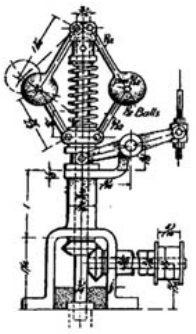

The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 176 Dec. 2010

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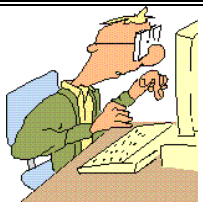


Editor's Desk

Frank Hills

Float Your Boat

Master And Commander is one of my favorite movies. It's the 1800s and England is at war with Napoleon's France. The hero Captain of an 18 gun English Frigate finds himself defending his aging ship against his own crew who believe themselves outclassed by a much large French pirate. "Certainly she's not an aged vessel" he says as he runs his hand over the shattered remains of his personal toilet. "She's quick, has a bluff bow. She's still in her prime!" The comment about the bluff bow caught my attention. In his time, a bluff bow kept the ship from diving into waves and swamping itself. It also causes tremendous drag. Today they do the same thing with flare, the expansion of the ships hull from the water line to the gunnels. Exaggerated at the bow, a ship running into a wave experiences an increase in buoyancy as it cuts deeper into a wave. But at the waterline, you have a sharp, slicing edge and reduced resistance. Of course, the Captains frigate was cutting-edge technology when it was built.

–Continued on page 2

Next Meeting

Thursday, Dec, 2 2010

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

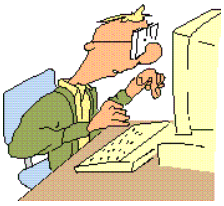
Membership Info

New members welcome! Annual dues are $25 (mail applications and/or dues checks, made payable to "NEMES", to our Treasurer Richard Koolish, see right) Annual dues are for the calendar year and are due by December 31st of the prior year (or with application).

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

Addresses are in the left column.

Contents



Editor's Desk

-continued from page 1

But then again, so were hollowed out logs. Boy, have things changed!

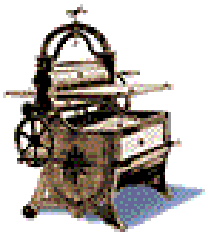
Rather than try to explain how and why ships designs changed over the millennia, I thought I'd share some of the stories recorded by nautical historians which have inspired some of these changes. For example…the need to understand a hulls center of gravity.

It's the late 1500s and England's Admiralty is very impressed with the many recent successes of English, French, Spanish, Portuguese and Danish flotillas to explore distant lands and spread colonial power. But experience has shown the need for larger ships with more firepower to defend these armadas so far from home. An experienced Navel architect comes forward with a plan for a new breed of ship specifically designed to extend English power. Compared to it's contemporaries it is huge, with three decks of the most powerful guns available. It could be the terror of the new world. Once completed and rigged, it pulled away from the dock crowded with cheering spectators and Nobility. Spreading its wings of sail cloth and picking up speed it entered the harbor where there was room to run…and turn over…and sink with all hands. All of those marvelous cannon made the ship top heavy and it took less than a minute to disappear beneath the waves. The architect went down with his creation. Maybe he would have done better to design a faster ship, able to run away instead of fight…but maybe not.

The east coast of the US is a wonderful place for boat racing. Late in the 1800s, clipper ships were made famous by their grace and speed. Every year there was a race of these beauties that formed the basis of our present "tall ships" events. Merchant ships from all over would come to race from one predetermined port city to another. It would become a market driver for many local industries and a great deal of money was involved. The winning ship would receive a sizable prize. Some wealthy ship owners started to cheat a little. Rather than running their merchant ships as has been done in the past, several would have special boats built. Sleek and massively canvassed, they made the more traditional competitors look like fishing scows. That is, until the starting cannon sounded. These thoroughbred beauties spread their massive sheets to the wind and heeled so much their leeward gunnels submerged and the crew had to hold on for dear life. The "scows" literally blew right past them. With their broader beams, the older ships had the ability to resist heeling in a stiff breeze. The fancy racing boats didn't, tipping so far, the huge sails spilled the wind rather than catching it. Many would be almost impossible to keep on course. Later, racing ships would feature broader beams with shallower hulls to reduce resistance and would have heavy weighted fin keels to enhance directional stability and further counter heel. Ever wonder why the America's cup contenders spend so much money on researching hull and keel designs? Now you know.

Keels have been around for centuries, though. It has only been recently, about the last 150 years, that keel extensions and fins have appeared. Wings, bulb weights, variable inclination systems have been much more recent innovations. And still experienced designers screw up. Several years ago, one of the America's Cup contenders learned the hard way about Froude numbers. Tremendously over-simplified, Froude discovered a means of comparing how hydrodynamic forces change as you scale up or down a shape traveling through the water. If you test a small model boat in the water, will a scaled up version handle the same? The afore-mentioned competitor wagered the multi-million dollar cost of a new boat that it would. Tests on small models had shown that a sharp-edged keel terminating with a broad, blunt aft edge would reduce drag by reducing keel parasitic drag (the drag related to the area of a body). Eddy current generation (coordinated swirling flow) behind the keel would reduce drag like it does behind a tractor trailer truck. The keel would be half the size! Brilliant! But he forgot Froude and his boat was a dog. They didn't even bother trying to finish the first lap. Do you think his engineer got fired?

Next month, "What's Up with Space Planes?"



NEMES Gazette Editorial Schedule

Issue	closing date for contributions
Jan. 2011	December 24, 2010
Feb. 2011	January 21, 2011
Mar. 2011	February 18, 2011
Apr. 2011	March 25, 2011
May 2011	April 22, 2011

2011 NEMES Membership Dues are DUE Now!!

Dick Koolish will not be in attendance at the December meeting but we will be collecting dues for 2011. Please use the form in the Gazette below with a check to pay your dues at this meeting or send it by US Mail, so that you get credit for paying the dues.

Please send a check for $25.00 made out to NEMES to:

Richard Koolish
212 Park Ave.
Arlington MA 02476

AND PLEASE PRINT NEATLY!

Name_____

Street_____

City_____

State_____ ZIP_____

HomePhone_____

Work Phone_____

email_____

President's Corner

Dick Boucher

The Meeting

You may have seen an article about this subject in the Boston Globe recently. Often referred to as a flying car, Terrafugia's Transition roadable aircraft is an airplane that can fold up its wings and drive on the road. Andrew Heafitz, Terrafugia's VP of Product Development will talk about the market for such a vehicle and then give an inside look into the team's first flight experience with the proof-of-concept vehicle and discuss some of the lessons learned that led to the design of the production-prototype currently being constructed. Terrafugia expects to deliver the first vehicle to a customer at the end of 2011.

Miscellaneous Ramblings

There is not much to ramble on this month. The leaves turned colors then started to descend upon the terrain. Bea and I cleaned them up, and the next day more fell on the lawn. Bea and I repeated the scenario a couple times, then the rain and wind came along and it seems as though we never bothered cleaning them up at all. The big problem is, now they are wet, heavy to rake and impossible to shred. Even after all that, there are still a couple of trees that still have a lot of leaves on them.

The big thing this month is the Cabin Fever trip. We will be leaving the Riverside "T" station on January 14, 2011 at 9:00AM as in past years. Our bus driver, Mark has recommended changing the first pickup location from the Charlton Rest Area on the Mass Pike to the Roy Rogers on Exit 1 off Rt 84. This new pickup location should be more convenient for all involved.

Norm Jones, Dick Koolish, Rich Baker, and I went over the problem with checking in at the Motel 6 in York PA to great extent. Rich checked out prices and locations of other motels in the York area with a concern about having a restaurant available for the morning breakfast and also a late night snack. Prices in the immediate area were in the $90

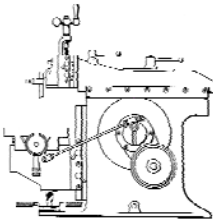
a night range, and we considered that to be unacceptable with our travelers. We had discussed with the manager of the Motel 6, arranging to pay for the 25 rooms with one check to speed the check in time. This idea seemed good until it was mentioned that we would have to collect the room fees from those who travel separately. That would add a lot of extra work for Dick Koolish, so we have decided to continue with the traditional method of individually reserving a room. Please be patient when we check in.

All that being said we will continue with the following:

If you plan on going, send a check for $151.00 made out to “NEMES”, to Dick Koolish 212 Park Ave., Arlington, MA 02476-5941 for the bus reservation. Then call the Motel 6 at (717) 846-6260, and make your room reservation for Jan 14th and 15th. Be sure to mention “The New England Model Engineering Society Cabin Fever Event” to get the $39.95 + tax room rate. We have 25 rooms reserved

The cut-off date of December 31 will be strictly adhered to, to save the trip planers a lot of headaches.

Dick B.



Metal Shapers

By Kay Fisher

R. G. Sparber’s Gingery Shaper - Part 9

Assembling the Shaper Column

I've done some simple machining that did not warrant pictures. The front column casting was set perpendicular to the ram supports. I then drilled four $^1/_8$” diameter holes and drove in roll pins to prevent any movement between the 3 castings. The spreader rod was installed in the back bottom area and a spreader bar was installed in the back top area.

Both of these additions should have been non-eventful but, alas, they were not. I step drilled the $^3/_8$” holes for the spreader rod and somehow the drill walked sideways. That is what I get for using a hand electric drill rather than the mill or drill press. The holes had to be elongated to get the bar to be true. You can't see the error but I certainly know it is there.

The spreader bar would have been a quick job but I forgot to lock the head of the mill to the column. As the cutter caught the part, the head swung over and damaged the bar. A quick redesign of the bar resolved that issue. Gingery calls for a ¼” x 1” bar but I had ¼” x 1¼”. I milled the area between the side castings so it was 1” and left in 1¼” where it attaches to the side castings.

I was then able to start the process of bolting the 3 column castings together.

Center Drilling Casting Photo by R. G. Sparber

The bolt rings are secondary reference surfaces and came in handy. I put down two 1-2-3 blocks and clamped the casting to them. You can't see it here, but I have a clamping bar pressing on the top of the lower side plate. A second clamping bar presses on the top of the upper side plate. This second bar is to insure that the top plate does not lift up. Angle plates press on the sides just in case the casting tries to turn.

Mill Clamp Setup Photo by R. G. Sparber

My column is 3” taller than standard so I added another screw on each side and changed the spacing slightly.

For each hole, I started with a center drill, then used a clearance drill. The tap drill came next. The clearance drill's point cuts a cone that centers the tap drill.

I ran into a small problem that was related to my extra thick side plates. I had sized my button head screws for ½” plates but then cast ¾”. I had three choices:

1. Do nothing and live with the fact that only about 0.1” of the screw meshes with threads (too weak),

2. Buy ¼” longer button head screws (too expensive), or

3. Counterbore the holes to a depth of 0.2” (the obvious winner).

The only hitch to counterboring is that the button head has a diameter of 0.53”. I want a flat bottom on the counterbore so can’t use a drill. I did not have a suitable end mill, either, so I used my boring head and it worked well.

Screws Holding Column Photo by R. G. Sparber

All but the right most screw sits in a counterbore. That last screw will be replaced by a much longer screw at a later date. The lower end of the table's vertical feed is supported by a small casting held in place by that screw.

Lower Clamp View Photo by R. G. Sparber

Here is a clear view of that lower clamping bar plus a good view of a counterbored screw.

Although I have a tapping head, I used tapped this by hand. I put a tap in the drill chuck and turned the spindle by hand until the tap was solidly in place. Then I carefully turned the tap with a wrench. One side is now done and the other side will not take much more time.

I have one more row of screws to install and then it will be time to draw plans for the next castings.

Stay Tuned for part 10 from R. G. Sparber next month.

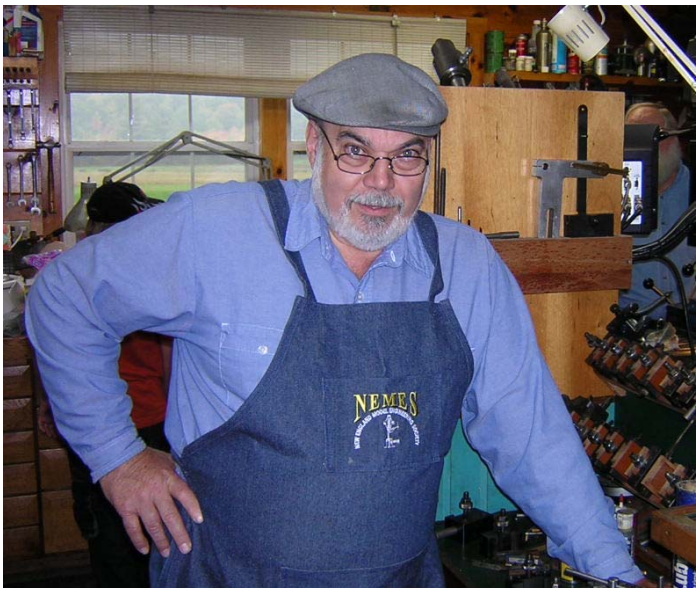
Keep sending me email with questions and interesting shaper stories.

My email address is:

KayPatFisher@gmail.com

Kay

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 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!

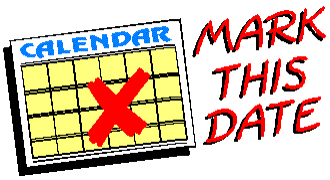
Artwork by Richard Sabol, printed on front and back:

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
10 May's Field Rd
Lunenburg, MA 01462-1263
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

Dec 2nd Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA 781-893-5410
http://www.neme-s.org

Jan 1st New Years day run
Waushakum Live Steamers Holliston MA

Jan 6th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA 781-893-5410
http://www.neme-s.org

Jan 15-16th Cabin Fever Expo Bus Trip
Bus reservation deadline December 31st!
Contact Dick Boucher 978-352-6724
http://www.cabinfeverexpo.com/

Jan 29-30th
Amherst Railway Society Big Railroad Hobby Show
Eastern States Exposition, West Springfield, MA.
http://www.amherstrail.org/