
The NEMES Gazette

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The Newsletter of the New England Model Engineering Society

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Our next meeting is at 7:00 PM on Thursday
1-Nov-2001 (first Thursday of every month) at
The Charles River Museum of Industry
154 Moody Street
Waltham, Massachusetts

Annual dues of \$25 covers from Jan to Jan.
Please make checks payable to NEMES and send
to our treasurer. (Address in masthead).

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publisher. (Address in masthead).



The Editor's Desk

By Kay R. Fisher

Sometimes, it is amazing where I get material for the Gazette. When possible, I prefer submissions from our club members but I'll take them from wherever I can get them. You may wonder what the connection can be between sea stories and the machinist hobby. Well, the connection is that these tales are from one of our own members (Alan Bugbee). There are some tool references. So if you stay tuned you will see what a claw hammer can be traded for. I currently have sea stories for this and four more editions of the Gazette. Hopefully Alan will be encouraged to submit more for the future. If you enjoy them, let Alan know.

I was surfing the web looking for Bridgeport info when I happened across a fascinating web site. This fellow BottleBob whose nickname stems from street racing days where he designed, built, and used custom nitrous oxide injection units (The Bottle) to "squeeze" every last horsepower out of an engine, has invented and machined some very clever stuff. With his permission we will show his machine tool inventions and handiwork. His web site is:

<http://home.earthlink.net/~bottlbob/>

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November Meeting

Mike Boucher will be our November speaker. He will talk about "The Care, Feeding and Breeding of Model Live Steam Locomotives". It would be nice if attending members who have such models (models that are not too difficult to transport, of course) would bring them so we can see as many examples as possible. Parts and partially complete examples also welcome.

Kay



The President's Corner

By Ron Ginger

Newsletter

When I started this group I knew that having a newsletter for it would be a very important element of its success. I also knew that doing a newsletter would be a lot of work, every month. So I was very pleased at our first meeting when Stephen Lovely stepped up and offered to do a newsletter.

Stephen did the entire job of writing and printing the news for the first couple years. Later Kay Fisher stepped up to handle the editing part, and Bob Neidorff stepped in to handle the publishing and mailing, but Stephen continued to write the major monthly meeting article. I have heard many fellows remark on the amazing job Stephen has done of capturing the details of each meeting into a very well written article. It is a tough job that Stephen has done well.

I am very sorry to hear that Stephen has decided to give up his writing of the major meeting review part of the newsletter. I offer my sincere thanks to him for a job very well done.

His careful and detailed reports will be hard to replace. I hope he can use the extra time to finish some of his projects!

Max ben-Aaron has offered to help out, but we need a couple more writers. Please consider helping to keep this newsletter strong. Kay and Bob are doing an outstanding job of the editing, publishing and printing part, but we do need some more help on writing. If you can help please let Kay know.

It sure looked strange last meeting to see Stephen without that notebook attached to his arm! I think it was the first time I saw him empty handed.

Thanks Stephen for a great job.

Cabin Fever Road Trip

It's time for the signup for the annual road trip to Cabin Fever. At the last meeting there were a couple of questions, and since I know there are new members, I thought it wise to give some of the background details.

Cabin Fever is a model engineering show held the last weekend of January in Pennsylvania. This will be the 6th year and the show has grown to be a very well attended and enjoyable show. Last year it moved to a new location in Lebanon PA, with much more display space, seminar rooms, and much improved food service.

The show has many of the commercial vendors that sell to this hobby, including the publishers, kit and plan sellers and many new and used tool dealers. Compressed air is supplied to the display tables so that steam models may be run, and gas engines may also be run. There are usually several hundred exhibitors, from all over the US. The displays range from all manner of model engines to clocks, tools, trains, and just about any facet of modeling.

In my view, this is just as good a show as the Detroit NAMES show. It has very nearly the same number of vendors and exhibits. If you have Internet access, look at www.cabinfeverexpo.com for more information.

This will be the 5th year the club has attended the show by motor coach. If you have not been in a modern motor coach you will be very surprised at how comfortable they are—smooth ride, quiet, and a great view. They are restroom equipped. We split the cost of the coach exactly; the club makes no money from this. Depending on the number of riders the fare is usually about \$75.

We will leave on Friday morning, Jan 25 at 9:00 AM from the Riverside T station in Newton. This is a major station, and it's safe to leave a car parked over the weekend. We will make a stop on the Mass pike and near Hartford to pickup fellows that live along the route. We will stop for a lunch break, and should arrive at the show about 4:00PM. We will unload our exhibit material, and get a quick look at the show. We will all stay at the same hotel, and on Friday night we will have dinner and a hospitality suite at the hotel.

This year we must be very sure that everyone gets the right hotel reserved. I have held 30 rooms again at the Quality Inn (717) 273-6771. The show is January 26th and 27th. Everyone must call and make their own reservations.

The bus will make a couple trips between the show and the hotel on Saturday, so if you are a late sleeper, or want to go back for an afternoon nap ;-) you can. I am trying to arrange for a group dinner on Saturday night.

On Sunday we return to the show and leave about 1:00PM. The bus should be back at Riverside about 7:00PM.

I think it's a great weekend, a lot of time to talk with our friends, and we always see some interesting new models. We also usually acquire a few new tools and castings!

If you have any questions about the trip call me any evening at (508) 877-8217 or email ronginger@rcn.com.

Ron



The Meeting

By Max ben-Aaron

The Meeting, 4 Oct, 2001

I do not yet have a November speaker. I have given the matter much thought and I am going to be selfish and get a speaker to talk about a subject close to my heart. I am going to try to get Mike Boucher to talk about "Live Steam Locomotives. Starting out . . ."

There was some preliminary business:

- (1) Fate seems determined that we should not have a P.A. system. The old one was stolen, the replacement still doesn't work very well. But we will prevail. We will eventually get a working system.
- (2) Announcements about Greenwich R.I steam-up next Sat. 13th.
- (3) Announcement of Rollie's get-together on the 20th.
- (4) Information about Precision Museum show in VT.
- (5) Bob Neidorff had an article published in M.E. Workshop.
- (6) Demise of "Strictly IC". It was suggested that it would now not be unethical for the club to make an effort to assemble a complete set for our library.
- (7) Stephen Lovely has weaseled out of doing the write-up of the proceedings after only five years of sterling service and the job is now open. Ron suggested that members could take turns so the burden would not

fall on any one individual. Volunteers are needed.

Our main speaker this month was Bob Cline (one of our own members now, thankfully, recovered from having a pacemaker installed) who explained the procedures necessary to fire up the 30,000 HP steam engines of a World War II destroyer.

Bringing up Steam on the Putnam.

The USS Putnam was one of seventy Allen M. Sumner class destroyers built during World War II. They were built in several shipyards, including the Bethlehem Steel Yard in San Francisco, where the keel of the Putnam was laid in 1942. Displacing 2200 tons, she was 40.10 feet wide and a tad over 376 feet long, although some ships were built with a “long hull”; where a 14 foot section was added to the center for additional fuel, to cope with the long hauls over the Pacific Ocean.

The Putnam carried a crew of 350 or more, depending on the mission, and was driven by twin screws, each powered by a 30,000 horsepower turbine set, enabling the vessel to exceed 35 knots at flank speed. The main armament was five 21-inch torpedo tubes and six 5-inch guns, in three turrets, doubling as 38s for anti-aircraft defense, backed up by quad 40mm and 20mm guns.

The power was generated in two engine rooms each driving its own propeller shaft. Each main propulsion unit consisted of a two-stage steam turbine set, with the steam passing through a high-pressure section to the low-pressure turbine, which sat on top of the main condenser. Because the engine rooms were in-line, each propeller shaft was slightly offset laterally from the centerline. The screws were contra-rotating (turning outwards). The ship could get by with only one propeller, if necessary, but the rudder had to be used to compensate for the unbalanced thrust in that case.

Because turbines are happiest at high speeds, while the propellers demanded low speed, the power passed through a reduction gearbox with herringbone gears, to the propeller-shaft.

Each gearbox was fitted with “jacking-gear”, which turned the turbines while warming up and cooling down, because unequal expansion or contraction would damage the closely fitting turbine blades.

For economy, in each engine room, a single-stage turbine with its own reduction gear was used for cruising. Power for running the ship was provided by a steam-driven generator and a self-contained auxiliary diesel generator in each engine room. In addition there were two evaporators and a steering engine as well as about 18 tons of refrigeration together with the usual auxiliary equipment: feed pumps, air ejectors, condenser pumps, lube pumps, fire and bilge pumps and so on. The closed water loop was so efficient that it was seldom necessary to top it up.

The boilers generated steam at 600-lb/sq. in. at a temperature of 800 degrees F. The steam-pipes carrying the superheated steam glowed red, and any leaks were instantly fatal. The crew were painfully aware that their main duty was to protect the battleships in the group and that they were expected to interpose themselves between any torpedoes and the battlewagons.

The destroyers were only lightly armored and the superstructure was built of aluminum. During the invasion of Okinawa, the kamikazes wrought havoc and took a terrible toll on the vessels taking part.

The furnaces in the fire rooms burned bunker oil, which was so thick it would not flow unless heated by steam, when the ship was under way. The “oil king” was a crewmember whose duty it was to keep the ship in trim, fore and aft and side to side, while the fuel level in the bunkers changed as fuel was consumed.

The combustion parameters had to be closely controlled, not only for fuel economy, but because of the quality of the smoke issuing from the stacks. Black smoke would give the position of the vessel away, so the optimum was a light brown haze that blended in with the horizon line. During amphibious landing operations, black smoke was generated to provide cover.

The steam was consumed almost as fast as it was generated, so the fire-room crew changed the “tips” to control the rate of oil flow, and therefore the rate of steam generation, depending on the orders that came down from the bridge through the annunciators. Close cooperation between the fire room and the engine room was essential as the throttles were opened, keeping close watch on the steam gauge.

In port, special procedures were followed to bring up steam. Using shore electric power, the bunker oil could be heated enough to liquefy it, so it could be pumped to the fire rooms to light one burner. The ship could get under way in about 20 minutes, but it took 90 minutes to get a full head of steam. With steam pressure up to 600-lbs/sq in. (saturated - no superheat), the auxiliary generators could be started up and shore power could be disconnected. The water level in each boiler was critical - it could not be allowed to get either too high or too low, and a crew member was detailed to maintain precise control.

When the steam pressure was up and the superheaters were operational, the bridge could issue the order, on the annunciator, "spin up the turbines" and the jacking gear was engaged as the turbines were spun up, to prevent unequal expansion. When the main turbines were running, the bridge was informed and the order came through the fire-room annunciator "Prepare to answer all bells". Under way, the cruising turbines were used. The turbines were reversible, and if the order "full astern" was received, they could immediately be thrown into reverse.

For maintenance, the ship carried a 16" LeBlond lathe with a vertical slide to provide some milling capability.

Steam was also provided to the galley. Although the kitchens could use electric heaters, steam was more convenient and the engine room crew could, by withholding steam, “encourage” the kitchen staff to keep them well fed and happy.

Mb-A



Treasurer's Report

By Rob McDougall

As of 9/30/2001

| | |
|------------------------------|-------------------|
| Balance as of 8/31/2001: | \$3,145.32 |
| Scraper Course Fee Income | 124.00 |
| Interest Income | 0.72 |
| Less | |
| Gazette expense | -181.78 |
| Front door security (August) | -50.00 |
| Balance as of: 9/30/2001 | \$3,038.26 |

Please Note: There will be a donation to the Museum taken out of the Scraper Course Fee Income.

BottleBob's Triceratops



Triceratops Chuck Side View

Photo by BottleBob

The “Triceratops” is an invention for measuring the diameter of bored soft jaws on a manual lathe. There is a .250 pin in the middle as well as the outer .250 pins that rotate outward or inward when you turn the knob.



Triceratops Tailstock Side View Photo by BottleBob

You put the tool against the soft jaws and turn the knob until the pins contact the bored surface of the jaws. Then you take it off and measure across the center pin and one of the outer pins. Subtract 1/2 the center pin diameter and double the result to get the OD of the jaws.

Minimizing Lathe Chatter

Bob Neidorff

While making a new lathe faceplate, I had the typical problem of chatter on the lathe. This photo shows the results of 10 passes at one spindle speed. The chatter caused bumps in the cut, like ruts in a dirt road.

I changed the lathe speed and the chatter stopped, but after a few more passes, it came back, a little at first, then larger and larger. Soon, my surface finish was worse than before, with deep ruts.



Chatter at Single Speed Photo by Bob Neidorff

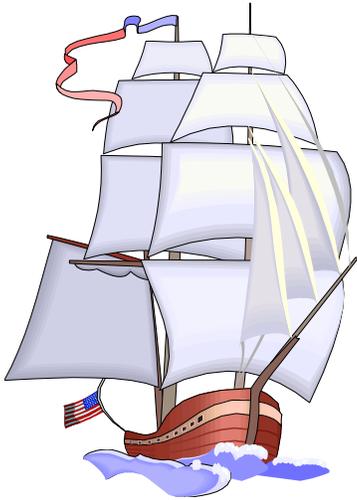
So I tried to outsmart the chatter. I took a few cuts at one speed, changed to the extreme opposite spindle speed, and took a few more cuts. Then I changed the speed to a different gear, took some more cuts, and went to another backgear setting for a few more cuts. Almost no chatter!



Chatter with Speed Changing Photo by Bob Neidorff

So if you can keep changing speeds, perhaps you too can outsmart lathe chatter.

Bob



Sea Stories

By Alan Bugbee

My grandfather, Herbert Clifford Ross, sailed with his father and mother from the time he was born until he was twelve years old. My great grandfather was Captain William Ross, Jr. and my great grandmother was Abby Cox, both from Plymouth, Mass.

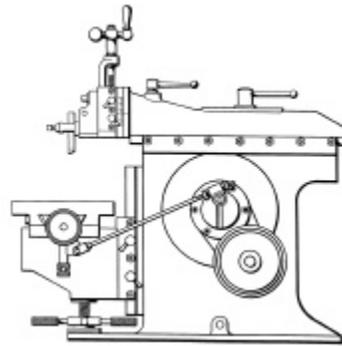
When I was a small boy, I used to walk to my grandfather's house on Saturday mornings. He would get something out of the cabinet and tell me marvelous sea stories about how he acquired it. These are those tales.

My grandfather came on deck one morning, on the way back from China. The ship was sailing through six feet of pumice. He climbed over the side and picked up a piece to see what it was. It turned out to be from Krakatoa, the volcanic island that blew up and sank. They didn't know that at the time. He took from his cabinet a piece of pumice from Krakatoa and handed it to me.

Alan

[Editors note] from <http://encarta.msn.com/>:
“**Krakatau**, also Krakatoa or Rakata, small volcanic island, southwestern Indonesia, in the Sunda Strait, between Java and Sumatra. Until the night of August 26-27, 1883, Krakatoa had an area of 47 sq km (18 sq mi); at that time, a volcanic eruption and its consequent explosions destroyed most of the island, so the present area is only 15 sq km (6 sq mi). The eruption produced huge ocean waves called tsunamis that reached an estimated height of 30 m (100 ft) and traveled

13,000 km (8,000 mi); these waves drowned about 34,000 people along the coasts of Java and Sumatra and destroyed incalculable amounts of property. In addition, pyroclastic flows of hot volcanic ash traveled more than 40 km (25 mi) across the surface of the sea and fatally burned at least 2,000 people. An explosion in the eruption series produced one of the loudest noises in history; it was heard at a distance of 4,800 km (3,000 mi). The material ejected was in the form of fine dust, which was diffused by aerial currents throughout the upper atmosphere; for three years thereafter, observers all over the world reported brilliant colorations of sunrise and sunset, caused by the refraction of the rays of the sun by these tiny particles. The island displayed volcanic activity again in 1927, and the inhabitants were evacuated; the island is now uninhabited.”



Metal Shapers

By Kay R. Fisher

The History of Shapers - Part 2

Deep in the wilderness far from civilization two old friends sit around a campfire discussing what? Politics? Religion? No, they were debating fundamental machine operations.

The old American says that any part can be machined by:

1. Drilling holes (hence the drill press)
2. Cutting round parts (hence the lathe)
3. Cutting flat parts (hence the shaper)

The gray haired gentleman from England admits that although making holes, turning rounds, and making flats are all that are required –

all three operations can be performed adequately by a single machine – the lathe.

Here you see the fundamental difference between the philosophy of amateur machinists in the United States and their counterparts (Model Engineers) in the United Kingdom.

The amateur machinist's literature published in the past 50 years has been dominated by the excellent publications from England. Meanwhile the Americans, instead of building model locomotives, were falling in love with Hot Rods.

American involvement with steam engines was largely limited to the many farmers who lovingly maintained full-scale steam traction engines.

Disclaimer – for sure there were many excellent model locomotives made during this era and many excellent books and articles were written. But per capita the English contribution was much more significant.

The point of this is – the American industrial revolution and post war economic boom allowed hobbyists on this side of the pond to buy parts that the hobbyists in England were making in their basement.

Ten years ago most English amateur machinists did not have a milling machine and most American amateur machinists would argue that the English were doing things “the hard way”. The Americans took advantage of the fact that good used milling machines were becoming readily available from large manufacturing facilities which were upgrading to CNC (Computer Numeric Controlled) units.

Now – after so many years of communication and evolution, we see that the hobbyists in England are putting milling machines in their basement workshops and Americans are making more locomotives and fewer Hot Rods.

Something is missing here. What about shapers? During the early part of the 20th century, shapers played an important roll in machine shops and industry. With the widespread use of horizontal and vertical milling machines, most of the work that could previously be done on the

shaper could now be done on the mill - much faster.

However, there were a few things that the old shapers could do better, and because of this they were frequently kept in industry long after they lost their ability to be cost effective in volume manufacture. After all, they were already paid for. Many stayed in shops until the last “old timer” that still knew how to run them retired. Even after retirement of the last shaper operator, they stayed in a dark corner of the shop waiting for a special job and collecting dust.

As a class of machines, they didn't have much value as used equipment for two reasons – size and knowledge. Most amateur machinists and many small machine shop operators didn't have a sufficient working knowledge of shaper capabilities to recognize any possible value. Also, unlike the retired old shaper operator, they didn't have a “Love for the machine”. As far as size, shapers are exponentially heavy as their size increases. The maximum length of cut they can take on their table commonly describes shapers. Whereas a 7-inch shaper weight in at 500 pounds, a 24-inch shaper will weigh over 2 tons. A 7-inch shaper might come with a one-half horsepower motor; a 24-inch shaper may have a ten horsepower motor.

But - things are changing. Used shapers are becoming more popular. On the used machinery market, the smaller shapers in the 5 to 9 inch range are becoming desirable and their prices are increasing. A few years ago, many were thrown out and scrapped. Even today, large shapers are scrapped because they are too heavy for amateurs and taking up valuable shop space.

Kay



Calendar of Events

By Bill Brackett

Nov 1, 2001 Thursday 7PM
NEMES Monthly club meeting
Waltham, MA
Charles River Museum of Industry (781)893-5410

Dec 6, 2001 Thursday 7PM
NEMES Monthly club meeting
Waltham, MA
Charles River Museum of Industry (781)893-5410

Dec 8 Frostbite Show
Boylston, MA
Rodger (508) 869-2838

Jan 26-27 Cabin Fever Show
Model Engineering Exhibition
Leesport, PA
Gary Schoenly (800) 789-5068

Feb. 2-3 Amherst Railway Show
Eastern States Expo
<http://www.amherstrail.org>

Feb. 10 Ct. River Ant. Collectors
Ice Harvest Day -Ely, VT
Doug Driscoll (802) 333-3243

Feb. 16 NEMES Show
Charles River Museum of Industry-MA
Call: Ron Ginger (508) 877-8217

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@ultranet.com or (508) 393-6290.

Bill



For Sale

Estate Auction

Tractors, trucks, machine tools and equipment.
Zagray Historical Farm Rt. 85 Colchester, CT.
10-Nov-2001 For more info call:

Karl Hanson (860) 887-0144

Model Shop Equipment For Sale

A former member, G. Scott Stoner, is selling his entire shop. He is located in Portsmouth, NH

Bridgeport Mill, 32" table, J-head, chrome ways, Newall DRO, new collets, 2 boring heads, angle vise, 8" horz/vert rotary table, 6" x 6" MAX-10 2-axis CNC attachment w/486-33 PC (reads standard G-Code), slotted angle irons, tram bars, indicators, 1 hp 3-phase motor \$3,000.00 or BRO

South Bend 10" lathe, manufactured 1980, Flame Hardened Ways, Buck chuck (D-4 Mount) 4 Jaw, 5C collet setup, 4" travel indicator for z-axis, micrometer carriage stop, turret stop, Fims #2 tool post & holders, 1 hp 3-phase motor. \$3,500.00

Toshiba "Tosvert" inverter-type phase converter for lathe and Bridgeport. \$500.00

Baldor pedestal type tool grinder, Cup Wheels, 2 diamond, 1 conventional gray cup. \$400.00

Craftsman 6" Bench Grinder. on pedestal. \$75.00

Craftsman 17" 16 speed, drill press, new. \$450.00

Jet 4" x 6" cutoff saw. \$150.00

Grizzly 6" belt, 12" disc sander on stand. \$500.00

Delta Milwaukee 14" bandsaw \$350.00

Dake model X small arbor press \$50.00

Craftsman 1.5HP 4 gallon compressor. \$150.00

(continued on next page)

| | |
|--|--------------|
| Diacro Type rod, flat & Tube bender | \$400.00 |
| #4 to 3/8-16 hand tapper w tap holders. | \$75.00 |
| Miller Thunderbolt AC/DC welder leads | \$400.00 |
| 18 x 24 Granite Surface plate | \$100.00 |
| 10" x 15" cast iron lapping plate | \$50.00 |
| 2" Height gauge | \$75.00 |
| 6" centers (for shaft run out checks) | \$75.00 |
| 1 x 5 sine bar | \$25.00 |
| sine vise | \$125.00 |
| B&S planer gauge | \$100.00 |
| Jo blocks (narrow) | \$50.00 |
| gauge pins .060 to .750 by .001" | \$300.00 |
| angle blocks. | \$50.00 |
| Matched V-Blocks, 2 sets B&S | \$75.00 |
| 0"-4" mic. set Poland | \$125.00 |
| Hout tap, drill Endmill cabinets, (4) | \$65.00 each |
| There are a lot of small tools, Parallels, gauges etc. too numerous to list. | |
| Prefer to sell everything as one large batch for \$10,000.00 | |

(603) 431-9586 gstoner3@earthlink.net

Web Sites of Interest

NEMES home page

<http://www.naisp.net/users/fisher/nemes.html>

Mike Bouchers home page

<http://people.ne.mediaone.net/bandm3714/>

Motor Drives International (MDI) sells VFDs (Variable Frequency Drives). Dave Shepard bought a VFD from these guys over ebay about a year ago. It's a 2 HP 1 ph to 3 ph unit he is using to run a medium size Clausing lathe. He got a very good price as it was a surplus unit and even cheaper than on their site. He says they were also pretty helpful answering questions over the phone and have a pretty good inventory.

<http://www.vfds.com/vfdprice.htm>

Dealers Electric Motor on the web sells VFD drives. Ron Ginger and Roland Gaucher each bought two units from them at the Cabin Fever show. They might be at the show at the Precision Museum.

<http://www.dealerelectric.com>

BottleBob's web site.

<http://home.earthlink.net/~bottlbob/>

The Microsoft Network on-line encyclopedia.

<http://encarta.msn.com/>

Shop Swarf - A miscellany of information for those who prefer chips that rust

<http://shopswarf.orcon.net.nz/sindex.html>

A Compilation of Thread Size Information

<http://www.iw63.freerve.co.uk/thread.html>