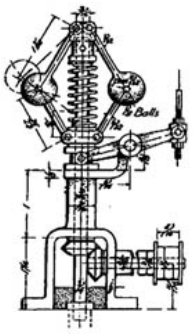

The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

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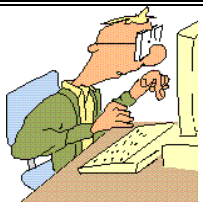


Editor's Desk

Victor Kozakevich

It may sound like one of those old jokes, but you have to look up - at the masthead. Pretty amazing, huh? This marks the 100th issue of the NEMES Gazette! Thank you everyone, for your unwavering support of NEMES; long may it live!

I received an e-mail recently from Charles Chiarchiaro, Executive Director at the Owls Head Transportation Museum. He thanked us for mentioning the upcoming events at the museum, and has offered free general admission to the museum and its events for NEMES members through the 2004 season. He thought we were "card-carrying" members, but if you bring a Gazette, or mention Norm Jones' name, it may suffice. He would also like to explore holding a major Model Exhibition and Symposia at Owls Head in the future.

Enjoy the rest of the summer, and may you have the luck of Norm's wife at finding those yard sale bargains!

Next Meeting

Thursday, August 5, 2004

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 Treasurer) for the calendar year are due by December 31st of the prior year.

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

Addresses are in the left column.

Contents

President's Corner

Norm Jones

The Meeting

Our speaker for the August meeting will be Ralph Lacerte. Ralph will be speaking about the evolution, development, and use of carbide in the metal cutting industry. Ralph has been with Kennemetal since 1988 as a Metalworking Systems Engineer and has also worked in the Valve industry as a Manufacturing Engineer for 15 years prior to Kennemetal.

Replica of Henry Ford's First Gasoline Engine

The Blue Mountain Antique Gas & Steam Engine Show in Bangor PA. is one of my favorite summer shows. The model area is especially attractive, in that it has a great location on the grounds, offering good solid display "counter space" under cover with compressed air available for powering steam engines. You can always count on seeing something on display there that is quite unique. This years show was no exception.

Ron McClellan of West Chester PA brought a replica of Henry Ford's first gasoline engine as part of his display. The original engine dates back to 1893. Word has it that Henry Ford and his wife first ran his engine in the kitchen of their home on Christmas Eve of 1893.

The engine looks deceptively simple, but upon close examination is quite ingenious.

Ron had just completed the project and was in the early stages of trying to get it to run. As with most projects like this, there is a learning curve. Everything seems correct but it still won't go! The engine uses a piston tripped igniter which can be tricky to get to function. We used the "John Rex" coil that I use with my Mery Explosive engine and the spark looked fine. Carburetion is accomplished by allowing fuel to drip from an oiler (fuel tank) through a small tube to minimize the drop size, onto a screen which is positioned just ahead of a check valve that has been modified with the addition of a light spring to act as an intake valve. Needless to say, the drip rate is critical.

We managed to get the engine to fire as many as a dozen times before stopping. Wafting propane into the screened area instead of dripping gasoline yielded limited success. The engine got quite warm in spite of the fact that it only fired a few times. The engine was definitely not intended to run for an extended period of time without a cooling system. The engine attracted lots of attention, with many individuals offering up suggestions on how to get it to run. That type of interaction is what it's all about!

Ron purchased a kit of "hard to find parts" for this engine from Leon Ridenour of Knoxville Tenn. Give Leon a call at (865) 584-9759 if you are interested in building one of these engines. The cost is very reasonable and he will be happy to recommend sources for items such as the timing gears and flywheel. As with most engines, a heavy flywheel will work better than a light one. Leon recommends lapping the cylinder to get a good fit with the piston. He does not offer a "mechanics kit", so you really need to have access to a lathe and mill to complete this project.

I expect to see Ron at Rough & Tumble in Kinzer PA in a few weeks with a progress report and the engine! The Ford engine is definitely an interesting project.

Technical Video Tape Rentals

Fellow member John Irza passes on this tip. Technical video tape rentals are available at a cost of $9.99 per week including postage both ways. Subject matter includes topics relating to: woodworking, machining, gunsmith, knife making, welding, sheet metal, and marksmanship. Information can be found at:

http://technicalvideorental.com/rental_frames.php

See you on August 5th.

Norm

The Meeting

Max ben-Aaron

The July Meeting

According to our tradition, the July meeting is a "Show & Tell" meeting in the Jackson Room at the Charles River Museum of Industry. Possibly because of the long week-end to follow, the turn-out was the smallest I can ever remember.

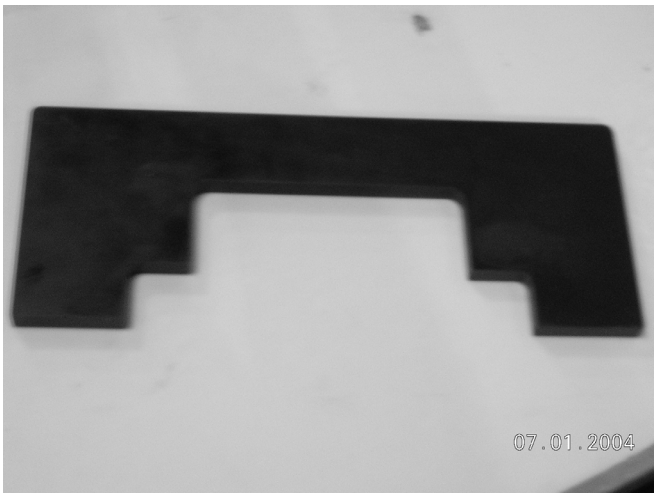
Also, according to her own voluntary tradition, the lovely Gail Martha provided sinfully delicious cookies and soft drinks and our treasury benefited. Thank you Gail. Well done.

Todd Cahill showed a dovetail scraper straight-edge 36" long that came from Wyman-Gordon. It shows a very impressive scraping job. Todd also has a matching square.

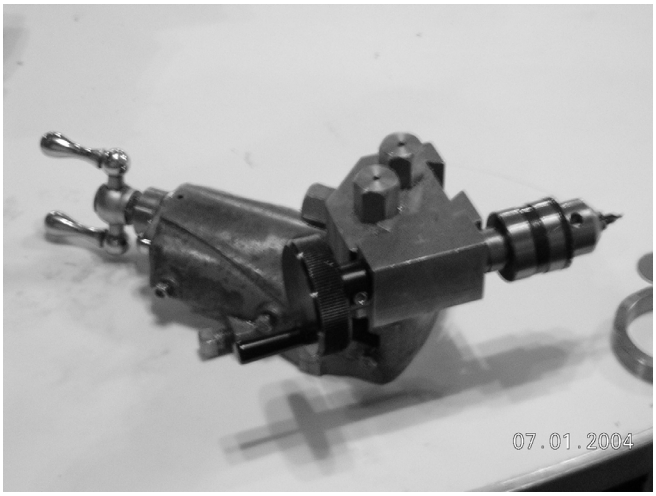
Dick Koolish showed some slides he took of the recent Venus transit.

The above photo shows some parts Errol Groff is making for a client in Rhode Island. The parts, made on a CNC machine, are for a 2-wheel robot destined for competition in the Trinity College contest.

This photo shows Larry Keegan with his little PIC-controlled robots: LiteBot, StepperBot and SquareBot.



Gene Martha brought an assortment of center-drills, reamers and countersinks for sale at $1 each. He also brought a very useful setting-up tool (see photo above) that is gripped in the milling-machine vise. The two ears hang down lower than the vise base and fit closely into the slots in the table ensuring that the vice is dead square to the table.



Dave Piper previously showed the above lathe toolpost patterned after the Hardinge version. This time the post was outfitted with a tool holder that had a hand-cranked spindle with a Jacobs chuck on the business end. With a center-drill in the Jacobs chuck, by appropriately positioning the cross-slide for the bolt-hole circle diameter, and indexing a part held in the lathe chuck, bolt-hole locations could be easily spotted without removing the piece from the chuck, guaranteeing concentricity and saving time and set-ups.

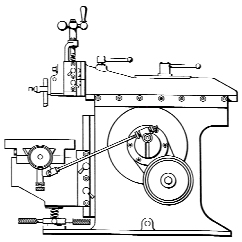
This photo is the crankshaft that Ed Rogers made for a 1½ scale working model of a Ford Model T engine.

Arthur Vandenbrug exhibited the above model steam engine he made from plans he downloaded from the Internet.

This photo was taken downstairs, in the Museum shop, showing members of the *Oil-Can Gang* scraping the K.O. Lee Tool and Cutter Grinder.

Walter Winship brought a Derr water-tube boiler he is making for his Stanley Steamer. The tubes, made from 20-foot lengths of $^{3}/_{8}$" steel steam-pipe were bent in a compression bender A test of the boiler design in the 1920s showed that the boiler can withstand pressures of 10,500 lb/sq. in. Derr boilers have been known to last for 50 years, so it is unlikely that Walter will have to build another.

Max



Shaper Column

Kay Fisher

Bridgeport Mill

By Kay R. Fisher
Part 3 of 3

The old quill worm-feed hand wheel was painted black and had a dark red patina. I removed the paint and patina with a wire brush and polished it.

Quill Worm Feed Hand Wheel 2 **photo by Kay Fisher**

Belt Housing

The belt housing was the most rewarding part to refinish. I started on it before anything else on the mill and finished it almost last.

Belt Housing Before **photo by Kay Fisher**

My first problem was that one of the two motor housing ring studs had been broken out of the housing and a larger stud had been threaded in. It was a mess.

Belt Housing Polished **photo by Kay Fisher**

When I gave my Bridgeport power feed to friend and fellow NEMES member Dave Mahoney, he returned the favor by giving me his undamaged Bridgeport belt housing. Dave also put two new bearings in the unit.

Belt Housing Polished 2 **photo by Kay Fisher**

At this stage I wanted to retain the serial number plates so we swapped them back. Switching those darn plates was really tiresome. They were slightly different sizes, so I had to drill 8 new holes and tap them to mount the ID plates.

Belt Guard Installed **photo by Kay Fisher**

I had never done any large polishing before so that was quite a learning experience. I am quite happy with the way it looks.

The belt on my old M-Head was badly worn and about to fall apart. However is was in just good enough shape to make out a number on it that the local AutoZone store could look up in their chart. It is a 3L 3/8-inch belt 29 inches long. The replacement Kelly Springfield Utility Belt number is 84290.

Door & Shelf

I enjoyed refinishing the parts that had raised brands and logos on them. The door looked pretty bad but with a few hours labor I was able to make it quite nice.

Door Before **photo by Kay Fisher**

Door After **photo by Kay Fisher**

Door Installed **photo by Kay Fisher**

The shelf was a pleasant surprise. It was painted gray and had swarf embedded in it. I decided to remove everything with a nice big belt sander. Then a couple of coats of urethane and it started to look pretty good.

Shelf Done **photo by Kay Fisher**

Shelf Installed **photo by Kay Fisher**

Motor

The motor worked, but the mounting slot on the right side of the motor flange was torn apart. Since I planned to power this with a VFD and not change belt position often it was not necessary to repair it, other than the fact that it didn't look nice.

Motor before **photo by Kay Fisher**

The Cutler Hammer forward reverse switch on the side of the motor would become a housing

for the controls for a VFD. The guts of the switch were thrown away.

Motor mount damage **photo by Kay Fisher**

Forward/Reverse Switch **photo by Kay Fisher**

Motor after cleanup **photo by Kay Fisher**

Most motors have a wiring chart on their label. This is what it said on mine:

Low Voltage (208-240)
4 – 5 – 6 shorted together
9 – 3 to L3
8 - 2 to L2
7-1 to L1

High Voltage (440-480)
9 – 6 shorted together
8 – 5 shorted together
7 – 4 shorted together
3 to L3
2 to L2
1 to L1

Motor primed & spotted **photo by Kay Fisher**

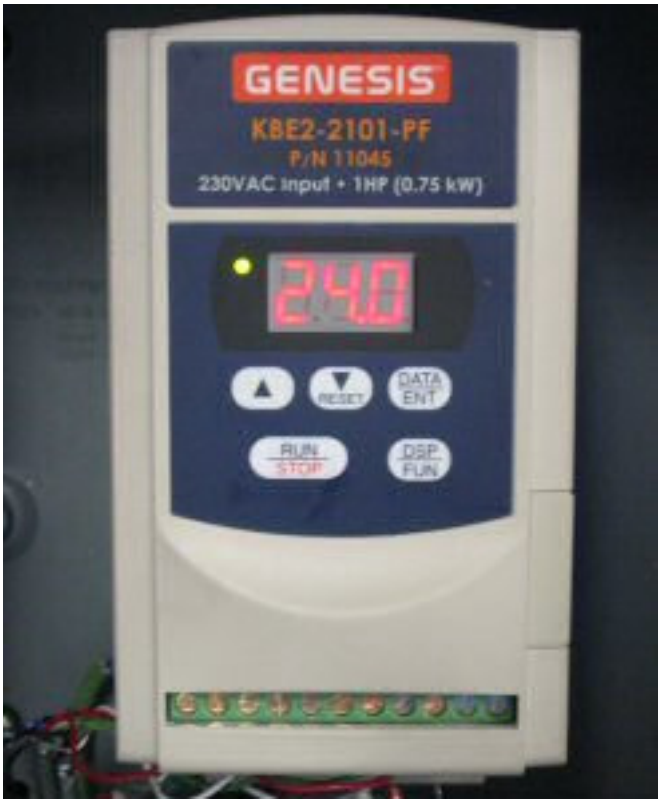
Motor Painted **photo by Kay Fisher**

Motor Parts Painted **photo by Kay Fisher**

Motor Installed **photo by Kay Fisher**

VFD

With the motor installed, it was time to make it run without installing three-phase power to the shop. I asked around and snooped on the web for the cheapest variable-frequency drive (VFD) that I could find. This was disappointing research because the cheapest drives were from offshore eBay dealers. Prices were much higher from USA dealers. To complicate matters there were a lot of tales of radio frequency interference and many folks advised using a special filter so that your neighbors don't loose their television or radio broadcasts.



VFD Showing 24 Hertz **photo by Kay Fisher**

After much Internet searching and frustration I finally ordered a VFD from Clapool Controls in Livermore CA (925) 294 5915.

VFD in Junction Box **photo by Kay Fisher**

Ron Kemp, of Clapool Controls seemed very knowledgeable about VFDs and sympathetic to my cause.

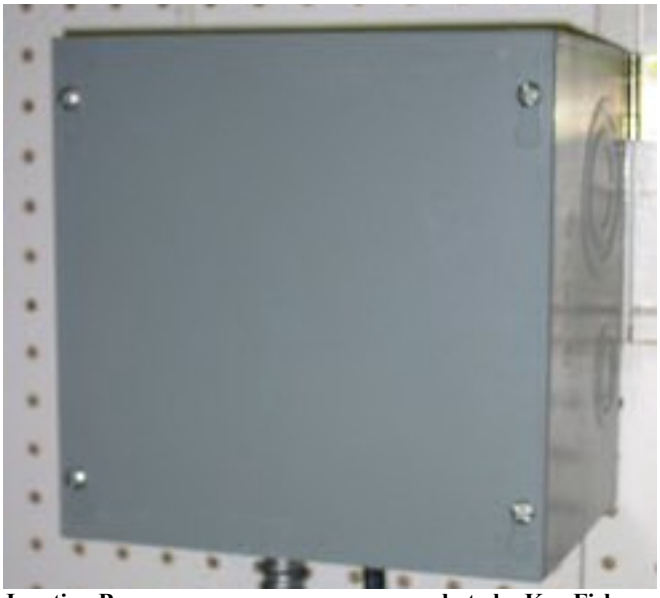
The unit I picked out was a Genesis KBE2-2101-PF. This unit is made by

KB Electronics, Inc.,
12095 NW 39th Street
Coral Springs, FL 33065-2516
(954) 346 4900
http://www.kbelectronics.com/

This small unit includes an RFI filter and costs $188 plus shipping. I also tried Electric Motor Service in Fremont CA (510) 651-2706. They returned my call 2 weeks later with a message from Lee that the same unit was $177.02. That's a better price but it was too late.

VFD Control Box **photo by Kay Fisher**

Almost all VFDs allow for external controls. I mounted two toggle switches and a potentiometer inside the old Cutler Hammer forward/reverse switch housing. To insure that the vent holes of the VFD did not ingest some swarf I mounted the control unit in a standard electrical junction box. I replaced the junction box metal front panel with Plexiglas. Not only does this protect the VFD but it also makes it silent. Before I put it in the junction box you could hear the little cooling fan inside the VFD. It is comforting that the motor, belt, and bearings of the mill are so quiet that the VFD fan could be heard.



Junction Box **photo by Kay Fisher**

The junction box must be large enough that the VFD can circulate air and not overheat!

Junction Box with Plexiglas **photo by Kay Fisher**

I used rub on dry transfer labels for the front of the control unit. You can set the high and low frequency limits as well as things like the maximum current before overload protection on this VFD. This unit is rated for 1-horsepower but since I have a ½-horse motor, I adjusted the overload protection lower. You can also program the acceleration and deceleration time of the motor. I set mine to a minimum of 16 Hz and a maximum of 80Hz – which means I can run the old motor 33% faster than rated speed.

VFD Controls **photo by Kay Fisher**

Drawbar

To remove collets, Ken Malsky, the mill's previous owner, told me that you have to back off the drawbar nut then whack them out with a hammer. Sure enough, they sell special drawbar wrenches which in addition to a ¾" wrench also

have a brass hammer. Yet, it seemed to me that the drawbar should eject the collet without a hammer.

When I tried to remove my first collet, I could not simply eject it with the drawbar as I had hoped. I had to whack it out with a hammer. I removed the drawbar assembly and took it apart. It was made to self eject. I tried several other collets with this draw bar. Some the drawbar could not even reach. Others it would just barely grab.

This drawbar measured slightly shorter than the published length in the "High Quality Tools" catalogue. High Quality Tools lists 3 different drawbars for M-head Bridgeports. Only two had 3/8 x 16 thread but one of those was one inch longer than the other. So my assumption is you get a different drawbar with your M-head depending on if it has #2 Morse taper, #7 Brown & Sharp taper, or B-3 taper. Perhaps this M-head drawbar was replaced with the wrong one. Perhaps at one time it was something other than a #2 Morse taper and the spindle was replaced.

I called Rice Machinery and got a quote on a replacement drawbar - $78.65. Wow – having a lathe and working mill I ought to be able to repair or remanufacture a drawbar. So I tried to figure out how I was going to stretch it.

Drawbar Parts **photo by Kay Fisher**

The 3/8 x 16 threaded end of this drawbar is brazed into a bored out end of the drawbar. I heated it to glowing cherry read with a MAPP gas torch and was able to force the threaded stud out with a few washers and a nut.

Drawbar Threaded Stud **photo by Kay Fisher**

I cut the head off a bolt that was one inch longer than the old threaded stud and turned the end to the same diameter. Then I heated the end of the drawbar and new stud to cherry red and hammered it back together. Now when you back off the drawbar knob it ejects the collet with little effort.

Finished at last

After two and a half years and one move across the country it is finally done.

Completed - Left Side **photo by Kay Fisher**

Done is relative of course. Someday soon I hope to add a digital indicator to the quill and perhaps a power drive for the Z-axis.

Done At Last **photo by Kay Fisher**

The photo above is me with my Bridgeport hat, my Bridgeport shirt, my Bridgeport belt buckle, and my newly finished 1947 Bridgeport. My Bridgeport coffee mug did not survive through the rebuild!

Completed - Right Side **photo by Kay Fisher**

Completed Top View **photo by Kay Fisher**

Completed **photo by Kay Fisher**

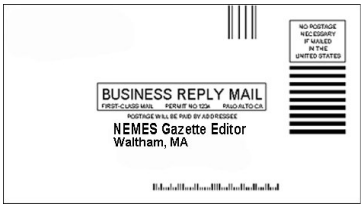
My mailing address is:

Kay R. Fisher
101 N. 38th St. #129
Mesa, AZ 85205

My e-mail address is:

KayFisher@att.net

Kay



Letters to the Editor

I'm told by a friend of mine that there is a small shaper, in mint condition, currently living in Tewksbury and it is looking for a new home. The owner is John Forney and he can be reached at home at 978-851-7013 or at work at 617-568-8272. This info comes from a person who knows what a good machine looks like, Shawn Ferrell of SR Ferrell Machine Tool. His business is refurbing the machines we all love. He did a beauty job on my B'port.

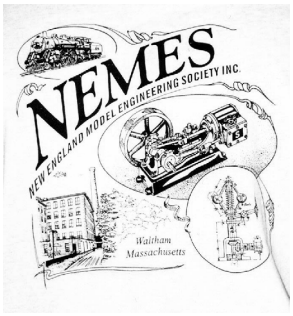
Regards,
Bob "Mac" McIlvaine

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. $5.00 shipping included.

Errol Groff
180 Middle Road
Preston, CT 06365 8206
errol.groff@snet.net

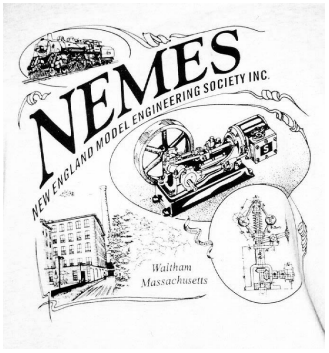


NEMES clothing

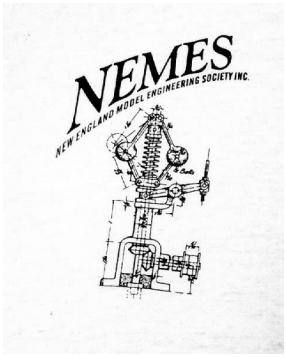
NEMES Tee Shirts

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

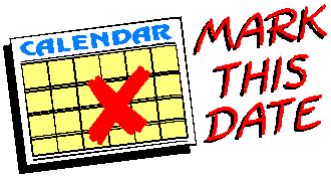
Prices:

	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
mdbouch@hotmail.com



Upcoming Events

Bill Brackett

Calendar of Events

Aug 5th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry 781-893-5410
Waltham, MA

Aug 7-8th
Scribner's Mill Show
Harrison, ME John Hatch 207-563-6455

August 7-8th
The 30th Annual Transportation Festival & Aerobatics Spectacular
Owls Head Transportation Museum
http://www.ohtm.org/

Aug 14-15th
The Second Iron Fever Expo
York Fairgrounds, York PA
Gary and Jared Schoenly 1-800-789-5068
http://www.cabinfeverexpo.com

Aug 14-15th
Straw Hollow Show
Boyleston MA at Pine Ridge Farm

Aug 21-22nd
Mystic Seaport Antique Marine Expo
Mystic CT Geo King 860-572-0711

Aug 15th Sun 9AM
MIT Swapfest Albany Street Garage
corner of Albany and Main Streets in Cambridge
http://web.mit.edu/w1mx/www/swapfest.html

August 21st
The 27th Annual New England Auto Auction
Owls Head Transportation Museum
http://www.ohtm.org/

Aug 27-29th
Waushakum 34th Annual Weekend
Holliston, MA
John Mentzer 508-359-8794
http://Steamingpriest.com/wls

August 29th
Vintage Motorcycle Meet & Antique Aeroplane Show
Owls Head Transportation Museum
http://www.ohtm.org/

Sept 2nd Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry 781-893-5410
Waltham, MA

Sept 11-12th
Granite State Steam and Gas show
Dublin, NH Phil Barker 603-495-3640

September 12th
"Made in the USA" Car Meet & Antique Aeroplane Show
Owls Head Transportation Museum
http://www.ohtm.org/

Sept 18th
Boothbay RR Model Show
Boothbay ME. Ron Ginger

Sept 19th Sun 9AM
MIT Swapfest Albany Street Garage
corner of Albany and Main Streets in Cambridge
http://web.mit.edu/w1mx/www/swapfest.html

Sept 24-26th
Cranberry Flywheelers Show & Swap
Plymouth Airport
Dave Moore 508-697-5445

September 26th
Convertible Meet & Antique Aeroplane Show
Owls Head Transportation Museum
http://www.ohtm.org/

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 or 508-393-6290.

Bill