
The NEMES Gazette

Vol 05, No 049
May-2000
© 2000

The Newsletter of the New England Model Engineering Society

Ron Ginger, President, 17 Potter Road, Framingham, MA 01701, Ginger@Acunet.net

Rob McDougall, Treasurer, 357 Crescent Street, Waltham, MA 02154, RCMcDougall@MediaOne.net

Our next meeting is at 7:00 PM on Thursday
4-May-2000 (first Thursday of every month) at
The Charles River Museum of Industry
154 Moody Street
Waltham, Massachusetts

Annual dues of \$20 covers from June to June.
Please make checks payable to NEMES and send
to our treasurer. (Address in letterhead).

This Months Contents

From the (Previous) Editor's Desk.....	1
From the (New) Editor's Desk.....	1
The President's Corner.....	2
Open House.....	3
Calendar of Events.....	4
Treasurer's Report.....	5
The Meeting.....	5
Metal Shapers.....	9

From the (Previous) Editor's Desk

By Stephen C. Lovely

It's hard to believe that I edited the Gazette for **FOUR FULL YEARS**. I was figuring on doing 50 issues, but Kay had some fancy formatting planned for his Shaper column this month and decided that it'd be easier to put the whole issue together himself than to explain to me how he wanted it to go. When I started doing it four years ago I had always wanted to try putting out a newsletter, and now I've done it. It was fun

and I'm glad I did it, but I'm also glad that Kay is going to be taking it over. I expect to continue to write up the monthly meetings for the Gazette and am looking forward to getting my issue in the mail and opening it up to see what's in it.

We all owe Gayle Martha and Pat Fisher a big **THANK YOU** for the work they did supplying us all with food at the show in February. Not only did they keep us well fed, but they took in enough money to pay for renting all the tables and leave us \$30 ahead as well. I had meant to mention this in the last issue, but it slipped by and I didn't. Better late than never I guess.

I've enjoyed being the editor for the last four years, and wish the new editor, Kay Fisher, well during his tenure at the job.

I'll see you all at the meetings, and with a little bit of luck maybe I'll have more time to get working on my projects, which seem to multiply faster than I get time to work on them.

scl

From the (New) Editor's Desk

By Kay R. Fisher

First and foremost I must both thank and congratulate Stephen Lovely for **FOUR** years of editing the NEMES Gazette. I think Stephen's work on the newsletter has certainly been one reason for the success of our club so far. I have always wanted to try my hand at the editor job but couldn't imagine being successful at transcribing the meetings. Fortunately Stephen has volunteered to continue this effort as a regular column to the newsletter.

When I started writing this note I didn't have input from anybody. This is a lonely feeling.

I thought it was sure going to be a short newsletter. So now is a good time to ask everyone for input. If you send me something I will put it in the newsletter. You can scribble it on the back of a napkin or write on construction paper with crayon if you want – just get it to me. Please consider this format for submissions.

I am using Microsoft Word and selected the “Times New Roman” 12 point font (the LARGE print edition). If you prepare your input in a similar manner then you will get a pretty good feel for how it will look after it passes through my hands. If you send pictures I can read most formats and will be creating mine in AutoCAD, CorelDRAW, Corel PHOTO-PAINT, Adobe PhotoDeluxe and occasionally DeltaCAD. DeltaCAD is a pretty good CAD program available www.dcad.com where they have a fully functional demo version you can download. I purchased my copy from Wal-Mart for \$10.00 in the junk CD section.

Please give some thought to writing something for the Gazette. You may have presented something long ago at a meeting and Stephen probably covered it in the newsletter, but since that time we have had many new members join. Perhaps you could revise your presentation as an article for the benefit of new members and those members who can't make the meetings.

I believe there is a newsletter article in every member. Don't make me pry it out of you ☺

Kay

The President's Corner

By Ron Ginger

Changes

There are a few changes that have been made in the club's organization, and I'd like to record them here so everyone knows about them. We are not a very formal group, but I do like to keep a modest amount of structure!

First, after about 3 years of service our Treasurer, Kay Fisher, has decided he wanted to

move on to something else, (see below) and so he has resigned. Many thanks to Kay for keeping the finances of this group in good order, and all his help in the collecting of dues and the record keeping. It's one of those behind the scenes things that just have to be done to keep a group functioning.

The only way you can get out of a job in this organization is to find a replacement, and Kay has done an admirable job by locating a very able member, Rob McDougall to succeed him as treasurer. Rob has been a member since the start of the group, and has been with us to NAMES and Cabin Fever. We welcome him to his new duties.

Next, our amazing ace reporter and publisher, Stephen Lovely has decided that 50 issues of the newsletter was enough, and so time for him also to move on. However, Stephen doesn't get far, because he will continue to do his tremendous job of reporting on each of our meetings. We all kid Stephen a lot about that notebook that seems to grow out of his left arm, but his detailed articles on each of our meetings have been a very important part of the group. To many of our members that see us only as a newsletter, Stephen IS the NEMES! So the good news is that Stephen will continue to write, he just won't have to do all the publishing work.

And that brings the circle around to the new newsletter publisher, Kay Fisher. Kay has offered to take on the job of collecting the input from Stephen and I and our other regular contributors, and getting it all into print. I understand Kay has started to write a book on shapers, so I suspect we will get a few shaper articles along the way. Also please remember, anyone is welcome to send article in for the newsletter. In particular, I hope we can start to get some photos into the newsletter. So, welcome Kay as our new publisher.

This group has become a very important activity to me, and I think to many of you, and I am very pleased to see changes like this that proves others are willing to join in and help keep this group working. Please join me in thanking

these guys, and everyone else that helps to keep this group functioning.

May Meeting

A few months ago I read on the Internet about an amazing product called Moglice. The note that really got my interest was from a fellow that had worked on a dam and fish ladder. They had several very big steel doors that were operated by a 3" or so acme screw to open them against tremendous water pressure. The screws were steel and the nuts were bronze, but the nuts kept wearing out in only a few months of operation. So a replacement was made of Moglice- a castable resin. The claim was these nuts were still in use many years later.

Well, I'm always interested in miracle products, especially something that can be poured into a part to repair it, so I dug around the internet and found Moglice, and found that they have a New England sales engineer that was willing to talk to us. I just realized as I was writing this that the e-mail address I've been writing to is Pat Wagner, but the signature on the notes is Dick, so I'm sorry to say I don't know the exact name of our speaker, but I will be there by the meeting! We will have some slides and some product samples to see. It should be a very educational evening.

Museum Shop

The shop area of the Charles River Museum of Industry needs some clean up and organization, and Karen would like some help from our club in that effort. We have a tentative date of Saturday, May 6 for this effort. We will have some details on this at the May meeting. If you don't make the meeting but would like to help out please call the museum 9-5 weekdays or call me some evening to confirm the plans.

When the shop area is complete Karen wants to have a display by each machine that shows a sample of the raw stock and a sample of a finished part that would be made on that machine. I have assured her our group would be able to supply those, so when we get the exact list of needs I will post them here.

Web Sites

One of our remote members, Ray Hasbrouck, now has a web site for his plans for steam engines made without castings. Ray sells several plans, for very modest prices, of some fine engines, like the steam engine Roland Gaucher built for our steam launch NORMAN D. See Ray's web site at www.hasbrouck.8m.com. You may recall Ray was a speaker at one of our meetings a couple years ago, and has been to most of our shows. He lives in New York, so is just a bit too far to attend most meetings.

Ron

Open House

Jim Paquette's Shop

All NEMES members are invited to visit Jim Paquette's shop May 13 (rain date June 10) 9:00 AM to 3:00 PM. Located in Uxbridge Ma. About 1/2 mile from the intersection of routes 16 and 122. Maps available at the May meeting.

Come and see:

- Jim's shop
- A Collection of antique gasoline engines
- A Collection of Steam Engines
- Some of Jim's projects

Jim also sells machinery and tooling. This will be available to look at and/or purchase. 5% of all cash sales on that day will be donated to NEMES.

Coffee and Donuts for the early arrivals.

There will be a generous box of misc., free, "scrap" parts, odd tools and materials for everybody to pick through. If you have any small, odd bits and pieces that you want to give to other members, bring them along and add them to the box.

Parking is a little bit of a problem so if you can double up with someone it'll help.

More details at the May meeting.

scl

Calendar of Events

By Bill Brackett

Thank you Dave Robie and Richard Sabol
for your extensive list of events

May 4, 2000 thru 7PM
NEMES Monthly Club Meeting
Waltham, MA
Charles River Museum Of Industry 781-893-5410

May 7
Dunstable Show
Dunstable, MA
Call: Jay Wilkie 207-748-1092

May 13
Jim Paquette's Shop Open House
See article above

May 20-21
Rhinebeck Show
Dutchess County Fairgrounds, Rhinebeck, NY
Call: 914-635-3217

May 20-21
South Carver Ma. At Edaville RR
Cranberry Flywheelers
Dave Robie 781-355-5322

May 23 - 25, 2000
EASTECH 2000
Eastern States Expo. W. Springfield MA
www.sme.org

May 27-28
Bernardston Show
Rt. 10 E Off Rt. 91 Bernardston, Ma
Call Wes Ball 413-648-9450

May 28 Owls Head
MOPAR/Chrysler Auto Meet

June 1, 2000 thru 7PM
NEMES Monthly Club Meeting
Waltham, MA
Charles River Museum Of Industry 781-893-5410

June 3-4
Dave Dearborn's
Dearborn Homestead, Campton, NH
Call Dave Dearborn 603-726-3257

June 3-4
Hinsdale Show
Rt. 119, Hinsdale, NH
Douglas Wood 802-254-6758

June 10-11
Skowhegan Show
Skowhegan State Fairgrounds-Skowhegan ME
Call: Joe Kelly 207-862-2074

June 10-11
Granby Show
Dufresne Park, Rt202, Granby, MA
Call: George Randall 413-467-9541

June 11 Owls Head
Rod & Custom Auto Show

June 15-17
Coolspring, Show
Coolspring, Pa. I90 exit 13 Rt. 36
Call: Joyce Bashline 412-487-1464

June 17-18
Old Stone House Museum Show
Brownington, VT
Call: Bob Williams 802-525-3931

June 24-25
Orange Airport Show
Orange Airport, Orange, Ma
Call: Grover Ballou Jr. 413-253-9574

June 25 Owls Head
Super 70's Auto Meet

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

Bill

Treasurer's Report

By Kay R. Fisher

Previous balance	\$3496.67
Service Charge	-3.00
Brian Matheny (Speakers fee)	-50.00
Bob Neidorff (Newsletter Expense)	-108.21
Dues Deposit	60.00
New Balance	\$3346.00

The Meeting

By Stephen C. Lovely

The theme of this meeting was electric powered vehicles, and there was a collection of them outside the back of the Museum before the meeting. Dave Robie organized it all, and when I showed up out back before the meeting he right away insisted that I try out a little electric scooter with a plate on it that said, "Mon-go". It was brought by Tony Ascrizzi who is the President of the New England Electric Auto Association. He also runs a business in Worcester, Electric Vehicle Systems where you can get what you need for your electric vehicle project. (508-799-5650 or TonyAscrizzi@Juno.com) The NEEAA has a web site at www.eaaev.org/neeaa, which has links to other Electric Vehicle sites. The scooter has a 275 amp controller that costs \$185, which with a lead acid car battery provides current to a 10 amp Chinese Hub Motor. The motor looks a lot like the front brake from an old motorcycle from back when they still had drum brakes. I took it for a spin around the parking lot, and it went quite nicely without making any noise.

Dave Robie had his electric tricycle there. When I first saw it I almost told him he'd left his headlight on and wasn't he going to turn it off to save the battery. But then I noticed that it was a flame, not an electric light.

Dave Methany, the main speaker for the night had his Chevy S-10 electric truck parked by

the door, with an extension cord going into the building to help things out a bit for the trip back to Bellingham Mass. after the meeting. There was also a Motobecane moped there that had been converted to electric, but I didn't get the name of the man who brought it. It had a huge motor on it and went very impressively despite the fact that someone had run it into a parked car and broken off one of the battery connectors.

Inside the meeting got going about 7:15. Ron got things started with some official business – Kay Fisher is stepping down as NEMES Treasurer and Rob McDougall is stepping into the job. He'll be acting Treasurer for a couple of months until elections at the annual business meeting when he will most likely be voted in as the official treasurer of the corporation according to the official rules. If you've read the Gazette lately you probably know that I will be done as editor after the fiftieth issue. I'd planned on doing it for four years and decided to go to 50 to provide a bit of extra time to find a new editor. Kay Fisher, now that he's no longer having to manage all the NEMES money, has volunteered to edit the Gazette and the issue that this meeting report is in is his first issue as editor. Bob Neidorff has agreed to continue to handle the printing and distribution each month, and I plan to continue to report on the meetings. So monthly publication of the Gazette should continue on uninterrupted, with the workload being spread out a bit more than it had been previously.

Dave Robie has a list of all the Machinery Shows scheduled for the coming season in the local area. A good many of them have been reported here in the Gazette in the Calendar that Bill Brackett does each month.

Jim Paquette is having an open house at his shop and engine collection on Saturday May 13, with the Rain Date June 10th. He'll have maps available showing how to get to his place in Uxbridge at the next meeting. Bring carryable items for a swap, but nothing heavy, as he doesn't have room to bring vehicles into the yard with them. I've been to his shop a couple of times, having bought a couple of things from him and am

looking forward to seeing it during the daylight hours.

Jeff DelPappa was showing the first episode of "Scrapheap Challenge" prior to the meeting (and is planning on showing one starting at 5:45PM for the next year or so when he's in town and can be at the meeting.) Jeff organized a team to try out for the next season's production of the show and was successful in getting his team qualified. The New England Rubbish Deconstruction Society, the "NERDS" will be flying to the UK sometime soon for taping the first round of the competition. Jeff reports that a US version of the show, "Junkyard Wars" is in the offing and that they are looking for teams to compete. Good luck to Jeff and the rest of the NERDS and I expect we'll hear more in the coming months.

Howard Evers will have an Atlas Horizontal Mill available soon, so if you are looking for one talk to him.

Don Strang reported that Bob Barrett had knee replacement surgery the Tuesday before the meeting and is recovering at Emerson Hospital. Hopefully Bob will be home and recovering nicely by the time this gets printed. Paul Budlong's Bridgeport is for sale by his widow. It's a J-head with a 36" table. Paul's complete ham station is also for sale, along with his 7-1/4 inch gauge 4-6-2 Pacific Locomotive project. Dr. Fred Armbruster, who gave us the great talk on building a Rose Engine a while back, has decided to go CNC, purchasing a new Cincinnati CNC lathe. As a result he has a nice fully tooled Monarch 10-EE (tube drive) and a Rivett 10" lathe for sale. A new IEEE Legacy book is out, "Famous Mechanics" written in 1841 just as the industrial revolution was getting going. Don says it's fascinating to read the contemporary reports on the figures that we see from over 150 years in the past.

Ed Rogers asked what Pyrene G1 from the Pyrene fire extinguishers is. Carbon Tetrachloride was mentioned as a possibility, but no one was sure.

Mike Boucher brought in a copy of Ron Colonna's book on building the quarter scale Offenhauser 270 engine without castings. Ron had the engine at the Cabin Fever Show, and at that point he said that he hadn't gotten it running yet. Since the show he has run it, and says that it's the only model engine he has that scares him because it's powerful enough to destroy itself and do some real damage. Ron's engine at Cabin Fever was drop dead gorgeous. I was disappointed that Ron couldn't take my check for the book right then, because he wasn't a vendor and only vendors could sell at Cabin Fever. I managed to remember to get the check into the mail after we got back from the bus trip and the book arrived once it had been finished and printed. It's a comprehensive book on a well-done model of an engine that figures prominently in the folklore of American motor racing. I expect it will become a classic in the years to come. To get your own copy send \$35.95 to Ron Colonna, 107 Lexington Road, McKeesport, Pa 15135-3117.

Brian Matheny, from the New England Electric Auto Association was the main speaker for the evening. He's been involved with electric vehicles now for about three years. He went to a meeting and said to himself "I can do that" and got involved.

Home Power magazine was mentioned, and Brian said that you can find the magazine at www.homepower.com on the web, available for free download.

To start out his talk Brian showed us a series of pictures of an electric dragster doing a serious wheelie with 700 pounds of batteries up front where the IC engine used to be. It has 2 nine inch Advanced DC series wound DC motors driving a hydraulic pump to a powerglide transmission. The pump takes the place of the torque converter in a more typical installation. The car in the picture was later fitted with wheelie bars because the driver took his foot off the pedal as he thought he might be going over backwards and the nose came down hard enough to bend some things.

Brian drove up to the meeting in his Chevy S-10 pickup, converted to electric power by him.

Here are the steps to convert an IC vehicle to electric power.

1. Take out the engine, Radiator, Exhaust, and fuel systems.
2. Clean up the engine compartment – get rid of the IC engines mess.
3. Assemble the electric motor with the flywheel hub adaptor plate and motor mounts.
4. Install 3 onto the transmission.
5. Consolidate the existing wiring.
6. Install new wires.
7. Install vacuum reservoir (for power brakes.)
8. Install front battery box frame.
9. Attach accelerator cable.
10. Put in an emergency disconnect to cut power.
11. Install a vacuum pump.
12. Put in the switching and fuse panel.
13. Install a DC/DC converter (acts like the charging system on IC car to keep the 12 volt battery for lights and systems charged.)
14. Install the motor controller.
15. Install a heater assembly (10 amps for heat vs 130 or so for moving the vehicle means the heat load is negligible. Also, you can have the vehicle preheated off the electric mains before you get in it so less heat is needed from the batteries.)
16. Install a gauge module.
17. Install an on board charger so you can recharge on the road.
18. Install the rear battery box.
19. Install the battery cables.
20. Install the front battery box.
21. Install the batteries and the final cables.

Brian's S-10 uses the clutch and transmission that were originally in the truck. Commercial installations use AC induction motors

that can go up to 14,000 RPM, so they don't need a transmission. His truck uses a DC motor.

The most expensive part of an electric vehicle is the motor controller. The S-10 has a nominal voltage of 144, and the controller can deliver 500 amps to the motor. The one he is currently using is reliable – it's got 26 thousand miles on it and is going strong. The controller is made up of discrete components, and like everything else on the truck Brian can work on it himself.

The S-10 is a functioning vehicle at this point and is Brian's only registered vehicle. He's working on a car project now, which is designed for higher performance than the truck. It will have 300 nominal volts and a current of up to 1000 amps. That should give it 4 times the power of the truck.

You can easily air condition an electric vehicle because it doesn't need nearly the AC capacity of an IC vehicle. That's because a big chunk of the heat you need to get rid of in an IC vehicle comes from the IC engine and in the electric vehicle you don't have it. Plus, you can use the power available from the grid to pre heat or pre cool the vehicle under timer control before you go out to take your trip.

Brian's S-10 gets roughly 60 miles per charge. A little more in the summer and a little less in the winter. Power steering is accomplished with a 1 HP motor. It's not a problem with battery use because it isn't used except when you're actually turning and can usually be cut out after you've gotten up to a set speed. Headlights take about 1 amp to run, so they are insignificant compared to the 130 or so that you are using to cruise down the highway.

The DC motors in the S-10 are about 85% efficient. The AC induction motors are good for 90% or more efficiency.

With an IC car, when the fuel runs out the engine stops and so does the car. That doesn't happen with an electric car. You don't have the engine cough and die when the last drops of fuel burn, you sort of see your power fade away like a

flashlight that is starting to go dead. If you stop at the side of the road and let the batteries rest they will recover somewhat and you can drive some more.

A standard wall outlet will only put out about 2 KVA (roughly equivalent to 2 KW) without tripping the breaker. So at 10 cents per kilowatt hour, which is about what we pay around here, charging for 7-8 hours to get a full charge in the S-10 will cost about \$1.60 and will take you 60 miles. At \$1.20 per gallon for gas fuel will cost 6 or 7 cents per mile. This is compared to about 2 cents per mile for electricity (3 cents for a truck – off peak rates.) In addition to the electricity cost you must include the amortization costs for the batteries and the maintenance of the vehicle. Batteries will probably run you 8 or 9 cents per mile, but other maintenance costs for the electric vehicle will be less, as there is no oil to change on a regular basis.

Electric cars being charged during off peak hours could significantly reduce the cost of electricity by helping to level out consumption and thus allow the cheaper base load facilities to supply more of the total power to the grid. Large steam plants produce power for way less per KWH than do the peak load plants. Gas turbine and diesel peak load plants might cost 50 cents per KWH to operate, while base load plants might cost less than 5 cents per KWH. If 10 or 20 per cent of the national vehicle fleet were electric and were charged off peak the cost of electric power would come down.

As things stand today Brian figures that his electric S-10 just about breaks even economically compared to an IC powered version. If gasoline goes to \$2 or \$3 per gallon he will be ahead.

Currently the S-10 has standard lead acid batteries, as opposed to the sealed type, which cost about twice as much. There is a lot of sulfuric acid in those batteries, but studies indicate that in the event of an accident the acid in the batteries is less dangerous than the gasoline in the tank of the typical IC car.

Brian does not currently have regenerative braking in his truck, although the connections are

there on the controller to use regenerative braking. The front end carries about the same weight that the IC version of an S-10 carries. The engine and radiator are gone, but the weight of the electric motor and the front batteries come out about the same. In the rear of the truck there is an extra 1000 pounds of weight from the rear batteries.

Going to get an inspection sticker for an electric vehicle turned out to be interesting. The computer knew that he had an electric vehicle, but the software wasn't quite up to the task by itself, as it required the displacement and the number of cylinders for the engine anyway.

Lead acid batteries are pretty reliable devices, but when you have a bunch of them connected up in a vehicle you need to care for them properly if you are going to get the best life out of them. Every two or three cycles you need to fully charge them. In a 6 to 8 hour full charge cycle 60% of the charge goes in the first hour. 80% of the full charge is in by 1-½ hours. The last 20 % is what takes the rest of the time. The last little bit is when the battery boils off hydrogen (which is what makes lead acid batteries prone to blow up if there are any stray sparks around.)

The charger can get sophisticated and expensive – you can spend \$500 to \$1000 for a charger. That charger can last you through several cars though.

You need to monitor battery temperature when you are charging. Nickel Cadmium batteries can vary all over when you charge them. Nickel Metal Hydride batteries won't charge if they get hot, they just act like a resistor and turn the power into more heat instead of charging.

Every seven to ten cycles the batteries in the vehicle need to be "equalized." All batteries are slightly different. That means that they all cycle slightly differently from each other. A battery that is slightly weaker than the rest of the pack will discharge a little deeper than the rest of the batteries, and when the pack is charged it won't be charged quite as fully as the rest. The equalizing charge every 7-10 cycles keeps the weaker batteries in the pack from getting low enough to cause them permanent damage. The equalizing

charge insures that the pack is charged long enough that every battery in the pack is fully charged when it is completed.

What's the procedure to charge a lead acid battery? Charge them up to the gassing voltage and hold it until they are within 2-5 % of the rated amp hours. Then trickle charge at 13.2 volts for the last 10% of the charge.

Lead acid batteries are now 98% recycled, with the largest remaining source of lead pollution being the burning of used motor oil, which picks up lead from engine bearings and such inside the engine.

What is the main problem with electric vehicles today as Brian sees them? It is range. His S-10 is good for about 60 miles on a charge. But, he is able to use it for 90% of the trips he needs to make and it is his only registered vehicle. Studies indicate that two thirds of all trips are local errands, and for these trips range is not a problem.

Here are some web sites for electric vehicle information:

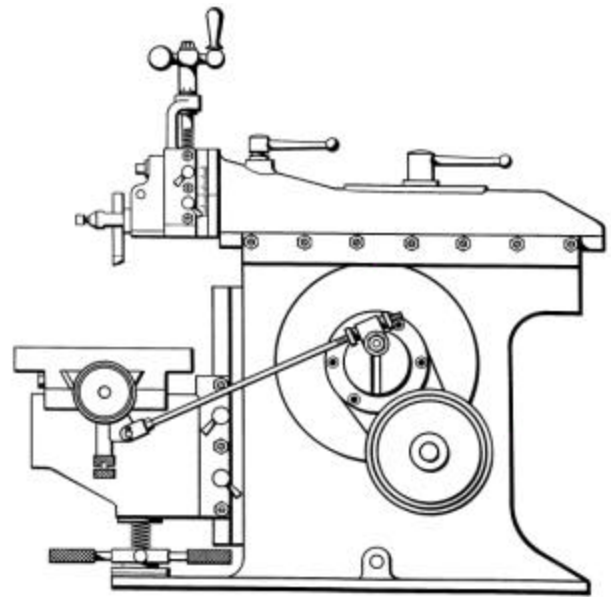
- New England Electric Auto Association
www.eaaev.org/neeaa
- Electric Vehicle Systems
www.ElectricVehicleSystems.com
- Solectria Corp
www.Solectria.com
- Electric Vehicles of America
www.inc.com/users/evainc.html
- Electro Automotive
www.ElectroAuto.com

I have to admit that prior to Brian's talk at the meeting I was pretty much convinced that electric vehicles were something cooked up by politicians to solve problems on paper rather than something that was remotely close to being practical. I'm still not about to run out and buy one (I like my diesel just fine thank you very much.) But, I have to admit that electric vehicles have reached the point where someone like Brian who is motivated to get an electric vehicle and to

make it work for him can do it successfully. And that's not something I would have expected to hear myself say a couple weeks ago.

Gene Martha recently purchased a wood bandsaw. He wants to use it to cut metal and to do it successfully figures he needs something around a 50 to 1 speed reduction. Has anyone got any ideas on how to go about getting that kind of a reduction, or an old gearbox they don't want that would do the job?

scl



Metal Shapers

By Kay R. Fisher

One frequently asked question is "I don't have a milling machine. Can I save some money by first getting a shaper. I have heard that you can do anything on a shaper?"

The answer is No. Don't even think about it. Although shapers are relatively inexpensive and frequently even given away you will not be a happy camper if your first serious metal working machine is a shaper. It is true that with patience and love you can create almost anything with a shaper. But the shaper will never replace a mill.

A shaper makes a wonderful addition to your workshop after you have the real necessities.

It can be fun and educational. Additionally most shaper owners pick them up for next to nothing and do some serious cleanup and sometimes rebuilding. This can prove to be an interesting adventure.

Another frequently asked question is "What things are shapers good at making?"

Shapers are good at making flat things, and keyways. Additionally shapers are the only machines that can make inside keyways, and inside gears. You can cobble some way to make inside keyways and gears without a shaper – such as using a tail stock ram to cut inside stuff on a lathe – but it isn't natural! Also in a small shop shapers are a very inexpensive way of making normal (external) gears. This is because you can

grind a tool bit to the shape of the gear tooth and save the expensive purchase of an involute gear cutter.

I received some good questions in my email, which I promise to get to in a future column. Keep sending letters and email with questions and interesting shaper stories. (Address in letterhead)

Kay

The NEMES Gazette

Newsletter of The New England Model Engineering Society

c/o Kay R. Fisher

80 Fryeville Road

Orange, MA 01364