

# The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 179

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## Editor's Desk

Frank Hills

### Who Cut the Methane?

Remember the movie American Graffiti? It's the early 1960s somewhere in small town America. A "not so tough" band of ruffians have commandeered a high school buddy of theirs and are riding around town looking for mischief to get into. Suddenly one of them complains "who cut the cheese?" It was obvious to all what he was referring to...methane. Of course the source of this methane left it rather odiferous, thus the complaint, but methane it was. That movie was a step back in time, a time when petroleum was cheap and plentiful. Looking forward, methane may very well become the petroleum of the future.

From the time of its earliest commercialization until today petroleum has been one of the foundational materials of our industrialized world. It provides power, the raw stock for thousands of other products, and is even, to an extent, recyclable. But it's becoming more expensive and a cause of political and economic turmoil worldwide. The fate of entire nations rests on its continued availability.

-Continued on page 2

## Next Meeting

Thursday, Mar 3<sup>rd</sup>, 2011

7:00 PM. Meetings held at:  
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 Richard Koolish, see right) 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 mail or email to our publisher.

Addresses are in the left column.

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## Editor's Desk

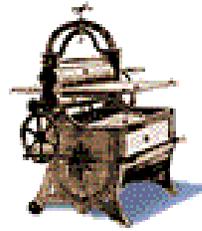
-continued from page 1

But it's also becoming more apparent, as more emphasis is placed on curbing petroleum's use and our dependence on it, that there must be an alternative. Though not a complete replacement for that black gold that comes out of the ground, methane is it, a basic molecular building block for the same things we count on petroleum to supply, and a clean burning, efficient fuel (except for the CO<sub>2</sub> produced). It's easily processed into other substances, and most importantly, it's easy to produce and use. Already the US is well on its way to a methane economy.

I find it interesting that more people aren't aware of the increasing roll methane plays in our world. It could be as simple as a name. Methane is also known as natural gas. Most people have heard of that, but are they aware that it's also the main ingredient in the manufacture of ammonia, most chemical fertilizers, dozens of plastics, and hundreds of medicines? Are they aware that increasingly it's being used to power inner city public transportation (buses) and municipal vehicles (DPW trucks)? It's becoming increasingly popular for large farms to power their vehicles by placing animal manure in large plastic containers to decompose. The resulting methane gas is collected, pressurized in tanks for fuel and the remaining compost is used for fertilizer. Even the space race is caught up in methane. Much of the latest rocket engine research is aimed at using methane for fuel. It is believed to be a safe bet in any future plans for interplanetary flight because if there is water there, man can make methane and oxygen (we won't ask where they intend to get the carbon from right now!).

I wish I had more room. Methane has so many interesting facets and we will all be hearing and seeing more of it in the future.

Next month "No More Glass Eye".



## NEMES Gazette Editorial Schedule

Issue	closing date for contributions
April 2011	March 25, 2011
May 2011	April 22, 2011
June 2011	May 20, 2011
July 2011	June 24, 2011

### 2011 NEMES Membership Dues are DUE!! Still!

**If you haven't renewed your NEMES membership, this is the last Gazette you will get. If you want to continue being a NEMES member and receiving the NEMES Gazette, please complete this simple form and send it with a check for \$25.00 made out to NEMES to:**

Richard Koolish  
212 Park Ave.  
Arlington MA 02476

AND PLEASE PRINT NEATLY!

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

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

HomePhone \_\_\_\_\_

Work Phone \_\_\_\_\_

email \_\_\_\_\_



## ***President's Corner***

Dick Boucher

### ***The Meeting***

This month, with the preparations for the show and such, neither I nor the committee have finalized a speaker for this month's meeting, but rest assured we will have something of interest, so come on out and enjoy the evening.

### ***Miscellaneous Ramblings***

We didn't ramble very far this month – just to our own great show in Waltham. Once again we had a great turnout of exhibitors and a tremendous amount of public enjoying at the show this year. Many thanks to Norm Jones for securing the air manifold for us this year and spending Thursday and Friday with me getting the new air delivery system organized. It did seem to work much better than last year. Also thanks to Garland O'Connell's efforts on our behalf concerning the adaptation of the new larger delivery hose to the Jackson Room.

One really great part of the show, as always, is the food service provided by the great unofficial ladies auxiliary which consisted this year of Gail Martha as head cook with Romaine Bono, Leslie Jones, Lisa Baker, Sue Brackett, Terri Groff and Bea Boucher doing the needful concerning cooking and serving of the cornucopia of food that was available and to those that donated pastries and such a heartfelt thanks. The intent of the Society isn't to make money on the event but the food service traditionally covers our expenses for the day.

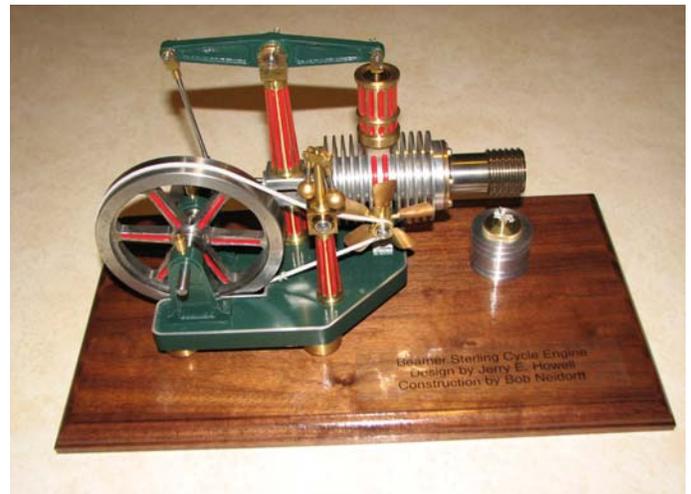
We did have a very notable first time exhibitor this year. Our own Bob Neidorff who has been our faithful Gazette publisher all these years displayed his newly finished first engine. It is a truly well done and finished hot air engine of Jerry Howell design. Nice work Bob.

Elin Hagney estimated the gate this year to be around 750 visitors and the gift shop had a very successful day. I should have final figures in next month's Gazette.

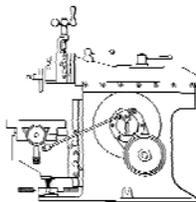
Keep in mind that the Waterworks Museum Grand Opening is March 27<sup>th</sup> from 11 AM to 4 PM. at 2450 Beacon Street, Chestnut Hill, Mass. For more information, see <http://www.waterworksmuseum.org>

Next we have been invited to join Gabriele and Bob Wallace for their steam meet at their house at 157 Old Rt. 109, Moultonborough, NH. They have a boiler and steam table available and we share a pot luck supper 603-476-5685.

Dick B.



**Bob Neidorff's latest creation! Photo by Bob Neidorff**



## ***Metal Shapers***

By Kay Fisher

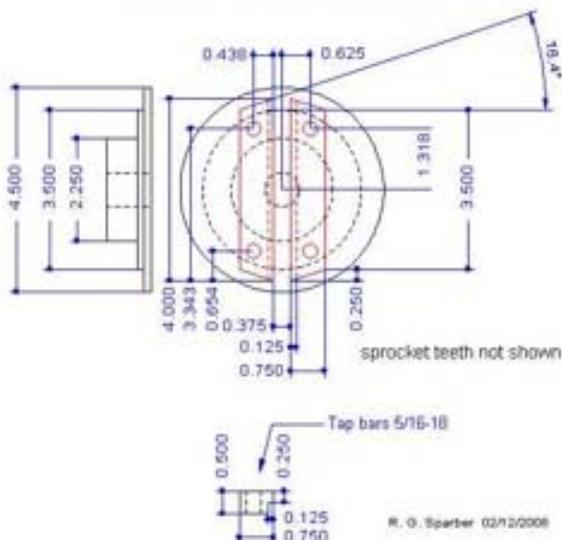
### ***R. G. Sparber's Gingery Shaper - Part 12***

#### **The Crank Plate**

In Gingery's original design, four lengths of ¼" x 1" x 4" CRS are assembled to form the crank plate. This is a good approach unless you have access to a milling machine. Then it is easier to start

with a pair of 1/2" thick bars. I didn't have 1/2" x 1" bars but figured that 1/2" x 3/4" would work fine.

Although I really have not redesigned this assembly, it is still beneficial to draw it. In this way I become familiar with the pieces and can think about the best way to machine them.



**Bull Wheel & Pinion Drawing by R. G. Sparber**

My first step was to cut the bars. Their overall length does not have to be precise so I just scribed lines and cut close. Clean up was done on my belt sander.



**Cutting Bars Photo by R. G. Sparber**

Note the block of paraffin wax on the left side of the picture, circled in red. My bandsaw blade teeth first cut across this wax and then cut the CRS. In this way, cutting lubricant is freshly carried into the cut. The cut end of the bar had an even coat of wax on it, indicating that there was plenty of wax present.

After deburring, the bars were clamped in my mill vise and 1/8" x 1/4" lips were cut. My rough cut was 0.01" from the finished dimensions. I used a 5/8" end mill running at 770 RPM with a feed rate of 1 inch per minute. A liquid cutting fluid kept things cool. Tap holes were drilled with an "F" drill in each bar and deburred with a countersink mounted in a brace and bit.



**Laying Out Sprocket Photo by R. G. Sparber**

Next the sprocket was laid out. This was done by fitting it to a piece of scrap 3/4" round stock. The round stock was then clamped to a V-block.

A fixture was rigged with a 1-2-3 block so the sprocket was suspended above the surface plate. I then used my surface gage to scribe the lines that would later define the location of the crank plate.

The placement of the crank plate is not critical but the spacing between the two halves should be precise. More on this later.



**Scribing Sprocket Photo by R. G. Sparber**

In order to scribe the lines, I first moved the surface gage so it touched the bottom of the bore. I then zeroed the display. Moving up by the radius of

the bar, 0.375", I arrive at the horizontal center line. The gage is again zeroed. It is then a simple matter to scribe at 0.1875" and -0.1875". These lines are parallel and 0.375" apart as shown in the drawing. Another set of lines were scribed 0.125" higher and lower to show me the location of the recess. In hindsight, these lines weren't helpful.

The V block is unclamped from the 1-2-3 block and turned 90 degrees. It is again secured. The sprocket has now been rotated exactly 90 degrees. I again pick up the center as described above. Then scribe lines at  $\pm 2.000$ " and  $\pm 1.500$ ".



**Scribed Sprocket** Photo by R. G. Sparber

Here we have the scribed sprocket. You may ask why I scribed lines at  $\pm 2$ " and  $\pm 1.5$ " parallel to the ones needed to set the bars. Simple – I screwed up.



**Using CRS as Fence** Photo by R. G. Sparber

The next step is to place the first bar. Since each bar has a step in it, lining up this bar

by eye is difficult. Instead I placed a straight length of CRS on the scribed line as a fence.



**1st Bar Clamped** Photo by R. G. Sparber

The first bar is clamped in place against the fence. This bar's placement is really not that critical.

The assembly was then taken to my mill/drill and match drilled through the bar using the same "F" tap drill. In this way I am guaranteed that the holes line up. With the bar removed, through holes were drilled in the sprocket.



**Tapping Head** Photo by R. G. Sparber

The bar is then tapped  $\frac{5}{16}$ "-18. I decided to hand tap the first hole but this got to be a chore. So I risked a real part using my "new" tapping head.



**First Clamp Method** Photo by R. G. Sparber

I've had experience with this head tapping  $\frac{1}{4}$ -20 in aluminum but was still a bit concerned about snapping a tap with this larger hole-size and harder material.

At first I just clamped the bar with my Vise-Grip® style clamp. I knew there would be a lot of force so quickly decided to add more clamping force.



**Final Clamp Method** Photo by R. G. Sparber

There is a hole in the table directly under the tap. It will hold the chips from the tap.

This needed more torque than my little drill press motor could handle. I stalled the motor twice before realizing that a pecking action worked better. The trick is to not let the

tap fully leave the hole. Upon reentering, there is a risk of tearing out some threads. I did not break a tap.

Some people may have told you that you can't break a tap in a tapping head. It can be done and is not pretty.



**1st Bar on Sprocket** Photo by R. G. Sparber

The bar is then secured to the sprocket using two grade 5 bolts and lock washers. The position of the second bar is more critical than this first bar. The gap between bars must be uniform. This is rather easy to do as long as it is not measured.



**Bar plus Parallel** Photo by R. G. Sparber

I want the distance between the bars to be  $\frac{5}{8}$ " as measured against the sprocket. This is accomplished by placing a  $\frac{5}{8}$ " parallel down and pressing it against the first bar.



**2nd Bar against Parallel** Photo by R. G. Sparber

The second bar is pushed against the parallel and clamped in place. You can see the holes of the parallel in the gap.



**Both Bars Fastened** Photo by R. G. Sparber

The attachment steps are repeated and the second bar screwed into place. As a final alignment step, all 4 screws are loosened and the parallel placed in the slot. Using my vise to apply gentle pressure on the bars and therefore on the parallel, I tightened all four bolts. My gap is now a precise  $\frac{5}{8}$ " wide and parallel.



**Sprocket Edge View** Photo by R. G. Sparber



**Sprocket Bottom View** Photo by R. G. Sparber

Stay Tuned for part 13 from R. G. Sparber next month.

Keep sending me email with questions and interesting shaper stories.

My email address is:

[KayPatFisher@gmail.com](mailto:KayPatFisher@gmail.com)

Kay

## NEMES Shop Apron



Look your best in the shop! The NEMES shop apron keeps clothes clean while holding essential measuring tools in the front pockets. The custom strap design keeps weight off your neck and easily ties at the side. The apron is washable blue denim with an embroidered NEMES logo on top pocket.

Contact Rollie Gaucher 508-885-2277

## NEMES Tee Shirts

NEMES tee shirts and sweat shirts are available in sizes from S to XXXL. The tee shirts are gray, short sleeve shirt, Hanes 50-50. You won't shrink this shirt! The sweat shirts are the same color, but long sleeve and a crew neck. Also 50-50, but these are by Lee. The sweat shirts are very comfortable!

Artwork by Richard Sabol, printed on front and back:

Prices:

	Tee Shirts	Sweat Shirts
S - L	\$12.00	\$22.00
XXL	\$14.00	\$24.00
XXXL	\$15.00	\$25.00

Add \$5 shipping and handling for the first tee shirt, \$1 for each additional shirt shipped to the same address. Sweat shirts are \$7 for shipping the first, and \$1.50 for each additional sweat shirt. Profits go to the club treasury.

Mike Boucher  
10 May's Field Rd  
Lunenburg, MA 01462-1263  
[mdbouch@hotmail.com](mailto:mdbouch@hotmail.com)



## 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.

*Bill*

March 3<sup>rd</sup> Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA 781-893-5410  
<http://www.neme-s.org>

March 18-20<sup>th</sup> Maine Boat Builders Show  
58 Fore St Portland ME  
[www.portlandcompany.com](http://www.portlandcompany.com)

March 26-27<sup>th</sup> Midcoast Model Festival  
Owls Head Transportation Museum Owls ME  
<http://www.ohtm.org/>

March 27<sup>th</sup> Waterworks Museum Grand Opening  
11 AM to 4 PM  
2450 Beacon Street  
Chestnut Hill, Mass  
<http://www.waterworksmuseum.org>

April 7<sup>th</sup> Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA 781-893-5410  
<http://www.neme-s.org>

April 17<sup>th</sup> 9:00am The Flea at MIT  
Albany Street Garage at the corner of Albany and  
Main Streets in Cambridge  
<http://www.mitflea.com/>

April 30<sup>th</sup>-May 1<sup>st</sup> NAMES Expo  
Toldeo, OH  
[www.modelengineeringsoc.com](http://www.modelengineeringsoc.com)