

# 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 April 1, 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 thing I know I have a weakness for is books. Don Strang has passed along to me the info that Rainy Day books is having their spring sale starting on 8 April thru the 11th, 9 am to 5 pm, 603-585-3448. 35% off 1st fl % 25% on 2nd incl. rare books section. He asked me to get it into the next Gazette, so here it is.

As I mentioned at the March meeting, the Waushakum Live Steamers are having their annual auction at their regular meeting for April. It's at the Masonic Hall on Route 16 in Holliston, Thursday the 8th at 8:00 PM. Non-members are welcome and if you want to auction off some off your surplus items you can (10% commision to WLS.)

Success is great, but can cause problems. For quite a while NEMES had 100 -110 members. Getting 100 or so Gazettes folded, stapled, labeled, and then stamped represented a relaxed time at the kitchen table winding down from getting the issue put together. This issue 146 copies are going out. So, we need to start thinking about distributing these things because the volume is starting to reach the point where there are just too many to get ready for the mail for me to enjoy doing it all myself. Anybody out there want to help with the distribution of the Gazette?

See you next Thursday -- scl.

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

Meeting Thursday, April 1

For this meeting we will have one of our own members talk, and again it shows the very wide

range of interest and skill of our group. This time its John Alden, a master safecracker, and expert on time locks. John was telling a few of us some experiences at the rest stop on the way home from CabinFever show, and I thought all of the members would like to hear this. There is a lot of very interesting metalwork, and some very clever mechanical systems. dont miss this one, it should be very interesting.

For the May meeting Id like to talk about lapping, honing and other very fine fit and finish techniques. Id like to try to make this both a short talk, and demo, and a wide range show and tell session. Roland Gaucher and Larry Twaits will each talk a few minutes about some of their special techniques, and show some of the laps they have made. Id like to also see many people bring in their favorite lap, or similar tool.

As usual, lets have more of the show and tell projects, for both the April and May meetings.

### **Construciton and Parking.**

I think we are near the end of the construciton mess, both in the parking lot and inside the museum. The Internet center is operational, and the finishing touches are being put on the musuems new space. Last month I was able to park back in the old lot, and it looked like the parking structure was nearly finished. It is about time to assemble a small group to help plan a new shop layout for the museum. I need a couple volunteers for that!

### **Auctions and Tool disposal.**

At the last meeting Max ben-Aron asked about the chances of our club holding an auction. Then, just a few days later, I received a call for the daughter of a modeler that had recently died. In this case, it was a model boat builder, but he was also into machine work, and has several Sherline and Unimat lathes and the usual collection of tools. The family is looking for suggestions on how to sell these tools. This is exactly the situtation we have talked about in the past, and I have given considerable thought to how, or if, the club should attempt to get involved in this. The model boat club is considering it as well. It seems to me that it would take a significant amount of work for a group of 4 or 5 fellows to survey, sort,

catalog and prepare everything for a sale. At this time I don't know if the model boat club will want to take any action. If anyone of our members is interested in working on this, please contact me and I'll fill you in on details and we can decide if we can get involved. I will also be sure to let everyone know if a sale is eventually held.

--Ron

**Calendar of Events**

**April 1, 1999 Thur 7PM**

NEMES Monthly club meeting  
Waltham, Ma.  
Charles River Museum of Industry 617-893-5410

**April 18 Sun**

MIT Flea Market starts for the year  
Third Sunday of the month

**April 25 Sun**

Steam/Gas Engine Show  
E. Hampton CT Belltown Firemans field Rt 16  
860-267-8584

**April 23-25 1999**

North American Model Engineering Exposition  
NEMES trip to Wyandotte, MI  
Ron Ginger 508-877-8217

**May 2 Sun**

NHOPTS Show  
Dunstable MA Rt 113  
Jay Wilkie 207-748-1092

**May 6, 1999 Thur 7PM**

NEMES Monthly club meeting  
Waltham, Ma.  
Charles River Museum of Industry 617-893-5410

**May 22-23 Sat & Sun**

Cranberry Flywheelers Antique Machinery Show  
Edaville RR So. Carver MA off Rt 58 off Rt 495  
Dave Robie 781-335-5322

**May 22, Sat 9 AM 4 PM**

Chester on Track  
Large train event for whole family  
413-667-8755

**May 29-30 Sat & Sun**

Steam/Gas Engine Show  
Bernardston MA Rt 10 between 93 & 142  
Wes Ball 413-648-9450

**May 29-30 Sat & Sun 10-5**

Owls Head Flea Market

**May 31, Memorial Day**

American Precision Museum opens for 1999  
Carriage Wheels to Cadillacs  
The Journey of Henry Leland  
Winsor Vt. 10-4 S,S,Hol 9-5 weekdays

Till Nov 1st 802-674-5781

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

**Treasurers Report**

**Jan-1999 Treasurers Report**

Previous balance ----- \$2507.68  
Interest ----- 1.08  
Brush Hill Tours (Cabin Fever Bus)-1985.00  
Steve Lovely News Letter Postage -77.13  
Bus Trip Deposit ----- 1760.00  
Dues Deposit ----- 60.00  
Fred Ruland (Dues Overpayment) -- -10.00  
Bus Trip Deposit ----- 330.00  
New balance ----- \$2586.63

**Feb-1999 Treasurers Report**

Previous balance ----- \$2586.63  
Bus Drivers Room ----- -144.30  
Bus Deposit ----- 340.00  
Peterson Party (Tables for show)- -177.00  
Interest ----- 1.12  
Ron Ginger (Advertising Expense)- -59.66  
Steve Lovely News Letter Postage -100.00  
Pat Fisher (Bus Trip Refunds) --- -273.00  
Bradford Chaucer Bus Trip Refund -13.00  
Leon Schiff Bus Trip Refund ----- -13.00  
Show Concession Profit ----- 243.32  
Dues Deposit ----- 60.00  
New balance ----- \$2451.11

**Our show**

expenses were 177 + 59.66 = \$236.66.  
The profit from concessions of \$243.32 gives us a profit from the show of \$6.66.

**Cabin Fever Expo Bus Trip financial results.**

There were 23 attendees and they all paid so:

23 \* 110 = \$2530.00  
-1985.00 to Bus company  
-100.00 Bus Driver tip  
- 144.30 Bus Driver's room

=====  
\$300.70 Profit  
300 / 23 = \$13.07 refund.  
Or 23 \* 13 = \$299.

Respectfully  
Kay R. Fisher

### **The Meeting, March 11, 1999**

Ron got the meeting going about 7 PM. Just when he thinks that he's about to run out of speakers for our meetings he comes up with another one. At one of the stops on the bus trip back from Cabin Fever he ended up at a table talking with John Alden, who has made a career out of opening safes for people who couldn't get them open. He's been in the hospital so he's not at this meeting, but is okay and will be at the April meeting to talk to us about safe-cracking. Ron figures that every one of us has got a good talk for a meeting in us, all he has to do is convince us to get up and talk about it.

We've talked about lapping at past meetings, but the subject has come up a few places lately, so it's about time to have another meeting on lapping. So, the May meeting will have a lapping theme. Ron figures we can count on Roland Gaucher and Larry Twaits to bring in some lapping stuff to talk about, but if you've got some lapping experience, good or bad, bring it in to the May meeting and we can all learn a little bit more about lapping.

The NEMES email list is working again, thanks to Scott Logan of the Logan Actuator Company in Chicago. If you need literature or manuals for Logan Lathes Scott is the person to get them from.

The Waushakum Live Steamers will be holding their annual auction at their April meeting. You don't have to be a member to go. It's the second Thursday in April at the Holliston Masonic Hall on Rt 16 in Holliston Mass.

We don't have enough people interested in a bus to the NAMES show in Detroit to do a trip, but some of our members, including Ron, will be there. If your going to be there get in touch with Ron. Even if we can't get a bus trip organized we can arrange something for the people who make it out to Detroit.

John Wasser brought in some of his propane fired foundry parts again. His goal is to make the foundry out of inexpensive and commonly available materials. He's melting aluminum now, and eventually he plans to melt brass. A propane torch doesn't give enough heat. He tried the charcoal approach in the Gingery book, it works well but is messy. The propane approach is MUCH cleaner than using charcoal. With propane you can melt aluminum in your living room - he knows because he's done it.

Dave Piper's tool post is now in a usable state. He brought it in to show us, along with a couple of completed tool holders. It's based on the Hardinge

toolpost, and he has used it already. He's planning to get it case hardened, but hasn't had it done yet. The only special tool he used to build it, other than standard end mills was a 60 degree dovetail cutter. He'll be making prints available, so if you'd like to make one too let him know you want a set of the prints.

Ron Ginger got back from the Cabin Fever Show inspired to make something, but didn't feel like working on his Minnie traction engine, so he started the Kinner K-5 Radial engine from Strictly IC. He didn't read the plans all the way through before he started, so he didn't know about the correction on the cylinders. The result was that on his first set of cylinders the flange was too small for the bolt circle in the crankcase. He had the crankcase on Roly's Lagun mill to put in some otherwise complicated cuts with the CNC when Roly checked it out with the indicator and they realized it wasn't square. Ron had grabbed something that looked like an angle block, but it turns out it wasn't really. They made the block square on Roland's mill, and Ron made a second set of cylinders and a new crankcase, which is square.

The plans for the Kinner show a bunch of gears running separate cams for each cylinder. Ron didn't want to do it that way, he wanted something more typical of radial engine practice. So, he's planning on the front half of the engine being the Kinner, and the rear half being from a Morton M5. The M5 has a 3 lobed cam that runs the valves in all five cylinders. He says he hasn't quite figured out how it works yet, but he knows that Morton M5s run so it must. He figures that he should be able to make the combination engine he's building work.

Norm Jones brought in the Crankshaft for the Merry engine that he's currently building. Going strictly to scale it should have a 1 5/8" stroke, but he heard that they run better with a 1 1/2" stroke so that's what he made his crank. He made the crank from a solid piece of hot rolled steel. He put two sets of centers on it and first turned the rod journal. After that he used a horizontal cutoff bandsaw to make the cuts to remove a rectangle from either end of the blank before turning the main journals between the other set of centers, with a brace in the gap from the crank throw to keep it from flexing. He didn't have a problem with the metal opening up and moving when he made the long cuts to cut away the excess steel, but the suggestion was made that by making the long cuts before the crank journal was turned the journal might end up truer than it would have if the cuts were made after the turning was completed. Norm started

to experience a little bit of chatter just before he got the shaft down to the final size and he's planning to lap it to the final size and finish.

Don Strang has some phase convertor literature that he got during his study of phase conversion for the shop if anybody wants copies. He also says that several people told him that they were going to use rotary phase convertors to get 3 phase power into their shops so that they could "plug" their motors. You plug a motor by switching two of the phases going into it, which makes the magnetic field rotate the opposite direction and thus instantly stops the motor and starts it going the opposite way. Some motors are made to plug and others aren't. Remember that the coils are going to take the force of stopping the motor and reversing the direction. If you've got a motor that's being abused with high current and heat from less than ideal phase conversion plugging it is not going to do the insulation on the coils any good.

The main speaker for the night is new member Morgan Davis, who has built a model Gatling gun and made a study of their history and the life of Their inventor, Richard Jordan Gatling. The model Morgan brought to the meeting is from the RGG plans. It is a standoff 1/2 scale model of an 1883/1885 Model. It has 10 barrels 16 1/8 inches long and will fire .22 long rifle cartridges at a cyclical rate of 750 rounds per minute. The RGG plans call for a barrel length of 12 inches. If you make one with 12" barrels in Massachusetts they'll put you away for life. If you get a federal license and pay a \$250 transfer fee you'll be okay with the Feds. If you make the barrels over 16" you don't have any problems with legalities beyond those with a normal rifle. If you use the RGG plans check all the dimensions out carefully if you want to produce a functioning model.

Richard Jordan Gatling was the third son of Scotch Irish English farmers, born September 12, 1818. After leaving school he became interested in propelling warships. In 1835 he built a boat with a screw propeller. In 1836 he went to the patent office with it, but John Ericson had beaten him to the office and had already applied for a patent on the screw propeller. So, Gatling had built a working screw propeller before Ericson thought of it, but Ericson got the patent.

In 1838 he went into business and opened a store. Later he patented a grain drill that he manufactured and sold to farmers. They used the drill to plant 1/2 their wheat fields, broadcasting the seed in the

other half. Gatling made his money based on the increased yield for the land planted with the drill.

In 1846 he survived smallpox, seeing most of his family die from it. He then decided to become a physician in 1847 and spent two years at the Ohio Medical College. He never practiced as a Dr., he didn't trust the doctors of the day and wanted to be able to take care of his family himself. In 1854 he got married and moved to Indianapolis.

He invented a steam plow in 1857, but it was never produced because the price of grain was so low that the farmers couldn't have afforded it. In 1860 he patented a rotary plow.

By 1861 he was the county medical examiner. He was impressed by the fact that over 50% of the civil war casualties coming back for burial were dead as a result of disease, not from wounds. As a result he decided that he should build a gun that would let one soldier do the work of a hundred. Then armies could be smaller and less people would die in a war.

He worked on it in summer of 1861 and in 1862 had a demo model and patented it. The patent was for a lock cylinder that rotates with the barrel and the patent was so well written that no one else was able to make a similar gun that didn't violate the patent. The first gun fired 200 rounds a minute and gas leakage was a problem. The second 1862 model used copper cartridges that solved the gas leakage problem. He was unable to sell the gun to the US Army because General James Ripley was opposed to any weapon that was capable of more than a single shot because he thought the soldiers would use too much ammo.

He did sell some to General Butler of the Mass. Volunteers for \$12000 - pretty incredible sum in the 1860s.

By 1863 enthusiasm for the war was waning in the North, and for the first time conscription laws were passed. For \$300 you could buy yourself out of the draft. It was unpopular and from July 13th to July 16th 1863 there were the Draft Riots in New York City. The New York Times came out for the Draft and was pro-war, making it a target for the rioters. They put two Gatling Guns in the lobby firing out the doors with a third on the roof. The rioters took note of the firepower and went elsewhere, leaving the Times building alone. The Gatling Gun had done its job well, defending the building without ever firing a shot.

In 1868 the first Gatling gun with a bolt, striker, and chamber for each barrel was produced. It was available chambered for .58 caliber rimfire or 1"

Gatling. Gun, carriage, and ammo weighed in at 650 pounds. Gatling sold guns all over the world. In Russia they are known as Gorloffs because the inspector, named Gorloff, stamped his name on every one he approved. It was the only Cyrillic on the weapon and that's what the Russian soldiers could read.

The gun was manufactured in Hartford by Colt, and Gatling moved there to be near the production. The Gatling Co. was incorporated in Conn. in 1874.

Feeding the gun was a major problem, it could consume rounds a lot faster than they could be readily supplied to it. In the 1870s everything was single shot. (Lever action rifles were an exception, but they used tubular magazines unsuitable for a Gatling guns appetite for shells.) The Mauser bolt action with clip feed didn't come out until the 1890s. There was no technology suitable for feeding them. 1872 saw the advent of a drum feeding device. It held 20 stacks of 20 rounds. After firing 20 shots the whole drum needed to be lifted and turned into the next position for the next 20 rounds. It was heavy, bulky and awkward.

Ackley's positive feed wasn't. It held 250 rounds in a spiral track, pushed along by a gear driven propeller. They were fragile, difficult to load, and highly prone to jam. They do look really good sitting on top of the gun though, so they're the magazine you usually see in Western Movies.

Most of the Ackley's positive feed systems were replaced by the LF Bruce two slot feed. This had two slots to hold the heads of the shells as they moved down into the gun by gravity. The two slots were pivoted so that the heaviest side lined itself up with the feed. In use the loader would rip the top of a box of cartridges so that the rims were exposed, slide the rims into the slots, and throw the box. With the loader working at it he could keep the Bruce loader full of cartridges as the gun was continuously fired. The black powder was a problem in that it tended to foul the barrels, but with ten barrels the fouling problem was only 10% of what it would have been with only one barrel.

An oscillator to sweep the gun over a 12 degree field of fire was geared to the crank. The result was that at 1200 yards the gun continuously swept a 62 foot wide area. In 1883 the geared crank was changed to a direct crank, raising the gun to a 1500 round per minute cyclical rate of fire. In 1893 Gatling patented an integral electric motor to power the gun. This was capable of 3000 rounds per minute and was water cooled. The only place in a battle with

electricity in the 1890s was on a ship. The Navy tried them but didn't have a need. None of the positive feed systems really were, and it was many years till feeding was truly satisfactory.

In the early 1900s firearms turned a corner with the advent of smokeless powder and better steels. Maxims short recoil system, where the bolt and barrel both moved by recoil to cycle the lock and John Browning's gas operated machine gun came onto the scene. Single barrel full automatic weapons became practical. The 1903 and 1906 models were the last Gatling Guns bought by the US Army, and in 1911 they Army declared the Gatling obsolete.

In 1891 Gatling became the first president of the American Society of Inventors. He was active at this till his death at 84. In WWII Gatling was remembered by the US Navy when they name a Destroyer after him.

At the end of WWII the Browning .50 caliber machine gun was up to 1200 rounds/minute. With jet fighters coming onto the scene closing speeds were way up and more firepower was needed. The F 50s in an F86 could shoot 120 rounds/second. It wasn't enough, and the .50 caliber round wasn't heavy enough to meet the need.

In 1945 Col. Rene Studley did a study on automatic weapons to determine the best way to meet the need for increased firepower for jet fighters. In June of 1946 General Electric got the Vulcan project. GE engineers visited the Springfield Armory where they inspected an original Gatling gun. The result was the Vulcan, standardized in 1956 at 6000 20mm rounds per minute.

The A-10 airplane was designed around the GAU-8A gun. It fires a 30mm round with 75000 ftlbs of muzzle energy. The gun appears to be offset in the plane. It's to line the firing barrel up with the planes centerline to keep from slewing the plane when the gun is fired. An extended burst from the gun can slow the plane enough to cause it to stall, and the engines igniters are automatically switched on when the gun is fired to keep the exhaust from putting out the flames. The gun has a low speed and a high speed. Low is with one 35 HP hydraulic motor turning the crank. High speed uses two motors.

The 7.65 mm Gatling MiniGun fires 7000 rounds per minute. A suitcase size magazine of 1200 rounds of link belted ammo lasts about 20 seconds.

The Phalanx Anti Missile ship defense system is a 20mm Vulcan cannon with radar control. It puts a

hail of metal into the path of the incoming missile and to destroy it, and it works.

In the original Gatling period the US Army didn't really know what to do with the gun. During the Indian Wars a sergeant understood the gun and arranged to use it in an ambush on the Apaches. It wasn't pretty and after that the Apaches were extremely reluctant to attack troops equipped with Gatlings.

It was also used at San Juan Hill by a Lieutenant known forever after as Gatling Parker. He moved the Gatlings right up the hill behind the troops, providing close support and keeping the Spaniards heads down. He expended 18000 rounds going up the hill, then turned the guns around to keep the Spanish from retaking the hill.

During the Viet Nam war some armored personnel carriers were equipped with the 7.65mm Gatling MiniGun. Gatling equipped weapons carries was attacked once.

If you plan on building a Gatling gun, don't even think about making your own barrels. Buy them from Gun Parts Co. - it'll cost you less than the steel to make them yourself and they'll be ready to go. He built his to the RGG plans, and at the time didn't have a mill so he was making parts on borrowed time at a friends shop. He made the parts to the plans and when he went to put things together he realized that he had lot's of problems. It wouldn't take much to improve on the RGG plans.

The critical dimension in the gun is the bolt length, so that the head spacing is the same for all 10 barrels. This brings up a quote from Roland Gaucher (suggested here by Max ben Arron) "Making one to the drawing is easy, making ten the same is what's hard."

After the meeting Gene Martha asked me a question. He said he'd asked a bunch of people at the meeting and didn't have an answer, so here it is. Does anybody know exactly what Varsol is?

## TIPS AND TECHNIQUES

**Ed Kingsley**

### CENTER DRILLS - THE REST OF THE STORY

In addition to the eight sizes I listed last month, here are a few more for the adventurous amongst us:

Size	Tip dia.	Body dia.
00000	.010	1/8
0000	.015	1/8
000	.020	1/8
00	.025	1/8
0	1/32	1/8
1-8 ....	see last month ....	
9	11/32	7/8
10	3/8	1

The "0" series is obviously useful for starting very small drills, down to a #80 (.0135"), in fact. Numbers 9 and 10 are probably somewhat elephantine for HSM purposes. Then, so is #8, but, it's useful to know they're out there, if we should ever need them, or just want to complete our set.

Get them and use them, or display them, you will be glad you did.

There is a "Long (body) Series" of centerdrills, with #1's ranging from 3" - 6" long, up to #8's @ 6" long. These are very useful in conjunction with jobber length drills, when your quill travel is limited, and/or when you need to set a stop for the drill depth, and using a standard length center drill would require you to undo the stop in order for the centerdrill to reach the workpiece.

Center drills are available in plain, bell and radiused points. In addition to starting holes for drills, centerdrills are used to centerdrill the end of work turned between centers ( ergo CENTERdrill ). Plain and bell points can be, and are used for this purpose, but the radiused end centerdrill forms a curved hole, which is more suitable for spinning on a fixed, or "dead" center. Since the center only rubs against the hole at one point, rather than against the surface of the entire length of the hole, any discrepancy in axial alignment is minimized, and running friction is reduced.

### TRUE GRIT

You wouldn't buy used sandpaper, would you? Then why hang onto and use the same sheet over and over again, until it falls apart? Sandpaper generally has a pretty short lifespan. This is especially true when you're sanding soft materials, like aluminum, plastic and brass. A few swipes over these materials, the paper's loaded and little if anything is coming off from that point on. But, some of us just rub a little harder - or faster, as if that will somehow encourage the gookum to fall off, or persuade the abrasive to try harder.

A few issues back, I suggested cutting up your Scotch-Brite pads into manageable little pieces, then

using them once and throwing them away. I'm now suggesting that you think about doing the same thing with sandpaper. Good sandpaper is expensive, and it's often difficult to use effectively in full sheets. This usually means that much of it is wasted. On the other hand, if you divide the sheet into smaller pieces, you can maximize its application to the workpiece. Then, throw it away, it's done its job, and now it's dead.

Cloth-backed abrasive sheets are probably the easiest to divide into smaller pieces, and can be ripped into narrow strips for getting into narrow spaces. They're very strong, and hold up well in lathe work. We all know sanding is a terrible thing to do to on our lathes, and we sometimes just go and do it anyway (!) But, we always lay some oil dampened cloth over the ways, and clean up very well immediately afterwards, don't we? Well, we should .....

I finally put a couple of these concepts together, and bought a roll of 1 1/2" wide, BLUE GRIT UTILITY CLOTH, from 3M, in 240 grit. Now I only have to rip in one direction. Very efficient. These rolls are available in several widths and numerous grits, and of course can be ripped into narrower strips if required. The point is that waste is minimized and use is maximized. How often do you need to use a full sheet of sandpaper, in one go? If the answer is, "Geez, Ed, now that you've brought my attention to it, I'd have to say really not that often", then rip 'em up - throw 'em away.

Tip: A little cutting oil can slow down the 'loading' process, and produce a finer finish.

#### SPACE FOR SALE

Harbor Tools (not to be confused with Harbor Freight) has a set of Space Blocks on sale, through March, for \$29.95 (This is as inexpensive as I've ever seen a set advertised). These are 36 piece sets of hardened steel cylinders, about 3/4" in diameter, in thicknesses from .050" to 1". They have a threaded hole through the center and can be joined, with the included (4) studs, to make up stacks of varying heights. The smallest incremental variable is .001", and (2) 1" blocks are included. The ends are lapped and polished, and they can be "wrung" together, but if you are moving them around, I'd use the studs.

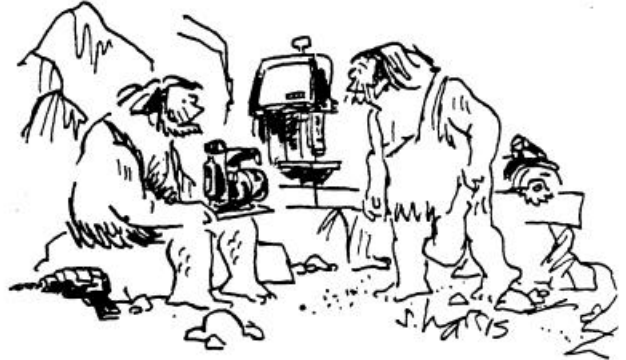
The blocks are accurate to +/- .0001" and, in many instances, can be used for reasonably accurate layout work, normally done with Gage Blocks costing many times more. More common uses are to make up spacers (hence SPACE blocks) for offsetting tools, or work, setting up sine bars, or to set a depth stop for the mill or drill press. This is the sort of tool you keep finding new uses for.

Harbor Tool: (Showroom) Westwood & (Pickup Point) Woburn, MA - (800) 443-4432

Warning: Use may lead to experimentation, and possible dependence, on other tools, such as Gage Blocks and Pin Gages.

#### PRODUCTS NEEDING JUST A BIT MORE R&D

- 1) Solar Powered Flashlight.
- 2) Smoke Alarm with 'snooze' button.
- 3) Inflatable Dart Board.

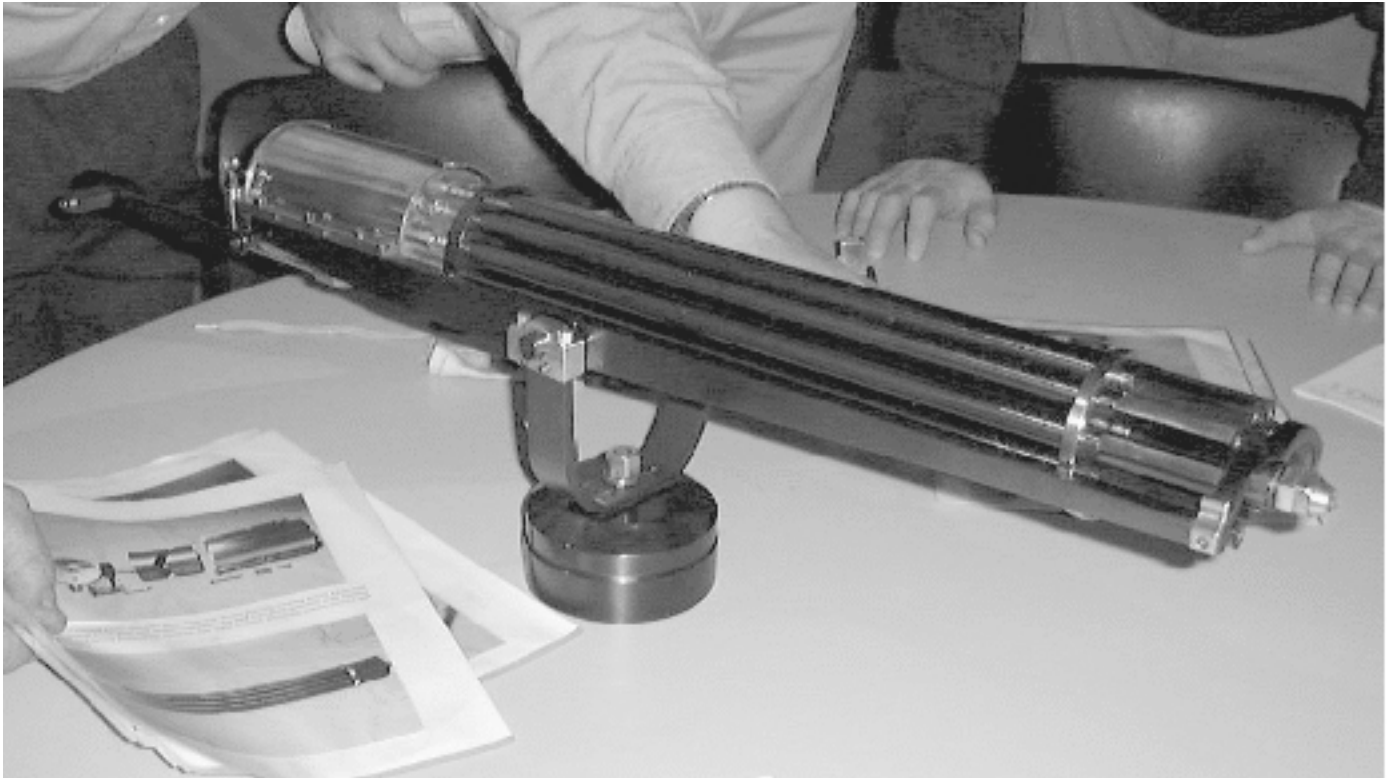


*"What distinguishes man from the lower animals is the ability to make tools."*

--Ed

#### Overleaf:

Here's the Gatling Gun that Morgan Davis built using the RGG plans as a guideline and brought to our meeting to illustrate his talk. He suggests that if you attempt to build one from the RGG plans that you check all the dimensions VERY carefully.



*The NEMES Gazette*

c/o Stephen C. Lovely  
Post Office Box 277  
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newsletter of **The New England Model Engineering Society**