

HUB Headlight

HUB Division Inc., Northeastern Region, National Model Railroad Association - www.hubdiv.org
Volume 36, Number 1, September - October, 2019

RAILFUN TIMETABLE

Presentation: Start-of-Season Mini Clinics

8PM Friday, September 27, 2019, Cambridge School of Weston

(Fourth Friday due to NER Convention)

Presented by Andy Reynolds and the membership, this will be our season-opener, and, once again, we will have a 12"x12" diorama contest (see Page 11 for more info) and a show-and-tell of what we all have been working on in the past 12 months. We welcome everyone to participate and bring in actual models, dioramas, trackwork or photographs of something you think is worthy of showing off to the group. PowerPoint photos should be emailed to Andy Reynolds in advance, if you cannot bring your project to the show.

Hands-On: Getting a Better Understanding of Scenery Techniques

By Andy Reynolds

10 AM Saturday, October 12, 2019

First Lutheran Church, 1663 Main Street, West Barnstable

This will be a hands-on clinic about creating better scenery. The first 25 participants who sign up will get a 12" by 12" diorama to take home and work on creating rock walls, abutments, or rocky fields. The clinicians will work with Bragdon Enterprises geodesic foam, hard-shell rock formations, latex rock molds, and weathering systems. For a precursor to what we'll be doing go to www.bragdonent.com/gfguide.htm. Seating is limited, so email Andy at railfun.coordinator@hubdiv.org to let him know you are coming. He'll be ordering supplies, and a count is necessary to ensure we have supplies for everyone. Obviously, if you are coming just as an observer, that's good, too. We'll also discuss how this part of scenery ties into the Master Model Railroader master plan. More information will be distributed closer to the meeting via our Google groups email list and via Constant Contact mailing list.

Hands-On: Painting People

By David "Shack" Haralambou

8 PM Friday, October 18, 2019, Cambridge School of Weston

This night will be a hands-on activity for painting people. In particular we will be painting "summer" people (as most people ship from various manufacturers) into "winter" people with hats, gloves, scarves, boots, etc. We will discuss skin tones, diversity on our layouts, and painting techniques. We will be painting figures in G-scale, O-Scale, and HO-scale. If you are a sloppy painter, wear appropriate clothes. All ages will enjoy this "hands-on" or should I say "gloves-on" presentation. All painted figures will be installed on a future Museum of Science (MOS) Holiday layout for all 175,000+ visitors to see!! (See MOS Update on Page 2).

RAILFUN Timetable Continued on Page 5

Kitbashing East Broad Top's Third #6 - Part 2

By Russ Norris, MMR

In Part 1 (found in the May-June *Headlight* Volume 35, Number 5), I covered the history of the engine and how I modified the sand domes and cab of an AHM kit to better represent EBT #6.

The dual couplers were the most challenging problem. As you can see from the following photo, the 3/4-size narrow-gauge coupler was located immediately below and to the side of the standard-gauge coupler.

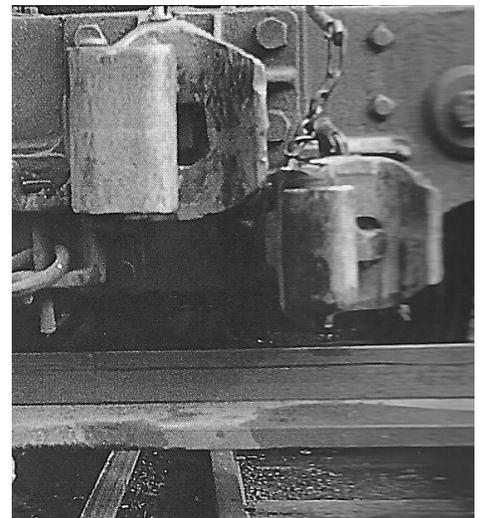


Photo 13: The dual couplers on EBT #6.

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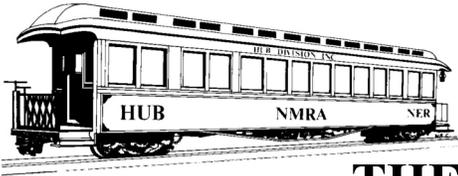
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THE PRESIDENT'S CAR

By James VanBokkelen

Hello, members of the HUB Division and readers outside our group. I'm writing this as my family is making plans for August, including the start of school.

First a look back:

Switching the HUB's email list server (from guesswork.com to hubdiv@google groups.com) went pretty smoothly. Office Manager Peter Watson is administering it, but if you have a Google account you can change some of your own settings. Thanks to Steve Knowles for handling the old list all these years.

The HUB's trip to Buxton, ME, to visit Bar Mills Models and a private outdoor layout nearby went well. Organizer Andy Reynolds reports more than 40 members joined the tour of Art Fahie's business and personal layout. I took my family to Seashore Trolley Museum in Kennebunkport on the way home. Thanks to Andy, Dick Towle, Mike Tylick and Bob Macaulley for organizing and helping out.

The annual HUB cookout at Waushakum also was a success. More than 100 members had requested meal tickets, and I think most made the trip. An antique Ford automobile group was present most of the day, but most members' attention was on the live steam, diesel and electric train activity -- a few pictures of this appear later in this *Headlight*. Thanks to Pete Watson for organizing the event, and to all the members who helped with cooking, serving and cleanup.

Several HUB members attended the NMRA National Convention in Salt Lake City, UT, the week before the cookout. Jeff Gerow even made it back in time to wear his convention t-shirt to the cookout. I know a couple of members were scheduled to present clinics. But you will have

to wait for a subsequent Headlight for pictures and stories.

Looking forward:

You should see this before the 2019 Northeastern Region "Empire Jct." convention September 19-22 near Syracuse, NY. The program looks good and it's an area I've only passed through to-date. If all goes well, I hope to see you there.

Ron Noret, our new Module Coordinator, has been working out our Fall/Winter Modular Layout calendar. There will be fewer events this winter than last, but he's keeping those that have drawn the most member participation. When he asks for available modules and members, please respond (yea or nay) ASAP.

As mentioned elsewhere in this *Headlight*, the Museum of Science painted itself into a corner with ongoing construction and won't have room for our Holiday Layout this year. If you were planning to volunteer for that effort, please consider helping out with our Modular Layout events, RAILFUN and the NEMTE.

Near the HUB's territory, the Seacoast Division hosts Derry Fun Night on the second Friday of the month (seacoastnmra.org). Their Fall Event will be in Stratham NH on October 12.

In the longer term, keep your ears peeled and your calendars ready for preparing and volunteering for our NEMTE in December, and then the 2020 NER convention October 9-12 (Columbus Day weekend) in Westford, MA. We'll be looking for clinics, layouts, operating sessions and volunteers for all aspects of the event.

MoS Layout Update

By David "Shack" Haralambou

After an amazing layout presentation last year at the Museum of Science (MoS) (Thank you all who helped out, we as a group, looked amazing!), the MoS has determined that they do not have a location for the layout this year due to construction in the building. They already have three potential spots for next year's layout, and there is a possibility something smaller or different may happen this year. Stay tuned.

Since I last wrote, I've done a lot of heavy track work at Seashore, but that's tapered off with the hot weather. As time allows, I've been working on structures and scenery for my B&M Eastern Route layout. My wife and stepson have both helped; she built the N-Scale Architect coal dealer kit and he's glazed windows, painted structures and helped me install LED lights.

I haven't done anything towards the Achievement Program this year, but if one of you wants to earn the Association Official certificate, I'll designate you the HUB's NER Director, which will qualify you in three years. Let me know.

If there's something on your mind about the HUB or its activities, email me at president@hubdiv.org, call me at (603) 394-7832 or catch me at a HUB event.

Until next time, High Green!

New Member

The HUB Division welcomes the following new member

- Kenneth Jordan - Beverly

HUB Logo Merchandise

By Barbara Hoblit

The HUB will be unveiling an exciting new way to order HUB logo merchandise and I'll be announcing it at the opening RAILFUN and via Constant Contact for those who can't make it.

Fiscal Year 2019 Appointments

David "Shack" Haralambou - Vice President

Gerry Covino - Treasurer

Mike Dolan - Secretary

Peter Higgins - Membership

Bill Barry - Headlight Editor

Andy Reynolds - RAILFUN Coordinator

Ron Noret - Module Coordinator

Dave Insley - Webmaster

Peter Watson - Office Manager/Clerk

Bill Harley - Expo Show Director

Mark Harlow - Expo Show Manager

Ken Belovarac - Librarian

Dan Fretz - Donations Chairman

Barbara Hoblit - Public Relations

Peter Watson - NMRA AP Chairman



Shanty Talk: A New Season

By Rudy Slovacek

Since the spring of 2019, I've been working on a number of projects including one to complete my achievement award in Rolling stock. I've gotten all the needed cars built and judged, but I just need to complete a passenger car. As per usual though, I quickly found myself in the midst of several other projects.

What began as a small Overton combination coach-type for the Taconic Lumber Company has now morphed into two cars. One is constructed of wood and the other uses styrene. The measurements and drawing are complete and several sub-assemblies finished. I thought if I'm going to do one, why not two. It just involved a few more measurements and cutting of styrene instead of wood. Of course, this involved digging out a partially assembled old Walther's Gas Electric kit (933-6451) I had purchased many years ago, and the assembly of some nifty-looking coach seats that I don't think they make any more. The passenger car project also involved finding some Tichy window and door castings, as well as painting and the making of some custom decals from scratch.

While these tasks delayed construction, I took it upon myself to also clear a couple of locomotive rebuilding projects awaiting my attention over the past couple years. I had already disassembled and accumulated the parts for rebuilding a second Atlas RS-3 to match the earlier one, (D&H 4049 in Photo 1), which I won an award for back at the Hartford National Convention. The second one (D&H 4040 in Photo 2) is shown with some of the hardware details added to the hood section. Note the engine access door handles not often captured on models. It also involved rebuilding

a proper 2000-gallon fuel tank as seen in Photo 3.

Because I enjoy rebuilding the ALCO models to better represent those that the D&H actually had, I also started an article to be submitted to one of the modeling Magazines. I intend to cover all of the types of ALCOs that appeared on the D&H roster.

While I was in the process of working on the RS-3, I took the opportunity to remove some material from the frames of a few RS-36 ALCOs and build some new 2000-gallon fuel tanks to be added in the upgraded detailing process. They are slightly different than those of the RS-3. It goes without saying that whenever I detail a locomotive, I also add sound or vice versa. In this case, I installed some of the new smart-phone speakers I had obtained at the Convention last fall in Mahwah, NJ, from Kaylee Zheng. I will cover this ALCO rebuild in a later column.

While the epoxy was curing and paint drying, I also decided to finish up a detailed flatcar load that I had seen on the Canadian Southern website. I used the Eastern Car Works Commonwealth Cast Steel 90-Ton Depressed-Center flat car to model NYC 499056. The load is a boiler casting from Chooch and is made to resemble the actual Boiler load from "Alco Locomotive Co, Schenectady, NY." I think you can guess why it attracted my attention. As I mentioned in an earlier column, ALCO not only made Tanks during the WWII, but also boilers for ships and undoubtedly stationary plant use. The cribbing and tie-downs really give it a unique character. I had previously constructed several of these flats; one for NYC and one for the Coastal Mountain with transformer loads, before I discovered the Canadian Southern Website.



Photo 3: Fuel tank modifications



Photo 1: D&H 4049



Photo 2: D&H 4040

Luckily, I was able to pick up another one of the discontinued kits at a swap meet.

Before I got back to my original project, I also wanted to finish up a prototype NYC wooden caboose for one of my war trains. Again, some years ago, I picked up a brass caboose at a great price and later discovered it was a dead ringer for one depicted on pg 81 of my copy of "Cabins, Crummies and Hacks Vol. 1, North and East." I have a display event coming up in August at a retirement community and wanted to put it into action. I soaked it in varnish remover, although I'm not sure it needed it, then washed and pickled (etched) it in distilled white vinegar. After a thorough rinse and drying, I spray-painted it with Krylon Ruddy Brown Primer. The color is so close to the color in the picture that I proceeded to prep and decal it directly for the NYC.

Finally for the passenger car project, I've begun to assemble the wall sections with the window and door fittings added. I'd like to show more but our editor needs this submission, so perhaps I'll be able to report back on the project after the fall convention in Syracuse. Am I enjoying my retirement? You bet I am! Maybe I'll see if I can make it to the RAILFUN in September.

Kitbashing East Broad Top's Third #6 - Part 2

(Continued from Page 1)

There's not a lot of clearance between the two knuckle couplers. In the beginning, I gave serious thought to using a Rio Grande-type flat car with a standard-gauge coupler on one end and a narrow-gauge one on the other. The breakthrough came when I realized that I didn't have to use a Kadee #5 for the standard-gauge coupler. I opted to replace the Kadee #5 with a Kadee #714, which will also mate with a #5. For the narrow-gauge coupler, I chose a Kadee N-scale coupler, which will also mate with a #714. With the #714 centered, I then used an HOn3 coupler gauge to determine the correct height and location for the narrow-gauge coupler.

Since the #714 coupler did not fit the cast bushing on the tender frame, I first filed off the bushing, then drilled and tapped for a 1-72 screw and mounted the #714. Because of the tight clearance, I had to remove one of the supports for the rear steps. As you can see in Photo 14, the removal of the support is almost completely hidden by the couplers. The N-scale coupler was screwed to a small piece of 3/32" styrene strip. The styrene and the underside of the tender frame were coated with Liquid PSA cement, allowing me to stick the coupler to the frame for a test fit.

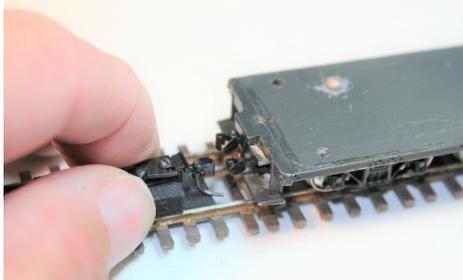


Photo 14: Using an HOn3 gauge to determine the position of the narrow gauge coupler.

Once I determined the exact location for the N-scale coupler, I cemented the styrene base to the tender frame with ACC cement. Photo 15 is a view of the tender before painting.



Photo 15: A view of the tender chassis with both couplers in place.

After testing the couplers on a section of dual-gauge track to make sure the couplers would properly mate with both standard- and narrow-gauge cars, I turned to the front beam of the locomotive. In Photo 16, I am using the gauge to adjust the height and location of the narrow-gauge coupler. Again, the inside support for the near side of the front step has been removed.

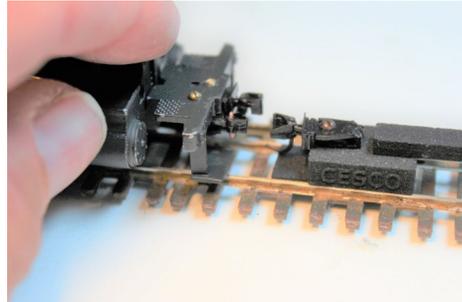


Photo 16: Making sure the locomotive coupler mates with the HOn3 gauge.

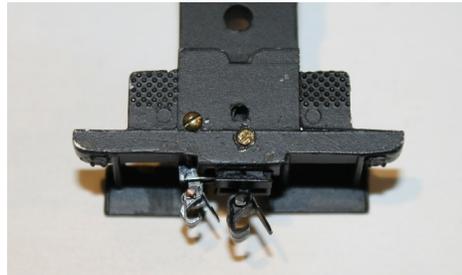


Photo 17: A view of the dual couplers mounted on the locomotive beam

In Photo 18, note the screw just forward of the draw bar. Changing from DC to DCC required a firm electrical connection to the engine frame. I drilled and tapped a 2-56 hole for a screw to attach the red decoder lead. A similar hole was drilled and tapped in the tender floor, for electrical pickup from the fireman's side of the track.



Photo 18: A view of the locomotive frame with couplers mounted.

Photo 19 shows how the can motor sits on an angle to the locomotive frame. The motor is insulated from the frame with Permatex Ultra Black Gasket Maker from my local automotive supply house. The motor fits snugly inside the locomotive shell, with the back of the motor projecting into the cab.



Photo 19: A new can motor installed on the frame.

In order to hide the motor, I decided to build up a dummy firebox and backhead for the locomotive. I used a razor saw to cut a section from a spare engine shell, that would just fit over the back of the motor. I cut the forward part of the section to fit squarely against the front of the cab. The back of the section was cut at a slight angle, and a piece of .020 styrene was cemented to form the backhead. I used brass parts from PSC to add interest to the backhead, including a D&RGW backhead throttle, part 3009; dual gauges, part 3226; a Sargent water glass with valves, part 3019; an early steam/air brake stand, part 3094; a set of 4" valve faucet knobs, part 4884; and a clamshell fire door, part 31160. Photo 20 shows what the finished backhead looks like after painting and detailing.



Photo 20: The super detailed backhead.

There was one more glaring discrepancy in my kit-bashed #6. Number 6 was, like all the other EBT engines, a coal burner, but the AHM Roundhouse model was of a Southern Pacific oil burner. I carefully cut away the oil tank, leaving a rectangular opening on the top of the tender.



Photo 21: Original oil burner tender shown on right, while on left is the modified version with the oil tank cut away.

(Continued on Page 5)

Kitbashing East Broad Top's Third #6 - Part 2

(Continued from Page 5)

In my scrap box I found a discarded D&RGW tender with a coal load. A little cutting and pasting, and you can see the difference in Photo 22. The large toolbox on the fireman's side was made from scrap styrene. The two on the other side were commercial brass tool boxes. The last step was to install the Soundtraxx Econami steam decoder and Current Keeper.



Photo 22: The finished tender.

Once the engine was wired for DCC, I converted the headlight to a surface mounted LED, or SMD. Photo 23 shows testing the LED and how I threaded the LED wires through the stack. Using a piece of shrink tubing for a guide, the wires were run back between the boiler shell and the weight.

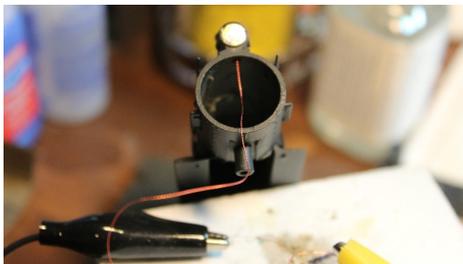


Photo 23: LED Headlight installation.

A few final details can be seen in Photos 24 and 25. Notice the large air tank beneath the fireman's side of the cab. There is no tank on the other side. I ordered a 24" tank kit from PSC and cut it to approximately the same size as the prototype. The unusual roof vent on the cab was scratch-built from styrene angle and sheet. The decals were purchased from Friends of the East Broad Top. The brass wheels clearly visible in Photo 25 accumulate dirt quickly, and eventually will be nickel plated to make the engine run better.

Since #6 was never turned, the views in Photos 24 and 25 are what visitors to my layout will see of this distinctive little switcher.



Photo 24: Side view of the completed EBT #6 in the Mount Union dual gauge yard.



Photo 25: A three quarter view of the completed EBT #6.

Presentation: Techniques on the Way to Master Model Railroader (MMR)

By Andy Reynolds

8 PM Friday, November 15, 2019, Cambridge School of Weston

This clinic will demonstrate and provide participants a clear understanding of the NMRA's Achievement Program. Andy will do this by explaining what he's learned about doing the paperwork for his AP certificate in structures and his journey to where he is today. He will show what he has done to get his structures "Contest Ready," and describe what you can do to make a better model. There will be many pointers on modeling techniques, paints, glues, weathering, scratch-building and working off craftsman-kit instructions. We will also discuss how to fill in the paperwork and provide an understanding of the point system. The goal is to get everyone to eventually enter a model in a regional contest. Will Andy earn his AP certificate in Structures at this meeting? Come and see if he meets his goal.

HUB Division Calendar of Events (Subject to Change)

2019

Sep 7 (Sat)	HUB Modular Railroad display at Norwood Days, Norwood, MA
Sep 19-22 (Thu-Sun)	NER Empire Junction Convention, Syracuse, NY, www.empirejunction.org
Sep 27 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Oct 1 (Tue)	Submissions deadline for the HUB <i>Headlight</i> Nov-Dec issue
Oct 5-6 (Sat-Sun)	HUB Modular Railroad display at the Nashua Valley Model Railroad Association's RailFair 2019, Boxboro, MA
Oct 12 (Sat)	HUB Cape RAILFUN Meeting, 10AM, First Lutheran Church, West Barnstable, MA
Oct 18 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Nov 2 (Sat)	HUB Modular Railroad display at the Wellesley Community Center, Wellesley, MA
Nov 15 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Nov 23-24 (Sat-Sun)	HUB Modular Railroad display at the Greenberg's Toy & Train Show, Shriner's Auditorium, Wilmington, MA
Nov 24 (Sun)	Submissions deadline for the HUB <i>Headlight</i> Jan-Feb issue
Dec 7-8 (Sat-Sun)	The HUB-sponsored New England Model Train EXPO at the Best Western Royal Plaza Trade Center, Marlborough, MA

2020

Jan 4(Sat)	HUB Holiday Party at the Common Market, Quincy, MA
Jan 11 (Sat)	HUB Cape RAILFUN Meeting, 10AM, First Lutheran Church, West Barnstable, MA
Jan 17(Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Jan 18-20 (Sat-Mon)	HUB Modular Railroad display at the Wenham Museum, Wenham, MA
Jan 25-26 (Sat-Sun)	HUB Modular Railroad display at the Amherst Railway Society's Railroad Hobby Show, Big-E Fairgrounds, West Springfield, MA
Feb 1 (Sat)	Submissions deadline for the HUB <i>Headlight</i> Mar-Apr issue
Feb 21 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Mar 20 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Mar 28-29 (Sat-Sun)	HUB Modular Railroad display at the Greenberg's Toy & Train Show, Shriner's Auditorium, Wilmington, MA
Apr 1 (Wed)	Submissions deadline for the HUB <i>Headlight</i> May-Jun issue
TBD (TBD)	The HUB Division Annual Meeting and Election
Apr 17 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
May 9 (Sat)	HUB Cape RAILFUN Meeting, 10AM, First Lutheran Church, West Barnstable, MA
May 15(Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Jun 19 (Fri)	HUB RAILFUN Meeting, 8 PM, Cambridge School of Weston, Weston, MA
Jul 12-19 (Sun-Sun)	2020 NMRA National Convention, St. Louis, MO, www.gateway2020.org
Jul TBD (Sun)	HUB Summer Picnic, Waushakum Live Steamers, Holliston, MA
Oct 9-12 (Fri-Mon)	HUB Sponsored NER Convention, Mill City 2020, Westford, MA, www.millcity2020.org

Fall Shows and Open Houses

September 22, 2019 (Sun): The Old Colony Model Railroad Club's 19 th Annual Train Show, Taunton Holiday Inn, Taunton, MA, www.ocmrrc.com	September 21, 2019 (Sat): The North Shore Model Railroad Club's Flea Market (Sat), Wakefield, MA, www.nsmrc.org	November 29-December 1, 2019 (Fri-Sun): Annual "Tour de Chooch" layout tour, Southern NH, Northeastern MA, www.tourdechooch.org
September 28-29, 2019 (Sat-Sun): 5 th Annual Maine Model Railroad Tour, www.mainemodellrtour.com	October 5-6, 2019 (Sat-Sun): Nashua Valley Model Railroad Association's RailFair 2019, Boxboro, MA, www.nvrra.com	December 7-8, 2019 (Sat-Sun): Bay State Model Railroad Museum Holiday Open House, Roslindale, MA, www.bsmrm.org
September 21, 2019 (Sat): Pepperell Siding Model Railroad Club Open House, Pepperell, MA, www.psmrc.org	October 26-27, 2019 (Sat-Sun): The South Shore Model Railway Club's annual Fall Model Railroad Show & Open House, Hingham, MA, www.ssmrc.org	December TBD, 2019 (Sat): The Providence Northern Model Railroad Club Open House, Warwick, RI, www.providencenorthern.com . (Club is also open most Saturdays 12-4.)

Note: These are presented here for the benefit of members. If you belong to a club and want to promote your open house or show, please email editor@hubdiv.org

Bar Mills RAILFUN Field Trip

By: Andy Reynolds

By all accounts the HUB Division, with invited guests from Little Rhody, had a fabulous time at the RAILFUN field trip to Maine on June 15th. The weather was a picture-perfect treat that enhanced all there was to see. The event was well attended with 46 members, guests and crew. Two separate tours, of six at-a-time, went inside the Strong Depot. Each tour saw the Bar Mills kits on display at the On3 layout and along the walls, and then went through the laser kit manufacturing facilities on two-floors of the plant. Jack Ellis had another group at the N-scale layout in Art's house, while Mike Tylick entertained people under the big top with clinics about tips and tricks to building Bar Mills structures. Some members even purchased kits after seeing them on display.



Garden RailWay - scratch built buildings and the B&M



Bar Mills clinic put on by our own Mike Tylick

After the activities at Bar Mills, most of us went to Carl Churchill's G-Scale Garden Train Supplies. We took in his completely scratch-built outdoor layout. It was being renovated to bring the layout off the ground by two feet for easier handling. Our group picnicked here under a shaded tent and had sandwiches provided by the HUB along with drinks and snacks. Later, Carl and his crew treated us to tours on ATVs though seven-acres of woods, showing off all his wood sculptures nestled along the trails.

From here people were on their own to tour other Maine sites, such as the Seashore Trolley Museum, the Maine Narrow Gauge Museum, the Wiscasset, Waterville and Farmington Railway Museum, railfanning photo opportunities at suggested sites, and then on to dinner at some of New Hampshire and Maine's finest steak and seafood restaurants.

Many members, either at dinner at Newick's Seafood Restaurant or by emails, thanked me and the crew for organizing the June RAILFUN in Maine this year. People were enthusiastic about keeping up the momentum and doing something next year. Plans are in the works to possibly take a train out of North Conway, New Hampshire, up through Crawford Notch. This would include photo run-bys at strategic locations. Planning will take some coordination with the Conway Scenic Railway folks, and a committee has been organized to get the train rolling!



Bar Mills - Art Fahie (out of frame left) discusses the HO-On3 layout and Bar Mills kits while James VanBokkelen and family, Bob Macauley and Toni Wolfman look on.



Dick Towle at the Maine Narrow Gauge Museum.



Bar Mills - The Sn3 layout



Bar Mills - N-Scale layout

How I learned to stop worrying and love DCC "Phase 1"

By Jerry Grochow

In Phase 0 of this series (HUB Headlight, October 2018), I described starting a new HO layout after a 25-year absence from model trains. After much reading and watching videos, I was convinced that I wanted to become “DCC knowledgeable,” if not actually a DCC expert. The level of DCC knowledge clearly ranges from having just enough so you are “able to run trains” all the way to “able to automate a realistic operation of multiple trains on a complex layout with signaling and a lot of animation.” While I intended to spend time on track planning and scenery and other aspects of my railroad, I also wanted to take advantage of the many possibilities that DCC and related technologies offer. Like all new technology, as “traintech” improves it becomes available at a lower cost and becomes easier to learn and set up. That means that more and more model railroaders will be able to implement realistic computer control and layout automation – and I wanted to be one of them.

As always, the first question was how to get started. Although I’m fairly well-versed in computer technology and the “do-it-yourself” ethic, I’m also a fan of making sensible “buy vs. build” decisions. Buy what works and isn’t too expensive; build what you have to – for additional features, to save money, or for fun. I didn’t need to build my own DCC controller (many are available with lots of features), but I also didn’t want to limit my fun by purchasing a ready-to-run DCC railroad (too simple, not enough future expansion capability, not enough fun!). I needed a middle solution that would be relatively easy to get going but allow me future flexibility. In Phase 0, I was quickly able to get a DCC locomotive operating on a simple loop of track with a single connection to a DCC controller. Now it was time for the next step.

Based on my thinking about future phases of my railroad, I needed a DCC control system that would:

- Have sufficient power to run several trains at once (four, in my case),

- Have the capability of using multiple throttles at once (I anticipated several grandchildren, each wanting to have their own!),
- Allow those throttles to be connected without wires (again, thinking of the grandchildren...),
- Be easy to control by my operating crew (grandchildren today are likely more comfortable touching a screen than turning a knob or pulling a real throttle; simulating a locomotive cab would have to wait another day, but this video certainly whet my appetite: youtu.be/eM2xM0NiUkg).
- Allow me to change the “configuration variables” on my locomotives (at least to lower the volume and limit the speed – yes, because of the grandchildren),
- Be easy to set up, but also have lots of features that I could learn about and use in the future,
- Not break the bank.

Even with this list, deciding on a controller is all about trade-offs: I could lower my dollar outlay by building my own (DCC++ on an Arduino), but at the cost of taking time away from other activities. Your list is likely to present other trade-offs so you still need to figure out how you are going to make your decision.

As I studied the offerings from the various manufacturers (Digitrax, NCE, ESU, MRC. etc.) and what it would cost once I had all the options to meet my needs (\$300 or so), I wondered what I was actually paying for. Maybe building that DCC++ controller might not be such a bad idea after all!

But then I started to study this in more detail. DCC railroading couldn’t really be that expensive, could it? Did I really need a command station with a fancy screen? Did I need an auxiliary power supply or a power booster? Did I need to buy throttles that came from the manufacturer of the command station? Since I was doing all this review sitting at my PC (and sometimes on my iPad or iPhone), I wondered what role the computer devices I already owned would play. Why couldn’t my PC do most of the work, using a command station just to translate and send DCC signals to the track? And why couldn’t my smartphone and other mobile devices

double as throttles? The dedicated devices that came from DCC manufacturers didn’t particularly look like controls in the cab of a locomotive anyway, and they certainly didn’t seem that easy to use in the hands of a six-year-old (although the throttle from Iowa Scaled Engineering is somewhat more realistic – and expensive).

In the midst of all this review, I had seen a number of references to open source PC software called JMRI (Java Model Railroad Interface, www.jmri.org), although mostly in the context of it providing a great user interface for setting locomotive configuration variables (CVs). Apparently commercial command stations didn’t do this job very well. JMRI does make changing CVs very easy and intuitive (you don’t have to know specific CV numbers, only the locomotive capability you want to change), so that made sense, but then it seems you would put the PC aside and run your trains using the separate DCC command station and its associated throttles. So even then, it seemed like I would be paying for a lot of duplicated capability.

The DCC++ folks had this same idea (if you want to go that route) but there is also a commercial command station designed to take advantage of the PC and JMRI. It is called the SPROG and comes in several models from a UK company that distributes through many retailers in the US and around the world. It works directly with JMRI, which further allows you to use iPhones, iPads, and Android devices as throttles by running apps available from their respective app stores. For about \$150 and using a computer, iPhone and iPad I already had, I could meet all my criteria for becoming DCC enabled with lots of future flexibility. And that amount even included a modest contribution to JMRI.org!

The SPROG3 model, incorporating a 2.5 amp power supply (which is enough to run several trains simultaneously), connected to JMRI running on my PC, seemed to meet all my criteria including easy startup. This solution also has one of the lowest price points outside of rolling my own, giving me some assurance that if I made a really bad mistake in buying it (I didn’t think so, but you never know...) I wouldn’t have blown my entire train budget. *(Continued on Page 9)*

How I learned to stop worrying and love DCC "Phase 1"

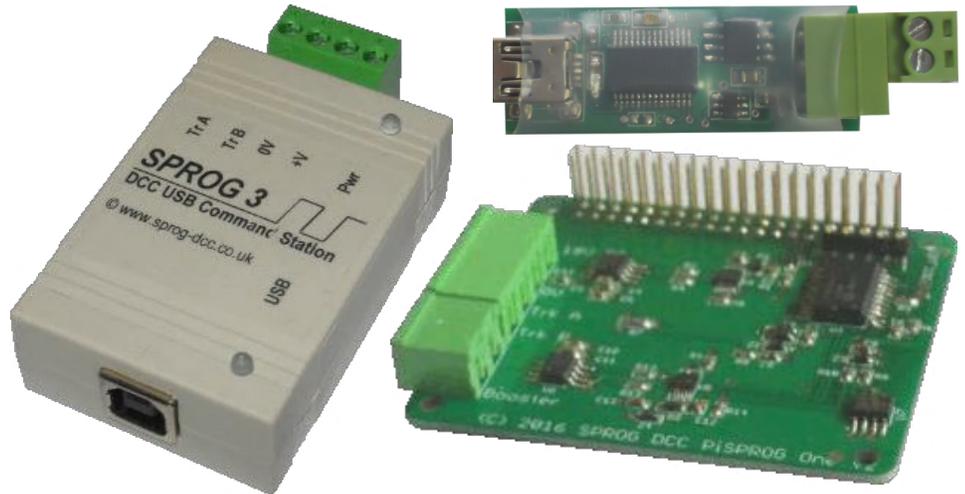
(Continued from Page 8)

The steps to get going with PC, SPROG, and iPhone were pretty straightforward. Connecting the SPROG to the track is like connecting any DCC controller: one wire to each rail! The SPROG itself connects to the computer via the supplied USB cable. The next step is loading the software.

While a version of JMRI comes on a CD with the SPROG, I chose to download the latest version from the JMRI.org web site (the "production release" although there are also test releases as new features are added). For Windows, it was basically a one click install (well, actually several, but really just follow the on-screen instructions). There are two applications that show up: DecoderPro to define and modify the operation of your locomotives (i.e. change the CVs), and PanelPro to describe your layout, control accessories (like turnouts and signals) and, if you wish, automate a large variety of tasks. [These two "applications" actually overlap and both use all the same underlying data and tables. More on this for another article...] Open DecoderPro and follow the instructions for adding a new loco to the roster. Put your loco on the track and in most cases the program will be able to detect the type of DCC decoder it carries (that's the little computer inside your loco). Once that is done, open an on-screen throttle (Actions->New Throttle), click the button to turn on track power, and you're off and running! It is pretty much that simple and I had my engine moving and the horn blowing about 30 minutes after I unpacked the SPROG.

The next step was getting my iPhone and iPad to work as walk-around throttles. Download the WiThrottle app from the Apple App Store. There is also a free version (WiThrottle Lite) which allows you to control a single locomotive at a time. If you are using an Android device, use the similar Engine Driver app.

Once you have the app installed, go back to JMRI and start the WiThrottle Server (Actions->Start WiThrottle Server). This

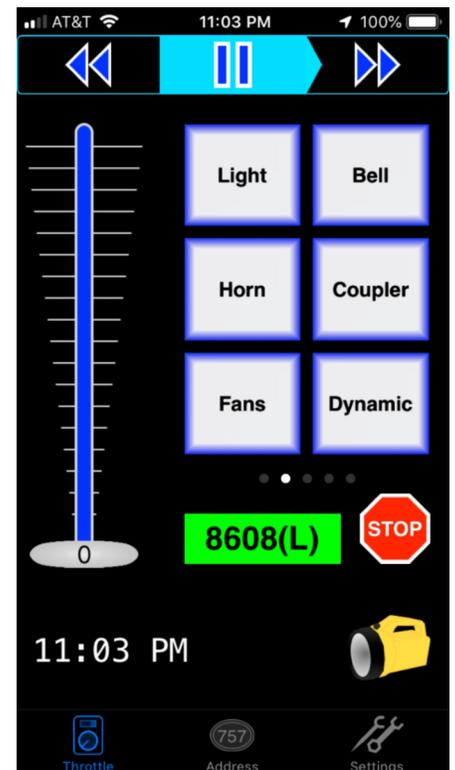


Members of the SPROG family of DCC controller/programmers: Clockwise from left: SPROG3 2.5amp, SPROG Nano (requires separate power booster), Pi-SPROG (for use with Raspberry Pi)

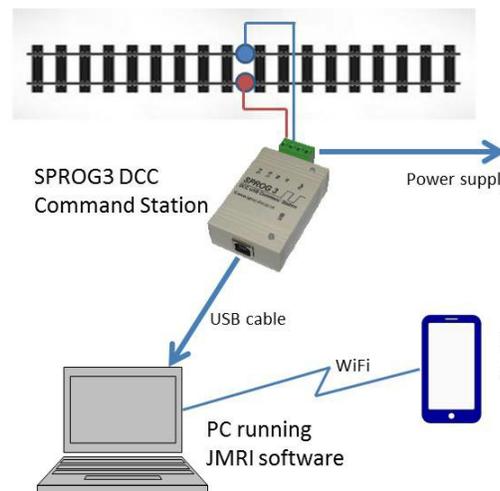
allows JMRI to communicate with your mobile devices on a specific IP address and port. When the window opens, the WiThrottle Server tells you the address where it is "listening." If you now start the app on your smartphone, it should link to JMRI. If for some reason it doesn't do this automatically, you just enter the address shown in the WiThrottle Server window. Now you select which locomotives you want to control from the roster list that shows up in another screen of the app and you have a fully functional walk-around throttle! And for those of you with some network understanding, you can even set it up for remote engineers, as I regularly do with my grandchildren many miles away!

So that's it for Phase 1 of my DCC journey: Multiple engines operating via wifi-connected throttles (iPhones and iPads) with a system that relies on my PC

– in the world of digital "traintech" without breaking the bank. As for Phase 2, well I've got a list of projects as long as my arm!



WiThrottle App throttle screen on an iPhone (one of several options available for look and feel)



A SPROG3 setup using a computer and smartphone throttles

Erich's Electronics Notebook

I need to begin this issue's column with a call for feedback. When I started writing this column, I asked you to send in questions and I would do my best to answer them. To date, however, I have only received one or two questions and I'm getting a little concerned that either the messages aren't getting to me or nobody is actually interested in the subject of electronics on their layouts. If it's the former, please let me know and I will look into why the messages are getting lost. If it's the latter, please let me know and I can find other subjects that would be of interest. I have several projects in my queue that I'm willing to continue with if I don't get any other input. Column topics include "Block Detection", "Layout Wiring Hygiene", and "DCC Boosters & Power Districts". Article subjects include "Building your own crossing gate with Arduino" and "The HUB Modular Signaling Testbed" (which I presented at the NMRA 2019 Salt Lake City National Convention). Please send any/all questions to me at erich@hbeng.com. Thank you!

LEDs 101

By Erich Whitney

"How do you choose the value of the resistor to use when wiring up an LED?"

I've heard this question many times and I've heard many marginally useful answers. I'd like to shed some light on this subject (pun intended) so that you can go forth and light your projects with LEDs with confidence and success!

Let's start with what an LED is. An LED is a semiconductor device that produces light when the correct voltage is applied. LEDs only turn on when the voltage at the Anode (+) side is more positive than the Cathode (-) side. The lens of an LED can be the same color as the LED but this is just to enhance the light they produce. Discrete LEDs such as the one in Figure 1 will likely have a flat spot on the Cathode side. If you look very carefully

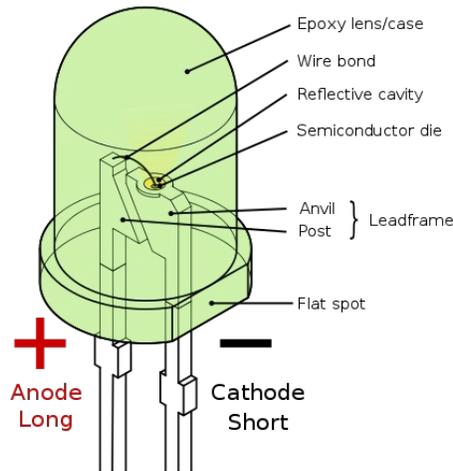


Figure 1: The Parts of an LED (source: Wikipedia)

through the lens, you can typically see the Anvil and Post leads as shown. This can be used to identify the Anode or Cathode if there's no flat spot. Discrete LEDs can also have one lead longer than the other. The circuit symbol for the LED is shown in Figure 2.

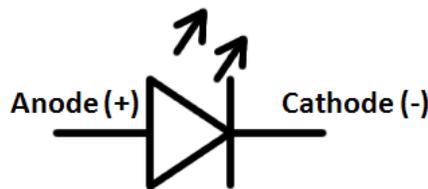


Figure 2 LED Symbol (source: DigiKey)

LEDs must have a current-limiting resistor connected in series in order to keep them from instantly burning out. You don't get a second chance with this. Unlike a light bulb that acts very much like a resistor, LEDs are non-linear devices. This means that the current they draw is not simply a linear relationship with the voltage applied. LEDs are specified by two very important numbers; V_f that is the voltage at which the LED will draw current and light, and I_f that is the amount of current they will draw when they are on. When you examine a datasheet for an LED, you will find either V_f and I_f specified as a value, or often times these are represented as a graph. Other times you may see these values listed as just a maximum value. Figure 3 is a diagram of the basic LED circuit.

As an example, let's say we have a red LED and V_f is specified as 2 volts @ $I_f = 10\text{mA}$. You want to run the LED from a

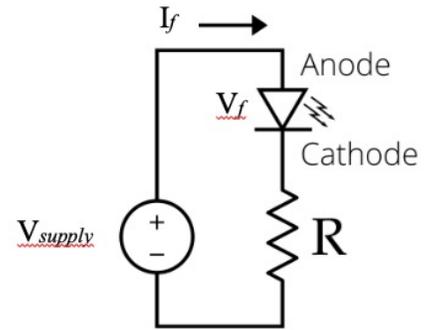


Figure 3 Basic LED Circuit (source: Wikipedia)

5-volt supply. The value of the resistor needed is calculated by dividing voltage by the current:

$$R = \frac{V}{I}$$

Sometimes people make the mistake of making the following assumption:

$$R = \frac{V_f}{I_f}$$

However, the correct formula is:

$$R = \frac{V_{supply} - V_f}{I_f}$$

For our example:

$$R = \frac{5-2}{0.010} = \frac{3}{0.010} = 300 \text{ ohms}$$

If you used the wrong formula, you would end up with 500 ohms which would result in the LED probably being dimmer than you expected. But 330 ohms is a common resistor value – that would work fine.

On a related note, when we're using LEDs on our layouts, we probably have some idea of how bright we want them to be. If we have multiple LEDs together such as a signal head, we'd like all the LEDs to appear about the same brightness. Unfortunately, not all color LEDs draw the same amount of current. If you buy a bunch of the same brand/part number LEDs, they'll all typically operate pretty close to one another. But mixing different LEDs from different manufacturers can be a problem. And, you might not always have a datasheet to look up the values for V_f and I_f . Also, don't assume that because an LED is bright that it's drawing a lot of power. White and blue LEDs draw a fraction of current as compared to red or green LEDs. Color and brightness are more about the physics of the device.

(Continued on Page 11)

LEDs 101

(Continued from Page 10)

Even though I can calculate the value of the resistor, I like to experiment and find a value that produces a level of brightness appropriate for my application. To do this, I will set up a test circuit and try different values to tune the brightness. To do this, all I need is a basic Volt/Ohm Meter (VOM). As a rule of thumb, if I'm using a 12V supply, I'll pick a starting resistor value of 1K. For a 5V supply I'll start with a 470-ohm resistor. When the LED is on, you can measure the voltage across it and this will give you the value for V_f . You can then calculate I_f with the following formula.

$$I_f = \frac{V_{supply} - V_f}{R}$$

Precisely controlling an LED's brightness is actually more difficult than picking a resistor. There is a very small range of voltages over which the brightness will be affected. Applications that need more precise control of brightness use a technique that turns the LED on and off very rapidly. This happens so fast that the human eye doesn't pick up the blinking – it just appears dimmer.

One final note on choosing resistors for LEDs. This is often overlooked and most of the time it's not a problem, but you should check the power rating of the resistor you use. Most carbon resistors you'll find will be either 1/4 Watt or 1/8 Watt. Using the same LED parameters, we can calculate the amount of power that will be dissipated in the resistor. This can be found by the equation:

$$P = I_f^2 R$$

For our example above:

$$P = I_f^2 R = (0.010)^2 \times 300 = 0.03 \text{ Watts}$$

So a 1/8 Watt (0.125 Watt) resistor is fine. However, a 30mA LED with a 1K series resistor is a different story:

$$P = I_f^2 R = (0.030)^2 \times 1000 = 0.9 \text{ Watts}$$

In this case, you would need to get a 1K resistor rated for at least 1 Watt!

LEDs are a great source of reliable lighting on your layout. They don't produce

much heat, they last much, much longer than incandescent bulbs and they're cheap. I keep a supply handy of standard resistor values, in the range of 220 ohms to 3.3k ohms, so that I can make the LEDs work the way I want. You will find that when you calculate a value for a resistor, more often than not you won't find an exact resistor value in a catalog. There is a common set of resistor values that are cheap and available. Trying to find an exact value can be frustrating and expensive and it's also unnecessary. Just find the next closest value and it'll be fine.

One of the places I use a lot of LEDs is when I'm installing new DCC decoders into locomotives. You really should read the instructions that come with the decoders with respect to their light function outputs. Decoder manufacturers will typically specify a maximum output current on these function outputs. You can use the information above to check the math and make sure you're not stressing the decoder, or worse yet, blowing an output. I've seen at least one manufacturer provide an option to use a built-in resistor for LEDs but most of the time you have to add the resistor. I typically install these resistors in line with the wiring to the LED and I cover them in heat shrink tubing to prevent any unintended shorts. If possible, try to use 1/8 Watt resistors if you can (remember to check the power) because they're smaller than 1/4 Watt resistors. The function output voltage is not a standard value – make sure you check the documentation or measure the common (blue) wire for what voltage a decoder supplies. There are yellow LEDs made that do a decent job of emulating the headlights on older locomotive. These will be less bright and yellowish in color. Modern locomotives may use brighter/whiter LEDs.

I hope I've covered the common issues with using LEDs on your projects. Feel free to reach out to me if you have further questions. And as always, please send your questions to erich@hbeng.com.



12"x 12" Diorama Contest – This September!

By: Andy Reynolds

Many of you may remember our modeling contest last September, but some members felt uncomfortable in showing off their skills. Over the past year we've listened to clinicians talk about modeling water scenes and buildings and how to detail, tune up and weather rolling stock. Also we've constructed and kit-bashed brass steam engines. We've learned how to dry transfer, make craftsman kits, weather buildings, do roofing and making create New England-style rock walls. We've even ventured into the Grand Canyon with Doug Scott.

So, let's take what we've learned and show off a little! Start this September 27 at our meeting. Make any type of diorama but keep it to a maximum of 12-inches by 12-inches. For example, last year's winner painted a hydrocal building along with scenery and track work. You could try a styrene kit, a Bar Mills laser kit, a scratch-built freight car, a water scene, a nicely weathered rock wall, a hand-laid turnout, or a simple hole in the ground! You will be judged by the membership, so please bring something with you, and you could be the prize winner!

This contest will be a primer for regional and national conventions, which I encourage everyone to try at least once. While a long way off, the HUB Division will host the NER Convention October 9-12, 2020. Why not get ready to win a contest now?

Iron Roads of the Monadnock Region Volume 1 & 2

These books, prepared by local historians over a seven year period, contain a wealth of information on railroad lines in New Hampshire and Massachusetts. They include many photographs, maps and tables about each railroad line. The Historical Society of Cheshire County is offering pre-publication discounts on these books through October 1st. Visit www.hscn.org for info.

Treasurer's Report Fiscal Year End; June 30, 2019

By Gerry Covino

The HUB Division has successfully completed another fiscal year by continuing to offer quality programs to our members and maintaining a solid financial position as shown in the summary financial statement below.

This year the Division undertook a new offering to the public under contract with the Boston Museum of Science (MOS), which approached the Division to build and manage a Train Exhibit at Christmas. This project is a three-year contract with the Division to construct and manage the event. The HUB Board approved the undertaking although it meant dipping into our reserves this first year to pay the entire expense of building the exhibit. The financial contribution committed by the MOS will allow the Division to help fund future programs. The event was a huge success largely due to the unselfish donation of time by many of our members. This included constructing and staffing the exhibit for many hours over the holidays and, afterwards the removal and storage of the exhibit for future years.

Other factors contributing to the Division's success are the generosity of our members, through their time commitments that support our programs, and the continued success of our donations table at the NEMTE (through great management by Dan Fretz, with assistance from Rudy Slovacek, Dave Insley, Barbara Hoblit, and many others.)

Additionally, the Division continues to receive many small donations from friends of the HUB Division as we promote the HUB as a non-profit organization. The programs we offer provide some revenue that helps offset the costs associated with their success. The Module Group delivers enjoyment to many modelers under the direction of modular superintendent Richard Ball, and his new replacement Ron Noret, while accepting honorariums from several venues, and our RAILFUN meetings continue to educate and entertain members under the direction of its coordinator, Andy Reynolds.

Our major fundraising event, the "New England Model Train EXPO," once again has been financially successful, despite a small decrease in paid admissions, due to an increase in Dealer participation. The event provides financial resources that fund a major portion of the Division's programs while our show management maintains strong cost controls. The Division leadership is extremely grateful and thankful for the effort and support you provide with the many volunteer hours required to staff this two-day event. Hopefully you will continue your involvement both days of the show with a minimum of one hour each day, for which you will be provided free admission to the show. The NEMTE management team is researching avenues that hopefully will increase attendance numbers going forward.

As we begin our new fiscal year, the Board has again approved a balanced budget to ensure the Division's ability to maintain its quality programs for the benefit of our

membership and modeling hobby. We encourage everyone to enjoy the upcoming season and to be an active participant in all the HUB's programs.

Finally, the Board urges each of you to make, or continue making, an annual financial contribution to the HUB Division, and consider leaving part of your railroad collection to it. The HUB Division is a registered 501(c)3 non-profit organization. This means your contributions to the HUB could be tax-deductible on your federal income tax return. You will find a form in this issue of the Headlight that you can use to make your contribution. We ask you also to help the HUB when you make personnel purchases over the Internet using PayPal, by designating a small donation to the HUB. Your financial support, as well as your volunteer support, will help ensure the ongoing success of the organization and the programs offered to you and to new members. Your ongoing generosity is greatly appreciated.

Account Balances Year-Ended June 30, 2019	
Checkbook	\$ 2,469.14
General Savings Account	538.23
Reserve-Life Savings Accounts	45,726.38
Restricted Savings Accounts	3,221.33
Program Checking Account	867.73
PayPal Account	1,099.28
USPS Permit Account	<u>3.00</u>
Total Funds Available	\$ 53,925.09

HUB Summer Picnic at Waushakum Live Steamers



Peter Higgins (center) heads out for a ride with his grandson. Photo by Bill Barry



Dan Temple (right) hauls a group of HUB members, including, second from left, Dan Fretz, and Bill Barry (center) along with Bill's sons Colin and Douglas. Photo by Sarah Barry



**2019 NER Convention
September 19-22, 2019**

The 2019 NER Convention is being held at the Liverpool Holiday Inn, site of prior conventions in 2008 and 2012. The room rate for single or double occupancy is \$115.00 per night.

Visit www.empirejunction.org to register and reserve a room.

Achievement - Russ Norris is Newest MMR in the HUB



Clockwise from top left: Russ Norris (right) receives his Achievement Certificates for Motive Power and Association Volunteer from Peter Watson, MMR (left); Russ holds his MMR #638 certificate tightly; and Russ receives his MMR certificates and plaques from Peter Watson, MMR at the May RAILFUN.

Photos by Andy Reynolds

New England Model Train Expo - Reminder to Volunteer

By Bill Harley

The NEMTE is HUB Division's annual window to the General Public and the model railroad community about our organization and all that it offers – starting with great friendships and the fellowship with other model railroaders. The revenue that the HUB generates from the NEMTE is what supports the Modular Layout assets that the Club owns and displays. The Modular setup provides not only a venue for us to run trains but, more importantly, to reach out to the general public with the great hobby that we all embrace. There is also the educational aspect of what we provide each time the layout is set up and displayed that is hard to quantify, but we certainly see the interest and positive impact that it has on those who stop by to see the display and talk with members about the various aspects of the hobby.

As such it is necessary for each of us to volunteer some time at the NEMTE to make the show a success. Members who bring modules to the show as part of the display are considered volunteers and

Achievement



David Trimble (left) received his Model Railroad Engineer - Civil AP Certificate from Peter Watson, MMR (right) during an operating session at Randy Child's house. Photo by Doug Scott

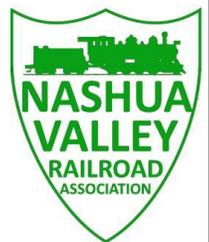
many of these folks also volunteer for time slots at the various activities that make this a successful show each year. Members who come to the show to just run trains are not considered volunteers and are required to pay admission to the show.

By volunteering you will have a badge ready at the door and will have fun with your fellow HUB members while making the NEMTE the great event that it has the reputation of being.

Cheers, Bill

**RailFair 2019
October 5-6, 2018, Boxboro
Regency Hotel, Boxborough, MA**

The Nashua Valley Model Railroad Association 55th annual "RailFair" model train show offers attractions including: model railroad displays, layouts, exhibits, dealers, & train rides.



Saturday-Sunday, October 5-6, 2019

TIME: Saturday: 10AM - 5PM;
Sunday 10AM - 4PM

PLACE: Boxboro Regency Hotel, 242 Adams Place, Boxborough, MA 01719

ADMISSION: 2 day admission price: \$8 per person, free for children under 12 and Scouts in uniform

RailFair information contact and dealer inquiries: email to showchair18@nvrta.com or call 978-225-0650.

Directions & More Information: See our website: www.nvrta.com

HUB Headlight

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Headlight Printers

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Directions to RAILFUN Meetings

RAILFUN is usually held at the Cambridge School of Weston (CSW) in Classroom G6 on the second floor of the George Cohan Building. The school is located at 45 Georgian Road, Weston, MA 02493.

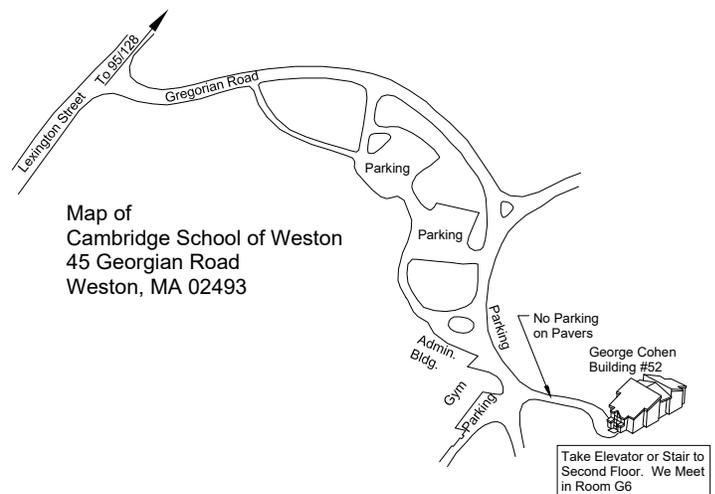
From Route 128 / Interstate 95:

From the North, take Exit 27B towards Winter Street.

From the South, take Exit 27A-B for Third Avenue toward Totten Pond Road/Waltham. Take Exit 27B towards "Winter Street" Bear right onto Wyman Street and continue to the traffic light. Take a right onto Winter Street at the light.

Continue on Winter Street to the second traffic light. Turn left on West Street, which becomes Lexington Street as you cross the Weston town line. At the crest of a small hill is Georgian Road and the CSW school sign; turn left on Georgian Road into the CSW campus.

Follow Georgian Road. There is a parking lot on your right, or you can park along the left side of the road and down the hill by the gymnasium. Please do not park on the stone pavers leading to the Cohen Building. See detail map below.



RAILFUN Weather / School Closure Note:

If the school is closed, we will NOT have RAILFUN that evening. School closings are broadcast over the radio at **WRKO 680AM** and **WBZ 1030AM**, and on **TV Channels 4, 5 and 7**. The Cambridge School of Weston recording is at **781-642-8600**. Check the radio or TV stations early on **the morning of RAILFUN!** You can also check www.hubdiv.org and we plan to post notices on **Facebook** and **Twitter**.

Submissions Wanted

The *Headlight* is always accepting photos and articles relating to model and prototype railroading. Articles about model building or home layouts would be much appreciated. Earn credit towards your Author AP certificate. Please email editor@hubdiv.org.

