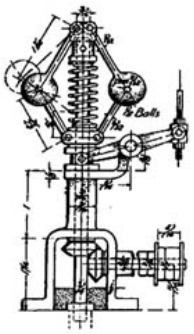

The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 152 Dec. 2008

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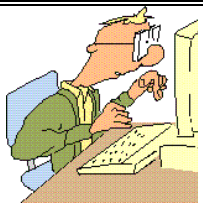


Editor's Desk

Frank Hills

Hi folks! Sorry, but the editor has to take time out for a business trip. My writing is bad enough without it being rushed, so next month you'll get:

Making a Computer Chip With a Handsaw!

This month you get stuff that's much better! See you at the January meeting!!

Next Meeting

Thursday, Dec. 4, 2008

7:00 PM. Meetings held at:
Charles River Museum of Industry
154 Moody Street
Waltham, Massachusetts

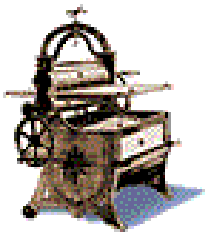
Membership Info

Annual dues of $25 (via checks made payable to "NEMES" and mailed to our membership secretary) for the calendar year are due by December 31st of the prior year.

Missing a Gazette? Send mail or email to our publisher.

Addresses are in the left column.

Contents



NEMES Gazette Editorial Schedule

Issue	closing date for contributions
Dec. '08	Nov. 21, 2008
Jan. '09	Dec. 24, 2009
Feb. '09	Jan. 26, 2009

President's Corner

Dick Boucher

Next Meeting:

Note: December meeting to be held in the Appleton Room!

Steve Beckwith is the owner of "Beckwith Strings" a company established to hand-build and repair, fine acoustic guitars and stringed instruments. In late 2007, Beckwith left a twenty-five year career in the semiconductor industry to focus on developing a market for his hand-built instruments. Besides building guitars, he is an experienced guitarist whose repertoire ranges from bluegrass music to jazz. Beckwith and his partner Don Hooper, can be found playing at local venues throughout central Massachusetts and have just recently released their first CD of country-folk music.

Beckwith will be presenting the steps he takes to build traditional acoustic guitars and the characteristics of different tone woods used in the construction of these instruments. He will also provide a hands-on demonstration on his evaluation techniques for the selection of a particular wood type when building his guitars and will bring some of his most used tools.

Beckwith is also an amateur astronomer and is currently the president of the Amateur Telescope Makers of Boston. He lives in Bolton, MA with his wife Jan and their four cats.

Miscellaneous Ramblings

The big ramble in this issue is the Cabin Fever trip in January. This is the only time I have to write to you and ask you to send your check for $150 for the bus to Dick Koolish and then call the Motel 6 in York at 717-846-6260 and reserve your room from the block of 25 that we have reserved. Reference the New England Model Engineering Society Cabin Fever Expo Trip to receive the rooms at the discount rate of $41.99 + tax. Please get to this now to save Norm and myself a lot of worrying.

Winter seems to be closing in on us rapidly, so I now have been able to spend some time in the shop on model work. Unfortunately, around 9AM it has warmed up enough for me to consider going outside and addressing this year's bumper crop of leaves. Fortunately, that is almost done, so there is only more firewood to cut and split before the snow flies. Then I will be able to spend the days in the shop, with a nice wood fire going, enjoying model building.

I have made considerable progress on the P.M. Research horizontal engine that I purchased at Cabin Fever, and am sure I will have it completed for that show and our own show in February.

Dick B.

Shop Tips

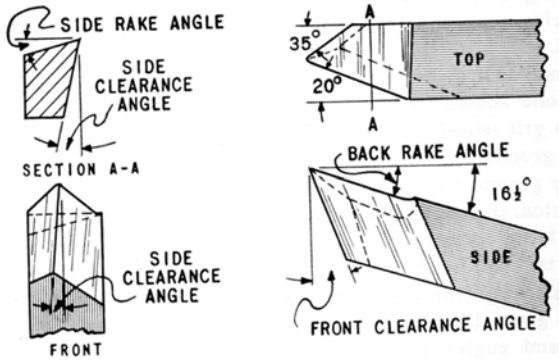
Lathe Threading and the Deadly Helix Angle

Most of the threads we deal with are 60 degree vee-threads with flat tops and flat bottoms. What follows applies to all threads, but will use these 60 degree threads as an example.

If you need an odd-size thread or a thread in an unusual place, you may choose to cut the thread on the lathe with a single-point tool. If you're a glutton for punishment like me, you will attempt to grind your own single-point threading tool. This article discusses the angles of such a tool, and explains why there are so many different threading tools.

First, the obvious: a single-point 60-degree threading tool will have a 60-degree point. But that's not all you need to know. If you've shaped your own

lathe tools, you know that lathe tools need different rake and clearance angles. Clearance is required so that the tool doesn't rub against the work. Rake directs the chip. Here's a sketch of a generic cutting tool, showing angles. Note that this is not a threading tool.

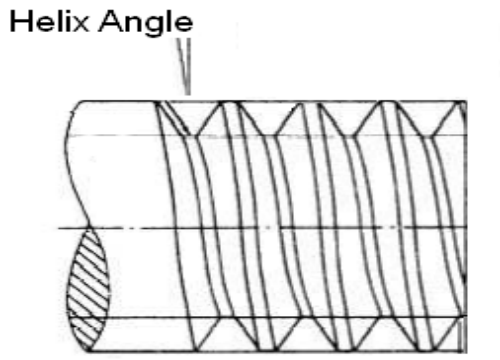


My Atlas lathe manual gives these recommended tool angles:

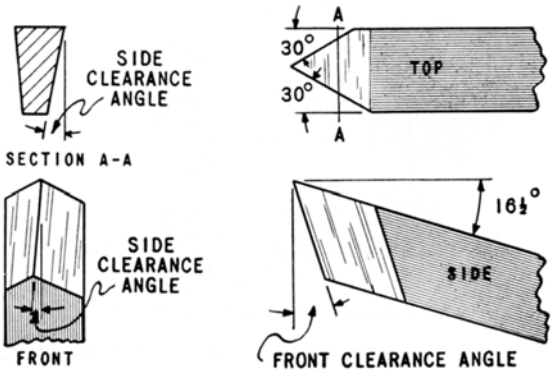
	Side clearance	Front clearance	Back rake	Side rake
Mild steel	12	8	16.5	14
Tool steel	10	8	8	12
Cast iron	8	10	5	12
Stainless	10	12	16.5	10
Copper	12	14	16.5	20
Brass	8	10	0	0
Aluminum	8	12	35	15

For threading, we often compromise on the rake angles, but still must deal with the clearance angles. So if you are going to grind your own degree threading tool, you need the 60-degree point angle and the correct clearance angles. In addition, you have to consider the helix angle.

A screw thread is different from a groove or notch because it is a spiral, not a simple circle. In this sketch, the threads are leaning, not straight up and down:



This "lean" is the helix angle. Because of this lean, one side of the threading tool must have more side clearance and the other side needs less, as shown in this drawing:



The side clearance is more on the right for a right-hand threading tool and more on the left for a left-hand threading tool. Machinery's handbook tabulates the helix angle for different thread diameters and pitches. Here are a few representative values:

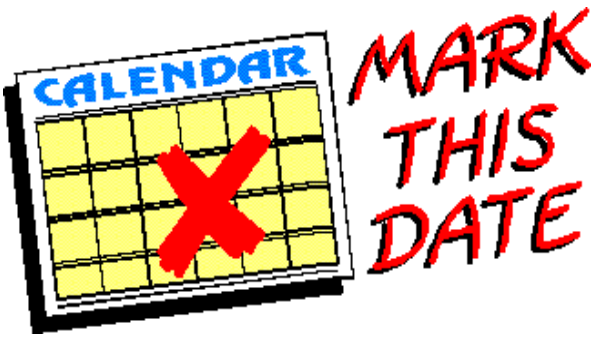
	Threads per Inch						
OD	32	26	22	18	14	10	6
3/16"	3°-24'	4°-19'	5°-14'	6°-40'			
1/4"	2°-29'	3°-7'	3°-45'	4°-44'	6°-22'		
3/8"	1°-36'	2°-0'	2°-24'	2°-59'	3°-57'		
1/2"	1°-11'	1°-29'	1°-46'	2°-11'	2°-52'	4°-11'	
3/4"	0°-47'	0°58'	1°-9'	1°-25'	1°-51'	2°-40'	
1"	0°-35'	0°-43'	0°-51'	1°-3'	1°-22'	1°-57'	3°-24'
2"	0°-17'	0°-21'	0°-25'	0°-31'	0°-40'	0°-57'	1°-36'

So, one threading tool is not ideal for all threads. You want a different point flat for each thread size, a different set of clearance angles for each material, different side clearances for different pitches, and to make things even worse, the side clearance angle is different for left-handed and right-handed threading.

But there is a happy ending to this story. For routine shop work, you don't need the ultimate in productivity, the ultimate in strength, the ultimate in tool life, or the ultimate in precision. You may be able to manage with free-machining materials so that the angles are less critical. I recently ground a "universal" 60-degree threading tool that seems to work well for me. It has no back rake and 14 degrees of side clearance on both sides. The nose is almost perfectly pointed, with just a slight rounding for strength. I was able to use this tool to

cut a very nice ½-12 left-handed nut, and believe it will work as well for many other threads as long as the material is not too demanding.

Bob Neidorff



Remember all! Your dues are due!!

Steam Man of the Prairies.

BY EDWARDS ELLIS,

CHAPTER X.

WOLF RAVINE.

DURING the absence of Baldy Bicknell in search of the steam man, neither Mickey nor Ethan had been disturbed by Indians.

They had worked unceasingly in digging the gold mine to which they had gained access through the instrumentality of the trapper. When they had gathered together quite a quantity of the gravel and dirt, with the yellow sand glittering through it, it was carried a short distance to the margin of the river, where it underwent the "washing" process.

While thus engaged, one of them was constantly running up the hank, to make sure that their old enemies did not steal upon them unawares. Once or twice they caught sight of several moving in the distance, but they did not come near enough to molest them doing nothing more than to keep them on the *qui vive*.

There was one Indian, however, who bestrode a black horse, who haunted them like a phantom. When they glanced over the river, at almost any time, they could see this individual cautiously circling about on his horse, and apparently waiting for a chance to get a shot at his enemies.

"Begarrah, but he loves us, that he does, as the lamb observed when speaking of the wolf," said Mickey, just after he had sent a bullet whistling about their ears.

"Jehosiphat! he loves us too much!" added the Yankee, who had no relish for those stolen shots. "If we

ain't keerful, there'll be nuthin' of us left when Baldy comes back—that is, if he comes back at all."

This red-skin on his black horse was so dangerous that he required constant watching, and the men could perform only half their usual work. It was while Mickey was on the lookout for him that he caught sight of the steam man coming toward him, as we have related in another place.

So long as that personage was kept puffing and tearing round the vicinity, they knew there was no fear of disturbance from the treacherous red-skins, who were so constantly on the alert to avenge themselves for the loss they had suffered in the attack; but it would hardly pay to keep an iron man as sentinel, as the wear and tear in all probability would be too much for him.

After consulting together upon the return of Baldy, and after they had ridden behind the steam man to their heart's content, they decided upon their future course. As the boy, Johnny, had no intention of devoting himself to manual labor, even had he been able, it was agreed that he should take upon himself the part of sentinel, while the others were at work.

In this way it was believed that they could finish within a couple of weeks, bidding good-by to the Indians, and quickly reach the States and give up their dangerous pursuits altogether, whereas, if compelled to do duty themselves as sentinels, their stay would be doubly prolonged.

This arrangement suited the boy very well, who was thereby given opportunity to exercise his steam man by occasional airings over the prairies. To the east and south the plains stretched away till the horizon shut down upon them, as the sky does on the sea. To the west, some twenty odd miles distant, a range of mountains was visible, the peaks being tinged with a faint blue in the distance, while some of the more elevated looked like white conical clouds resting against the clear sky beyond.

From the first, young Brainerd expressed a desire to visit these mountains. There was something in their rugged grandeur which invited a close inspection, and he proposed to the trapper that they should make a hunting excursion in that direction. "No need of goin' so fur for game," he replied, "takes too much time, and thar's sure to be red-skins."

"But if we go with the steam man we shall frighten them all away," was the reply.

"Yas," laughed Baldy, "and we'll skear the game away too."

But we can overtake that as we did the poor Indian the other day."

"Not if he takes to the mountains. Leastways yer isn't him that would like to undertake to ride up the mountain behind that old gintleman."

"Nor I either, but we can leave the wagon when we get to the base of the mountain."

"And give the reds time to come down and run off with yer whole team."

"Do you think there is danger of that?"

"Dunno as thar be, but ef they catched sight of yourself, they'd raise yer ha'r quicker'n lightning."

Seeing that the little fellow was considerably discouraged, Baldy hastened to add:

"Ef you're keerful, younker, and I b'lieve yer generally be, take a ride thar yerself, behind yer jumping-jack, but remember my advice and stick to yer wagon."

Having thus obtained permission of the hunter, Johnny Brainerd, as may well be supposed, did not wait long before availing himself of his privilege.

The weather, which had been threatening toward the latter part of the day, entirely cleared away, and the next morning dawned remarkably clear and beautiful. So the boy announced his intention of making the expected visit, after which, he promised to devote himself entirely to performing the duty of sentinel.

"Abeout, what time may we look for you neow?" asked Ethan, as he was on the point of starting.

"Sometime this afternoon."

"Come in before dark, as me mither used to observe to meself, when I whit out shparkin'," added Mickey.

The boy promised to heed their warnings, and began firing up again. The tank was completely filled with water, and the wagon filled nearly full of wood, so that the two were capable of running the contrivance for the entire clay, provided there was no cessation, and that he was on the "go" continually.

Before starting, it was thoroughly oiled through and through, and put in the best possible condition, and then waving them all a pleasant farewell, he steamed gayly toward the mountains.

The ground was admirable, and the steam man traveled better than ever. Like a locomotive, he seemed to have acquired a certain smoothness and steadiness of motion, from the exercise he had already had, and the sharp eye of the boy detected it at once. He saw that he had been very fortunate indeed in constructing his wonderful invention, as it was impossible for any human skill to give it any better movement than it now possessed.

The first three or four miles were passed at a rattling gait, and the boy was sitting on the front of his wagon, dreamily watching the play of the huge engine, when it

suddenly paused, and with such abruptness that he was thrown forward from his seat, with violence, falling directly between the legs of the monster, which seemed to stand perfectly motionless, like the intelligent elephant that is fearful of stirring a limb, lest be might crush his master lying beneath him.

The boy knew at once that some accident had happened, and unmindful of the severe scratch he had received, he instantly clambered to his feet, and began examining the machinery, first taking the precaution to give vent to the surplus steam, which was rapidly gathering.

It was some time before he could discover the cause of difficulty, but he finally ascertained that a small bolt had slipped loose, and had caught in such a manner as to check the motion of the engine on the instant.

Fortunately no permanent injury was done, and while he was making matters right, be recollected that in chatting with the trapper as he was on the point of starting, he had begun to screw on the bolt, when his attention had been momentarily diverted, when it escaped his mind altogether, so that he alone was to blame for the accident, which had so narrowly escaped proving a serious one.

Making sure that everything was right, he remounted the wagon, and cautiously resumed his journey, going very slowly at first, so as to watch the play of the engine.

Everything moved with its usual smoothness, and lifting his gaze he descried three buffaloes, standing with erect heads, staring wonderingly at him.

"If you want a chase you may have it!" exclaimed the boy as he headed toward them.

BABY ANNOUNCEMENT!

(that's some baby!)

Larry Vance wishes his friends and acquaintances to know he has completed his 2½ inch scale model of the locomotive Breckenridge. The original engine was built by the Mason Machine Works of Taunton MA in 1879-1880. The original engine was delivered to the Denver, South Park and Pacific Railroad in Colorado in the spring of 1880. It was part of an order for Mason Bogies that totaled 23 locomotives. Only the Boston, Revere Beach and Lynn narrow gauge in Boston had more Bogies; 31 engines operated over the years 1873-1928.

The model was completed in early October after a 14 year gestation. It is being bench tested on air at this time. The engine operates correctly in both forward and reverse. This indicates the initial valve settings are close to correct. The Eames vacuum brake system operates on air, applying the brakes. (The Eames system was the brake system supplied with the Mason Bogies). Although it only pulls 10 inches of mercury on air, it should do better on steam. All significant air leaks have been corrected. A few seepage leaks will have to be tolerated. The steam-pressure gauge has been checked against a test gauge. Both safety valves are in place and working.

A few statistics: The model is eight feet long and weighs an estimated 1200 pounds (wet). The engine is built to IBLS standards for 7¼ inch gauge. The steel boiler was built to the ASME boiler code by Steam Age USA in Texas (my welding is not up to pressure vessel standards). I machined and fabricated all of the other parts of this locomotive including slightly over 250 castings. The castings were supplied by Ulin Locomotive Works of Broomfield Colorado. The cylinders are 2¼ inch in diameter, driving 8 inch diameter wheels. The center

drivers are blind. The pilot truck is equalized with the drivers.

This is a scale model of the 2-6-6 Mason Bogie. The model was built using a set of drawings of all major parts reconstructed by Art Wallace of Aurora, Colorado. He reconstructed the drawings from about 150 original Mason subassembly drawings which exist in two local, Boston area museums and by examination of the one remaining Mason Bogie, the Torch Lake, at Henry Ford's Deerfield Village. Art recently (2004) published his book "Mason Steam Locomotives" for those interested in this subject. Rich Ulin supplies as-built drawings with his castings.

I consider this a "Museum Quality" model. That is, it is near enough to scale so that the average museum visitor would not notice any deviations from the original. I have made some deviations from fine scale in the interest of live steam operation and ease of construction. For instance, the main driver bearings are sealed ball bearings. These minimize maintenance and cannot be seen. As another example, I did not attempt to put in every rivet as in the original, in the model, using only sufficient rivets to make it appear realistic.

One objective of mine in building this model was to have all of the cab controls located in the same positions as on the original and to operate in the same manner. I believe I have succeeded in this. The two lifting injectors are located in the cab at the sides of the fire box. (A backup manual pump is in the tender). The blower valve is located just behind the stack and is operated from the cab by a lever which rotates the fireman's side hand rail, rotating the valve handle through a linkage near the valve. Controls for the dampers and blow down cocks are located on the cab deck. The manual cylinder drain cocks are operated from the cab with the same linkage design used on the original. The throttle and reverse levers, of course, are mounted as on the original.

I have attempted to paint this engine in its original colors. No historian, to date, has found a contemporary reference which states what colors were used. A Colorado newspaper reporter wrote, when the Breckenridge was delivered, that it was "colorful"; not particularly helpful. Many of you have seen the excellent black and white builder's photo of this engine as it has been reproduced in many books. Based on secondary and circumstantial evidence I have painted and decorated the model with my best estimate of its original colors. How I came to these conclusions is too lengthy and detailed a discussion for this note. You may have a feeling this color scheme looks familiar. It has been a common decoration scheme for commercial vehicles in the Boston area for years. The best current examples are the trucks of Casey and Hayes Movers which are often seen in Boston.

I will complete the testing of the model this winter. I will move it outside and fire it up on coal (weather permitting). This will allow testing of the injectors, manual pump and setting of the safety valves. Any tightening of the piston rod and valve stem packing glands will be accomplished under steam. In the early Spring I expect to have the model on the Waushakum track for testing its tracking through switches and curves. I am looking forward to a good year of running. See you there. Happy steaming!

Yes, for those of you with sharp eyes I have yet to paint the domes. This will be done this winter after testing is complete.

Larry Vance. (VanceLL@AOL.Com)

For Sale

Shaper Work CD

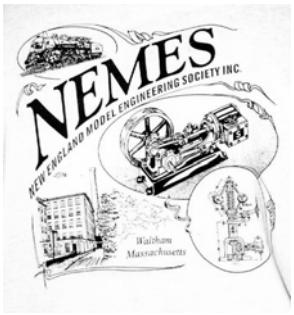
Put out in 1944 by the New York State education Department this 326 page manual is chock full of valuable tips and information on using the King of Machine tools....The Shaper. Covered is everything you need to know about the care and feeding of the shaper, use of the shaper, even how to sharpen tools for the shaper. Scanned and saved in Adobe Acrobat format. The CD now has a lot more info on it, and the price has increased accordingly. $10.00, shipping included.

Errol Groff
180 Middle Road
Preston, CT 06365 8206
errol.groff@snet.net

NEMES Shop Apron

Look your best in the shop! The NEMES shop apron keeps clothes clean while holding essential measuring tools in the front pockets. The custom strap design keeps weight off your neck and easily ties at the side. The apron is washable blue denim with an embroidered NEMES logo on top pocket.

Contact Rollie Gaucher 508-885-2277

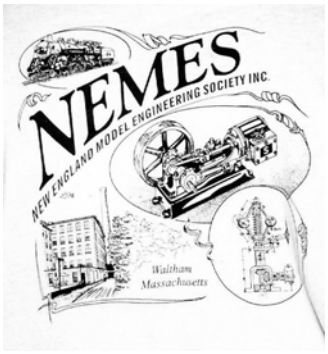


NEMES clothing

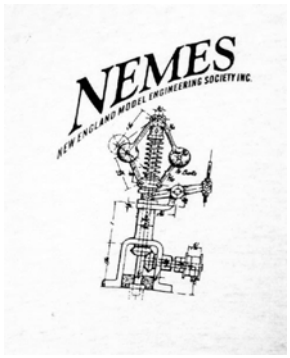
NEMES Tee Shirts

NEMES tee shirts and sweat shirts are available in sizes from S to XXXL. The tee shirts are gray, short sleeve shirt, Hanes 50-50. You won't shrink this shirt! The sweat shirts are the same color, but long sleeve and a crew neck. Also 50-50, but these are by Lee. The sweat shirts are very comfortable!

Artwork by Richard Sabol, printed on front and back:



Rear



Front

Prices:

	Tee Shirts	Sweat Shirts
S - L	$12.00	$22.00
XXL	$14.00	$24.00
XXXL	$15.00	$25.00

Add $5 shipping and handling for the first tee shirt, $1 for each additional shirt shipped to the same address. Sweat shirts are $7 for shipping the first, and $1.50 for each additional sweat shirt.

Profits go to the club treasury.

Mike Boucher
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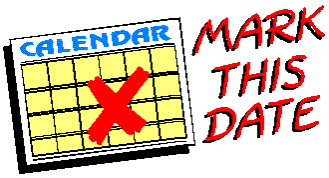
mdbouch@hotmail.com



Upcoming Events

Bill Brackett

To add an event, please send a brief description, time, place and a contact person to call for further information to Bill Brackett at thebracketts@verizon.net or (508) 393-6290.

Bill

NOTICE!!!
An apology to anyone I missed this month! I was rushed to get the Gazette done before I left for a business trip. Please forgive me. I'll get you next time!!
The editor….