast of the camp. Red Hawk located a rocky outcrop that overlooked their expected route of travel. Since the Comancheros had a two-wheel wagon carrying their trade goods, they had fewer trails to pick from. Aaron secured their horses and found a spot for himself. Red Hawk was already well hidden. They would kill several of the Comancheros and then move on to another location.

They waited until midmorning before the Comanchero wagon came into view. Two men rode in front of the wagon, and another trailed behind. They were not paying much attention to their surroundings, and the driver was nursing a jug of firewater. The others were not to be seen. They must have gone after the scalps of some Apaches in the area.

No one noticed anything when Red Hawk's arrow killed the trailing rider. His second arrow killed the wagon driver. The sudden slackening of the reins startled the horses pulling it, and they stopped moving.

The two leading riders finally noticed something was wrong. They stopped and turned, reaching for their guns. Aaron shot them both out of their saddles.

When no other riders appeared, the two men moved down to examine the wagon. They discovered various trade goods that included old rifles, gunpowder, and several bags of scalps. Several small kegs of whiskey were buried beneath everything.

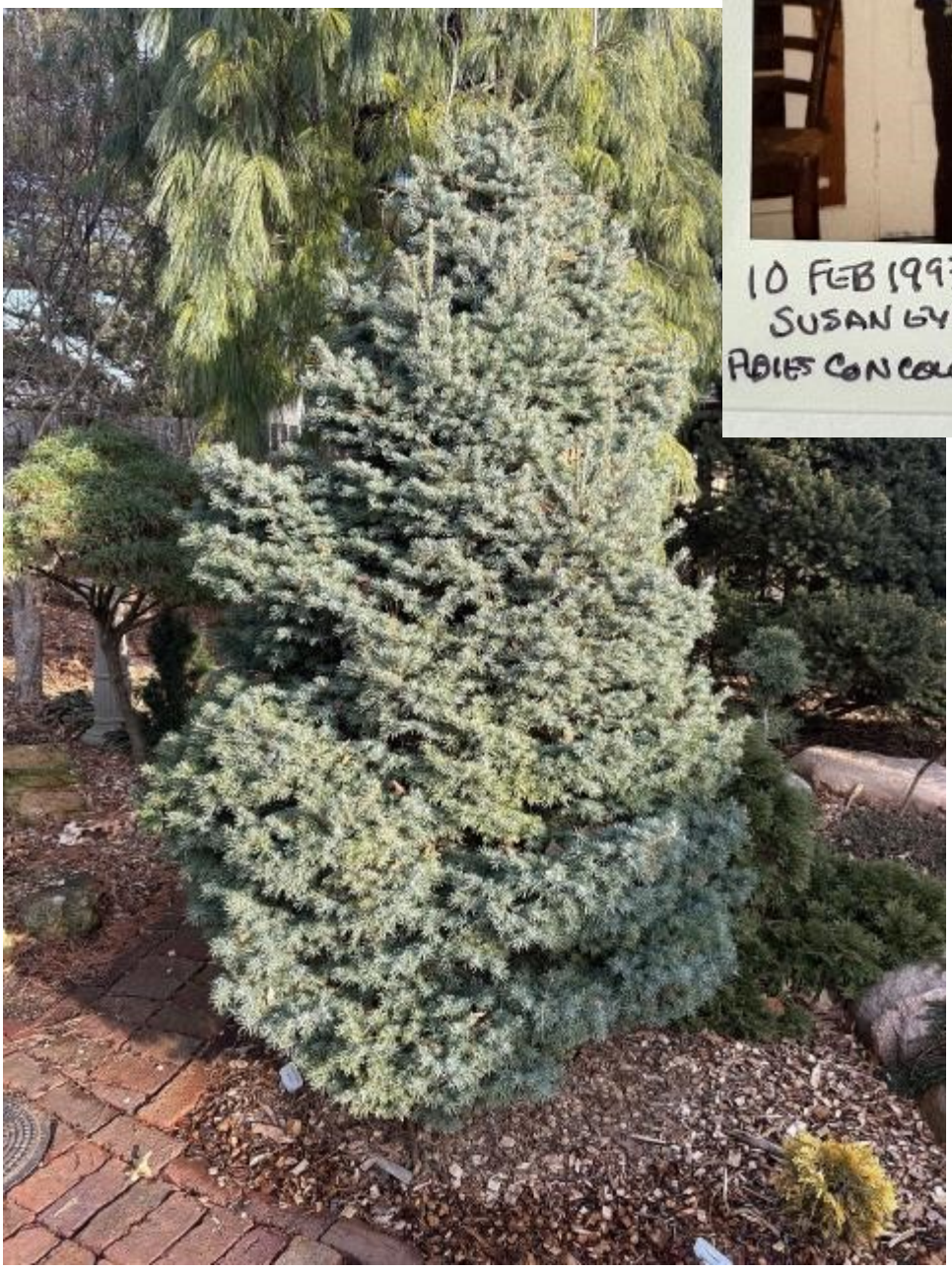
Abies concolor 'Morton'

The plant below is growing in Randy Dykstra's garden and was propagated from a scion cut from the original broom. Susan Eyre is holding the broom.

The plant pictured is 22 years old and 8 feet tall.

Thanks to Randy and Susan for the pics and info.

I had this cultivar in my last issue (Firs for the Rock Garden) and just a picture of a young plant.



I spoke with Rich Eyre and he said if he remembers correctly, Chris Bechtel at Morton arboretum told him about it. No one can remember who actually found the broom. When Rich asked them to collect it they removed the whole broom and sent to him. Rich's wife Susan said she had a picture of her holding it and is going to see if she can find it.

Randy

Stack 'em Deep & Teach 'em Cheap **Excerpt (Teacher Section)**

Retesting: Studying for a Test is Passé

When I taught ninth-grade space science at Tamaqua High School, I tried a semester of independent learning. I designed four astronomy units whereby students completed assignments and laboratories at their own pace. A student completed a unit when they turned in all the work and took the test. If the student failed the test, they had to finish a new assignment before retaking it. Likewise, the student had to pass the test for a unit before going to the next one. I had written several tests for each unit to prevent students from retaking the same exam or sharing answers.

I discovered after a few weeks that I was physically unable to complete the workload I had created for myself. To be successful, I needed assistance to help with grading papers. Then I could work with the students who were having problems with the material.

Retesting sounded like a good idea. However, I quickly discovered that most students refused to prepare for the initial test. After all, they could keep taking it until they passed. Unfortunately, this also meant they spent so much time retesting that they could not cover much coursework.

I tried this teaching method during the late 1970s. I never repeated it. I did not again run into the concept of retesting until near the end of my career at Eatonville. Washington State was pushing a "new" program, and the local district was 'all in.' A student had to master each unit before the teacher let them move on to the next unit. They showed mastery by passing the unit test. A student could keep repeating a failed test until passing it.

Many students stopped studying for tests. Teachers had to figure out how to handle retesting students while successful students moved on to new material. One class could have every student working on a different section of the curriculum. That would be unmanageable without small classes and some individualized instruction.

One of the ridiculous proposals that accompanied the retesting idea said that a teacher might give homework but not grade it. Instead, students would complete the work independently because they wanted to pass the tests. Whoever came up with that notion must have had a real sense of humor.

Suppose a student moved on to the next unit after failing several retests. That defeated the philosophy of the whole program. At the same time, if the student remained stuck on one unit for too long, they got so far behind that there was no way to complete the course, defeating the program's philosophy.

Retesting until a student masters a unit sounds like a great idea. But unfortunately, it makes several assumptions about student behaviors that are rooted in a world of fantasy.

Sometimes, education experts forget what it was like when they were students themselves. I believe retesting had a short life span at Eatonville, which is usually the case whenever it is attempted.

Stack 'em Deep & Teach 'em Cheap Excerpt (Teacher Section)

Failures: Who Takes the Blame?

Several times during a typical school year, I would ask a high school student, "Why are you failing a certain class?" An almost universal answer was, "I don't like that class." Or "I don't like that teacher."

Then I would say something that never got a satisfactory answer, "If you fail that class, you will need to take it over and spend a second year in a class or with a teacher you don't like. So why not do enough work to get a passing grade and be done with it?"

The invariable response was either a shrug of the shoulders or rolling of the eyes as if I was the one who did not get it.

Whether a teacher is the most outstanding educator who ever lived or a complete waste of space, their classes will always include some students who are failures and some who are successes. Of course, the ratio between these student extremes will differ considerably, but there will always be students at opposite ends of the learning spectrum.

Trying to assign blame for the underachieving students is an exercise in futility. Parents blame the teachers while teachers blame the parents. Politicians will blame whichever faction is most likely to secure votes, while the administration may go either way, depending upon the politics of the situation. Everyone plays the blame game at the expense of the students.

I believe the blame falls upon the failing students more often than any other group. If a student wants to learn, even a bad teacher can be helpful, and the student can still be successful. However, the student must see the value of having a good education and working for it. Learning is a combination of hard work and satisfaction, just like life itself.

Distractions abound, and many students quickly go astray. Bad habits develop and are difficult to end. A teacher can only do so much to involve students in the learning process. Home life plays a crucial part in that process. Suppose parents raise their children in a way that shows the value of a good education while avoiding overt criticism of the educational system and its teachers. In that case, their offspring will tend to have a positive outlook toward learning.

During my years teaching middle school, I was aware of many instructors who blamed elementary school teachers for students who did not perform in our classes. Likewise, I heard teachers at the high school level who blamed the middle school faculty for underperforming students. Unfortunately, that blame game of teachers on teachers continues up into the college level, where many professors blame high school teachers for the freshman drop-out rate.

Teachers must work within the established system. That system is constantly changing and inconsistent, especially without transitional programs between the different levels. Teachers are an essential component of this system, as are parents and administrators.

The students are the products of this system. Until the blame game ends and everyone works together across the different levels, schools will spend a lot of money, "experts" will fatten bank accounts, and nothing will change.

Organization

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I located my picture of the witches' broom that produced *Abies koreana* 'Blauer Eskimo' on an *Abies koreana* 'Blauer Pfiff'.

It would have been easy to overlook.