



BADGER BONSAI SOCIETY

Promoting and Enjoying the Ancient Art of Bonsai Since 1972

Badger News | A Publication of the Badger Bonsai Society | FEBRUARY, 2010

NEXT MEETING DATE: February 11th, 2010

6:30–8:00 p.m.
Olbrich Botanical Gardens
3330 Atwood Ave. Madison, WI

MEETING AGENDA: DRAWING YOUR BONSAI ATTITUDE

Before you cut, wire, bend, repot or just give up, try pulling out some paper and a pencil, study your tree and draw what you'd like to see happen. Hands-on demo by BBS Member Mark P.

CLUB OFFICERS:

President	Tim
1st Vice President	Matthew
2nd Vice President.....	Devon
Secretary	Duke
Treasurer.....	Gary
Librarian/Newsletter	Greg
Refreshments	Elaine
Past President	Ron

President's Message

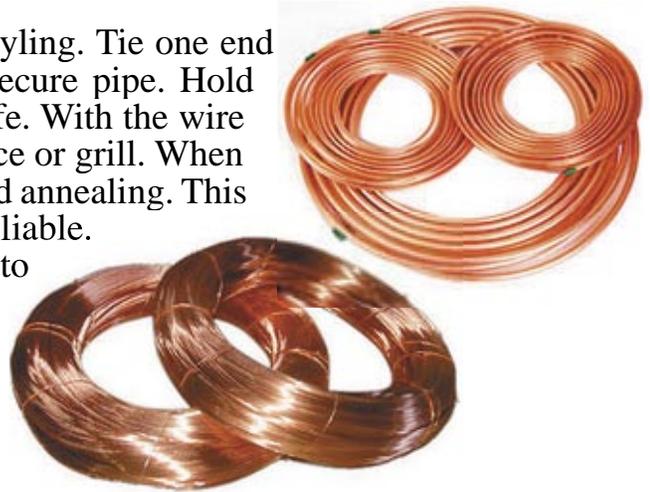
By: Tim

The dinner at Imperial Gardens was a great chance to chat with fellow members. Many drinks were spilled on our end and that made for some exciting moments.

Olbrich called me to say they want us out at 8:00 p.m. Everyone must be out of the building by 8:15 p.m. That includes all clean-up, chatting, and bathroom stops. I asked if they are going to make us leave at 7:30 p.m. next year. That question stirred up a hornet's nest. More will be shared at our February meeting.

Now is a good time to prepare your wire for spring styling. Tie one end of a plastic coated wire to something sturdy like a secure pipe. Hold the other end taut and strip the wire using a utility knife. With the wire stripped, coil the wire and throw it in a burning fireplace or grill. When the coil changes color or glows, it is ready. This is called annealing. This makes the wire easier to work with because it is more pliable.

Straightening and bending, however, returns the wire to its original stiff state. There is no need for thermometers, as the glowing tells you when it is ready. Do not leave it in the fire too long or else it will become brittle. This process saves you money and is very "green". If this whole process is too much for you, then talk to Ron about purchasing some wire.



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Just a friendly reminder that membership dues are due. **See Gary if you haven't renewed your membership for this year.** I look forward to seeing you at the meeting.

Presidentially yours,
—Tim

2010 BBS Schedule of Events

By: Devon and BBS Officers

General Notes:

We encourage members to bring trees to every meeting (weather permitting). Before meetings with acceptable weather (March–October), we'll identify a "species/style of the month" and encourage members bring in examples from their collection. Particular focus will be paid to examples that tie into the evening's event / discussion. Of course, we won't all have examples for every meeting, but if everyone focuses on their own collection, and what they do have, we can all see more examples of bonsai.

Possibility of a non-meeting-day workshop that focuses on Forest Planting. This requires more exploration. Interest of such an event to be asked of members at next few meetings. More to come.

All meetings (unless noted otherwise) will be held on the second Thursday of each month at Olbrich.

BBS Events for 2010:

Jan. Annual Member's Dinner

Feb. Drawing Your Bonsai Attitude (Mark)

Mar. Wiring Techniques (Tim)

Apr. Repotting Techniques (Ron)

May Burning Bush Workshop pt. 1 of 2
and show preparation

May Public Show May 15/16 Olbrich 9 a – 4 p

June Phoenix Graft (Tanuki) Demo
(Devon and Ron)

July Tropicals Workshop (Tim)

Aug. Private Club Show and Critique

Sept. Burning Bush Workshop pt. 2 of 2

Oct. Fall Clean Up and Winter Preparation

Nov. Over-Wintering Techniques,
end of year business and officer elections

Dec. Wrap up any unfinished club business,
begin planning following year's events
and, of course, Holiday Cheer

Next Meeting:

Drawing Your Bonsai Attitude

By: Mark P

What is Your Bonsai Attitude? Drawing while keeping styling in mind. How does the tree grow? The roots, trunk, branches and foliage masses. Pay attention to balance of the tree – whole presentation.

Basic art principles

- Light
- Balance
- Purpose of representation
- Creativity as a process

Everyone will get paper and a pencil during presentation. We all will create a drawing using our bonsai attitude, basic art principles, and knowledge of tree growth. We will draw using our growth priorities and sense of artistic balance.

– Mark

Welcome back to the "Great White North"

For a few days I was lost

By: Greg

January and February

January's meeting, dinner at the Imperial Gardens, went very nicely. Got to meet with everyone, good conversation, and best of all good food. At this month's meeting we will have a demonstration and talk on sketching.



From the collection of Jim Smith, this sketch is one of the many drawings of bonsai that John made of the members bonsai at Jim's study group in 1987.

This is an area used in bonsai and one in which I am totally inept. Art is not that bad for me, I even took first place in a painting contest, but that was in the seventh grade. I only have one tree that has a real sketch drawing for it and 'Bonsai' Bob did that. Tried it on my own a few times and the people stick figures that I draw look better, so I am really hoping to learn something on Feb. 11th.

Library Information

One of the organizations, I believe it is BCI, is selling John Naka's Sketches in book form. I have been looking at this for some time now thinking this might be a good book to get, but have not purchased it yet.

Speaking of books I will bring a few to this meeting to see if any members want to checkout any, We also have a few DVD's to checkout. Some members have already checked them out, hopefully they will bring them back for others to checkout.

A list of books is available on the Website (badgerbonsai.net/library), if you find a title you would like to read please let me know and I will bring that book along. We also have *Bonsai Today* and *BCI* magazines going back to the 1970's. If you would like to check them out, let me know by email and I will bring some of them along also. Email me (email removed).

Will The Deep Freeze Kill My Bonsai?

Does anyone still have a few unbroken News Year's Resolutions left? I know I started out with a few of my own: loose weight, listen to my wife more (or just act like it), pay more personal attention to my bonsai (such as in fertilization). Well one out of three is not too bad, that's only because my trees are frozen or are they?



Contrary to popular belief your bonsai at this time of year are not frozen. On a few occasions when I was outside walking the 'Monster' I surely would have thought so but in scientific actuality they are only 'dormant.' Actual tree cell freezing occurs with steady temperatures of around -40F. So far we have not yet reached this temperature.

'Up Here,' bonsai growers have taken great pains in studying ways to effectively overwinter their prize possessions, all have their benefits and detriments, from storing them in a greenhouse, cold garage, cold frame, burying them, or covering them in mulch. Something for future club discussion would be to talk about how we overwinter our trees and how successful we have been at it. I know this is a question in every beginner's mind.

How many times have you used the phrase, "My trees are frozen." Unless you live in Yellowknife Canada or Fairbanks Alaska this is simply untrue. What you actually have is the water in the soil is frozen. In a tree in soil in nature root freezing rarely occurs, the earth's warmth sees to that. In bonsai our trees are confined to pots where air and cold circulates, and this allows the water in the pots to freeze.

(1) Pure water freezes at 32F, since the bonsai soil is for the most part sterile and the water has few impurities the water in the soil freezes at this temperature, not the water in the roots. The water in the roots has impurities such as sugars, sugar alcohol, and other proteins. These make it possible for the roots to survive temperatures below freezing, though they do have their limits. Tree mortality can occur at this stage if the plant is subjected to weather where the shoots are at higher temperatures and/or exposed to drying winds where they respire fluids at levels faster than the amounts that the roots can pick up, remember the water in the soil is frozen.

(2) Once temperatures drop below 20F the cells have a process to protect themselves. The gooey juice within the cells contains among other stuff water, as the temperature drops some of the water within the cells is pushed out into the air chambers surrounding the rigid cell walls. This freezes thus protecting the cell itself from damage. We see this in the brittleness of the stems or needles as they snap easily. In our world the citrus growers applying water to their trees during a freeze to protect them is a good example of this. The freezing of the water actually keeps the plant cells from freezing. You sacrifice some fruit to save the tree.

(3) Below -10F the cells themselves start to freeze and plant mortality could be near. We see this in the spring when branches fail to sprout, or the tree itself.

These temperature ranges are arbitrary and certain tree plant species are able to handle temp extremes better than others. A Ginella maple is hardier than a Trident Maple, etc. Protecting the roots are what is important and protecting the roots is what the tree does to survive. My favorite line from the movie 'Jurassic Park' is fitting here. Dr. Grant while sniffing the dinosaur eggs says "Nature finds a way."

We as our trees stewards must find a way. To insure our trees survival we need to find a place to store them where the temperature stays temperate, no wild fluctuations. Keep the roots from their killing temperatures. Give them plenty of water, and keep them away from drying winds. Light at this time is unimportant. And allowing the plants to come out of their imposed dormancy naturally. Hopefully if all these are met your trees survival will be greatly enhanced and your tree will go on to meet other future challenges.

– Greg

Annealing Copper Wire

By: Marty Weiser / www.evergreengardenworks.com

Introduction

Marty Weiser is a regular contributor to the Internet Bonsai Club. He describes himself as "Marty - actually a ceramist who is working as a metallurgist and has moved on to marketing". The following article is the best description of the process and the physics of annealing copper wire that I have come across.

Work Hardening

Copper has a cubic crystal structure. It is the particular variation (face centered cubic) that gives it its extreme ductility so that you can bend a wire into really sharp curves. Aluminum, silver, and gold

among others have the same crystal structure. Bending a copper wire work hardens it which introduces defects known as dislocations into the structure. These defects interfere with further deformation and make the copper hard and strong so it is not easily rebent. This is why copper is so good for bonsai - it bends easily the first time, but then holds its shape. Aluminum work hardens less than copper while gold barely work hardens at all.



Annealing

Annealing the copper eliminates the dislocations so that the copper is once again composed of nice perfect crystals. This allows the copper wire to be re-used since it is now soft and easily bent. Generally annealing is done at greater than 1/2 of the melting point on the absolute temperature scale. Copper melts at 1083C = 1356K so the annealing is done at greater than 678K = 405C = 761F. However, it will take a fairly long time at the lower end of the range so it is more common to anneal at about 700 to 800C. The copper can be worked and annealed many, many times for the purposes of bonsai since we really don't need extremely tightly controlled properties. The properties will degrade with repeated cycles for various reasons - oxidation being the most obvious.

The copper will maintain its soft crystal structure after annealing at any realistic cooling rate (from very slow like letting fire die down to fast like throwing it in a bucket of water). Generally, I would suggest water cooling to prevent excessive oxidation of the surface. Steel (iron + carbon) on the other hand will change its properties dramatically upon rapid cooling. However, it is possible to cool copper fast enough to make it into a brittle material. This normally involves cooling rates of greater than 10 million degrees C per second which



can only be obtained by spraying a very thin film on to a very cold surface (this equipment is very expensive).

For bonsai wire it is generally not necessary to take strong measures to prevent oxidation unlike jewelry or electronics where a precise part is being made. So go ahead and heat it with whatever safe form of heat you have to a dull red glow. The woodstove, the barbecue, a torch, or the gas stove will work just fine. Just remember that the copper will be hot enough to ignite most flammable objects if you set it down on them and it will give you a nasty burn if you are not careful. In addition, copper is an excellent heat conductor so heating one end of the wire to red hot will quickly result in the other end getting hot too.



Increase In Work Hardening Strength

Fully annealed copper wire will increase in strength by a factor of about two as it work hardens. In addition, it takes relatively little deformation to bring about a fair bit of this strengthening. I am hoping to run some good solid tests later this summer.



I estimate that the act of wiring a branch and then bending it once into some reasonable shape will increase the strength of the wire by a about 50%. I don't have

any strength data for copper versus aluminum here with me, but if memory serves me right the strength of fully annealed copper is 50 to 100% higher than fully annealed aluminum. Given that aluminum does not work harden as much as copper this means that once wrapped around the branch and bent a given diameter of copper will have about two to three times strength (and whence holding power) of aluminum wire.

Large Gauge Wire

A further comment is that copper work hardens enough that merely taking a large diameter wire off of a coil will increase its strength appreciably. This can be good in the hands of one who really knows what they are doing since the stronger



wire will then hold more. However, if the wiring skills are not as advanced then the wiring will be that much more difficult since they are starting with a really stiff chunk of wire (almost rod). It is therefore probably a good idea to anneal really large diameter copper wire in a straight piece rather than on a coil. Of course the other alternative is to use two or more pieces of smaller diameter wire.

Could It Be Your Water?

By: Jack W

There is no need to read farther --- unless you are curious --- if you are one of those people whose bonsai consistently look healthy and grow well. On the other hand,

reading more could be helpful if your trees fail to thrive in spite of your conscious effort to follow some old but good advice: water thoroughly and leach frequently to keep unwanted



salts from accumulating in your bonsai soil. This is especially true if you keep seeing the common symptoms of what horticultural scientists know as low quality water: persistently weak green or yellow-green leaves with darker green veins often accompanied by scorched-looking leaf tips and burned leaf margins (most prominent toward the leaf's tip).

By definition, "pure water" is nothing but water. But, being the "universal solvent," water available to us from lakes, waterways, wells, the local Water Department or even a rain barrel is never pure. Actually, the "load" of dissolved minerals and other substances found in water -- even water acceptable for use in human consumption and plant irrigation -- is highly variable.

People dealing regularly with water quality commonly make a distinction between "surface water," the runoff of rain into ponds, lakes and rivers, and "ground water," which typically has seeped deep into the ground through many tons of soil and rock before emerging as spring water or being pumped back to the earth's surface from a well. The reason for this classification is that surface water is relatively "soft," that is, low in dissolved mineral content. Ground water, on the other hand, having accumulated lots of dissolved minerals as it settled deep into the earth is "hard," high in mineral content. Where available, surface water is almost al-

ways superior to ground water for plant irrigation purposes.

However we need to be aware that knowing your city's water source is a river or reservoir does not necessarily mean it will be as low in pH and mineral content as one might expect. We are told it is not uncommon for municipalities to add chemicals, typically calcium hydroxide, to surface water to raise its pH (make it less acid) as a way of minimizing corrosion of public and private plumbing. This addition makes water less satisfactory for plant use.



Technical publications directed to commercial growers of irrigated greenhouse and nursery crops make it very clear that water quality is a major factor in their success or failure. The standard recommendation is that a comprehensive horticultural water analysis should be done before settling on a growing site. Tables specifying recommended ranges for alkalinity, pH (not the same as alkalinity), soluble salts (usually measured by electrical conductivity), and six or seven specific elements can also be found in this literature. It is relatively common today for commercial growers stuck with low quality water to inject acid into it to make it better for plant use even though this adds significantly to their production costs.

The main point here is that water, even water satisfactory for kitchen use and bathing, varies greatly in pH and mineral content depending on its source. Good evidence of this is that water softeners are considered essential household equipment in some communities and not necessary in others.

Actually, I have theorized for some years that an unrecognized difference between those people whose experiments in growing bonsai are rewarding right from the beginning and those who struggle for awhile before giving up in frustration because "they don't have the touch," may be the quality of their water. A related observation is that, while cautions against wetting the foliage of one's trees dur-

ing the heat of midday to avoid burn are common in bonsai literature, many growers do this routinely with no damage. Again, it seems likely that this seeming contradiction is explained easily by differences in water quality.

So, what does one do if poor water quality is suspected? It would be hard to go wrong to begin by obtaining an analysis of your water. Those using water from a municipal supply will find this as easy as requesting a copy of their water analysis from the local Water Department. (The Federal Safe Drinking Water Act Amendments of 1996 require "providers" to make water analysis information available to their "customers.") People who rely on their own wells or other private water sources, can learn where a horticultural water analysis can be obtained by contacting their local Agricultural Extension Service office. (Water Standards for Horticultural Use offered by Dr. John C. Peterson at the American Bonsai Society's 1990 Annual Symposium, can be found at the end of this article.)

Another way of evaluating the quality of your water for horticultural use is to obtain a package of radish seeds (radish seedlings are known to be sensitive to high salt concentrations and other water contaminants). Plant these seeds in a relative sterile growing medium in a number of containers. Then water some pots with your household water and others with distilled water or other mineral-free water. Noticeable differences in seed germination and seedling growth between treatments -- better germination and stronger growth in the mineral-free water -- will be strong evidence that your household water is a significant problem.

Once you learn that your water is not good for growing plants, what are your options short of acid injection like the commercial growers do? Of course the amount of water needed for routine watering will be a major factor in deciding what might work for you. For a small number of plants the answer may be as simple as purchasing distilled water. If available in large enough quantity, water discharged from air conditioning equipment or water collected by a dehumidifier will also work very well.

And, even though not pure (we have all heard of acid rain), rain water will typically be far better for growing plants than mineral loaded water. With gutter, and downspout rigged to direct water into a container of some kind, it will be surprising how much water can be collected.

One simple water treatment remedy being used by a number of bonsai enthusiasts in parts of the country with very hard water is to routinely add white vinegar, a tablespoon or two per gallon, to the water

used on their bonsai. Others have written of adding as much as a cup of vinegar per gallon of water and applying this as a monthly drench. Actually, a little experimenting with vinegar additions to your water may be all you need to do to learn more about its quality.

Another simple, though slow acting, remedy used some in commercial production is to treat plants with powdered sulfur either by scattering it over the soil surface or mixing it into the soil. One advantage in doing this is that it makes it fairly simple to treat consistently weak and off-color plants while ignoring those that seem to be fine without the extra attention. This dosage doesn't have to be too precise but a teaspoon of powdered sulfur per gallon of soil is a reasonable target rate for experimentation.

A more expensive but almost foolproof remedy recommended as cost effective by horticultural scientists is use of a reverse osmosis (RO) water treatment system. This equipment is now widely available. Actual costs vary depending on the volume of water required. (I know personally two very active bonsai growers who went through considerable frustration with ongoing foliage disfiguration and unexplained tree loss before they decided their problems had to be water related and had RO systems installed at their homes.)

To summarize, water varies greatly depending on its source. Unresolved problems with your bonsai may be the result of poor quality water for growing plants. Although having low quality water is unfortunate, there are remedies available. Clearly, there is little to be lost by investigating your options and the potential for improvement in your trees can be great.

Desirable Ranges for Problem Water Parameters

Distributed by Dr. John C. Peterson, June 29, 1990 at American Bonsai Society Symposium at Ohio State University :

- * pH: 5.0 to 6.5
- * Soluble Salts (Conductivity): 0 to 1.5 mmhos per cm (1 mmho is equal to 1000 umhos)
- * Calcium: 0 to 120 ppm (1 ppm is equal to 1 mg per liter)
- * Magnesium: 0 to 24 ppm
- * Sodium: 0 to 50 ppm
- * Chloride: 0 to 140 ppm
- * Boron: 0 to 0.8 ppm
- * Fluoride: 0 to 1 ppm
- * Sulfate: 0 to 240 ppm
- * Alkalinity: 0 to 100 mg per liter CaCO₃



Some things Never Change

