

October 2009

# HIT & MISS

Journal of the Western Antique Power Associates

## MACHINE SHOP CLINIC AT DON HUNTER'S

A machinist needs to be half mathematician, half physicist, and half artist. Many have the basic skills to turn a lump of metal into a small part, but it takes many years of practice, many failures, many successes, and many barrels of swarf to hone one's skills to a degree of proficiency required to turn those lumps of metal into complex and precision machines. An apprentice can have the same tools as the master, the same books, the same pad and pencil, but a simple operation might take five times as long to complete, and the results may not be as good. The expert has a particular insight, of seeing, like a chess master can see a dozen moves distant.

So it was with enthusiasm that a group of WAPA folks took availed themselves of the opportunity to visit Don Hunter at his shop to learn some of his favorite machine shop tips. It has been rumored that Don knows a thing or two about machine tools.

The first thing that becomes evident, is that Don works under the same laws of physics as the rest of us. His projects

offer the same problems, the same challenges, and his machines are capable of the same operations as all of ours. The difference is in seeing an elegant and efficient way of using the machines to solve an array of problems.



Don demonstrates a technique for machining large track rollers

The first step is to make sure your machines are set up properly. Don walked us through the process of trammig the head on a milling machine. A couple points that I thought were particularly clever were that his indicator was held by a bent metal rod, which was of a length to maximize the sweep, and thus the accuracy. Also, he indicated to a 1-2-3 block on the table, rather than having to drum up a large, precision ground plate.

A tangential subject that arose from this lesson was the judicious use of a stone on the table to take down any burrs that may arise out of normal use. I've done this in the past, but was not at ease with the process, so it's consoling to learn that even the experts find it necessary on occasion.

A point that Don strongly stated was that it is nearly always necessary to use two clamps on any work. The



Straightening in a press requires proper back-up

reason becomes obvious when one considers that it is easy for work to rotate around the point of a single clamp. Sometimes more clamps are needed, and sometimes, despite all efforts, it is hard to keep a piece from slipping. I've recently

explained to me, it wasn't until later that day that I figured out what the problem was. That's one of those things that is so easily overlooked by a beginner, but the expert instinctively sees. But once the beginner works it out in his own head, he'll never

At this time, the tracks are off and Don is in the process of refurbishing them. Of particular interest is the method used by Best to pivot the individual segments of the track. One would automatically think of round bushings and pins for such an application. Unfortunately, Holt thought of that first and patented the idea. Best came up with a design where the cross section of the pin is semicircular, and the hole into which it fits contains a triangular fulcrum. The effect is that all the pressure is between the point of the fulcrum and the flat surface of the semicircle. The intent is that the area of contact would be very small, decreasing power loss as a result of friction. An added effect is that the pressure is exerted over a very small area, which would increase the rate of wear over the Holt design.

One factor that makes this project very special is that no one has worked on this type of track system in modern times. It is unknown how Best originally manufactured the components. Traditional machining techniques are not practical because of the shape of the holes. Don



Examining some unique track pivot pin assemblies

experienced such a problem myself, with a toolpost that insisted on rotating. A possible solution to such a problem is placing a single sheet of paper between the metal surfaces. Paper-on-metal can provide much more friction than metal-on-metal.

Gus Lukrofka asked for a lesson on turning threads on a lathe. Don showed us how the tool cuts, the angles involved, why the compound is set to 29.5 degrees, and one more thing that bowled me over. Don explained how the carriage is moved by the lead screw and pushes the tool into the work. That seemed pretty obvious, *until you start cutting inside threads*. If you don't turn your compound around to point in the other direction, every time you advance the cut, you're cutting on the *back* side of the tool and it just clunks and jumps along, giving a rough finish. Even after it was

make that error again. The funny thing is, I'm sure this rule was told to me sometime in the past, but it wasn't until after running into problems that the rule began to make sense. So it seems for some of us, we have to goof up a few pieces before we figure out what we need to learn.

Another skill that was discussed was straightening bent pieces, or bending straight pieces in a controlled and repeatable manner. The key is to back-up the piece in the press, so it cannot be bent too far. With a back-up, the amount of bend will be the same every time. Of course experimentation is required to get the desired effect, as the work will spring back to some degree.

Of course, no trip to Don's shop would be complete without a gander at whatever project is in the works at the time. The current project is a 1907 Best 75.



Best 75 undergoing restoration

originally experimented with welding inserts into the round hole, but has since had good results cutting the hole with and EDM.

The machine shop experience of the attendees ranged from beginners such as myself, to experts. I think we all learned a thing or two, and we all had a good time.

-Rob Skinner

# ALISO VIEJO FOUNDER'S DAY FAIR

There are some shows that stand out in my mind, and which I make an extra effort to attend. The Aliso Viejo Founder's Day is one such show.

The primary factor in the success of any show are the spectators attending. The people who attend Aliso are genuinely interested in what we do, and they show enthusiasm regarding our displays. This is one of those shows where as an exhibitor, I had to make a conscious effort to take a break and get a little bit of rest on occasion because we had so much interest from the public.

Also adding to the feeling of welcomeness of this show is due to the efforts of the organizers to accommodate the special needs of engine exhibitors. They set us up with a prime display area that was directly across from the entrance, there was water close by, and we could park our trucks and trailers close by. We were well taken care of.

This show is unlike many of our others because it starts at noon and runs until 6:00 p.m. It's nice not having to get up and leave home before sunrise. All the WAPA folks had ample time to set up and relax before the gates opened, and when the show was over, there was plenty of time to get home and unload before dark.

Members present in the WAPA area were Bob Smith, Gus Lukrofka, Joe Siddons, Merle Morse, Kelley Garcia and Rob Skinner. Klaus Duebbert was busy beating on hot metal the next row over.

-Rob Skinner



From top: Bob brought this pump display that was originally put together by his father. Merle's Galloway Masterpiece Six. Gus' Fuller & Johnson pumping engine. Corn must be shucked before putting it in Kelley's



# UPCOMING EVENTS

**Board of Directors Meeting**  
**October 9, Friday**  
**7:00 p.m.**

The WAPA Board of Directors meeting is held at Heritage Park in Santa Fe Springs. All members are welcome and encouraged to attend. If you have ideas on how WAPA can become a better club, or if you just want to come and join in the festivities, please join us.

Heritage Park Rd. is located just south of Telegraph Road just west of Norwalk Boulevard. The meeting is held in the train depot next to the steam locomotive.

**Wilson Elementary School**  
**October 9, Friday**

This is primarily a hand-on show for the students and their parents who come to visit on VIP Day. If you wish to attend, please call Tom Millett at 626-335-6271 for details and times.

**Artesia Country Fair**  
**October 10, Saturday**  
**12:00 p.m. – 4:00 p.m.**  
**Setup 8:00**

Located at the park at 18750 Clarkdale, Artesia.

**Glendora Pumpkin Festival**  
**October 17, Saturday**  
**10:00 a.m. – 4:00 p.m.**  
**Setup 7:30**

Located at the park at 725 E. Mauna Loa, Glendora.

**Wings, Wheels & Rotors Expo**  
**September 25, Sunday**  
**9:00 a.m. – 4:00 p.m.**  
**Setup 6:00**

Located at the Joint Forces Training Base in Los Alamitos. Go south on Lexington from Katella, and enter through the Main Guard Gate. There, you will get instructions and an escort onto the tarmac.

**Flabob Airport**  
**Veterans' Day Family Fun**  
**November 7, Saturday**  
**9:00 a.m. – 4 p.m.**  
**Setup 7:00**

4130 Mennes Avenue, Riverside. There will be a veterans' parade band, comedy, veterans' honor ceremony, chow hall serving Spam and SOS, live music, games, war birds, military vehicles, and car show.

## SOUTH PASADENA CAR SHOW

*by Ken Evans*

To help celebrate South Pasadena's Fifth Annual "Cruz'n for Roses" Hot Rod and Classic Car Show, WAPA put on another great show with our engines and equipment. The event took place on Sunday, September 20, 2009 on Mission Street. All our folks did a great job of talking to the large crowd and explaining what we are about. Tom Millett was there with an Economy 2 hp pumping water. Next we had Joe Giocomarra running a 1½ hp John Deere. Leroy Overstreet exhibited a 1½ hp McCormick-Deering Model LA powering a hacksaw. All the way from Riverside was Merle Morse with a beautiful series of three hot air models and Ron Haskel with a Frisco Standard 5 hp marine engine. Joe Siddons ran his McCormick-Deering 1½ hp manufactured by International Harvester. Tom Fee had his 1½ John Deere belted to a Duro water pump. Jim Davis was there with a Fairbanks Morse 2 hp Type Z. Dean and Barbara Hale had a table with a nice selection of antique tools and goodies. Dave Ruhland demonstrated rock crushing with a small crusher and also had a V-belt driven pump jack driving a converted pitcher water pump. Larry and Ken Evans brought a United 1¾ air cooled engine running the Duro mystery water pump with a bucket the never fills or empties. There were three hand operated pitcher pumps for the kids and adults to try their hand at emptying the barrels of water. New member David Paul stopped by and took in all the sights and sounds of the show. Thanks to all of you and we had a very good show. The car show is to raise money for the city's self-built Rose Parade float.

The Hit & Miss is the monthly publication of the Western Antique Power Associates. Information about the club and it's activities is available online at [www.wapa.us](http://www.wapa.us).

Rob Skinner, editor  
[editor@wapa.us](mailto:editor@wapa.us)