

The NEMES Gazette

*The Newsletter of the New England Model Engineering Society,
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Our Next Meeting is at 7:00 PM February 5, 1998 at the Museum, 154 Moody Street, Waltham Ma.

Don't Forget to Sign Up with Max ben-Aaron for Your Spot at the Big New England Model Engineering Show coming to the Museum February 21, 1998

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

From the Editor's Desk:

Three times now I have forgotten to thank the ladies who provided the food concession at the show in October, so I'm going to do it first thing this issue before I forget it again. Bea Boucher, Pat Fisher, and Gale Martha did a terrific job with the food for the show in October, and Gale Martha provided some special refreshments again for the meeting where Rudy Kouhopt was the speaker. So, thank-you ladies.

The January meeting was pretty well attended even though it was on the "wrong" Thursday of the month. I don't think there was too much confusion over it, although I did miss another meeting that's normally on the second Thursday and at least one person called my house on the first asking if there was a meeting since they got to the Museum and it was locked up tight. We're doing well membership wise. We dropped under 100 with the dues cutoff a couple months back, but there are four new names this month and that should put us over 100 again.

Right after this issue goes in the mail some of us will be getting on the bus to go to the Cabin Fever Expo. That should be a good time and help get us all warmed up for our own show coming up soon on Saturday Feb 21st. Max has 38 people signed up for the show - if you haven't signed up yet be sure you see him at the meeting and reserve yourself a space.

See you next Thursday night, scl.

President's Corner

by Ron Ginger

CABIN FEVER: This newsletter will be reaching you just about the time we leave for the Cabin Fever Expo. If by chance it gets to you before Noon on Friday, Jan 30, and you want to join the trip, call me at 508/877-8217. There is still room

NAMES: I asked at the January meeting about interest in this trip, and didn't get much response. If I don't have a more than 20 names by the February meeting, we will NOT plan a trip to NAMES in April .

February Meeting We will have 2 talks this meeting, a 'short subject' and a featured speaker. The short subject is our member Ed Mann talking about Silversmithing. Ed

makes some amazing silver jewelry, and it should be interesting to get a glimpse at this skill.

Our featured speaker is George King, the chief Engineer of the steamboat SABINO of Mystic Seaport Museum. A few years ago George supervised the complete overhaul of the compound engine from this boat. It was removed, hauled off to a very big mill and totally rebuilt. George will have a good slide show of the work. A project slightly larger than the scale many of us work at, but it should be fascinating.

We will not have time for normal show and tell, but will have time for brief announcements of events or other news.

Future meetings. Don Strang has lined up a speaker on ornamental turning for the May meeting. If you have ever seen this work or the amazing chucks used to produce it you will want to hear this talk.

February 21: Show Plans are progressing well for our show. Max has reported a good list of pre-registrations. We are getting a few raffle prizes for Exhibitors. We will need some volunteers to set up and clean up. We will talk more about this at the meeting. Keep working on your projects so we have lots of 'good stuff' at the show.

-- Ron

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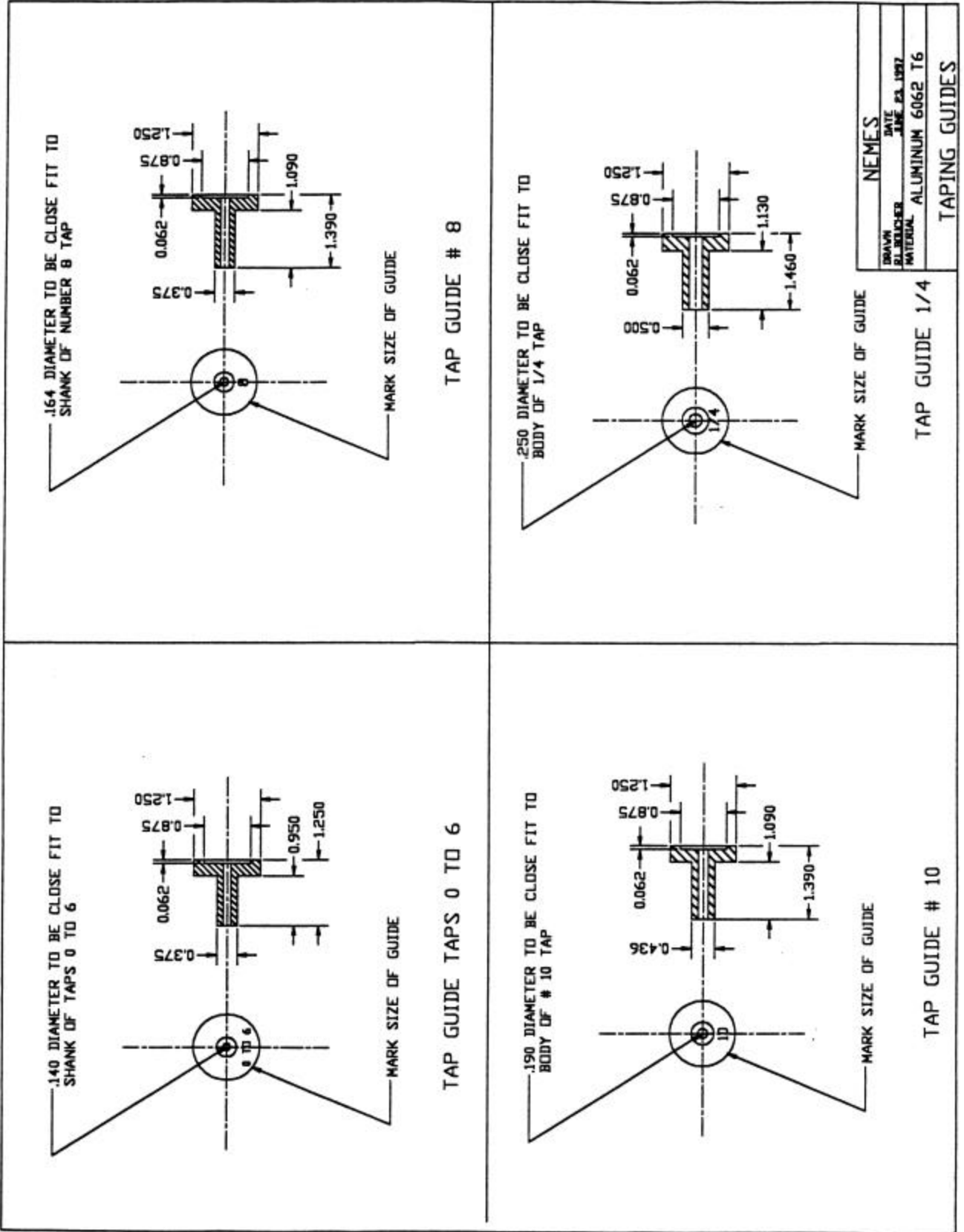
Thursday February 5, 1998 -- 7 PM, NEMES MEETING at the Charles River Museum of Industry, 154 Moody Street, Waltham, Ma 02154, telephone 617-893-5410

Saturday Feb 21, 1998 -- 10:00 AM to 4:00 PM-- Second Annual NEW ENGLAND MODEL ENGINEERING SHOW at the Charles River Museum of Industry, 154 Moody Street, Waltham, Ma 02154, telephone 617-893-5410

Thursday March 5, 1998 -- 7 PM, NEMES MEETING at the Charles River Museum of Industry, 154 Moody Street, Waltham, Ma 02154, telephone 617-893-5410

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



NEMES	
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TAPING GUIDES	

TAP GUIDE 1/4

TAP GUIDE # 10

The Meeting, January 8, 1998

The January meeting was different from the typical meeting in two ways. First it was on the second Thursday of the month and second it was our second meeting in a "Poster Session" format. About thirty people brought things to talk about, and there was a lot of activity for the whole night with people circulating around, discussing the goodies people had brought in, and generally having a good time. There was a lot going on, and I tried to get all the things listed. If I missed what you brought in I apologise -- bring it to the show in February so I'll get a second chance to look it over. Don Strang had his George Thomas pillar tool to display, and a couple of items for sale, including a Starret center finder that was sold almost before he put it down on the table. Roland Gaucher brought along his version of Jerry Howell's low temperature differential Sterling engine. He also brought his 1/2 size version of the same thing. He spent an entire evening honing the cylinder for it's graphite piston and it ran nicely sitting on his palm. He also had a new crossslide feed screw and nut that he had made for his Clausing lathe. The screw was cut down from an old Bridgeport lead screw that he had.

Norm Jones brought his version of Gerry Howell's Mizer in, running well and looking good with it's new red Trim. Jim Chetwyn Sr. had the Metal Lathe Accessories Ball Turning attachment that he made from their castings and a 1/2 size Maytag single made from Casting he got from an ad in Modeltec. Dick Boucher had some individual aluminum tapping guides and a nice tapping block he had made from steel.

Kay Fisher was passing out books from the latest club order from Village Press and had his collection of tool holders on display. He had a nice toolpost and 25 toolholders, most of which he made himself. He says they work well but he still wants and Aloris.

Walking around I was interested to see that Both Geoffrey Brown and Larry Twaits were working on some interesting collets/toolholders that I didn't recognize. It turns out that they both have Linley Jig borers and were working on making tool holders for them. Geoffrey also brought in a model steam mill engine and a clamp part that he had made for a woodworking machine belonging to someone on the South Shore someplace. Larry had some interesting tools for making the tapers he's working on. He had an adjustable taper gauge and a cast iron lap for tapers. The lap is charger with diamond abrasive using a hardened wheel to push the diamond into the softer cast iron of the lap. In use the lap cuts the object being lapped and any wear on the lap means that the lap has to be redone or the piece being lapped will not be correct since the shape of the lap controls the shape of the part. This is unlike the cylindrical lapping that Roland Gaucher discussed a few meetings back where the lapping process itself helps to generate the correct cylindrical shape.

Errol Groff brought in another nice project from the classes he teaches. This one was the Number 1 Plate from a B&S division plate set. He also had a paper version of it. The paper version was the output of the CAD system they used to lay the plate out. After they had it on paper to see that it looked right they made the plate on a Bridgeport mill with a

Boss CNC controll. The actual plate took 15 minutes of machine time on the mill. Plates 2 and 3 in the set were scheduled to be made in the week after the meeting.

David Osier had a bullet mold for his 45-70 Trap Door Springfield Rifle. It's a nice rifle with a good barrel that was made about 0.010 oversize. As a result standard bullet molds produce slugs that are undersize for his rifle and accuracy is poor. With his mold he can produce bullets that are the right size, greatly improving accuracy and enabling him to win a match with it.

Over the course of the last year and a half or so we've seen the progress on Wayne Slinger's Climax locomotive project. This time the new addition was the skew bevel gear set for the trucks to get the power from the engine to the wheels. It was Wayne's first try at cutting gears. He ground one side of a slitting saw to shape, cut one side of the teeth, then reversed things and cut the second side. He made them all out of CRS. After they were all machined to shape he sent them to Sola Heat Treat out by Springfield and had a 0.020 inch deep case of 57-60 Rockwell put on them - only \$33 to heat treat fourteen gears.

Gene Martha had taken one of those cheap Sears Drill Sharpeners that would work okay if you could just get it mounted in the right spot by the grinding wheel and then keep it there and done it up right. He had a base that held the grinder, and an adjustable table on the base to position the grinder correctly with respect to the wheel.

Joe Worthel brought in a very nice tripod he had made for his camera. He also had a bracket to support the heavy telephoto lens mounted to his camera on the commercial tripod he had, and a nice toomakers vice.

On a musical theme we had two people bring in projects. Walter Stanul had an Arch Guitar. It has 13 strings on it which allows it to play an octave lower than the standard guitar does while still having all the normal guitars strings. Henry Szostek brought in his Concertina project. again and it looks like he's making progress. He's refined the construction of the wooden end pieces so they should be stronger than the originals and I'm looking forward to seeing and hearing the finished product.

Bill Brackett brought in a sanding machine that he designed and built. The table is set up so that it pivots on an axis that runs through along the front face of the sanding disk so that as the table is pivoted to various angles it maintains the same small gap with the disk so you can sand small objects at an angle as readily as when you are sanding them square.

Paul Budlong brought in the Wall Four he's working on to match Herb Cotterly's and a partially completed PM research model lathe.

Mark Marini was running his Duclos Gearless Hit and Miss engine on one of the tables. It looked nice and ran nice and I enjoyed watching it.

I don't know where he gets the time, but Ron Ginger has made a lot more progress on his 120% scale Minnie traction engine. He says he may have it finished in time for the NAMES show!

John David Heinzman had a Flame Eater Engine running on a little Alcohol Burner. It's currently running with an Alu-

minum piston in an Aluminum cylinder, and ran nicely once it warmed up. There was some discussion about piston materials since he said he wasn't all that happy with the aluminum one and graphite was suggested as the way to go.

Dave Busch had an HON3 model of a Silver City Shay locomotive he's building in brass. It's a two truck two cylinder locomotive and will be electrically powered when it's finished. HON3 is 1/87 full size and is for 3 foot gauge equipment sized to run on HO track. He also had the Brass Master Patterns for 1/32 scale Lockheed Pac3 Missile pewter desk sets that he made for Loral Vought. The Pac3 is the successor to the Patriot Missile.

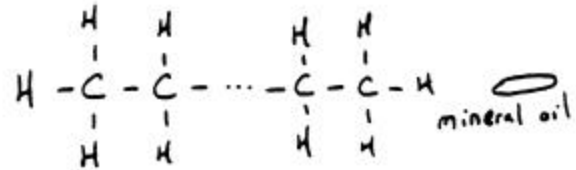
Harold Holland had a nice little 4" rotary table made by Stevens in Hartford Conn. He had some bronze gears that he had cut using it on a form cutter in a Bridgeport mill. Todd Cahill had two sets of Lionel Train mechanical parts. One set had steel bodies he'd made. The other set had paper bodies, inspired by the Paper bodies used on some models during the WWII metal shortages. I was amazed, It'd never occurred to me that you could make such a nice looking train set out of paper.

Les Russell had a bevel gear generating machine he made to produce the 3/8" diameter bevel gears he needed for the governor on his Minnie traction engine. It's based on a Bilgrim Bevel Gear Generator for use with a shaper that he saw illustrated in a history of machine tools book. He used it with a straight V flycutter and generated the proper angles on the teeth through the action of the generator. Bob Barrett had a nice Plexiglas looking paperweight with some shells in it. I'd looked at it earlier in the night and thought it was nice, but it didn't occur to me that Bob had made it himself. He started with a piece of 1/4" clear Plexiglas and engraved the lettering. Then he filled the lettering with black silkscreen ink. After that he bedded the shells over the lettering with slow curing epoxy. It took 16 hours to firm up around the shells, and after that he cooked it at 150 degrees F for a month to finish up the cure. He also had a book with pictures of some of his projects. The one that impressed me the most was his active solar array that heats water to 405 F on a clear day. When the sun comes up and hits it in the morning it boils the frost off the ground before it gets itself lined back up on the collector with the new direction of the sunlight.

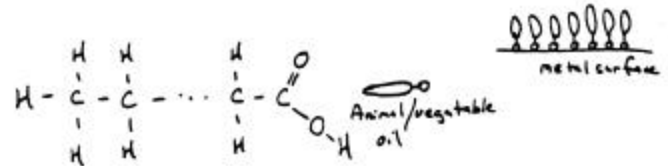
While there weren't any formal presentations to the whole group at the meeting, Don Strang had some interesting info on oils that he'd come across recently in his search to find out what holds JoBlocks together.

There are three basic types of oils: animal, vegetable, and mineral. When it comes to lubrication starting, stopping, and running hot are the primary problems. Starting and stopping because the oil tends to squeeze out of the spaces between the moving parts when they aren't moving. So, when they are just starting up or about to stop the oil film gets thin and metal is apt to rub against metal, which is not a good thing. The same sort of thing happens when things get to hot for the oil - it thins out and metal rubbing on metal becomes a lot more likely.

Mineral oils tend to be saturated hydrocarbons:



Mineral oil molecules tend to stick to other mineral oil molecules and not to other things.



Animal and Vegetable oils are fatty acids. When the acid on the end of one of these oils contacts metal the H gets replaced by a metal atom on the surface of the metal, which tends to "glue" the molecule down to the metal surface with an ionic bond. This action forms a layer of molecules on the metal with the long oily part of the molecules out at the other end, forming a mono-molecular layer of oil molecules on the surface of the metal. Modern oils are mixtures of these two types of oils. The fatty acid ends stick to the metal providing the coating of oil that protects the surfaces from rubbing on each other at starting and stopping time, and the mineral oils slide over the ends of the surface layer of oil to provide additional protection when running.

Letters

8 January, 1998

Dear Sir,

As an enthusiastic model builder looking for new models, for example petrol, diesel, gas motors and also steam models, perhaps you could help me make contact with model clubs, whereby I may purchase complete sets of drawings. If this is possible could you please send me forwarding addresses. I thank you sincerely.

Yours faithfully,

D. Scanlan

Wilgenweg 21

7556 HD Hengelo (OV)

The Netherlands

This showed up in my mailbox in an envelope with a Boston postmark, so I'm not quite sure how I got it. If you'd like to correspond with a fellow modeler in The Netherlands, here's your chance.

Jan-1998 Treasurers Report

Previous balance -----	\$1515.71
Dues Deposit -----	40.00
Books Deposit -----	44.00
Books Withdrawal -----	-44.00
Interest -----	.60
Service Charge -----	-3.00
Holding Fee for Bus Tour -----	-540.00
News letter postage -----	-66.48
Bus Deposits from members -----	1980.00
Dues Deposit -----	30.00
New balance -----	\$2956.83

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More Good news guys. I just got off the phone to Village Press managed to get two magazine subscriptions for raffle prizes at our next show in February. Village Press has been very good to us. However this month I only have an order for 1 book. I'm afraid that if we don't keep the quantities up we may lose our discount. Also our savings on shipping and handling isn't there. So I am holding this order till after the next meeting and show. If you want a Village Press book at 40 percent off see me at the next meeting and our show in February. As always - pay in advance.

Respectfully
Kay R. Fisher

TIPS AND TECHNIQUES by Ed Kingsley

SMART (DIGITAL) CALIPER TRICKS

1) If you have to take a reading in a position where you are unable to see the caliper readout, and your caliper doesn't have a "Hold" function; press the "Zero" button, remove the caliper from the part, close the jaws and read the display. The dimension shown will be the size the you were trying to read, but will be displayed as a negative number.

2) When turning or milling a piece to size, set your calipers to read the desired dimension and then carefully "Zero" them at that reading. Readings now taken of your part will indicate the material remaining to be removed, directly, and thereby eliminate your having to subtract the target size from your caliper measurement each time you measure the part. Remember to divide this number by two if you're turning the piece on the lathe.

3) Use the above technique as a "Go-No Go" indicator for parts tolerancing.

4) When you're trying to find the distance between the centers of two holes, use the "Inside" jaws and measure the diameters of both holes. Add them together and divide by two. Now, measure the closest edge-to-edge distance between the two holes and add this to the first number. The sum is the center-to-center distance.

Items 1, 2 and 3 also work well with (electronic) digital micrometers.

THE EFFECTS OF SHARPENING ON THE LIFE OF TiN COATED DRILLS

(From Curt Anderson, Darex Corp, as reported on the Rec-CraftsMetalworking Newsgroup)

Surprisingly, there is not as much loss in performance as one might think. One manufacturer of TiN drill bits measured the loss in longevity after re-sharpening at only around 25%. (This test was done using one of our industrial sharpeners) The 25% loss is not bad considering you can sharpen many times.

Remember that the cutting edge of the bit has two sides, the top and bottom. The grinding process removes the TiN coating only on the top side. The bottom side of the edge

retains the TiN coating. New TiN drill bits in the test outlasted standard new HSS drill by 9 times. Resharpener on a Darex industrial drill bit sharpener, the TiN drill bit outlasted the standard HSS drill by "only" 6.66 times. (I don't know exactly how the Drill Doctor would compare.) Further, ... the flutes retain the benefits of TiN, which helps in chip evacuation. Plus, most TiN drill bits are made more accurately, straighter, concentric, etc. (Not necessarily those Chinese ones ...ed)

Modern Machine Shop ... published an article of mine on this topic, see <http://www.darex.com/osg&sp.htm>, for a reprint.

TWO SOURCES OF FAT FELT

I had been looking, for a number of years, for a piece of felt suitable to stuff into a couple of oil cups, on my power hack saw and lathe, that were lacking same and thought I had finally gotten lucky last month when I found and ordered a piece of 1/4" thick x 3" x 6" felt from "Small Parts, Inc.", for \$6 and change. Well, actually I had. It is good stuff, but as MY luck would have it, last week I was in Sears and found two packages of felt "replacement intake filters" for air compressors, that appear to be pretty much the same thing, albeit you have a choice of thicknesses, and the price is a bit less, too.

#16433 - 1/4" (by approx. 3x6") or #16279 - 1/2" (by approx. 3x4 1/2") either package, \$3.99 each.

FILE THAT FILE

(Another tip from RCM - author unknown) One way to store all those files you have (Kay :) is to use the plastic racks sold for holding open end and socket wrenches in tool chests and roller cabinets.

COLD TIPS FOR HARD TOOLS

Check out the web page at <http://www.heattreatingonline.com> There are (3) articles on the cryogenic treatment of cutting tools which explain what it is, what it does and, more or less, how you can try it out in your own home shop. The gist of the explanation is that hardening steel with traditional heat treatment does not convert "all" of the austenite to martensite, thus leaving the cutting edge softer than it could be. Cryogenic treatment is reputed to complete this process.

The catch is that the subfreezing process forms "some kind" of thin surface layer which is not as hard as the rest of the tool and cryogenics should therefore be utilized only AFTER the tool has become dull in normal use and BEFORE it is resharpened. The grinding removes this "mysterious layer" (approx. .001" thick) to exposes the newly, totally hardened metal which is then able to hold its edge, "many times longer than the original." Anecdotal references are given for magnitudinal increases in performance.

The author, Bill Bryson, has written, "Heat Treatment, Selection and Application of Tool Steel". Cryogenics is the subject of one chapter. General outlines for using liquid

nitrogen or dry ice and kerosene, a sort of try-it-yourself, are given on the web page. In the book, ..."these instructions are fully elaborated and illustrated for the readers understanding." Brrrrr.

-- Ed Kingsley

Grinding Lathe Bits

Here's something by our own Bob Neidorf that I picked up from the modelengineering email list that I thought was interesting.

Perhaps I discovered something recently. (Not likely)

I took a 3" diameter straight soft Norton grinding wheel and ran a big bolt through it. Cardboard washers and metal flanges for safety and stiffness. I then put the bolt in the lathe 3 jaw chuck. That made the neatest HSS lathe bit grinding jig I could imagine. I could put the tool bit in the toolpost and use the lathe crossfeed and compound to take light or heavy cuts, to cut straight faces, and make any shape bit imaginable.

Thanks to the advice of others, I knew to cover the ways with cloth to keep grit off of them. I also ran my shop vac to suck up as much grit as possible before it went too far.

I wanted a 60 degree threading tool for inside cutting. OK. Set the compound to zero, made a pass, then 60 degrees and made another pass. Perfectly flat faces at the right

angle. I was able to put relief on the bit by rotating the boring bar in the toolpost slightly. OK, that wasn't 0.1 degree accurate, but it went so easily. I touched the point with a hand stone and then used it for inside cutting. It cut beautifully and lasted well enough for my home shop.

Perhaps I'll never learn the skills of freehand grinding this way. Perhaps you talented people can do this sort of thing with your eyes closed. However, for me, this was the easiest thing in the world, took no skill, and worked perfectly first time.

It took some head scratching and sketching to think through the angles before actually grinding, but after that, it was 5 minutes from tool blank to finished tool!

-- Bob Neidorff

One thing about the internet is that you can get a lot of feedback quick. butcher paper and aluminum foil were both suggested as substitutes for the cloth that had been recommended to Bob. Cloth can wind up in the lathe and cause problems while the butcher paper and the aluminum foil give equally good protection to the ways without nearly the danger of wrapping up on the wheel as cloth since they tear so readily.

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c/o Stephen C. Lovely

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