



The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

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February 2006

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Editor's Desk

Victor Kozakevich

An article in this week's *Newsweek* magazine comments on the growing following of *Make* magazine. The journalist mentions a *Make* project to turn a junked VCR into an automated pet feeder. He recognizes that there is a group of people out there, willing to tinker with electro-mechanical castoffs, in hope of extracting a bit more use, or perhaps getting control of the gadgets that have been slowly taking over our lives.

Maybe for those folks, it's just getting some hands-on experience in a world of electronic entertainment. The author seems to get it, that some people enjoy the personal satisfaction of seeing their creation do something, even if it's only to shoot a potato from a length of PVC pipe. Then again, some people just like to read about stuff, like home improvement, but never pick up a tool.

We should invite him to a NEMES show, he'd probably come away thinking we're the rock stars of do-it-yourself.

Next Meeting

Thursday, Feb. 2, 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.

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President's Corner

Norm Jones

The Meeting

Our speaker for the February meeting will be Rick Selah. Rick is an applications engineer for Stannah Stairlifts. I met Rick at the museum a few weeks ago. John Bottoms, Rick and I were talking about the Solidworks display (part of the Widgets of 128 exhibit), when Rick described how data is taken for the design of custom installations of their products. Rick will be presenting a brief history of the company which is based in England, how they developed the design process and some of the challenges encountered in each unique installation. I had no idea that stairlifts are nearly as popular as they appear to be!

A Great Little Engine!

Just about a year ago, a friend of mine, Bob Simonik from Johnson City, NY sent me the plans for a stirling cycle engine that he had designed. He assured me that this would be a "short term" project to build. I had the best of intentions to build one right away, however time has a habit of slipping away.

My enthusiasm for this project was rekindled after I got to see his engine run at the Blue Mountain Show in Bangor PA last July. Since I generally don't build engines in the summer (too busy keeping the others running), it got put off until a few weeks ago. This is a small engine: 1.760" dia flywheel, .282" dia power piston, and a .380" dia displacer running in a .400" dia cylinder. Those of you who attended the January meeting got to see some of the parts. By the way, Les Russell came up with a great suggestion for silver soldering the copper end cap to the stainless steel displacer cylinder. It was, to mix silver solder filings with the appropriate flux. Apply the mixture to the interface and reflow with a torch. It worked perfectly! Thanks Les.

The engine is now complete and I expect to bring it to the Cabin Fever Expo show this coming weekend. The flame height represents the last issue to resolve, since too much heat warms the entire cylinder. The flame needs to be really small! By the way, Bob is more than willing to have me share the plans with any of you who would like to build one. Thanks Bob!



NEMES Model Engineering Show

It's time to plan for our annual show at the Charles River Museum of Industry, 154 Moody St. Waltham MA, on February 18, 2006 from 10:00AM to 4:00PM. Tables and chairs will be provided as well as compressed air to run steam engine models. We will have ¼" female shutoffs at various intervals on a manifold. Bring a regulator to interface with your model. I encourage everyone to bring something to display. Photos, projects in progress, etc are welcome along with completed items. Refreshments will be provided by Gayle Martha and her crew. Please consider bringing something to supplement their menu. Thanks in advance. This event represents one of our most significant contributions to the museum. Local advertising of this event attracts many first-time visitors to the museum. NEMES members as well as non-members are invited to exhibit at the show. Setup time is 8:00AM.

See you at show

Norm



The Meeting

Max ben-Aaron

The January meeting, in keeping with tradition, is a "Poster" meeting, which is a euphemism for "Show & Tell". The meeting was opened by Venerable President Norm Jones in the Jackson Room of the Charles River Museum of Industry.

There was not as much as we have had in past poster meetings. Members I have spoken to say "I don't have anything new to show." I keep telling them, "Bring what you have, even if you showed it before. I am probably the only person who remembers, and I don't remember much".

Les Russel brought his presentation in his pocket -- a wooden propeller (for a model aircraft engine he is building) that he made on his numerically controlled mill.

John Bottoms brought a display of books on automata and this radio-controlled mastodon model. John is the curate of a CRMI exhibit of automata that will be on display in November as well as spearheading the effort to reconstruct the first loom used in the mill.



Gene Martha is reworking some Wen-Mac .049cc glow-plug model aircraft engines to make them lighter, for competition in a new 'Nostalgia' class. This involves making new gaskets out of a vellemoid material. The gaskets are tiny rings, so Gene made some dies for cutting them out. The annular dies are made in two parts because it would otherwise be very difficult to do.



Errol Groff is building a 2-cylinder oscillating steam engine, using Clarence Meyer castings.



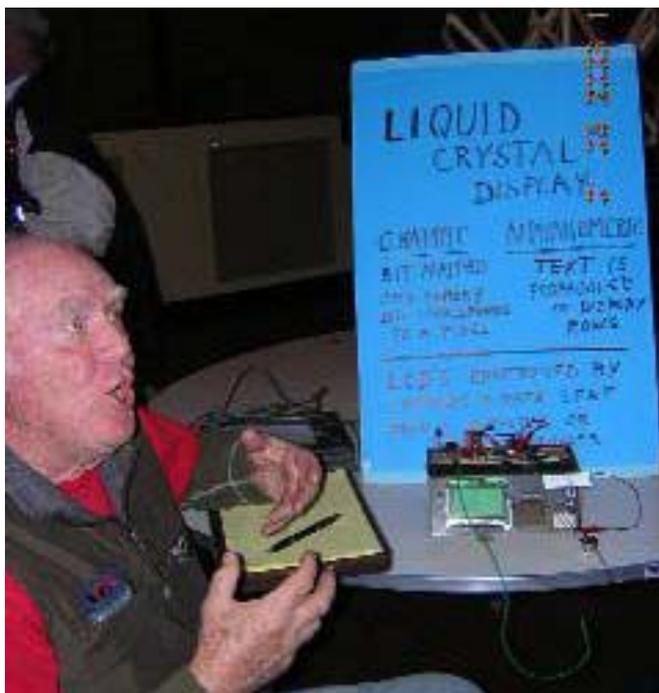
Venerable President Norm Jones brought some of the parts for a tiny Stirling cycle engine that he is in the process of building.



Rollie Gaucher has a customer who wants to install a walnut panel with engine gauges, in his boat, so Rollie is making bronze bezels for the gauges. He brought a sample bezel and a picture of what the finished panel is going to look like.



Larry Keegan brought a display explaining the use of Liquid Crystal Displays (LCDs) as output devices.



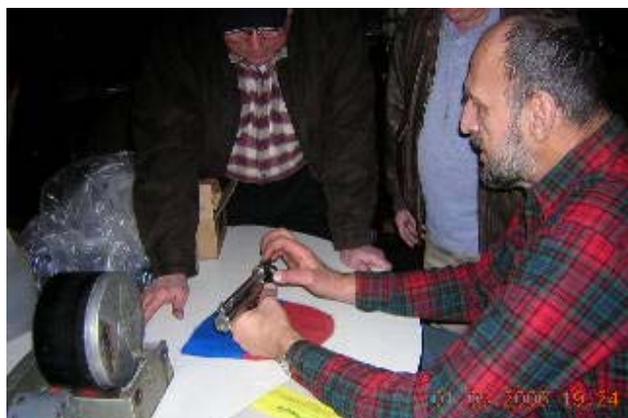
Todd Cahill made a model of a sliding cylinder engine, made by Bodmer in the 1840's. This model is made to Todd's usual meticulous standards and is very interesting.



Gene Henning brought a 'Swift' made by his daughter to hold a skein of wool so that it can be wound in a ball.



Henry Szostek is still working on his improved pellet gun, and it keeps looking better and better. He also brought a half-hull for a model sailboat.



Harvey Noel showed parts for a Jerry Howell designed engine that he is in the process of building.



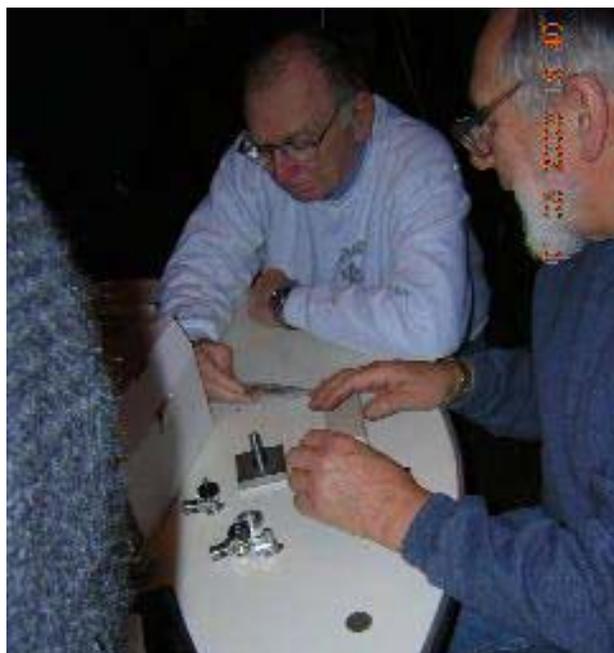
Jonathan Bosworth is an expert in the field of spinning and weaving and also a mine of information on the subject. He brought a sample of a "Journey" spinning wheel and a Gandhi Charkla, a portable spinning wheel that he makes and sells to enthusiasts as well as a drop spindle.



Robin Parker makes very imaginative 'found art' works, using parts from antique and classic cars, and he brought a couple of samples, one made from the rear window of a 1949 Mercury and the other from a 1959 Chevy.



Another picture of Gene Martha with some of the Wen-Mac engines.



I have tried to be as accurate as I can. If I have made any mistakes in identification, or if I have misrepresented your contribution, please let me know (non-violently) and I will make amends next report.

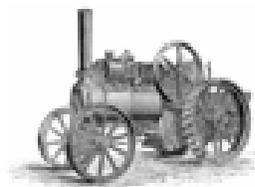
Max



Treasurer's Report

Richard Koolish

Balance on December 20, 2005	4569.92
Gazette printing	-190.45
Blue flyer printing	- 85.00
Sale of apron and sweatshirt	+ 44.00
Dues collected	+1025.00
Bus trip checks deposited	+3410.00
Balance as of January 16, 2006	8773.47



N.A.M.E.S. SHOW

NAMES, by Train

You have probably heard that the NAMES show has been moved to Toledo, Ohio for this year. As I drove through Toledo this morning, on my way from Detroit to Cabin Fever, I saw a sign for the Amtrak station, and it occurred to me we might take the train to NAMES this year.

It's a long train ride, but with a group of guys it might be interesting. It leaves Boston at 1:00 on Thursday, April 20. We change trains in Albany and arrive in Toledo at 5:30 AM on Friday. The train station is near downtown and the convention center.

A return train leaves Sunday night, at 1:30 AM (Monday actually) and is back in Boston at 6:20 PM. The round trip fare is \$146. If you want a bedroom, it's \$136 additional.

You can also board the train in Framingham, Worcester, Springfield and even in Albany if you wanted to, I didn't check the fares for those locations.

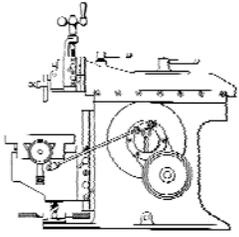
I am willing to make some arrangements for local transportation, maybe an interesting tour on Friday. There is a Great Lakes freighter in the river right near the convention center. It's possible we could even get a group rate on Amtrak, but I will need to know some numbers for that.

Just think about a 16 hour long NEMES meeting, on a train, with a dining car, drinks, and a long night to tell each other lies!

If anyone is interested, let me know. I will try to be at the February meeting, but the best way is to send me e-mail: ronginger@adelphia.net

So, anyone for NAMES in April?

[Ron](#)



Shaper Column

Kay Fisher

Ludwig Gack Shaper Part 4

This month we will continue our story of Ludwig Siegfried Schmidt's Gack Shaper.

Electronics

"The electrics of this machine were altered more than once, which was deduced by the use of different cables. Only the overload protection was still original. This was found out via old photos. The motor itself has a Dahlander setup (tapped winding) for different numbers of poles under current and therefore it has two different speeds in a ratio of 1:2.

Since the highest setting with approx.120 cuts/min is quite a load for the old machine and also since I was able to lay my hands on an old VFD, the machine was converted for lower speed settings.

The 380 Volt VFD is a vintage part with at least 20 years on it. I'm happy about everything concerning manufacturer and type.

No computer is part of this electronics. Just discrete logic!

Caused by the age of the VFD, a few electrolytic capacitors blew up during the first hours of the VFD's new life. However, after removal of the faulty parts, the machine is willing to cooperate again.



Discrete VFD

Photo by Siegfried Schmidt

The VFD is a tight fit in the cabinet. The heat sink is cooled by an oversized fan, which is even louder than the motor.



VFD Electrolytics

Photo by Siegfried Schmidt

Below is the old front plate with new interior. The over current protection was removed. Just the mains switch and crank speed control remain. Start/Stop of the VFD is set via a rheostat, like in a good old radio. The knob on the outside comes from the good old times and also looks like it!



VFD Controls Photo by Siegfried Schmidt

The decision for the VFD was good. The motor can be driven with 0-100 Hz; the motor itself is set to the lower revolution range. By this setting, all former drive speeds can be achieved.

Without the VFD, the machine would travel another half revolution after power was removed.

Before conversion, lots of cranking was necessary for setup. After conversion, the hand crank is no longer necessary.

During operation, I found out that the fan in the motor was not sufficient at low driving speeds. Maybe the small venting slots are the problem. Anyhow, serious work with low operation speeds sent the motor temperature to unhealthy regions quickly.



Motor Cooling Bracket Photo by Siegfried Schmidt

Since motor and side cover is a unit, I didn't want to risk the premature death of the motor. There's no easy way to improve the built in forced-air cooling, so I added an external 120mm fan.

The plastic flange shown below between the fan and the motor looks rather bad. Also, the small slots slow the moving air, but enough air comes through to keep the motor cool.



VFD on Front Plate Photo by Siegfried Schmidt

Not every speed setting is necessary, but with the VFD, very slow revolutions of the crank are possible to test the machine's setting. Another advantage is the possibility to stop quickly.



Motor with Fan Photo by Siegfried Schmidt

Operation

The ultimate question is now: Do you need such a machine? The answer is yes, for sure. Especially if you own one!

The most surprising fact is a mill and a shaper go hand-in-hand quite well. Every time setting up or machining imposes problems on one kind of machine, the other jumps in and helps out. The classic impossibilities of a mill (internal keyways, internal gears) are not the real problems; it's rather the small things that help a lot.

Cut-outs with sloped sides are an example. Where setting up and cutting with a mill is problematic or at least time consuming, cuts are easily achieved with the shaper.

Slots with slope Photo by Siegfried Schmidt

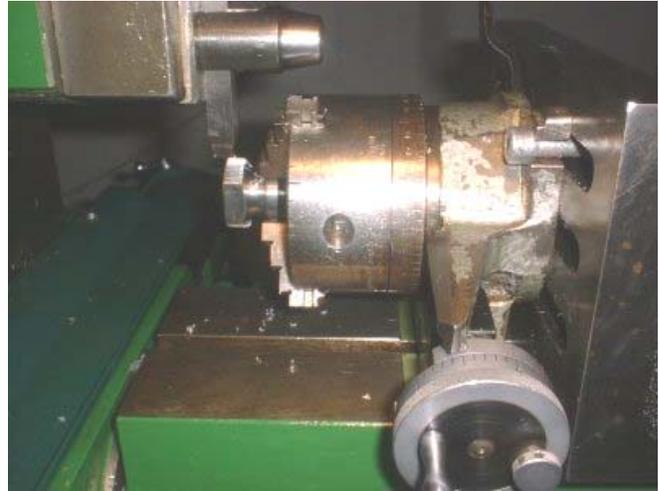
Also, a simple lathe tool leaves surface finishes impossible to achieve with a mill, at least for me.



Shaper Surface Finish Photo by Siegfried Schmidt

Cutting of gears or knurling with the shaper is much easier than with a mill. The shaper needs less headroom.

In the same setup, milling with a disc cutter or a gear cutter would be critical, because there's not as much room.



Shaping a Gear Photo by Siegfried Schmidt

I was able to hunt down some documentation to clear up the details. The right side of the table with its three slots is for direct work mounting. A v-groove for round parts is included. There is also a bigger auxiliary table that can be attached here. Until now, I found no picture for this delicate part of special tooling.

The long, single slide to the left is dedicated to mount a dividing fixture, like in the next picture.

For precision work, the setup of the machine can be altered for a draw cut. Draw cutting preserves layout lines. Also, when draw cutting, chips fly away from the operator."



Left Side of Table Photo by Siegfried Schmidt

Next month we will continue with the grinding with Siegfried Schmidt's Ludwig Gack Shaper.

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

KayPatFisher@yahoo.com

Kay

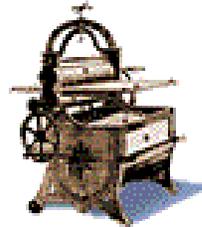
The DRO on my mill doesn't calculate anything. It's a very basic readout. Machinery's Handbook gives the X and Y coordinates, and in my experience using the information from the book, it's dead on.

Bob Beecroft



Web Sites of Interest

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



NEMES Gazette Editorial Schedule 2006

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

Issue	closing date for contributions
March	2/17/2006
April	3/24/2006
May	4/21/2006
June	5/19/2006



Shop Tips

Regarding Norm Jones' bolt circle problem and Dave Stickler's suggestion, I have another that about covers everything, right out of a book I'd bet everyone has on the shelf, Machinery's Handbook. Look under "Circles" in the index at the back. It shows coordinates for circle spacing in any number of ways. Then crank them in on the mill.



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



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 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:

NEMES Shop Apron



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

Feb 2nd Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA 781-893-5410
<http://www.neme-s.org>
<http://www.crimi.org>

Feb 18, 2006 NEMES Model Show
Charles River Museum of Industry
Waltham, MA 781-893-5410
<http://www.neme-s.org>
<http://www.crimi.org>

March 2nd Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA 781-893-5410
<http://www.neme-s.org>
<http://www.crimi.org>

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