



The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 134

June 2007

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Editor's Desk

Victor Kozakevich

There's a dream about to be launched in Scituate: a handmade, 50 foot floating dream. Thirty years ago, Bob Kingsland decided to build himself a boat. It's a steel hulled, diesel powered, 20-ton, cutter-rigged sailboat, with plans to launch on June 16.

Anyone who's taken on a major project knows the need to balance things, between the need to see it finished, and the need to take time for details. When it's going to be your own, being sure it's right is often the only way.

In the past 30 years, the project would compete with raising a family and making a living, and was sometimes extended by the desire to make the boat just a little better. Three years into building, he didn't like the way it looked so he recurved the bottom of the boat, Smaller decisions had to be made as well, from layout of interior to the sheen of the varnish. The result makes the builder believe he'll be happy with the boat for the rest of his life, when cruising the South Pacific and other places of his dreams.

What do you name a boat that has already been such a big part of you life? The owner decided on "Restless".

Next Meeting

Thursday, June 7, 2007

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 31st 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

Dick Boucher

Some fellows asked me about subscribing to Model Engine Builder magazine. The subscription phone number is 1-866-996-8999 or e-mail publisher@modelenginebuilder.com The web site for the magazine is www.modelenginebuilder.com

Dick B.

The Meeting

Our speaker for June is John Muise who will be bringing us a history of miniature trolley cars from 1896, both toy and scale. I have known John for many more years than I care to remember. He is the organizer of the Haverhill Band Parents Train Show. At the show this year, John told me he was writing a book on the Miniature Trolleys. John will bring along a number of items for us to see. He has even promised a Toonerville Trolley with the Skipper on board!



The Meeting

Todd Cahill

Miscellaneous Ramblings

Well it looks like I am in a pattern now. We get a couple of days of rain, then sun, followed by me following my lawnmower around the yard. Man, does the grass grow this time of the year. I can't wait for it to turn brown and crunch under my feet when I walk on it.

Despite the rainy spring, we did have a great day for the Dunstable Show again this year and it was great to see so many of the members out for the event.

While reading the web I discovered why Professor Chaddock called his tool and cutter grinder the Quorn. If you would like to know why, either go to Ron Chernich's site at www.modelengineneeds.org which has had over one million visits, or ask me at the meeting.

I know of two Quorn grinders built by our members, perhaps there are more. Walter Windship built his using no castings, a truly great bit of fabrication, and Larry Twaits had given a great demonstration of his at one of our February shows a number of years ago. It is said that there are many more casting sets under benches than actual completed ones. I wonder if I should get my castings out and dusted off for when the grass gets crunchy.

Venerable President Richard Boucher called the May meeting to order with the announcement of our annual nominations. As usual, the present officers will run unchallenged with the exception of Membership Secretary, Ed Borgeson, who will receive help from Al Goldberg.

Show and Tell for the evening included information on a few different Blacksmith classes taken by members. Dick Koolish attended a class in Waltham taught by Carl West, who was a NEMES speaker on Armor making. Dick learned twisting, thinning, and bending to make an 'S' hook. Vern Eshbaugh attended a class given by another former NEMES speaker, Carl Close, who produces beautiful architectural ironwork. In one 6-hour session, Vern was able to produce a nice looking barbecue fork,

Alan Bugbee purchased a set of camera lenses and filters at the Tool Shed. One produced a type of kaleidoscopic effect. He also told of the history of the cigar tobacco industry in the Connecticut area. He covered everything from the glaciers to cigar rolling machines.

Founding President, Ron Ginger told of the events occurring at The Boothbay Railway Village. There is steam run there everyday. They have also become boilermakers for another area narrow gauge railroad. The last weekend in July and the first

weekend in August, Thomas the Tank Engine will be there for their summer bash. The weekend after Columbus Day will be their "learn how to drive a steam locomotive" weekend.

Rollie Gaucher told a tale of repairing a gun part with a $\frac{5}{16}$ -20 thread, which led him to look through his collection of odd dies. Sure enough, he found a 20-thread die that matched the threaded part perfectly.

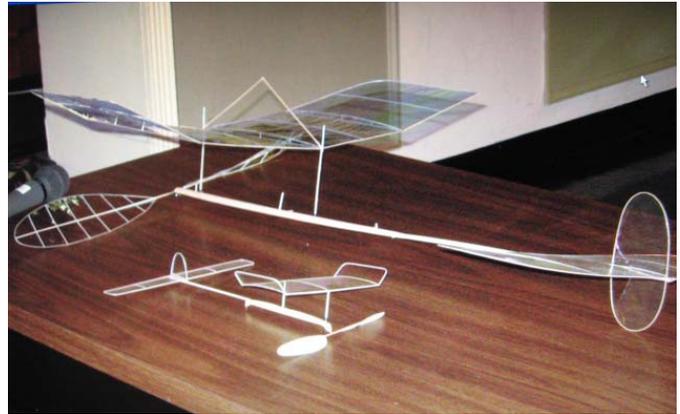
New member, Bruce Murray offered for free, a nine-inch South Bend lathe bed. The bed presently awaits the exchange with my old, rather worn, bed. Thanks, Bruce.



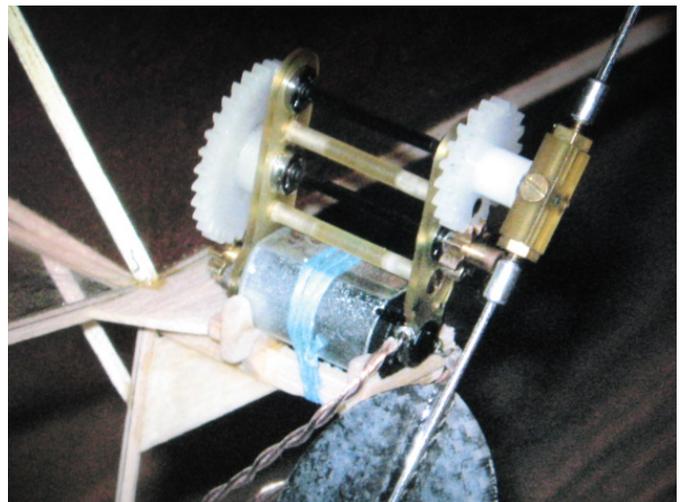
Last month's speaker and member, Herb Cotterly, knows and introduced the guest speaker for the evening. Ray Harlan builds very lightweight model aircraft that is flown indoors. There are a few different classes in lightweight aircraft. Ray showed a number of different planes in different classes. The first one he showed was an international class plane with a wingspan of 25" and a 22" propeller. It is constructed of balsa with clear microfilm as a skin. It weighs in at a miraculous 1 gram. Ray wound the rubber band used to power the plane with a torque meter. After attaching the rubber band to the plane he launched it, bringing absolute delight to all present as the plane flew ever so elegantly around the room.

Slight adjustments in the plane's wings, rudder, and propeller make the plane fly in a wide circle. A slight sense of panic ensued as the plane headed for the brick wall but with so little mass, it withstood the impact without damage. It

reminded me of a mayfly banging against a window.



The second model Ray showed was a Penny Plane. The class was first started to encourage new builders. The class had simple requirements such as an 18" wingspan and a 20" fuselage length. However, the class soon became more sophisticated with biplanes and variable pitch propellers. Ray's plane holds a record in the class with a 16-minute 40-second flight. It had an unusual flight profile when it set the record. First, it climbed to about 25 feet, circled there for a while, then came down to about one foot where it flew for another minute. Then it climbed to 35 feet and came down to ten feet when the propeller ran out of turns.



The third plane Ray showed had a tiny electric motor. The batteries have a constant torque output making these types of models more difficult to adjust for flight. Ray has experienced drastic changes in flight habits.

Another plane ray showed was an ornithopter, which had no propeller. The ornithopter has two sets of

wings that flap. In flight, it appeared as if it was a dragonfly in slow motion.

Ray has flown his planes in various places; at the MIT armory building and at a large hanger in New Jersey, which used to house the Hindenburg. Last year, he flew at the world championship in a salt mine in Romania. That room measured 200 ft high by 400 ft long by 100 ft wide. Their team came away with three of the four awarded gold medals!

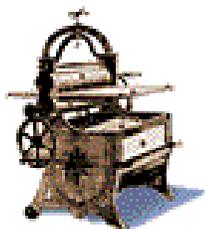
Todd



Treasurer's Report

Richard Koolish

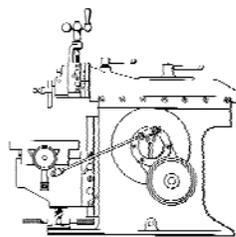
Balance as of February 15, 2007	\$8329.80
Feb show food income	+ 426.68
Feb show T-shirt sales	+ 129.00
March Gazette	- 168.52
April Gazette	- 181.82
May Gazette	- 167.49
Speakers fees (2)	- 100.00
2 year website fee	- 382.80
Donations	+ 15.00
Member dues (34)	+ 850.00
Balance as of May 24, 2007	\$8749.85



NEMES Gazette Editorial Schedule

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

<u>Issue</u>	<u>closing date for contributions</u>
July '07	June 22, 2007
August '07	July 20, 2007
September '07	August 24, 2007
October '07	September 21, 2007
November '07	October 19, 2007
December '07	November 23, 2007



Shaper Column

Kay Fisher

Shaper of the Month Terry Chisholm's 7" AMMCO

This month's story is one of acquisition and rebuild. Terry Chisholm from McGregor Ontario submitted this story about his 7-inch AMMCO.



7 Inch AMMCO

Photo by Terry Chisholm

"I obtained this shaper from my friend Keith (who is a farmer) about Jan 2003. He had it about a year. He obtained it for the 1/3 hp motor on it. He wanted to use it on a grinder, I asked him where he got it from, and he stated that another fellow that he knew had it. It had belonged to his brother and was stored in his barn for some time - at least ten years. I told him that I would trade him a 1/2 hp motor for it and he agreed to the terms.

Keith's son and I loaded it up in the trunk of my car and I took it home. I unloaded it with my engine lift. I would say it's about 250 lbs.



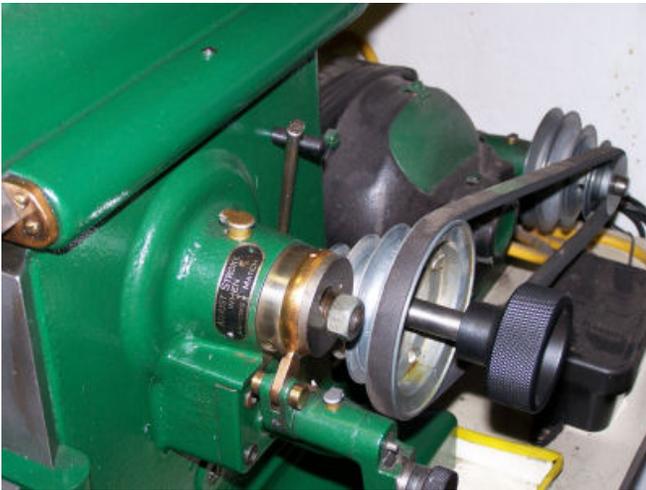
Right Side Photo by Terry Chisholm

The shaper was a cruddy mess - oily, dirty, paint chipped and worn. It was grey and I believe that was the original color. I did not take any pictures before I started the clean up. It had a war tag on it so the vintage is late 30s or early 40s.



Rear Photo by Terry Chisholm

I had some parts black oxide finished and did a lot of polishing with a cotton buffing wheel charged with rouge. I cleaned up the vise on a surface grinder. I polished the vice handle with jewelry rouge and cotton buff. I turned the balls for the vice handles from brass.



Right Side #2 Photo by Terry Chisholm

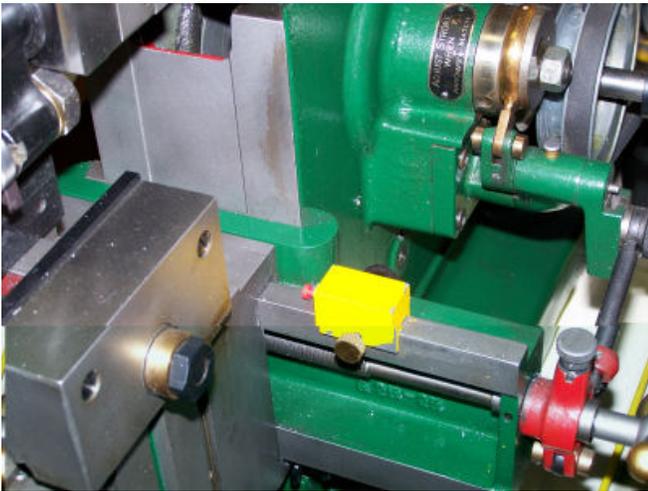
I finished rebuilding and painting it after a few months of part time work. My first task was to strip and clean it, next haul it to where I worked and then glass bead blast all parts. Then I cleaned it again and started making new bushings for it. I replaced the bull gear shaft bushings, spur gear shaft bushings, put new bushing and pins on the link arm, and drilled out and made new bushings for the ratchet links. All bushing were made from bronze. I also made a new slide block for the stoke adjustment.

I first put on two coats of primer. Then I brush painted it with two coats of forest green enamel.



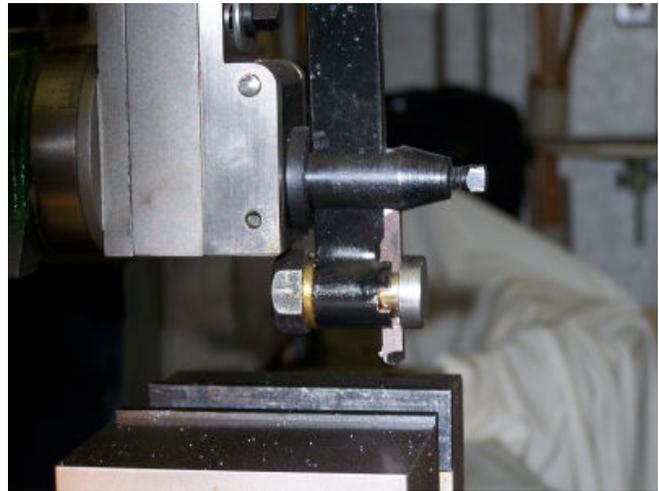
Front Photo by Terry Chisholm

After I had it cleaned and painted, I let it set for a week to harden up then I took off the drive pulleys, mounted them in my lathe, cleaned them, installed new belts and mounted it on a bench that I had in shop. When I fired the old girl up, low and behold, she ran very quietly.



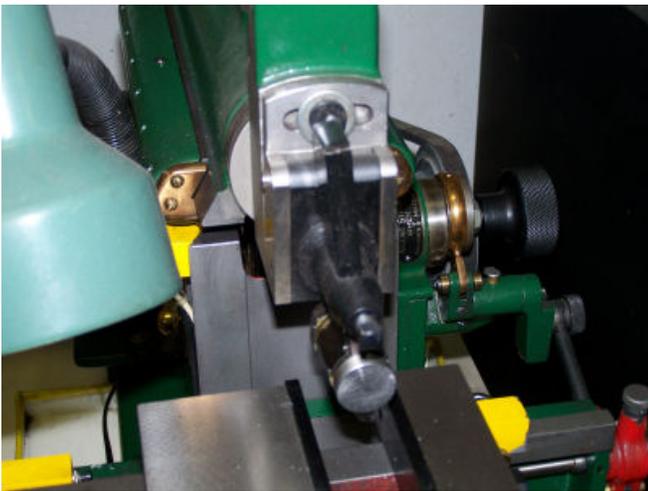
Limit Switch (Yellow) Photo by Terry Chisholm

The motor is a $\frac{1}{3}$ horsepower Leeland which I believe is the original.



Tool Holder Photo by Terry Chisholm

The yellow aluminum blocks on each side of table are positioned and mounting micro switches. When the carriage reaches the micro switches it will shut the unit down.



Clapper & Tool Holder Photo by Terry Chisholm

After a few test cuts, I thought that I had better find a way to shut it down on auto, so I made micro switch holders and wired it to shut down when it was finished cutting. I made two slide brackets for table travel limit switches (momentary, normally closed switches) and a holder for the start & stop switches out of 6061 aluminum. The start switch is normal open, the stop switch is normal closed. On the right rear of the shaper table top, there is a black enclosure that contains a 12volt relay (single throw double contact). This is powered by a 12VDC adapter, so there is no high voltage at the controls. If the power drops out, the relays drop out and the motor also shuts off.



Cutter Holder & Insert Photo by Terry Chisholm

The larger yellow aluminum block on the left that mounts the light also has a stop switch and a start switch. I can jog the motor by holding down the stop button and depressing the start button!

[Note: This is the same functionally as the limit switch schematic that Bob Neidorff has given us in shaper column 55.]

I also made the light holder from 6061 aluminum. The door was missing so I turned one out of 6061 aluminum and made locking arms and brass knobs for it. Then I made the tool holder that was designed by Art Voltz. I milled it out of a solid piece of bar and welded on the round end. I bored out slots to hold the cutting tool in two positions – for cutting on the horizontal or vertical. The insert was broached thru to hold cutters.



Shearing Tool in Holder Photo by Terry Chisholm

[Art's tool holder drawings are posted on the web at the Yahoo Metal_Shapers group: http://groups.yahoo.com/group/Metal_Shapers The drawings are in the Files section (membership required) as holder1.jpg and holder2.jpg]

For cutting keyway slots I made a special insert.



Holder & Keyway Cutter Photo by Terry Chisholm

Thanks Terry for that great acquisition story.

Keep sending me email with questions and interesting shaper stories.

My email address is:

KayPatFisher@gmail.com

Kay



Keyway Insert Photo by Terry Chisholm

I have used the shaper to square up stock, cut internal keyways, and most recently, cut a real small dovetail for an indicator holder.

The total cost in this project is small because I had most of the material in shop. I bought two belts and a couple of cans of primer. I had the bronze for bushing in stock and micro switches and relays from my amateur radio building hobby."



Shop Tips

Stainless Steel

I'd like to build a model Sterling engine. One of our members suggested that I look at Jerry Howell's engine plans. Jerry's website <http://www.jerry-howell.com> has many engine plans for sale. I'm a real novice at model engines, so I read every tip on his website then asked Jerry a lot of questions before committing. Wow, there's a lot to building one of these engines! My compliments to anyone who's completed one of these projects.

I finally bought a set of the plans for Jerry's "Beamer", a Sterling cycle engine modeled after engines of the Victorian era. The plans come with detailed drawings of each part and suggested materials. This engine has many different parts, some aluminum, some brass, some drill rod, and some stainless steel.

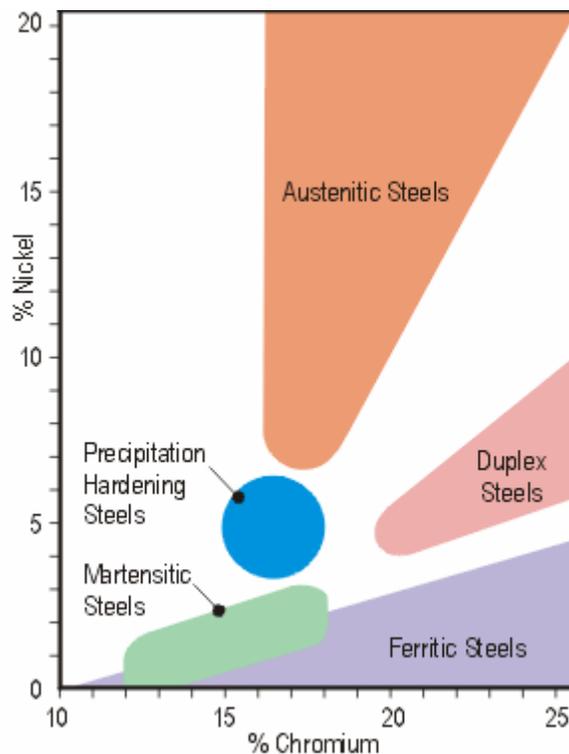
If you've ever tried to machine stainless steel, you know that it can be awful. Stainless steel "galls" very easily. In other words, even a sharp tool can dig out gouges rather than leaving a smooth surface. Also, stainless will work-harden, so if the tool isn't extremely sharp, the steel will harden as you machine it, and the harder it gets, the quicker the tool dulls (and breaks!). Jerry's plans call for two stainless parts, and one is a very precise machining challenge, so I'm going to have to figure out how to precisely machine it.

Some quick research taught me that there are five classes of stainless steel and many varieties in each class. Each variety has a different fraction of chromium and nickel, plus small amounts of other elements like Manganese, Copper, and Silicon.

The most common class is Austenitic, the 300 series stainless steels. Different varieties have different properties. For example, 304 is the general purpose cutlery stainless, sometimes called 18/10 because it contains 18% chromium and 10% nickel. Types 316 and 317 have higher corrosion resistance, type 310 is better for extremely high temperatures, and type 303 is considered more machinable. Proprietary versions of type 303 (for example, Ugima 303) are extremely machinable, but also hard to find and expensive.

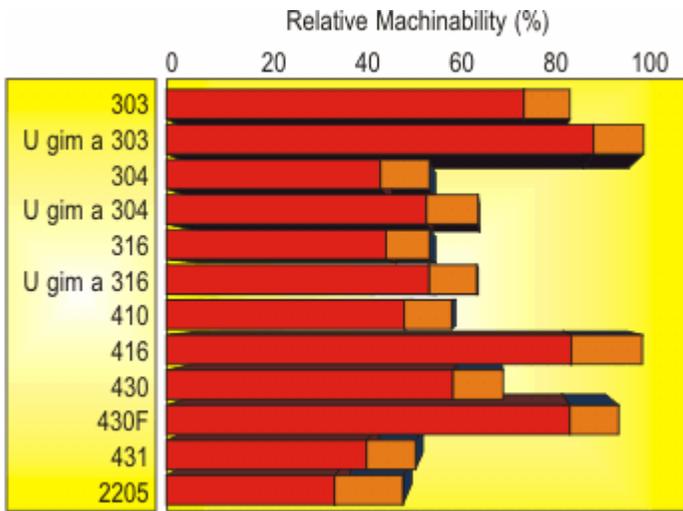
Another common class is Martensitic, or 400 series stainless steels. These have slightly less chromium and much less nickel, and are slightly less resistant to corrosion in harsh environments, but still are resistant to rust. In this category, type 410 is the general purpose material, 420 is harder, 431 is tougher and more corrosion resistant, and 416 is considered very machinable, even more machinable than 303.

Here's a chart showing the different types of stainless steel and their chromium and nickel compositions, courtesy of AZoM.com:



Relative machinability is a measure of ease of machining and the speed that it can be cut without problems. Free-machining carbon steel 1212 is the machinability standard, with a rating of 100. This steel contains added phosphorus and sulphur to improve machinability. Common high-carbon steels are harder to machine, with steels like 1095 rated 42. Some metals have a relative machinability greater than 100, such as 12L14 "Ledloy", which is rated 158 due to the addition of 0.25% lead. Another easy-to-machine metal containing lead is 360 brass (3% lead). The chips from cutting leaded metals crumble as they peel off the work, and the lead helps lubricate the cut. Unfortunately, adding lead to steel makes it difficult to weld and adding sulphur to steel reduces toughness. So there is no perfect material. Everything is a trade-off.

This chart, also from AZoM.com, shows the relative machinability of various grades of stainless steel. "Ugima" grades are proprietary compositions made by Ugitech in Ugine, France. These are harder to find and more expensive, so I didn't consider them in my search for stainless. Leaving them out, my best hope is 416 stainless, which is rated approximately 85% as machinable as free machining 1212, and contains at least 0.15% sulphur.

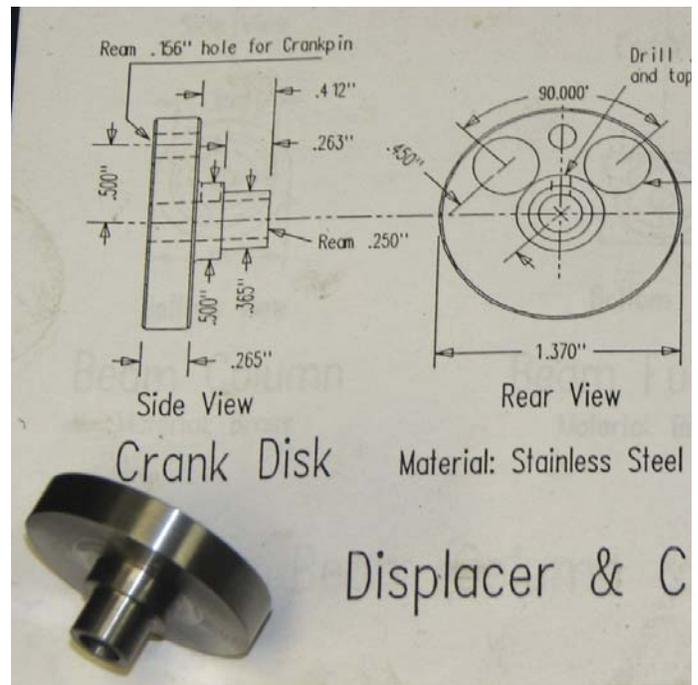


Calls to local dealers had the expected results. When I finally found a dealer that had some 416, his question was "How many 20' long bars do you want?" So I checked a different source: ebay. There is a dealer on ebay, Shapiro Supply, selling 416 stainless rods in 4' lengths for a fair price. So I bought one. This will last me many years and many projects.

I've made my first part from this rod and can report that 416 really is easy to machine. It produces a good surface finish with sharp HSS or carbide tools, works over a wide range of feeds and speeds, doesn't gall, doesn't seem to work harden, and doesn't dull tools quickly. On my Logan lathe, I was able to remove as much as 0.04" from the radius of a 1.375" rod in one pass, producing a long, hot, straw-colored chip. I was also able to peel layers as fine as 0.001" from the radius as a very fine shaving, with beautiful surface finish. The hardest lathe operation is normally parting. I was able to part off my part from the 1.375" rod in one plunge, under power feed, with a slow drip of oil. In this case, the chips came off as tight curls, 0.125" wide. The parted surface was fairly good, but a purist would face it once more to get the nicest finish.



Parting off 416 Stainless Photo by Bob Neidorff



Stainless Part and plans Photo by Bob Neidorff

In another three or four years, I should have this engine done! ☺

I learned a lot about steel from AZoM.com (A to Z of Materials). You can read more about stainless steel and machinability here:

- <http://www.azom.com/details.asp?ArticleID=470>
- <http://www.azom.com/details.asp?ArticleID=1178>
- <http://www.sdp-si.com/D190/HTML/D190T94.htm>

Bob Neidorff



NEMES Mailing List

Send an email to nemes-subscribe@yahoogroups.com and mention subscribe on the subject line and in the body of the message.

In Memoriam

Bill Schoppe

The following notice was provided by Dick Boucher and Ron Ginger.

I have received the unfortunate news that Bill Schoppe passed away quietly in his sleep on Wednesday morning 5-9-07. For those of you who knew Bill one could not help but notice that his health was deteriorating but even with the problems he was a regular attendee at the Society Meetings. Bill was also a regular attendee at the Antique Gas Engine Shows held throughout the region and beyond and always had a great smile and something interesting to show.

A scholarship fund in memory of Bill Schoppe has been established. This fund will be designated for the benefit of a student of a Maine Antique Power Association member. Cynthia and I discussed this tonight and she feels Bill would want the son or daughter of a MAPA member to get the assistance they need with their education.

The Limington show generated \$75.00 which we will use as a "kick off" amount to establish the scholarship fund. Charles Chiarichiaro of Owls Head Transportation Museum has committed to donate a bi-plane ride which will be auctioned off and the proceeds applied to the Fund. As the fund builds we will monitor it and decide on the amount that will be given out

etc, much like we did with the Paul Tewksbury Memorial Scholarship.

I would like to Thank Paul Baresel for donating the \$75.00 from the LHS 50/50 drawing to MAPA and this cause. If you would care to make a donation, you may do so by sending a check made out to MAPA to:

Pat Kelley Treasurer
25 Wessnette Drive
Hampden, ME 04444-3015

Please indicate that your donation is for the Bill Schoppe Memorial Scholarship Fund.

We will dedicate our 34th Annual Show in June to Bill. Please keep Cynthia in your thoughts, she is doing very well and feels that Bill is in a better place.



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

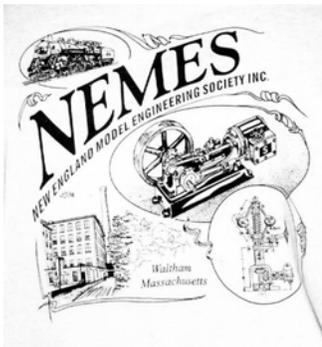


NEMES clothing

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

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

Calendar of Events

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 or (508) 393-6290.

Bill

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

June 10th Rods, Mods & Tuners & Antique
Aeroplane Show
Owls Head Transportation Museum Owls ME

June 16th-17th 10AM-3PM Father's Day Meet
Pioneer Valley Live Steamers
Southwick MA.
<http://www.pioneervalleylivesteamers.org>

June 17th 9AM The Flea at MIT
Albany Street Garage at the corner of Albany
and Main Streets in Cambridge
<http://web.mit.edu/w1mx/www/swapfest.shtml>

June 23rd Maine Coast BikeFest & Antique
Aeroplane Show
Owls Head Transportation Museum Owls ME
<http://www.ohtm.org/>

June 24th Van Brocklin Meet
Waushakum Live Steamers
Holliston MA
<http://www.steaminpriest.com/wls/>

June 23rd-24th Orange Show
Orange Airport Orange MA

June 24th NSOCC Show
Topsfield Fair Grounds
Ed Rogers 781-233-3847
<http://www.nsocc.org/homepage.htm>

June 27th 8AM through 12:00 noon,
130 pre 1916 motor vehicles from the
Horseless Carriage Club will be visiting the
New England Wireless and Steam Museum
East Greenwich, RI 401-885-0545

June 28th Transportation & Technology Auction
Owls Head Transportation Museum Owls ME
<http://www.ohtm.org/>

July 5th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry 781-893-5410
Waltham, MA
<http://www.neme-s.org>

July 7th Antique Engine Meet & Tractor Pull
Boothbay Railway Village
Rt 27 Boothbay ME
www.railwayvillage.org

July 8th Pepperell Crankup
Pepperell MA Town Field on Rt 111.

July 7th-8th Fabulous 50s, 60s, & 70s & Antique
Aeroplane Show
Owls Head Transportation Museum Owls ME
<http://www.ohtm.org/>

July 8th Pepperell Show
RT 111 Pepperell, MA Ken Spalding 978-433-5540

July 15th 9AM The Flea at MIT
Albany Street Garage at the corner of Albany and
Main Streets in Cambridge
<http://web.mit.edu/w1mx/www/swapfest.shtml>

July 21st -22nd Trucks, Tractors, Engines & Antique
Aeroplane Show
Owls Head Transportation Museum Owls ME
<http://www.ohtm.org/>

July 27th-29th Eliot Antique Tractor & Engine Show
Raitt Homestead Farm, Rt 103
Eliot ME. Lisa Raitt 207-748-3303

July 28-29th New England All-Corvette Meet &
Aerobatics Show
Owls Head Transportation Museum Owls ME
<http://www.ohtm.org/>