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 October 7, 1999 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:

One of these days I'm planning on making a calliope, so I've been looking around for information on them. On the internet I came across the fact that the June 1977 issue of "Live Steam" has an article on building a calliope. Anyone have a copy I could borrow for a short time to get the info on calliopes?

See you next Thursday night - scl

President's Corner
by Ron Ginger

DUES

Ok, this time I got it right, I hope! Last month I printed the mailing labels with the dues paid legend, but I made a mistake in the sort part of the program, and only made labels for people with dues paid in 1998! So several new members did not get newsletters. My appologies to all that have missed newsletters.

So, if it says PAID above your name on this newsletter, you are paid up and will keep getting newsletters. If it says NEW, you have had a couple samples, this one will be the last unless you send $20 to our treasurer Kay Fisher. If there is nothing above your name, you were a PAID member last year, but did not renew. This is also your last newsletter, unless you renew.

In case anyone is interested, we have 129 on the current PAID list, and about 30 non-renewals.

October Meeting

Thanks to Norm Jones, we have what promises to be another very good program for the October meeting. Norm has arranged for Harry Schoepf to be our speaker. Harry is building a one quarter scale model of a 1913 model T Ford. He has the entire chasis done, and I understand it is a fine piece of work.

Last time we had several nice Show and tell items, lets keep that trend going this month. As before, these are meant to be 5 minute talks. We will have the overhead projector onhand if its needed.

Rudy Kouhoupt returns

Rudy will be our speaker in March, 2000. He will be doing a workshop session in the afternoon, probably 3:00 to 5:00, then giving a talk at the meeting. The workshop will be limited to 20 people, and will cost $20 (that gives Rudy a chance to cover his travel and hotel epenses for this trip). The exact subject of the workshop and Rudys talk at the meeting, is still open- suggestions are welcome.

Third Annual

Rollies Shop Vist and Swap Meet.

Mark the date, and don't miss this one! Sunday, October 17, 12:00 to 5:00. For any of you that have been there before you know what a great shop Rollie has, and there is always something new to see (ask Grandpa Rolie about the Tonka Trucks). There is plenty of room for tables to sell or swap your 'good stuff'. There will be a large table for FREEE STUFF. Also plenty of room for a mini-model show, if you want to bring along some engines, or whatever- maybe we can talk Morgan Davis into a real demo of the Gatling gun???

To get to Rollies, take the Mass Pike to the Sturbridge exit (Exit 9). Just 1/4 mile past the toll booth, exit onto Route 20 EAST. About 1 mile on Rt 20, turn left at Route 49 toward Spencer. Follow Rt 49 about 2 miles to Flagg Road. Turn right on Flagg, just a few hundred yards and it curves left. Follow it about 3 miles. When you cross the town line Flagg becomes South Spencer Rd. Rollie is at #90. If you reach the small town park with the cannon, you just missed it!

Remember, this is a Rain or Shine event- plenty of room in the garage for lots of swap tables.

Bus Trips

I expect we will again run the charter bus trip to Cabin Fever at the end of January. How about another NAMES trip to Detroit in April? If you think you might be interested let me know, if there sounds like eough, Ill make some calls and see what we can do. Maybe this time we could make a bit more comfortable trip, and not take the overnight ride home. We could stop at the Hamilton Museum one way, and

the Canadian War Bird Musuem on the return. If this sounds like fun, let me know you are interested.

--Ron

Calendar of Events

Oct 2-3 Sat & Sun
Steam/Gas Engine Show
W Sutton MA Waters Farm
Butch Oosterman 508-234-5035

Oct 2, Sat
Yankee Steam_up
East Greenwich RI
NEWSM 401-885-0545

Oct 3, Sun 10-5
Owls Head Foreign Auto festival

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

Oct 9-11 Sat - Mon
Cranberry Flywheelers Cranberry Harvest Festival
So. Carver MA Edaville RR
Dave Moore 508-279-1483

Steam launch at Lee's Mill
Lake Winnepesaukee NH

Oct 17, Sun 10-5
Owls Head Ford vs. Chevy Meet

Oct 31
Owls Head Fall Auction & Open House

Nov 4, 1999 Thur 7PM
NEMES Monthly club meeting
Waltham, Ma.
Charles River Museum of Industry 617-893-5410

Dec 2, 1999 Thur 7PM
NEMES Monthly club meeting
Waltham, Ma.
Charles River Museum of Industry 617-893-5410

For a listing, please sent 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

Aug 1999 Treasurers Report

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Previous balance -------------- $3333.00
Interest --------------------------- 1.38
Dues Deposit ------------------- 360.00
New balance ------------------- $3694.38
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Sep 1999 Treasurers Report

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Previous balance ---------------- $3694.38
Interest --------------------------- 1.50
Bob Niedorff ( newsletter expense) -172.14
Dues Deposit --------------------- 400.00
July Concession Profit ------------ 26.50
New balance -------------------- $3940.24
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Respectfully
Kay R. Fisher
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The Meeting, September 2, 1999

The September meeting took place on Thursday the second. Ed Rogers reminded us all about the show at the Topsfield Fair Grounds and passed out free passes for people who were going to be exhibitors.

I had two aluminum castings that I had made by the lost styrofoam method from patterns I had hot wired from styrofoam. I used the propane burner and furnace I had built based on the unit the John Wasser had brought in to show us a few months ago. Using propane to provide the heat is a lot more convenient than coal or charcoal. You strike a match to light the burner and when you're done you shut the valves. Solid fuel does a good job, but it's a much bigger production to get it going and to clean up after.

Dave Piper brought in his 1.5 - 3.0 by 2.5 compound steam engine. It's entirely his own design and is now finished except for the lagging. We've watched this move along from a couple of patterns to some parts and now it's good to see a finished engine.

Dave Robey has 3 people working on projects for his Laser Project Design contest. It'll be interesting to see what ideas people come up with to use these neat little gadgets in the shop.

Don Strang came across some more info on the Telsa style pumps on the internet. At Northwestern University they've discovered that liquid against a solid behaves like a solid for three molecules out from the solid. He's also been looking into "Thermally Protected" motors and such in small appliances. Recently a lot of them have a thermal overload fuse in them. They open and stay that way, there isn't any button to push to reset them so you have to either throw it away and get a new one or you have to take it apart, find the open fuse, and then try to get a replacement. Some electronic stores have them but they can be hard to find. Things like fans and hair dryers seem to have them lately. They protect against fire by blowing, but they make the appliance they're in into a use once and throw it away sort of a product.

Ron has spoken to Karen about a place for a storage cabinet for NEMES now that the work in the Museum has been completed and she's going to find us a place for a storage cabinet. So, we now need a nice looking secure cabinet that we can use to keep

our stuff at the Museum between meetings. He's also spoken with Rudy Kouhoupt recently and asked him about coming up to talk to us again. Rudy said he'd enjoyed his last trip up to talk to us and was willing to come again. Since Rudy has to come so far Ron thought it might be a good idea to have a workshop session ahead of time from 2-5 PM or so. It would be $20 by reservation for 15-20 people. It should be an interesting afternoon and would probably be held in the small ampitheater by the boiler. Ron is currently shooting for having Rudy at the November meeting.

Don't forget, the third Saturday in February is the Club Show at the Museum. We will hopefully have a permanent exhibit with a rotating assortment of members projects on display in the near future. Karen is looking for a case to house it.

At the last meeting there was some confusion with a slide to be projected that couldn't be because it was opaque and the projector only worked with transparencies. We don't have to worry about that any more. Henry Szostek has donated an opaque projector to the club. He demonstrated it by projecting some coins onto the screen and it worked quite nicely.

Larry Twaits was the main speaker for the night, talking about his quorn, which he brought in to show us. He had some handouts with some diagrams showing how to do a couple of sharpening operations. He also had some overheads produced by the NEMES audiovisual department (Ron Ginger's digital camera and inkjet printer.) There are several Quorns in the club. Don Strang has built one, Steve Wellcome's is nearly finished, and there is Larry's. Walter Winship brought in pictures of one he built in in the 80's.

The Quorn was designed by Professor DH Chaddock in the early 1970's, and reportedly named for the place he was living when he designed it. It attracted lot's of attention right up to today, with an article on the Quorn in ME Workshop just last year. In the mid 70's after the series of articles on it was completed there were a lot of letters to editors trying to pick holes in it. The articles were compiled into a book that goes into great detail on making it in the first half and then into great detail on how to use it in the second half. There's even an article on how to sharpen a hacksaw blade.

Most of the controversy about the Quorn was centered on the overselling of it by Chaddock. By "Universal" he meant that it could do anything. Larry finds it great for doing simple tools like threading cutters, parting tools, and so on.

One thing it's not is cheap if you buy the casting set. Larry figures he has $1200 - $1500 into his by now. Some of the castings that came in Larry's set were less than ideal, and he ending up replacing them with parts made from durabar. You can make the entire Quorn without castings if you wish. Walter Winship built his entirely out of the stuff in his scrap box. The only items he purchased special for it were the spindle bearings, which at $45 amounted to the entire out of pocket expenses for his Quorn. Larry's casting set was $5or600. Twenty years ago a set cost Don Strang about $80.

There are no dovetail slides on the Quorn, everything is mounted on rods. The workhead slides and moves in all directions. It rocks against the wheel, advancing to the side under micrometer control. Typically you rock the head to take a cut, advance 1 - 2 thous. to the side and rock again for another cut. You can do a lot with a Quorn, but you can't take a heavy cut.

Some of the things in the basic Quorn design don't lock up well. Larry modified his based on advice from Don Strang who had already made one. Most people who make a Quorn modify it to some extent before they are finished with it.

To get the relief on a tooth when it's ground the tooth is placed below the center of the wheel (this is shown in the pages Larry passed out.) Larry likes aluminum oxide 4" dish wheels on his Quorn. You can get them from MSC. One controversial thing about the Quorn is that there is no way to set the wheel to a specific height above the tooth being sharpened. When you are setting up you need to juggle things around to get them to come out producing the correct relief on the tooth - you can't just dial it in.

Larry likes 2 flute endmills because there's more room on the end to sharpen them than on the ones with more flutes. He also likes to standardize. That way he can go through a batch of a dozen identical endmills and sharpen them all at once. Sharpening a dozen isn't much more trouble than doing just one - most of the time and effort you spend is getting the settings for the various cuts. It's a big project to set up to sharpen the end of a center cutting endmill so doing a bunch at the same time is the way to go. He also says that with a bunch the same you get used to having a cutter that's really sharp, not one that's just sortof sharp. He finds it very satisfying to put an newly sharpened endmill into the holder and nice fine shavings off a piece of aluminum indicating that the cutter is SHARP.

The Quorn is similar to some commercial cutter grinders. The Gorton and the Deckel units have similar motions.

For engraving cutters to work well the cone on the end has to be ground flat to within a half a thou of the center line or it won't cut well. He has made some of these cutters, and after doing it thinks that the builder's plate Les Russell made for his Minnie trac-

tion engine was one of the highlights of the last NEMES show in February.

Don Strang's talks about four facet drill sharpening inspired Larry, so he bought a really nice little four jaw chuck with jaws jaws long enough to hold a drill over a whole twist of the flutes. The chuck cost him about $300 and so far he's sharpened three drills.

The plans call for slitting the castings to clamp them on the bars. Larry has used split cotters in cross bores instead. They clamp very well and the casting doesn't spring when you slit it because you don't slit it. There is a screw pulling the two halves of the cotter together to provide the clamping action. Larry cut the radius of the bars into his cotters, then cut them apart so that the saw kerf provides the distance for the two parts to move together and clamp the bars. Plain wedges on the ends of the cotters would probably work as well and be less trouble to make.

Larry spent six months building the Quorn, and blames Roland Gaucher for it. He saw Roland's ball turning attachment and made one. Then he made some ball handles and needed something to put them on. There are thirty on a Quorn so it seemed a natural project to use some ball handles. Every ball handle on the Quorn has a spacer under it that is adjusted to the proper thickness to get the handle at the right angle when it's tight. The handles interfere with each other, so the final assemble has to be done in a specific sequence, making the Quorn not only a cutter grinder but also a three dimensional jigsaw puzzle.

It wouldn't be a Quorn without the ball handles, and Larry also finds the split cotters interesting in it's construction. It's possible that you could make a Quorn without the ball handles and use a wrench, but when you get going using it you are flicking handles, adjusting and flicking again to tighten. If you had to reach for a wrench before each flick you'd slow things down a lot. Some of the handle on Larry's Quorn are not yet ball handles. They are straight rods held into round nuts with Loc-Tite (r) adhesive. They work fine, but are not nearly as esthetically pleasing as the ball handles.

The spindle is nearly impossible to make as drawn in the original design. Larry ended up using Loc-Tite(r) to hold the Labrinth seals on. You have to be careful building it to keep it in balance since you can't dynamically balance it when you're done. He put a 20 degree male taper on the end of his spindle, so that he hubs with the grinding wheels slide on so the wheels stay concentric when the are removed and then replaced. The preload on the spindle comes from a spring box holding six coil springs that came with the casting kit. Larry found making the spindle an interesting project.

You're never done with a Quorn - there's always another attachment you can make to do another job.

1 1/16 drill rod is the material Larry used for the rods in his Quorn. Drill rod isn't round and it isn't straight, so at the very least you need to lap it enough to get it round.

Having made the Quorn he doesn't think he'd do it again. For the money he's spend making the Quorn he could get a Cincinnati #2 to put in his garage and have money left over. If he was going to do it again he wouldn't buy the castings, he'd make it out of Durabar. He figures he could get a lot of Durabar for the price of the castings. You can also get a good used toolpost grinder for 1/3 the cost of the Quorn castings.

Larry also feels that people don't give their bench grinders enough respect and don't dress them nearly enough to keep the wheels sharp and cutting. Conventional wisdom says to pick a wheel that wears at the same rate it dulls so it's always sharp. With modern wheels if you dress as often as you should they don't wear. Use a cbn dresser and the wheel cuts nice. If you are using a diamond point to dress your wheel the rate you traverse the diamond across the wheel makes a big difference.

How does Larry dress his wheels? He uses a cbn stick by hand, or if he's using a diamond point he puts it into the work holder. The diamond in the holder makes it easy to get the profile you want on the wheel. It also makes a big mess. For bench grinders he likes the star wheel dressers are the greatest.

You can do things with a proper commercial Tool and Cutter grinder that you can't do with the Quorn.

Quote of the month, from Geof Brown's wife when he was complaining to her about how many hours he had spent making something for his shop. "It's a hobby - it's supposed to take a long time."

Tips and Techniques
by Ed Kingsley

... Mine is Just to Tap and Die

A colleague recently purchased a Tapping Machine from *Harbor Freight*. You may have seen this in an *HF* flyer recently. They resemble the 8" Drill Press everyone seems to be selling these days. I would guess that they are built on the base and column of one, and throw in the table.

The head of the unit, however, is definitely not a drill press. It consists of two pulleys, one on either

side of the column, one connected to the motor by a belt and the other an idler; and two clutched pulleys, both attached to the spindle, one above the other and separated by about 4".

A second belt runs over the drive pulley, foreword, and around the top spindle pulley. From there it heads back and circles the idler pulley. Then, it heads front again, winds around the lower spindle pulley and returns to the drive pulley. The pulley and belt arrangement is reminiscent of turn-of-the-century drill presses, and moebius strips.

The machine has a two-speed-by-pulley setup. The tapping capacity of the unit is specified as 1/4" and taps are gripped by a 1/4" capacity, keyed drill chuck. Surprisingly, throughout the use I gave it, the tap never once slipped in the chuck, but the clutches may have prevented that.

In use, one of the spindle pulleys drives the spindle counterclockwise - until you lower a tap into a hole. At the point of engagement, the other clutched pulley engages and the rotation reverses to drive the tap into the hole. If you stop the downward pressure, or reach the "stop", the spindle reverses again and the tap backs out of the hole.

Despite it's slightly "clunky" look, the 123 pound unit performs quite well. It IS Chinese, so a few "adjust-ments" are usually needed. In this case, a new belt was fitted after the OEM one slipped its surly bonds one too many times. But, other than that, it works as advertised.

I have used the unit to tap #4-40 holes in aluminum and 1/4" x 20 holes in 316 SS. The later holes were tapped with a "formtap", which requires considerably more torque than 'cutting' style taps, and I did not notice any sign of strain on motor or tap. It just went in, circled a few times, and came back out, as direct-ed. A few dozen #10x24 threaded holes in mild steel were just as uneventfully satisfying.

After using the machine for a couple of weeks, I used a Tapmatic Tapping Head for a few holes that were a little deeper than the Tapping Machine liked to go, and decided that I preferred the machine to the Tapmatic. The machine has a specified range of 1 7/8", but I've found that 1 1/2" is pushing it. Some-times it will, and sometimes it won't, make it all the way through. But, how often do you thread a full 11/2", anyway? Requires a special tap, also.

I've got four tapping heads, including a Procunier, and a Tapmatic, but I'm thinking seriously about plunking down the $239 for this little devil, too, when it goes on sale. You can have a look at it @

http://www.harborfreight.com/cpi/taf/DisplayItem.taf?ItemNumber=38431

Sending a Parallelogram

I was feeling a bit sorry for myself, the other night, because I had to measure some work carefully, and that meant using an 8-9" micrometer. Now, you may have read, here, that I favor micrometers, but I will admit I do have some problems with the larger sizes. Getting the faces aligned on the work, in two axes, often takes a "bit of doing" (or other dumb homily).

Anyway, I was attempting to measure the length of long narrow bars, that I was machining on parallels, and it occurred to me that, if I put a parallel at each end of the bar, perpendicular to it, I could then rest the micrometer anvils on the parallels, and reduce my alignment problems by at least one axis.

Oddly enough, it worked. Bringing all the faces into alignment now only required a clockwise, anti-clock-wise movement, in the plane of the parallels.The parallels also supported the weight of the heavy micrometer and made the job considerably easier. Even I was impressed. I would expect that this tech-nique would also work equally well with calipers.

Do not walk behind me, for I may not lead.
Do not walk ahead of me, for I may not follow.
Do not walk beside me, either.
Just leave me the hell alone. - Ed

Search Lite

I don't know whether it's failing eyesight or just plain senility, but I seem to be having more trouble finding things lately. It's not a memory problem, though God knows, I think I ... "I'm sorry, what was the choice of vegetables again?"

It seems to be related to the way I look for things. I picture the object that I'm looking for, in my mind, and search to match that image. I've discovered that I can look right at the target object, even several times, and still not "acquire it". Why? I'm not certain, but I suspect that when I picture the missing object, the image I see is in a particular spatial orientation. When I concentrate on that image, and search, only seeing the object in the same orientation seems to trigger the "gotcha" response. If I find it upside down, or sideways, I usually don't "see" it.

I've tried being less "object" and more "attribute" oriented instead, looking for a particular color, or concentrating on a unique aspect, like a curve or texture. I've only tried this in the past couple of weeks, but I do believe it works better.

"So, I believe I'll just have the salad, with the dressing on the side. Thank you."

It may be that your sole purpose in life is simply to serve as a warning to others. - anon

It All Hinges on This

I have acquired several measuring instruments with nice (OK, or not so nice) wooden boxes in various stages of decomposition. Sometimes there are screws missing from the nice little hinges. One gone is unsightly, but workable, but when 2 or more are missing from one hinge, lids can get a bit sideways and instruments may, thus empowered, honor and obey the laws of physics. I hate that.

I know, a couple of rubber bands .... but they tilt the pile. The screws are really small, #2 or #3 would be my guess. #4's are too large for the holes in the hinge, although they do fit the gaping holes left by the screws. I don't have any #3's, so I can't try them for fit. #2's fit the hinges pretty well, but bang around like clappers in the old holes.

My first thought was to fix a couple of #2's in the holes with something appropriate, like "Gorilla Glue", but it just wasn't an HSM solution. Then I thought of Helicoils, and cracked myself up when I pictured tapping holes in 'wood'. But then I thought, "it's *hard* wood, right?, and besides, who would ever know?" So I got out the iddy-biddy tap for a #2-56 insert and threaded away.

To my great relief (amazement) the tap "took". I was further astounded when the Helicoil insert screwed in, straight and true. But, I admit that I was astonish-ed when I broke off the tang and the insert didn't punch right through the side and fly out into the box! Simply amazing! So, fellow box owners, this does work, at least for me, and is definitely worth a try, especially if you can borrow the insert tool and tap.

I would hazard a guess that you might also enlarge the existing hole, and epoxy in a threaded insert for the appropriate size of screw. Said insert can be made by you, or purchased from the Reid Tool Supply Company (#2-56 = item number EZ-202 @ $.18 ea.). They have no "minimum charge".

Gravity...It's Not Just a Good Idea. It's the Law

- I. Newton

Classified Ads

Howard Evers would like to talk with anyone who has had any experience making or repairing pocket knives. Also, does anyone have a (workshop) oven suitable for heating/bending plexiglass?? Please call Howard Evers at 508-987-0654.

Free Lathe. About 9 by 36, Old Flat Belt LeBlond Lathe. On a skid in a walkout cellar, no stairs. Nate Flood, 23 Beacon St. Mattapoisett, MA 02739 -- 508-758-2137

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newsletter of The New England Model Engineering Society
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