

The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 154

Feb. 2009

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Editor's Desk

Frank Hills

When Will Computers Think?

Do you remember the movie "2001 a Space Odyssey"? By the end of the movie you're convinced that the ship's computer, a HAL 9000, has a mind of its own and has murdered the ship's crew to prevent them from turning "him" off. It's an ongoing fantasy of ours that computers will one day think for themselves. But is it just a fantasy? Of course, in the sequel to 2001, a 2010 rescue crew has been sent to find out what went wrong with the mission, with the crew, and with HAL. As it turns out HAL did not have a mind of his own, he was only carrying out the instructions he was given within the limits of his programming and the hardware that interpreted it. That's the way computer science stands today, still bound by the limits of human programmers and the hardware built to run it. But things are changing.

Until the advent of the modern programmable computer, all "computer like" machines were little more than "hard wired" calculators or "circuit connecting" devices. That means that they were designed from the beginning to perform one and only one function.

-Continued on page 2

Next Meeting

Thursday, Feb. 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.

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Editor's Desk

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If the device was intended to do many things, like a calculator, it had many different circuits, each dedicated to a single function. Modern programmable computers overcame that limitation, but only to an extent. Programmable computers still have hard-wired circuits, and a great many of them, that can perform a great many different functions. The genius of the programmable is that you can “program” a long list of instructions which tell the computer which operations to perform, in what order, how to record the result, and perhaps, what additional functions and processes to perform on the new information. Early computers could only perform basic math functions, like “add, subtract, multiply and divide”. Later, Boolean operations were added, like “and, or, not, then, go to,” and others. All of these were hard wired, but programming allowed for an incredible number of combinations and increasingly long and complex programs. Today’s video games, analysis software and word processors, in reality, are nothing more than this.

So, where does the thinking come in? So far, all that a computer has been able to do is follow very explicit and exact instructions. If there are any flaws in the instructions, the computer “crashes”. But people have a greater capacity, the ability to make incorrect decisions, then correct themselves, to make comparisons between seeming unrelated events, to analyze problems through the filter of past experience, to learn and then create our own programs to respond to new and changing input. It took the talents of expert programmers, electronic circuit designers and, believe it or not, psychologists to figure out how to mimic this human ability. The answer was a combination of “fuzzy logic”, comparison modeling, and programs designed to write more programs.

Fuzzy logic is an interesting notion. It allows the computer to look for an answer that is more than just black or white. It’s an algebraic process that creates a range of answers. Where $2 + 2$ only has one answer, $2X + 2$ can have an infinite number of them. The programmer still must supply a range of answers or additional program paths, but this is where things get interesting. Another program will compare the potential range of results to past answers to similar problems and experiences. Similar problems are

“recognized” by the computer as combinations and orders of words, numbers, and information that it has “experienced” before. Then a third program records these combinations, and the path taken to successful answers. Mind you, that means it may follow unsuccessful paths. To avoid crashes, situations where there is no answer, the programmers write instructions to tell the computer to stop and return to the last successful operation or instruction performed and take another path until a resolution is found. Once the answer is found, it is added to the list of preprogrammed answers created by the programmer. The more successful resolutions the computer has, the more experience it has at avoiding dead end paths. The computer learns! This takes incredibly powerful computers, intricate and complex programs, and enormous amounts of memory. This kind of technology you won’t find running on a typical PC.

But the rate of advancement in computer and software (program) design is growing at an exponential rate. Until recently, the operational speed of computers and their computational capacity in relation to their size was doubling every 18 months. The task performed by super computers only twenty years ago can now be accomplished with the average office server. There is even a contest sponsored by the same organization that promoted the space X-prize. The first group to produce a computer that can fool 10 people into believing it’s another person during an internet chat wins \$10,000,000. This past fall a computer convinced 9 out of 10 people on the panel.

We might not be as far from the autonomously thinking computer as some might wish to believe, if thinking is as simple as manipulating and remembering learned responses. But it’s still not clear whether it’s possible to build a computer that can learn to function beyond the limits of its hard-wired brain. The human brain creates new circuitry as it learns. But, though it is true that today, computers design and build other computers, they do so from a known set of logic-based design parameters. To go beyond this, computers would have to learn to create that which does not yet exist, a path beyond logic. And this isn’t the only step computers would need to take. As they exist today, computers will only advance in the direction they are “stimulated” to progress...by us! To go further, to choose their own path, they would need to become self aware. The next computers might need the help of a philosopher too!

Next month, “The History of Future Transportation”

Frank Hills



NEMES Gazette Editorial Schedule

<u>Issue</u>	<u>closing date for contributions</u>
Mar. '09	Feb. 16, 2009
Apr. '09	Mar. 23, 2009
May '09	Apr. 20, 2009



President's Corner

Dick Boucher

The Meeting

The February meeting will be a poster session. This is a great time to show off a finished project or a work in progress. It is also a great time to bring in a tool or fixture you might have used to make a complicated part of your project. The poster sessions are my favorite meetings of the year, not just because I don't have to get a speaker, but it gives me a chance to talk with you fellows and check out your work.

Miscellaneous Ramblings

We have just returned from Cabin Fever as I write this. Well not exactly just returned. Monday was spent clearing over a foot of snow off the driveway and paths around the house then recovering from that for the rest of the day. Well, actually, working on my P.M. Research steam engine and having the Frodo locomotive building group over in the evening, but that is relaxing.

The trip to Cabin Fever was uneventful as far as the travel was concerned. Our driver, Mark Feldman, was his usual competent self and really shone on the return trip when we ran into the snow. Once again we had a good turnout for the bus ride and we had a major area reserved for our displays thanks to Ron

Ginger, Eroll Groff, Russ Steves, Rich Hubbard and James Lea reserving the space for us.

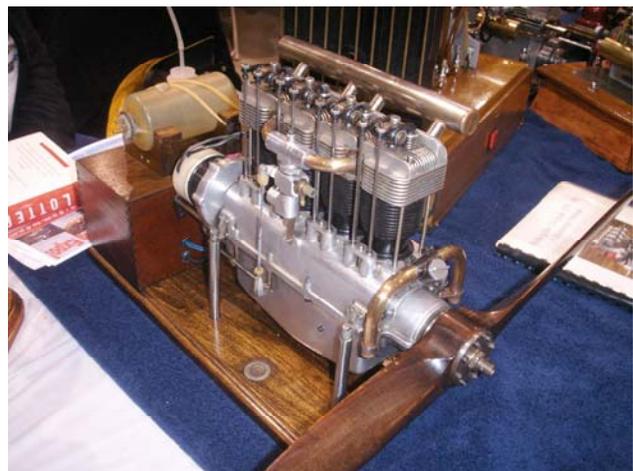
The show model this year was Lou Chenot's 1/6 scale Duesenberg SJ automobile. There are pictures in issue 12 of the Model Engine Builder, but seeing it live and up close and talking to Lou was a real treat.

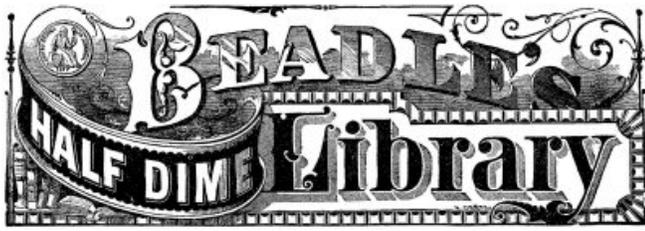
As always, our driver Mark can tell we bring more home with us than we take down by the feel of the bus as he drives (the extra weight may have been good in the snow). I myself got a couple of Shooting Star digital readouts from Bill Chernoff of Shooting Star Technology for my Bridgeport milling machines. I will do a photo report on the installation and a review of the units when they are installed. Getting to see the vendors offerings and the things in the consignment area is always a nice part of the trip. Catalogs and web sites are nice, but nothing beats getting a hands-on look at something.

The next big event for our society is our show on February 21st. We open the museum at 8:00 AM for setup and as always we can use a lot of extra help getting the tables set up and covered and the air line run. Please remember not to place any of your display on the tables until we get the covering on them, and yes, the ladies auxiliary is going to have the refreshment stand again this year.

Finally the First Robotics Competition team I am mentoring will be participating at the Agganis Arena at Boston University on March 5th- 6th and 7th. If you haven't seen one of these competitions yet you might find it a really enjoyable afternoon.

Dick B.





The Steam Man of the Prairies.

BY EDWARDS ELLIS,

CHAPTER XII.

THE GRIZZLY BEAR.

FROM where young Brainerd was perched on the tree it was impossible to catch a glimpse of the steam man, so patiently awaiting his return. The distance was also too great for him to make himself heard by the miners, who were hard at work twenty miles away.

Fruitful in expedients, it was not long before the boy found a resource in his trouble. Tearing a large strip from his coat, he tore this into smaller strips, until he had secured a rope half a dozen yards in length. Upon the end of this he placed a loop, and then, descending to the lowest limb, he devoted himself to the task of looping it over the end of his gun. It fortunately had fallen in such a manner that the muzzle was somewhat elevated, so that here was a good opportunity for the exercise of his skill and patience.

When the first attempt was made the bear suddenly clawed at it and tore it from the boy's hand

before he could jerk it beyond his reach. So he was compelled to make another one.

Nothing discouraged, the boy soon had this completed, and it was dropped down more cautiously than before. When the grizzly made a lunge at it, it was deftly twitched out of his way.

This was repeated several times, until the brute became disgusted with the sport, and dropping down behind the tree, let the boy do all the fishing he chose.

Now was his time, but the boy did not allow his eagerness to overcome the steadiness of his nerves. It required no little skill, but he finally succeeded in dropping the noose over the muzzle of the gun and jerked it up taut.

With a heart beating high with hope, Johnny saw it lifted clear of the ground, and he began carefully drawing it up. The grizzly looked curiously at his maneuvers, and once made as if to move toward the dangling rifle; but, ere his mind was settled, it was drawn beyond his reach, and the cold muzzle was grasped in the hand of the eagerly waiting boy.

While drawing it up, he had been debating with himself as to the best means of killing the brute. Remembering that his first shot had done no harm, he sensibly concluded that he had not yet learned the vulnerable part of the monster.

His gun was loaded very carefully, and when everything was ready he made a noise, to attract the attention of the brute. The bear looked up instantly, when the gun was aimed straight at his right eye.

Ere the grizzly could withdraw his gaze, the piece was discharged, and the bullet sped true, crashing into the skull of the colossal brute. With a howling grunt, he rose upon his hind feet, clawed the air a few moments, and then dropped dead.

Young Brainerd waited until he was certain that the last spark of life had fled, when he cautiously descended the tree, scarcely able to realize the truth that he had slain a grizzly bear—the monarch of the western wilderness. But such was the fact, and he felt more pride at the thought than if he had slain a dozen buffaloes.

“If I only had him in the wagon,” he reflected, “I’d take him into camp, for they will never believe I killed a grizzly bear.”

However, it occurred to him that he might secure some memento, and accordingly he cut several claws and placed them in his pocket. This done, he concluded that, as the afternoon was well advanced, it was time he started homeward.

His hurried flight from the ferocious brute had bewildered him somewhat, and, when he took the direction he judged to be the right one, he found nothing

familiar or remembered, from which fact he concluded he was going astray.

But a little computation on his part, and he soon righted himself, and was walking along quite hopefully, when he received another severe shock of terror, at hearing the unmistakable whoop of an Indian, instantly followed by several others.

Immediately he recalled the warning given by the trapper, and looked furtively about, to make sure that he was not already in their hands. His great anxiety now was to reach the steam man and leave the neighborhood, which was rapidly becoming untenable.

So he began stealing forward as rapidly as possible, at the same time keeping a sharp lookout for danger. It required a half-hour, proceeding at this rate, before reaching the base of the mountain. The moment he did so, he looked all around in quest of the steam man, whom he had been compelled to desert for so long a time.

He discovered it standing several hundred yards away; but, to his dismay, there were fully a dozen Indians standing and walking about it, examining every portion with the greatest curiosity.

Here was a dilemma indeed, and the boy began to believe that he had gotten himself into an inextricable difficulty, for how to reach the steam man and renew the fire—under the circumstances—was a question which might well puzzle an older head to answer.

It was unfortunate that the machine should have been taken at this great disadvantage, for it was stripping it of its terror to those Indians, who were such inveterate enemies to the whites.

They had probably viewed it with wonder and fear at first; but finding it undemonstrative, had gradually gathered courage, until they had congregated around it, and made as critical a scrutiny as they knew how.

Whatever fear or terror they had felt at first sight was now gone; for they seemed on the most familiar terms with it.

Several climbed into the wagon—others passed in and around the helpless giant—and one valiant fellow hit him a thwack on the stomach with his tomahawk.

This blow hurt the boy far more than it did the iron man, and he could hardly repress a cry of pain, as he looked upon the destruction of his wonderful friend as almost inevitable.

The savage, however, contented himself with this demonstration, and immediately after walked away toward the mountain. The observant boy knew what

this meant, and he withdrew from his temporary hiding-place, and started to watch him.

The fact that the Indian followed precisely the path taken by him, did not remove the uneasiness, and he made up his mind that nothing but danger was to come to him from this proceeding.

When the Indian had reached the spot where the dead grizzly bear lay, he paused in the greatest wonderment. Here was something which he did not understand.

The dead carcass showed that somebody had slain him, and the shot in the eye looked as though it had been done by an experienced hunter. A few minutes' examination of the ground showed further that he who had fired the shot was in the tree at the time, after which he had descended and fled.

All this took but a few minutes for the savage to discover, when he gave a whoop of triumph at his success in probing the matter, and started off on the trail.

Unluckily, this led straight toward the boulder behind which the boy had concealed himself; and ere he could find a new hiding-place the Indian was upon him.

At sight of the boy, the savage gave a whoop, and raised his tomahawk; but the youngster was expecting this, and instantly raising his gun, he discharged it full into his heart.

As he heard the shriek of the Indian, and saw him throw up his arms, he did not wait to hear or see anything else, but instantly fled with might and main, scarcely looking or knowing whither he was going.

A short time after he found himself at the base of the mountain, very near the spot where he had first come, and glancing again toward the steam man, he saw him standing motionless, as before, and with not a single Indian in sight!





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.

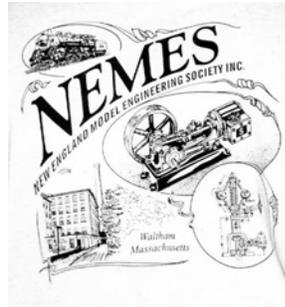
Errol Groff
180 Middle Road
Preston, CT 06365 8206
errol.groff@snet.net

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

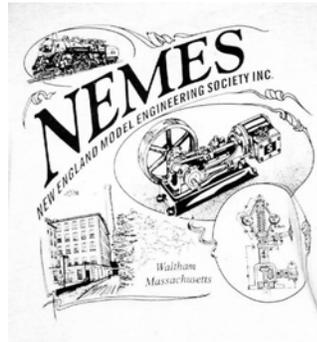


NEMES clothing

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



**MARK
THIS
DATE**

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

Feb 5th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry 781-893-5410
Waltham, MA

Feb 21st Saturday 8:00am-4:00pm
13th Annual NEMES Show
Charles River Museum of Industry 781-893-5410
Waltham, MA

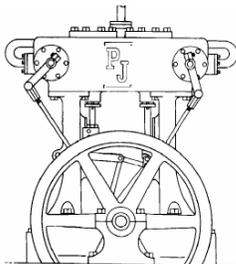
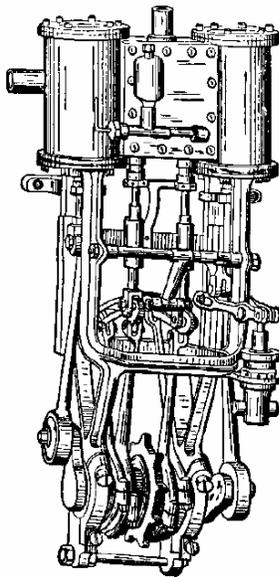
Feb 26-28th—FIRST Robotics Competition
Verizon Wireless Area
555 Elm Street
Manchester, NH
<http://www.baesystemsfirst.org/regional/when.htm>

13TH ANNUAL N.E.M.E.S. MODEL ENGINEERING SHOW

FEBRUARY 21, 2009

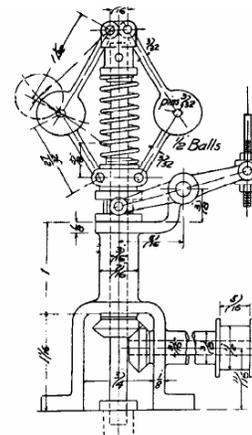
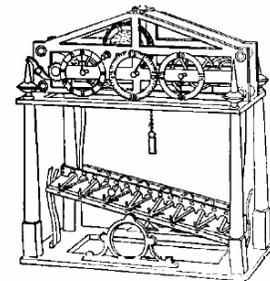
10:00 AM TO 4:00 PM

CHARLES RIVER MUSEUM OF INDUSTRY
WALTHAM, MA



SEE OPERATING SCALE:

- ◆ STEAM ENGINES
 - ◆ GASOLINE ENGINES
 - ◆ AIRCRAFT ENGINES
 - ◆ STIRLING CYCLE ENGINES
 - ◆ CLOCKS
 - ◆ MACHINISTS TOOLS AND FIXTURES
 - ◆ LOCOMOTIVES
 - ◆ TRACTION ENGINES
 - ◆ MODEL BOATS - STEAM AND GAS
- AND MEET THE CRAFTSMEN WHO BUILT THEM.



EXHIBITORS SETUP STARTS AT 8:00 AM
COMPRESSED AIR FOR RUNNING MODELS
GAS ENGINES ALLOWED
NON-MEMBER EXHIBITORS WELCOME

GENERAL ADMISSION FOR SHOW AND MUSEUM

ADULTS	\$6.00
CHILDREN 6-12 WITH ADULTS	\$4.00
EXHIBITORS AND CHILDREN UNDER 6	FREE

Directions:

Take Rte. 128 to Rte. 20. Go East on Rte. 20 to Central Square, about 2 miles. Right on Moody Street. Cross the river, left on Pine Street to municipal parking lot on left. Short walk over the footbridge to the museum.

For additional information call the Museum at 781-893-5410 or go to www.neme-s.org