

# 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 Nov 3, 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*

### **This Months Contents**

President's Corner .....	1
The October Meeting .....	2
Tips and Techniques .....	2
Letters, Machine Re-Sales Co.....	5
Anodizing for Idiots.....	5
Calendar of Events.....	2
Classified Ads .....	6

### **From the Editor's Desk:**

Don't forget to park up by the Railroad Tracks again this month. Hopefully the new Garage will be done on schedule and we'll be able to park across the footbridge again soon.

Last month's meeting was a poster session, so there isn't a whole lot of space devoted to the meeting this issue. I did get a good article on anodizing from Ron Chernich in Australia via the internet however.

This issue also marks the first issue with the Calendar of Events being handled by Bill Brackett. Thanks for taking on the task of producing the calendar Bill, it's an important part of the Gazette and wasn't getting the attention it deserved

Don't forget, the Gazette needs material for upcoming issues.

See you next Thursday night, scl.

### **President's Corner by Ron Ginger**

#### **Meeting and Speakers**

Well, after coming up short last meeting, I now have a couple speakers booked ahead! Thanks to some of our members for their help. I can still use more on this- if you want to volunteer, let me know, if you have a subject you would like to hear, let me know that, I'll see what I can find.

For November we will get a bit into the history theme. John Lelivere, and several other of our members are clock and watch fans. John has arranged for Pat Caruso to speak to us in November. Pat worked at the Waltham Watch Company for 55 years. He was involved in many of the operations of watchmaking, and helped in solving many problems. He will talk about his experiences and give us some insight to the working conditions and general life in a watch factory. This should be a very interesting evening.

For December it looks like a rep from Kennametal (owner of J&L Industrial) will talk about carbide tooling. I've traded a couple phone calls so far, and don't yet have the exact details, but it looks like this will work.

For January one of our members, Dave Stickler, will talk about rocket engines and some very interesting experiments with them. If you were at the October meeting and saw his rocket motor you will get to hear the rest of the story. I expect it to be a very interesting evening.

Cabin Fever Expo- Jan 30,31 1999 I had a sign up sheet at the last meeting, and got about a dozen names for this trip. That's not enough to make it, but it looks like a good start, so I have made some tentative reservations.

First, in case you haven't heard of the show, have a look at the last issue of HOME SHOP MACHINIST. They ran a 4 page article with many pictures of last years show, and even mentioned us and our bus. This is an excellent show, in a nice location. There were well over a hundred exhibitors, and many hundred models on display. They cover the entire range, from a vest pocket size Rolls-Royce Merlin V-12, to the usual hit-n-miss engines and many of the common steam engines kits. A local club setup a rather large outdoor G-scale track and ran trains all weekend.

Most of the major vendors are also there- several good used tool dealers, PM Research, Briesch, and several other kit vendors, HSM and MODELTEC magazines, and several book and plans vendors. Plenty of good stuff to buy!

So, if I have convinced you it's a good show, let me add that the trip itself is fun. The bus is comfortable (we are going to use the same company we used to NAMES in 97) has a rest room aboard, and even a good video system. The hotel was very nice, with a fine restaurant and nice bar where several of us continued to talk well into the night.

The bus will cost \$2100, so to keep it to \$100 each we need 21 riders. The hotel is \$65 per night, for a room with 2 double beds- same price for 1-4 people, so find a room-mate and split the cost. Or bring your spouse and make a nice weekend of it- we had one spouse last year, and so far, another signed up for this year.

We will leave about noon on Friday, January 29. We can arrange to pickup along the route for fellows in mid-Mass or CT. We will take a rest stop midway, and should be at the hotel before 7. Time for a short relax in the bar and a nice dinner. Saturday we will be at the show all day, but we can arrange the bus to make a couple trips to the hotel in case someone wants to rest, or a spouse wants to make a shopping trip (There is one of the worlds biggest Outlet Malls near the hotel). We will return to the show on Sunday for half a day, and be back in Boston by about 7.

So, that's the story- all we need now is another 10 or 12 people to sign up. If you are not at the meet-

ing but want to go, please telephone me so I can add your name to the list.

#### SIGs or BOFs

In the computer world many of the organizations have SIGs - Special Interest Groups, or Birds of a Feather groups, where people can get into much more detail on some topic. I've been thinking about how we might do this in our group. One topic that has been raised is electric motors and phase convertors. Don Strang has offered to do a talk, but there seemed to be only a few fellows really interested. I think there may be more such topics- CAD, CNC, stirling engines, etc etc. Lots of possibility.

I see two ways this might work. One would be just get together of small groups, outside the meeting, at someone's shop. For example, I would be willing to have a session to talk about experiments in CNC and machine control, at my shop, some Saturday afternoon.

We might also arrange a Saturday session at the museum's shop. Maybe we could have 5 or 6 small groups meet to discuss, or demo, some topic. Maybe a half day workshop, followed by lunch.

So- here's the pitch- if anyone wants to have such a session, take action. Name the topic, get a few people together, and let's see what happens. This could be a very valuable addition to our club activity.

OK, long enough for this month. See you all on November 5. Remember, the parking lot is still under construction, so one more month of parking up by the railroad. Please don't park in the reserved spots around the building, and if you are in doubt, assume any spot by the building is reserved!

--Ron

#### Calendar of Events

*Being editor of the NEMES Gazette is a lot of fun, and I enjoy it or I wouldn't do it. But, being the entire staff from reporter to mailroom eats up a lot of time. As a result some aspects of the Gazette sometimes suffer from lack of attention. The Calendar of Events was definitely one of those aspects. Typically in the rush to get the new issue out I would cut last month's meeting notice off the front and paste it on the end with a new date. Bill Brackett pointed out to me that there were often events mentioned in the Gazette that didn't make it to the Calendar. I told him that I knew it, but usually by the time I got to the point of getting the issue out there wasn't time to go over the calendar and make sure that the calendar had been updated with the latest info on good events. The result is that Bill has volunteered to do the Calendar for the Gazette every month. He'll put the Calendar together and email it to me, and I'll put it into the Gazette. What follows is Bill's first Calendar, along with a letter from him on how he plans to do things. So, a big NEMES Gazette THANK YOU to Bill Brackett as he becomes the newest regular contributor to the Gazette. --scl*

Steve;

*I would like to volunteer to maintain the Calendar of Events part of the NEMES news letter. I think a listing should contain the name and brief description of the event, the time and place, and a name and phone number of a person (not me) to call for more information.*

*There are a lot of events that are held yearly and are scheduled months/year in advance. I would like to compile and maintain this list, adding events as I hear about them and cut out a portion of it for our news letter. This could be for a time frame i.e. next two months or for a specified size i.e. 4 column inches.*

*I have started this list but it has only four entries. I also have a form that includes a header (Calendar of Events) with my name and how to*

*list an event. These are included below. I will past the two together and send them to you monthly.*

*Please feel free to send me your comments and suggestions on this material.*

*Thanks \_Bill*

Nov. 5, 1998 Thur 7PM NEMES Meeting  
Monthly club meeting Waltham, Ma. Charles River  
Museum of Industry 617-893-5410

Dec. 3, 1998 Thur 7PM NEMES Meeting  
Monthly club meeting Waltham, Ma. Charles River  
Museum of Industry 617-893-5410

Jan. 7, 1999 Thur 7PM NEMES Meeting  
Monthly club meeting Waltham, Ma. Charles River  
Museum of Industry 617-893-5410

Jan. 29 1999, Fri noon to Sun noon Cabin  
Fever Show NEMES bus trip to big east coast model  
show. Ron Ginger 508-877-8217

For a listing, please send name and brief  
description of event, time and place, and a person to  
call for further information to: Bill Brackett at  
wbracket@ultranet.com or 508-393-6290

#### The Meeting, 1 October, 1998

We didn't have a speaker for the meeting, but we had a good time, with way too many interesting things showing up for the Show and Tell session than I am going to attempt to cover.

Dave Piper asked me to be sure to get his phone number into this issue because it wasn't on the list that came out last time. It's 978-534-0239. Check your phone number in the list that came out recently and if it's wrong let Ron know so we can get it right next time. Dave brought his steam launch engine in again so we could check the progress on it. It's come a long way and is looking good. He needs some info on how much pressure there should be between the cylinder wall and the cast iron piston rings for a steam engine so he can get it right in his engine. If you have any info on it let him know.

Dave Stickler had a rocket engine that attracted quite a bit of attention, and since he'll be talking about his experiences with rockets at a future meeting all I'll say here is that it's a meeting I don't want to miss.

Don Strang is collecting info on commercial phase convertors. If you've got one, please let him know so he can get some info on it.

#### TIPS AND TECHNIQUES

by Ed Kingsley

##### MORE NEAT STUFF FROM SEARS

Just when you thought it couldn't get any better than a power saw with an electronic blade height and angle readout, or a drill press with a built-in oscillator for spindle sanding, those darn folks that brought you Robo Grip Pliers have outdone themselves again, and I do mean again, and again and ..

These guys must be staying up way late to come up with stuff that's nearly irresistible. How would you like an AIR die grinder, with a built-in light (no batteries or power connection required!), or a portable drill with an interchangeable 5 bit tool "magazine" (just load 'em up, chamber and squeeze!).

Sabre saw blades with coarse, smooth and fine teeth - all on one 4 or 6 inch blade.

Nah?. How about a 0-1" Dial Gage with inch AND metric scales (this one's not bad, actually, and I haven't seen it advertised anywhere else, either). Talkin' Dial Gage, here, not Dial Caliper. OK, you're pretty tough - how about a 13 drawer Roll Away Tool Cabinet with a remote control locking system. Just point and click, guys, and that annoying little beep assures you it'll all still be there tomorrow. Hmmmm, I wonder if it locks the wheels, too?

Also in the "not too bad" column is a 20 compartment "drawer organizer" insert that fits a 16 1/2" x 22 1/2" Craftsman (or similar) tool chest. I have one of those, myself. And, finally, there's a 3 plug electrical outlet that starts up 1 or 2 other tools, attachments or sundries, automatically, when you flip the power switch on any tool that is also plugged in to it.

For example, start the band saw and the dust blower comes on - the radial saw and the vacuum powers up - the lathe and the suds pump ... you get the idea. The other outlet might control task lighting, a run-time clock or the massage pad on the stool - your call, and we don't want to know.

Note: Many of these items appear to be available only through catalog sales.

#### EXPERIENCE THE POWER

Ten power, 10x, bigger than life and a magnitude uglier. I got a Bausch and Lomb, Illuminated Coddington Magnifier, last week (\$19 @ J&L, batteries not included), and tried it out this weekend on an assortment of used taps, drills, endmills and boring bars. Up close and personal and a friend in need, this window on reality comes at the end of a compact, double AA, penlight with a pocket clip. It has very sharp optics and it's quite portable. I rejected dozens of bits, I might otherwise have bought, when I looked at those cutting edges (or lack thereof) magnified ten fold. It's a really useful tool that could easily pay for itself in one trip to the flea market. Just be careful not to point it at your fingers.

I picked up a Durex Magnifier at Ames, recently. Funny how seeing stuff gets more important as time goes on. This is a 3" lens on a flexible neck, mounted to a good sized iron base, with a handy tray built right in. The critical deciding factor was it cost \$5.99. On Tuesdays, if you're young at heart, it's 10% off. So for \$5.39 how could you go wrong? I don't think I did and I recommend it. Just be careful not to move the lens around while actually holding the lens. The weak link is the split, threaded stud on the plastic rim holding the lens to the neck. Grab it by the neck and it works OK. My pecuniary pick of the month, and, it's warranted -- forever!

#### I'M REAMING MY LI-FE A-WAY

I finally caught up with a sale on Under & Over, "Decimal" Reamers last month. These are the reamers that "bracket" the common fractional sizes, from 1/8" to 1/2". They come in pairs over and under the standard size, e.g., .124" and .126", up to .499" and .501". I've made do with those more-or-less-adjustable thingies and the dark side method of slipping a shim of paper down the throat along with the

"regular" size reamer. Both ways work (sometimes), but often leave something to be desired.

I'm surprised by how much I've used these already. If you've ever tried fitting a 1/2" shaft into a 1/2" hole, for any reason, (this doesn't actually work) you're ready for a set of "U & O" reamers. Why under-size? Well, sometimes people I've known have accidentally turned a piece slightly smaller than the diameter they were hoping for, and a slightly smaller reamer can help rectify that (if you don't miss by quite as much as I usually do). Or, you might actually want a press or shrink fit, or the stock you have may be a half to a thousandths (or two) undersize to start with.

The Quality Import set goes for about \$69 on sale. Mine (from KBC) was made in Macedonia and seems to be of decent quality. You might want to buy your set quickly, before the Serbs get there.

#### GET A GRIP

Got an old drill chuck laying about? I've got two on straight 1/2" shanks that are too worn to use for their intended purpose, but still too valuable to throw out. One's 1/2" and the other's 5/8". I keep them handy for holding roundish things, like reamers, or stuck shafts, or screws and threaded rod, or just about anything that's small and round enough to fit, and in need of "adjustment". You can pick these up for change at flea markets and used tool venues. I got the 5/8" chuck at the Tool Shed for \$5, and it's probably good enough to use on the lathe if the need arises.

I have a 3/8" screw mount chuck, connected to a file handle, that I use to hold countersinks, deburring implements, drills and small reamers. I drilled a snug hole in the handle and store the key there, sort of proctologically. Dumb looking, but practical. (I think my wife said something similar to that, once ....)

#### A FRIEND'S SHOP PHILOSOPHY

"I have a place for everything, and everything's in it".

--Ed

#### An Afternoon At Roland's

October 4th was the second NEMES gathering at Roland Gaucher's shop in Spencer Mass. Twenty five or thirty folks showed up for a fun afternoon of swapping and talking. There was a lot of "good stuff" that changed hands.

Last year Roland impressed us all with his new CNC Lagun mill, showing how to program it to do all sorts of neat things, but he was so busy showing how easy it was to program all sorts of things that he never got around to making any chips. I gave him a hard time about it, and he promised that this year he'd have it running and making chips. And boy o boy was he making chips! The project was a 6 1/2 hole saw for cutting holes in particle board. One of his customers needs to cut clean round holes in particle board. He's tried all sorts of things from punches to flycutters and the only really efficient way to do it is with a hole saw. He's also looked everywhere and can't find a commercially available hole saw over six inches in diameter. After facing a 6 1/2" diameter bar of mild steel in his lathe and drilling a 1/2" hole down

the center Roland clamped the faced side onto the table of the mill and indicated the center. Then he put a 1": roughing end mill into the spindle and using the built in program to cut round pockets proceeded to hog out a 6" diameter hole into the bar about 3/16 or so at a time. The mill worked its way out from the center hole he'd drilled in the lathe (his end mill wan't center cutting) in a nice even spiral while Roly stood by to make sure nothing went wrong and to vacuum out the big piles of chips that kept filling up the hole.

Once the blank is hollowed out it goes back to the lathe for the final touches and a 5/8 thread to attach it to the arbor. Then back to the mill where the bolt circle function lays out the points of the teeth on the back of the saw. Then a scribe is used to transfer the marks from the back of the saw blank along the sides to the front. With the blank mounted by the center hole on an angle block the gullets to form the teeth are cut using a CNC program one at a time as the blank is positioned using the scribed lines from the bolt circle on the back. This gives good tooth alignment, and if it's not perfect it just helps to keep the saw from resonating when in use. With the gullets all cut and the teeth formed the last step in making the saw is to silver solder in the presharpended carbide teeth.

In addition to the one Roland had in progress to show us on the mill, there was a second hole saw that he had already completed. It was a good looking tool and will probably cut an awful lot of holes in particle board before Roland has to make another one to replace it.

It was a great afternoon at Roland's Shop and I hope he does it again sometime.

## ANODIZING FOR IDIOTS

by Ron Chernich

*This is something that I first saw on the modeleng-list email list. Since it fits right in with the talk we had a couple of meetings ago about getting things anodized commercially and is a pretty good guide to doing it in your own shop rather than sending it out I asked Ron for permission to use it here. This is the version from his web site, which he says is cleaned up some from the version that was sent to the email list.*

A couple of weeks back, I tackled a restoration job on some old model IC engines all of which had one problem in common: all have red anodized, screw on cooling fins which at some time in the past, their then owner(s) had taken a large set of multy-grips to, resulting in horrendous graunch marks. A good restoration would require the heads be cleaned up and re-anodized. After some experiments, my co-researcher and I achieved remarkable successful in this, so if you're curious, here's how. For those who care, the engines were two Australian Taipan 1.5cc (a round head and a flat top head), a Frog "Vibromatic" and two ME Herons.

0. Research! - in this case, magazine articles from SIC (Strictly Internal Combustion) and MEW (no, not Model Engineer's Workshop, the other British one, Model Engine World), plus the Tee Workshop Practice book). Naturally, all were somewhat contradictory and follow-up letters to the editor in MEW added more confusion. My description below (cut from an email to the "Motor Boys" fraternity) gives the process which is now working consistantly for me.

1. De-anodize the old part by imersing it in a weak caustic soda solution - like a level tea spoon dissolved in an old coffee cup of warm water. Takes no more than 5 minutes and the part may turn "black" depending on the alloy. Keep this up until all, or virtually all the old color has disappeared and the outer surface is dull. Rinse under tap water and scrub with an old tooth brush to remove surface scale. Rubber gloves are probably a good idea for this (and other) process.

2. Mount on some kind of mandrel and skim it up with minimal metal removal on the outside (would you believe the Taipan head internal thread is 27 tpi? Some kind of pipe thread, I think. With only a QC box on the Myford, I cut a loose 28 tpi and that worked well enough). Finally, run at high speed with fine wet 'n dry using kerosene. I also buffed them on a Scotch-Brite belt that runs on one side of my bench grinder.

3. Bend a strip of aluminum to go inside the head/whatever, making good spring contact. This needs to be able to pass the anodizing current, so take a little care. The other end of the strip will be screw mounted to a common hanger bar connected to the positive side of the current source - hence it is the "anode" and we have the origin of the term anodizing.

Now back into a fresh caustic solution for about 30 seconds to de-grease, then rinse in cold, demineralized water. From the time it comes out of the caustic, avoid all direct contact with the part. The oils on your fingers will leave patterns on the part, as will the minerals present in some domestic water supplies.

4. The anodizing bath is 1:1 battery acid and demineralized water (my cloths dryer condenses water into a collector for me, so I've a never ending supply of this). The container should be clean and plastic. I used a 2 litre square food container with a snap-on lid for storage. I've no indication of how long a batch of electrolyte like this will last. So far, mine has been used ten times with no apparent change in the results, but anyway, we are not talking significant cost here - just be carefull disposing of it.

The cathode used is a piece of lead sheet hammered flat from an old length of lead covered communications cable. It's bent in a U shape inside the bath, with another U bent so it sits on one rim of the container. The negative wire from the current source gets attached to it (soldered). The refs say it should surround the part (hence the U shape) and be at least of the same area. I went for massive over-kill in the cathode area and this has worked.

The aluminum hangers of part(s) to be anodized are then screwed to a bar (I used 1/8" al strip, but any thing would do) that sits over the top of the bath and carries the positive wire from the current source. Plastic clothes pegs either side of the bar prevent it accidentally touching the cathode. That would be bad.

The refs say about 65-70 degrees F for the bath. That's about room temp for water here in spring, so I didn't bother to heat in any way.

5. Now the techie-part. The anodizing current required is about 100 mA per square inch (all

sources disagree, so this is a good, round number average). This apparently impacts the pore size formed and hence the ability of the oxide to accept and trap the color. You can laborously calculate the surface area, or approximate it. From the heads I've done, a rule of thumb seems to be surface area = 2.5 times the area of the head calculated as a simple cylinder. I didn't bother to include the area of the hangers, but if they are big and flat, it would be a good idea to figure them in.

The current source needs to be DC and about 12 to 20 volts, capable of delivering at least 2 amps and variable in some way. You also need to be able to measure this. My flying buddy (who is the head engineer at a local radio station) "found" a supply that was close to this, but not variable, so we fitted an auto-transformer (Viaiac) but a drill speed control to the mains side of it would also do the job. A battery charger driven by a speed controller would probably work ok. My current source has some filter capacitors on it which a battery charger wouldn't though.

After you have the approx surface area for each part in the batch, add them up and divide by 10 to get the current (in amps) required. Hook up the source negative to the lead cathode; the positive to the black lead of your multimeter (which should be set to the 5 or 10 amp DC current range) and the meter red lead to the wire coming off the hanger with the parts to be anodized. Now plonk 'em in the bath and crank it up to about the reading calculated (err on the high side). Start the stop watch and watch the part. After a minute or so, a fine stream of bubbles should start to form.

Keep this up for 45 minutes to an hour, periodically checking the current and adjusting as required. At any time you can lift the bits out (turn off the current and hold via the bar). If they appear a dull gray, that's good. If not, run them a while longer. This is a real suck it and see operation. Avoid breathing when inspecting the bath - it's evil stuff (explosive, too). I did this out doors - I suspect the fumes would have attacked every piece of steel in the workshop.

When satisfied, rinse parts in demineralized water and place them out to air-dry thoroughly. This is important! I put them in the sun for an hour or so, but avoid all direct contact (oils in the skin etc). We are going to depend on capillary action to get the die into the microscopic pores formed by the anodizing, so the dryer the better. Even over-night would probably be ok. Believe me, going into the color bath wet gives no color take-up at all, even though one source advocated this!

6. The color bath is not a precise process. I had success with a product called "Dylon" used for dying fabrics that I got from the drug store (chemist shop). It comes in little round plastic tubs with a crimped on alloy cap and seems to be globally available. The color "Scarlet" works great - but their "Emerald" was a dismal failure, so I conclude that the die particle size varies with the color. It's too large, it won't go into the pores. I dissolved half a tab of die in a 1 pint jar of de-mineralized water to give a very concentrated mix. This is warmed in the micro wave oven for 1 minute before use (this step may not be

necessary, but having a process that works, I don't want to vary it!).

Put the kettle on and start it heating to make steam, then pop the part in the die (holding it only by the hanger) and dunk and swish it around. Try to avoid hitting the sides of the jar. At one stage, I bubbled compressed air into the jar, but swishing seems to work just as well. Take the part out periodically and look at the color absorption. When it seems like it's got all it's going to get, give it a bit more and make sure you've got steam. This will take only a few minutes.

7. Tap off the excess liquid, then place part in the steam coming from the kettle. Rotate, twist, turn, etc to get steam into all knooks and crannies. This is closing the pores, sealing in the color (and apparently changing the type of oxide formed from a hydride to a hydrate - at least I think that's what one of the refs said). After you've burnt yourself a couple of times and are totally sick of it, take part and kettle to the sink and pour the boiling water all over the part.

8. You can touch it now. Dry it off - I used paper towels - and expect a little color to rub off, but if you've got it right, not a lot. Finally rub some machine oil over it. This brings out the luster and changes it from merely nice to absolutely spectacular.

That's it! As I said - the die particle size is the critical thing. My friend Peter Crewdson, from Canberra was staying with at the time (I'm RC, he's PC and \*still\* an aviation electronics tech with our FAA equivalent). He and I experimented with red and blue ink as the die as well as red and green Dylon. Only the "scarlet" Dylon worked acceptably, but it worked great. He's gone home determined to anodize the entire Canberra airport red, just for the fun of it.

If it fails, go back to step one and try again. Our test piece (a reject Schroeder Deezil head with a strange internal thread cut for no valid reason) went round this loop three times. The final anodizing is good, but the surface is dull due to fine pitting, probably from the multiple caustic dippings to de-anodize - so good idea to practice until you're confident and if you must de-anodize, re-polish each time.

I've got some blue Dylon to try, and the owner of the Frog, Herons and one of the Taipans who donated the power supply has just dropped an old Taifun on me with a tab of pink Dylon - he insists it had a pink head - but you'd never know to look at the sad old thing. That will probably be the next experiment, along with the stuff-up head for the Owen "Mate" (was busily turning out the id to match the od of the fin groove - got to within 10 thou of creating a set of rings before I realized what was happening!) which I'll try the blue on.

This is a real empirical process, but after we arrived at it, we did three totally successful batches in a row, over two days, so I think we have it down (for the setup we used, anyway). The more pure the alloy, the better the color absorption. We hung one batch on aircraft alclad hangers. The 99.9% pure coating came out an absolutely brilliant red, but on the edge you could see that the core (high manganese and silicon, I think) was much darker and duller.

### Letters

I found a great source for what has previously been referred to in the newsletter as "stuff", or more specifically, used machinery, tooling/accessories, material and perhaps whatever obscure shop item one may seek. The place is Machine Re-Sales Co. 244 Liberty Street in Brockton, 508/559-2100. Their main location and office is 3 turns off of Route 24 at the exit for Route 123. Gerry, the manager, is a fascinating mix of theoretical knowledge and practical experience, which is not much different than is found in the cross section of NEMES members. His memory houses the inventory and he is quicker in identifying availability than a salesperson with a computer at the J&L and MSC type places. The unsolicited input of pros and cons is not just for the item or application at hand, but also for additional capabilities/limitations or alternate approaches.

I felt that the prices were quite competitive. Keep in mind that when I say competitive, my preference is for good condition, used, U.S. made industrial equipment where prices are typically higher than brand new, Asian, moderate duty equipment.

As is typical for used machinery dealers, space is at a premium - the showroom/warehouse is packed. I also went to their nearby outside storage yard, however I did not see their other warehouse. Nothing derogatory towards this place or other good local suppliers, this is not the spacious and sterile showroom of the J&L and MSC type places.

Blue jeans, work shoes and maybe even a pair of gloves and a flashlight should be considered. Be prepared to squeeze through tight aisles and duck under some hanging gear to see all that is offered.

If you succumb to temptation and your new prize doesn't fit in your car's trunk, trucking is available.

The hours are 8:30 to 5:00 Monday to Friday. They probably will not be open the day after Thanksgiving and around Christmas and New Years, so I suggest calling ahead to verify that they will be open.

Joseph Donahue

*Thanks for sending this info along. It sounds like a good place to check out when you're looking for equipment. I'm going to plan on visiting them sometime in the next month or two.*

### Classified

Did you find a brown leatherette "dispatch case" at the last meeting? If you did Max ben-Aaron is looking for it.

20 tooth stud gear for a 9" SB model A needed, It came with the 40 tooth one on it. SC Lovely

Howard Evers (508-987-0654) is looking for two things. Does anyone know a source for PHENOLIC or a similar material? Wanted to buy or trade: gears for a small dividing head" 2" to 4-3/8" diameter; 40-50-56- and 100 teeth. Howard will return all calls.