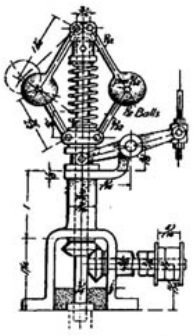


The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 155 Mar. 2009

Gazette Staff

Editor	Frank Hills
Publisher	Bob Neidorff
Events Editor	Bill Brackett
Meeting Notes	Todd Cahill

NEMES officers

President	Dick Boucher
Vice Pres.	Frank Dorion
Treasurer	Richard Koolish
Secretary	Todd Cahill
Membership Secretary	Ed Borgeson
Director	Mike Boucher

NEMES web site

http://www.neme-s.org

Contact Addresses

Frank Hills, Editor
464 Old Billerica Rd.
Bedford, Ma. 01730
hills@aerodyne.com

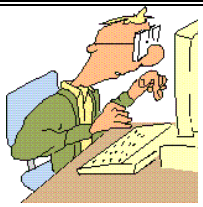
Dick Boucher, President
130 West Main St
Georgetown, MA 01833
rlucienb@juno.com

Richard Koolish, Treasurer
212 Park Ave.
Arlington, MA 02476-5941
koolish@alum.mit.edu

Ed Borgeson, Membership
11 Peck Ave.
Wayland, MA 01778
eborg1@verizon.net

Bob Neidorff, Publisher
39 Stowell Road
Bedford, NH 03110
Neidorff@ti.com

Bill Brackett, Event Editor
29 East Main St
Northborough MA 01532
thebracketts@verizon.net



Editor's Desk

Frank Hills

The History of Future Transportation

Sounds like a contradiction, doesn't it? While it's true that the future of transportation hasn't yet been written, it is also true that you can look at the past to see where it's likely to go. The direction technology will take the future rests, not only on what is being developed, but what exists now. Existing forms of energy, production techniques, and even past trends in marketing will all dictate what is to come in automotive, aircraft and naval design in the short term, and very likely, in the long as well.

Let's start by looking at the material forces driving the designs of future transportation. What forms of energy and materials are most likely to be used and how much of it will be available? Are there any new manufacturing techniques likely to steer industry in one way or another? Not surprisingly, these issues are closely related. Fuel capacity translates into range. Materials have weight which reduces range. Manufacturing techniques which allow materials to be machined, formed and bonded in new ways can save weight and increase range. This world is experiencing an energy crisis. Not just because energy is in short supply, but because the most abundant source at the moment is damaging the environment.

–Continued on page 2

Next Meeting

Thursday, Mar, 5 2009

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

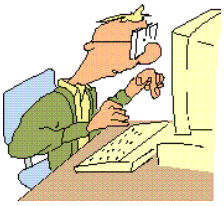
Membership Info

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



Editor's Desk

-continued from page 1

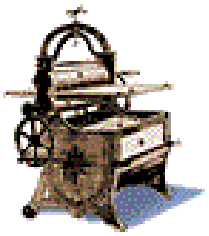
So let's look at fuel first. Liquid hydrocarbon fuels, including liquefied natural gas, propane, and the like, are still the fuels of choice for the foreseeable future. Despite economic, political and market induced shortages and expense, gas is the cheapest, easiest to use, and most abundant energy source. But, again, it's becoming a tremendous burden, financially and ecologically. The ethanol economy has already proven to be a bust. It provides less energy for its mass, it's expensive, and what plants we convert to fuel, we can't eat. Electricity is equally problematic. Battery and fuel cell technologies have a long way to go. In addition, you have to get the electricity from someplace, and that still means burning hydrocarbon fuels. Hybrids are nice, but they too, burn fuel. Plug your car in? The power station has to burn coal, fuel oil, or bust atoms to make the power. Hydrogen? Same problem. At present, the best alternative is to consume less fuel, period! That is our future. Obviously we'll be seeing smaller cars. Composite structures of carbon fiber, nomex and Kevlar are making their way into all forms of transportation now. Expect more because reducing weight while increasing strength works, and these materials accomplish that. New techniques for forming these materials are able to produce structures with greater strength while using less physical material. Vacuum bagged composites, epoxy bonding, and high porosity metals all produce lighter, stronger components. But is it possible for less to continually add up to more? I suspect not. A better, but less popular answer, long term, is better and more public transportation using these same technologies.

What about aircraft? The most common airliner, the Boeing 737, burns no less than 57 times the amount of fuel the average car does. But it's still more efficient per passenger mile. It has always been true that reducing the weight of the aircraft compared to the weight of the cargo is critical. And so, aircraft manufacturers have always been on the cutting edge of manufacturing technology. Many of the big jets manufactured after 1997 have carbon fiber tail assemblies. Engine shrouds are a combination of aluminum framing and Kevlar panels. More and more aluminum assemblies are epoxied instead of riveted, saving weight and improving strength and rigidity. But where the trend for cars is for them to get smaller, long range planes have been getting bigger, increasing that all important "passenger mile" number. But have you noticed that there are many more small turboprop (re: shuttle) aircraft than there used to be? That's because the larger the plane, the farther it must travel to be financially viable. For the shorter commuter ranges, the turboprop is much more efficient, and even those are getting bigger as the best balance between the two aircraft types is found. And did you know that the dirigible may be making a come back? They are the kings of passenger miles. Traveling at lower speeds than planes, they require far less power and can have remarkable ranges. I suspect that you'll see these trends to continue.

Well, we can't forget ships. While it's true that the manufacturing techniques used to build them have changed, this hasn't necessarily translated into greater fuel economy. And you've probably already noticed that fuel economy is the primary factor in future transportation. Ships are still built of steel and aluminum and naval architecture hasn't made any huge strides in decades. The real changes have come in propulsion. When fuel was cheap the focus was on speed. Speed requires high power-to-weight ratios. That meant steam or gas turbines. While both provide prodigious amounts of power, both are relatively fuel hungry. In the present economic and ecological climate, that can't be tolerated any longer. The latest thinking is enormous yet very fuel efficient diesels. The last time diesels were the primary power plant for ships was during the twenties and thirties. Back then, diesels in large ships were rated in the thousands of horse power and were the size of the average house. Today, diesels are being built which produce over 100,000 horse power at only 120 RPM and are the size of small office buildings. Yet despite their enormous size, these engines are so fuel efficient that they could become the power sources for the next wave in electricity generating plants. History does repeat itself.

Before I finish off, you may have noticed I've mentioned ecology several times. I don't really consider myself a greener, but I do know a problem when I see one. Our environment is being seriously damaged by the burning of hydrocarbon fuels. China is starting up a new coal-fired electric plant every week and the pollution from them is killing the forests in Alaska and western Canada. The US has the cleanest running cars in the world, by far, but between them and our household and industrial energy usage, we burn 25% of the world's fossil fuels while making up only $^{1}/_{20}$ of the worlds population. The problem is that this world is energy hungry, and most of that energy comes from burning polluting fuels. The answer is to reduce burning stuff to make energy and demand less of it. We can't wait for others to do it. We all have to do our part. That means reducing our own energy consumption and quickly utilizing other power sources we know work and are right at our finger tips.

Next month…"Home Grown Power". Don't worry. It will be fun, not a lecture!



NEMES Gazette Editorial Schedule

Issue	closing date for contributions
April 2009	Mar. 21, 2009
May. 2009	April. 25, 2009
June 2009	May 23, 2009
July 2009	June 20, 2009
August 2009	July 25, 2009

President's Corner

Dick Boucher

The Meeting

This month, David Toppin who is responsible for the large collection of unique bicycles on display at the museum, will be our speaker. David has been involved in antique bicycles since age two, when his father started collecting.

He learned to ride the highwheels at age 12 and has had a keen interest in them ever since. He is the Massachusetts Captain of the Wheelmen, an international group dedicated to the heritage of the bicycle. He has appeared on the Antiques Roadshow and in various publications. He rides, restores and researches all sorts of antique bicycles and was a fairly accomplished trick and distance rider 100 pounds ago.

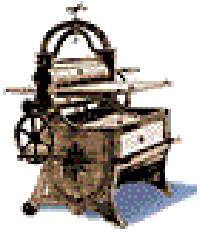
Miscellaneous Ramblings

The First Competition Team 2589, The Codebandits, robot was shipped last Tuesday. The mechanicals are all working but the electronics and code still need work, Our competition is in two weeks so the pressure is on for the programming team. It has been both a great experience to me as the mechanical mentor and a great deal of extra work. It was most satisfying to be in my shop watching four high school students running the machines and making parts for their robot. They took to the shop work really enthusiastically and made some impressive parts for with only one week of instruction.

By the time you read this, our show at the Charles River Museum of Industry and Innovation will have come and gone. Not much to say now as it is all "in the can" but I have all confidence that it will be as great a show as in the past. Grandson James came over one Sunday afternoon and kept telling his mother that he had to go down to the shop and work with the crew. He loves coming over and hanging out with his grandfather in the shop.

I guess that just about covers everything for this issue. It is snowing as I write but the days are getting longer and the temperatures are milder so the summer engine shows can't be far behind.

Dick B.



Book Review

Bob Neidorff

Metalworking – Sink or Swim by Tom Lipton

"A nearly 40-year veteran of the trade, Tom Lipton has written an invaluable and time-saving guide for anyone working in a machine, welding or fabricating

shop, including apprentices, journeymen, foremen, engineers, shop owners and hobbyists."

"…The contents of my book are intended to capture and preserve some of the skills and techniques learned from a generation passing…"

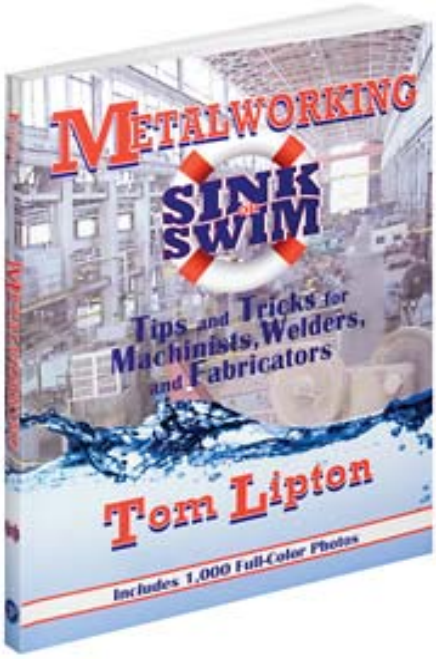
This is a very unusual book. It is a significant book to read, with over 300 large pages, beautifully printed in full color on high quality paper. The cover says that it has over 1000 color photos, but the photos are relatively small, so there really are 300 pages of text about nearly everything.

Foremost, this book has many great tips, both simple and advanced; such as tips on making sketches, tips on dimensioning, tips on choice of materials, tips on setting up shop, tips on sawing, turning, milling, CNC, welding, bench work, sheet metal, and much more. Much of it is common sense, like having handles on files and good lighting, but a lot of it is also novel, smart, and practical advice. There are some great ideas for fixtures and homemade tools. The book is also partially a textbook on machining, giving advice on quite a few specific operations, like how to turn threads and how to cut off stock. Tom definitely knows his stuff and covers a very wide range of material in one great book.

This book also contains off-topic and questionable advice, such as advice on emergency first aid (use Scotch Super 33 electrical tape to wrap cuts), tips on working for a boss (consider profit before considering getting paid), and tips on handing your mistakes (blame the guy who just got fired or paint it black and ship it at night). It also has many stories, and these tend to be corny and dull. At one place, the author describes a "right hand left hand bandsaw blade", and shows a photo of it, with no explanation for whether this is a joke, a mistake, or a serious tool for a special job. Readers are also subjected to the author's rants, such as a diatribe about how stores should not have self-checkout lines and how CD packages should be easier to open.

I think that the author is trying to imitate Guy Lautard's folksy style of mixing advice with anecdotes, but the author lacks Guy's storytelling skills, so for me, those parts land flat. In addition, the author spells words wrong, uses bad grammar, and tells jokes which may bother some readers.

Do I recommend this book? Absolutely! Tom Lipton is an extremely experienced machinist who learned from great teachers, learned a lot on his own, and tries his best to share this with you. You will get more useful advice from this book than you would from two years of any magazine or a general metal shop textbook. Each short paragraph teaches something very useful. Metalworking Sink or Swim is a very dense tomb of great information. But it is also a wandering read, interspersed with boring stories and poor writing. I really recommend reading this book, but don't consider it a reference book. After one read, you'll probably have a few pages of great notes and be through with it, so you may want to buy this book with a few friends and pass it around.



You can buy this book from MSC for the sale price of $38.95 (order MZ88489083) or from Amazon for $40.45 including free shipping (Item 0831133627.)

Bob Neidorff

The Steam Man of the Prairies.

BY EDWARDS ELLIS, CHAPTER XIII.

AN APPALLING DANGER.

NOT a second was to be lost. The next moment the boy had run across the intervening space and pulled open the furnace door of the steam man. He saw a few embers yet smoldering in the bottom—enough to rekindle the wood. Dashing in a lot from the wagon, he saw it begin blazing up. He pulled the valve wide open, so that there might not be a moment's delay in starting, and held the water in the boiler at a proper level. The smoke immediately began issuing from the pipe or hat, and the hopes of the boy rose correspondingly.

The great danger was that the Indians would return before he could start. He kept glancing behind him, and it was with a heart beating with despair that he heard several whoops, and saw at the same instant a number of red-skins coming toward him.

The boy gave a jolt to the wagon, which communicated to the steam man, and it instantly started, at quite a moderate gait, but rapidly increased to its old-fashioned run.

It was just in the nick of time, for two minutes later the savages would have been upon him. As it was, when they saw the giant moving off they paused for a moment in amazement.

But their previous acquaintance with the apparatus had robbed it of all its supernatural attributes, and their halt lasted but a few seconds. The next moment they understood that there was some human agency about it, and uttering their blood-curdling yells, they started in full pursuit. But by this time the steam gentleman was getting down to his regular pace, and was striding over the prairie like a dromedary. For a time the Indians gained, then the intervening distance became stationary, and then he began pulling steadily away from them.

Still the savages maintained the chase until satisfied of its hopelessness, when they gave it up and sullenly withdrew in the direction of the mountains.

The young fellow, in his triumph, could not avoid rising in the wagon, shouting and waving his hat defiantly at his baffled pursuers. The daring act came near costing his life, for it was instantly followed by the discharge of several guns, and the singing of the bullets about his ears caused him to duck back into his seat as suddenly as he had risen from it.

The afternoon was now quite well advanced, and besides feeling hungry, Johnny Brainerd was anxious to get back to camp.

The intervening distance was rapidly passed, and the sun was just setting as he slacked up within a short distance of Wolf Ravine.

For some unaccountable reason, the nearer he approached "camp," as it was called, a feeling akin to fear came over him. It was a presentiment of coming evil, which he found it impossible either to shake off or to define, and that was why he halted some distance away.

From where he stood it was impossible to see his two friends at work, but at that time of day he knew they were accustomed to stop work and come out upon the prairie for the purpose of enjoying the cool breeze of evening. At the same time, when such constant danger threatened, they were accustomed to have one of their number, either all or a part of the time, on the ground above, where the approach of enemies could be detected.

The absence of anything like a sentinel increased the boy's apprehensions, and when he had waited

some fifteen minutes without seeing anything of his friends he became painfully uneasy.

What if they had been killed? What if they were prisoners? What if a hundred Indians were at that moment in the possession of Wolf Ravine?

Such and similar were the questions which the affrighted boy asked himself, and which, with all his shrewdness, he was unable to answer.

In the hope of attracting attention he set up a shrieking with the whistle, which sounded so loud on the still evening air that it must have gone miles away over the level prairie.

There being no response to this he kept it up for some time, but it still failed, and all this confirmed him in the belief that "something was up."

What that particular something was it was impossible to say, so long as he sat in the wagon, and for five minutes he endeavored to decide whether it was best to get out and make a reconnoissance on his own look or remain where, in case of danger, he could seek safety in flight.

As the day wore rapidly away, and he still failed to see or hear anything of his friends, he finally concluded to get out and make an examination of the ravine.

Accordingly he sprung lightly to the ground, but had scarcely alighted when a peculiar signal—something resembling a tremulous whistle—reached his ear, and he instantly clambered back again, fully satisfied that the whistle was intended as a signal, and that it concerned him, although whether from friend or foe he could only conjecture.

However, his alarm was such that he moved a hundred yards or so further away from the ravine, where there was less likelihood of being surprised by any sudden rush upon the part of the thieving red-skins.

From this standpoint he carefully scanned what could be seen of the ravine. It descended quite gradually from the edge of the bank, so that he gained a partial view of the rocks and bowlders upon the opposite side. Some of the trees growing in the narrow valley rose to such a hight that one-half or two-thirds of them were exposed to view.

It was while the boy was gazing at these that he detected a peculiar movement in one of the limbs, which instantly arrested his attention.

A moment showed him that the peculiar waving motion was made by human agency, and he strained his eyes in the hope of detecting the cause of the curious movement.

The gathering darkness made his vision quite uncertain; but he either saw, or fancied he saw, a dark object among the limbs which resembled the form of Baldy Bicknell, the trapper.

Johnny Brainerd would have given almost anything in the world could he have understood what it all meant.

But the very fact of these singular demonstrations was prima facie evidence of the most unquestionable kind; and, after a moment's consultation with himself, he began moving away, just as the sharp crack of several rifles notified him of the fearful peril which he had escaped.

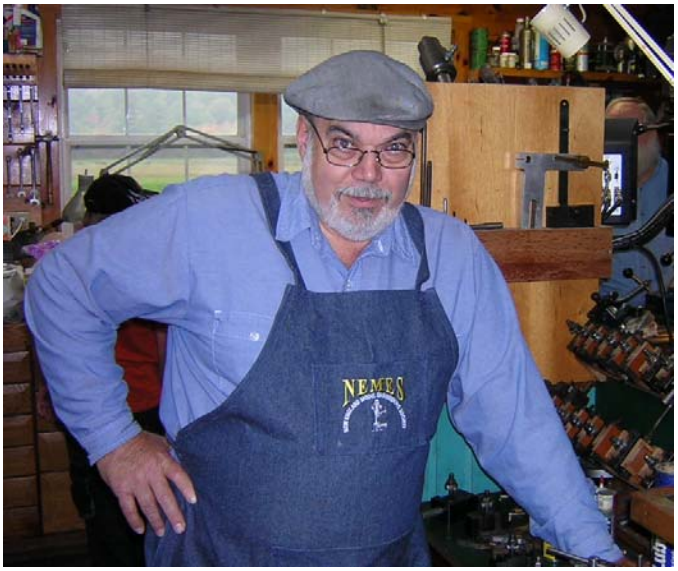
For Sale

1948 Monarch Lathe 14½ x 30

Abrasive surface grinder 8" x 24" with vertical head and 8" x 24" electric magnet

Phillip Ward
802-635-7095

NEMES Shop Apron

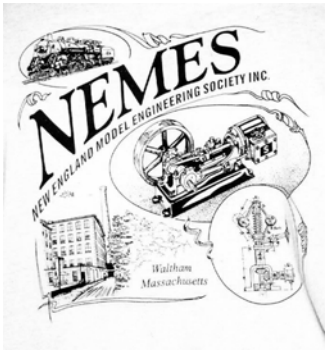


Look your best in the shop! The NEMES shop apron keeps clothes clean while holding essential measuring tools in the front pockets. The custom strap design keeps weight off your neck and easily ties at the side. The apron is washable blue denim with an embroidered NEMES logo on top pocket.

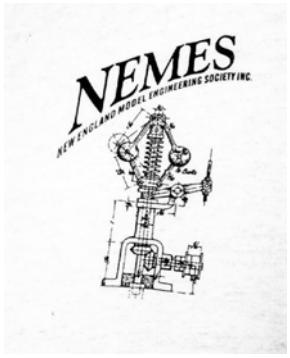
Contact Rollie Gaucher 508-885-2277

NEMES clothing

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

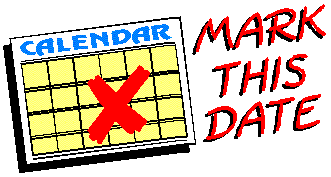
Add $5 shipping and handling for the first tee shirt, $1 for each additional shirt shipped to the same address. Sweat shirts are $7 for shipping the first, and $1.50 for each additional sweat shirt.

Profits go to the club treasury.

Mike Boucher
10 May's Field Rd
Lunenburg, MA 01462-1263
mdbouch@hotmail.com

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!



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

March 5th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry
Waltham, MA
781-893-5410
http://www.neme-s.org

March 20 – 21st 10:00-6:00 22nd 10:00-4:00
Maine Boat Builders Show
58 Fore St Portland ME
http://www.portlandcompany.com

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

April 18th – 19th NAMES Expo
Toldeo, OH
http://www.modelengineeringsoc.com

April 19th 9:00am The Flea at MIT
Albany Street Garage at the corner of Albany and Main Streets in Cambridge
http://web.mit.edu/w1mx/www/swapfest.shtml