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Spring's a'comin'

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Bob's News & Musings

Spruce for The Rock Garden Part Two

It is not easy to find a wide range of conifers that are suitable for planting in a rock garden. The number of specialty nurseries that handle this kind of material fluctuates over the years for a variety of reasons. The major factor that affects availability is profitability. These plants take time to grow into a saleable size and demand a high price. They are not high volume material and do not produce much profit for a big wholesale nursery.

I was lucky when I started collecting conifers. Many of the collectors I befriended also operated small, hobby nurseries where I could purchase miniature and dwarf conifers. A few of these nurseries were, Palette Gardens, Rudi Kluis Nursery, Eddie Rezek Nursery, Joe Reis Nursery, Joe Burke Nursery, Joel Spingarn Nursery, Hank Weissenberger Nursery, Mike Kristick Nursery, Watnong Nursery, Howard Kellerman Nursery, Bethlehem Nursery, Rarafolia Nursery (Bergman), and Raraflora Nursery (Skeeter Rodd). All were a short drive from my eastern Pennsylvania home, all were backyard-sized operations, and all are gone as the owners either passed away or moved on to other endeavors.

Today, it is harder to find this sort of a nursery, although some are still scattered around the country. Coenosium Gardens and Porterhowse Farms came and went. Crowfoot Nursery and Bill Barger Nursery are very active and expanding. Gee Farms, Western Evergreen Nursery, and Conifer Kingdom are large operations producing excellent material, but they are beyond the scope of my May feature article.

I previously did an article about starting a nursery. It was about the generalities and philosophy behind taking such a step. Next month, my feature article will be focused upon the actual steps to follow when creating a backyard nursery.

Picea englemannii 'Hoodie'

A slow-growing selection, *Picea englemannii* 'Hoodie' is a nice selection for a larger rock garden where a more upright feature is desired. It is very densely branched but manages to stay narrow with an irregular outline. It grows about 6 inches per year.

Picea englemannii 'Jasper'

Found as a witches' broom by Gunter Horstmann in Jasper National Park, Canada, *Picea englemannii* 'Jasper'id densely globose with blue-green foliage.

Picea glauca 'Burning Well'

Found by Joseph (Joe) Stupka in Pennsylvania on Burning Well Road, *Picea glauca* 'Burning Well' is a cushion that grows about 1" (2-3 cm) per year. Tiny gray-blue needles completely cover its small branches. The most striking feature of this plant is its winter buds. They are large and round and tinted a dark cinnamon brown. These characteristics make it a valuable addi- tion to the smaller garden. Plant it in the full sun in a rockery or a trough garden. It likes good air circulation and well drained soils. During hot, dry spells in the summer, give it a deep watering to prevent sun scorch; otherwise, it does just fine on its own.

Picea glauca 'Cecilia'

My good friend, Layne Ziegenfuss was very proud of a witches' broom that he and Greg Williams had discovered growing along the Skippack Highway near Philadelphia, Pennsylvania. This plant led to a rift between Layne and Humphrey Welch. Ziegenfuss showed the plant to Welch when he visited him to gather in- formation on a book he was writing. Ziegenfuss was calling the plant *Picea glauca* 'Skipjack' (I think he meant 'Skippack'). Welch liked the plant but not the name.

Welch visited Joel Spingarn on Long Island after leaving Ziegenfuss. While there he discussed 'Skippack' with Spingarn (perhaps Joel had one in his garden). Welch decided to list the plant in his book as *Picea glauca* 'Cecilia' in honor of Spingarn's first wife. Ziegenfuss was not very happy, to say the least.

Picea glauca 'Cecilia' is a miniature bun with short needles arranged radially around each branchlet. It grows about 1" (3 cm) per year in the northeastern United States. In the Northwest it grows about twice that rate. Unfortunately a large wholesale nursery has been producing 'Cecilia' for over twenty years from wood originally sent to them by Zieg- enfuss, and they have destroyed the plant's character. Their plants grow almost 6" (15 cm) per year. I believe they always used strong shoots for propagation which gradually destroyed its dwarfness.

Picea glauca 'Cecilia' has silvery-gray to blue foliage. Its winter buds are globular and dark brown. Use it in the mid sized rock garden in the full sun with good soil drainage. It may be found in Europe under the name 'Stanley's Pygmy'.

Picea glauca 'Echiniformis'

Originating before 1865 in France, *Picea glauca* 'Echiniformis' is an exceptionally dwarf globe with a flattened top. The needles are blue-grey and radially arranged around the twigs. It grows less than one inch per year and is great for smaller rock gardens or troughs. It can be hard to find due to its slow growth rate.

Picea glauca 'Goldylocks'

Not an easy plant to find, *Picea glauca* 'Goldilocks' is a shrubby little tree that burns in the hot summer sun. It foliage is bright yellow and it grows 2-3 inches per year.

After I got my first scions, I successfully grafted one of the three pieces after they arrived in the mail. Unfortunately, only one bud survived the first year. I nursed it along and the second year saw that bud push into a single stem with several good buds. The third year it developed three small branches and by the end of the sixth year, I was able to offer it for sale through Coenosium Gardens. It is in the lower picture in my Puyallup garden.

Picea glauca 'J.W. Daisey's White'

Picea glauca 'J. W. Daisey's White' has nearly white new growth in the spring, making it a beacon in the garden. Then after several weeks of outstanding color display, it slowly turns green while retaining a white frosted appearance. It may burn slightly on an early hot, summer day so some partial afternoon shade is beneficial.

Discovered in 1979 by L. Jeurisen-Wijnen from Belgium as a mutation on Picea glauca 'Conica', its creamy white spring color is striking. In my garden *Picea glauca* 'Daisey's White' grows at about half the rate of 'Conica'. It also appears to be more resistant to red spider, since the foliage color may fool those pests to some extent.

Picea glauca 'Little Globe'

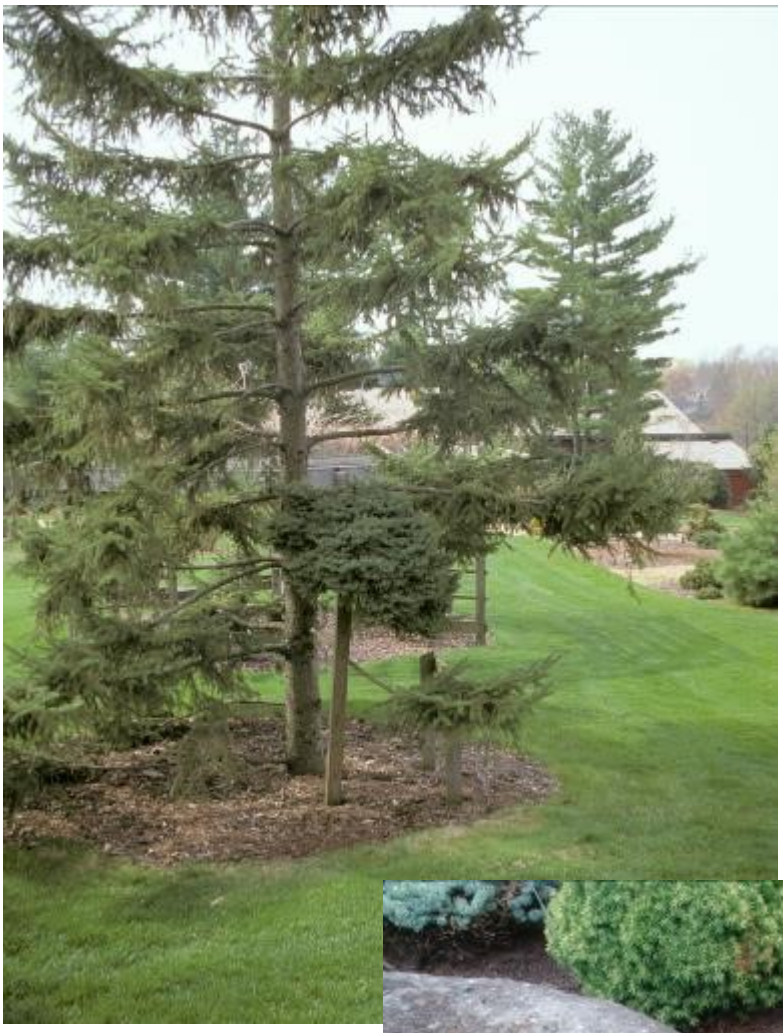
Picea glauca 'Little Globe' is another spruce that becomes a near perfect globe. It is very dense and has a slow growth rate of just over 1" (3 cm) per year. Its foliage is slightly bicolored green and gray with needles that are not especially short. The relatively large, round, brown buds make this selection easy to identify. Discovered in 1959 as a witches' broom at the Waterford Works, Wayne, New Jersey, it was introduced by Verkade Nursery of the same location in 1968.

John Verkade was an avid plantsman and was responsible for many new conifer introductions. Verkade was especially fond of *Tsuga canadensis* and named a number of unique plants for family members. Verkade's name is familiar to anyone with knowledge of the American nursery industry. He and Jean Iseli had a friendly rivalry over new introductions, especially after Verkade introduced *Picea orientalis* 'Tom Thumb Gold'.

In the picture to the left, the dark green plant to the rear is *Picea abies* 'Pumila Nigra'. The closer one is a *Picea glauca* 'Little Globe'

Picea glauca 'Metzger Broom'

Picea glauca 'Metzger' was one of Chub Harper's earlier finds. Here is the original broom growing in the Heartland Collection in the Bickelhaupt Arboretum. Chub had the tree with the broom dug from its original location and replanted here. It becomes a dense, flattened globe with blue-



Picea glauca 'Palecek'

Picea glauca 'Palecek' is a dense, globose selection that grows about 1" (2 cm) per year. It becomes 10" (28cm) wide by 8" (20cm) high in twelve years. Its foliage is blue-green with small, stiff needles. Originating as a witches' broom, it was found in 1973 by Daniel Pesek near Kutna Hora, Czech Republic. 'Palecek' is Czech for "small thumb". Use it in the garden just like 'Burning Well'. Their colors are similar, but 'Palecek' mounds up more in the center without the pronounced winter buds.

Picea glauca 'Pixie Dust'

The most dwarf selection of 'Conica' yet found is *Picea glauca* 'Pixie'. This miniature pillar is extremely dense and grows about 1" (3 cm) per year. Its light green foliage has prominent round buds. Discovered by William Goddard, Floravista Gardens, Victoria, British Columbia, about 1964, this selection is very difficult to root or to graft. It seems to root best from soft wood and to graft best onto *Picea glauca* 'Conica'. It has the same problems as 'Conica' and when grown in the full sun, it may sun-scald on its south side.

Picea glauca 'Pixie Dust' is a typical *Picea glauca* 'Pixie' in every way but one. Its second flush of growth is bright yellow, provided the days and nights are warm when it is flushing. It looks like a decorated Christmas tree when this color variation occurs. The color develops best during hot weather, especially with warm nights.

The lower picture shows a block of 'Pixie' to the left and 'Pixie Dust' to the right at Iseli Nursery.

Picea glauca 'Spring Surprise'

Recently a witches' broom was found on a 'Daisey's White' and introduced as a new cultivar named Picea *glauca* 'Spring Surprise'. A dense, miniature globe covered with white tips in the spring, it will be the size of a grapefruit in five to six years.

Picea omorika 'Elizabeth'

Elisabeth and Gunter Horstmann were married for many years, and it is only fitting that *Picea omorika* 'Gunter' should also have a mate. *Picea omorika* 'Elisabeth' was formerly known as 'Hexenbesen #3'. It needs considerable vertical space but makes a small "footprint" in the garden. Growing tall and narrow, *Picea omorika* 'Elisabeth' becomes a narrow spire. It grows about 4" (10 cm) per year, and by the time it is 10' (3 m) tall, it will be about 3' (1 m) wide. The branch structure is very dense as the branches grow laterally rather than upward as in fastigiated conifers or pendulous as in the weeping forms.

Picea omorika 'Gunter'

Picea omorika 'Gunter' was originally listed as 'Hexenbesen #1' but was later given a name in his memory. Horstmann was one of those collectors who would not use his own name for one of his discoveries. 'Gunter' is an excellent choice for the smaller garden. In twenty years it will be a globe 3' (1 m) in diameter. The branching is very dense, and it is covered by a mantle of blue, silver, and green foliage.

This picture shows one (L) next to a *Pinus strobus* 'Horsford' (R).

Picea omorika 'Pimoko'

Picea omorika 'Pimoko' originated as a witches' broom in the W. Wuestemeyer Nursery, Germany, in 1980. This dwarf form grows about 2" (5 cm) per year and becomes a slightly flattened globe. It is very similar to 'Gunter' but grows slightly faster and has a slightly flattened top. Either 'Gunter' or 'Pimoko' can serve the same purpose in the smaller garden and have many similarieties.

Picea omorika 'Treblitsch'

The many different cultivars of *Picea omorika* that developed from witches' brooms have many differences and similarities. Some of the differences are apparent only to the experts. However, *Picea omorika* 'Treblitzsch' is quite distinc- tive and easy to identify. As a young plant, it is compact and cushion shaped, similar to the other forms. The foliage is quite coarse with short, straight needles, a characteristic that separates it from the other dwarf forms of *Picea omorika*.

As *Picea omorika* 'Treblitzsch' ages, it becomes conical. Growing just over 1" (3 cm) per year, a twenty-year-old specimen may be about 3' (1 m) tall and almost as broad at its base. The branch structure is very dense, and multicolored foliage completely covers its exterior.

Originating as a witches' broom, *Picea omorika* 'Treblitzsch' was found in Treblitzsch Park at Beigen, Germany, about 1977. Its unique foliage and slow growth rate make it a very desirable plant for the smaller garden. It works especially well in a rock garden in full sun with the good drainage that is present in a rockery. It can also be used in borders where the dominant plants are dwarf selections from various genera.

Picea orientalis 'Barnes'

In the early 1970's there was a source of rare conifers in the nearby city of Quakertown, Pennsylvania called Pallette Gardens. Joe Lankalis and I used to stop there from time to time and go through their offerings. I picked up a number of small plants from them until they went out of business. Eventually I found out that they got most of their material from Layne Ziegenfuss and I learned a few things about some of the plants they listed. One of the plants I fell in love with was a plant simply called *Picea orientalis* 'Witches' Broom'. Layne told me how he and Greg Williams discovered it at the Barnes Arboretum Merion Station, Pennsylvania, U.S.A. in 1970. Every year he did a few grafts for Pallette Gardens. It was a tight little bun with glossy, dark-green foliage. It grew about 1 inch (3 cm) per year.

Eventually I was able to start grafting my own plants and I offered it for sale through Coenosium Gardens under the name of *Picea orientalis* 'Barnes' with an explanation of the origin of the name. When we moved to the west coast, it came with us and when I grew it in the garden, it would grow 6 inches (15 cm) per year into a broadly conical, dense little tree. The foliage was still glossy, dark-green but with considerably larger needles. I was always disappointed that this plant lost its extreme dwarfness in the Northwest climate.

Picea orientalis 'Bergman's Gem'

Introduced by Fred Bergman in the 1970s, *Picea orientalis* 'Bergman's Gem' is globose as a young plant, becoming broadly conical as it ages. The foliage is dark green and the branching is quite dense.

Picea orientalis 'Mount Vernon'

Picea orientalis 'Mount Vernon' is a dwarf selection with a globular shape and very dense foliage, which does not scald in the full sun like some of the other ultradense spruces. It grows up to 2" (5 cm) per year in the northwestern United States but less than 1" (2 cm) per year in the northeastern United States. The tiny needles are dark green and create a different color and texture for the rock garden. My original plant (below left), which is one of the first generation propagations, was over thirty years old and about 4' (120 cm) wide and 2' (60 cm) high.

This selection likes full sun to partial shade with well drained soil. However, if it is allowed to dry out completely during a hot summer period, it can suffer some burn. It is propagated by grafting, and although it may not be easy to find in retail garden centers, a persistent person should be able to locate it at a specialty nursery.

A very old specimen at Iseli Nursery developed apical dominance and has become a conical tree (picture).

Picea orientalis 'Professor Langner'

I used to think that *Picea orientalis* 'Professor Langner' was one of those miniature spruces that looked great for a few years, then burned out, and died. How- ever, after seeing some fine specimens in Europe, I changed my mind. I have discovered that it likes a bit of afternoon shade to prevent sun scald of the foliage on exceptionally hot, summer afternoons. This is also true of most miniature selections of *Picea abies*.

'Professor Langner' is exceptionally dense and grows about 1" (2 cm) per year. It is a true miniature with a globose shape and dark, shiny green foliage with very short needles. As a young plant, the center will be slightly depressed presenting somewhat of a nest shape to the plant. As time passes, the center eventually becomes more convex. I like to think of it as a green form of *Picea orientalis* 'Tom Thumb Gold'. Plant it in an area of a rock garden where it is exposed to filtered sunlight in the afternoon.

I doubt that this plant will ever be easy to locate since only a few specialty nurseries offer it for sale, and those are mainly mail order.

Picea orientalis 'Shadow's Broom'

Introduced about 1984 by Don Shadow, *Picea orientalis* 'Shadow's Broom' is a spreading globe with a slightly depressed center. The foliage is dark green and it is a reliable selection for the intermediate rock garden.

Picea orientalis 'Tom Thumb Gold'

Picea orientalis 'Tom Thumb Gold' is a miniature selection with bright yellow foliage identical to that of Picea orientalis 'Skylands'. It grows about 1" (2 cm) per year and becomes a tight little globe or cushion. It can tolerate up to about three hours of sunlight a day, but not at the hottest part of the day. More sun will cause burning while less sun will subdue the yellow/gold coloration and make it a shade of green. Good drainage with sufficient moisture will prevent root problems while also protecting against sun scald.

Picea orientalis 'Tom Thumb Gold' was originally listed by Verkade as 'Aurea Compacta Tom Thumb', but with his permission, I renamed it 'Tom Thumb Gold'. Recently it was incorrectly changed to 'Tom Thumb' by someone who just wanted to shorten the name, causing some confusion about the correct name.

Picea pungens 'Blaue Kissen'

Picea pungens 'Blaukissen' (blue cushion) is a dense, bunlike selection with bright blue foliage. It was found by Günther Eschrich, Germany in 1978 and can be used in a variety of ways in the rock garden.

Picea pungens 'Blue Mesa'

Found by Ken Franke, a Christmas tree grower in the Northeast, *Picea pungens* 'Blue Mesa' is a low-growing form that becomes wider than high. It grows up to about 4 inches (10 cm) per year as it develops its flattened, globose shape. The foliage is bright blue and it has a very dense branching structure.

It is a fairly rare conifer that should become more available as it gets better known.

Picea pungens 'Blue Pearl'

Picea pungens 'Fat Albert' was selected at Iseli Nusery as the best form of Colorado blue spruce to grow for the nursery trade. It developed a perfectly symmetrical shape with little or no training. The blue color was good, although not exceptional. The combination of its growth habit and Iseli salesmanship made it a popular plant at the nursery and among the nursery's customers.

One plant of 'Fat Albert' developed an exceptional witches' broom with good color and a dense growth habit. As the nursery developed the broom and prepared plants for production, they tightly controlled its distribution. It was given the name *Picea pungens* 'Blue Pearl'.

Picea pungens 'Blue Pearl' is a low, dense bush with short needles and bright blue foliage. It is a miniature selection that grows just over 1" (3 cm) per year. It is equally at home in the smaller garden as a specimen or the larger garden as an accent plant. In the Midwest, the bottom branches that touch the ground tend to develop dead spots that need to be pruned away.

Picea pungens 'Bob's Broom'

I have not been able to find any information on *Picea pungens* 'Bob's Broom' but I decided to include it here anyway. It has too good of a name for me to ignore it. Besides, it is a nice plant. I have only seen it in the Midwest, a hot center in North America for "broomers". That leads me to believe that it was found in this part of the country where it was named for either its discoverer or the person who owned the tree. It develops into a nice dense, blue globe with a growth rate of about 4 inches (10 cm) per year.

Picea pungens 'Christina'

Randy Dykstra, lives in Illinois, just across the river from Clinton, Iowa with its Bickelhaupt Arboretum. He found a witches' broom in a *Picea pungens* that he named after his wife's grandmother. *Picea pungens* 'Christina' is a globose selection that grows up to about 3 inches (8 cm) per year. It has light blue foliage and is very densely branched. It is a nice alternative to the other known globose selections that grow faster or slower. This cultivar, 'Christina', grows at an in-between rate. It is presently very hard to locate anyone who has it for sale.

Picea pungens 'Donna's Rainbow'

Picea pungens 'Donna's Rainbow' is a dwarf, dense, conical plant with all of the new shoots angled sharply upward, giving it a very distinctive appearance. It grows about 3" (7 cm) per year. Its foliage is light blue with the needles slightly angled toward the tip of the branch, similar to the foxtail spruces. It can be used for some height in the medium sized rock garden or as part of the border of a smaller rock garden. As a very young plant, 'Donna's Rainbow' has a terrible shape with long and short branches shooting off at various angles. After five or six years, it starts to show promise as it tightens up and develops character.

I have yet to find a spruce to compare with the appearance of a mature *Picea pungens* 'Donna's Rainbow'. It can be used as a centerpiece in a moderately sized garden but stays small enough to blend into a rock garden or border garden planting scheme. My oldest plants were twenty years old and less than 5' (1.6 m) tall and 3' (1 m) wide. Planted in a sunny location with good drainage, 'Donna's Rainbow' will not scald and the growth will eventually be very dense.

Picea pungens 'Early Cones'

Many dwarf and miniature conifers do not produce cones, or if they do, the cones are rather insignificant. Since cones add greatly to the garden appeal of a conifer, finding a dwarf conifer that freely produces cones is a major event. During my 1992 visit to Australia, I found such a conifer at Ferny Creek Nursery near Victoria.

Picea pungens 'Early Cones' grows about 2" (5 cm) per year and becomes a flat topped bush twice as wide as high with cones developing at the ends of the branches, making it an 'Acrocona' variety of *Picea pungens* The cones are purplish when they first appear in the spring, drying to paper-bag brown as they mature. The gray-blue foliage consists of short, thin needles on slender branchlets. It de- velops slowly and needs about five years before it assumes an appealing shape. Use it in any size rock garden where a small blue cushion is wanted. Consider the cones a bonus. Found as a seedling by Peter and Joe Versteege, Ferny Creek Nursery, Victoria, it was introduced in 1992.

Interestingly enough, a similar plant was discovered a few years later in Germany. *Picea pungens* 'Hermann Naue' is almost a "dead ringer" for 'Early Cones' with a few significant differences. From a nurseryman's viewpoint, 'Hermann Naue' is a better choice since it becomes a full bush in a shorter time possibly due to its faster growth rate as a young plant.

Either selection provides a focal point in the garden that would attract much interest. Use either one in a rock garden or to complement a planting along a bor- der or above a wall. Both plants will be difficult to find, but as time passes, their availability will become more widespread.

Picea pungens 'Freida'

Picea pungens 'Freida' has a number of similarities to *Picea pungens* 'Jean Iseli' and a number of distinctive differences. Discovered by Franz Esteldorfer, Austria, and named for his wife, *Picea pungens* 'Freida' is a dense, little globe with bright blue foliage. The needles are small and thin and densely arranged along its branchlets. It grows less than 1" (3 cm) per year as it maintains its globose shape. It must be propagated from rooted cuttings since grafting will cause it to bolt and become upright and conical with a coarse texture. The bottom picture shows a grafted plant and a plant propagated from a cutting.

'Freida' is very suitable for the small garden or rockery and should be planted in full sun with well drained soil.

Picea pungens 'Millbrook'

I think that the only reason *Picea pungens* 'Millbrook' is not commonly found throughout the country is that the right person still has not discovered it. Found by Joe Stupka, a legendary broom hunter and nurseryman/ collector from Western Pennsylvania, it is one of those plants that everyone wants as soon as they see it. It is also one of those plants that the big nurseries tend to avoid due to its slow growth rate and a long turnover time.

A mature specimen takes on the appearance of a blue mushroom with its flaccid- appearing branches. Flat-topped and wide-spreading, it grows up to 3 inches (8 cm) per year. It is very dense and will apparently develop areas where a longer shoot may appear and repeat this growth habit. I cannot compare the plant I saw at Dave Horst's home with others because I have not seen it elsewhere. It needs to be propagated and put into more gardens.

Picea pungens 'Pali'

Picea pungens 'Pali' is a very interesting, dwarf selection of Colorado spruce. Not only is it slower growing than most, but it also maintains a more globose shape than most of the others, which tend to be cushion-shaped. Growing about 1" (3 cm) per year, it is reliably dwarf. Its foliage is blue, although not as bright as some.

Selected about 1975 by Mr. Pal Lengyel, Picea pungens 'Pali' was a seedling in Prenor Nursery, Szombathely, Hungary and is just now appearing in gardens throughout Europe. In North America it is still quite rare and will require considerable effort to locate. It is worth the search since it has many uses in the smaller garden or rockery and is quite distinctive from other selections like 'St. Mary' or 'Blue Pearl'. Plant it in full sun in well drained soil. It tolerates dry conditions without suffering any sun scald.

Picea pungens 'Porcupine'

A dwarf bun of exceptionally high density, *Picea pungens* 'Porcupine' grows less than 1" (2 cm) per year. Its foliage is blue with short, stiff, sharp needles. The needles are almost longer than the annual growth, and the winter buds are so small as to be easily overlooked. It will never be easy to find because a nursery has to grow it for quite a long time before it reaches a saleable size. This investment doesn't justify the return for most nurseries since people still tend to buy plants by size, not age.

The original plant was first exhibited at The Farwest Trade Show in Portland, Oregon in the early 1980's. Jean Iseli tried to purchase it, but the owner refused to part with it. Then when Dick Bush asked for it, he just gave it to him.

Dick Bush was a close friend of Jean's. He owned Bush's Nursery and spent a lot of time sharing ideas with Jean. Bush loved to fly and owned a single engine aircraft. He would often land his airplane in an open spot at Iseli Nursery whenever he wanted to visit Jean. His plane was bright yellow and would cause a stir whenever he buzzed the main office at the nursery. Some days he flew in just to have lunch.

He seldom ever got "one up" on Jean, but this time he did. Jean was disapointed but happy that a close friend got 'Porcupine'. Dick propagated it and shared it with Jean and with me. Eventually the original plant was stepped on by a horse and lost.

Picea pungens 'Scottie'

A dense little pyramid that grows about 2 inches (5 cm) per year, *Picea pungens* 'Scottie' was found by James Stanley at Schaeffer's Nursery. Growing in a field of *Picea pungens*, it was dug and planted at the home of Scott Schaeffer. Larry Stanley named it for Scott.

Some nurseries are selling it as a rooted plant, but it maintains its shape and density even when grafted. It will show accelerated growth as a young plant, and show an open structure, but once the roots and top get into balance, the growth rate becomes more reasonable.

Picea pungens 'St. Mary'

This bright blue cultivar was found as a witches' broom at Saint Mary's Convent in New Jersey. The original broom is in sad shape but was still alive as of 2009. It is not uncommon for specimens of this cultivar to have many buds that never push, leading to slower growing regions on the plant, producing a low cushion with an irregular outline. The winter buds are very pronounced.

Picea pungens 'St. Mary' has a variety of uses in the landscape. It can be used as a foundation planting or in a rock garden or as a blue mound to provide color in a mixed border of lower growing ornamental shrubs. It needs good drainage and prefers full sun. It will grow in partial shade but will be a bit looser in its growth habit.

Picea pungens 'Waldbrunn'

A seedling selected in 1984, *Picea pungens* 'Waldbrunn' is a nest-like spreader that is ball-shaped with a flat top and grey-blue foliage. If it is propagated by grafting, it grows upright into an open-branched, scraggly little tree.

Picea pungens 'Yvette

Picea pungens 'Yvette', found at Iseli Nursery and named for Jean's younger daughter is a dwarf bun of exceptionally high density, Growing less than 1" (2 cm) per year, its foliage is blue with short, stiff, sharp needles. The needles are almost longer than the annual growth, and the winter buds are so small as to be easily overlooked. It will never be easy to find because a nursery has to grow it for quite a long time before it reaches a saleable size. This investment doesn't justify the return for most nurseries since people still tend to buy plants by size, not age.

It is a great selection for a rock garden. Plant it wherever a tiny blue mound with dense, coarse foliage is desired. It needs good drainage, full sun, and good air circulation.

Picea sitchensis 'Renkin'

A slow-growing, broadly conical selection, *Picea sitchensis* 'Renken' is bicolored silver and green. It has twigs with short needles and other twigs scattered about with needles that did not seem to fully expand. It is sort of bifoliaged as well as bicolored. It originated sometime before 1990.

Picea smithiana 'Ballarat'

Picea smithiana 'Ballarat' is not suitable for cold climates but thrives in milder ones. Peter Nitschke found it as a witches' broom on a *Picea smithiana*. 'Ballarat' in Australia. It develops into a diminutive, dark green mound with drooping branchlets. It is very dense and may grow up to 2" (5 cm) per year. The dark green foliage has short needles. It is a natural for the smaller rock garden with its unique drooping appearance as if it were in need of water. Plant it in the full sun in a location with good drainage for best results.

A Few Comments on My Rock Garden Articles

I will take a break from rock garden selections for a few issues and then return with a few other conifer genera. There are many good selections among the *Chamaecyparis*, *Juniperus*, *Taxus*, and *Thuja* that are excellent choices for a rock garden.

Container gardening is another topic for a feature article, especially since most rock garden plants can be used in container gardening.

Do not consider the firs, pines, and spruces in my feature articles to be the only cultivars to use in rock gardening. They are just representative of the many plants presently available. I have additional cultivars in my conifer books that are also suitable.

Additionally, new selections are being made every year by people known as "Broomers". They are the ones who search the wilds hunting for witches' brooms, many of which maintain a dwarf growth habit, making them good for the rock garden.

Next month I will take my subscribers through the steps of establishing a "backyard nursery".

Conifer of the Month: *Microbiota decussata* 'Carnival'

Microbiota decussata is a spreading plant that is hardy into Siberia. It loves full sun with well-drained soil. Grafted standards are attractive with strongly pendulous foliage. It is compatible with *leylandii* and *Thuja occidentalis*.

One of the problems with this species is its winter color. It turn brownish and to the uneducated appears to have died. Interestingly, ones grafted onto standards have less intensity in the color change.

Jim Boyko discovered a sport on his nursery with yellow variegation. It is very attractive and the winter color creates a nice contrast with the variegation (picture on next page). An occasional green branch must be removed or the variegation will be overwhelmed.

Conifer of the Month: *Microbiota decussata* 'Carnival'

Tree of the Month: *Acer pseudoplatanus* 'Brilliantissimum'

A deciduous tree, *Acer pseudoplatanus* 'Brilliantissimum' is slow growing, small, wide spreading, probably about 20 ft (6 m) tall and 25 ft (8 m) wide. Its new leaves brilliant shrimp-pink, later pale yellow-green, then light to medium green, pale green below.

Introduced before 1904 in England, it is hardy to USDA Zone 4. It is similar to 'Prinz Handjery', but the leaves of 'Prinz Handjery' are purplish underneath.

Tree of the Month: *Acer pseudoplatanus* 'Brilliantissimum'

Aaron Talbot and The Old Apache: Part Three

They stripped anything of value, including their weapons, from the dead men and threw it all into the wagon. They unsaddled the dead men's' horses and threw the tack into the wagon as well. Then, while Red Hawk chased the horses away, Aaron lit the wagon on fire.

While the wagon was burning, aided by the gunpowder Aaron had spread over the guns, he and Red Hawk rode west. They figured on cutting across the tracks left by the other Comancheros. They would follow them and watch for an opportunity to attack them. The wagon had burned without any explosions and little smoke. The Comancheros should be unaware that anyone is hunting them.

It was early in the afternoon when they found the tracks left by the Comancheros. They were traveling northwest and moving fast. Sometime during the day, the two men passed out of Texas and entered New Mexico. Since they were no longer Texas Rangers, that was not a problem.

It was near sunset when they came across an odd scene. An old Mescalero Apache was sitting in the center of a campsite with a shredded tepee of sorts. There were five fresh graves along the northern edge of the site. The old man was staring in that direction.

Red Hawk circled around the site and took up a crouching position facing the old man. The two of them quietly stared at each other. Meanwhile, Aaron approached the old man from behind. He carelessly bumped two pebbles together. When he did, he saw the old man slowly reach toward a knife in his belt.

Aaron stood perfectly still as the old man suddenly jumped to his feet and drew his knife. He rushed toward Aaron but had only taken a step before falling flat onto his face. His knee joints had tightened up while he sat and refused to obey his mind.

Stepping onto the old man's hand, Aaron reached down and took his knife. When he backed away with it, the old man got into a kneeling position and started singing his death song. He only stopped after Red Hawk walked over to him and said something into his ear. They said a few words to each other, and the old man stood. He made no movements while Red Hawk talked to Aaron.

Red Hawk explained what had happened to the old man's family. Aaron watched the old man while Red Hawk spoke to him. When he finished, Aaron said, "It was probably the same bunch we've been following. This attack took place several days ago, and their scalps were probably in the wagon we burned. Now they are after another family somewhere nearby."

Red Hawk nodded and said something to Bodaway, who quickly answered.

"What's he saying," Aaron asked.

"Bodaway say another family camped two hours north of here. Today they would have moved toward the rising sun. His people have learned that they must constantly move around."

"You think they are the ones the Comanche scout had spotted?"

"Bodaway say no others within a day's travel of here."

"Can he lead us to them? It will be quicker than trying to follow the Comancheros, and we might be able to set a trap for them."

"Him want revenge. He say we follow him."

Aaron Talbot and The Old Apache: Part Three (cont.)

Aaron returned his knife. Bodaway returned it to its sheath and walked into the remains of his tepee. He threw an old, tattered buffalo skin to the side. Beneath it was a bow and a quiver of war arrows. Next to the quiver was a small pot of black paint.

Aaron gave Bodaway a questioning stare. Bodaway returned the look and, in English, said, "These for my journey to the Great Spirit if I no survive my seeking. Now they want to find the hearts of those who killed my family."

After quickly drawing black lines across his forehead and on each side of his face, Bodaway threw the container aside and said, "We go now."

Bodaway led the way out of the camp. He was on foot while the other two men rode after him. He maintained a steady pace that many younger warriors would have found difficult to match.

After several hours and two brief stops, Bodaway suddenly signaled another halt. Aaron and Red Hawk reached for their rifles but stopped when Bodaway made a yipping sound similar to a coyote. There was a similar response from a short distance ahead. It was followed by the sudden appearance of an Apache warrior.

As the man approached Bodaway, he held an old muzzle-loading rifle in his left hand. His right hand was raised in a greeting of friendship. Bodaway responded with the same sign, and the two men had a short discussion. Then they both turned as Aaron and Red Hawk rode up to them.

The Apache said, "The old man says you are to be trusted. I think maybe he is old and foolish to trust a white eye and his Tonkawa friend. But scalp hunters kill his family, and he had a vision. I trust you for now, but I will kill you very slowly if you betray me.

Aaron looked directly into his eyes and said, "We seek the scalp hunters, not the Apache. They are coming for your family and are aided by a Comanche."

"We go," the Apache replied.

Yellow Quill, the Apache warrior, led them to his camp. There were six others in his party, and they were in the process of setting up their tepees.

Red Moon, Yellow Quill's brother-in-law, his wife, Day Star, and their three children were erecting one tepee. Yellow Quill's wife was preparing a meal in front of her completed home.

Red Moon signaled the others to stop working. They watched Yellow Quill lead the others into the camp. When everything appeared to be alright, he directed them to continue their chores. He met the riders and extended his right hand in greeting.

Red Moon's left arm was missing. He had lost it during a fight with a Comanche war party raiding in Apache territory.

The five men held a quick meeting and decided how they would defend the camp. They had to move fast since the Comancheros must be close at hand.

Red Moon would sit with the women and children near the fire in the center of the camp. Bodaway would wait in the partially completed tepee. Yellow Quill and Red Hawk would keep watch from a high outcrop near the camp's eastern edge. Meanwhile, Aaron stayed among rocks at the camp's northern boundary.

Aaron Talbot and The Old Apache: Part Three (cont.)

They did not have long to wait. The Comanche scout was the first to appear. He came from the south and slowly rode into the clearing with his hand raised in the sign of peace. Red Moon stood and returned the gesture. As the Comanche continued to move toward Red Moon, he raised his right hand higher and touched an arrow in his quiver. His bow was in his left hand, and it would take a few short seconds to grab an arrow and fire it into Red Moon's chest. Then the others would swoop in to kill the others.

When the Comanche realized that the Apache had only one arm, he sneered at him. He turned and signaled to the others. As they came storming in from the west, he grabbed an arrow from his quiver. He quickly nocked the arrow and started to swing the bow into a firing position.

He never completed the movement. Bodaway stepped out of the tepee and shot one of his war arrows into the Comanche's chest. A look of surprise appeared on the warrior's face, but it was quickly erased when a second arrow caught him in the throat and knocked him off his pony.

The five Comancheros kicked their horses into a faster gallop and rode toward the center of the camp. Red Moon stood in the open. They were so focused on him, they ignored Bodaway, much to their own detriment.

Red Moon pulled a tomahawk from under his shirt and threw it at the approaching riders, catching one of them in the shoulder and knocking him from his horse. The women and children had scattered, and Red Moon flattened himself behind a log next to the fire.

Bodaway fired another arrow, tearing open the cheek of the leader, who screamed in pain and motioned to his men to ride him down. The resulting confusion caused the mounted men to become entangled with each other. Red Moon scampered to his feet and headed to the edge of the camp. Aaron stepped out into the open and started shooting his Henry at the confused riders. He had fired one shot, hitting a man in the shoulder when three more riders appeared at the southern edge of the camp. They were Comanches and riding fast.

Aaron shifted his focus toward these three newcomers while the Comancheros were close to Bodaway. They were stopped when Yellow Quill killed one with a good musket shot, and Red Hawk put an arrow into another. The three surviving Comancheros were all wounded and trying to get away. They had lost all interest in killing any of the people in the camp. As they turned their horses to ride past Bodaway's location, Yellow Quill fired a second shot, knocking another rider from his horse with a shattered skull.

Bodaway saw the leader approaching. He hardly felt the impact of the slug from his pistol as it caught him in the stomach. He threw himself in front of the man's horse, causing its legs to become entangled with his body. As the horse went down, it flipped over and broke its neck. The rider was trapped beneath its body.

Bodaway's body was twisted awkwardly, but his arms were still functional. Blood flowed from his belly wound, and both of his broken legs were useless. He pulled himself up and over the dead horse to where he could reach the pinned man. The man was screaming and pulling the trigger on his empty pistol. The screaming changed to a gurgle when Bodaway plunged his knife into the man's left side and macerated his kidney

Aaron Talbot and The Old Apache: Part Three (cont.)

while tearing open a long gash. The gurgling quickly ended when the two women appeared with their own knives.

The last rider had reached the edge of the clearing. Red Hawk put an arrow into his back. The man threw his hands into the air and fell from his horse.

Aaron had been kept busy by the three unexpected Comanche warriors. Using his Henry, he shot two of them off their ponies before they got ten feet into the clearing. The third man turned and fled into the rocks and trees from where they had appeared. One of the other warriors followed him with his arm hanging uselessly at his side. Aaron let him go and turned his rifle toward the Comancheros. The fight was over except for one wounded Comanchero. He was sitting near the fire at the center of the camp.

The Comanchero was feebly touching the tomahawk in his left shoulder. When he finally worked up enough nerve to pull it free, Red Moon brained him with a second one.

Everyone gathered around Bodaway as he was dying. His expression was peaceful as he motioned to Aaron to come near. As Aaron bent down, Bodaway whispered into his ear, "This knife was a gift to me from Victorio. I give it to you. It will be honored by any of the People you meet." He held out the bloody knife and died as Aaron took it from his hand.

The next day, Aaron and Red Hawk decided to head for Santa Fe. El Paso was in Carpetbagger country and needed to be avoided.

Yellow Quill and his family would travel along with them for a few days before turning north to their tribe's stronghold.

Bodaway lay in an honored place and would be remembered by all who fought by his side. The Comancheros lay where they fell, food for the vultures. Their scalps adorned a lance carried by Yellow Quill.

The Math Bugaboo: The "I Can't Do Math." Whine

If I heard the expression "I can't do math." once, I must have heard it a thousand times. I was not even a math teacher. I was teaching science, so my students had to do some basic arithmetic. Unfortunately, most of my students who said they could not do math believed it was true. They had convinced themselves of that.

When a student is convinced about something, it is nearly hopeless to change their mind. In this case, as long as these students held such a conviction, they would never master any basic math skills in school and, most likely, in their future lives.

Usually, these students had failed general math in the elementary grades and continued to flunk it through their middle school years. By failing the same classes, they reinforced their negativity.

I was tired of hearing students express this nonsense and decided to do something about it. I lobbied for a class at Keithley Middle School that integrated math and science. I believed students could gain skill and confidence by teaching math through practical application. I had considerable success with the class. The "I can't do math" whine mostly disappeared.

When I moved to Eatonville High School, I decided to approach Byron, the high school principal, with a proposal for a similar class.

As I became familiar with the situation at the high school, I realized that each year there was a core of students entering ninth grade who had failed general math in the eighth grade. They had not taken algebra in middle school because they had failed basic math whenever they took it. So the current solution was to put them into a general math class in the ninth grade. Usually, that led to more failure, convincing them they were hopeless as math students.

I proposed offering a ninth-grade class that integrated math and science into a single curriculum. I would teach it for two periods, the first and last periods of the day. For record-keeping purposes, period one would be tech math, and period two would be tech science. Science was the foundation course, and I would teach math as applied math related to science. I wanted twenty-four students who had demonstrated an inability to pass general math. (My proposed class would not include special education students who already had special programs beyond the regular curriculum to help them be successful.)

I wanted the kids who had no safety net. I wanted students who had no place to turn for extra help. I knew they would have low self-esteem and most likely challenge any teacher. I have always enjoyed working with these types of students. They wanted to succeed in math but could not succeed in the traditional classes. They had been taught math the same way for three consecutive years and failed all three times. They needed a different approach.

I taught the class for two years with a high success rate. Most students passed Tech Math and Tech Science, and quite a few took algebra in tenth grade. I had some issues and rescheduled a few students when they refused to attempt the work, but they were the exceptions rather than the norm.

Projects included a wide-ranging variety of laboratories that required basic math skills. For example, a scale drawing laboratory used three electric train scales: N, HO, and O. Students measured train speeds and car siz-

The Math Bugaboo: The "I Can't Do Math." Whine (cont.)

es. Then they had to do conversions to actual dimensions and velocities for each size. They had so much fun with the trains that nobody complained about the math involved in the laboratory.

We also spent time working with mechanical drawing equipment. Students had to demonstrate measuring and scale conversion skills. They also had to follow written directions to complete drawings, and nothing was accepted if done carelessly. The final project was a scale drawing of the high school and its surrounding property, including all buildings. Measurements were taken with tapes and measuring wheels.

Furthermore, we used protractors and surveying transits to determine the heights of buildings and distances to faraway objects. Students verified the distances by working with topographic maps.

I did not allow pupils to use calculators until they could demonstrate an ability to perform the four essential math functions. Then, those students could use them during the second half of the school year. Eventually, the whole class was proficient enough to use them.

Counting on the fingers when solving problems was allowed and even encouraged. (I did not allow counting on toes.) I worked with "finger counters" and got most of them to the point where they could mentally count on their fingers as many adults do daily.

Word problems were always the most challenging part of math. When students learned to read the problem and then take it apart, they lost most of their fear. Reading for comprehension was an issue for these students, so a thorough dissection of any problem was a breakthrough.

The whine, "I can't do math," disappeared from my classroom. Of all the students who went through my class (most of which had failed three years of general math in middle school), most went on to be successful in algebra, and most graduated from high school.

After two years of teaching Tech Math/Science at Eatonville High School, the district removed it from the curriculum. Supposedly, I was not an "exceptional teacher" according to criteria recently published by the Washington State Department of Education since I did not have a math endorsement (certification or license) on my teaching certificate. I could legally teach this class since it entailed only a single math period each day, but the curriculum director decided she did not want that to continue. To her, it was more important to have everyone labeled as an "exceptional teacher" by only teaching classes listed on their certificates.

Blast from the Past: Jiri Balatka

I visited with Jiri Balatka several times during my trips to the Czech Republic. I was saddened to recently read about his passing away. He was an excellent plantsmen who specialized in conifers and alpine plants.

Jiri and his wife welcomed visitors and it was impossible to visit without being fed a cooked meal that was washed down with good Czech beer.

Jiri had gardens that were meticulously maintained with concise records on every plant. He even brought his notebook along when we toured his gardens. His main garden surrounded a central area of lawn. The smaller areas around his house held all sorts or rock and trough plantings.

His nusery held a wide assortment of container plants and he was very generous with the way he shared those plants. Enjoy these four pages of pictures. The other people in them are Jan beran (striped shirt and cap), Jaroslav Kazbal (white beard), and Larry Stanley.

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Organization

COENOSIUM PUBLISHING

Robert Fincham
12609 118th Street Ct. E.
Puyallup WA 98374

Phone: 253-208-0233
Email: bobfincham@mashell.com

I am on the web.

www.robertfincham.com

NINE THINGS TO THINK ABOUT

- Number 9 - Death is the number 1 killer in the world.
- Number 8 - Life is sexually transmitted.
- Number 7 - Good health is merely the slowest possible rate at which one can die.
- Number 6 - Men have two emotions: hungry and horny, and they can't tell them apart. If you see a gleam in his eyes, make him a sandwich.
- Number 5 - Give a person a fish and you feed them for a day. Teach a person to use the Internet and they won't bother you for weeks, months, maybe years.
- Number 4 - Health nuts are going to feel stupid someday, lying in the hospital, dying of nothing.
- Number 3 - All of us could take a lesson from the weather. It pays no attention to criticism.
- Number 2 - In the 60's, people took acid to make the world weird. Now the world is weird, and people take Prozac to make it normal.
- Number 1 - Life is like a jar of jalapeno peppers. What you do today might burn your ass tomorrow.

A short message from an old friend....