



The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

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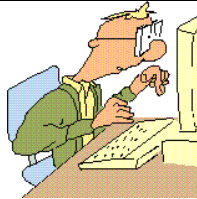
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Editor's Desk

Victor Kozakevich

It must be fall: the students are moving in all over Cambridge, the Red Sox are beating the Yankees and suicidal squirrels are gathering nuts in Boston traffic. At least hurricanes are staying in Florida.

Norm finally shares one of his digital pictures this month. I'm glad to know those newfangled cameras actually work.

Mike Boucher sent us information regarding the upcoming American Precision Museum show at the end of October. Time for a trip north!

Al Goldberg wrote an excellent article about the future of the Chestnut Hill Waterworks, and the challenges of preserving this piece of local history.

Hope you all enjoy my attempt at writing a column, I thought we could all relate to the subject. Next month will be a how-to article on making a mainspring winder.

The clock at the column header is a favorite, with an electrically wound mechanical movement made by the Illinois Watch Co. and designed to make use of the unreliable AC line current of the 1920s.

Next Meeting

Thursday, October 7, 2004

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

Membership Info

Annual dues of \$25, for the calendar year are due by December 31st of the prior year. Mail checks to our treasurer, made payable to "NEMES".

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

Addresses are in the left column.

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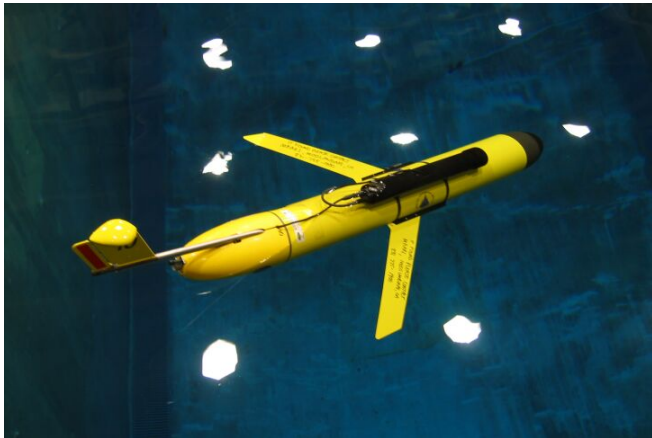


President's Corner

Norm Jones

The Meeting

Our speaker for the October meeting will be Clayton Jones, Vice President of Webb Research Corporation, East Falmouth, Mass. His talk will be about The Slocum Glider, an autonomous vehicle that moves up and down in the ocean by means of changing buoyancy. The Slocum Glider is named after Joshua Slocum, the first man to single-handedly sail around the world. It is a uniquely mobile network component, capable of moving to specific depths and occupying controlled spatial and temporal grids. Driven in a sawtooth vertical profile by variable buoyancy, the glider moves both horizontally and vertically.



Lees Mills Steamboat Meet

I made arrangements to meet Ron Ginger with his steamboat on Wednesday Sept 15th. We arrived within about ten minutes of each other! Never having attended this event before, I had no idea what to expect. Wow! At around 10:00 AM a flotilla of boats departed for, in some cases, an all day trip. The weather was perfect. Ron and I met Clarence and Gayle Myers just before they were going off for the day. I made arrangements to go for a ride with them on the *Lady Gayle* on Thursday morning.

Ron and I got the *Norman D* fired up and launched in that order. Our first excursion had Ron running the boat. I now have a much better appreciation for what is involved in steamboat operation after he suggested that I give it a try. The combination of: maintaining a fire, keeping the proper water level in the boiler, and steering the boat certainly keeps one busy. It was great fun!

Thursday morning (my second trip to Lees Mills) I arrived at around 9:30 AM, in plenty of time to meet the 10:00 AM departure time of the *Lady Gayle*. We were out for about 1½ hours. The time just flies by! This is the second year that Clarence and Gayle have brought their boat to Lees Mills. They built the boat over the span of two years. It is a fantastic accomplishment! You have to see it. Pictures just don't do her justice.

Thursday afternoon I was again fortunate to go for a ride with Charlie Roth on the *ADAMY III*. Some of you may recall that the *ADAMY III* was on display at the 2003 Cabin Fever Expo in York PA.

I met Ray Hasbrouck upon returning, just in time to assist him in launching *Tinkertoy*. Yet another ride. Boy you can't beat this!

Clarence and Gayle suggested that I might enjoy the parade on Sunday morning. This time I was able to persuade my wife, Leslie to come along for third trip to Lees Mills! Being part of the parade on board the *Lady Gayle* was a terrific experience. Many thanks to: Ron, Clarence, Gayle, Charlie, and Ray for making this a very memorable experience.

Annual Cabin Fever Expo Bus Trip

It's time to think about Cabin Fever once again. A few minutes conversation with anyone who was attended in the past will convince you that this is one of the premier events of the year. Our bus trip presents a great opportunity to get better acquainted with your fellow club members, not to mention the luxury of not having to drive yourself to York Pa in the middle of the winter.

Cabin Fever Expo will be the weekend of January 15-16, 2005. This year's bus fare will be \$100 per person, based on 26 riders. Refunds will not be extended this year under any circumstances if you are unable to make the trip. The trip will also

be canceled if less than 26 people sign up. A maximum number of 40 will allow us to reduce the cost per person. Price reduction will be calculated based on the number of people that sign up.

As in the past, we will leave from the Riverside T station in Newton on Friday morning Jan 14th. The Holiday Inn on Arsenal Rd in York Pa. is the only hotel that the bus will be servicing. Room rates are the same as last year, \$59 + tax per night. We will be staying there on Friday and Saturday nights. Please make room reservations in advance by calling 717-845-5671. You must mention that you are on the NEMES Cabin Fever Expo Bus Trip to get the rate of \$59. The rate at this hotel is \$64 per night for those of you who are traveling independently. I will try to rectify that situation but can't make any promises at this time. We are going to offer a Deli Buffet upon arrival on Friday evening as was provided last year, for \$15.75 per person. This also gives us the use of that room for the evening to socialize.

Please send a check to Rob McDougall for \$100 to reserve your seat on the bus. We will have to pay for the Buffet in advance, however I will address that issue at a latter date. The deadline for bus reservations will be December 4. More details to follow next month.

See you on Oct 7

Norm



The Meeting

Max ben-Aaron

September Meeting

The September meeting was opened by Venerable President Norm Jones in the Jackson

Room of the Charles River Museum of Industry (CRMI).

Norm went to Rough & Tumble, at Kinzer, PA. They have model tables in a building as well as outdoor area, on a concrete pad, with steam supplied. There is no compressed air. There is a flea market, with mostly mechanical stuff, but Norm found a life-like model of a 'bear' for his lawn. He passed around a picture. It looks very real.

This 'lawn-animal mania' started last year, at Bangor, Norm found a life-sized model 'sheep' that he thought his wife would like. It now 'munches' on his lawn, and is accompanied by the bear. The sheep is so lifelike that a stray dog has been seen trying to herd it.

Next on the menu for Norm is the 4H Fair in Westford where he has become a fixture -- a legend in his own time. Norm retrieved his model engine that had been on display on the ramp at CRMI to show at the Fair. It would not start because the battery would not take a charge. Norm replaced the battery with a new Nickel Metal Hydride (NiMH) battery he got from Ritz Camera in Nashua (4 for \$10). These new batteries are astonishingly powerful, with a capacity of 2200 milliamp hours. When he bought the batteries, he found that the 2 megapixel digital camera that he just bought is now obsolete; it has been replaced by a 3 megapixel camera at \$140.

"I went to the Waushakum annual meet. I got lost and stopped at a farm stand to get directions. The whole area was festooned with "NO PARKING" signs. A huge crowd was in attendance."

Norm did not attend Iron Fever this year.

The Precision Museum's 5th Annual Model Engineering Exhibition in Vermont will be held on October 30th and 31st.

It is not too soon to start organizing the Cabin Fever bus trip for next year. Last time we did not have a full complement. As things stand at the moment, we are pegging the bus-fare at \$100 with the proviso that it will come down according to the number of takers. We will have more details in future meetings.

Show & Tell

Norm passed around the trick nut and bolt that he mentioned last meeting.

Frank Stauffer mentioned a private World War II Museum in the vicinity. If there is any interest, perhaps a group tour could be arranged.

Al Goldberg is involved in the effort to save the Service Building at the Chestnut Hill Water Works. The State Agency and the developer insist that the machinery must be cleaned up. Volunteers are needed to help with this effort.

Rollie Evans announced that the Steamboat meet at Leeds Mills (northeast corner of Lake Winnepesaukee) will be from September 9th to the 14th. More than 60 boats will be on display.

Bill Brackett told that the Grizzly site has a shop layout program that is fun to use.

Wayne Singer has the 1927 organ from the old Porter Square Theater (Wick's Theater?) in his house. It has been completely restored. It is huge. It is for sale or trade.

Rollie Evans says that the Autocad program has a scaling feature. If you import a digital picture and can establish one dimension (a flywheel, for example) by scaling, all other dimensions can be easily read off.

Al Arena gave us the sad news of the death of Ken Burgess. He had a great shop. His widow asked if anybody was interested in purchasing any of the equipment. He handed out brochures with the details.

Harvey Noel knows of another amateur machinist who died. He had a long bed Sherline lathe with a lot of attachments. It is up for sale at \$700.

Dick Sedgwick also had some brochures of equipment for sale in Dover NH.

Rollie Gaucher passed out flyers for his shop visit and swap meet on Sunday October 3rd, from noon to 5 pm.

The North Shore Antique Auto Show

We had an small exhibition as usual at the show, which is at the Topsfield Fair Grounds. Once again, Ed Rogers did us proud, with a lovely canopy, electric power, tables, chairs and even coffee and donuts. When I arrived at the front gate, the attendant recognized me and said "Ed is in the usual place".

The usual suspects were there: Ed Rogers, Venerable President Emeritus Ron Ginger, President Norm Jones, Herb Cotterly, Henry Szostek, Rollie Gaucher and yours truly. I always look forward to this day, which is one of the highlights of my year, and I was not disappointed. It is a real treat to meet the public and spend a couple of hours socializing with the above-mentioned villains.

Lou D'Allesandro's Engraving Machine

The speaker was Lou D'Allessandro. Venerable President Norm Jones saw Lou's laser engraving operation at the Pheasant Lane Mall in Nashua and invited him to come and tell us all about it.

Lou's wife works for a company called Vytex, in Fitchburg. They make large laser engraving machines for doing inscriptions on tombstones. Lou and the owner collaborated on making a smaller machine that is essentially a X Y plotter - a dumb printer which uses a 1200 watt CO₂ laser. It can cut through 1/4" acrylic with a 1/16" kerf. The machine is capable of etching curved surfaces (e.g., a baseball) with special tooling that Lou does not have.

If you have a photograph, say of your wedding, expect it will fade in time. Lou can engrave the image on stone and it will last forever. "If you can picture it, we can engrave it".

Any image that you can generate on your computer, write to a CD or draw he can engrave on marble, granite, slate, glass, wood, ceramic, lexan or leather. Once he gets the image into his computer, he uses Photoshop to convert it to a half-tone image that is fed to the machine.

Lou does not engrave metals at Pheasant Lane Mall because of leasing problems, due to the detritus that ensues with using lasers on metal.

One pass of engraving is 0.007" to 0.01" deep and encompasses 100 shades of gray. The material he uses most is white marble $\frac{3}{8}$ " thick with a black surface. His largest marble image is 12" x 12", which takes 30 minutes to engrave.

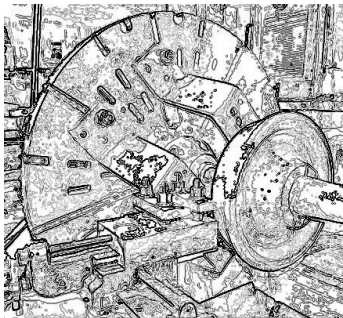
The machine itself is 2' x 3' but it is not limited to those dimensions. By successively moving the workpiece, larger sizes are possible. His record currently stands at 16' x 16'.

Retail, a 6" x 6" image costs \$50, but Lou is offering a half-price deal (\$25 with discount) to NEMES members. Lou invites members to come down to the Pheasant lane mall and see the laser at work.

Lou also has a quantity of various-sized scraps of marble at his home in Chelmsford that can be had for the asking.

His URL is: <http://www.etchinginstone.com>

Max



**Museum
Shop Update**

Fred Widmer and
Max ben-Aaron

The Oil Can Gang

The Museum has a live steam locomotive "The Governor Stanton" which it would like to put to work. Perhaps we might lay some track to give rides to and from the footbridge to the front door. Would some of the Waushakum experts please step forward and give us some advice? Is it feasible to lay track on the brick walk?



**Treasurer's
Report**

Rob McDougall

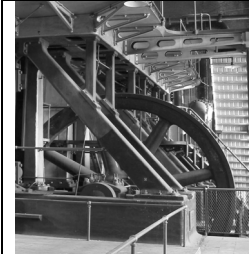
Balance as of: 7/31/2004	\$6,610.41
Dues Received	25.00
Donations/Meeting Café	8.28
Interest Income	.56
Gazette Production Expense*	-11.90
Guest Speaker Fee	-50.00
Balance as of: 8/31/2004	\$6,582.35

*The usual Gazette expense rolled into the next month, except for this small copying cost.

Cabin Fever 2005:

I will collect the prepayment checks and hold them all. If we don't reach the minimum of 26 people, I can either return them to each person at the meetings, return them by US mail, or destroy them – whatever each person prefers.

Rob



**Chestnut Hill
Waterworks**

Al Goldberg

Volunteers for the Chestnut Hill Waterworks

As most are aware of the historic collection of municipal water pumps at the Chestnut Hill Waterworks, I'll not belabor another description of engines that are housed in the High Service Building (HSB) at that site. Massachusetts is in the process of transferring ownership of the Waterworks to a private developer, and there are problems concerning the fate of the engines along with whether or not a truly viable museum is

possible. I'd like to bring these problems to your attention along with a plea for help.

Problems arise from several conflicting sources. The State agency handling disposal, the Division of Capital Asset Management, DCAM for short, has decreed that 'no matter what' the engines are to be preserved, although there is no definition of what, exactly, that means. The interpretation of DCAM, however, is essentially that the engines are to be maintained in a condition suitable for public display, in perpetuity. The developer, under pressure to finish his project according to a time schedule, wants to see this accomplished by the time the whole site is finished. So the engines, now covered by peeling paint and rust after some thirty years of disuse and neglect, must be cleaned within the next couple of years. While both DCAM and the developer would like to see that done well, they are more concerned that it simply be done.

The idea of a museum related to the presence of the engines has long been a topic of debate. All who have had a hand in the disposal process have accepted the idea but there is still no definition of what exactly it should be, nor of more importance, how it should be financed. DCAM is silent here although it has insisted that the developer reserve modest funds to be used for preparing the engines for display. The developer, under pressure to get the job done, has proposed that after a cleanup, some display material be set up among the engines, the area opened for visitors, and a receptionist to the building accommodate visitors to both the engine area and commercial areas that are to occupy spaces in the HSB once used for boilers and coal storage.

The concept of a museum, above, is that of a static lobby - a low bar that satisfies the minimum requirements of both DCAM and the developer. But we believe the historic collection in the HSB deserves something more imaginative. We would like to see a truly viable museum that is based on the technology within the HSB while also touching on the impact of this site to Boston. This implies that a small staff be supported along with occasional changes to the displays, and that the museum be capable of raising its own funds. There is also the possibility of getting one of the early engines to operate, in some fashion, as something to rouse the interest of visitors.

However, before any of that can be tackled, DCAM's requirement that the engines be made presentable must be met.

There are two ways that cleanup can be accomplished. Lacking money for a specialized commercial group, the developer is prepared to spend some of his reserve funds to hire low-cost, unskilled help to do the job. This is apt to produce a superficial result with a good possibility that the machinery be damaged, with little hope that things would ever be made better. The other way is to organize a group of knowledgeable volunteers who are willing to devote time doing a more careful job.

Conversation with the developers suggests they will be willing to give cleanup by volunteers a try, and if it is demonstrated that such a group is effective then there is a good possibility that a truly viable museum could be created. In essence this means that raising the bar set by DCAM will have to be done by a group of citizens, working in conjunction with the developers, but not a part of them. It also suggests that the reserve fund set aside for preparing the engine space could be used more effectively. If, on the other hand, such a group can't be formed - then it's cleanup by minimum-wage labor and the static lobby.

We would like to arrange a tour of the HSB with a group from NEMES in order to show details of what is in the building and what cleanup involves. Suggestions on how to do it will be welcome, as well as names of those who want to be involved. We believe the project is something well worth doing and will have its own rewards in the sense of creating something of lasting consequence.

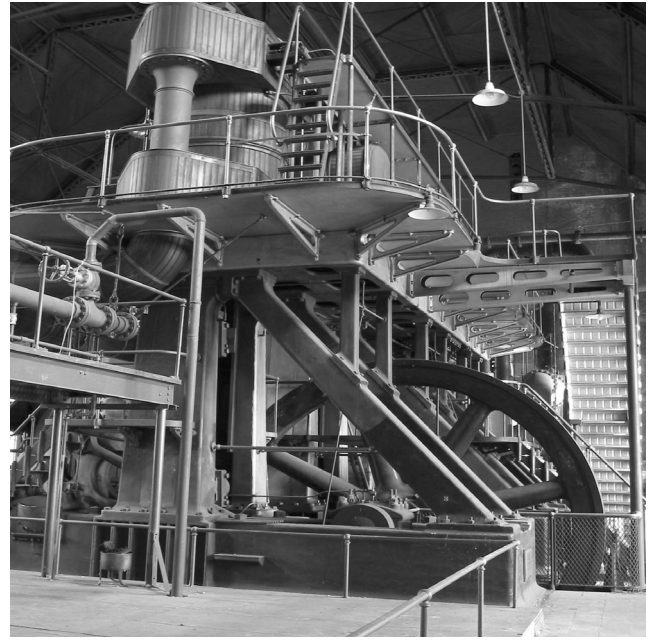
A major problem has been that access to the HSB has been extremely difficult due mainly to liability issues. We are promised, however, that soon this will be resolved, possibly sometime next month. When access is available I'll let you know and give details about a tour. Also I hope to get information onto the NEMES website.

Some images of the engines are on a following page. In addition to the well-publicized Leavitt Engine, there are four others. This collection spans the period from that of large reciprocating steam engines to that of small, modern high-speed rotary machines.



Allis, floor view, installed 1898, a fine example of a large vertical reciprocating steam engine, generic from the 1880's through the early 1920's when rotary steam turbines became practical. The steam head rises 30' above the floor, water pumps extend 20' below; triple expansion, engine output 800 gross hp or 750 net hp at 17.8 rpm, pumps rated at 30 million gal/day and 140' head. Designed for least operating cost and easy maintenance at the expense of great bulk.

Leavitt floor view, installed 1895, 550 gross hp at 50 rpm, 20 million gals/day at 132.5' head, triple expansion steam head. Known as a 'rocker engine', a complex design where vertical piston rods drive massive rocking elements that are pivoted from the frame, each driving a connecting rod forward to a common crankshaft and a pump rod rearward to a water pump located at about a 40 degree angle below the floor. The design is used in deep mines where headroom is limited, although this one is only some 15' shorter than the Allis and requires more floor space. A competent pumping engine but a relatively high maintenance machine, copied only once elsewhere for municipal service.



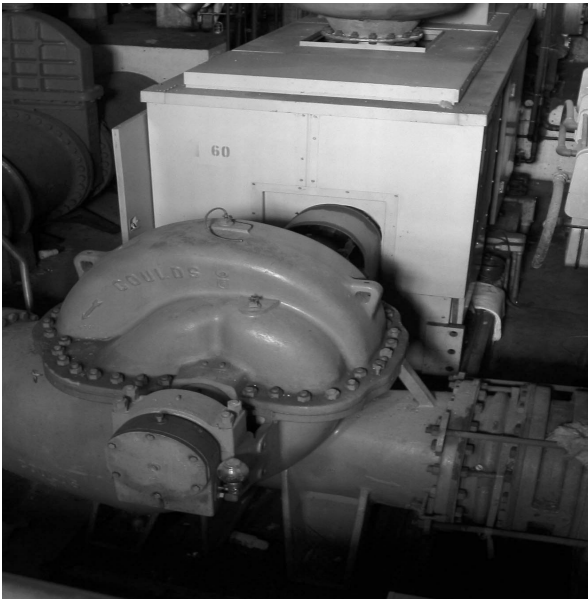
Well publicized in Boston, it contains some unusual design features and elegant cabinet-quality brass-bound wood covers over its hot surfaces.



Worthington, installed 1922, a horizontal two-stage expansion steam engine, 448 gross hp at 38.9 rpm, driving double acting pumps rated at 15 million gals/day and 133' head. Actually two separate engines connected to a common crankshaft with one flywheel. Corliss valves are on both cylinders, valve gear is simple and compact. An example of a commonly used engine of its time. Due to its cramped placement a better image of the engine isn't possible at this time. Shown are the two steam heads to the left, pumps to the right. Not shown are the usual water vessels to the right and on the floor level.

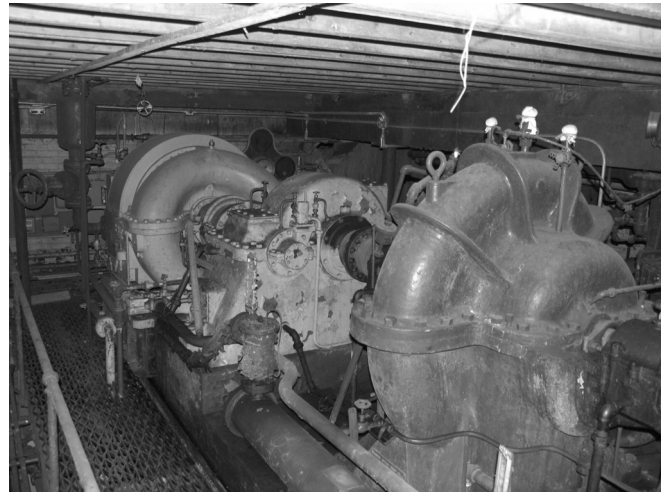


Solar gas turbine, a high speed rotary machine not dependent on the steam system, it was installed 1974 as emergency backup after steam was shut down in that year. Rated at 35 million gals/day at 135' head and about 830 net hp, it has the highest pumping capacity in the building although, without its accessories, it occupies a space of only some 15' long by 6' or 8' in cross section. The small size is due to a turbine speed in the vicinity of 20,000 rpm, driving a centrifugal pump through reduction gear at about 900 rpm. Shown is the air inlet and compressor on the left, a burner in the center, and turbine and exhaust on the right; not seen in this image is the reduction gear and pump on the right.



Gas turbine centrifugal pump, seen as a bump on a 4' diameter water pipe. Since the flow is steady, with no surging as with the older reciprocators, the large water vessels are not needed nor are

there water valves in the pump. This machine makes a stunning comparison to the earlier engines, a testament to some 75 years of technologic progress.



Elliot steam turbine, installed in 1932, rated at 625 hp at 5990 rpm, driving a centrifugal pump at 900 rpm and 15 million gals/day. The turbine is to the rear, reduction gear in the center, with the pump in the foreground. In 1932 there was also a much larger steam turbine with a capacity of 50 million gals/day so that, with the Elliot, the station capacity was either doubled or, more likely, the pumping load was transferred to the more modern rotary machines. The gas turbine replaced the larger steam turbine when the steam system was shut down in 1974.

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	<p><i>Time on My Hands</i> Vic Kozakevich</p>
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A Steam Engine On Your Wrist

I'd like to introduce this column with a story that connects a tiny model steam engine to a watch brand that became a household name. The tale starts in Connecticut's Naugatuck River valley, already established in the early 1800's as a

center for the manufacture of American clocks, the very first having wooden gears.

In the 1840's, the process of rolling brass into sheets was developed, and one of the companies in the business was Benedict & Burnham Manufacturing of Waterbury. They started out selling their rolled brass to button manufacturers, then found another client in the Jerome Manufacturing Company, a clock factory. The relationship with Jerome soured after a while, so Benedict & Burnham decided to engage in what is now known as "value add", and became a clock manufacturer as well, founding the Waterbury Clock Company around 1854.

The clocks sold well, and the company decided to get into pocket watch manufacture, too. They worked with an agent named E.A. Locke to find a design for a low cost watch movement. The first design offered was not ready for production and was rejected. Locke kept at it, and one day while walking down a street in Worcester, MA, in the spring of 1877, he looked in a shop window and saw a tiny steam engine on display. He entered the watch repair shop and spoke with the owner, Daniel Buck, and asked about the model. He learned that the engine, made by Buck on watchmaking equipment and weighing about an ounce, had been displayed at the 1876 Centennial Exposition next to a massive Corliss engine. The model, complete with boiler, governor and pumps, stood on a base covering one eighth of a square inch, was five eighths of an inch high and included one hundred forty eight parts held together with fifty two screws. Three drops of water filled the boiler.

Locke decided he had found the man he was looking for and discussed the idea of Buck designing a cheap watch movement for him. Buck completed a version, sent it to Locke and was paid a hundred dollars. This first pass was found too unfinished for manufacture, and a second version was produced. The new model was finished in 1877 and Buck was granted patent number 204,000 in 1878. The movement was known as a rotary, in that the entire movement rotated once per hour inside the case. The goal had been to reduce the parts count, and the final version contained fifty-eight parts. A conventional watch of the day needed as many as one hundred sixty. The Waterbury "long wind" as it was known (it had a nine foot mainspring, and the crown needed one hundred fifty turns daily), sold initially

for \$3.50, and for \$2.50 late in its production run. By comparison, the cheapest Waltham watch, in an 1874 ad, sold for \$20. A separate company, the Waterbury Watch Company, was created in 1880 to produce the watch. Production of the long wind lasted about ten years. Waterbury Watch went on to produce pocket watches of more conventional design, but sales were suffering. Waterbury's inexpensive watches were often given away as premiums with men's suits and other significant purchases, so it became harder to sell under the name.

To digress for a moment, I often think of American watch manufacture as our first "high-tech" industry. Like today's high tech, it was full of bankruptcies, mergers and acquisitions. The ride gets bumpy from here, so hang on.

In 1898, the Waterbury Watch was reorganized as the New England Watch Company. New England Watch continued the manufacture and marketing of low-priced offerings, as well as reselling their product to other companies, to be sold under other brands, like Cambridge Watch Company of Boston. New England Watch eventually went into receivership, and on November 25, 1914 was sold to the Ingersoll brothers. The Ingersoll Watch Company had started in 1881 in New York City, reselling watches from other manufacturers. The main supplier had been the Waterbury Clock Company. Waterbury Clock had stopped supplying Ingersoll in 1914, so that had spurred the acquisition of New England Watch. Ingersoll failed in 1922 and was purchased by Waterbury Clock. Production was restarted under the name Ingersoll-Waterbury. The new company survived the Depression and went on to produce the famous "Mickey Mouse" watch starting in 1933. This watch sold for \$1.33, but was being produced on old machinery and suffered from poor quality.

In 1944 United States Time Corporation purchased the Ingersoll-Waterbury Company. Led by Joakim Lehmkuhl, who had fled Nazi occupied Norway in 1944, the company prospered. The Ingersoll brand continued until 1951, when it was renamed Timex. In 2004, Timex is celebrating its 150th anniversary. And it all began with a tiny steam engine in a Worcester shop window.

Well modelmakers, display your work proudly, you never know where it may lead!



In the News

Model Engineering Show

On October 30-31, the American Precision Museum will hold its fifth annual model engineering show at the Windsor Municipal Center on Union Street near the museum. Join with the best model machinists in New England in Windsor VT, the cradle of manufacturing technology, for a weekend of fine craftsmanship and engineering excellence. Exhibitors, vendors and the public are welcome!

This year, model engineers exhibiting are invited to participate in a number of events related to the museum's annual membership meeting on Friday October 29. Please join members and trustees for dinner at 5:30 at the Juniper Hill Inn (reservations required), and a lecture with slides at 7:30 with Bill Hosley, Executive Director of the Antiquarian and Landmarks Society, Hartford CT. Mr. Hosley's talk will be "Silicon Valley of the 19th Century: Rediscovering the Connecticut Valley's Industrial Heritage." He's an outstanding speaker with a lot of experience in his topic. The slide talk will be held at Old South Church, a stone's throw from the museum on Main St.

Saturday from 5:30 to 6:30pm the museum is hosting a reception for model engineers so they can visit the museum's exhibit *Building for Invention: The Machine Shops on Mill Brook*. Executive Director Ann Lawless will bring attendees up to date on the restoration project at the Armory building that houses the museum.

Several special programs are planned for Saturday and Sunday to draw visitors in conjunction with the model show. In a collaboration with the Guild Institute in Newport NH, attendees at the Model Show will be able to attend, free of charge, the Biennial V International Tapestry Exhibition and Machine Tool Exhibit at the historic Dorr Mill in Newport NH, a 25 mile drive from Windsor VT.

In conjunction with the museum's historic windows restoration project, museum trustee and model engineer Bill McCarthy, from Riegelsville PA will be doing a special free demonstration for visitors to the model show. Bill will set up his mid-19th century joiner's work bench with end vise and bench dogs and his array of historic hand tools to conduct demonstrations in crafting a window sash by hand.

Sunday at 3:30pm at the museum, author Carrie Brown will discuss her book *Rosie's Mom*. Carrie's research into the museum's collections and archives as consulting exhibit curator inspired her to write *Rosie's Mom*. We know that "Rosie the Riveter" drove the rivets on airplane assembly lines during WWII. If you have ever wondered who shaped and filled the millions of cartridges, who made the gas masks, and who assembled all those fabric covered airplanes, this talk is for you. Admission is free with museum/model show admission.

The American Precision Museum, housed in the Robbins & Lawrence Armory, a National Historic Landmark, has the largest collection of historically significant machine tools in the nation, tracing their evolutionary development back to the early days of manufacturing. The museum is open daily from 10-5, Memorial Day to the end of October. The Model Show and related happenings are the closing events of the museum's 2004 season. Don't miss this opportunity to attend! Those seeking to exhibit and sell their wares at the Show are invited to contact the museum for an information & registration packet at 802-674-5781 or at info@americanprecision.org. Information is also available on the American Precision Museum's website at <http://www.americanprecision.org>.



For Sale

Shaper Work CD

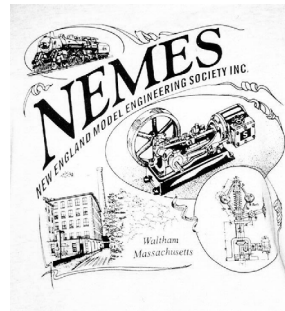
Put out in 1944 by the New York State education Department this 326 page manual is chock full of valuable tips and information on using the King of Machine tools....The Shaper. Covered is everything you need to know about the care and feeding of the shaper, use of the shaper, even how to sharpen tools for the shaper. Scanned and saved in Adobe Acrobat format. \$5.00 shipping included.

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

Micrometers

I have a friend that would like to sell two micrometers. They are 1" and 2" made by Union Tool in Orange MA. The numbers on the boxes are 801 for the 1" and 812 for the 2". They are both .001". The 2" does not have a standard. He would like to get \$35 for both.

Bill Brackett wbracket@rcn.com

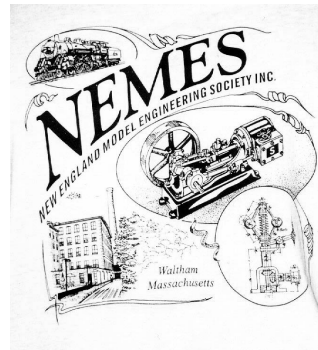


NEMES clothing

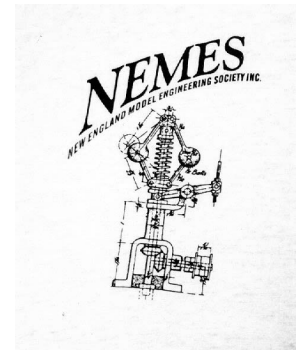
NEMES Tee Shirts

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:



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



**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 wbracket@rcn.com or (508) 393-6290.

Oct 2 9:00AM-4:00PM
The Original Yankee Steam-Up
1300 Frenchtown Road, East Greenwich, RI
<http://users.ids.net/~newsm>

Oct 2-3 Granite State Steam and Gas show
Deering NH Rte 202 near airport
Phil Barker 603-495-3640

Oct. 3 Noon – 5PM
Roland's shop visit
90 S. Spencer Rd Spencer MA
508-885-2277

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

October 10
Foreign Auto Festival & Antique Aeroplane Show
Owls Head Transportation Museum
<http://www.ohtm.org/>

Oct 17 Waushakum Fall blow-down
Holliston, MA
John Mentzer 508-359-8794
<http://Steamingpriest.com/wls>

Oct 17th Sun 9AM
MIT Swapfest [Albany Street Garage](http://www.albanystreetgarage.com)
corner of Albany and Main Streets in Cambridge
<http://web.mit.edu/w1mx/www/swapfest.html>

October 30-31, 2004

American Precision Museum, Windsor VT
5th Annual Model Engineering Show
info@americanprecision.org
<http://www.americanprecision.org>
802-674-5781

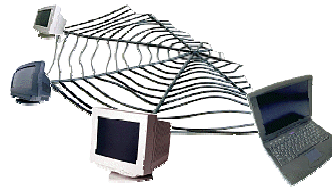
October 31 The Great Fall Auction & Open House
Owls Head Transportation Museum
<http://www.ohtm.org/>

Nov 4th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry 781-893-5410
Waltham, MA

Nov 5-7 PUNKIN CHUNKIN 2004
<http://www.worldchampionshippunkinchunkin.com/>

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

Bill



Web Sites of Interest

This bicycle is ridden sideways and is balanced by using human Front to Back balance.
<http://sidewaysbike.com/>