

# The NEMES

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

# Gazette

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January 2013

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## President's Corner

Dick Boucher

### The Meeting

The January meeting is a poster session. Bring your toys. This is a good chance to dust off your exhibit for the NEMES February show!!!

I hope everyone who attended the Second Annual Unofficial Banquet at Woodman's had a good time. We missed not being there.



## Next Meeting

Thursday, January 3, 2013

Charles River Museum of Industry  
154 Moody Street  
Waltham, Massachusetts

## Membership Info

New members welcome! Annual dues are \$25 (mail applications and/or dues checks, made payable to "NEMES", to our Treasurer David Baker) Annual dues are for the calendar year and are due by December 31<sup>st</sup> of the prior year (or with application).

Missing a Gazette? Send a US mail or email to our publisher. Contact addresses are in the left column.

### Issue Contributions Due

FEB	JAN 24, 2013
MAR	FEB 21, 2013
APR	MAR 21, 2013

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Let's face it, for some of us, machinist's gages are mesmerizing pieces of mechanical jewelry, and the more exotic, the better. However, as we lavish our attention on wonderfully precise gages that can measure out to the fifth decimal place, we may tend to overlook the humble workaday gages that are actually much more useful in the home shop. A case in point is the center gage, a very handy but often unappreciated tool.

I think center gages have somewhat fallen into disuse as quick-change tool posts have come to be widely adopted. With the old lantern-type tool post, checking the setting of the threading tool with a center gage was a mandatory exercise as it was just about the only way to assure the tool was perpendicular to the work. However, most of us now set our quick-change tool post square to the lathe's axis of rotation when we install it, and the tool holder and the threading tool it holds are squared up as a result. Most of the time, that is. I'll bet you can remember more than a few occasions when, in a hurry, you reset the tool post to "approximately" square with the good intention of checking it later. Also, sturdy as they are, quick change tool posts can be shifted off-square by a bump or a heavy cut. So even if you use a quick-change tool post, it wouldn't be a bad idea to keep a center gage handy to assure good threading results.

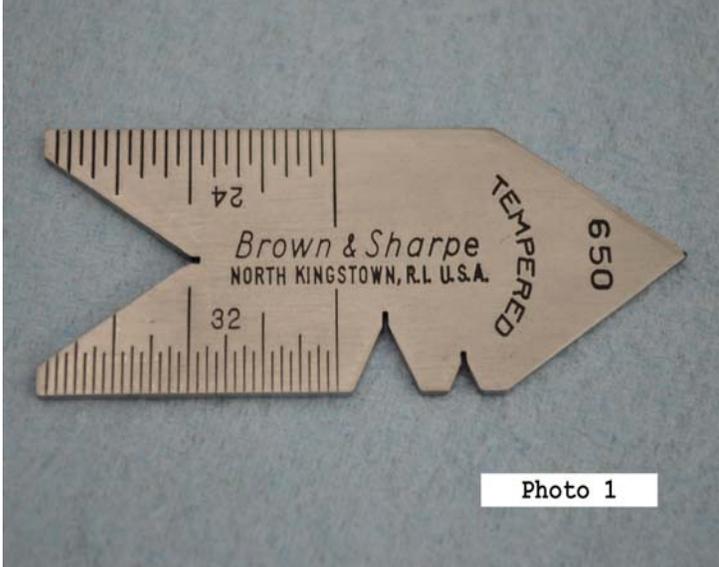


Photo 1

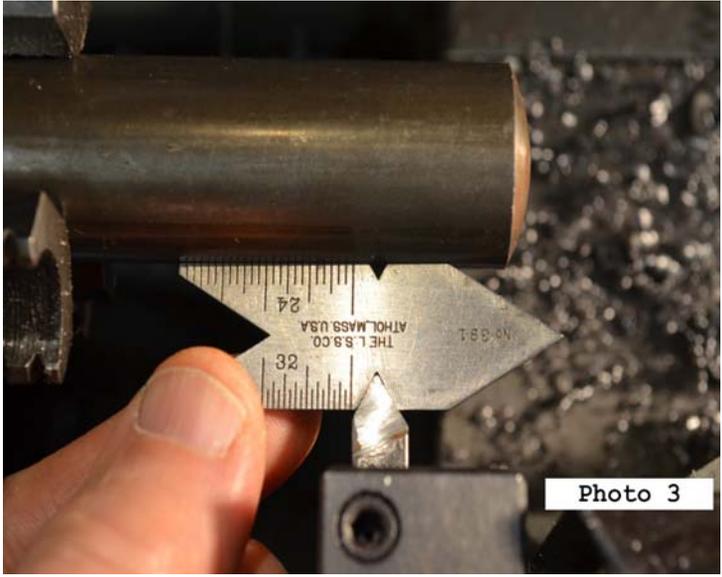


Photo 3

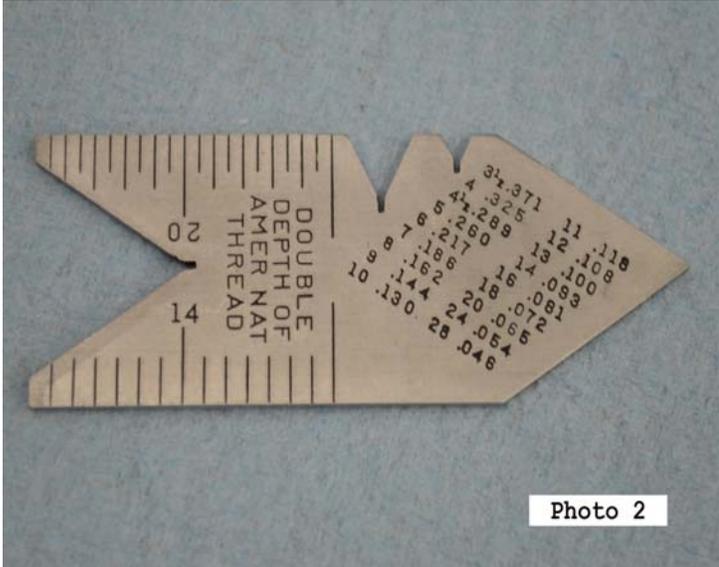


Photo 2

Photo 1 shows the front side of a standard center gage. Photo 2 shows the back side of the gage. As far as I know, this pattern was followed by Starrett, Brown & Sharpe, and most other makers of machinist's tools. The center gage has two primary purposes. One is to check the threading tool to be sure it's ground to an accurate 60° angle. The other is to check that the threading tool is being presented correctly to the work piece before cutting a thread in the lathe.

Photo 3 shows the gage in use checking the threading tool in a setup for external threading. In using the gage, it is sometimes helpful to put a piece of white paper under the gage to reflect light back up so you can see any gap between the gage and the threading tool more easily.

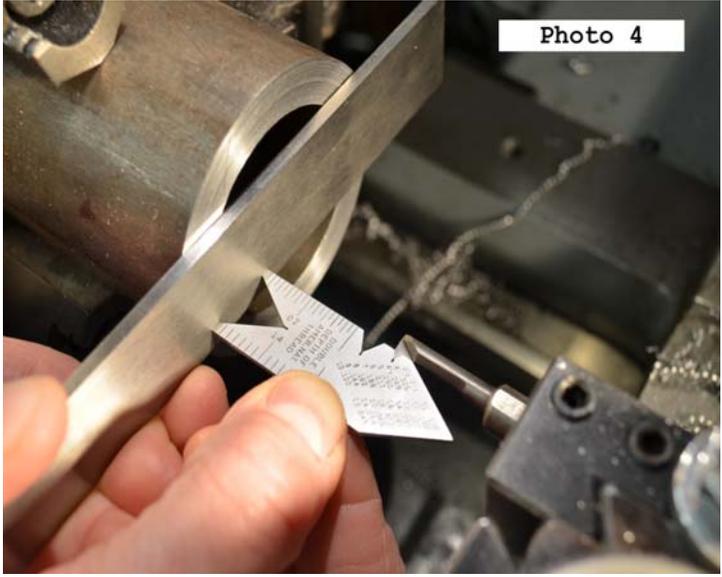


Photo 4

In Photo 4, you can see the method for setting the threading

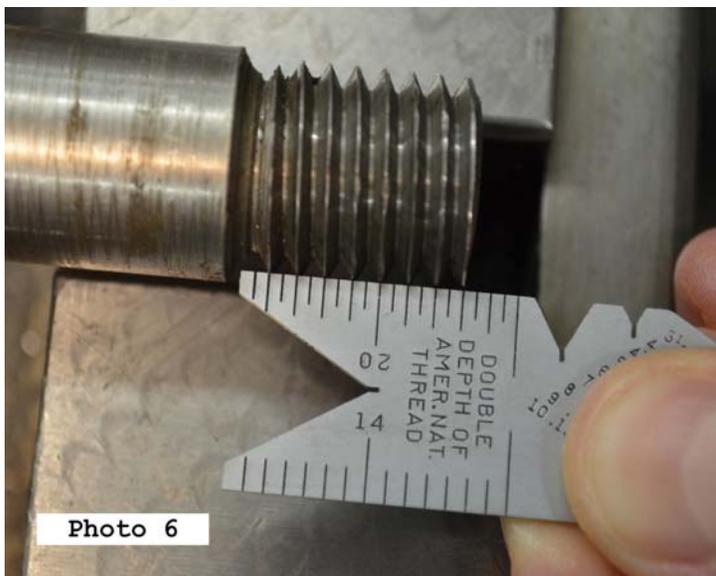
tool to cut internal threads. For this setup you will be tempted to use your handy 6" scale across the workpiece opening. Just check first to be sure the scale is flat and true – many scales have a bow along their length. A better choice would be a piece of 1/8" thick ground stock which is flat and stiff enough to resist being distorted by the hand pressure used to hold it in place.

Besides checking cutting tools, the large female 60° angle at one end of the center gage is also handy for checking male centers. Theoretically, the other end, a male 60° angle can be used for checking centers in the ends of a workpiece. However, at least on smaller work, this feature is of limited value as the edges of the 60° angle would have to be ground to a knife edge in order to get an accurate reading.

But, wait! There's more! I am embarrassed to admit how long I used center gages without paying the least bit of attention to the information engraved on them. At best, I remember wondering occasionally why they bothered to put graduations on the relatively short edges of the scale. It wasn't until I recently read through an old machinist's training manual from the early 1940s that I finally woke up to the rest of the center gage's features. Go back to Photos 1 and 2 and look at those graduations. Only one set of graduations is in conventional 1/32" increments. The other three sets of graduations are in increments of 1/14", 1/20" and 1/24" respectively. This seems strange until you realize that these four differently-graduated scales are intended to be used as thread gages, and that, together, they cover many of the most common thread sizes.

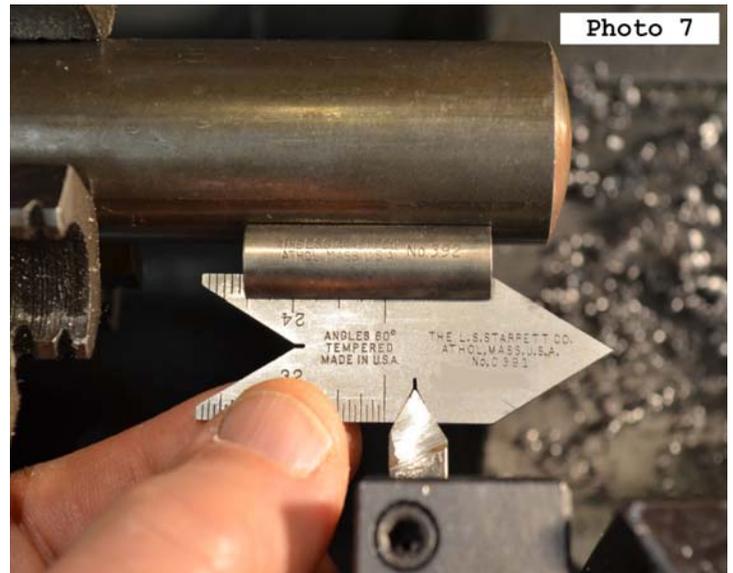
Scale	Threads Per Inch
1/24"	2, 3, 4, 6, 8, 12, 24
1/32"	2, 4, 8, 16, 32
1/20"	2, 4, 5, 10, 20
1/14"	2, 7, 14

As an example, Photo 6 shows the 1/20" scale being used to check a 10 tooth-per-inch thread.



In addition to its edge graduations, Photo 2 shows that the back of the center gage is also engraved with a table of Double Depth of American National Threads. By subtracting the double thread depth number in the table from the outside diameter of your male thread, you get the correct size tap drill for a theoretical 100% thread. Keep in mind though that you would typically want 75% thread engagement, so you would need to open out the hole for the internal thread accordingly. This thread depth information is particularly handy when you need to thread non-standard diameters.

And wouldn't you know it - even the humble center gage has an accessory attachment. Starrett makes the Model 392 Center Gage Attachment to help locate the center gage accurately against the workpiece when setting both internal and external screw cutting tools. I found mine kicking around at the bottom of a box of junk years ago. You can see one in action in Photo 7.



The attachment is a simple design. It's made from a piece of 7/16" diameter round stock about 1-3/8" long. There is a slot containing a flat spring on the top to hold the gage and a V groove on the bottom to locate the attachment against the workpiece.



Photo 8 shows the details of the attachment's construction.

At each end of the spring, there is a little tab bent at a right angle that fits into a little notch adjacent to the slot. That keeps the spring in place when you are installing and removing the center gage. This would be a nice little project for a winter evening.



The tortuous working of my warped mind.

I intended to write a short article about the Linotype machines currently standing on the Museum floor. They intrigue me because they represent one of the best examples of the rate of technical progress. These marvelous machines, invented very late in the 19<sup>th</sup> century, became obsolete within 70 years. The increasingly short half-lives of media is part and parcel of the the galloping obsolescence infecting our times.

I started thinking about printing in general and I thought that it would be necessary to start with Gutenberg. Gutenberg did not just invent the press; he had to invent a whole system and what he did is interesting in its own right.

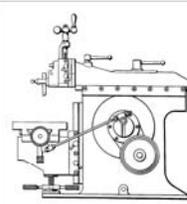
Then I discovered that the Romans came astonishingly close to inventing the art of printing. They were very fond of public baths and they built a very large number of them. They were heated with hot water carried in lead pipes. The pipes were made by pouring molten lead onto a stone slab, to form a sheet, which was bent into a tube, and the seam was soldered to form the pipe. Many of the baths were financed by donations made by wealthy citizens who wanted the world to know of their generosity. The name of the donor was chiseled into the stone so that the lead sheet would carry the name embossed on it. If they had thought of inking the embossed letters and pressing them onto paper, printing would have been born.

Most people think that the invention of the wheel as the greatest invention of all time. Actually, I believe that the taming of fire (being able to start a fire at will) and the invention of writing are greater. The great civilizations of Central and South America had both, and they managed quite well without wheels.

This led me to the history of writing which is an easy transition for me because I am a calligrapher. As usual, my concept grew in grandiosity and I then started to think about starting with the history of writing because, recently I got onto a discussion about the longevity of media.

I get a great charge when I read the Hebrew characters on a scrap of parchment from the Dead Sea scrolls, or the Greek characters on a 2500 year-old gravestone. Can your computer still read a 5¼" floppy? Can you play an eight-track tape in your car? It turns out that the longest-lasting medium is the clay tablet with cuneiform writing. By happenstance, the burning of buildings, with tablets in them, is responsible for their durability. The original clay was quite soft.

I may yet get around to writing about all of these things unless there is vociferous opposition. Be warned.



## ***Metal Shapers***

Kay Fisher

### R. G. Sparber's Gingery Shaper - Part 32

#### **Machining and Assembling the Down Feed (part 2)**

After machining Reference 1, I measured the height of Reference 2 with respect to Reference 1. Not good. My guess is that the hold-down clamp side rose up about 0.005". If this was a more critical dimension, I should have put eccentric clamps on both sides. That would have uniformly pulled the Reference 1 prime surface down to the support block. What is really important is that my Reference 1 surface is smooth and flat. I will be re-cutting the Reference 1 prime blocks soon enough.



Mill Setup 3 Photo by R. G. Sparber

Reference 2 is now cut. A knee (angle plate) has been secured to the mill table. The casting is then set up by eye so Reference 2 is about parallel to the mill table and the C-clamp tightened.

Note the second knee in the background. It will be clamped to the casting's Reference 1 plane and to the mill table next. This sequence is important because I don't want to put stress on the casting by trying to bend it across two knees that are not perfectly aligned. The first knee plus casting define the proper location of the second knee. Only then is the second knee secured.



Shell Milling Photo by R. G. Sparber

It is important to have two bolts holding the casting. A single bolt might permit rotation which would spoil the part and might even spoil my day if things started flying.

I'm now ready to shell mill Reference 2 which should be perpendicular to Reference 1.



Reference Plane 2 Done Photo by R. G. Sparber

The casting is put aside as I make the hold down clamps. They will be needed during the time that the casting is set up for all top machining. I would not want to remove the casting, make the clamps, and then refit the casting. I figured this out by writing out my procedures before I started.



Milling Hold Down Width Photo by R. G. Sparber

I needed some  $\frac{1}{4}$ " x 1" x 3" CRS but only had a slab of  $\frac{1}{4}$ " x 3" CRS. After rough sawing off a strip 1.1" wide, I milled it to width. I used a digital caliper to tell me how much more to remove in order to get to 1" but somehow set it to 0.746". It is annoying that I ended up with high precision and no accuracy. Fortunately, this dimension is not critical. During final assembly I discovered that if I had cut the clamps 1" wide, they would have hit the slider. This was dumb luck!



1st Clamp Photo by R. G. Sparber

The first clamp has 3 holes drilled in it. They are clearance holes and I will use my clearance drill to cut a cone in the casting that will accept my pilot hole. By using the end stop, I was able to drill the second clamp without having to re-set my reference. The backing behind the clamp prevents the fixed soft jaw from being hit by the drill.

I use a Shumatech DRO but still scribe layout lines. Those lines help me avoid making BIG mistakes. The DRO helps me avoid making tiny mistakes. On more than one occasion I have placed a hole exactly 1.000" from where I wanted it by using just my DRO.

Stay Tuned for part 33 from R. G. Sparber next month.

Keep sending me email with questions and interesting shaper stories.



## **WEB Site**

Errol Groff

I use running the site as an excuse to drive, pretty much all over New England, taking photos and video of a wide variety of antique engine and live steam shows. This explains why my 14 year old Ford Escort wagon has 308,000 miles on it (throw in a number of summer trips to Oshkosh WI also).

I have just finished processing photos and video from the Quinnebaug Valley Engineers Association show at the Zagray Farm in Colchester CT and will use this event to describe the process of creating a page on the site.

When I get home from a show, I throw the batteries from the cameras onto their chargers so that they will be ready to go next time. I carry a spare memory card and battery for the still camera and spare battery and memory card for the video camera. Memory cards for the still and video cameras are backed up onto CD or DVD.

First I open MS Photodraw, my preferred program for digital photos. Today I took 123 photos, each needs to be appraised. Some photos are fine as they come out of the camera and just need to be saved (in JPG format) to a folder that I create in the appropriate section of my hard drive. Some photos need a bit of tweaking for sharpness or contrast. There are usually also a few photos that don't make the cut and are not published.

After all the photos are appraised and processed, I use a program from Google called Picasa 3 to re-size the saved photos in bulk. I select the photos and re-size them to be 1000 pixels wide. These are saved in their own sub folder. This program does, in a few keystrokes, what would otherwise take a half dozen strokes per photo. That adds up to a considerable time saving. The reason for this step is to reduce the size of each photo file to make them faster to load when a visitor to our site clicks on a thumbnail.

Next I open a program called Flash Slideshow Maker Pro. I select the photos that have been re-sized in Picasa 3, select a frame for the slides, and the program creates a slide show which is saved into the same folder as the photos.

At this time, there are approximately 350 folders in our website and who knows how many sub folders. When our site started, I could back up all the information on a couple of CDs. The last time I did a manual back, up it took 8 DVDs. Now I use a program called Carbonite that makes a concurrent backup off line from my location. Also, all these folders are on the servers of the company that hosts our site.

Now that the photos have been processed and re-sized and the slide show is created, it is time to open MS FrontPage (FP) which is the program I use to create the actual pages. After the program opens, I create a blank page and start to assemble what I want. A title, consisting of the event name and date goes at the top, followed by some text about the event and the day in general. A line of text follows this with links to the slide show and video. The slide show link can be

created at this time by highlighting the word HERE and clicking on properties. This action lets me select the appropriate file name and clicking OK creates the link.

When I want to start adding photos I click on the "Insert picture from file" icon on the top line and FP lets me select the photo to place in that spot. All folders are alphabetized, so it is fairly easy to find the one I want, but now there might be a number of folders with similar names so it is necessary to select the right one. For example there are folders named Bernardston\_MA\_2007 and '08, '09 '10 and '11. It wouldn't do to be taking photos from the '07 folder to put on the 2011 page. When I have the right folder opened I double click on the first photo. This opens the photo on the new web page. But it opens full size (1000 pixels wide) so I select the Auto Thumbnail icon from the bottom of the screen to make it a thumbnail picture. This is what the viewer sees on their screen. A mouse click to the right of the new thumbnail and two taps on the space bar creates the gap between thumbnails. A click on "Insert picture from file" starts the sequence for the next photo. And so it goes until all the photos have been placed on the page. The process is not particularly difficult but is very repetitive. I can click and drag thumbnails on the page into groups of particular photos as necessary. Then I will add captions to some photos as required. I usually solicit information from folks I have talked to at shows and sometimes they will follow through and send me their comments about the pictures that I took at their displays. When I get new information, I reopen the webpage in FP, add the comments or corrections, save and re-post the page to the server.

Sometime during this process, I click in an open area of the page and select "properties". This lets me go to the Backgrounds folder and I select a background for the page.

When the page is complete and saved, it is time to upload the page, the photos, the thumbnails and the slide show files to our web server. For this a program named WS\_FTP Pro is used. What the WS means I have no idea (\*) but FTP is "file transfer protocol" and as the name implies it lets my computer communicate with the servers at Dreamhost, our web server service. When the program opens and connects with Dreamhost, it is just a matter of dragging the folder from the left side of the screen (my local computer) to the right side (Dreamhost's computers). The Zagray Farm (16 July 2011) folder is about 46 megabytes and took a while to transfer even with a DSL connection.

*\*Publisher's comment: WS stands for WinSock, which is short for Windows Socket API.*

While the file is uploading, I go back to FB and open the "index" page. The index page is what you see when you go to <http://neme-s.org>. I scroll down to the section where event pages are listed, insert a line or two and add a link to the new pages. That page is saved and when the main upload is complete, I upload the updated index page.

I use Sony Vegas to process the video. After opening the program I drag in the individual video clips. The camera I use now, a Panasonic, creates individual clips each time I press the record button. A show will have 6-40 clips, depending on the size of the show and how much equipment was running. It is necessary to make the transitions overlap slightly so that they slide smoothly from one shot to the next

without jumping. Next I watch the whole sequence and review the overall look of the video. Sometimes it is necessary to do a bit of trimming here and there. For example I might have jostled the camera and need to trim out that bit of shaky video. When I am satisfied with the video, I process into the file format that YouTube wants. This process is called rendering and, depending on the length of the video, this can take up to an hour. While this is going on, I can go about doing other things with the computer.

When the rendering process is complete, I upload the video to YouTube. Again, depending on the length of the video this may take a while. When the upload is complete, I copy the web address of the video and go back to FB to add the link to the page, save the page and re-upload it to the server using WS\_FTP.

Of course I don't have to do this whole process in one sitting. I work on it for a while, wander out and watch the Red Sox for a while, drift back to the computer and continue and so on. I do try to get a page done as soon as possible since I know that if I procrastinate it might not get done at all.

That covers the creating of a page for a specific event. In addition it is necessary to do ongoing site maintenance. This includes updating the index page with the date and subject of the next meeting, updating the calendar page when Bill Brackett sends me the calendar information and, when I receive the Gazette from Bob Neidorff, I upload the file to the web and update the Gazette page to reflect the new file.



***Circuit Corner***  
George Gallant

The circuit boards for my pulsing EDM are in. Both look great from an artistic point of view. Purple solder mask and gold plating on the pins and pads. Too bad that one of the boards (CPU) is useless. I can't explain but apparently I submitted a preliminary design. The second (power) board is being populated. Some of the components were not available in the desired package and will require creative rework to get working. Will bring to next meeting.



## Upcoming Events

Bill Brackett

To add an event, please send a brief description, time, place and a contact person to call for further information to Bill Brackett at

[thebracketts@verizon.net](mailto:thebracketts@verizon.net) or 508-393-6290.

Jan 1st New Years day run  
Waushakum Live Steamers  
Holliston MA.

Jan 3rd Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry 781-893-5410  
Waltham, MA

Jan 26-27<sup>th</sup>  
Amherst Railway Society Big Railroad Hobby Show  
Eastern States Exposition, West Springfield, MA.  
<http://www.amherstrail.org/>

Feb 7th Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry 781-893-5410  
Waltham, MA

Feb 16th 10:00-4:00  
16th Annual NEMES Model Engineering Show  
Charles River Museum of Industry 781-893-5410  
Waltham, MA

### MEMBERSHIP FORM

For 2013 Calendar Year

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ New [ ]

(\_\_\_\_) \_\_\_\_\_ Renewal [ ]

EMAIL \_\_\_\_\_

Please enclose form in an envelope along with \$25 cash or check made payable to NEMES. Dues can be brought to the next meeting or mailed to our treasurer:

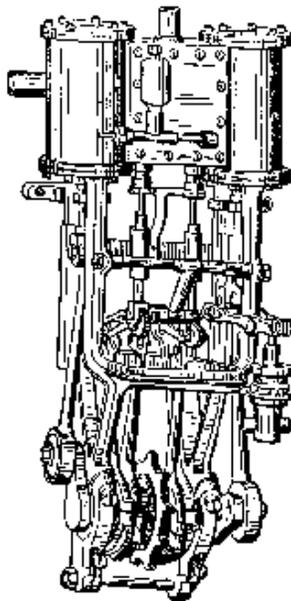
David Baker  
288 Middle St.  
West Newbury, MA 01985

# 17TH ANNUAL N.E.M.E.S. MODEL ENGINEERING SHOW

FEBRUARY 16, 2013

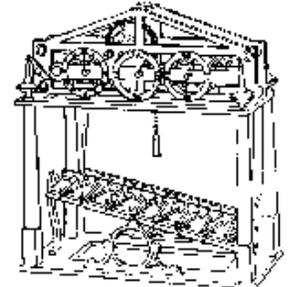
10:00 AM TO 4:00 PM

CHARLES RIVER MUSEUM OF INDUSTRY  
WALTHAM, MA

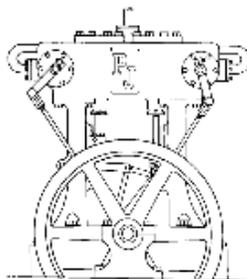


SEE OPERATING SCALE:

- ◆ STEAM ENGINES
- ◆ GASOLINE ENGINES
- ◆ AIRCRAFT ENGINES
- ◆ STIRLING CYCLE ENGINES
- ◆ CLOCKS
- ◆ MACHINISTS TOOLS AND FIXTURES
- ◆ LOCOMOTIVES
- ◆ TRACTION ENGINES
- ◆ MODEL BOATS - STEAM AND GAS



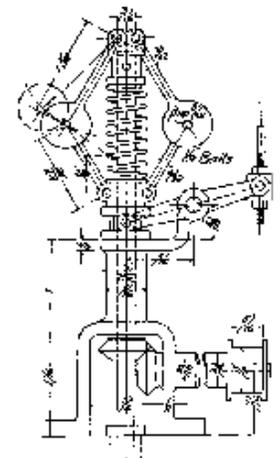
AND MEET THE CRAFTSMEN  
WHO BUILT THEM.



EXHIBITORS SETUP STARTS AT 8:00 AM  
COMPRESSED AIR FOR RUNNING MODELS  
GAS ENGINES ALLOWED  
NON-MEMBER EXHIBITORS WELCOME

GENERAL ADMISSION FOR SHOW AND MUSEUM

ADULTS	\$7.00
CHILDREN 6-12 WITH ADULTS	\$5.00
EXHIBITORS AND CHILDREN UNDER 6	FREE



## Directions:

Take Rte. 128 to Rte. 20. Go East on Rte. 20 to Central Square, about 2 miles. Right on Moody Street. Cross the river, left on Pine Street to municipal parking lot on left. Short walk over the footbridge to the museum.

For additional information call the Museum at 781-893-5410 or go to  
[www.neme-s.org](http://www.neme-s.org)