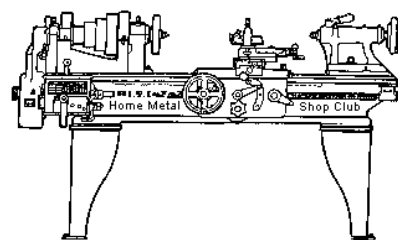




May 2013  
Newsletter

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<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.

President <i>Vance Burns</i>	Vice President <i>John Hoff</i>	Secretary <i>Martin Kennedy</i>	Treasurer <i>Emmett Carstens</i>	Librarian <i>Dan Harper</i>
Webmaster/Editor <i>Dick Kostelnicek</i>	Photographer <i>Jan Rowland</i>	CNC SIG <i>Dennis Cranston</i>	Casting SIG <i>Tom Moore</i>	Novice SIG <i>Rich Pichler</i>

This newsletter is available as an electronic subscription from the front page of our [website](#). We currently have over 220 subscribers located all over the world.

## About the Upcoming June 8 Meeting

General meetings are usually held on the second Saturday of each month at 12:00 noon. The June 8 meeting will be held at the new location, [Jungman Library](#), located at the intersection of Westheimer Road and Augusta Drive (near the Galleria) in Houston, TX.

Visit our [website](#) for up-to-the-minute details, date, location, and for the main presentation topic.

## 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. The library is maintained and curated by the club librarian, *Dan Harper*. These books can be quite expensive, and are not usually available at local public libraries. Access to the library is one of the many benefits of club membership.

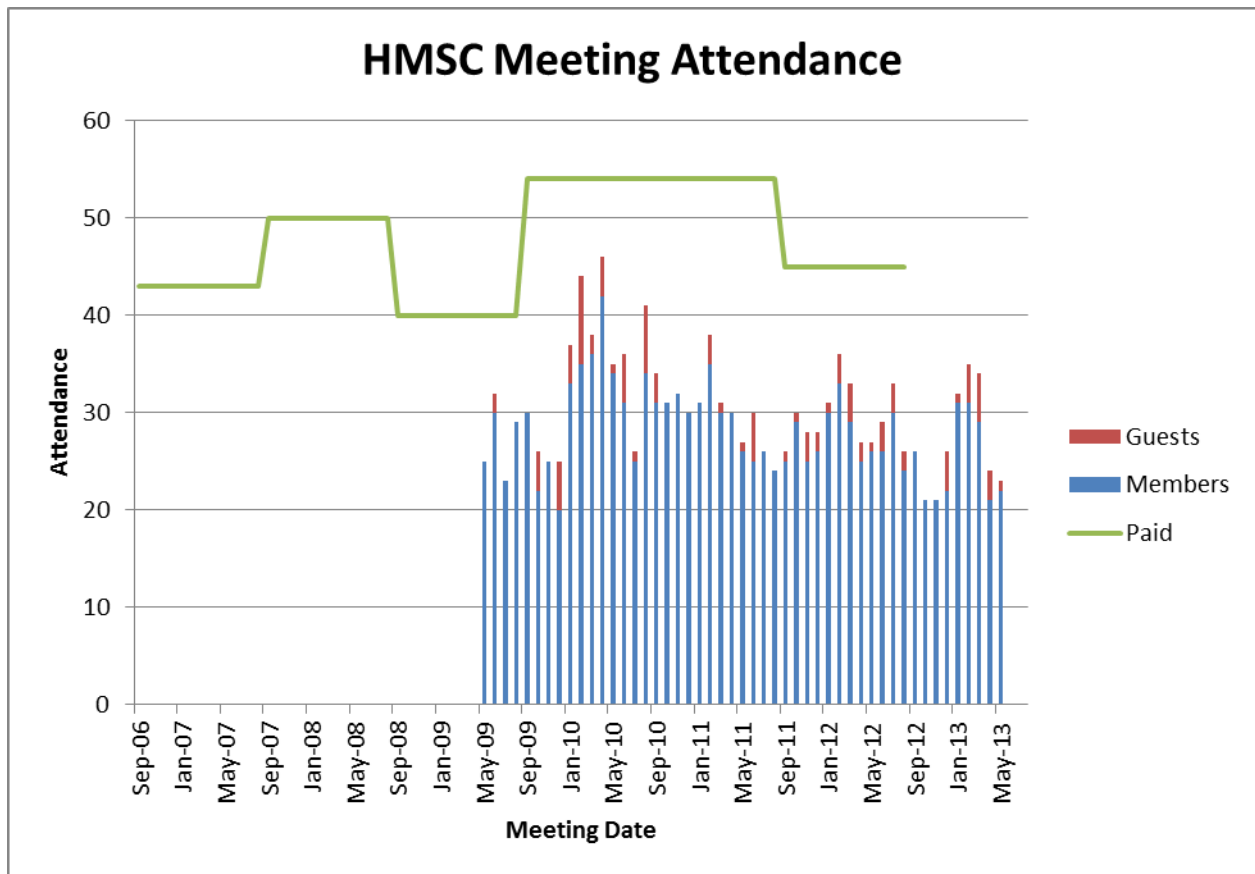
We need more articles for the monthly newsletter! If you would like to write an article, or would like to discuss writing an article, please contact the Webmaster, [Dick Kostelnicek](#). In the September HMSC board meeting, the board elected to waive membership fees during the next membership renewal cycle for those providing newsletter articles.

Ideas for programs at our monthly meeting are always welcome. If you have an idea for a meeting topic, or if you know someone who could make a presentation, please contact [John Hoff](#).

## Recap of the May 11 General Meeting

By Martin Kennedy, with photos by Jan Rowland

Twenty-two members and one guest – Barry Basile, attended the 12:00 noon meeting at Ring Library, Houston, TX. The meeting location changed from Jungman Library at the last minute due to a lost reservation. President *Vance Burns* led the meeting.



This previous graph shows meeting attendance since May, 2009. No attendance data is available before that date. Recent attendance reflects the summer cycle of lower attendance. Paid membership is shown in green as of the end of the September to August membership period. Club treasurer *Emmett Carstens* reports that the club has 36 paid members so far for the current period.

## Safety Moment

*Vance Burns* showed a [humorous video](#) on safety by the comedian Steve Hughes

*Gary Toll* used nitrile gloves while using MEK. The chemical dissolved the gloves.

*Mike Winkler* was welding cast aluminum for practice. When he stopped welding, the piece kept burning. It turned out it was magnesium, and not aluminum. He knocked it off the table, and it went all over the garage floor. Fortunately, nothing else was ignited. There is an easy test for magnesium. [Vinegar will bubble](#) with magnesium, but not with aluminum.

*Dick Kostelnicek* recommended that you don't have a woodworking shop and a metalworking shop in the same room. Sawdust collects in places that are hard to clean, such as under cabinets, and sparks or hot metal from metalworking can cause a fire in the shop. Worse, the onset of the fire can be delayed for hours by smouldering sawdust before it starts in earnest.

## Presentation

The presentation this month was a video called "[Secrets of the Viking Sword](#)". The video recounted the successful efforts of a modern-day swordsmith to reverse engineer the legendary +ULFBERH+T sword and craft one using the original techniques, starting with making crucible steel.

The video was donated to the club library by the late *Ed Gladkowski*.

## Show and Tell

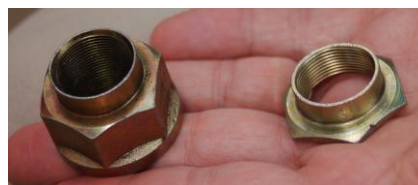
*Joe Williams* picked up a used face mill at a scrap yard. One of the screws holding the insert was broken off, and he heated the screw and was able to remove it. He made a shell mill adapter so that he could use the mill with his equipment.



*Norm Berls* bought a book called [Gears and Gear Cutting \(Workshop Practice Series 17\)](#) by Ivan Law. It includes detail on how to make gear cutters. He likes the book and plans to purchase others. The book is one of 40+ books in the series.

*Vance Burns* was installing recessed ceiling lights at his home. He needed a way to see behind the ceiling to fish the electrical wire through. He bought a waterproof endoscope/inspection camera with a light on the end of a long USB cord, and attached it to a fish tape. This made it really easy to find the hole. The cameras only cost about \$15-25 on [eBay](#).

*Lee Morin* was replacing a lead screw with a ball screw. He bought a nice German one that had a metric thread. He had trouble finding a metric nut, and eventually found some inexpensive ones on eBay. They were too long. He used a [Tormach face mill](#) to make the cut.



*Tom Moore* brought in catalog #43 from Machinery Sales and Supply in Dallas Texas. The catalog was given to him by Joe Scott, and was published sometime in the 1940's. In the catalog, he found a grinder identical to one he got when he was young in 1946. He brought it in and said that it still works. Tom brought in some unusual taps. They were larger numbered taps that are no longer in common use. He had a 34-24, a 24-16, a 20-18, a 16-16 and a 9-32.

*Burnell Curtis* was interested in a metal cutting carbide insert cut off saw that his friend had. The saw could accurately cut off as little as 1/16", and made a nice smooth cut. He thought he might be able to retrofit his chop saw with the carbide blade. After some research, he found out that his saw ran at 4,000 RPM, while the more expensive metal cutting saw ran at only 1,600 RPM, so he could not retrofit.

## Problems and Solutions / Ask the Blacksmith

A member asked about the proper way to do pipe thread milling with a thread form mill. He wanted to know if you should cut the taper from the bottom up, or from the top down. No one knew the answer.

## Reprint from the Past

Contributed By Shannon DeWolfe

I recently stumbled onto a very interesting web site: <http://cdl.library.cornell.edu/moa>. There are two dozen mid-nineteenth century magazines archived there. One in particular that caught my attention is The Manufacturer and Builder. This article is from page 3, Volume One - Issue One, January, 1869.

## Learned Blacksmiths

Who has not heard of the learned blacksmith, ELIHU BURRITT? His learning is, however, merely literary and outside of his profession. In his youth little was known of that which at present constitutes scientific, useful, and practical knowledge, and therefore it is not to be wondered at that a man in whom the natural thirst for information, which we observe in all children, has not been suppressed by defective education and bad company, satisfied this thirst by pure literary pursuits. At the present day it is different. Scores of facts in natural science are known, studied, and applied; more interesting, we think, than all the literary productions of Greece and Rome, together with those of some modern nations thrown in; and a blacksmith nowadays who ceases to extend the range of his knowledge need not go entirely outside of his occupation to satisfy his praiseworthy desires.

An illustration of this was lately given in England, by Mr. SAXBY, who applied his knowledge of the properties of magnets, the compass-needle, and the mysterious magnetic properties of the earth to the detection of hidden defect in iron castings, wrought-iron shafts, and other heavy products of the iron industry.

In order to understand this method, it must first be known that, when a small magnetic steel bar is so supported or suspended by its centre of gravity that, besides being able to turn in a horizontal plane, it can also turn in sectional planes, it will not only point northward, but, at the same time, downward with an inclination of some seventy degrees. This downward inclination is called the dip of the needle; the end directed downward is called the north pole, the upper end the south pole. Secondly, it must be known that if an elongated piece of iron is placed in the described position or nearly so, it will become magnetic by the influence of the earth's magnetism, and a common compass-needle will indicate this plainly. The lower portion will obtain a so-called polarity, similar to the north pole of the compass-needle; the upper end one similar to the south pole. If, however, this iron is placed in a horizontal position, pointing nearly east and west, but exactly perpendicular to the direction of this dipping-needle, it must lose this so-called magnetic polarity, especially if it is also thoroughly jarred by hammering. If, now, a compass-needle is passed along this bar, it must show an equal attraction for the needle along the its whole length. A flaw or bad place anywhere will be detected by an irregularity in the direction of the needle as it is passed over the spot. The inventor of this method was put to a severe test in England. In a heavy shaft of iron a large hole was drilled, filled up with an inferior iron, then plugged up, and turned off so smoothly that the place where this had been done could not be detected. Mr. SAXBY found the place with his compass-needle, and stated that at this spot the strength of the shaft was not reliable. In every other case where he indicated hidden flaws in iron his statement was verified by subsequent examination.

This is only one out of thousands of instances which might be brought forward indicating how the study of modern sciences possesses not only a peculiar charm unknown to those devoting themselves to mere literary pursuits, but also bears practical fruits, beneficial not only to the possessor, but also to human society in general, and showing themselves in the saving of life, the promotion of health, the increase of wealth and comfort, and so forth.

## Articles

### Making a Hex Hole

By *Dick Kostelnicek*



I had to replace a broken knob from a heat selector switch on a wire feed welding machine. The switch shaft was hexagonal in shape and about 11/32-inch across the flats. I made a replacement knob from brass and swaged the hex hole in its center.

The swage was fashioned from a 3/8-inch dogleg Allen hex key. I used a friction chop saw to remove a straight section from the key, about 1.5 inches in length (left photo). The thickness of the hex swage was reduced from 3/8 to 11/32 on a surface grinder. The 11/32-inch

round pilot was ground by a lathe tool post grinder. A 20-ton Hydraulic press was used to push the piloted hex swage into the knob's 11/32 hole (above photo). Finally, a pin punch was used to press the swage out from the knob.

Now, swaging is a common process in HVAC to expand copper tubing so that one section slips over another for brazing. Also, the ends of exhaust pipes on IC engines are expanded by swaging. This process is not broaching, since no cutting teeth are involved nor are chips produced. The swage just pushed the brass metal into a hex shape as if it were *Jell-O*®.

## Drill Press Toggle Clamp

By Dick Kostelnicek



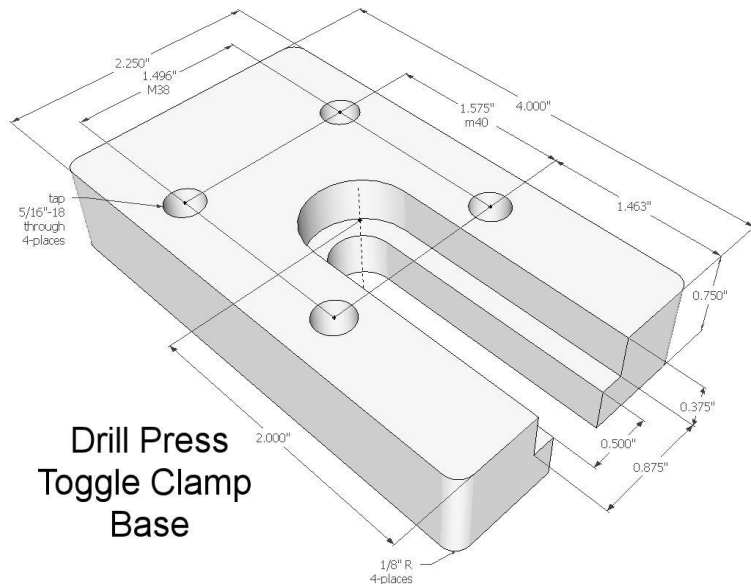
A horizontal toggle clamp makes for a handy method of holding down sheet material being drilled in a drill press. The alternative is to hold the sheet by hand or pliers, risk having the work get caught by the drill bit as it breaks through, and having it rotate and slice into your hand.

The toggle clamp, shown at the left, attaches atop a shop made metal base that is held down to my drill press table by a ½-inch SHCS (Socket Head Cap Screw) and a T-nut (right photo). The SHCS is not fully tightened so that the clamp can slide



along the table's T-slot and in the base's slot as the clamp is positioned.

An elastomer pad comes attached to a threaded stud that slides along the clamp's extended arm. This arrangement also provides for a 1-inch height adjustment of the pad. Note the use of hardboard to back up the sheet being drilled.



I find that spur bits work well in thin steel while Forstner bits readily cut through aluminum and plastic sheets.



Specifications for the toggle clamp H-45105UB pictured above are [found at this web site](#).

I bought this clamp years ago, but a [similar one with, slightly different mounting holes](#), can be purchased from Enco Tool Co.