MICHIGAN WOODWORKER

michiganwoodworkersguild.com

Michigan Woodworkers' Guild (est. 1981) February 2021 Vol. 42 No. 2

When / Where:

SUNDAY, FEB 14, 2021

(Virtual Meeting starts: **2:00 PM**)

LIVE SEMINAR:

Our President, Jerry Romito will present

"Youtube Virtual Woodworking Tours"

- COORDINATED BY JERRY ROMITO

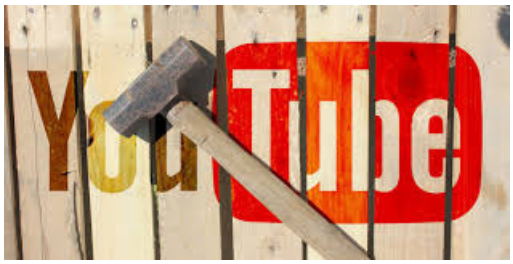
ZOOM MEETING START TIME: **2:00 PM**

VIRTUAL MEETING
ZOOM CONNECTION DETAILS TO BE SENT BY JERRY ROMITO

The Guild luncheon will be at The George's Saltgate Coney Island on **February 25th** at 1:16 pm (see map on page 10)

No Lunch This Month

WOODWORKING



Next Month:
Showcase of Skills

Celebrate Valentine's Day with us. Our President, Jerry Romito will showcase short You Tube Videos from many woodworking experts at our February 14TH Virtual Meeting.

CALENDAR OF EVENTS

Our very own president, **Jerry Romito**, will feature Youtube **Virtual Woodworking Tours** at our Sunday **Feb. 14, 2021** Virtual meeting. Start time: **1:59** PM

The monthly luncheon will be at George's Coney Island on the February 25th at 1:16 pm

No Lunch This Month

MWG's "**Showcase of Skills**" co-ordinated by **Ed Stuckey** is tentatively scheduled for our Sunday, **March 14, 2021** Virtual Meeting
Start time: **1:59** PM

The monthly luncheon will be at George's Coney Island on the March 25th at 1:16 pm

No Lunch This Month

Professional Wood Carver, **Mary May**, will demonstrate an **"Introduction to Carving"** at our **April 11, 2021** Virtual meeting
Start time: **1:59** PM

The monthly luncheon will be at George's Coney Island on April 22nd at 1:16 pm

No Lunch This Month

Ragnar Bergethon, aka "Berg", details the unique techniques to build a **Craftsman Style Side Chair** Sunday **May 9, 2021** Virtual meeting. Start time: **1:59** PM

The monthly luncheon will be at George's Coney Island on May 27th at 1:16 pm

No Lunch This Month

President's Corner

By Jerry Romito

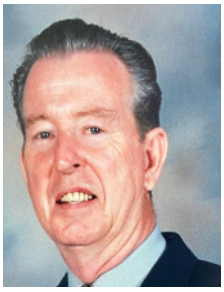
February, 2021

The bad news is that due to Covid-19 we will continue to have only remote Zoom meetings for an indefinite time. The good news is that these meetings are becoming more successful as we continue to showcase excellent speakers and as our members become more accustomed to using the remote technology. Our January remote meeting from Titebond on "Wood Science" had a record attendance of 44 members. You can see Dale Ausherman's review of that presentation in this newsletter. Since the meeting was recorded, if you missed it or would like to see it again, send me an email at GJRomito@aol.com, and I will send you the 2-hour-long recording.

I am going to try out something new for our "YouTube Virtual Woodworking Tour" remote Zoom meeting on Sunday, February 14, from 2:00 pm - 4:00 pm. The presentation will feature a collection of 15 short YouTube videos from 10 different woodworking experts. The topics that I have selected should be of interest to all members, ranging from beginner to advanced. My idea is to give you just a flavor for the wealth of woodworking information available on YouTube. If you enjoy a particular video, you can later go to that presenter's own YouTube channel to see their whole collection of videos, most of which range from 1- 2 hours long. I will send the Zoom link a few days before the meeting, as usual.

And again, this a reminder that the 2021 MWG dues of $25 for all members is due by January 31, 2021. Please check your email for the notice that was recently sent, or go to the MWG website for on-line or mail-in payment options.

Jerry Romito
MWG President



Daniel O'Brien, an MWG member for 14 years, passed away on September 18, 2020, at 83 years old. Below you can see his obituary. You can see his obituary at: https://www.desmondfuneralhome.com/obituaries/Daniel-Earl-OBrien?obId=18398950#/obituaryInfo

Daniel O'brien

The O'Brien, Bahorski and Kapsner families are blessed to have shared the life of Daniel O'Brien. At almost 84 years old, his family spent his last week ushering him into the next phase of his soul's journey. Throughout that time and through his last breaths, he reminded us of how proud he was of his family and that he loved us. He had known his wife, Jean O'Brien for over 50 years total, and carved out a safe, stable and enriching life for his two daughters, Jennifer Bahorski (Michael) and Julie Kapsner (Jason) and their families, which combined gave him 6 grandchildren; Madeleine, Hannah, Avery, Kate, Isabelle and Colin.

After having attended St. Joseph's School in Detroit and then graduating from University of Detroit, his married life started on the slopes of Boyne Highlands in about 1965 where they met through a common friend. His journey with Jean took him to Canada and then back to Bloomfield Hills where he had many jobs in Human Resources and Personnel Management.

In addition to being a family man, he was a woodworker and fisherman. Until he became unable, he loved a fishing trip to Lake St. Clair or one of the Great Lakes, owning a few boats in his lifetime and one sailboat in his youth. God also gave him a great affinity for carpentry and he loved to build furniture, especially gifting it to someone. He has made chests, book cases, cradles, and tables for family members and was so proud to give them away. It was his love language for sure.

He was a member of St. Hugo's since 1978 and a man of faith. He was proud that he could say the Our Father in Spanish, having spent some time in college with the Christian Brothers in Santa Fe, New Mexico and often said the traditional grace before meals for his family. We know his days will now be filled with God's blessings of peace and hopefully some of his favorites; orange tabby cats, Tiger's games, plaid button-down shirts, chocolate cake, WJR, and big meals cooked by his wife and set in the dining room.

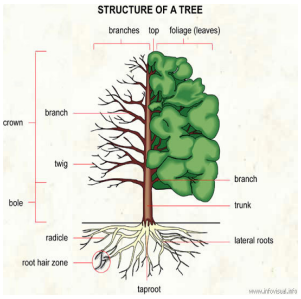
MEETING REVIEW

By Dale Ausherman

Due to the continuing Coronavirus restrictions on large meetings, the Guild continues online virtual programs to educate and entertain members in the craft of woodworking. Recall that for our October meeting Ragnar Bergethon had arranged a presentation by Bob Behnke, Franklin International's Technical Services Manager, on the characteristics and uses of their Titebond line of adhesives. That program only touched on the key characteristics of wood which impact glue use. As a follow up Bob offered a new presentation titled Wood University, which is a much deeper dive into the science of wood, how it grows, its preparation for market as lumber, and how the resulting material impacts use in woodworking. Bob also provided additional insight into glue products and use, based on questions from our online members. The meeting was conducted on the Zoom app, enabling attendee interaction. The entire video of the session is available on the Guild website under the Photos menu.

Bob reviewed why a good woodworker needs to understand wood, especially its surprising determination to take a particular shape over time, with the resultant warping, loose fasteners, and failing glue joints. A woodworker can minimize the deleterious effects of this by proper selection of wood, and secondarily by design and proper joinery. Bob started the discussion by reviewing the structure of a tree, from leaves, branches and trunk to the roots. Trees are scientifically broken into **softwoods**, older species with higher strength to weight ratios, and the typically deciduous **hardwoods** with are generally stronger than softwoods. He later explained the key differences in microscopic structure and the resultant impact on use.

In explaining how trees grow he related the key parts of a tree trunk or branch, including heartwood, sapwood, early and late wood, bark, the pith, and radial-



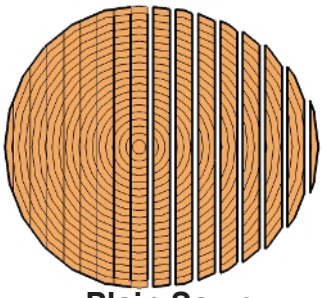
ly arranged rays. The sapwood carries the water and minerals to the tree components. The thin cambium layer under the bark is the only living part of the tree. Bob then dove deeper into the structural components such as cellulose and its molecular makeup of various polymer chains. Cellulose is the structural component of the primary cell walls of green plants, so its makeup is key to the characteristics of various wood species.

Bob then spoke to non-ideal growth conditions, which impacts the resultant wood. Specifically he discussed trees growing on a slope with trunks tilted accordingly. This creates "reaction wood," or stress induced asymmetrical wood growth. In hardwoods this results in **tension wood** on the high side of the stress, with widely spaced growth rings, stronger than normal, but wood which is difficult to surface smooth, e.g. it tends to remain fuzzy with sanding. In softwoods reaction wood results in **compression wood**, which forms on the low side of the stress with wide growth rings, but is typically weaker than normal wood and brittle, more likely to split. And both conditions result in wood with moisture coefficients of expansion 10 to 15 times that of non-reaction wood, resulting in greatly increased tendency to warp, etc. Thus stress-induced wood is not useful for most woodworking projects. This is also why wood from branches, which contain mainly reaction wood, is also not useful except for special projects such as spoons.

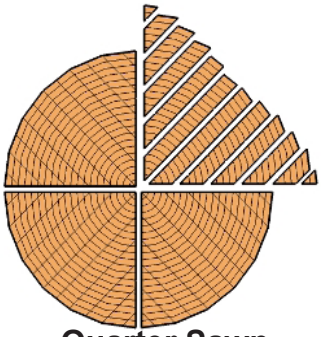
Bob then gave a lengthy discussion of polymers and how they form the basic structural elements of the wood in trees. A key one is cellulose, which makes up the primary cell wall of green plants, and whose properties depend on molecular chain length, or degree of polymerization. Cellulose molecules are quite strong and difficult to break down. Bob also discussed the polymer lignin. Lignin plays a crucial part in water transport and mechanical support. He discussed the various types of cells which form the critical structures for strength, and for carrying of water and nutrients between the various parts of a tree. He gave

a very interesting point that, while a total vacuum can raise water in a tube upwards only 32 feet (beyond that the water boils), with capillary action and other factors the wood vascular system in trees can raise water hundreds of feet. The subject of wood polymers and structure is too complex to discuss in this article. Bob gives an interesting and informative discussion in the video itself.

Bob next turned to realizing the amazing gift to mankind of trees by the creation of boards. How we do that impacts how those boards perform in our projects, as well as how efficiently the wood is extracted. He first describes ***Plain Sawing***, basically just longitudinally slicing up the whole trunk, as the simplest method with the least waste. This produces a variety of grain configurations in the resultant boards, including parts with "cathedral" patterns.

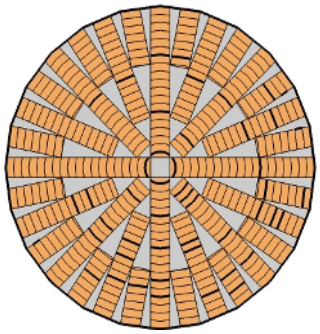


Plain Sawn



Quarter Sawn

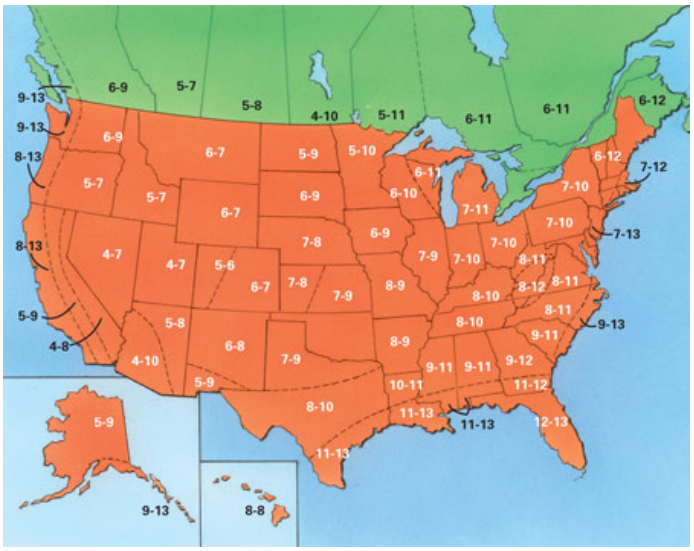
Then there is ***Quarter Sawing***, producing boards with attractive and consistent grain patterns, including greater visibility of any existing rays, and also good stability with moisture content changes. There are some differences as to "quarter sawing" approaches, the true approach requires actual quartering of the log, and then alternately flipping the quarter and sawing right angle sections of increasingly smaller width boards.



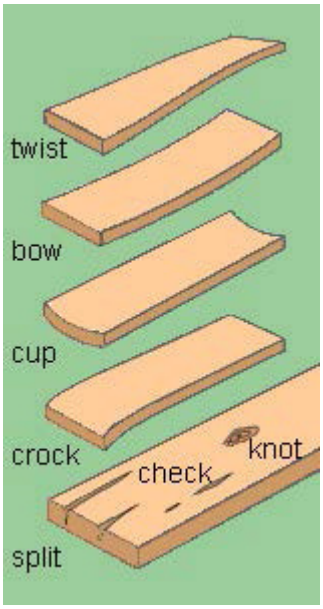
Rift Sawn

Finally there is ***Rift Sawing***, with boards all cut radially from the pith, producing boards with the most desirable grain direction and pattern. Because these latter approaches "waste" more wood, or are less efficient, both quarter sawn and rift sawn lumber are more expensive than plain sawn.

Moisture content, the percentage of total weight divided by weight of completely dried wood, was covered in depth. Newly cut green wood contains both free water, liquid within cell cavities, and bound water, absorbed within the cell walls and molecularly bound to the wood molecules. When drying wood, free water leaves first, then bound water. Shrinkage takes place only when the bound water is removed, and strength properties increase as bound water is removed. 15% moisture content is too wet for gluing, while typical air drying approaches 10%. Bob provided a great chart showing recommended average moisture content for interior use of wood products in various States, with Michigan showing 7-11%. (Generally I have found that the content of wood stored in my basement shop is generally about 8%, but a little lower in winter and higher in summer.) Bob recommends we all use a moisture meter to understand and control how we deal with moisture in our wood.



Wood movement is primarily driven by changes in moisture content, with practically no thermal expansion. What causes wood distortion is that as moisture content changes, wood changes least (hardly any) in the longitudinal direction, most in the tangential direction (along the growth rings), and less in the radial dimension (cross grain) than in the tangential direction. Bob provides a great drawing which shows why these differential moisture



behaviors try to straighten the curved growth rings for plain sawn wood, which results in warp twist, bow, cup or crook depending on the varying grain orientation in a particular board. On the other hand, for quarter sawn boards the growth rings run perpendicular to the long edges and so with moisture changes the board will shrink uniformly in thickness, and uniformly in width, resulting in little warping. This is why quarter or rift sawn wood is worth the extra cost resulting from the inefficiencies of production.

Bob referred to his previous program on glue technology, wherein he mentioned the risk of creating sunken glue lines when gluing up panels if one planes or scrapes the lines before the adjacent wood is completely back to ambient moisture. He made an observation that hide glue, being made of animal polymers, also changes dimension with moisture content in a manner similar to wood, and so has less tendency to create sunken joints.

One must account for expected wood motion with moisture changes in the design process, even for quarter sawn wood. Bob had images of horribly bulging wood flooring where this expansion was not adequately taken into account. Expected change in width equals %Moisture Change x Shrinkage Coefficient x face width. Plugging in the numbers for a 60 foot wide basketball court he showed expected change in width of 32 inches! One must also account for situations where adjacent parts have crossed grain, each with different moisture expansion coefficients.

Next Bob explored the nature of *grain* in wood, one word with many meanings. Grain can refer to a surface of a piece of wood (end, face, side), grain direction refers to the way most of the cells in the wood lie (parallel or perpendicular to the board axis), grain can refer to the direction a tool moves on a board (against the grain causes tools to "dig in"), grain can refer to the way the cells line up in a piece of wood, grain can refer to the texture or density of the wood (heart, sap, course, fine, etc.), and grain can refer to the "figure" of the wood (bird's eye, curly, crotch, etc.). He also described possible defects in grain, such as knots and other natural defects in growth or manufacturing.

About the final 1/3 of Bob's presentation dealt with the process of buying woods, with the methods for softwoods versus hardwoods considerably different. Softwoods are generally available at home big box stores or local lumber yards, and sold as boards as "dimension lumber" with dimensions less than that implied. I.e. a 2 X 4's actual dimensions are 1 ½ in X 3 ½ in. There is a lot of grading associated with softwoods, and Bob described the complexity of grading and the associated grade stamps, including various categories of process methods. I don't recall seeing stamps on all the softwood lumber at the box stores, perhaps because they may be stamped on the ends and I have not been particularly observant.

Buying hardwoods is quite a different matter, as they usually come from specialty suppliers such as: hardwood suppliers in large metropolitan areas, well-stocked lumber yards, woodworking stores, cabinet or millwork shops, other woodworkers, internet sources, and even some home centers (usually selling expensive surfaced boards). Much of the wood sold in these venues is rough sawn - straight from the sawmill. So one will need a jointer and a planer, or a

good set of planes, strong arms, and much energy, and lots of patience! In my own experience there are not standard sizes, but thicknesses generally come in 4/4 (pronounced "four quarter") which means the rough surfaced board is about 1 inch, which can be planed down certainly to ¾ inch, but maybe even 7/8 inch if not too cupped or warped. Then there are 6/4, 8/4, 12/4, or even 16/4, the latter being a rough board about four inches thick, which can be jointed and planed to maybe 3 ½ inches or a little more. The hardwood is usually priced by the board foot, the amount of wood contained in a piece 1" thick, 1 foot wide and 1 foot long, or 144 cubic inches (e.g. an 8/4 board 8 inches wide by 6 ft. long would be 2 X 8 X (6 X 12) ÷ 144 = 8 board feet).

There are grades of hardwood, and Bob provided several detailed charts as to the grading and what it means. In my experience these grades are not evident when buying locally, one typically just hunts through a stack of boards, considering size, grain direction, visible defects such as knots, edge "wanes" (knocked off edges or bark), and end "checking" (splits due to the drying process). But if one is ordering wood by phone or internet from a distant supplier it would be good to study Bob's hardwood buying charts to gain the terminology needed to converse about the product quality. In response to a member question, Bob explained that kiln drying, as opposed to air drying, results in some lignin "setting" which makes the wood stiffer and less suitable for steam bending.

There were several attendees who did not attend Bob's prior program on gluing with Titebond Glue products, so during Q&A there was much repeat discussion of glue and gluing. I will not review all of that discussion as it is mainly discussed in the November 2020 Newsletter on the website. He repeated the admonition not to use too much clamping pressure, as their testing shows this can weaken a joint. "Use just enough pressure to hold the parts firmly in place." And he added that their "***Titebond Extend***" is the best product for gluing up laminations, due to its extended clamping time. He also advised against "roughing up" surfaces to be glued with something like P80 sandpaper, which some novices think provides a better surface for adhesion. Bob says their data shows this creates damaged weakened fibers and that simply planing the wood creates the best bond surface.

Bob offered that the book ***Encyclopedia of Wood***, is an excellent resource of information. This is a U.S. Department of Agriculture book available on Amazon and other book sellers. Other good books are ***Understanding Wood: A Craftsman's Guide to Wood Technology***, and ***Identifying Wood: Accurate Results with Simple Tools***, both by R. Bruce Hoadley, also available on Amazon and elsewhere. (It is sad to note that Dr. Hoadley, Professor Emeritus of Wood Science and Technology at the University of Massachusetts, passed away suddenly on Oct 15, 2019 at age 86. His books are beautiful and fabulous sources of wood information.)

We thank Ragnar and Jerry for arranging this valuable presentation and also thank Bob Behnke for sharing his incredible expertise and valuable time.

NEW MWG ADVERTISER

Saw & Specialty Corporation
"EXCLUSIVELY SAWS SINCE 1919"
Saw Service Centers

We welcome a new advertiser to the pages of the MWG Newsletter.

Saw and Specialty Corporation is located in Romulus, Mi. and has a wide variety of goods and services which we, as woodworkers, can readily use.

Company Background:
Saw and Specialty Corporation was incorporate in 1919 to service the vast lumber industry of Michigan. They would "saw file" or handwork the carbon steel saws of the day. The business concentrated on both manual saws (hand saws) as well as 3-6 ft. diameter blades used in the lumber mills. Their original location was on the site of the Ren Cen in downtown Detroit.

Over the years, Saw and Specialty Corporation's business has evolved from sharpening manual wood blades and chain saw blades to utilizing fully automated CNC grinding machines. They are an authorized Freud sharpening facility. The corporation supports the RV and furniture industry on the west side of the state and Indiana as well as the metal industry and the home woodworker.

They now employ 12 people and are woman owned. The company has seen three ownership changes from their original 1919 incorporation. The latest being when Sue and Darien DeRunco sold to the Lorenze family patriarch who bought the business as "Something nice for the kids to do".

Some of the various materials for which they typically sharpen blades include all types of wood (dimensional stock, plywood, particle board...), Steel, Plastic, and Aluminum. Cutting aluminum with a circular blade is perfect application for Carbide tips. Steel cutting blades feature a short tooth approximately .125" tall.

Woodworking Services:
Saw and Specialty Corporation is truly a cost effective source to have all your woodworking blades sharpened. When you bring them a circular blade, they will:
1. Clean the blade in an ultrasonic bath which removes the wood pitch.
2. Rotary wire brush the blade to remove any ultrasonic bath residue as well as support the inspection step.
3. Fully inspect the blade for broken or chipped teeth as well as any other anomaly. The blade will then be marked identify subsequent needed operations.
4. As needed, missing Carbide teeth are braised to the blade.
5. The blade is then etch identified with the owner's name, blade diameter, tooth number, and tooth geometry (ABT, Flat Top, …)
6. Blades are then stationed for automatic loading into the CNC grinding machine which imparts the specific tooth geometry. The typical amount of material removed is approximately 0.05 mm (.002")
7. Finish sharpened blades are finally coated with a plastic tube to protect them during shipping.

With each shipment, as a service to their Commercial customers, Saw and Specialty Corporation supplies a full history for each blade. The history includes the blade size, amount of material removed from its teeth, and the number of times it has been sharpened. This information is used to track the total life of each blade.

Available Products:
Saw and Specialty Corporation has a wide selection of blades to support their customers. For us woodworkers, they have a wall of Freud and Trulane (Japanese made) saw blades. The company also has on site or quick, cost effective access to shaper cutters, carbon inserts, Diamond cutting blades, plainer blades, straight knives, band saw blades, router bits and indexable carbon inserts.

Contact Information:
Call / visit Neil or Odette. Their contact information is shown on their business card below.

MWG RESOURCES

In previous newsletters, a call went out to provide the Editor with your favorite source for various woodworking related materials and resources. These would be firms and people that we, as woodworker's have found to be exceptional in selection, service, and pricing. The request was intended to compile a list of companies and people who we, the members of Michigan Woodworker's Guild, have found to be remarkably helpful over the years.

Our thanks go out to **Tom Duke** who has been extremely supportive of this endeavor. He has provided us with the names of over 100 firms or people, many of whom he has worked with in the past. Tom continues to build this listing for which we thank him tremendously. The Website committee is actively working to develop a subdirectory on the MWG website into which we can store Tom's as well as everyone's favorite sources.
To give you an idea of the nature of this list, below you should find a sample of Tom's findings:

Category: **Lumber**

Johnston Workbench/Lumber Charlotte Mi
http://www.theworkbench.com/
Armstrong Millworks Hartland
http://www.armstrongmillworks.com/
Detroit -General Hardwood Co.
https://www.generalhardwood.com/
Cook Woods
https://www.cookwoods.com/

As the website matures, we will be adding more information about these sources for all our members to access.

Once again, we are requesting that everyone send their favorite sources, both local and nationally, to the Newsletter Editor at: d2mccagg@provide.net so that we can build a robust listing.

MWG MEMBER-SHIP

A hearty thank you is extended to everyone who responded to the initial dues email request from the Membership Chair for the renewal of your Michigan Woodworker's Guild membership for 2021.

A follow-up letter requesting 2021 Membership Dues payment was sent earlier this month to the remaining memberships who, for one reason or another, were-unable to renew. Note: if you received a letter from the Guild after paying your dues earlier, feel free to make a second payment aka **"Chicago Style"** (Early and Often)

Renewal dues for 2021 are $25.00 which has remained unchanged for a number of years and can be accomplished either by mailing a check to the Membership Chair or through our website dropdown menu under "Membership - Payment/Renewals".

Many early payers included an overpayment. These donations are earmarked for the Michigan Woodworker's Guild's Toy Program for Children's Hospital. As of the writing of this newsletter, we have achieved approximately 60.6217% of our 2020 members who have renewed their 2021 dues.

Again, thank you to those who have renewed; to those who have not:

WHAT'S THE HOLDUP?

CHILDREN'S HOSPITAL MWG PROGRAM UPDATE

From Ron, Ken, and Dan:

Dan Holowicki received the Thank You letter shown below from Children's Hospital of Michigan and would like to thank all those who made toys or memory boxes for the hospital.

Children's Hospital of Michigan Foundation
A Children's Foundation Initiative

Greetings,

Thank you for your recent donation to the Children's Hospital of Michigan Foundation and the Snowpile program, it is truly appreciated! It is members of the community like you that help patients and families feel less nervous while seeking necessary pediatric care. Your thoughtfulness is sure to bring smiles to the faces of many during a special holiday time of year and beyond.

Donations help to support patients and families during this special event and throughout the year. Items are used in many different areas of Children's hospital including the emergency department, the activity centers, on the inpatient units to support admitted patients and their families, and the outpatient clinics where children are receiving various treatments and may have to sit for a few hours at a time. Donated items can provide patients with comfort and are often a welcome diversion to help reduce anxiety while waiting for the doctor, a medical procedure or test results.

Thank you again for your generous donation to the Children's Hospital of Michigan Foundation. We greatly appreciate your time and efforts!

With many thanks,

Children's Hospital of Michigan Foundation and
on behalf of the patients, families and staff at the Children's Hospital of Michigan

PROJECT REVIEW

By MWG Members

From the editor:

Mill Birdfeeder
Project Report 1-26-21

A number of years ago, maybe 30, the wife bought a birdfeeder at one of the local craft fairs. Unfortunately, the years have not been good to the feeder as the pine from which it was made has significantly rotted.

Being a dutiful husband when she told me to rebuild it, I put it on the "someday" list of "Honey-Do" projects. (Those of you who are married, tell me you don't have a similar list!) "Someday" finally came this past summer and the Mill Birdfeeder rebuild got my attention.

My first step was to design the birdfeeder in CAD. That way, I knew there would be fewer miss-steps in the construction process and less scrap material for the burn pit. With 3D CAD completed, a detailed drawing would be only a few additional steps.

Next step: **acquire material**
It just so happened that some cedar trim which was removed from our house earlier this summer was calling my name. Cedar shingles were then retrieved from the shed where for decades they had been stored awaiting a "Future Project".

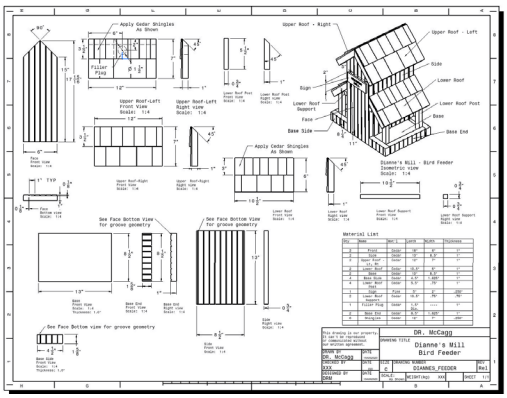
After the recycled materials were compiled, the build process went fairly quickly. A few rip saw and cross saw cuts later; the various individual parts were completed.

Assembly was also straight forward with the use of a pin nail gun. (No, during the build, there was no frantic visit to the local Urgent Care with a nail stuck in an unnamed body part.)

The final project is shown to the side. It was embellished with a plaque made on the CNC router.

Luckily I spelled the wife's name correctly. The wife seemed happy that I spelled her name right and then added 10 more projects to the "Honey-Do" list that will get done "Someday".

A drawing of this birdfeeder can be found on our website at: https://michiganwoodworkersguild.com/wp-content/uploads/designs/Diannes_Mill_Bird_Feeder_8-15-20.pdf



From Dave McCagg:

Dinasour For Sidney

As we put more birthday candles on the cake, it seems that the next generation of offspring is multiplying as fast as rabbits. With each new addition to the family, we obviously want to help the little ones as much as possible. As woodworkers, we can do this with many projects custom made as age appropriate gifts. The best part of these gifts is that, after they are completed and provided to the little one, we don't have to store them.

One of our nieces has now reproduced a second time and provided our family with another young one to receive our woodworking projects. This latest family addition is now approximately two (2) years old and constantly running around the parent's house.

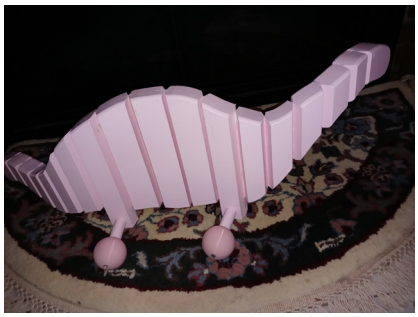
To help entertain the new addition as well as provide unending noisy turmoil for the parents, it was decided to make a Dinosaur pull toy for Sidney. It is shown in the photo below.

To construct the Dinosaur, I found a couple of #2 pine boards at the local big box store. They were then rip cut into various widths with a 150 angle on each side, after which they were cut on the chop saw to the required lengths. A piece of canvas was then sandwiched between the individual pieces to form an overall blank. Note: I used every hand clamp in my possession to hold the parts together while gluing.

After the assembly was completely dry, the Dinosaur outline was cut out and a corner radius was routed on the periphery. Sample interior wall paint was then applied to the machined Dinosaur. I found that for some reason, Pink requires only two (2) coats while Green needs four (4).

The Dinosaur's sneakers were made from PLA plastic material on the 3D printer. It took about two (2) hours to build each sneaker.

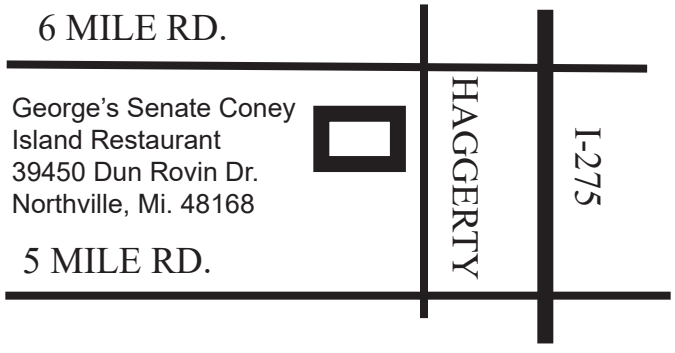
Again, the final pull toy is shown below. Hopefully the grand niece will get months of joy with it while the parents think of us every time the little one goes screaming around their house.



For membership information contact

Dave McCagg at: d2mccagg@provide.net

For name tags, sign up with Ed Stuckey at a regular meeting.



MAP TO GEORGE SENATE RESTAURANT
HAGGERTY BETWEEN 5 & 6 MILE

Executive Board Members

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Will Wilson.....Vice President.....248-207-8883
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Don Hess.....Secretary.....734-207-8427
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Ron Ross.....Officer at Large.....734-812-5531
Rich Herbert.....Officer at Large.....248-628-0644
Ragnar Bergethon....Officer at Large.....248-608-8436
Bill Rigstad.....Officer at Large.....734-459-3374
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Dave McCagg.....Newsletter Editor.....734-482-6764
Dave McCagg.....Membership.....734-482-6764
Larry Last.....Programs.....248-207-9386
Bob Mills.....Mentoring.....248-535-6718
Ragnar Bergethon....Web Site.....248-608-8436
Fred Ball.....Web Site Calendar.....248-681-3108
Ron Ross.....Toy Program.....734-812-5531