

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 March 5, 1998 at the Museum, 154 Moody Street, Waltham Ma.

Annual dues is \$20.00 - Please make checks payable to "NEMES" and send to the NEMES Treasurer: Kay R. Fisher 80 Fryeville Road Orange, MA 01364

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From the Editor's Desk:

Sometimes I'm almost embarrassed by all the begging I do for material to put into the Gazette, but sometimes it pays off. This month we've got a good article by Steve Cushman on some repairs he did to his lathe.

Believe it or not, this is the last issue of our second year and next month will be the beginning of our third year. Time flies - it's hard to believe that I've put out two dozen issues!

Last issue we included a list of the membership. I've had a couple people send me corrections already, but they need to go to Ron Ginger as he's the one who maintains the mailing list. The big problem seems to be telephone numbers with all the changes in area codes. Please check your address and phone number on the list and get any corrections to Ron. If we get enough corrections we can get a corrected list out in another couple of months.

See you next Thursday night, scl.

President's Corner by Ron Ginger April Meeting

We will try again with George King, the chief engineer of the steam boat SABINO, coming up from

Mystic Seaport to talk about the engine restoration project. Hope for better weather this time!

Mail Labels

I guess we really confused things by putting the dues reminder on one set of labels. Our dues run from June to June for everyone, to keep the accounting simple for our treasurer. For the newsletter before our show I mailed some extra copies to some of the old names I had that had not renewed, so I added the dues reminder in hope some of them might re-new. Then, in the next issue I left off the dues reminder, since we only mailed that to paid members. But several fellows noticed the PAID word missing and asumed their dues were due.

So- if you get a newsletter your dues are paid. If I ever do mail extra issues again, I will be more clear in the reminders.

Future Meetings.

We have Frederick C. Armbruster, M.D., for May to talk about ornamental turning. I don't have any other programs lined up yet, and could use some ideas or contacts. In fact, I'd like to have a couple other guys to help arrange meetings. Any volunteers?

-- Ron

Feb-Mar1998 Treasurers Report Feb-1998

Previous balance	\$2956.83
Colonial Tours (Bus payment).....	-1260.00
Bus Deposits from members	110.00
Bus Deposits from members and dues	120.00
Interest88
Service Charge	-3.00
Ron Ginger (Bus expenses - dues)--	-284.94
Peterson Party Center (Tables)	-171.25
News letter postage	-68.00
Books Deposit	23.00
Books Withdrawal	-23.00
Dues Deposit	40.00
Show Concession Profit Deposit	168.00
New balance	\$1608.52

Mar-1998

Previous balance -----	\$1608.52
Interest -----	.90
Service Charge -----	-3.00
News letter postage -----	-96.45
Speakers Fee (Roger Winiarski)-----	-50.00
New balance -----	\$1459.97
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I have good news and bad news.

The bad news is Debbie Newman from Village Press that made the deal with me for the 25 Percent off Village Press subscriptions got yelled at for over extending her authority. It seems that at the cabin fever expo some of our members were visiting the Village Press booth and remarked that they would not pay list price and wait till the got back home and order stuff cheaper and mentioned also the 25 percent discount on subscriptions. As it turns out the president of the company (Joe Rice) was not aware that I had struck up this deal with Debbie.

Suggestion for next time. Shake Joe's hand and thank him for supporting our club and the gift subscriptions he just gave for our February show.

Debbie agreed that the offer will extent until 31-Aug-1998 in order to give every member one chance to get the discount. She assured me that by then everyone would get a early chance to renew. If your worried about it just send in the money now and ask to have your subscription extended. I suggest a check that way they won't accidentally change your charge card full price as they did one of our members. Also to avoid confusion please remember to mention your a NEMES member and add attention to Debbie Newman.

The good news is the 40 percent discount on books still applies. At the February show I received orders for 7 books. Who knows - this may not last forever - bring money for another order to the next meeting. My goal is to order one for myself with every order I place.

Respectfully,
Kay R. Fisher

The Meeting, March 5, 1998

Ron got the meeting going by reading a note from Karen LeBlanc saying that the Museum was very pleased with the results of the show. It was definitely not the usual Saturday at the Museum.

The Museum is looking for a committee to reorganize the workshop. See Karen if you'd like to be part of it.

The raffle was a big success, we'll plan on doing it again next year.

Ed Rogers is in the North Shore Old Car Club. Every year they have a big event at the Topsfield Fair Grounds. It combines a car show, and auction, and a fleamarket. The club would like NEMES to come and have a model engineering display. They'll provide us with as much space as we need for our display, along with a tent to keep the elements off us. It's taking place September 13th this year, on a Sunday. That's the same weekend as the Dublin NH show, which is both Saturday and Sunday.

There was quite a bit of talk on the model engineering mailing list recently about folding bandsaw blades up into three loops for storage. Dick Boucher brought a couple in and showed us how to do it. I'm not going to attempt to describe how to do it.

Don Strang had a whatsit on a #2 Morse Taper he was trying to get identified. He also had a recommendation on a book from England, "Gauges & Fine Measurements" by F.H. Rolt, McMillan & Co., London, 1929. It has some chapters in it on Jo Blocks and such. Another item he'd recently come across was a reference to the "Gustav" gun built by the Germans to crack the Maginot line. It was built by Krupp, traveled on four railroad flat cars, had a 31 1/2" bore, and could penetrate 264 feet of reinforced concrete.

Don also got some more facts on Ericson from a 2 Volume biography by Church. The navy wouldn't allow a full powder charge to be used in the guns on the Monitor, which is probably the reason that the Monitor was unable to defeat the Merimac in the famous Civil War battle between the two ships. Ericson was an advocate of blowers on steamships and the Monitor used them. From steamships he got into solar power, using steam to run engines. Then it was solar power to heat the bottom of a hot air engine. Later this evolved to a flame on the bottom and engines like the Ryder-Ericson that Norm Jones has built a model of.

Greenwood Co. in England has recently come out with a holder for Sandvick cutoff inserts that is 45 lbs or so. They come from .089" to .125" wide. The Greenwood holder modified from the Sandvick Holder so that it will fit into the Myford tool holder.

Aloris makes and expensive one that is claimed to work very well. The Sandvick holder is \$48 and the bits are \$8 to \$12 each. Parting off from the rear works better because it pushes the spindle down into the bearings rather than lifting it up out of them.

John Wasser has done a lot of work on his face plate since the show. It has slots and such for attaching the work and is now a real face plate rather than a nut and a weight.

Ron told us that Henry Szostek is famous for his gift buckets, where everyone who visits his shop is urged to take home some nice metal pieces from the buckets of excess materials. Tonight he brought one to the meeting. He recently had a job of restoring the ballisters from the Ruby Miller Mansion in Wenham. The old bases are solid bronze mystery metal. (Which means that they are yellow metal of some kind.) Henry emphasizes that with mystery metal you never know what you have. He had a friend with a very nice looking bronze canon of unknown history that he proof tested. He charged it up, lit the fuse and ran like H***. When he got back to the canon after the bang it was peeled open like a watermelon and looked like blue cheese with all the green corrosion along grain boundaries the size of corn kernels.

If anyone has seen the Conrad Milster Stationary Steam videos that Howard Gorin brought on the bus for the trip to NAMES last year, he'd like them back.

The main speaker for the night is Roger F. Winiarski who does business as Bristol Bronze, POBox 101, Tiverton, R.I. 02878, telephone 401-625-5224. Ron helps out at the Maine Boat Builders Show and met Roger there.

Roger used to work at Chase Brass and Copper in Boston, a very conservative company. By strict definition Bronze is an alloy of Copper and Tin while Brass is an alloy of Copper and Zinc. But the Brass and Copper industry is very old and as a result there are a great many names and you can't rely on a manufacturer's name for an alloy to tell you much about it. As an example, Pennies were made out of 90% Copper and 10% Zinc and Tin while Brass is an alloy for alloys and this alloy was known as Penny Bronze at Chase. An alloy of 87 1/2 % Copper and 12 1/2 % Zinc is used a great deal in Jewelry Findings because when it's polished it looks like 14 Karat Gold. It's

called Jewelry Bronze, even though it is definitely a brass and not a bronze.

Since it's an old industry Copper sheet is not sold by thickness and area, it's sold by the pound and specified by the pounds or ounces it weighs per square foot. This results in a lot of rooves being done with Copper that weighs one pound per square foot. It's not the optimum thickness for a roof, but it makes it a lot easier to figure out how much to buy to do a certain number of square feet of roof.

The trend now is to use a numbering system for copper alloys. Silicon Bronze is an example. From three different manufacturer the same alloy is known as Shamut Bronze, Tobin Bronze, and Naval Brass. It is now also known as #454.

There are literally thousands of Alloys now. He's been in the business thirty years and only knows the ones he used to sell. When he is making a particular fitting, he selects the alloy so that it will match the use of the fitting. He uses some sand casting and investment casting - which has unique capabilities.

The smallest female thread that he casts is 8-32, which comes out reliably.

He has a Herreshoff Boat and started out by making his own fittings. That was eight years ago and now he produces 500 different items and sends them all over the world.

He strives for authenticity in his products. Normally a steel mold is made to produce the wax patterns used in investment casting. Steel Molds are expensive to make, and last year he added 100 new items to his line, so he needs a less expensive way of producing the molds for the waxes he needs. The solution is to start with an original fitting and to vulcanize a rubber mold around the original.

The rubber is hot vulcanized around the original, then the wax shrinks a little in the cavity as it cools. The metal shrinks a little as well when it solidifies and cools. Shrinkage hasn't been a real problem for him though, and in the case of internal threads it's a help. He can lay the original part into the mold and it will fit correctly. The wax will shrink about 4% and then the metal will shrink about 4%.

To make a rubber mold start with a heavy rectangular mold frame. Pack the bottom with unvulcanized rubber. Pack around the part and on top. Leave the teflon coating on the rubber (the rubber comes

with a peel of coating so that it doesn't end up one solid block in the package) where you want the mold's parting line to be so the waxes can be removed from the mold. Put the whole thing under 1500 PSI at 350 degrees F with hydraulic pressure.

Roger has a friend in the jewelry business who makes the waxes from his rubber molds. The waxes are cast with sprues in place on the patterns. Using a heat gun and a wax post (similar to a candle) build the individual waxes up into a tree. Put the tree into a can, and pour the investment (a special sort of plaster) into the can. Heat the can in an oven to 1200 F and lose the wax (this is why investment casting is also known as "lost wax" casting.) Pour the metal under a vacuum. The vacuum is pulled through the investment through a whole in the bottom of the can. The vacuum eliminates blows and porosity from any gases given off by the heat and the hot metal that might otherwise interfere with the filling of the cavities.

He passed around quite a few items that he had cast. A set of oarlocks was sent around straight from the investment without any cleanup other than the normal water wash used to dissolve the investment. They looked very nice.

At boat shows very often the wife, who's not really interested in boats, will come along. Roger's wife goes with him and sets up a table of knick-knacky items and sells them to the wives. He usually pays for his booth at a boat show by selling to wives.

One of the favorite knick-knacky items is the Brass pine cone. He makes them by the lost pinecone method. The normal wax pattern totally disappears during the bakeout process for the investment, but with the pine cone you need to shake the ash out before you pour in the metal. The investment is soupy enough that it will totally coat the pinecone without any special shaking to get all the air bubbles out of the nooks and crannies.

You can cast engine blocks using investment casting, but he's limited to things about a foot long because of the size of the cans and the vacuum system that he uses. The wax and the plaster are lost in the process, but you get a casting

He needs to get a nice clean original in good condition to use as a master. Any imperfection in the original will show in all the copies.

Scrap is not used. Quality parts are what he is making and to be sure that he starts with the quality

materials he needs he uses only metal from refineries. Brass and Bronze come in small ingots about the size of a small Hershey Brand Chocolate Bar. The higher the copper content in an alloy the more apt it is to have started from Virgin Copper

One of his customers is an investment banker and took a business trip to China. While he was there he decided to see if he could take a trip to a foundry to see where the fittings and such from China were produced. Most of the foundries are little Mom and Pop operations. He saw a grandmother/grandson team melting metal where the grandson powered the bellows and his grandmother picked yellow metal from a pile of scrap to go into the pot for each melt. No two melts would be the same and what any casting ended up being made from was a matter of luck. This is known in the industry as "sweepalloy"

In general, if a brass is good machining it will be bad in salt water. If it's good in salt water it'll be tough to machine. If free machining brass has a machinability of 100, the Manganese bronze he has used for some items has a machinability of 8. That's where investment casting is so useful - you hardly have to do any machining to have a finished part.

(Metal cores are used to form the internal threads.) He uses induction melting. It's quick and neat: put the metal in the crucible, melt it, and pour it.

It's the lead in free machining brass that makes it corrode in salt water and break when it's bent. Zinc doesn't like copper, a high electric load or salt water will take the zinc out of brass. The zinc that comes out oxidizes to Zinc Oxide, which is acidic and bad for wood. So, you need to put a barrier between a brass fitting and wood. Red Lead Paint or West Systems brand epoxy coating between the wood and the brass.

Silicon Bronze is good under saltwater.

Passivation is used in the marine industry to keep SS from reacting with Salt Water. The process uses Nitric Acid, so most companies don't do it anymore as the EPA rules make it cost prohibitive. Roger's boat is 78 years old, and it still has most of its original fittings. The ones he replaced were for damage reasons, not corrosion. Bronze gives a long notice that it's going to fail so you can replace the problem fitting before it let's go. Stainless looks fine right up until it let's go.

The Minimum quantity of parts that he does is one. To make a mold for an item such as a shackle pin would cost about \$10 or so. He had a bronze shackle from his product line that he passed around. It was an inch and a half or so long and sells for \$15. In investment casting you don't get economies of scale the way you do with sandcastings. Each wax needs to be cast and then assembled into a tree which is then invested and cast. No matter how many you make it still involves hand work. The minimum cost for casting a flask is \$25, but the labor to assemble the tree of waxes that goes into it is more.

For polishing he starts with a ScotchBrite brand wheel, then goes into a vibratory polisher with ceramic media and wood chips. Polishing is the dirty part of the operation and is done in a separate facility from the casting.

Steel and iron can be investment cast, but they pour near 3000 degrees while Brass and copper alloys pour in the 2200 degree range. The jewelry technology that he uses is good for what he does but isn't high enough temperature for ferrous metals.. He hasn't tried silicone rubber or urethanes for molds. He gets at least 1000 waxes from the vulcanized rubber molds he uses and hasn't seen any need to try anything else.

He uses escutcheon pins with big heads to align the halves of his rubber molds.

If you need to get ahold of him to get something cast, contact Roger F. Winiarski at Bristol Bronze, PO Box 101, Tiverton, RI 02878, tel 401-625-5224.

Calendar of Events

Thursday April 2, 1998 -- 7 PM, NEMES MEETING at the Charles River Museum of Industry, 154 Moody Street, Waltham, Ma 02154, telephone 617-893-5410

Thursday May 7, 1998 -- 7 PM, NEMES MEETING at the Charles River Museum of Industry, 154 Moody Street, Waltham, Ma 02154, telephone 617-893-5410

Saturday May 9, 1998 -- Big Swap Meet at Paul Gauffin's new place in Mason New Hampshire. He's at 443 Rt 31, which is easy to find as it's right at the intersection of NH Routes 31 and 124 (it's Rt 31 in Mass also)

Thursday June 4, 1998 -- 7 PM, NEMES MEETING at the Charles River Museum of Industry,

154 Moody Street, Waltham, Ma 02154, telephone 617-893-5410

TIPS AND TECHNIQUES

by Ed Kingsley

It's Spring, it's spring, and the bird is on the wing. Now, isn't that absurd, I thought the wing was on the bird. ... And, moving right along, then

PUTTING THE BITE BACK IN THREADS -

In plastic, for instance, to put 'the bind' on a set screw, try using a Thread Forming Tap, without increasing the size of the tapping drill. In other words, use the same size drill you would use with a normal tap, instead of the larger drill size recommended for the forming tap. In plastics, that "elastic bounce back" that occurs when drilling, reaming and tapping, now makes a tight fitting thread that will hold a screw like it was wearing a nylon patch.

A HOLE IN .073 - RETURN OF THE PIN GAGE

I discovered yet another use for these gifts to machinistkind. I had to drill 180, .073" holes in a sheet of 1/8" black acrylic and, when I was finished, I noticed that about 80% of them were blocked with a stringy chip that would not "blow out". Poking with a scribe had the same non-effect. I picked out the .072" pin gage, ran it through a hole and presto, no more chip. Repeating this on the other 140-something holes had exactly the same effect, 180 holes, round and empty, just the way the Great Machinist had meant them to be. Watch for a sale at your favorite store.

GETTING THE LAYOUT RIGHT

I bought a can of Dykem Layout Spray some time ago and have never been able to get it work worth squat. No matter how I used it, it always produced a mottled surface that looked like snow moguls from 2000 feet. A shorter while ago, I purchased a spray can of Layout Fluid Remover from ENCO (I know, I know ... but, it was cheap) that seems to work, somewhat better, at inducing a short high, accompanied by a medium headache, than removing Layout Fluid, but hey, (... it was cheap).

A few months ago, I needed to clean oil off of a piece of steel I wanted to apply layout fluid to and, without thinking, I grabbed the ENCO spray and - got high. As I waited for the headache to subside, I sprayed on the Dykem and a miracle occurred! It went on all motley, sure, but as it dried, it spread out into a beautifully smooth, even surface, just like in the

shop books. I was elated, without the acetone, this time, and have used the cleaner to prepare every surface since, with consistently good results, and I'm pleased to report, gradually diminishing headaches.

GOING UP AS IT GOES DOWN

(The Titanic of Tools)

I took advantage of a sale at MSC (good till 3/31) to buy a Dial Depth Gage, and have been measuring depths, wherever I can find them, ever since. Mostly, for the experience of watching the dial. Firstly, it goes backwards (counterclockwise) and secondly, the numbers run in the same direction. Thirdly, unlike a normal dial indicator, which reads higher as the plunger is pushed "up", mine reads higher - as the plunger slides "down". Aside from being a moron, or perhaps because of it, I really appreciate things like that.

But, I also appreciate being able to get an easy to read, repeatably accurate measurement of a slot, groove, depression, or shoulder, VERY quickly. In short, I love this thing! It has a .5" travel, comes in a very nice wooden case, with attachment rods to read to 10", and even includes a certificate of calibration listing the deviation, in tenths, for each rotation of the dial. All this for a measly \$49.95. If you need one, this might be the time. MSC # 06368153. (Usual caveats - not a satisfied customer, just an employee on commission). :-)

THE MEANS TO AN END

Way back, I mentioned picking up a blister-pak of vinyl caps, ostensibly designed to seal off the ends of vacuum lines or cover the unsightly ends of tubings, wherever they may be found. I have used them to replace the lost caps on oil and cutting fluid cans. Recently, I discovered that they make a nice, low pain covering for the ends of the bar in my tap wrench and, as a bonus, the bar doesn't fall out anymore.

A PERSON WITH ONLY ONE CLOCK KNOWS WHAT TIME IT IS -

While the person with two clocks is really never sure. I faced the same problem the other night, measuring a critical dimension, first with a dial caliper, then with digital calipers and then with two different micrometers. Each had a different tale to tell, and I was left knowing that I had no idea of what that dimension actually was. One thing I have learned, though, is that calipers (of any brand) are handy and convenient for a multitude of measurements, but their

do-all approach may not always provide the most precise measurement in every situation.

I had always believed in calipers, I took them at their word and never questioned their values. Until one day, I began taking measurements with calipers, but then switched to a micrometer when I approached the last 'few thou'. (I read a lot of folks on rec.crafts.metalworking 'talking' about doing that, and even though I hate reading a micrometer, I figured it was worth a try) Now, I've got pretty good calipers, B&S, Mitutoyo and Starrett, and I was shocked to see how much their readings "might" vary from a good micrometer's. I say "might", because the real issue here is dependability. In some situations, the calipers tended to get a little bent out of shape because of the angle I had to hold them at to get a reading. The mic's, smaller, seemed far less sensitive to these positional problems, and their 'feel' seemed more positive.

After a few weeks of this, I have slowly become a reluctant micrometer convert. But, I still misread the darn things, sometimes, so I picked up one with a digital readout, that I look at first, and then at the barrel. (sometimes) Hopefully, some day, I'll get good enough to read it the other way round. (or not) Between installing a dial gage on the lathe cross feed, and now using a micrometer to measure my turning diameters, accuracy has increased by an order of magnitude, and I feel really good about that.

-- Ed Kingsley

Group Steel Buy

Max ben-Aaron has volunteered via the NEMES Email list to run another group buy of Ledloy if there is enough interest. Since at least six people have already expressed interest in it things look good for another group buy. There was a lot of interest in getting some plate as well, such as 3" by 12" pieces of 1/8, 1/4, and 3/8 thick steel.

So, think about the materials you need for the projects you have coming up and consider getting in on the next group buy.

Lathe Repairs by Steve Cushman

A couple of recent events motivated (or embarrassed) me into some overdue maintenance

on my 10" Sheldon Lathe. Others may find that similar attention is due on their equipment.

The lathe is a 10x24 Sheldon LWQ. According to Sheldon, it was manufactured in 1942 and delivered to the Navy in Philadelphia. I purchased it over 20 years ago from an individual who inherited it from his father. He had no idea of how his father came to own the lathe.

I got a parts list and related documentation from Sheldon. This included the information that in the late 1940's Sheldon began using standard acme thread patterns (although not standard diameters) on the lead and feed screws in these lathes. My lathe, however, dated from the period when Sheldon used a modified square thread. Replacement nuts and screws were not available in the square thread although all the related parts could be upgraded to acme.

When I got it there were no major signs of wear in the precision components, with the prismatic ways, flat surfaces and gibs in excellent condition, although there were many signs of neglect and it had been repainted a disgusting shade of light green.

There were serious problems with the motor drive assembly due mostly to lack of lubrication. The bronze bearings for the jackshaft were worn through, the ends of the jackshaft worn out and the cast iron bearing seats seriously damaged.

The cast iron bearing seats were repaired by welding with nickel rod and boring to size. A new jackshaft was made and new bronze bearings fitted. Also, the missing oil cups were replaced, and a few alignment issues attended to.

After this, the lathe served faithfully for about 10 years without much attention. One day as I was having a bunch of trouble doing some fairly critical work on material which pushed the capacity limits of the lathe it dawned on me that the headstock bearings were loose. This led to a protracted period of experimenting with shims and scraping poor fits (which had probably been poor since the lathe left the factory).

About 5 years ago, the tailstock spindle nut (which had been loose for quite a while) failed completely. The screw was in good condition and I decided to replicate the nut in the modified square thread. After this activity was complete (and an addi-

tional oil cup installed), I decided that any further failures would be replaced with standard acme threads.

As time has gone forward, I have been ignoring (or learning to live with) an increasingly sloppy cross feed.

Two things which happened recently motivated me to some action.

One was the photographs of the lathe which I took, showing the shop built taper attachment in place for our recent show. These photographs clearly showed just how bad the paint job on the lathe was.

The other was the beautifully made screw and nut which Roland Gaucher brought to the January meeting. It reminded me that I've made a few of these and there was not much excuse for putting up with the current state of affairs.

I disassembled the cross feed and learned that the factory nut was cast iron and the screw was 8 tpi modified square thread, about 1/2" diameter.

To move to a standard thread meant that either the screw would have to be 1/2-10 or 5/8-8. 1/2-10 would require making a new micrometer collar. 5/8-8 could use the same collar and offer more thread surface, but might not fit and I did not want to seriously modify the apron.

Careful measurement showed that the existing hole through the front side of the apron was large enough for the 5/8 screw and there was (marginally) enough clearance. It would only be necessary to clean up some "as cast" surfaces on the back side of the apron with a file.

I made a new screw using the 5/8-8 left acme threads with all other dimensions matching the factory screw. A trip to Metal Source provided a chunk of bronze from which I made a nut. I chose to make a longer nut than the factory nut, for more thread contact surface. The outer surface of the nut required some interesting fitting so that the clearances for the factory 1/2-8 screw and nut could be maintained. I also drilled the screw which attaches the nut to the cross slide for a ball type oiler.

The cross feed now works smoothly, with minimal backlash and slop. It's a pleasure to use and well worth the small effort.

Now, all I need to do is strip off the ugly paint and apply some nice grey enamel to match the other equipment in the shop.

Letters

Attached are two business cards from local used tool shops which may deserve mention in the NEMES news letter.

J.J. Tool Etc. has an adequate supply of machinist tools and tooling.

Tool Time Used Tools had a small amount of machinist tools and tooling, but had a good selection of other clean top end tools plus some hardware.

As is the nature of any used business, availability dictates offerings for sale, and that can vary on a daily basis. In other words these guys will resell whatever they can get their hands on. If you don't find a certain item today,

keep checking back because these shops make there money by turning over inventory.

Joe Donahue

Thanks for the letter Joe, these are the sorts of businesses that most of us like find out about so we can stop by when we're in the area.

From the business cards Joe included Tool TIme Used Tools is open 10:30 to 6:00 Mon-Fri and 9:30 to 3:00 on Sat and is located at 647 Washington St Norwood Ma. The phone is 781-769-6969.

j.j. tool etc. is open 9-4 Tue-Fri and 12-5 Sat. Run by Jennifer and Jeffrey Cook it's located at 948 Main St (rte 18 off rte3) in South Weymouth Ma. The phone is 781-340-9977, the fax is 781-928-1307.

Classified Ads

FS: LOGAN model #1955 11x24 lathe, quick change gear box, power cross feed, power longitudinal feed, cabinet model, disassembled, no tooling. Bed and bearings, etc. in good condition. Make me an offer.

For more details contact Bob McIlvaine:

Home: 603-673-5861 Work: 978-937-3700 x669 email: mac@adra.com