

# The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 113

September 2005

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## Editor's Desk

Victor Kozakevich

I hope everyone has had time this summer for some of the many engine shows and museum visits posted every month in the Gazette. Fall is just around the corner, so perhaps it's appropriate to start thinking about getting the shop in shape for those winter projects.

Do folks out there have any tips or examples on shop organization?

Knowing where the 5/16" countersink is or where you put that special tip for the dial indicator translates into more time cutting metal and less time rummaging in boxes. Where will you put all those neat tools and castings you bought at the summertime model engine shows? And I don't mean in that big pile on the middle of the bench!

In the President's column, Norm mentions that NEMES has acquired some new video equipment for our meetings. Every member should take the opportunity during future meetings to share their experience. After all, NEMES members have the best stories.

## Next Meeting

Thursday, Sept. 1, 2005

7:00 PM. Meetings held at:  
Charles River Museum of Industry  
154 Moody Street  
Waltham, Massachusetts

## Membership Info

Annual dues of \$25 (via checks made payable to "NEMES" and mailed to our membership secretary) for the calendar year are due by December 31<sup>st</sup> of the prior year.

Missing a Gazette? Send mail or email to our publisher.

Addresses are in the left column.

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## President's Corner

Norm Jones

### The Meeting

The September meeting will feature a dual program for the evening. I will be presenting on "work holding relating to lathe operation". Some of you may recall that I asked for suggestions for future topics that might be of interest to the group. This subject is intended to help those of you who are just getting started in the machining hobby as well as to inspire interaction within the group as to how some of the more experienced hobbyists have addressed challenging problems. The second part of the program will feature a slide show on the steam engines that once occupied the low service building at the Chestnut Hill Pumping Station in Chestnut Hill Mass, presented by Al Goldberg. Sadly to say, these engines are now gone forever but not forgotten.

### Club Purchase

A majority of your board of directors met prior to the start of the August meeting to discuss and ultimately decide to purchase a: digital projector, DVD player, and a digital camera. The board felt that these items will allow us to enhance the quality of our presentations in the future. Those of you who have digital pictures in a jpeg format on a CD are encouraged to bring them to a meeting at any time to share them with the group. These items will become available for use at the September meeting.

### NEMES Members Out and About

I encourage you to attend and display your various projects at the many Antique Machinery shows that are held in the New England area during the summer months. The following pictures are of some of you that I have seen and enjoyed meeting with this past month. The Eliot Tractor and Engine show held on July 29-30 proved to be quite popular with our members this year. Joe Higgins and his wife, Dorothy are shown here with a display of some of Joe's beautifully crafted models.



Phil Goodwin is shown, proudly standing next to his John Deere tractor. I was not aware that Phil had a tractor. Nice restoration job Phil!



Bill and Cindy Schoppe are shown here with Bill's fine display of model airplane engines. I can identify with many of the engines in Bill's collection that I had many years ago.



Another display of exceptional note at the Eliot show was that of my long time friend, Neal Hastings. Neal had a very interesting prototype rotary two-cycle engine on display that was originally designed and built by Edwin Londo in 1972. The engine has six cylinders. The piston rods push on a swash-plate causing it to rotate. Neal ran it for me. It's quite a machine! You can look up patent number 3695237 dated October 3 1972 for further information.



Todd Cahill had a wonderful display of his finely crafted steam engines. Todd's display is unique, in that his engines were actually powered with steam. That is a nice touch on a very hot day!

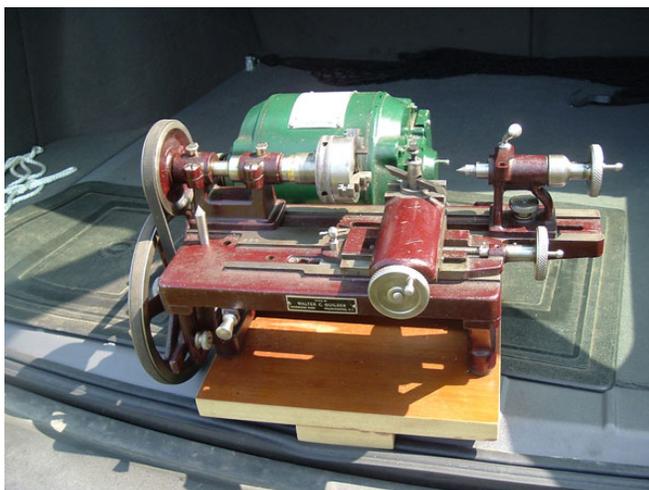


Russ Steeves brought his steamboat "Redbud". Too bad there wasn't a pond at the show site to sail her on. I can't say enough about the workmanship on Russ's boat.

The Straw Hollow Engine Works Show in Boylston Mass, held on August 13-14, also proved to be a popular destination. Rich Hubbard is shown here with some of his fine models. Rich divides his time between various antique machinery, model engineering, and live steam railroading shows



I first met Dave McClary at Eliot Maine on July 29. Dave is with the Quinebaug Valley Engineers Association in Colchester Conn. He showed me some pictures of a Walter C. Guilder lathe, built in Poughkeepsie NY in the 1940s. It is very robust, with a swing of 3" and a working length of 5". Dave is the curator of the machine shop at the club and would be interested in hearing from you if you would like further information or can share any knowledge of this lathe. Dave can be reached at <http://www.qvea.org/> Dave brought the lathe to Straw Hollow so that I could see it firsthand. Thanks Dave!



Well that does it for this month. I will be going to "Rough and Tumble" in Kinzer Pa. on Aug 17<sup>th</sup>. There is always lots to see there and many good friends to meet with. See you on Sept 1<sup>st</sup>.

*Norm*



## ***The Meeting***

Max ben-Aaron

## **SHOW & TELL**

Treasurer Dick Koolish reported that Jim Paquette sent us \$15.00 in donations from his open house plus \$50.00 of his own donation. Thank you, Jim.

Jeff del Papa drew our attention to the ongoing buscycle project. "The Busycle is a fully functional 15 to 20 person 100% passenger pedaled vehicle. The Busycle itself runs solely on the energy of its passengers. Although driven by a Busycle driver, all passengers pull their weight and pedal in their seats. Once construction is finished in August 2005, anyone and everyone is invited to busycle around the City of Boston following a community-determined Busycle route and schedule. The route will begin in Dudley Square (home of the Berwick Research Institute) and will travel to key points determined by residents in the neighborhood. Eventually the artists and 15+ friends will busycle across the country taking in many sights along the way.

"The first stage in the development of this project is supported by the Berwick Research Institute, a 501c3 non-profit, artist-run space located in Dudley Square, Roxbury, Massachusetts. Artists Heather Clark (Boston, MA) and Matthew Mazzotta (Burlington, VT) were awarded a residency through the Berwick Public Art Satellite Program to invent, construct and pilot the Busycle." View the details at: <http://www.busycle.com>

## **THE AUGUST MEETING**

The August meeting was opened by Venerable President Norm Jones in the Jackson Room of the Charles River Museum of Science.

John Bottom introduced the speaker, Keith Pedersen, who related "the story behind the story" of 3d Computer-Assisted Drafting (CAD) systems.



The story began at MIT in 1963 when Ivan Sutherland developed 'Sketchpad', described in his Ph.D thesis. Early programs featured unstructured files and layers and, basically, tried to emulate what a typical draftsman of the period did at the drafting board. This was soon followed by '2½ D', which allowed drafting on multiple planes and introduced the idea of 'model space' vs 'paper space'. Systems such as Calma and Cadkey extended the field to include wire frames, the first inklings of true 3 dimensional drawing. The result was a picture, plotted on paper.

Moving beyond wire frames, inspired by work on Computer-Assisted Machining (CAM) also at MIT, the succeeding systems stretched skin over the wire frames and allowed collections of like surfaces to be stitched together as Boolean or faceted solids by a batch program, running in the background. The batch program could also generate cross-sections, shading and other desirable effects. The result was a form that could be associated with CAM.

This era, 1970-1985, was the age of 'big iron', with the computing power provided by \$1,000,000+ mainframes. Software was a 'big-ticket item' typically costing \$100,000. This limited it to large companies. Sales was handled by a direct sales force and the decision to buy involved upper management. The user bought an integrated system and became a captive to that system because there were no translation standards between competing systems.

Boolean methods introduced a repertoire of elementary solid forms - spheres, cylinders, cubes, etc -- which could be stitched and cut to generate complex sculptural forms. No history of the successive operations was kept and any changes required starting the process from the beginning.

More research at MIT during the 1980s introduced the idea of solid modeling with variational geometry and allowed assemblies to be modeled. One of the researchers, Bob Zuffante, eventually carried these ideas to Solidworks.

To the mid 90s, feature-based systems corrected a serious deficiency by capturing history and enabling the 'recipe' to be modified to rebuild parts without forever having to start from scratch. The draftsman could look at a time-line, roll back, and change the recipe, which changed the relative effects of the operations on each other. The new systems changed the essential *modus operandi* to sketching, rather than drafting. Solidworks also introduced file references and data reuse and fostered 'top-down' design. The result was to capture relationships.

This era saw the introduction of workstations rather than mainframes, with computers costing about \$125K and software at about \$65K. Lower prices meant lower margins so volume sales were needed. Dealerships replaced the direct sales force. Translators and standardization emerged from the need to port from 1<sup>st</sup> generation systems.

This was succeeded by 3<sup>rd</sup> generation 3D parametric systems, captured behavior by supplementing the memory of operations performed with equations that allowed parameters to be varied. A simpler example of this is a TruType font, which uses a formula for generating each character, so different sized characters can be created at will. Parametrics introduced 'virtual engineering', with 'object-then-action' editing, allowing greater freedom to evolve, revise, and improved constraint solutions.

The inexorable increase in PC power, and the continuous erosion of prices, together with Microsoft's monopoly (Windows, which actually produced the benefit of standardization) opened vast new markets for native CAD systems for PCs. Software prices dropped to \$4k per seat.

A great part of the power of 3D CAD resides in the libraries of auxiliary functions that form a working

environment. Parts can be analyzed, their performance evaluated, physical characteristics (thermal, mechanical etc.) calculated and assemblies can even be exercised (individually and in concert), emulating true motion to determine interference and other effects.

A visit to the URL <http://www.capinc.com> will supply all sorts of information about the impressive capabilities of Solidworks - more than is feasible to include here.

I must say that I found Keith Pedersen's talk fascinating and extremely informative; he is to be commended for a superb presentation.

The history of 3D CAD is now part of the history of technology, which is fascinating in its own right. A search on the Internet for "CAD history" will tell you more about the history than you probably care to know.

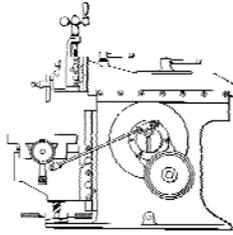
Model engineers are a pragmatic breed, so the question arises: What can 3D CAD systems do for me? I have owned AutoCad Light for many years and I have yet to use it. The learning curve is steep and I cannot get past the stupid tutorial ('Draw a clown') that is supposed to help me learn. All 2D systems have a steep learning curve and are easy to forget unless they are used often (personal observation).

Judging by the examples that Keith used to illustrate his talk, I am convinced that 3D systems (Solidworks, in particular) are much more intuitive and easier to learn. Furthermore, help is available. The same URL <http://www.capinc.com> provides information about free seminars and free copies of the program.

Member Bill Bracket has signed up for a seminar in Westboro. I hope we will soon have a first-hand report from him.

3D modeling can be closely tied in to CAM, and as prices drop (as they did for computing power), more and more modelers will have access to numerically-controlled machines and, eventually, 3D prototyping ('printing'). I wonder if they will have as much fun as we do, with our primitive manual capabilities.

Max



## ***Shaper Column***

Kay Fisher

### ***Shaper Hacksaw Attachment***

While I will be the first one to admit every home shop machinist does not need a shaper – everyone does indeed need a power hacksaw.

I've thought about the idea of making a simple hacksaw attachment for a shaper and indeed have seen them mentioned before. Thanks to Larry Kiesler, we finally have photos of one that came with his 14-inch Steptoe shaper.



**Hacksaw on Steptoe**

**Photo by Larry Kiesler**

The overall length of the shaper is 36 inches. It uses a 20-inch hacksaw blade. The hacksaw attaches to the clapper box with the mount.

When Larry sets the ram back as far as it will go and set the stroke to 14 inches, he only has 5" of table to clamp the work. There is no provision to add weight to the end. Larry thinks the hacksaw is already too heavy.



Hacksaw on Clapper Box Photo by Larry Kiesler



Hacksaw Threaded Shaft Photo by Larry Kiesler



Hacksaw T-Nut Photo by Larry Kiesler



Hacksaw on Wall Photo by Larry Kiesler

The T-nut mount seems quite reasonable and the long threaded shaft and handle that looks like the end of a scissors jack appears to tighten the hacksaw blades.

Someday, I plan to refurbish an old power hacksaw that I purchased at a yard sale. Most power hacksaws have an adjustable end weight. Several designs attempt to reduce weight during the return stroke. With modern high-speed steel blades it may not be necessary to relieve the weight on the return stroke.

If anyone has their own shaper hacksaw attachment please send me pictures.

Keep sending me email with questions and interesting shaper stories. My email address is:

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

Kay



## *Web Sites of Interest*

Sign up for the NEMES mailing list at:

<http://groups.yahoo.com/group/nemes>

Mechanology is developing a new positive displacement technology that can be described as the first major innovation in compressor technology in 30 years. The design can be applied as an engine, compressor, expander, and pump. Mechanology's technology is based on its patented Toroidal Intersecting Vane Machine (TIVM). This looks like a ring of interlocking gear pumps. See this animated on their website.

<http://www.mechanology.com/home/index.htm>



## ***NEMES Gazette Editorial Schedule 2005-2006***

Here are the closing dates for Gazette written contributions in the coming months:

<u>Issue</u>	<u>closing date for contributions</u>
October	9/23
November	10/21
December	11/18
January	12/23
February	1/20



## ***In the News***

### **Doing What You Love**

A man to envy is Walter O'Rourke, a train buff who became a conductor. As he might say, "There's no place else I'd rather be." To make it even sweeter, Walter doesn't need to work. He's already a millionaire from business, real estate and insurance investments. He even owns a railroad, as the majority shareholder in Durbin & Greenbrier Valley Railroad, a 112-mile stretch of track that runs along the Cheat River in West Virginia. The railroad, which consists of three trains with a total of 14 cars, is used mostly for tourist travel. Last year, he said, it turned a \$300,000 profit.

When asked why he joined the New Jersey Transit, a commuter rail service, in 1999, at age 60, he replied: "I've always wanted to work on a real, professional railroad," he said. "And these trains can go really, really fast."

After retiring earlier this year, he retreated to his 4,000-square-foot, two-level basement-turned-workshop, where he builds model trains that run along some 300 feet of track around his home.

*(Do I see a future NEMES speaker? Ed.)*



## ***For Sale***

### ***Shaper Work CD***

Put out in 1944 by the New York State education Department this 326 page manual is chock full of valuable tips and information on using the King of Machine tools....The Shaper. Covered is everything you need to know about the care and feeding of the shaper, use of the shaper, even how to sharpen tools for the shaper. Scanned and saved in Adobe Acrobat format. The CD now has a lot more info on it, and the price has increased accordingly. \$10.00, shipping included.

Errol Groff  
180 Middle Road  
Preston, CT 06365 8206  
[errol.groff@snet.net](mailto:errol.groff@snet.net)

### ***Lathe for sale***

South Bend 9" x 3' bench model. Mounted on heavy homemade bench. With 3 + 4 jaw chucks, collets and some tooling.\$500 Located in Saugus. Call George (781) 233-2495.

### ***Plastic oil bottles for sale***

I want to buy some 4oz. plastic bottles and haven't had a lot of success finding what I want. I finally found the right size at <http://www.ebottles.com/> They say that there is no minimum order BUT charge a \$15.00 "small order fee" for orders under \$50.00. Since the bottles I want (for applying drops of tapping oil etc.) are \$0.45 each plus a spout cap for a total of about \$0.65 I probably do not need 75 of these things to avoid paying the small order charge. And I will be darned if I am going to pay that fee! For a look at the bottle, go to:

<http://www.ebottles.com/showbottles.asp?familyid=4> and <http://www.ebottles.com/showcap.asp?familyid=1179> for a look at the spout cap. Take a look at the web site and if you see anything that interests you please send me an email with the exact model number and amount you want and I will order them when I place my order. I can deliver the goods at the October meeting. On the other hand if there is nothing you want but you would like a 4 oz. bottle or two I will sell them for \$1.00 each to help cover the UPS shipping. Errol Groff [errol.groff@snet.net](mailto:errol.groff@snet.net) or on the club mail list.



## ***NEMES clothing***

### ***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:



Rear



Front

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  
[mbouch@hotmail.com](mailto:mbouch@hotmail.com)

### ***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



**MARK  
THIS  
DATE**

## **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 [wbracket@rcn.com](mailto:wbracket@rcn.com) or (508) 393-6290.

*Bill*

Sept 1st Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA 781-893-5410

Sept Call 603-476-5617  
Lee's Mills Steamboat Meet  
Lake Winnepesaukee, Moultonboro, NH

Sept 4 Owls Head Transportation Museum  
Vintage Motorcycle Meet & Antique Aeroplane  
Show

Sept 10-11 Dublin Show  
RT 101, Dublin, NH 603-495-3640

Sept 18 Owls Head Transportation Museum  
Made in the USA" Car Meet & Antique  
Aeroplane Show

Sept 18th MIT Flea Market  
Albany Street Garage, Cambridge MA

Sept 24-25 Cranberry Flywheelers Meet  
Edaville RXR S. Carver, MA David Moore  
508-697-5445

Oct 1-2 Water's Farm Days Show  
Exit 4 (Sutton) from I-395 4 miles to Douglas  
Rd.  
(right)after church then left on Waters Rd. W.  
Sutton, MA  
Butch 508-235-5035

Oct 1 9AM-4PM Yankee Steam Up  
New England Wireless & Steam Museum  
1300 Frenchtown Rd.  
<http://users.ids.net/~newsm>  
East Greenwich, RI 401-885-0545

Oct 2 12:00- 5:00  
Roland's shop visit  
90 S. Spencer Rd Spencer MA  
508-885-2277

Oct 6th Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry 781-893-5410  
Waltham, MA

Oct 9 Owls Head Transportation Museum  
Foreign Auto Festival & Antique Aeroplane Show

Oct 17th MIT Flea Market  
Albany Street Garage, Cambridge MA

Oct 29th APM Model Show  
American Precision Museum Windsor, VT  
802-674-5781

Oct 30 Owls Head Transportation Museum  
The Great Fall Auction & Open House