Volume 4, Issue 1

COENOSIUM PUBLISHING

December 1, 2023

Bob's News & Musings

Special points of interest:

- **All past newsletters are now available on my web site at www.robertfincham.com as downloadable files.**
- **A lack of carotenoids is a cause of gold conifers.**
- **Are students smarter than teachers when behavior is involved?**
- **The cell phone: the bane of education?**
- **What do you get if you turn the word 'swims' upside down?**

Inside this issue:

Why Are Some Conifers Gold?

Yellow conifers are interesting in that many of them go through seasonal periods of varying intensity with winter being the season with most of the brightest shades. Spring is a season that sees a reawakening of conifers after a winter rest with several selections putting on a colorful show of new growth with varying shades of gold, yellow, and even white foliage.

The yellow color appears to be due to a lack of chlorophyll, allowing other pigments to dominate. As more chlorophyll is produced, the yellow pigments are masked by its green coloration. During the summer, leaves/needles will produce more chlorophyll, unless genetically prohibited from doing so, causing the gold- flushing conifers to turn green. Golden foliage that is shaded will also turn green as more chlorophyll survives to capture more energy from the reduced light level.

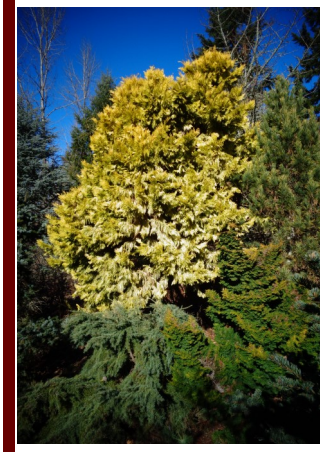
Golden conifers in the full sun will often become brighter as the chlorophyll level is reduced and may become more sensitive to foliage burn with a reduced growth rate.

There are three pigments in plant leaves/needles that are very important. The green one is chlorophyll which uses blue and red wavelengths of light for a food production process called photosynthesis. When chlorophyll is produced by the leaf, it lasts for a short time before disappearing. Solar radiation and some of the chemicals produced by photosynthesis destroy chlorophyll. That means the leaf must be constantly producing new chlorophyll.

A second pigment, antho-

Pinus virginiana 'Wate's Golden' showing its winter color at the Dawes Arboretum..

Abies nordmaniana 'Golden Spreader' above and *Calocedrus decurrens* 'Berrima Gold' below



THE ORIGINS OF CONIFER CULTIVARS

cyanin is a red pigment and is only visible when the others are not present. It is seldom seen in conifers.

The third pigment that occurs in different forms called carotenoids range in color from yellow to orange and play an important role in the leaf. They can use the wavelengths of light between red and blue to carry on photosynthesis and supplement the work of the chlorophyll while absorbing some of the sunlight's energy. They are found with chlorophyll and extend the life span of the chlorophyll by absorbing some of the damaging chemicals produced in the process of photosynthesis. They can hold up much better in the sunlight than chlorophyll.

Carotenoid-chlorophyll Relationship

Sunlight will gradually destroy the chlorophyll in a leaf and if its intensity increases, chlorophyll is destroyed at a faster rate. If the weather is warm and sunny, the chlorophyll is replaced as fast as it is destroyed, especially if the chlorophyll is in balance with the carotenoids. If the carotenoids are present in smaller amounts, they may not protect the chlorophyll in a normal manner and the carotenoids will show as chlorophyll is destroyed by the sunlight, leading to a conifer with gold foliage. If a golden plant is shaded, less chlorophyll is destroyed, and the foliage will be greener.

An initial lack of carotenoids in the spring would cause a conifer to flush variegated or yellow growth. As time passes, the production of carotenoids would allow the chlorophyll concentration to increase, and the yellow would gradually disappear as it is masked by the chlorophyll.

Influence of Atmospheric Haze

Light reduction by haze can also influence the color of a golden conifer. Photosynthesis occurs in chlorophyll when light photons impart energy into the chlorophyll. These photons also destroy the chlorophyll if it is not protected by carotenoids. So it is that a reduction in the rate of photosynthesis will cause a corresponding reduction in the destruction of chlorophyll.

Measurements made during studies of the effects of haze upon the tropical forest ecosystem showed some interesting data. On a hazy day in a warm climate there was a 50% reduction in photosynthetic photons reaching the canopy of a forest.

Haze consists of a variety of substances ranging from

Picea abies 'Perry's Gold' creates a nice contrast with the red foliage.

THE ORIGINS OF CONIFER CULTIVARS

pollutants such as sulfates to tiny soot and dust particles. In areas of high humidity solid particles become saturated with water and the particles tend to be larger. This haze absorbs photons and becomes warmer while decreasing the quantity of photons available for photosynthesis (and chlorophyll destruction). It is interesting to also note that the diffusion effect of haze will direct photons into the normally heavily shaded interiors of conifers, increasing the photosynthesis in this part of the plant.

The net result of the effect of haze is to decrease the gold coloring in golden conifers while allowing the overall photosynthetic rate of the total plant to remain at an unchanged level.

Temperature Influence on Foliage Color

During the fall, cooler temperatures slow chlorophyll production in a typical conifer but the green color remains because the chlorophyll/carotenoid balance remains in place even though the chlorophyll is undergoing some destruction from the cooler temperatures and the photosynthetic process. The rate of photosynthesis becomes very low as the quantity of chlorophyll decreases. If there is also a reduction in the carotenoids, upsetting the chlorophyll/carotenoid balance, the chlorophyll may not be replaced as fast as it is destroyed and the major pigment remaining is the carotenoid, producing a yellow foliaged plant. If the temperatures get even colder, the carotenoids become more visible as the chlorophyll suffers even more loss. An example would be a conifer such as Pinus contorta 'Chief Joseph' which turns bright gold in the winter. Another would be Pinus strobus 'Hillside Wintergold' which becomes brighter as the temperature becomes colder. The length of daylight plays no role in this process. Conifers that are gold in the winter turn green when placed in a heated greenhouse, even though the length of daylight has not changed.

Yellow conifers are viewed as being sick by many people. However, when yellow-foliaged conifers are properly sited in a landscape, such thoughts are forgotten. I find these colors are especially enhanced when used with blue conifers or red foliaged trees or shrubs.

A block of *Taxus baccata* 'David' in a nursery in Holland. It is just one of many golden selections of *Taxus baccata*.

Cryptomeria japonica 'Sekkan' above and *Pinus mugo* 'Amber Gold' below.

Golden Conifers

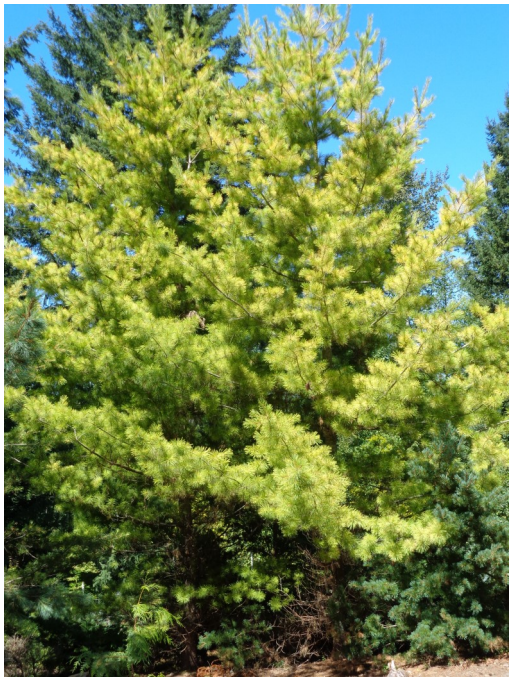
Abies balsamea 'Eugene Gold' to left, *concolor* 'Wintergold' to right showing winter color.

Abies balsamea 'Old Ridge' lower left and Picea abies 'Perry's Gold' lowest left and Cedrus deodara ''Deep Cove' lower right all showing new spring growth.

Next Page:

Cham. Obtusa 'Nana Aurea' top left, *Picea orientalis* 'Sunrise' top right, *Pinus strobus* Louie' left center, *Pinus thunbergiana* 'Oculus Draconis' center right, Picea *orientalis* 'Early Gold' bottom left, and *Pinus jeffreyi* 'Lemon Frost' bottom right. All show year-round color except the 'Early Gold' showing spring flush color.

Golden Conifers



Conifer of the Month: *Pinus contorta 'Taylor's Sunburst'*

I could hardly believe my eyes the first time I saw a *Pinus contorta* 'Taylor's Sunburst' growing at Iseli Nursery in Boring, Oregon. It was during the spring in the mid 1990's. Its new growth put on an unbelievable display of bright gold foliage and stems. The color took several weeks to fade to green. I was able to purchase one of the first plants that they released for sale. It was planted in a key position in my landscape where it put on a great display every year. Then, during the summer it was completely ignored since it looked like a typical *Pinus contorta* without any special redeeming characteristics. When my friend, Dean asked about buying an older plant, I told him to check a local garden center when they had their fall sale. The retail price was very high due to the tree's rarity and was often avoided in the spring when it would put on its color show. Afterwards, it would look so nondescript that no one would even consider buying it. He was able to get one for half price.

Alan Taylor discovered this tree growing in the Colorado Rocky Mountains in the early 1980's. He shared it with Iseli Nursery, Boring, Oregon who introduced it in the mid 1990's. It grows over 1 foot (30 cm) per year and puts on a great color display every year.

Unfortunately, I had to remove my tree after about ten years and Dean removed his five years later. There is a pest that I could not control. The Sequoia Pitch Moth is a bee mimic that infests two and three needle pine in the Northwest. Its larva damages the tree at the underside of lateral branches where they meet the trunk and weakens/ kills each branch. Eventually even the leader can be severely damaged. Digging them out can get rid of them but the damage is already done and as the tree gets bigger that process becomes harder and harder. Eventually this tree will not be available in larger sizes due to this insect.

The plant pictured to the right is an eight year old offspring from a witches' broom discovered at Iseli Nursery growing in our Puyallup garden.

Below, the three pictures show the pest that does severe damage to this species in the Pacific Northwest. I had to remove a fifteen-foot-high specimen of 'Taylor's Sunburst' from my Eatonville garden in 2010 thanks to all the dead branches and dying top two feet of my oldest specimen. It was one of the first trees to be offered for sale by Iseli Nursery.

The pest is the Sequoia moth, a bee mimicking moth. It lays an egg wherever sap is leaking through the bark of the pine. The the grub that hatches will feed on the cambium and hollow out a large area beneath the crotch of the branch. As the tree tries to drown the proble, the oozing sap leaks out into the open loaded with sawdust. Eventually the branch dies.

Control with a paper clip straightened into a skewer works for a while. Eventually the tree gets too tall (unless the infestation is too severe). Of course, by the time the evidence shows itself, a lot of damage has already been done.

Tree of the Month: *Styrax japonicus* 'Evening Light' PP 24168

Hardy to USDA Zone 5, `Evening Light` was discovered by Henny Kolster, in 2001 in his nursery in Boskoop, The Netherlands, as a chance seedling. It develops into a small tree when kept single-stemmed. It can also be a large shrub when grown multi-stemmed. The leaves are dark maroon and create a nice contrast with the white, fragrant, bell-shaped flowers in the spring. The base of each flower also exhibits some maroon coloration due to the maroon sepals. The leaf color develops some greenish undertones as the summer progresses.

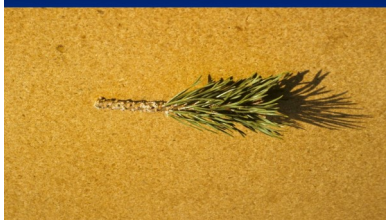
The tree pictured here is in front of our Puyallup home. It is especially showy in the spring while providing nice color throughout the growing season.

The Mechanics of A Veneer Graft

Tools of the Trade

Scion

Cleaned Scion



First Cut

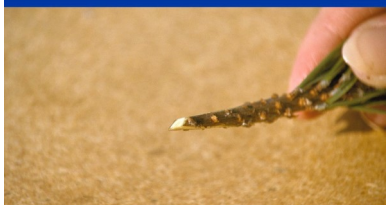
Against Thumb

Second Cut

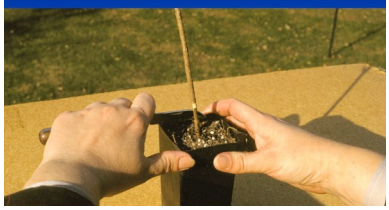
Change Angle

Quick Slice

Anchor Shape

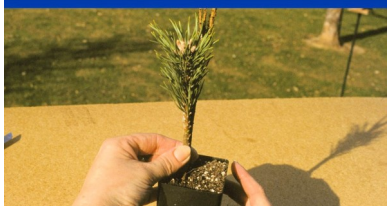


Cut Flap



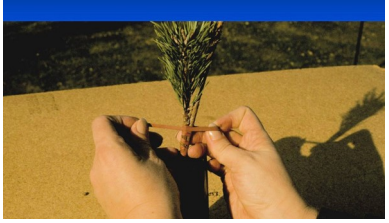
Insert Scion

Hold Tight



Tie Tight

Slip Knot



Fini

Stack 'em Deep & Teach 'em Cheap (an excerpt)

Section 1 Students
Unit 2 Student Behaviors
Chapter Nine
Smarter Than A Teacher: Ha Ha Ha

Kids think they are too bright for us teachers. But unfortunately, they do not realize that every prank they pull was done hundreds of times before. I did many of the same things during my school days.

Students tried the old "tack on the teacher's chair" on me more than once. I always went along with it to confuse the kids. Spotting the tack in the center of my seat, I would deliberately sit down to take attendance. But I would sit on the edge of the chair and slide across it. I pushed the tack out of the way. The students always thought I sat on the tack, and their puzzled expressions at my lack of reaction amused me.

Students love being able to fool a teacher. Cell phones provided such an opportunity. Students learned to set their ringers at a high pitch inaudible to most older ears, so they could take calls and keep their phones turned on. Many teachers could not hear the ringing.

I could hear the sound like a faint noise. So, figuring two could play at that game, I hooked an oscilloscope up to a speaker and set the pitch so high that it was indistinguishable to anybody on a conscious level. When my class entered the room, they were annoyed but did not know what was happening.

I let them suffer for several minutes before changing the pitch on the oscilloscope. Finally, they agreed to reset their cell phone ringers in my class. I figured the other teachers were on their own.

Occasionally, I pranked a student, especially when I wanted to teach a lesson in behavior. Let me tell you about Brock. He was a junior and a farm boy only in school because his parents said he had to get a diploma. Brock was too big to ignore at 6' and 220 pounds. He was in my oceanography class, and I sat him right up front, where we interacted when necessary.

Brock scored a "B" on our first test. When I discussed the test with the class, he could not answer any of the questions orally. I figured then he was copying from his neighbor. The next test I gave was a big unit test and consisted of fifty multiple-choice questions. I typed two copies of it and ran off two sets of tests. The only difference between the two sets was that I arranged the answers differently while keeping the questions the same and in the same order. When I handed them out, I made sure that the tests alternated across the rows of students without my mentioning that.

I graded the tests as they were handed in and read off the scores before the period ended. (Any student ~~also~~ could come up and look at their paper if they did not want the score read aloud.) The girl next to Joe was an "A" student and earned a 98% on the test. I read her score before Brock's on purpose. He grinned from ear to ear, expecting the same grade when I called his name. He was crestfallen when I read his score as 2%. His one correct answer was her one wrong answer.

When I privately explained what I had done, Brock told me, "You got me good on that one." and gave me

a big, brown-toothed grin. Joe failed the class without being written up for cheating and getting a black mark on his record for dishonesty. He was a real character and a class disruptor but still a harmless guy.

I taught the class again the following year, and Brock was right in the front row, making up for the "F" he had received the previous year. We got along quite well, and he earned an honest "C" or "D" and graduated with his class.

Years later, at Eatonville High, I taught Fundamentals of Biology. It was a class for students who had problems passing biology in earlier grades, were not planning on attending college, and had no ambition toward completing work simply to learn about a subject.

I knew from experience that many of these students would complain that I was making the class too hard for them to pass. So I decided to teach it as I had taught my eighth-grade Life Science course at Keithley Middle School. Several chapters' assignments consisted of coloring biology drawings, each of which had labeled parts. An information sheet explained the function of each component the student colored. I included five questions that students answered from the information sheet.

During conferences, I met with my students and their parents. The flunking students in biology classes had not turned in any work and failed the tests, despite study guides that included the test questions. In nearly every case, the student said the class was too hard when the parent had asked them why they were failing. Inwardly, I had to chuckle at this little act that regularly occurred between child and parent.

I sympathized with these parents and whipped out a student's progress report. We would run through the grades, and invariably I would point out a montage of zeros. The student would repeat that they did not understand the work, so they got zeros. Of course, the parent expected a standard teacher answer, such as, "Why didn't you come in for extra help?" or "Why don't you ask for extra credit?"

Instead, I pointed out that most of the zeroes were for not doing the assigned biology drawing colorings. What a shock to the parent. When the student gets asked about those zeros, their excuse disappears, and the parent's ire turns in a new direction. I even had an example to show parents that coloring a biology drawing is a simple assignment and an excellent way to learn terminology and function differently in the learning process.

The funniest thing is that I warned all my classes that I would give coloring assignments, and this exchange would happen at conferences if they did not do them. I guess they did not believe me.

Unfortunately, most failing students did not change their ways, but the parents knew where the fault lay.

My methods often used teaching techniques that students may have perceived as tricks or pranks, but they were effective and contributed to an excellent teacher-student relationship. However, it took many years of experience before I could use these methods effectively without embarrassing anyone.

Stack 'em Deep & Teach 'em Cheap: Part 2

Section Five: Teachers
Unit Seven: Teacher-Student Relationships
Chapter One
Technology: Computers and the Hell of Cell Phones

I have always been an advocate for computers in the classroom. While teaching at Tamaqua, I learned to write programs in Apple Basic for the IIe and sold eight astronomy programs.

After a six-year hiatus, when I went to Keithley Middle School, I soon purchased two Apple IIe computers on eBay and made them a part of my classroom as enrichment stations for my life science classes. My students also used these computers for self-testing to assist them with their test preparations. I even developed a football program where students played against each other, answered various questions to gain yardage, and ran specific plays. They were a great asset to my class.

Washington High School is next to the Keithley campus, and I made it a point to visit the high school regularly. When I discovered they were eliminating their Apple IIe computer lab and replacing them with PCs, I made enough noise that the IIe computers were given to me and became part of my instructional program. I made good use of them for two years.

Then I was awarded 15 computers by Intel Foundation as part of a grant to integrate science and a computer-assisted drawing (CAD) program into a class that would be team-taught with the shop teacher.

After two years of working with this lab setup and integrating the computers into my other science classes, several of Keithley's seventh-grade teachers started making noise about wanting to use the computers. They were taken away from me and set up in the library, where I had to schedule a time to use them. They were seldom available, and computers were on their way out of my curriculum.

Fortunately, I scraped some money together and purchased several obsolete computers on eBay and antiquated networking equipment. Soon I had eight computers up and running and continued with my classroom program. In addition, the school had site licenses for the software I needed, so I was back in business, albeit at a reduced level.

I then applied for a Gates Foundation Grant, winning five modern computers for student use and a laptop for instructor use. I integrated them into my lab setup, and my classes could function as before.

When I left Keithley, the Gates Grant computers remained behind, but the eBay computers gave me a good start on my curriculum at Eatonville High School.

After several years at Eatonville, the district passed a bond issue to remodel the high school. As a result, I set up a modern, fifteen-station computer lab for my classes.

This computer lab enabled me to design an intensive project for my students to complete that involved extensive use of Microsoft Office and close teamwork on their parts. The work, presentation, and scoring took three weeks of class time and were well worth every minute. Students had to use so many different pro-

cesses and skills to complete this assignment that it was a great learning experience. I would not have even considered such an assignment without the computer lab.

Technology is a definite asset to any instructional program. But unfortunately, it can also be a tremendous detriment. While I was at Eatonville, one piece of technology became a curse on education: the cell phone.

Cell Phone Hell

No valid reason exists for any student to have a cell phone in the classroom. Parents say they want the convenience of calling their children at any time, and if a family emergency occurs, it is essential to contact their children. I suppose that might be a valid justification if their children drove the ambulances or fire trucks that respond to emergencies. But, realistically, a call to the school office will message the child in minutes. The child can then make a return call from the office, just as they would have before cell phones became ubiquitous.

We would all like to think that high school students have enough self-discipline to stay off their phones during class. They do not. It is even worse in middle school.

Texting during class is an art for many students. They can send messages back and forth by just glancing at the phone's screen. They can even hide ring tones by making them too high-pitched for an older person to hear.

The consequences of cell phone use during class have little effect. A confrontation, the most common and apparent result of taking a cell phone away, elevates disruption to the class. It is generally useless to involve parents since the majority cannot or will not regulate cell phone use. The legality of taking the cell phone away during class is not a problem unless the cell phone disappears from the teacher's desk. Then, the teacher must pay for it out of their pocket.

The most significant consequence of using a cell phone during class is the effect on grades. Unfortunately, the students who persist in using their cell phones are the ones who need to be paying attention.

Book Special for Christmas

My most recent book on conifers is an enjoyable read for anyone. It focuses upon the uses of conifers as art forms in the garden as well as art forms in the art known as Bonsai. It would be a great gift for someone to find under their Christmas tree. I have discounted it to $25.00 including mailing vis USPS media mail. The sale is until Saturday, December 9. All books ordered will be mailed on December 11. That allows ten business days for the postal service to deliver them. Buyers may use PayPal, sending $25.00 to my email (bobfincham@mashell.com) or email me saying that a check is in the mail. This price is for domestic purchase only.

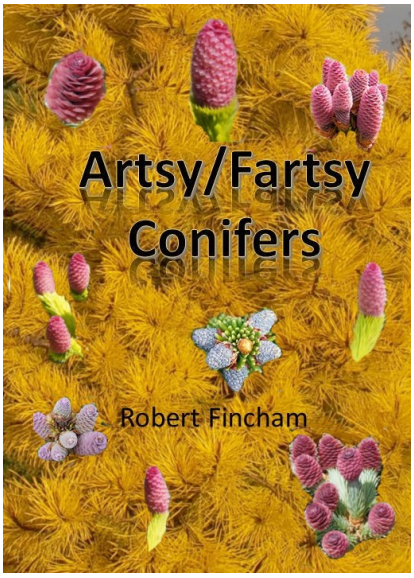


Table of Contents

The bottom left corner shows two pages from the chapter on rock gardens as an art form.

There is a large amount of information about the plants to use when creating the various art forms throughout the book.

Sometimes a garden landscape will have an area with rocks among the conifers that may or may not be considered a rock garden. The smaller rock garden at my **Eatonville, Washington** home is pictured on this page while the facing page shows the rock garen at **Iseli Nursery** in Boring, Oregon.

Book sale ends at midnight on Saturday, December 11.

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Wiel, seen here, must have boundless energy to maintain his extensive gardens.

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The top pictures show two pages from the chapter about grafted standards as an art form.

The bottom pictures on the right show two pages showing examples of the art form called Dantsugi, which uses multiple grafts to create an art form.

The Dantsugi on this page has Picea pungens 'Early Cones in the apical position. There are three cultivars but just a bicolor effect, with the yellow of Picea abies 'Gold Drift' and the blue of Picea pungens 'The Blues'. The reduced color interest is offset by the abundant cones of the Picea pungens 'Early Cones.

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This Dantsugi has Picea abies 'Pusch' in the same position, but has a tricolor effect with the yellow of Picea abies 'Gold Drift', the green of Picea abies 'Pusch'. and the blue of Picea pungens 'The Blues'.

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JUNIPERUS SCOPULORUM
O 1750
T 1945
FRONT VIEW

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JUNIPERUS SCOPULORUM
O 1750
T 1945
REAR VIEW

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JUNIPERUS CHINENSIS 'SHIMPAKU'

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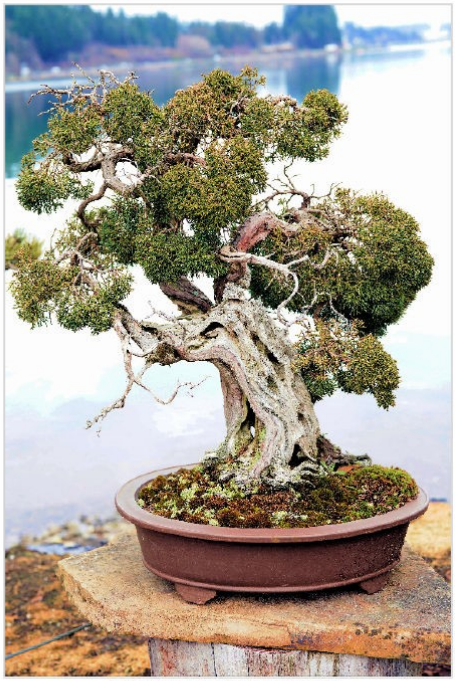

JUNIPERUS CHINENSIS 'SHIMPAKU'

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The top pages from the book are pictures that show the front and back of a Bonsai specimen at the Pacific Bonsai Museum.

The lower two pages show two of the ancient natural Bonsai creations of Dan Robinson at his Elandan Gardens.

Chapter Six: Creating Art Forms Through Bonsai
Part Two: Rooted Conifers For Bonsai

This next section of my book is based upon what I determined to be among the most popular conifers for Bonsai that can be propagated and grown as cuttings on their own roots.

Chamaecyparis obtusa 'Hage'- This cultivar grows more slowly than Chamaecyparis obtusa 'Nana' and is relatively undistinguishable from it as a young plant. As a young plant, 'Hage' or 'Nana' makes an excellent choice for Bonsai. The small foliage, slow growth, spreading branches, and rapid trunk development all combine to create an excellent miniature tree.

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Chamaecyparis obtusa 'Kosteri'- A slow-growing, upright form with horizontal, twisted foliage occurring in layers, 'Kosteri' is quite popular with some bonsai growers. It can become a most attractive formal or informal bonsai.

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The two pages shown above introduce the chapter on rooted plants for Bonsai.

The lower two pages from the book are from the chapter on grafted plants suitable for Bonsai.

Pinus parviflora 'Ara-Kawa' is popular for bonsai since young plants appear to be very old. The young bark is fissured and rough while the foliage is dark green and not as twisted as that of 'Ibo Can'. 'Ara Kawa' was a favorite of Joe Burke, my friend from Long Island who made this cultivar available to me. He told me that he found it to be difficult to propagate but worth the effort. I have to agree.

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I am doing Pinus parviflora 'Ibo Can' next (out of alphabetical order) because I like to compare it to 'Ara Kawa'. Joe Burke grew quantities of these two cultivars and had much to do with introducing them into this country. He did it by selling me several of each for stock plants, and I sold grafted plants to my Coenosium Gardens customers from 1979 through 2013.

Pinus parviflora 'Ibo Can' has bluish, twisted foliage, a dense branch structure with an upright growth habit, and rough, pebbly bark on two-year-old wood. Its needles are a bit long for bonsai work but not a major detriment. Burke had several outstanding specimens and this cultivar made up a high percentage of plants in his collection.

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Things That Do Not Make Sense

Organization

COENOSIUM PUBLISHING

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When you are bored just think about a few things that don't make sense .....like ;

1. If poison expires, is it more poisonous or is it no longer poisonous?
2. Which letter is silent in the word "Scent," the S or the C?
3. Do twins ever realize that one of them is unplanned?
4. Why is the letter W, in English, called double U? Shouldn't it be called double V?
5. Maybe oxygen is slowly killing you and It just takes 75-100 years to fully work.
6. Every time you clean something, you just make something else dirty.
7. The word "swims" upside-down is still "swims"
8. 100 years ago everyone owned a horse and only the rich had cars. Today everyone has cars and only the rich own horses.
9. If you replace "W" with "T" in "What, Where and When", you get the answer to each of them

Historically Relevant Conifer Books Available

Phil Perrone is a friend of mine through the American Conifer Society. We mostly met and visited during regional and national meetings during his New York days. For some time now, he has been living in Savannah, Georgia and enjoying its milder climate.

Recently he contacted me to see if I would be interested in purchasing a couple of his conifer books since he has decided to give some of his extensive library new homes. A signed copy of Welch's first edition and a 1938 copy of Hornibrook (both focusing on dwarf conifers). He has many others in his library that he would like to see go to conifer people who would enjoy having them.

Phil told me to feel free to share his email address with my subscribers. I made this offer to Phil for a couple reasons. First, I enjoy reading through old conifer books and adding to my knowledge. Second, I thought it would be a good opportunity for my readers to add some special books to their conifer libraries. Third, I empathize with Phil because I'll be in this same position in a few more years.

Feel free to contact him and discover what classic conifer books he is willing to let go.

Phil's email is: Philip Perrone <philpine@aol.com>