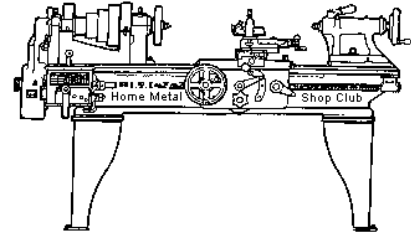




October 2021
Newsletter

Volume 26 - Number 10



<http://www.homemetalshopclub.org/>

The Home Metal Shop Club has brought together metal workers from all over the Southeast Texas area since its founding by John Korman in 1996.

Our members' interests include Model Engineering, Casting, Blacksmithing, Gunsmithing, Sheet Metal Fabrication, Robotics, CNC, Welding, Metal Art, and others. Members enjoy getting together and talking about their craft and shops. Shops range from full machine shops to those limited to a bench vise and hacksaw.

If you like to make things, run metal working machines, or just talk about tools, this is your place. Meetings generally consist of **general announcements**, an **extended presentation** with Q&A, a **safety moment**, **show and tell** where attendees share their work and experiences, and **problems and solutions** where attendees can get answers to their questions or describe how they approached a problem. The meeting ends with **free discussion** and a **novice group** activity, where metal working techniques are demonstrated on a small lathe, grinders, and other metal shop equipment.

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|---|---------------------------------------|----------------------------------|---------------------------------|----------------------------------|
| President <i>Vance Burns</i> | Vice President <i>Ray Thompson</i> | Secretary <i>Joe Sybille</i> | Treasurer <i>Gary Toll</i> | Librarian <i>Ray Thompson</i> |
| Webmaster/Editor <i>Dick Kostelnicek</i> | Photographer <i>Jan Rowland</i> | CNC SIG <i>Martin Kennedy</i> | Casting SIG <i>Tom Moore</i> | Novice SIG <i>John Cooper</i> |

This newsletter is available as an electronic subscription from the front page of our [website](#). We currently have over 1027 subscribers located all over the world.

About the Upcoming 13 November 2021 Meeting

The next general meeting will be held on 13 November 2021 at 1:00 P. M. on-line at Zoom.us and in person at [TxRxLabs, 6501 Navigation Street, Houston, Texas 77011](#). Richard Pichler will give a presentation on microscopes. The Zoom meeting ID = 850 0674 7911 and passcode = 401006.

General Announcements

[Videos of recent meetings](#) can be viewed on the HMSC website.

The HMSC has a large library of metal shop related books and videos available for members to check out at each meeting. These books can be quite costly and are not usually available at local public libraries. Access to the library is one of the many benefits of club membership. The club has funds to purchase new books for the library. If you have suggestions, contact the [Librarian Ray Thompson](#).

We need more articles for the monthly newsletter! If you would like to write an article, or would like to discuss writing an article, please contact the [Webmaster Dick Kostelnicek](#). Think about your last project. Was it a success, with perhaps a few 'uh ohs' along the way? If so, others would like to read about it. And, as a reward for providing an article, you'll receive a free year's membership the next renewal cycle!

Ideas for programs at our monthly meeting are always welcomed. If you have an idea for a meeting topic, or if you know someone who could make a presentation, please contact [Vice-President Ray Thompson](#).

Members are requested to submit to the club secretary the name, address, telephone number, and website address, if any, of any metal or other material stock supplier with whom the member has had any favorable dealings. A listing of the suppliers will appear on the homepage of the club website. Suppliers will be added from time to time as appropriate.

Recap of the 09 October 2021 General Meeting

By Joe Sybille



Six participants attended the in-person meeting at TxRxLabs. They live streamed the meeting to seven participants attending virtually. There was one visitor, Wilfred Nijs, of Brussels, Belgium. President Vance Burns led the meeting (right photo).



Presentation

There was no formal presentation today.

Safety Moment

Two safety videos were shown. The first emphasized the importance of wearing appropriate attire when operating a lathe. Shown in the video was a lathe operator wearing a loose fitting tee-shirt. The operator leaned over the workpiece and the rotating spindle grabbed the tee-shirt and ripped it from the torso of the operator. Fortunately for the operator, the tee-shirt tore and spared the operator injury.

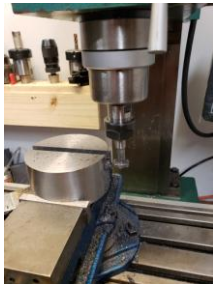
A second video depicted a worker reaching into a printing press to clear an obstruction. Unfortunately, the printing press, still in operation, caused the worker to lose his balance and to fall headlong into the press resulting in severe injury.

Show and Tell

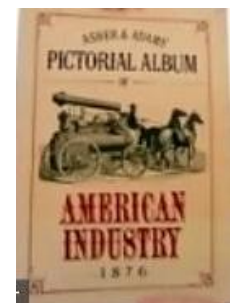
John Cooper showed a new combination square he recently acquired. See photo at right.



Richard Douglas exhibited the jaws for an off-center lathe chuck he is making. The design is based on one by [Stefan Gotteswinter](#). See photos below.



Joe Sybille showed a book donated to the club library by member *Brian Alley*. See photo at right.



Problems and Solutions

A member requested suggestions on how to improve the efficiency of a thread milling project he has pending. He has over 350 parts in which to make 1-1/2" internal pipe thread. A few suggestions were offered.



Another member shared his solution to minimize the excessive play in the worktable of his bench mill. He modified the X-nut to expand the thread instead of to shrink it. See photo at left.

Articles

Attempts to straighten diamond rock saw blades

by John Cooper

For a long time, Neal, the shop foreman of the Houston Gem and Mineral Society (HGMS), has had an issue with the rock cutting blades being bent by improper usage. These blades go from 10" up to 24" in diameter and the larger ones have a 1" arbor hole. The saw blade run in a special oil bath that lubricates the blade, cools it, and removes the rock dust which gathers in the bottom of the saw chamber. Because this operation is so messy all the larger rock saws are enclosed with a window in the top to see what is going on, sort of, looking through the spray of dirty oil.

The saw blades are generally belt driven and fixed. The rock is then clamped onto a carriage which is driven by either a screw or a hydraulic pump. Since rocks are almost always odd shaped it is often difficult to clamp them properly. When the rocks are not clamped properly the force of the cutting action causes the rock to twist in the clamp and jam the saw blade. This action causes the saw blades to look like cymbals – dome shaped near the middle.

Large diamond saw blades are not cheap, so Neal was looking for a way to salvage them. His first thought was to cut out the dome and replace it with a center out of a worn-out blade that was still straight. He was going to use the shop's jewelry TIG machine to weld it in place. The downside I found was trying to true the cutout center to that it would be easier to align (it would fit on the side of the blade, not fill the hole in the center). What Neal had given me to work with were some smaller much thinner blades, and they would snag when I machined them in spite of using a backing.

This project has no deadline so while I was trying to figure out how to make this work I picked up a flammables cabinet at an auction to store my cans of spray paint, brake cleaner, paint thinner, etc. When I loaded the cabinet in my truck I discovered that the adjustable feet on the cabinet were so badly damaged I was going to have to replace them. The adjustable feet screwed into 3/8"-16 rivnuts which were mounted on short legs under the cabinet. The rivnuts were also damaged, so I was going to replace them, but first I had to straighten out the legs.

In the process of trying to get the holes flat enough to install the new rivnuts, I had an idea. I could flatten the metal by threading a 5/16" thick piece of steel for the back side. Using another piece of steel on the front side, I could clamp the two pieces of steel together by tightening the bolt. It worked so well I tried it on some holes in my Lista cabinet which it also straightened. That gave me the idea that it might also work with the saw blades.

I discovered that the saw blades I was given were not the 18" I thought but 14" which would fit in my hydraulic shop press which has a 17" opening. So I got some heavy steel plate, sandwiched the cut out dome-shaped piece in between them and pressed as hard as I could with the 12 ton jack. It flattened it out but not completely. The main thing I was concerned about was the arbor hole which seemed to remain undistorted. The issue was the larger blades which would not fit in the press, so I thought I would use a bolt like I did for the holes in the cabinet.

Drilling holes in the steel big enough to use a 1" bolt in was not an issue, but the question in my mind was: how much clamping force could I get with a 1" bolt? Checking the web I found a table of clamping force verses torque by Sabre Industrial Supplies. It lists the dry and lubricated torque values for grade 2, grade 5, grade 7, and grade 8 bolts all the way from 4-40 to 1-1/2"-12. Although it does not list the 1"-14 size bolt, I suspect the 1"-12 would be close enough. If I were able to torque the bolt to 740 foot-pounds of torque, I would generate 59,000 pounds of clamping force. Assuming I would get the full 12 tons (24,000 pounds of force) of pressure from my hydraulic press on the saw blade, I should be able to exceed that amount even if I can't torque the bolt all the way to 740 foot-pounds.

Neal looked at the blade and decided it was not yet straight enough, so we are looking at ways to make it flatter. One thought is to put a wooden ring under it and something smaller on top and see if over bending it will help.

Here are some pictures.



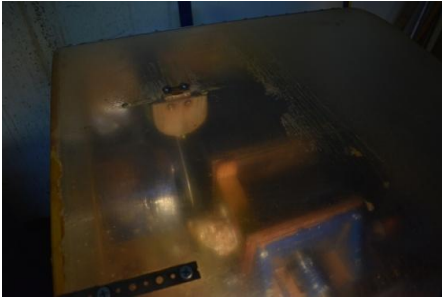
At the left is the 24 inch hydraulic feed saw. Its advantage is it puts a constant pressure on the blade and therefore cuts much faster.



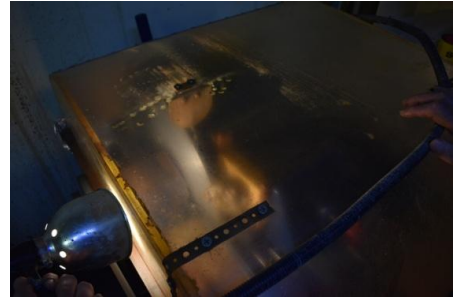
At the right is an 18 inch belt and gear driven saw and the only one with a full plexiglass cover. All the others just have a window.



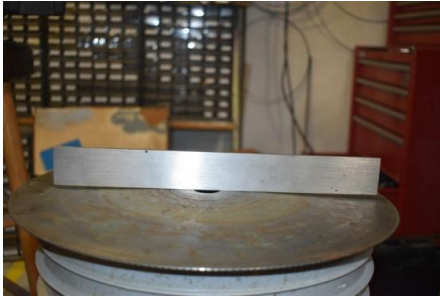
The left picture shows a way to hold a rock that is too small to clamp well in the rock vise. The white stuff is Elmer's Glue which works because the saws use a special oil, not water. Notice the wedge to make sure the 2 x 4 doesn't move.



These two pictures are of the rock being cut. Notice how hard it is to see what is happening. The lamp was held by Neal to get a better picture. The flap you see above the blade is to deflect the oil spray.



Shown at the left is the smaller blade after I put it in the press. The dome shape was much worse before.



At the right is a damaged 20 inch blade. It looks somewhat like a cymbal.

