

# The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 160

Aug 2009

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## Editor's Desk

Frank Hills

### Micro Machines, Hobby Style!

When most people think of models, they first assume that it's a non-functioning representation of something else. Next, they assume that it's a smaller representation of that thing. We know that these assumptions are not necessarily true. Models can be any size, scaled or not, functioning or non-functioning, animated or dull as dishwater. Most of our crowd like functioning and scaled. You can add to that "visually stunning" at times. I was stunned recently while doing some research on the web for work. I needed a small, electric pump for an instrument. Along with the expected commercial websites, I found the site of George Luhrs, an expert in the manufacture of working miniature engines.

Those of you who have been to Cabin Fever know George. He's usually standing in the middle of a circular table covered with model engines so small you have to bend down and press your nose against the glass to see the details. Gas, Steam, compressed air, and they all work.

## Next Meeting

Thursday, Aug 6, 2009

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

## Membership Info

New members welcome! Annual dues are \$25 (mail applications and/or dues checks, made payable to "NEMES", to our Treasurer Richard Koolish, see right) Annual dues are for the calendar year and are due by December 31<sup>st</sup> of the prior year (or with application).

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

Addresses are in the left column.

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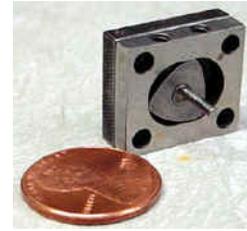
## Editor's Desk

-continued from page 1

Talk to George and you'll quickly learn that making operating machinery this small is difficult. Accuracy and tolerances are more critical. A leak rate of 10 percent in a cylinder means nothing in a quarter scale model engine. In one of his "minis", that 10 percent means you have to make some part all over again. A microscope is his most important tool, and not just because his eyes are getting bad. It's critical, like his lathe and his milling machine. Some parts are smaller than a grain of rice...much smaller!



George isn't alone. I also found an article by a company making small, high precision pumps, just what I was looking for in the first place. Just for fun they thought they'd try their hand at making something to power their pumps: a rotary engine the size of a penny. There wasn't a great deal of detail. It apparently runs very well, but as you can see from the picture, not everything is shown. While true that small rotaries have been around for years, the sheer size of this device was impressive. Almost as small as the vibrator motor in your cell phone, they anticipated ten times the power and a run-time of close to ten hours from a single butane cartridge used to fill cigarette lighters. Its purpose is to power a small, portable medical device. If it works so well, why isn't it in use now? Because it's noisy, gets hot, and has to pass innumerable operating tests before it will be trusted with someone's life. But just imagine what it would be like in a micro-light RC!



To finish up this article I looked and looked for a picture I had seen some time before. It was the image of an RC car. There appears to be nothing unusual about it until you notice that it's standing next to the eraser of a pencil, and it's not much bigger. Another image showed the inner workings. The electric motor had to be handled with tweezers. It was hand made, under a microscope, of course, and is wound with a single strand of 0.003" diameter copper wire. The control units looked like an electrician's junk drawer. Why? To keep things small the circuitry was assembled without a mounting board. I get a headache just thinking about it.

Next month, a short course on CNC.

## A Note From Our Publisher

### NEMES Mailing List

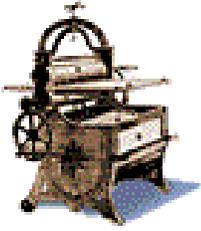
We have an electronic mailing list for NEMES members. Members can use this list for notices of upcoming events, contacting other members, asking questions, or just shooting the breeze. Currently, this list has 81 members and has roughly 20 messages per month. If you're not a member, you can join easily, using either of two methods:

*Method #1* – By e-mail: Send a blank e-mail message to [nemes-subscribe@yahoogroups.com](mailto:nemes-subscribe@yahoogroups.com) A few minutes later, you will receive a confirming e-mail from yahoo. Reply to that confirming e-mail and you will be on the mailing list.

*Method #2* – From the web: Go to <http://groups.yahoo.com/groups/nemes> and click the blue box that says "Join This Group!" Then follow the instructions. This method allows you to configure how you will receive messages, but either method will work.

Once you're a member, you can post messages, share photos and files, and much more. See you "on the net".

Bob Neidorff



## ***NEMES Gazette Editorial Schedule***

Issue	closing date for contributions
Sept. '09	Aug, 24 2009
Oct. '09	Sept. 28, 2009
Nov. '09	Oct. 26, 2009



## ***President's Corner***

Dick Boucher

## ***The Meeting***

Our speaker this month will be our own George Gallant. George will be telling us about his quest to build a fire seeking-fire fighting robot. George has been working on this for a number of years so it should be an interesting evening.

## ***Miscellaneous Ramblings***

We have been invited to have a display at the Saugus Iron Works on September 12 for their Founder's Day. For those of you who have taken advantage of this great venue in the past, know that it is a great place to display our machines and that the park rangers treat us wonderfully with a nice tent to shade us and a steady stream of folks walking in enjoying our show. I will be looking for a commitment at the meeting so that I can inform the head ranger that we will be there.

Other than that, I am hiding here in the shop with the air conditioner running full blast in this muggy weather. The good part is even though I have a million things to be doing around the house including some scraping and painting and trying to keep ahead of the vegetation that is going absolutely wild in the yard, I have made

some progress on the rebuilding of the "Virginia" to run on my new track.

Dick B.



## ***The Steam Man of the Prairies.***

BY EDWARDS ELLIS,

### ***CHAPTER XVIII.***

#### ***THE ENCAMPMENT.***

THE storm proved the severest which the steam man had encountered since leaving St. Louis, and it put an effectual veto on his travels during its continuance, and for a short time afterward.

The prairie was found so soft and slippery that they were compelled to lie by until the sun had hardened it somewhat, when they once more resumed their journey.

As they now had thousands of dollars in their possession, and as all sorts of characters were found

on the western plains, it may be said that none of the company ever felt easy.

Baldy Bicknell, the trapper, from his extensive experience and knowledge of the West, was the guide and authority on all matters regarding their travels. He generally kept watch during the night, obtaining what sleep he could through the day. The latter, however, was generally very precarious, as at sight of every horseman or cloud of smoke, they generally awakened him, so as to be safe and commit no serious error.

As the steam man would in all probability attract an attention that might prove exceedingly perilous to the gold in their possession, the trapper concluded it prudent to avoid the regular emigrant routes. Accordingly they turned well to the northward, it being their purpose to strike the Missouri, where they would be pretty sure of intercepting some steamer. Reaching such a place they would unjoint and take apart the steam man, packing it up in such a manner that no one could suspect its identity, and embark for St. Louis.

While this relieved them of the danger from their own race, it increased the probability of an attack upon the Indians, who scarcely ever seemed out of sight.

Their watchfulness, however, was constant, and it was due to this fact, more than any other, that they escaped attack at night for the greater part of their return journey.

Their position in the wagon was so cramped, that the party frequently became excessively wearied, and springing out, trotted and walked for miles alongside the tireless steam giant. Water was abundant, but several times they were put to great inconvenience to obtain wood. On three occasions they were compelled to halt for half a day in order to obtain the necessary supply.

Once the steam man came to a dead standstill in the open prairie, and narrowly escaped blowing up. A hasty examination upon the part of the inventor, revealed the fact that a leak had occurred in the tank, and every drop had run out.

This necessitated the greatest work of all, as water was carried the better part of a mile, and nearly an entire day consumed before enough steam could be raised to induce him to travel to the river, to procure it himself, while the miners acted as convoys.

Late one afternoon, they reached a singular formation in the prairie. It was so rough and uneven that they proceeded with great difficulty and at a slow rate of speed. While advancing in this manner, they found they had unconsciously entered a small narrow valley, the bottom of which was as level as a ground floor. The sides contracted until less than a hundred feet separated them, while they rose to the height of some eight or ten feet, and the bottom remained compact and firm, making it such easy traveling for the steam man, that the company followed down the valley, at a slow pace, each, however, feeling some misgiving as to the propriety of the course.

"It runs in the right direction," said young Brainerd, "and if it only keeps on as it began, it will prove a very handy thing for us."

"Hyar's as afear'd it ain't goin' to keep on in that style," remarked Baldy; "howsomever, you can go ahead awhile longer."

"Naow, that's what I call real queer," remarked Ethan Hopkins, who was stretching his legs by walking alongside the steamer.

"And it's meself that thinks the same," added Mickey, puffing away at his short black pipe. "I don't understand it, as me father obsarved when they found fault with him for breaking another man's head."

"Ef we git into trouble, all we've got to do is to back out," remarked Baldy, as a sort of apology for continuing his advance.

"This fellow doesn't know how to go backward," said Johnny, "but if it prove necessary, we can manage to turn him round."

"All right—go ahead."

At the same moment, the limber Yankee sprung into the wagon, and the steam man started ahead at a speed which was as fast as was prudent.

However, this delightful means of progress was brought to an unexpected standstill, by the sudden and abrupt termination of the valley. It ended completely as though it were an uncompleted canal, the valley rising so quickly to the level of the prairie, that there was no advancing any further, nor turning, nor in fact was there any possible way of extricating themselves from the difficulty, except by working the steam man around, and withdrawing by the same path that they had entered by.

“Well, here we are.” remarked the boy, as they came to a standstill, “and what is to be done?”

“Get out of it,” was the reply of Hopkins, who advanced several yards further, until he came up on the prairie again, so as to make sure of the exact contour of the ground.

“Did yer ever try to make the thing go up hill?” asked the trapper.

Young Brainerd shook his head.

“Impossible! he would fall over on us, the minute it was attempted. When I was at work at first making him, what do you think was the hardest thing for me to do?”

“Make him go, I s’pose.”

“That was difficult, but it was harder work to balance him—that is, so when he lifted up one foot he wouldn’t immediately fall over on the same side. I got it fixed after a while, so that he ran as evenly and firmly as an engine, but I didn’t fix upon any plan by which he could ascend or descend a hill.”

“Can’t you make him do it?”

Not until he is made over again. I would be afraid to attempt to walk him up a moderate inclination, and know it would be sure destruction to start him up such a steep bank as that.”

“Then we must work him round, I s’pose,”

“There is nothing else that can be done.”

“Let’s at it, then.”

This proved as difficult a job as they imagined. The steam man was so heavy that it was impossible to lift him, but he was shied around as much as possible; and, by the time he had walked across the valley he had half turned round.

He was then coaxed and worked back a short distance, when, with the “leverage” thus gained, the feat was completed, and the steam man stood with his face turned, ready to speed backward the moment that the word might be given.

By this time, however, the day was gone, and darkness was settling over the prairie. Quite a brisk breeze was blowing, and, as the position of the party was sheltered against this annoyance, Hopkins proposed that they should remain where they were until morning.

“We couldn’t get a better place,” said Johnny Brainerd, who was quite taken with the idea.

“It’s a good place and it’s a bad one,” replied the trapper, who had not yet made up his mind upon the point.

They inquired what he meant by calling it a bad place.

“Ef a lot of the varmints should find we’re hyar, don’t you see what a purty fix they’d have us in?”

“It would be something like the same box in which we caught them in Wolf Ravine,” said young Brainerd.

“Jist the same, perzactly.”

Not the same, either,” said Hopkins; “we’ve got a better chance of getting out than they had. We can jump into the wagon and travel, while they can’t; there’s the difference.”

“S’pose they git down thar ahead of us—how ar’ we goin’ to git away from them then?”

“Run over them.”

“Don’t know whether the younker has fixed the engine so it’ll run over the skunks, ef it doesn’t run up hill.”

“It can be made to do that, I think,” laughed young Brainerd.

“Afore we stay hyar, I’ll take a look round to make sure that thar’s some show for us.”

The trapper ascended the bank, and, while his companions were occupied in their preparations for encamping, he examined the whole horizon and intervening space, so far as the human eye was capable of doing it. Finding nothing suspicious, he announced to his companions that they would remain where they were until morning.





## ***Check This Out!***

**PRESS RELEASE**  
**AMERICAN PRECISION MUSEUM**  
**196 Main Street, Windsor, VT 05089**  
**802.674.5781**

[www.americanprecision.org](http://www.americanprecision.org)

FOR IMMEDIATE RELEASE:

Contact: Ann Lawless

July 2, 2009

[alawless@americanprecision.org](mailto:alawless@americanprecision.org)

### **A WORKING MACHINE SHOP AT THE AMERICAN PRECISION MUSEUM**

*Exciting! Engaging! The highlight of our vacation in Vermont!*

*The museum gets better every time I come here! Fantastic exhibit-well worth the drive from Maine!*

These are just some of the comments about *From Muskets to Motorcars: Yankee Ingenuity and the Road to Mass Production* and the working machine shop launched in 2008. Both will remain in place through October 2009. The exhibit celebrates the ingenuity of the work that began in the Robbins and Lawrence Armory in Windsor, VT with the manufacture of the 1841 Mississippi rifle and explores how the tools and techniques of precision manufacturing made mass production possible.

However, it was the working machine shop at the center of the exhibit, and our 2008 student interns from the River Valley Technical Center (RVTC) in Springfield, VT who captured the imagination of our visitors last season with their energy, enthusiasm and knowledge. They worked daily through the summer and on weekends in the fall helping visitors understand the transition in manufacturing from the mechanically operated historic machines to the computerized numerically controlled (CNC) machines of today.

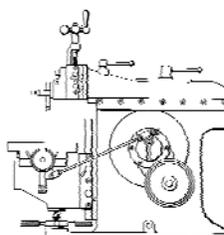
The working machine shop will be running daily through August and on weekends through October. Ben Holleran, from 2008 is the senior intern, and he will be joined by five new students this year – Alexander Cesari (Rennselaer Polytechnic Institute, 2013), Newell Clark (Hartford High School, Senior), Cody Dana (University of Vermont, 2013), Henry Drummond (Utica College, 2012) and Cherie Hannah (Windsor High School, Senior). Thanks to ongoing support from the Vermont Department of Labor's Next Generation program, the working machine

shop has become a focal point for museum visitors who appreciate the opportunity to see machines in action and learn from the student interns operating them.

Christopher Gray, a trained machinist and tool-maker and the RVTC Manufacturing and Engineering instructor and our partner in this project, added a new dimension to the program this past year. He and his students, including Ben Holleran, are building a Mobile Manufacturing Exposition (MME), a portable, design development and manufacturing laboratory, to take elements of the working machine shop to schools. MME will go on the road this fall, bringing current and historical manufacturing and engineering technology and equipment to rural elementary and middle in the Connecticut River Valley. MME introduces students to the high tech world of modern manufacturing, enabling them to experience that environment directly through a variety of hands-on learning activities. While the goal of this Vermont Department of Labor funded, career exploration program is to interest more students in careers in the manufacturing sciences and in RVTC's programs in particular, it will have the added benefit for the museum of introducing the American Precision Museum to a wider audience during the off-season when exhibits are closed.

Holleran and Gray's other students will have the opportunity to keep their interpretative skills sharp with the MME project as they continues to demonstrate the historical impact manufacturing ingenuity has had on this region since before the industrial revolution.

The American Precision Museum holds the most significant collection of machine tools in the country. The museum is housed in the Robbins and Lawrence Armory, a National Historic Landmark, on Windsor's Main Street. The museum is open daily, 10am-5pm from Memorial Day weekend through October, and admission is \$6.00.



## ***Help A Friend!***

Help! I apparently need personalized instruction on how to grind tool faces that in general do more than burn their way through. I've read the books and watched the videos, all to no avail. I am particularly interested in making rounding tools for decorative turning. Also, I'd like some help adjusting the gib screws (nine on each axis) on my Clausing 8520 mill. I'll supply all the homemade pizza and beverage of choice that can be eaten by anyone willing to visit my shop in New Boston (NH). I'm a retired EE engineer, so scheduling is extremely flexible.  
Jim, 603-487-2115.



**For Sale**

**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



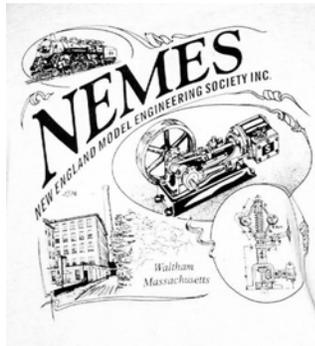
**NEMES clothing**

**NEMES Tee Shirts**

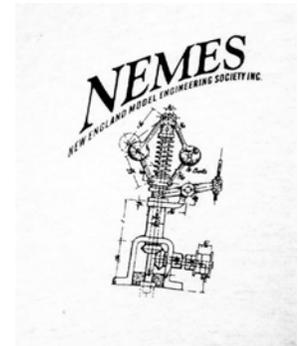
NEMES tee shirts and sweat shirts are available in sizes from S to XXXL. The tee shirts are gray, short sleeve shirt, Hanes 50-50. You won't shrink

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](mailto:mdbouch@hotmail.com)





**MARK  
THIS  
DATE**

## **Upcoming Events**

Bill Brackett

To add an event, please send a brief description, time, place and a contact person to call for further information to Bill Brackett at [thebracketts@verizon.net](mailto:thebracketts@verizon.net) or (508) 393-6290.

*Bill*

Aug 1<sup>st</sup>-2<sup>nd</sup> Scribner's Mill Show  
Sebago Lake Region near Harrison ME  
207-583-6455

Aug 6<sup>th</sup> Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA - 781-893-5410  
<http://www.neme-s.org>

Aug 8<sup>th</sup>-9<sup>th</sup> Straw Hollow Engine Show  
Boylston, MA  
J. A. Resseguie 508-869-2089

Aug 15<sup>th</sup>-16<sup>th</sup> Mystic Marine Engine Show  
Mystic Ct.  
<http://www.mysticseaport.org/>

Aug 16<sup>th</sup> 9:00am The Flea at MIT  
Albany Street Garage at the corner of Albany and  
Main Streets in Cambridge

Aug 22<sup>nd</sup> 32<sup>nd</sup> Annual New England Auto  
Auction  
Owls Head Transportation Museum Owls ME  
<http://www.ohtm.org/>

Aug 29<sup>th</sup> - 30<sup>th</sup> 39<sup>th</sup> Annual Meet  
Waushakum Live Steamers  
Holliston MA  
<http://www.steaminpriest.com/wls/>

Aug 22<sup>nd</sup> Vintage Motorcycle Meet & Antique  
Aeroplane Show  
Owls Head Transportation Museum Owls ME  
<http://www.ohtm.org/>

Sept 3<sup>rd</sup> Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA - 781-893-5410  
<http://www.neme-s.org>

Sept 12 NEMES booth at  
Saugus Iron works  
<http://saugusironworks.areaparks.com/>

Sept 12<sup>th</sup>-13<sup>th</sup> Dublin Show  
RT 101, Dublin, NH 603-863-4696

Sept 11<sup>th</sup>-20<sup>th</sup> Annual Lee's Mills Steamboat meet  
Lake Winnepesaukee Lees Mills NH  
<http://www.steamboating.org/>

Sept 20<sup>th</sup> Convertible Meet & Antique Aeroplane  
Show  
Owls Head Transportation Museum Owls ME  
<http://www.ohtm.org/>

Sept 20<sup>th</sup> 9AM The Flea at MIT  
Albany Street Garage at the corner of Albany and  
Main Streets in Cambridge

Starting September and every weekend through Oct  
1:00-5:00

'Yankee Siege' trebuchet  
Greenfield, New Hampshire  
<http://www.yankeesiege.com/>

Sept 26<sup>th</sup> Innovations of Yesteryear  
Charles River Museum of Industry  
Waltham, MA - 781-893-5410  
<http://www.crmi.org>

Sept 25<sup>th</sup>-27<sup>th</sup> Connecticut Antique Machinery  
Museum  
Fall Festival \$8.00 entry  
<http://www.ctamachinery.com/>