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MARCH MEETING HIGHLIGHTS

Gary Rock was our host this month at his shop while Professor Marty Bee of McNeese was our presenter.

Professor Bee started with a presentation of a few of his very funny and timely works after Rita including drawings and water color paintings he made while evacuated from the storm. The best (in our view) was the one that showed a coffin and refrigerator side by side in the water with the caption that said you can't tell the difference from the air. There were many more fun and relivant images that told the story of his Rita experience.

Marty did a demonstration of how to open your mind to more expansive ideas about design. He started with a question from John Marcon about using a simple magazine rack, and Marty questioned the members about how it could be viewed from many perspectives. John also mentioned the "Golden Ratio", an ancient form relevant to many designs. It is also called the "golden mean" or "golden number" and is often represented by the Greek letter phi (ϕ) in mathematics. For example, many consider the Parthenon in Athens, an example of this ratio. (Note that there is a replica of the Parthenon in Nashville, TN on the street leading to Vanderbilt University, should not be able to get to Athens to see the original).

To the extent that classical buildings or their elements are proportioned according to the golden ratio, this might indicate that their architects were aware of the golden ratio and consciously employed it in their designs. Alternatively, it is possible that the architects used their own sense of good proportion (as we do today in our woodworking), and that this led to some proportions that closely approximate the golden ratio. Marty also sent us a Windows program that permits you to display a golden ratio grid on top of any photo. Should you want a copy (it's free), just email Barry and he'll forward it to you.

In any case, Marty's presentation was a different perspective on how we need to think about how our designs are viewed.

Jim Anderson continues to bring us interest-

ing old tools (as he collects some) with an ancient brace and spoon bit for Show and Tell. Jim was so impressed with this brace, he built a replica.

Gary Rock showed off a couple of walnut bowls and a spalted cottenwood vase, an absolutely gorgeuos spalted pecan bowl as well as a couple of "catch" toys he made as a project for the Lafayette turning group. Gary can "do" the catch toys with great skill. Mr. Thiboudeaux (Eltee to his friends) did an Easter Bunny.

Aaron Andrepont brought us a great wooden tie made of pine plus a shop apron his wife made for him. While we don't wear ties often these days, we would be proud to wear this one. The apron featured a pocket that holds a wooden brace to protect one from kick-back flying objects off the table saw.

Pie Sonnier brought us a 1919 Model T truck design (he said it was a 4 cylindar) and Roy Lee LeBlanc won the Bring It Back Item (a fine bow saw hand crafted by George Kuffel). Jeff Cormier won the door prize, a clamp set (we all know that Jeff probably does not have enough clamps).

Tom Bergstedt turned a weed pot from a piece of Rita wood (cherry) that also included a bit of ebony.

Gary Rock mentioned a safety issue regarding electrical repairs. Always cut the breakers before working on an electicial circuit and not just turn off the switch associated with the item. You don't know when someone will come in and flip up the switch as you are working.



Coming Up . . . Saturday, April 14, 9:00 a.m. Shop of Chuck & Charlene Middleton. See the new shop and give them some ideas.

TOOLS FOR SALE

Jeff Cormier's cousin Mike Pousson has tools for sale. Mike now lives in Canada and needs to sell his inventory. His cell phone number is 337-387-9773.

Sears 15" Floor Model Drill Press & Mortising Attachment with 3 Mortising bits: \$200

Northstate Planer 15 inch 3 knife 3HP 220V: \$500

Trendlines 3HP 220V Shop Dust Collector (2 Bags) w/ Remote Control, Collection Barrel, Blast Gates, & some Dust Collection hose: \$200

Sears 12 inch Tubular Bed (36") Lathe. Three step pulley rotation control with motor. All Chisels and Manual Duplicator included. Mounted on table: \$130

Grizzly 22 inch Jig Saw mounted on table. The legs under a drawer box that it is mounted on is from the above Planer: \$100

Delta 6 Inch Jointer on roller stand: \$300

Homemade 12 inch Bandsaw that takes standard 80 inch blades. Made from a kit by Gilliam Mfg Co.: \$20

Sears Tabletop portable shaper (A glorified heavy duty router mounted in a cast aluminum table. Has a 1/2 in spindle). Used on one project many moons ago: \$30

Delta Contractors Saw w/ 29" Unifence and a spare Delta motor. (Delta sent out another motor and switch when original went dead. In the meantime, motor was removed and end cover was opened and blown with air. It was just dust in the starter windings.) Both motors are set up for 220 volts and the motors are like new. I think Brian wants this so he has first dibs on it: \$400

Shop built Router table. Made with birch plywood, trimmed with maple. Large 1" MDF top sandwiched with Formica on both sides, trimmed with maple. Dust drawer, pull out bit tray, and storage space at bottom. External switch to operate router. Extra 3/8" Plexiglas inserts ready to be drilled for specific router: \$60

22 inch heavy frame big wheel Yazoo self propelled mower. Probably could use new drive rollers & tires. 5 HP Wisconsin engine. It was running 3 years ago when I used it and when I last saw it, the tires were flat: \$150

10 X 15 foot slant roof shed that is built at with 2x6 floor framing on 16" centers and 2 x 4 wall framing. Skinned in white aluminum siding on top and sides. It is only 6 years old and is movable. It has a 4 x 6 door made with 1" Square Tubing covered with 1/2 treated pine plywood, skinned with white aluminum. It cost me \$1200 to build in 2000: Asking \$500. Portable building manufactures will move it fairly cheap.

If you have any questions about any of these items, please contact Jeff Cormier at 582-3278.

BARRY HUMPHUS: WOODWORKER

My first experience with woodworking was in a 1962 high school woodshop class (when they were common). I likely made a "B" for a couple of small nasty and long forgotten items. But what the class taught were the use of hand tools and safety. We had to watch a gory movie about table saw kickback and other evil things. The only person using a power tool was the shop teacher and some of the time, we were sneaking out to the boy's

restroom to have a smoke!

By 1970, I was back from Vietnam and at UT Austin. As poor college students, Linda and I had little furniture other than a bed, dresser and drawer set her parents had given us. I announced that I could build furniture as I had had a wood shop class in high school (way too confident, even then!).

My woodworking tools consisted of a Stanley # 40 block plane, an electric drill, a dull chisel plus a few screw drivers and wrenches (still have them all). My first task was to find a design we liked and thus went to several furniture stores where I took photos and made measurements (telling the managers I was making sure the furniture fit our "home").

I found some wood. There was a small company (Austin Hardwoods) that sold mostly hardwood timbers and I purchased very large pieces of walnut – 6" x 6" x 5 foot stuff, cheaply. I also purchased a palm sander at a local hardware store – the Calcasieu Lumber Co. in Austin (founded in 1883 and still in business).

Found a guy (one of my professors) who dimensioned the timbers on his radial arm. Found a friend of a friend who had a jointer and another friend of a friend who had a router. I assembled a dining room table, a couple of end tables and a coffee table out of the walnut using mortis and tendon joinery.

Some walnut trim pieces came from Linda's cousin who was part owner of All-Woods Schroeder in Houston (bought out by Houston Hardwoods years later). The top of the dining and coffee table is Mexican tile bought on a holiday to Matamoros, Mexico. We still use all of this furniture in our home today. And all of the assembly, joinery and finishing techniques came from a vocational school textbook titled "Cabinet Making and Millwork" by John Feirer. You can still get this great book used from Amazon and it's an excellent resource for any woodworker.

Since then, I have purchased a few more tools and learned a bit more about woodworking. Just like the Paul Simon song Kodachrome says "When I think back on all the crap I learned in high school, it's a wonder I can think at all." The real woodworking knowledge, though, came from a vocational school textbook.

These days, my favorite tool is the lathe. It relaxes, produces satisfactory work quickly and is an adventure – you never know quite what will come from the wood. *Barry Humphus.*

CHARGING AND DISCHARGING BATTERIES

My first battery powered shop tool was a DeWalt drill. But over the past year or so, the original set of two began to fail. One wouldn't take a charge any longer and the other would take a charge but then wouldn't deliver power very long. So what happened and how can I moderate the failure? Even more important is how to get a replacement without paying more than the original cost of the drill plus the batteries. Here is the answer to both questions.

More batteries are destroyed or damaged by poor charging techniques than all other causes combined. Once a battery reaches full charge, the charging current has to go some-
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where – most often, generating heat and gases. Both are bad for batteries.

In a nutshell, a charge is the inverse of the discharge. To charge one is forcing current back into the cell (opposite of discharge current). Hence, electrons are being taken out of the positive terminal, and forced into the negative terminal. This means that the material at the positive terminal is being oxidized and material at the negative terminal is being reduced.

The easy part of charging NiCad batteries is reconverting the spent material on the plates to the charged condition. The hard part is learning when to stop. So take a moment to think about what happens when we overcharge a battery. Once all the nickelous hydroxide is converted into nickelic hydroxide, and in theory all the cadmium hydroxide is converted into cadmium, the charging current has to go somewhere. As the energy of the charging current cannot go into more chemical energy, it goes into splitting water (water is the major constituent of the electrolyte). Just like my high school chemistry experiment of splitting water into hydrogen and oxygen, a fully charged NiCd cell does the same thing. You are forcing oxidation at the positive terminal and reduction at the negative. When one oxidizes water (actually the OH-ion), you produce oxygen. Likewise at the negative terminal (now the cathode), you produce hydrogen.

This is bad: Oxygen + hydrogen = BOOM. Cell manufacturers, or at least their lawyers, frown on this from happening. So they cheat. During manufacture, they deliberately oversize the negative plate and they partially discharge it. That is, they put in a fully charged positive plate, but put in a slightly discharged, but bigger plate of cadmium. The amount of free cadmium in the oversized plate is matched to discharge in step with the amount of nickelic hydroxide provided in the positive plate.

Now consider what happens as full charge is achieved. Oxidation of water starts at the anode, but since the cathode is oversized, and has excess hydroxide, the current continues to produce cadmium metal instead of hydrogen. At the same time, the separator (the material used to prevent the plates from shorting) is designed to allow oxygen gas to diffuse through, from the positive to the negative plate. The free oxygen then oxidizes the cadmium metal to form more cadmium hydroxide to prevent hydrogen from being formed. Voila – a safe battery.

Ordinarily, and under moderate charging currents, the cadmium that is deposited is microcrystalline (i.e. very small crystals). Now, metallurgical thermodynamics states that grain boundaries (boundaries between the crystals) are high energy regions, and given time, the tendency of metals is for the grains to coalesce and form larger crystals. This is bad for the battery since it makes the cadmium harder to dissolve during high current discharge, and leads to high internal resistance and voltage depression.

The trick to avoiding NiCad memory is avoiding forming large crystal cadmium. Very slow charging is bad, as slow growth aids large crystal growth (recall growing rock candy). High temperatures are bad, since the nucleation and growth of crystals is exponentially driven by temperature. The problem is that given time, one will get growth in the cadmium crystals,

and thus, one needs to reform the material. Partial cycling of the cells means that the material deep with the plate never gets reformed. This leads to a growth of the crystals. By a proper execution of a discharge/charge cycle, one destroys the large crystal cadmium and replaces it with a microcrystalline form best for discharge.

This does **NOT** mean that one needs to cycle one's battery each time it is used. This **does more harm than good**, and unless it is done on a per cell basis, one risks reversing the cells and that really kills them. Once in a while, use the pack until it is 90% discharged, or to a per cell voltage of 1.0V under light load. Here, about 95% of the cells capacity is used, and for all intensive purposes, is discharged. At this point, recharge it properly, and that's it. At least, that is all you can do.

The more common memory effect isn't memory at all, but voltage depression caused by overcharging. Positive plate electrochemistry is very complicated, but overcharging changes the crystal structure of the nickelic hydroxide from beta-Nickelic Hydroxide to gamma-Nickelic hydroxide.

What's the trick? Don't overcharge. Leaving cells on a trickle charger encourages formation of gamma nickelic hydroxide. Expect the cells to discharge at a lower voltage.

I fully realize that we've said a lot about batteries lately, but in today's shop, they have become more common and even a necessity. For example, if you need a battery powered tool in a remote location in your home, a battery powered tool is a necessity.

So how do you get a replacement set of batteries without paying as much for the set as you did for the tool with the batteries? The answer is the battery after-market. DeWalt sells the DW9071 and DW9072 for between \$50 and \$80 EACH. A higher capacity (1,700 mA vs the DeWalt 1,500 mA) can be had for \$20 each. Plus, you can get higher capacity (2,000 mA) for just a bit more. The best prices I've found is at www.camera-battery.net (note the dash). However, there are many more sources. Just shop around on the Internet. *Barry Humphus with thanks to Leonard Wilfret for inspiration.*

President's Report

There was a nice turn out for our monthly meeting at my shop. We had were several visitors at the meeting including Dick Hopes' grandson, Marylyn Vincent, Wally Fruge and probably some others that I missed. Then there was Marty Bee who talked on design concepts and project idea generation. There was a nice show and tell by our members.

George Kuffel was to bring back the "Bring Back Item," last month, but he was out of town and Barry Humphus brought it for him. Roy Lee LeBlanc won the "Bring Back Item" for May. Jeff Cormier won the Door Prize. Jim Couvillion will bring back his "Bring Back Item" at our April monthly meeting at Chuck Middleton's new shop in the Maplewood / Sulphur area.

Dick Trouth asked at our March meeting if any one wanted a wooden name tag to see him. He stated that after this it will be a while before the wooden name tags come up again. To get them at a reasonable price, there needs to be at least 6 bunny rabbits brought. *Gary Rock*