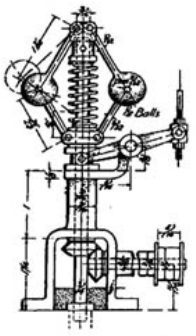
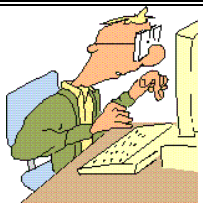


The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 122 June 2006 © 2006 NEMES



Editor's Desk

Victor Kozakevich

The saying "One man's trash is another's treasure" is more true now than ever. Prices for scrap metal are rising as countries in the far east are rapidly industrializing and need material to feed their factories. Metal prices have nearly doubled in the past three years.

In January and February of 2006, U.S. recyclers exported 290,000 tons of scrap iron, twice as much as the same period in 2005. In that year, US scrap yards processed 70 million tons of iron and steel. To contrast, in the middle of WWII, U.S. industry consumed just 56 million tons of scrap iron and steel per year, even given the patriotic metal donations to built tanks and ships.

Higher prices make it harder for those who scavenge curbside discards for metals, as the homeowner is more likely to bring it to the recycler for cash.

For a NEMES member, scrap is just another word for raw material. However, in case you've been hoarding chips, it might be time to sell them.

Next Meeting

Thursday, June 1, 2006

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.

Contents

President's Corner

Norm Jones

The Meeting

Our speaker for the June meeting will be Jim Phelan. Jim is co-owner of Burkart-Phelan, Inc., flute and piccolo makers in Shirley, Massachusetts. His background includes degrees in music performance from The New England Conservatory and a BSME from Northeastern University. At Burkart-Phelan, he is Director of R&D and is responsible for the introduction of CNC machining to the high-end musical instrument industry. Jim is also the author of "The Complete Guide to the Flute and Piccolo", now in its second edition. The title of the talk will be: "How Flutes are Built"

A Vote of Thanks

I would like to take this opportunity to thank a number of you who have worked so hard over the years to support NEMES. Without your efforts we surely would not have the vibrant organization that we enjoy today. Thanks to Steve Cushman for serving as Vice President since the club's inception. Also thanks to Max ben-Aaron for capturing the essence of a meeting and so eloquently elaborating on the details in his Gazette column each month. Thanks to Dick Koolish for serving as Treasurer. Thanks to Ed Borgeson for serving as Membership Secretary. Thanks to Bill Brackett for serving as Event Editor. Thanks to Errol Groff for managing our outstanding web site. And a special thank you goes to Vic Kozakevich as Editor and Bob Neidorff as Publisher of the Gazette.

Elections will be held at the June meeting. The nominees to serve for the 2006-2007 year include: Vice President; Frank Dorion, Treaurer; Dick Koolish, Membership Secretary; Ed Borgeson, Director; Mike Boucher. There currently are no nominees for the office of President and Secretary. Please consider accepting a nomination to one of these positions.

Restoration Opportunity

Fred Widmer advised me a couple of weeks ago to expect a call from an acquaintance of his regarding a piece of antique machinery. For those of you who are not aware, antique engines are one of my long-term interests!

Sure enough, I received a call from Paula Muggleton in reference to an antique cracker grinder located at the Francis Farm in Rehobeth Massachusetts. It turns out that the Francis Farm has been hosting clambakes for over 100 years. Ken Foley, who is the current owner of Francis Farm as well as being related to the founding family, is planning to establish a museum on the grounds which will highlight the history of clambakes in the area as well as all over New England. He would like to restore the P Bowsher #7 Cracker Grinder which was patented on Sept 20, 1887 for the museum. Ken would like to hear from anyone who might like to become a part of this restoration project. He can be reached at (508) 328-0028. Take a look at their web site: http://www.francisfarm.net for more information. Here are some pictures of the cracker grinder in the barn, awaiting restoration!

See you on June1

Norm

The Meeting

Max ben-Aaron

The May meeting was called to order by Venerable President Norm Jones in the Jackson Room of the Charles River Museum of Industry.

After the President's report, a motion was made to donate $1000 to the Museum in appreciation of their granting us the use of the room for our meetings and supporting us generally. The motion was carried unanimously.

Ed Rogers reminded the meeting of our previous participation in the North Shore Old Car Club Annual Car Show at the Topsfield Fair Grounds and asked the Club to show up again at the 37th Annual Show on Sunday June 25th. I have been present at several meets and I can attest that it is a great venue. The N.S.O.C.C. accommodates us with style and the visitors to our table are very appreciative. I enjoy socializing with fellow NEMES members and seeing the cars exhibited. This show is highly recommended. Please show up at the main gate and tell the gatekeeper that you are with NEMES.

A team at the Charles River Museum of Industry (http://www.crmi.org) is creating a new set of activities for kids and could use your help. This fall, the museum will be opening a new exhibit highlighting automata, guided by long-time NEMES member John Bottoms. In conjunction with this exhibit, John and museum trustee Rudy Ruggles are creating a set of workshops for elementary and middle school kids that will enable them to learn more about the mechanics behind these mini-machines. They have some examples of kits that kids could use to make their own automata, but they could use help choosing appropriate models, refining the content, and structuring and delivering the program. Along with workshops run at the museum itself, they would also like to create a "traveling" version that can be done at schools.

If you would like to use your knowledge and expertise to help them create a fun and interesting program to get kids excited about engineering, please email Rudy rudy.ruggles@comcast.net Even if you've only got an hour to give, they would welcome your input and assistance. Please contact Rudy Ruggles (617-513-1869) with any questions.

Our speaker at the May meeting was Stan Grayson and the topic was "antique Marine Engines".

Stan has authored many books on antique engines. His first book "Old Marine Engines, the World of the

One-lunger", sold out quickly. Public demand led to its reissue and it is now in its third edition. To document other marine engines, Stan wrote a 2-volume set "Engines Afloat, from Early Days to D-Day." He also wrote "Beautiful Outboards" and "Beautiful Engines, Treasures of the Internal Combustion Century." His books are available from Devereaux Books in Marblehead (781-631-3055).

The topics Stan covered were:

- Industry pioneers
- Technical development
- Diesel background
- The meaning of it all...

The talk was lavishly illustrated with slides. While this makes for a more interesting talk, it also makes it very difficult to report without access to the pictures.

Stan started with a perspective slide of the Chicago Exhibit of 1893 and an anecdote about the rescue of the crew of small sailboat that capsized on Lake Michigan. The Fair's steam launch was about to try to rescue the crew, but a gasoline-powered boat beat them to the punch, signaling that a new era in powered boating had begun.

The builder of the first vehicle that could fairly be called an automobile, Gottlieb Daimler was also a pioneer of marine gasoline engines. In 1886, Daimler and Maybach were secretly testing marine engines on the Neckar River. An Otto engine of that era, putting out 2 HP at 160 rpm was a huge success. It should be noted that it weighed 2200 pounds, not a very good HP/weight ratio by today's standards. At about the same time, another automobile pioneer, Karl Benz, also trying to keep his work secret, was testing his 3-wheeler in the dark.

By 1890, Daimler was marketing engines for marine applications. Steinway, now noted for pianos, acquired the rights to sell Daimler engines in the US in 1888.

The marine-engine development era can be divided into 4 periods:

- Pioneer period 1884 – 1898
- First period 1889 – 1912
- Maturation period 1913 – 1929 which saw the emergence of early diesels
- Prewar modern era 1930 – 1945 when diesels were perfected.

A pioneer, Clark Senz, from Ohio, installed a gas engine in a boat in 1884. In Grand Rapids, by 1892, he produced the 2-cycle Senz 1-lunger, one of the most efficient engines at that time. It had no valves and a make-and-break ignition system. The founder of ChrisCraft was an early user of Senz engines.

Ignition was a perennial problem in early gasoline engines. In 1884, Karl Benz remarked: "Ignition! The problem of problems!"

Ignition types at that time were:

- Open flame
- Make-and-break
- Hot tube (using an iron tube plated with platinum)
- Jump spark
- Diesel (compression ignition)

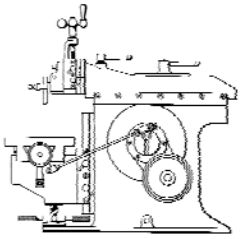
Commercial fishermen tended to favor make-and-break because it was more reliable when wet.

The Sterling Engine Company produced both straight 6- and 8-cylinder engines, with cylinders cast in pairs, by 1910. The blocks were sleeved for lightness, but they were still heavy. They featured counterbalanced crankshafts and filtered oil cooling.

The rest of the talk highlighted the engine builders van Blerk, Alexander Whitney and Kettering. We can't do it justice without pictures. If you are interested, Stan's book is recommended.

All in all, it was an interesting an informative lecture. Thanks Stan.

Max



Shaper Column

Kay Fisher

Building a Vise

It is an unfortunate fact that many fine shapers are still available but their vises are missing. Unfortunately I currently find myself in the same boat. You can find them on eBay but usually they cost almost as much as you may have paid for your shaper. There are also some nice new vices available, which will work just fine. But the third alternative is to build your own.

Bill Cleary in Pensacola Florida just did exactly this. Here is his story:

"When I purchased my 7 inch South Bend shaper at a local school auction in 2005, it was complete and working, with the exception of a vise.

Restored South Bend **Photo by Bill Cleary**

The vises on eBay were very expensive and the little drill press vise I had kept slipping. When I saw these drawings for an AMMCO Shaper vise on the internet, I decided to make my own vise:

http://lathe.com/YahooGroups/Files/Metal_Shapers/ShaperVise.pdf

If you join the Yahoo group – "Lewis_Machine_Tool" which is dedicated to the Lewis family of machines, you will have access to the file "shaper_vise.exe" which is a self-executing file that contains 3-D drawings.

Many thanks to Keith Violette for the excellent drawings and Art Volz for preserving them!

I made the vise from Fortal, an aluminum alloy, which is supposed to have the strength of steel. See the excellent article "A Unique Mill Vise - Junior Edition," by Donald L. Feinberg on page 26 of the December 2004/January 2005 issue of Machinist's Workshop. He provides a good bit of information on Fortal. I bought my Fortal from www.mousebar.com, who have apparently closed shop, so if anyone out there knows a good source, please let us all know. Fortal is a very friendly material for the home shop, since it can be cut with wood working tools like a carbide table saw blade. I also used a metal cutting band saw blade, but Mr. Feinberg states that a woodworking band saw could be used.

Table Sawing Fortal **Photo by Bill Cleary**

Incidentally, my band saw was homemade over 20 years ago from a "metal parts kit" made by Gilliom Mfg. of St. Charles, Missouri, and is still the most frequently used tool in my shop!

Band Sawing Fortal **Photo by Bill Cleary**

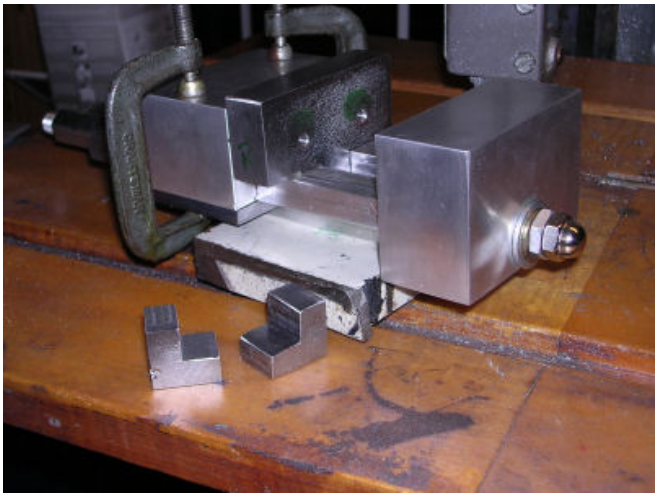
My vise was patterned after the drawings in the two references, but was scaled to a slightly narrower width because of the width of the size of Fortal on hand. I incorporated a couple of novel improvements, which you may notice in the photographs. The first idea is to use "hardware store fasteners" for simplicity and low cost.

Vise Roughed Out **Photo by Bill Cleary**

The second idea is a novel pair of "lock blocks" that work like a lathe carriage clamp, but pull the moving jaw downward.

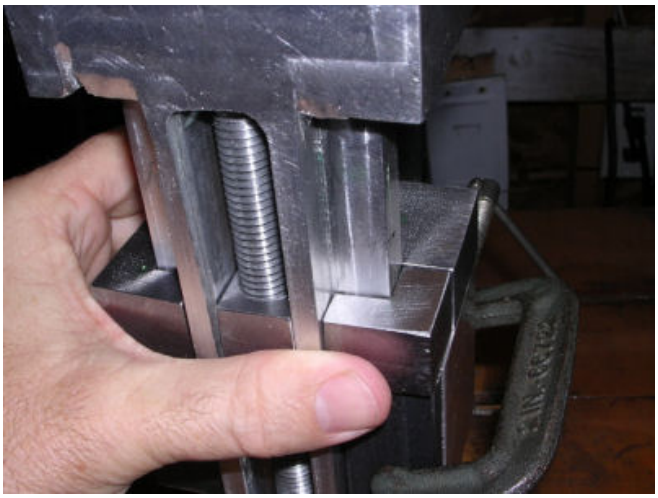
I used ¾" scrap steel for the moving jaw, lock blocks and swivel base. A piece of ½" steel was used for the fixed jaw.

The first key piece is the moving jaw. I shaped it into a T shape so that the thick top part of the T is the actual moving jaw, which contacts the work being held. The ¼" thick steel gibs are fastened to the bottom of the Fortal guide block.



Side View with Lock Blocks **Photo by Bill Cleary**

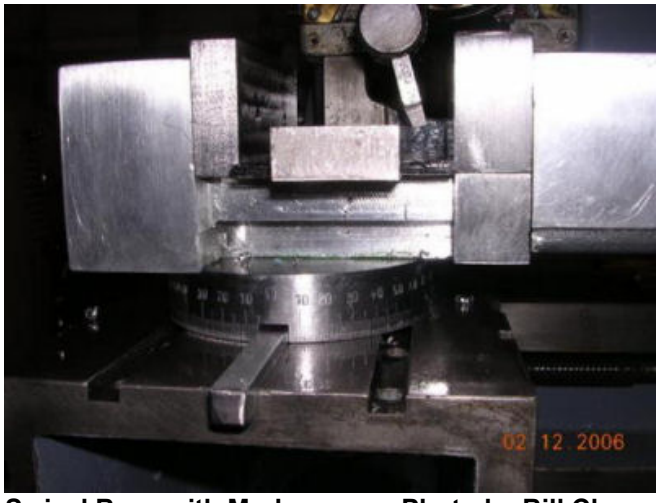
The lower part of the T shaped moving jaw is drilled and tapped for the leadscrew. I used a piece of RH thread, ½-13 rod which I will probably replace with a piece of LH thread rod sometime. This lower part was very carefully hand-fit to the central opening, so there is very little play. The top of the T of the moving jaw extends ½" beyond each side of the body or base of the vise. The thick steel of the moving jaw hanging out over the sides creates the ideal space for an L shaped block.



Bottom View of Lock Blocks **Photo by Bill Cleary**

The block becomes a lock when it is drilled and tapped down from the top (I used a #10 Socket head cap screw countersunk). The lock block dimensions are 1" square, ¾" thick with a ½" x ½" notch cut on the inside portion, so that it nestles perfectly under the top of the T of the moving jaw, outboard the base or body of the vise, and under the vise body slide as shown in the picture above. It stays in position due to the fact that it is in contact with the steel plate gibs and it has the #10 SHCS holding it

from above. The only thing the photo does not show is the drilling, tapping and countersinking operation.

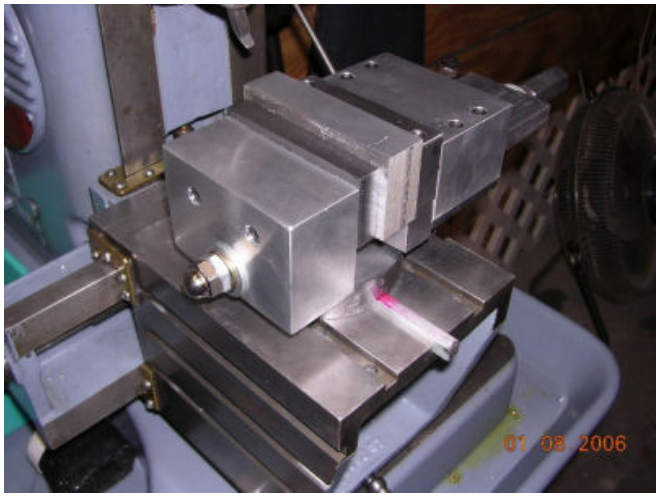


Swivel Base with Marks **Photo by Bill Cleary**

The lock blocks work quite effectively, and they are a practical solution to the eternal problem of the moving jaw rocking backward when clamping the work.

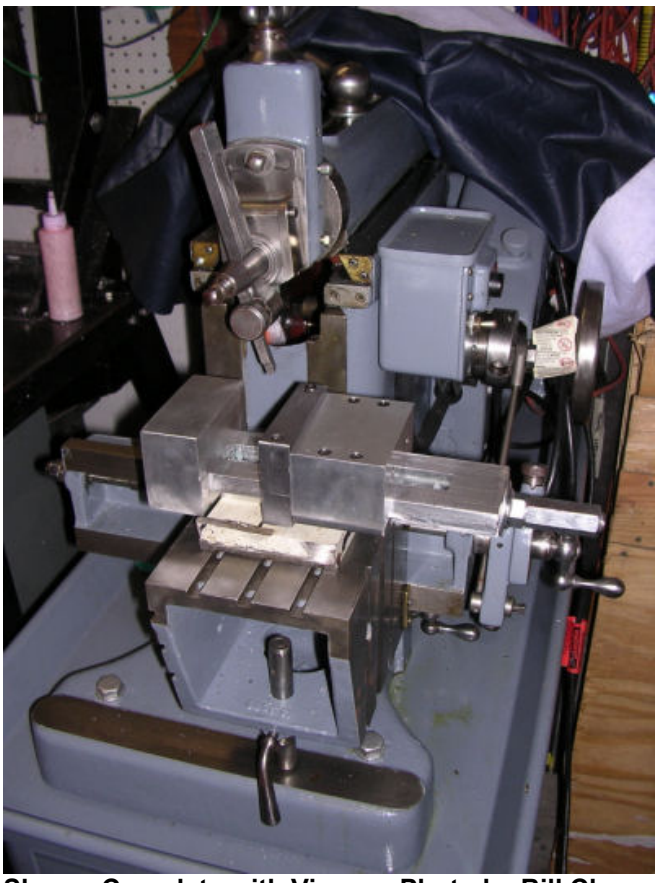
The swivel base is marked every 10 degrees with $^{3}/_{32}$" number stamps. It is patterned after a Geo. Thomas designed rotary table I built from drawings and instructions sold by Mr. Guy Lautard at:

http://www.lautard.com



Vise in Use **Photo by Bill Cleary**

I am very pleased with the look and usefulness of the vise.



Shaper Complete with Vise **Photo by Bill Cleary**

I hope this brief outline will be helpful to readers of the Shaper Column."

Thanks Bill for sharing this information.

Keep sending me email with questions and interesting shaper stories.

My email address is:

KayPatFisher@Yahoo.com

Kay

Shop Tips

Wild guess on Jacobs® chuck rebuild saves a bundle!……. Bob Beecroft

Earlier this year, I graciously accepted the opportunity to take a rough-operating Jacobs® 18N Ball-Bearing Super Chuck for free. This is an expensive and very high quality item. The 18N has a ⅛" to ¾" capacity, and would be (and ***is***, now) a great addition to my little shop. An eBayer I trade with a great deal, Jim Placzkowski, told me he couldn't sell it as it was in rough shape. He offered to toss in with my order. I accepted the offer and the challenge to save it.

The order came; another veritable treasure trove of new or barely used cutters and trinkets. Also carefully packed in this box was a very rough running 18N chuck. It languished on my workbench for a while, but several times came along that I really needed that ¾" capacity chuck. It was time: Either fix it or toss it. I pressed it apart to find the problem. I found that the nut, a split-nut arrangement, had shattered. Hammer marks on the top of the chuck body were clues that someone less than a craftsman had been let loose with a machine tool.

The chewed up pieces were cleaned out first. There was precious little thread left on one side of the nut, and the other side wasn't in great shape either. Some fleeting thoughts of either brazing it up, or TIG welding it up and cutting new threads were dismissed quickly. Newer 18N chucks have a service kit number engraved on the nose. Older ones do not. This chuck is engraved Service Kit #30347. MSC http://www.mscdirect.com lists the Jacobs® 30347 kit for **$208.95**. Wow! To add insult to injury, they add tax and shipping. A ***brand new one*** from them is $262.95…more than a little out of reach for this Home Shop Machinist. The 'kit' is only new jaws, nut, caged bearings and a flat thrust washer. That's OK for a production shop, but out of my reach.

I considered that for about a nanosecond, then thought 'There simply can't be ***that*** much difference in these same-numbered chucks, can there?' I took a chance and ordered the kit for the 'older' model 18N (MSC's item #08594699) listed at $72.78. It still isn't cheap, but is quite a little bit more reasonable. To my great delight, my premonition was correct; there isn't that much difference in the older and newer chucks. Here's what I learned:

Newer 18N chucks - those with the kit number engraved on the nose:

1) Use a plastic race with (only) 27 $^{5}/_{32}$" balls.

2) The balls run on a flat-faced race on the split-nut, and a hardened flat steel washer that fits on a flat on the unhardened main body of the chuck for the race on that side. In my opinion, this 'new' arrangement was done to reduce manufacturing costs. There is no grooving operation to machine in the split nut, and the bearings are easily and quickly assembled because they are captured in a plastic race.

Older 18N chucks – those without the kit number engraved on the nose:

1) Use loose bearings running in a machined groove on the split-nut.

2) I don't have an "older" 18N to compare, so it could be that the main body ***has*** a hardened groove, but this is of no consequence if rebuilding a "Newer" 18N chuck using the "Older" kit.

3) The depth of the ball bearing race machined into the (old-style) split-nut is 0.030" deep. With $^{5}/_{32}$" balls + 0.030" (depth of machined race in the 'old' model split nut) = $^{3}/_{16}$" (0.18625"); **Voilà**! We use the 'Old' kit number for the 'new' model 18N chuck and pick up a dollar pack of 50 $^{3}/_{16}$" bearings from the local bicycle shop.

My cleaned-up chuck with new 'old style' jaws, new 'old style' split-nut, and a fresh set of $^{3}/_{16}$" balls is better than new. Better, defined as:

1) I replaced 27 smaller balls with 39 or 40 larger ones. I'm no engineer, but more and larger bearings in the same space has got to be an improvement.

2) The hardened flat-washer in my chuck was starting to show signs of Brinelling. I simply turned it over to the fresh side.

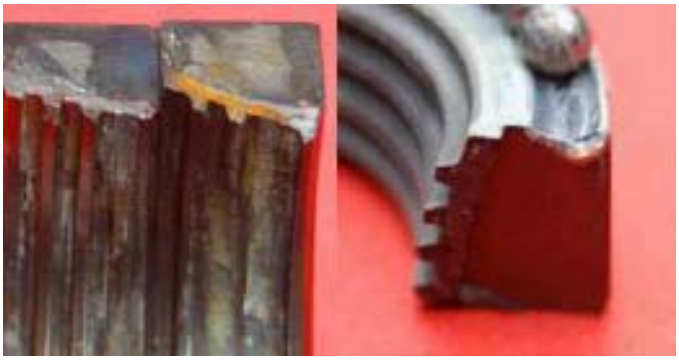
3) My chuck now has a larger range:

a) The range of the 18N is (normally) ⅛" to ¾". With old-style jaws in the new-style body, the range is just under $^{1}/_{16}$" to a tad over ¾".

4) While I had the chuck apart, I did a couple of things to the main body:
a) I cleaned up the top of the chuck's main body where it had hammer dents. It's soft, and cleaned up very nicely on the lathe.
b) I turned the body around in the lathe, spun it up and used a little 320, then 400 paper and oil to freshen up the appearance of the nose, then later did the same with the outer shell.
c) I drilled through the center of the JT4 taper in the body and threaded it $^{5}/_{16}$-24. Threading $^{3}/_{8}$" would also have worked. If I ever need to remove the chuck from a taper, I can thread a capscrew through the open jaws, snug it up, and pop the chuck free of the taper.

"Special" tools required for chuck overhaul:
1) Sleeve removal – I used a piece of steel ⅛" wall X 2⅞" OD X 2" long. Turn the ID to 2.600" at least an inch down.
2) Sleeve replacement – I used a piece of steel ⅛" wall X 2½" long. Turn the ID to 2.100" through. Both IDs can be turned from one piece to both press it apart and press it together. Aluminum 6061-T6 is stout enough unless you plan to be doing lots of rebuilds. I reassembled the chuck with Lubriplate #107. Another favorite light grease of mine is Phil's Waterproof Grease, available at most bicycle shops.

Sources:
Jim Placzkowski: jplaczkowski@wi.rr.com, and found on eBay as http://stores.ebay.com/JP-ENTERPRISESWI. I have no personal interest in his eBay store, save that I've found some killer deals on absolutely first-rate stuff from him. His items are always at least as good, and more often than not, better than described. He usually has loads of cutting tools of all sorts, plus a wide variety of related items. He packs stuff for shipment better than ***anyone*** else I've traded with on eBay. Besides all that, he's a really great guy.
MSC: http://www.MSCdirect.com has first rate delivery service and usually good prices with a selection from cheap-import, middle-ground import, and high-end items from the US and elsewhere.
I also like Enco and Travers, and when I can, I support our local tool merchants.



Left: The shattered threads on the Jacobs 18N Ball Bearing Super Chuck as received. Note that there is no groove for the bearings: they ride on a flat surface top and bottom on the newer 18N chucks. **Right:** The split ring thread for the old Jacobs 18N Ball Bearing Super Chuck: Note the machined bearing groove and larger balls.

Top views of the old style on the left, and new style on the right. It has more and larger balls than the "new" style bearings. Fewer and smaller bearings and smaller contact area, too. Sometimes older is better.

Left: Using the sized-to-fit tube to push the chuck apart. Might take note of the relatively soft aluminum faces on the vise. **Right:** The chuck body & bearings, and ring used to press the chuck apart.

Left: From the topside: the center hole in the main body has been drilled and threaded to push the chuck off its taper mount if needed. **Right:** The main

chuck body. The flat surfaced and hardened ring that serves as a bearing race sits atop an unhardened portion of the body.

Left: The chuck assembly back together with the grooved race and larger balls used in the older BB Super Chucks. **Right:** Pushing the press-fit body back together with another turned-to-fit piece of tubing.

If I'm reasonably happy with how a job like this turns out, I'll put on my 'stamp of approval". That stamp may come to haunt me someday!

Back together again, better than new, and certainly with more capacity than the ½" Jacobs Ball-Bearing Super Chuck it replaced. I'm very pleased with the results. It's in the tailstock almost all the time now.

Jacobs links:

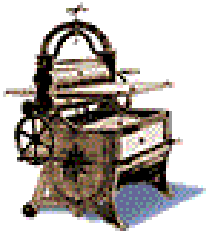
http://www.jacobschuck.com/product_details.asp?pid=24
http://www.jacobschuck.com/images/products/JC-003%20Super%20Chuck%20Bearing%20No%20Crops.pdf

Bob Beecroft, Fallbrook, CA 760-419-5972
Bob@theaerosmith.com

Treasurer's Report

Richard Koolish

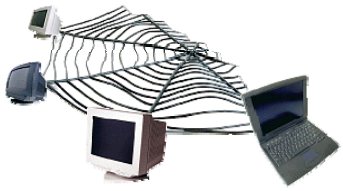
Balance as of April 14, 2006	8831.91
May Gazette printing	-164.58
Camera storage card reader	-52.49
Speakers fee	-50.00
Balance as of May 18, 2006	8564.84



NEMES Gazette Editorial Schedule 2006

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

Issue	closing date for contributions
July	6/23/2006
August	7/21/2006
September	8/25/2006



Web Sites of Interest

Sign up for the NEMES mailing list at:
http://groups.yahoo.com/group/nemes

Cheap AXA Holders
Little machine shop sells axa holders, which fit Aloris and Phase 2 toolposts for $14 to $15. See:
http://www.littlemachineshop.com/

Harvard Museum
Perhaps you remember, some time ago the curator of Harvard's collection of scientific instruments gave a talk at the NEMES club. Now, I understand, Harvard has opened a new museum to display their collection, the Putnam museum and Ms. Schechner is the curator. Perhaps the club could arrange a visit sometime. See:
http://www.harvardmagazine.com/lib/06ma/pdf/0306-42.pdf

Burndy Library
The Burndy Library at MIT, building 56, just east of the Sloan School on memorial drive, will be closing in the Fall and moving to the Huntington library in California. The library is the creation of Bern Dibner, president of the Burndy corporation maker of electrical connectors. Mr Dibner was an avid collector and scholar of the history of science and amassed a large library of important scientific books and manuscripts from the dawn of science onwards. The library has an interesting display of early scientific apparatus. Worth a trip before it goes West. See:
http://burndy.mit.edu/Collections/Babson/Online/Principia/
contributed by Fred Jaggi

For Sale

Lathe for sale
10 inch Atlas lathe with chuck and four drawers packed with gears, headstock parts and tailstock parts. Owners manual included. Machine located in Middleton, Ma. Asking $275
Neal Pizza 978.777.9960

Help Wanted
Very mechanical and willing assistant to help get an old Monarch lathe back into condition. I have been working on this machine, on and off, for over 5 years and I'll never find the time that it needs. I am looking for someone who would be willing to work one or two days per month (yes, for money) in my heated, well-lighted, and air-conditioned shop; weekdays preferred, but Saturdays are OK. The work involves extensive disassembly, cleaning, paint removal, inspection, painting, and careful re-assembly. Some of it is quite heavy (but not too scary) and almost all is grungy. Lest you think it's a losing proposition, I can tell you that under it all, the ways are pretty darn nice. Since I acquired 2 machines to get one, I have spare parts for very nearly everything. I have tools, parts lists, assembly pictures, and some rigging equipment. So, are you crazy enough to be interested? I am located in Plympton (south shore), MA. E-mail ssmugwump@adelphia.net - subject; monarch lathe, or call 781-585-6504. Steve Earle

Help Wanted
I'm Jim Hachey, a Worcester resident and machinist who, in my spare time, enjoys making miniature machinery. I'm a member of NEMES (New England Model Engineering Society in Waltham, MA).

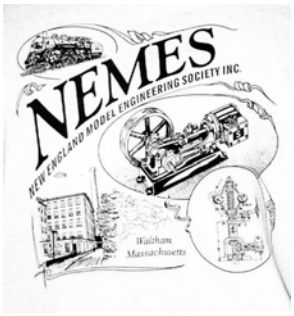
I'm currently trying to make a mini hydraulic axial piston pump. The application is to build functioning scale model hydraulic machines, such as a press and forklift. I'm finding that this type of pump, though efficient for positive oil displacement, is proving to be a challenge to machine the components, especially at this scale (entire pump is approx. 1 cu. in. overall size). An AutoCAD drawing of the design is available for evaluation.

Is there either a simpler design with fewer components, or a way to simplify the design of this type of pump? My first attempt was a gear pump, but I could not obtain nor machine mini gears that would mesh closely enough to seal and create positive liquid displacement. I would welcome any advice or assistance from yourself or an engineering student. I can be reached at j.hachey@att.net or after 6pm at 508-852-2820.

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

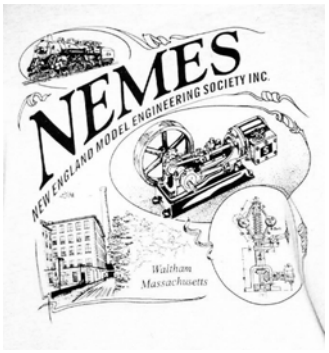


NEMES clothing

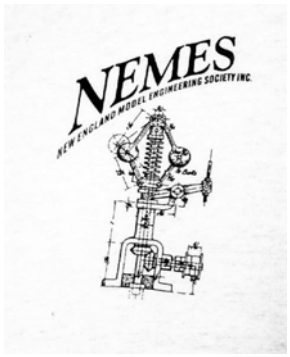
NEMES Tee Shirts

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.

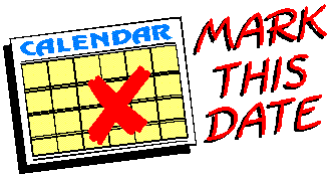
Profits go to the club treasury.

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



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 or (508) 393-6290.

Bill

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

June 3-4 Dearborn Homestead Show
Campton, NH
Dave Dearborn 603-726-3257

June 3-4 Cranberry Flywheelers Meet
Edaville RXR S Carver MA.
David Moore 508-697-5445

June 11th
Rods, Customs, Muscle Cars & Antique Aeroplane Show
Owls Head Transportation Museum Owls ME

June 17-18 9:30AM-3:00PM
Pioneer Valley Live Steamers Father's Day Run
Southwick Ma
http://www.pioneervalleylivesteamers.org

June 18th Iron pour
Saugus Iron Works NP
http://saugusironworks.areaparks.com/

June 18th 9:00am 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 25th Waushakum Live Steamers
4th Annual Van Brocklin Meet
Holliston MA
http://www.steamingpriest.com/wls

June 25th
Convertible Meet & Antique Aeroplane Show
Owls Head Transportation Museum Owls ME

June 24-25 Orange Show
Orange Airport Orange MA

June 25th NSOCC show
Topsfield Fair Grounds
Ed Rogers 781-233-3847

July 1-2 Antique Engine Meet
Boothbay Railway Village
Rt 27 Boothbay ME
http://www.railwayvillage.org

July 1-2
The Fabulous '50s, Sensational '60s & Antique Aeroplane Show
Owls Head Transportation Museum Owls ME

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

July 9h Pepperell Show
RT 111 Pepperell, MA
Ken Spalding 978-433-5540

July 16th 9:00am 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 22-23
The Fabulous '50s, Sensational '60s & Antique Aeroplane Show
Owls Head Transportation Museum Owls ME

July 29-30 Raitt Homestead Show
Eliot ME. Lisa Raitt 207-748-3303

July 29-30
Wings & Wheels Spectacular; Classic Cars & Aerobatic Air Show
Owls Head Transportation Museum Owls ME