HUB Headlight

HUB Division Inc., Northeastern Region, National Model Railroad Association - www.hubdiv.org
Volume 39, Number 1, September - October, 2022

RAILFUN TIMETABLE

Presentations: Member Updates

By HUB Members

8 PM Friday, September 23, 2022, Motherbrook Arts and Community Center, 123 High St, Dedham, MA 02026

Let's re-introduce ourselves to the members, by telling us about your interests, aspirations and what you have been working on over the summer. We are interested in having a complete update on where your interests lie in the hobby, and what your current projects and recently completed projects were. The HUB Division encourages you (and your guests) to bring in your models, dioramas, track plans, or vacation itinerary.

Please provide Andy Reynolds (Railfun.coordinator@hubdiv.org) in advance with pictures or pdf files, and we'll show things off to the members in a PowerPoint presentation.

Presentation: Passenger Operations on the Valley Junction RR

By Bruce Robinson

8 PM Friday, October 21, 2022, Motherbrook Arts and Community Center, 123 High St, Dedham, MA 02026

Passenger operations on the VJRR include long distance trains and commuter traffic. This traffic runs on a schedule that has several meets where passenger trains arrive at a station at the same time. This enables passengers to change trains to reach their destinations as would be the case in the real world. The make-up of the trains and why certain cars are included in a consist, along with the engine changes that occur, will also be presented.

Presentation:

By David "Shack" Haralambou

8 PM Friday, November 18, 2022, Motherbrook Arts and Community Center, 123 High St, Dedham, MA 02026

Save the date for a presentation by our "Southern Gentleman" Shack, when he's in town for his "real job". Look for more info about this presentation in the November-December issue of the *Headlight*.

New Members

The HUB Division welcomes the following new members

- Philip Anthes, Lexington
- Robert Hill, Bellingham
- Chris Metzger, Whitman
- Jorge Roman Beverly

RAILFUN Updates or cancellations will be posted on the division website (www.hubdiv.org) and issued via the HUB email list and via Constant Contact.

Photo 1: The Inspiration

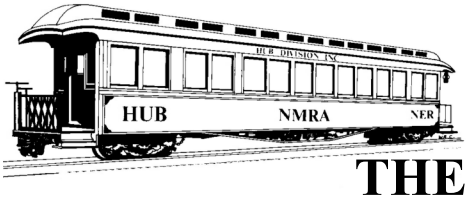
Country Road, Take Me Home

By Russ Norris, MMR

For the last 12 years I have been working on an HOn3 version of the East Broad Top Railroad. Three major scenes occupy most of the 200 square feet of space: The northern terminus at Mount Union; the shops at Rockhill/Orbisonia; and the town of Robertsdale at the southern end. Between those iconic scenes were several empty spaces with little more than tracks and slabs of two inch extruded foam. In a previous issue of the *Headlight* I briefly described how I finished some of these areas (Vol. 38, No. 4, April 2022, page 12). But there were one or two small empty spaces that remained unfinished. (Photo 2)

(Continued on Page 6)

Also Inside This Issue



THE PRESIDENT'S CAR

By Manny Escobar

September is here! For me, this month will give me the opportunity to begin implementing my ideas for the HUB membership and its growth. The pandemic has meant that we had only been able to see some of you during the past year at a few public events.

On August 6th and 7th, we had the opportunity to display our "Thomas the Train" layout. Together with the Amherst Railways Society, the Springfield Union Station was hosting Kids ON-TRACK – a model railroading job fair. Area model railroad clubs had operating model railroads set up in the historic Union Station concourse, and children (of all ages) had a chance to run trains. "Thomas the Train" display was donated to the HUB by Joanne and John Sweeney from Fall River, MA, about a year ago, and we promised that we would continue their legacy for the kids and future model railroad hobbyists. I want to thank Dick Ball and our new Modular Coordinator, Robert Collins, for their help and support.

In July, we had our annual cookout at the Waushakum Live Steamers in Holliston, MA. It was our largest attendance ever and the food (especially Watson's corn-on-the-cob) was good and the weather was tolerable. My thanks go to Pete Watson and Dick Ball and all the volunteers from Waushakum.

It is also time to attend NER Convention this year. If you have never been to one, you are really missing out. At regional conventions there is so much to see and do. As we enjoy the ability to return to face-to-face events, I hope you'll consider registering for the 2022 NER Convention "Connecticut Yankee" in Windsor, CT, September 15 to 18, 2022. until September 8, 2022, you can register at www.ner-conventions.org/connecticut-yankee or at the door after that.

This year I will be asking the Board of Directors (BoD) to look into ways that the HUB can plan and secure a facility of our own. We are growing and it was brought to my attention that our volunteers who are custodians of our current assets will not be able to do this in the near future. Let me assure you that the BoD and I will keep you informed as this project develops. Meanwhile, if you have a facility you could offer the HUB, or experience acquiring property, please contact me at president@hubdiv.org, I will be very appreciative of your thoughts or help.

I do want to draw attention to the call for volunteers. With lots of activity in new projects and business as usual, we can't do anything without support from our volunteers. We need to grow the number of volunteers we have, so please review the requests for help and offer your time if you can.

Thank you for everything you do for the HUB

Please stay safe and healthy

"Keep 'Em Rolling"

Fiscal Year 2022 Appointments

Malcolm Houck -Vice President
Gerry Covino - Treasurer
Mike Dolan - Secretary
Peter Higgins - Membership
Bill Barry - Headlight Editor
Andy Reynolds - RAILFUN Coordinator
Bob Collins - Module Coordinator
Dave Insley - Webmaster
Peter Watson - Office Manager/Clerk
John Russo - Expo Show Director
Mark Harlow - Expo Show Manager
Ken Belovarac - Librarian
Dan Fretz - Donations Chairman
David "Shack" Haralambou - MOS Coordinator
Peter Watson - NMRA AP Chairman
Erich Whitney - Online Activities Coordinator

Kids ON-TRACK

The Amherst Railway Society held its first ever job fair/ model railroad show at Springfield Union Station on the weekend of August 6 and 7.

The Hub Division was represented by the new Thomas the Tank Engine Division of the modular group.

Lots of people cycled through over the two days and the event was covered in depth by all the various western MA media outlets.

Overall it was a great success.

Manny Escobar, Dick Ball and Bob Collins stand behind the Thomas layout in Springfield Station. Photograph by Bob Collins

Shanty Talk:

DOG DAYS

By Rudy Slovacek

Do you know why they call the lazy, hazy hot days of summer the 'Dog days?" Well, it all revolves around Sirius the Dog Star in Canis Major. It is the brightest star visible from earth, which rises and falls in alignment with the sun on the 23rd of July. The ancient Romans thought this added to the Sun's heat so from July 3rd to August 11th the phrase arose to cover this period.

So, what have I been doing in the "Dog Days?" I'm just trying to stay cool in my basement or in the air conditioning. I like to sit in my armchair and catch up on my reading as I get no less than seven subscriptions and it's so easy to fall behind. They are Scientific American, Model Railroader, Railroad Model Craftsman, The Bridgeline Historical Society publication, the Boston Globe, Funny Times and my wife's Post magazine. This does not include the occasional detective novel or some science fiction piece. Between chopping up weeds, tying up plants and watering in the mornings I manage to sneak a little time in the cool basement finishing up some projects I started over the year.

I'm about to end up putting the roof on my Saratoga Yard Engine house and I just finished researching the sizes commercial corrugated roofing come in. I hope to begin that one before fall. The extra yard extension module for the Coastal Mountain group has been ballasted and a bit of grass and weeds added, so mark that done. I mentioned a while ago that I might spend more time on my kit-bashed Difco Dump car and I can say the extra horizontal rib reinforcement has been successfully removed so I can take that project up again. And then there's that NYC caboose that needs work.

None of this, of course, accounts for the time to set up the clinic I delivered on May 20th. I decided a little, hands-on project, like building a split rail fence would supplement my scenery talk nicely. I think that was a hit with those in attendance

So here are my instructions for building this little iconic piece of rural America. Note the dimensions were gleaned from a trip through Maryland to Fredericksburg armed only with an 8 1/2 by 11 inch piece of paper as my measuring tool. Dimensions are given in inches and listed also in scale feet for an HO-sized fence. I built mine from wooden coffee stirrers obtained through Amazon. A package of 1000, 5-1/2 by 1/4-inch wooden sticks. They appear to be less than a 1/6 inch thick and are also perfect for making fences, boardwalks, platforms, etc.

The first steps are to cut each stirrer into two lengths of 2-1/4 inches (about 16-1/2 scale feet) and leaving a 1-inch, (7-1/2 foot) piece for making posts. All these pieces should then be split in half with a razor knife. Do not worry about perfection here as the pieces are meant to be crudely hewn rails. At this point one can soak the material in dilute India ink to give a weathered look.

Begin by laying and gluing down the first rail along a fence line. I use a spot of white glue dabbed with a toothpick. Lay the next sequential rail at about 135 degrees to the first with just a tiny bit (1/8- inch) of overlap. Repeat the pattern alternating the angle side to follow a straight fence line or on the same side to affect a curve. On either side of the rail crossings drill a 1/8-inch hole for the aligning post insertions. Next continue adding the layers with a tiny spot of glue where the rails cross. A typical fence would be 6 to 8 rails high or about 4 scale feet, but you may wish to alter that somewhat. Figure 1 shows a couple courses of an unstained fence that I built for the demonstration class in about an hour. Once you have a supply of materials cut and split, the work goes fast. It is a great evening project while you watch a ball game. Art Fahey of Bar Mills Scale Model Works once instructed HUB members at a clinic years ago to enhance their dioramas and scenery with some verticals like fences to add interest. This fence should fill the bill nicely.

Well, gotta go. Our editor needs this column for the next issue. In the meantime, stay cool and happy modeling.

Fig. 1: Split Rail Fence at the May 2022 RAILFUN

Alaska in Massachusetts

Peter Higgins' train of White Pass equipment passes over a steel girder bridge on Stan and Debbie Ames' SJRPRY. The bridge is based on a prototype on the White Pass & Yucon Route Railway so Peter brought along his G-Scale equipment to a work and operating session in order to create this photo. Photo by Peter Higgins

HUB Ops: A Weekend of Running Trains

By Bruce Robinson

How would you like the opportunity to join an operating session? Well, the HUB Board of Directors (BoD) is going to make that a reality. The BoD met on June 11, 2022, to conduct the business of the Division and in that effort was a short discussion about hosting an operations-themed weekend. The BoD decided "We need to do this for the Division" and so the motion was carried with a unanimous vote.

OK , now what? There is a mandate and support from the BoD, but where do we go from here? Well, we need host model railroads, some kind of centrally located gathering space for dinner/breakfast and modelers that would enjoy running someone's trains with a bunch of other modelers wanting to do the same thing. So, if you have a railroad that can host an op session, please get in touch with me. If you are a modeler that wants to join in on the fun, let me know that too.

Over the years the HUB has seen some pretty dedicated members (John Lutz, Stan Ames, Keith Shoneman, Don Howd, Bill Borelli) put forth the idea that this activity could be fun and bring together a bunch of modelers from all over to "play trains" with a purpose.

In April, Erich Whitney and I traveled to the CNY Division op weekend in the Albany and Syracuse areas. We operated on four first-class layouts, met a bunch of New Yorkers and had a great time! The HUB Division can do this, too. It takes some planning and some dedicated people to put this new HUB event together but the rewards are many. If you can contribute to make an operations weekend happen, please let me know.

Last, we need a catchy name. Come up with a cool name and send it along. You'll have your name posted high and in lights!

Please send your comments, suggestions and ideas to brobinson8577@comcast.net

Op sessions on the Valley Junction RR include local POFR working out of Portsmouth yard to Franklin and return. The covered hopper will be set out at Farmer's Coop here in Tiverton.

From the Modular Superintendent's Desk

By Bob Collins

It is a little strange sitting here in the dog days of summer thinking of cool fall mornings, when we just finished our first summer work day. On the other hand, it is exciting to realize that we have a great fall show schedule ahead of us. It's even stranger writing a column for the HUB newsletter as the new Module Superintendent. Thank you to Manny, Gerry and the rest of the board members for their confidence in me. I'm looking forward to working closely with Dick Ball to make the 2022-2023 show season a success!

There have been a lot of exciting things happening with the modular group this summer. Two new modules are in progress. One a three-track corner module that will let the group set up a longer, dedicated, industrial switching track at our shows this fall. This corner module will have working wind turbines and solar panels, which are fun, cutting-edge technologies that should be a hit for the viewing public. The other will be attached to the diamond the HUB Division uses at the Amherst Railway Society Show in Springfield. This module will have a Fed Ex, UPS distribution facility, but more importantly, will solve the problem of trains running efficiently on the branch line.

Speaking of our first work day, special thanks go to Gerry Covino, Rodney Feak, Mike Dolan, Bill Harley, Peter Barrington, Mark Harlow, and especially Dick Ball for hosting us.

On another note, we are happy to announce our newest division in the HUB. The Thomas the Tank Engine division. After a generous donation, we are able to bring this four-foot by 12-foot layout to various shows as another way to introduce the public to this great organization. This module set up made its debut in August at the Springfield Union station as a guest of the Amherst Railway Society. Keep an eye out for its next appearance to see this unique layout in action.

Speaking of our 2022-2023 schedule. Here are the confirmed dates thus far:

Norwood Day - September 10th

Nashua Valley's Railfair 2022- October 1st and 2nd

Greenberg - November 19th and 20th

New England Model Train Expo- December 3rd and 4th

Amherst Railway Society - January 28th and 29th

Greenberg - March 25th and 26th

Updates and changes will be emailed to module group members and included on the Division's website and future *Headlight* issues.

So until next time, HUB Division, "Okay to go." See you in Norwood.

HUB Division Calendar of Events (Subject to Change)

2022

Sep 10 (Sat)	HUB Modular Railroad display at Norwood Day, Norwood, MA
Sep 15-18 (Thu-Sun)	NER Convention, The Connecticut Yankee, Windsor, CT, www.ner-conventions.org/connecticut-yankee
Sep 23 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Oct 1 (Sat)	Submissions deadline for the HUB *Headlight* Nov-Dec issue
Oct 1-2 (Sat-Sun)	HUB Modular Railroad display at the Nashua Valley Model Railroad Association's RailFair 2022, Boxboro, MA
Oct 21 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Nov 18 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Nov 18 (Fri)	Submissions deadline for the HUB *Headlight* Jan-Feb issue
Nov 19-20 (Sat-Sun)	HUB Modular Railroad display at the Greenberg's Toy & Train Show, Shriner's Auditorium, Wilmington, MA
Dec 3-4 (Sat-Sun)	The HUB-sponsored New England Model Train EXPO at the Best Western Royal Plaza Trade Center, Marlborough, MA

2023

Jan 7 (Sat)	HUB Holiday Party at the Common Market, Quincy, MA
Jan 14-16 (Sat-Mon)	HUB Modular Railroad display at the Wenham Museum, Wenham, MA
Jan 20 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Jan 28-29 (Sat-Sun)	HUB Modular Railroad display at the Amherst Railway Society's Railroad Hobby Show, Big-E Fairgrounds, West Springfield, MA
Feb 1 (Wed)	Submissions deadline for the HUB *Headlight* Mar-Apr issue
Feb 17 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Mar 17 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Mar 25-26 (Sat-Sun)	HUB Modular Railroad display at the Greenberg's Toy & Train Show, Shriner's Auditorium, Wilmington, MA
Apr 1 (Sat)	Submissions deadline for the HUB *Headlight* May-Jun issue
Apr 21 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Apr 22 (Sat)	The HUB-sponsored SpringTRAINing, Manchester by the Sea, MA
Apr 22 (Sat)	The HUB Division Annual Meeting and Election at SpringTRAINing
May 19 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Jun 16 (Fri)	HUB RAILFUN Meeting, 8 PM, Motherbrook Arts & Community Center, Dedham, MA
Jul 16 (Sun)	HUB Summer Picnic, Waushakum Live Steamers, Holliston, MA
Aug 20-26 (Sun-Sun)	2023 NMRA National Convention, 2023 Texas Express, Grapevine, TX, www.2023texasexpress.com

Fall Shows and Open Houses

September 3-4, 2022 (Sat-Sun): Seashore Trolley Museum Model Railroad Layout Exhibit Days, Kennebunkport, ME. www.trolleymuseum.org

September 10, 2022 (Sat): The North Shore Model Railroad Club's Flea Market, Wakefield, MA, www.nsmrc.org

September 18, 2022 (Sun): The Old Colony Model Railroad Club's Annual Train Show, Clarion Hotel, Taunton, MA. www.oldcolonyrailroadclub.com

September 24, 2022 (Sat): Southern New England Model Railroad Club Open House, Gardner, MA, www.snemrr.org

October 1-2, 2022 (Sat-Sun): Nashua Valley Model Railroad Association's RailFair 2022, Boxboro, MA, www.nvrra.com

October 29-30, 2022 (Sat-Sun): The South Shore Model Railway Club's annual Fall Model Railroad Show & Open House, Hingham, MA, www.ssmrc.org

November 25-27, 2022 (Fri-Sun): Annual "Tour de Chooch" layout tour, Southern NH, Northeastern MA, www.tourdechooch.org

December 3, 2022 (Sat): Bay State Model Railroad Museum Open House, Roslindale, MA, www.bsmrm.org

December 2022 TBD (Sat):
The Providence Northern Model Railroad Club Open House, Warwick, RI, (Club is also open most Saturdays 12-4.), www.providencenorthern.com

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

Country Road, Take Me Home

(Continued from Page 1)

Photo 2: Empty spaces that remained unfinished

There really wasn't enough room for more than a few small structures and a road, but I wanted something that would pop and catch the eye. I was stumped until an Australian friend and fellow modeler, Laurie McLean, sent me a sign he had Photoshopped for another narrow gauger nicknamed Shorty. (Photo 1 Front Page) The idea of a junk store and swap shop on a small country road was too much to resist. Checking my stash of kits I found the J. Keen Supplies store by Railroadkits. It was exactly what I was looking for! Something old and dingy would fit the scene, so I brushed the walls with a mixture of India ink and alcohol. Then I rubbed on Antique White craft paint with a soft cloth to give the structure a weathered look. (Photo 3)

Photo 3:Junk store and swap shop

Shorty's needed a collection of old furniture, tools, pallets and junk to complete the scene. That was the fun part. Looking through my spare parts drawer I found some white metal brooms and shovels, an old bathtub, some broken toilet bowls, metal cans and barrels, pieces of old machinery, and even a rusty tractor. Craft paints were used to color the junk. The store sits in a field of weeds and dirt, with Shorty himself relaxing on the loading dock. (Photo 4). Perfect!

The house next to the store is a Conawingo Models "Grey Street Company House" stained and painted the same as the store. The two buildings are situated on a rutted dirt road made of sanded grout. I have used this technique in other scenes with good results. I used "sandstone" colored grout, mixed according to the directions on the package. Just mix a small amount. One or two ounces of water will mix with a lot of grout. Add the grout a little at a time until the mixture thickens. Then let it set for 10 minutes and stir it again before applying. I marked off the edges of the road with blue painter's tape, then applied the grout with a small putty knife, smoothing it with a one-inch brush. The brush will leave grooves in the grout that resemble tire ruts. Let it dry at least overnight before removing the tape.

Photo 4: Completed junk store and swap shop with house beyond

Shorty's house and store looked really great, but only filled one side of the road. I needed one more structure to nestle up against the hillside across from the store. Another trip to my stash of kits led to the discovery of a Conoco 1930-1940 gas station by Banta Modelworks. The building was finished in the same way as the other two structures. (Photo 5) The tar paper roofing is a commercial product weathered by gently rubbing it with emery paper.

Photo 5: The gas station

The finished scene is reminiscent of country roads everywhere, with old weathered structures serving the mountain folk who live nearby. (Photo 6)

Photo 6: The completed scene viewed from the opposite direction

Progress on the RC&N (Part 2)

By Jerry McDonald

Much of the past two years has been spent on the basic structure of the Rockland Canton & Northern. (For Part 1, please see *Headlight* Vol. 37, No. 1, page 8) Benchwork for peninsulas two and three was completed, considerable spline roadbed was prepared, power was extended to the whole railroad, mainline track and switches were installed and wired, and recently we built and installed double-sided backdrops on peninsulas two and three. It is now possible to run trains over the complete main line and the staging below New Bedford. Roadbed has been installed from the main into New Bedford and with luck, by the end of this year, continuous running will be available on all major trackage.

Photo 1 gives an idea of the overall size of the new double-sided backdrop. On peninsula three (left) it ends in a simple straight line; on peninsula two (right) it ends in a broad curve that just touches peninsula one. It is 24-inches tall and is raised five inches above the joists. Splines are used for the tops and bottoms of curved portions and 1x2s on the straights while the surface is 1/4" Masonite. Originally, we intended to finish-paint each eight-foot section downstairs and then connect them up on the railroad. When we moved the first curved sections upstairs for testing, reality set in. They were much too heavy and awkward for this; and needed to be installed before detail painting.

Photo 1

Photo 2 has the new spline roadbed leading out from New Bedford to Myricks, which is the junction with the Fall River Branch (not modeled), continuing to Taunton; and eventually to Canton and the crossing of the Canton Viaduct on New Haven trackage. Roadbed in the foreground will carry the mainline leading from the passenger station and the freight main leading from the yards. The two lines join at about the middle of the photo and become the single-track main. At the far end can be seen two unfinished groups of trees that the resident artists have begun in the vicinity of Myricks.

Photo 2

Photo 3 is peninsula two and the aisle between that peninsula and peninsula one, which contains New Bedford and staging underneath. Part of the backdrop has already been painted there. This photo contains the New Haven main leading from the Viaduct and eventually disappearing into staging. RC&N has trackage rights over this portion of the NH, with commuter service to Boston. Slightly behind is the RC&N line to Framingham and the interchange with the Boston & Albany.

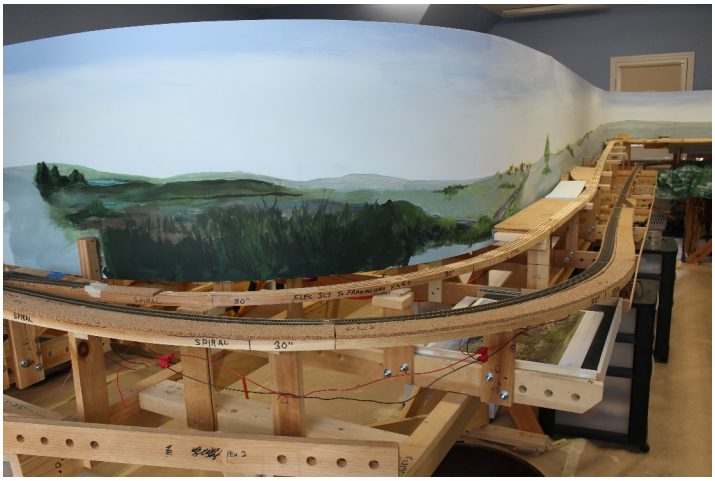


Photo 3

The resident artists have been mentioned. They are my daughter Siobhan and daughter-in-law Becky, who have volunteered to do the backdrop and help with buildings, etc. Both are professional artists – Siobhan, an art teacher and Becky, a commercial artist. They are a real windfall for someone like me with absolutely no known artistic ability.

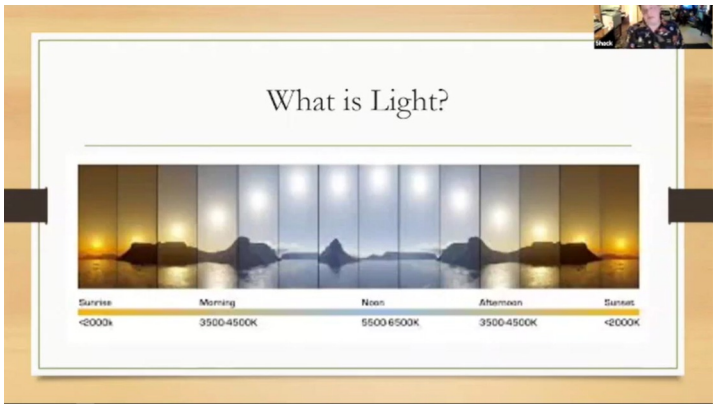
Once cork, track, and switches have been completed on the new roadbed; and wiring and connections have been finished (mostly by Jeff Gerow, with barely competent help by the owner); we hope soon to move on to semaphore signals and the beginning of scenery. There is still lots to do, but maybe we are at (to quote the famous Prime Minister) "The end of the beginning".

A Trip Along the Rails – RAILFUN March 2020 to Present

By Andy Reynolds

The past few years have been a tumultuous stretch adjusting and learning how to cope with the COVID-19 outbreak. In March 2020, we had to cancel Bruce Robinson's clinic at The Cambridge School of Weston, not knowing what was in store for future HUB events. Fast-forward to May 2020, and Bob Peters from Little Rhody took us back on the rails as he presented our very first Zoom RAILFUN of his photos along Colorado Railways! The biggest accomplishment over this time was getting most of our members onboard with learning how to use Zoom. We persevered with loads of help from Pete Watson and Erich Whitney.

Once we got the hang of this new technology, we realized we had the opportunity to bring in speakers who would not necessarily be able to travel to Massachusetts. In October, David "Shack" Haralambou gave an excellent talk from Georgia on Lighting Your Layout, followed by Doug Scott from South Carolina on Trips around the USA on steam. We then tapped into the local NMRA chapter in Cincinnati with Cheryl and Lou Sassi and coupled this with John Burchnall on Modeling Trees. January 15, 2021 brought us to Cape Cod with our own Russ Norris, MMR, giving an incredible clinic on How I Decided to Go for My MMR, which had Zoom followers all the way to Australia!



A screen shot from David "Shack" Haralambou's "How to Light Your Layout" October 16, 2020, Zoom presentation that can be found on the HUB YouTube channel.

A screen shot from Cheryl and Lou Sassi's "Modeling Trees" December 18, 2020, Zoom presentation on the HUB YouTube channel.

We then steered the Zoom clinics back down to Rhode Island and George Landow showed us his AP Prototype - Conklin Limestone Quarry. In March 2021, we hopped on the train to China and Canada to see Bill Schneider and John Sheridan take us though the Rapido Trains manufacturing facilities. This was a rare opportunity to see the design and manufacturing process for products like their New Haven passenger cars.

We rarely get to visit well-constructed layouts, but Jeff Padell brought us to the Old Colony Model Railroad club and his own Lehigh Valley layout. Thanks again Jeff, for the tour.

In May 2021, we went to the Amherst Railway Society to visit with John Sacerdote and Russ Berry who brought us to their Coors Plant in Golden, Colorado, and a demonstration about how to make a DCC Troubleshooting Toolbox. They also gave us further insights as to how the pandemic was affecting their show and what was in store for future train exhibit events.

Next up, was a train stop in Texas to see Jim Tylick, associate VP of Merchant Service Design, for BNSF Railway. He gave us a hands-on perspective on day-to-day running and scheduling of the extensive network.

Finally, we ended the year with Erich Whitney presenting an update on the HUB's signaling testbed. To this point we were doing Zoom meetings, but saw light at the end of the tunnel.

Note that if the clinician allowed us to record the clinics to Zoom, they can be found on the HUB's YouTube channel. Some clinics were proprietary and are not available for this reason. Click the YouTube icon at the bottom of the www.hubdiv.org main page.

After a long hiatus, the coast was clear to meet again in person thanks to many of us getting vaccinated, the fear of Covid waning and the CDC Guidelines loosening up. The goal was to continue offering Zoom along with in-person sessions, and we did this a few times. However, we still lack the volunteers and proper equipment to continue this. The board is reviewing how we can continue offering Zoom along with the live clinics.

Our first in-person RAILFUN was held in September 2021 at the Best Western Royal Plaza Hotel in Marlborough, MA. It was a true meet-and-greet after all the months apart.

(Continued on Page 9)

A screen shot from George Landow's "Conklin Limestone Quarry" February 15, 2021 Zoom presentation on the HUB YouTube channel.

A Trip Along the Rails – RAILFUN March 2020 to Present

(Continued from Page 8)

In October 2021, we moved over to the Motherbrook Arts and Community Center's gymnasium in Dedham. We were given a brief history of the trains that ran though Dedham by the Dedham Historical Society followed by Mike Tylick's presentation on Forced Perspective. In November, Shack Haralambou visited in-person and gave a brilliant hands-on clinic, Wiring 101: How Cable Works and How to Use It On Our Layouts. He also gave an update on the upcoming Museum of Science exhibit.

Still wearing required face masks, in January 2022, James van Bokkelen gave a clinic about engineering, designing and building automatic block and interlocking signals for his DC/DCC layouts, followed by Pete Watson giving us the rules of the road from a train engineer's perspective.

In February 2022, we finally introduced a new speaker. I want to congratulate Tim Towle, (Dick Towle's grandson) as a third-generation train enthusiast, on all his prep work and demonstrations on how he weathers trains and how the new graffiti craze made its way to some of our layouts and our modular show program. He brought with him a few dozen demonstrations of his artwork. By the way, Tim learned his first weathering techniques at a hands-on RAILFUN back at Cambridge School of Weston (CSW). I know he spent countless hours getting his presentation ready for prime-time viewing.

In March 2022, Bruce Robinson gave a two-part presentation. Operations 101-Running local POFR on the Valley Junction RR, then after a short break, AP Dispatcher where Bruce talked about the steps to take to earn the AP Chief Dispatcher certificate.

In April 2022, we were back in the gymnasium for a Zoom and live clinic with Malcolm Houck showing us how he built his NYO&W scratch-built, award-winning steam engines. The following month, Rudy Slovacek came to the Motherbrook classroom with a hands-on clinic on weathering and making realistic farm-style fences. Rudy started the first clinics at CSW back in March 2002 as the club's RAILFUN coordinator.

We closed out the season with two more new clinicians – Jim Joubert and Paul Saint Martin. Jim explained roofs and visual elements of buildings from a union carpenter's perspective. Paul ended the year with his Fine Scale specimen craftwork. If you ever get a chance to visit his layout, I have to say it's a "must see."

I want to extend my heart-felt thanks to all who presented as well as all who attended these events. Not only is this a benefit to you as a member of the HUB, but it is where experienced members get to engage, foster and educate the membership, applying our mission statement to the hobby. Let's again thank everyone for a job well done.

Three Generations of Towles, from left, Tim, his father Rick, and his grandfather Dick were on hand for Dick to receive an Honorary HUB life Membership from Peter Watson, MMR (right) at the January 21, 2022 RAILFUN.

Tim Towle demonstrates his weathering techniques during the January 21, 2022, RAILFUN.
Photo by Andy Reynolds

Rudy Slovacek speaking during his presentation at the May 20, 2022, RAILFUN
Photo Andy Reynolds

Building a 50-Year-Old Kit
Alexander Scale Models "Little Hook"

By Bruce Robinson

Photo 1: Finished Scene

It seems of late that the specter of "old" has appeared in the pages of the model press. This got me thinking about the kits I had sitting on shelves in the train room purchased long ago for very specific places on the Valley Junction Railroad. A quick scan (OK, not so quick… more like a long remembrance) revealed several candidates for the next project to tackle.

From time-to-time I would pull down the Alexander Scale Models Little Hook kit, open the box and ponder what to do with it. There was a spot set aside for it many years ago on the team track in Northfield, but to-date it had remained unfilled as many years and a lot of operations sessions passed by.

That kit had served its time sitting on the shelf and needed to be built. It was time to bite the bullet and open the box, with the intent to build the kit.

Photo 2: The original box from its 1954 production

Opening the box revealed contents from 1954: wood pieces, several very nice soft-metal castings, a small square of yellow card stock, acetate, 1/32" scribed siding, a hydrocal plaster base casting, a piece of brass tube and a square of fine sandpaper. Looking at these materials from 65 years ago was like looking into a time machine pointing backwards. This is what the hobby did in those days. The go-to materials were paper, scribed basswood siding and soft-metal castings. There is no laser-cut or 3-D printed anything in this box!

Photo 3: Box Contents

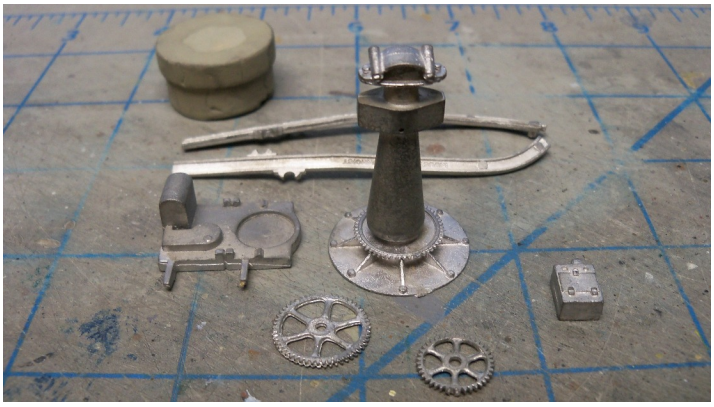


Photo 4: The castings included in this kit are very well done and require very little clean-up.

The instructions begin with boom assembly, telling the modeler that there are left-side and right-side booms. The boom sides are pinned down and the cross-braces are added. In 1954 you cut these pieces from the included yellow card stock. No laser printed parts here. However, the castings for the booms are very finely done and will hold up to today's scrutiny with no excuses. The instructions say "cement to the boom" but no mention as to what type of "cement" is to be used. In today's world the adhesive of choice is ACC adhesive. It not only secures all the metal parts but coats and makes the yellow card stock pieces rigid.

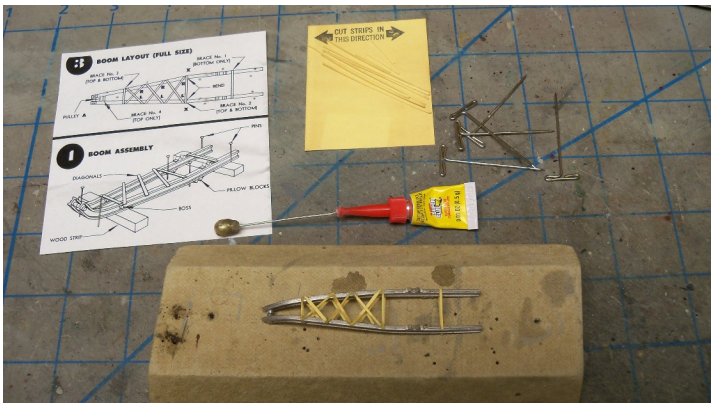


Photo 5: Boom Assembly

(Continued on Page 11)

Building a 50-Year-Old Kit
Alexander Scale Models "Little Hook"

(Continued from Page 10)

Pillar, gear and drum assembly and the motor box assembly are put together next using the supplied castings. This concludes all the metal casting assembly and it is time to move on to the wood cab. Here I found an oddity in that the kit includes a "stack," the short piece of brass tube. I don't know why this is included as the cab is much too small to contain a stove. Besides, the electrical equipment of this era did not need to be kept warm. Think "trolley car controls" for the motors that rotated the hoist and raised and lowered the hook cables. I omitted the stack on my model. Looking at photo #11 of the prototype you can see the pair of controllers along with the resistor grids for speed control.

Photo 6: The crane portion of the model is assembled and ready for paint.

The model was spray-painted Floquil Grimy Black and the cables were rigged through the pulleys and the take-up drum. A casting from BEST Scale Models was used for the lifting hook. The plaster base casting was stained a dirty concrete color. The 1/32" wood scribed siding was pre-stained before assembling the cab.

Photo 7: The four sub-assemblies, crane, wood cab, concrete pillar and shortened loading dock have been assembled, painted and ready for final assembly.

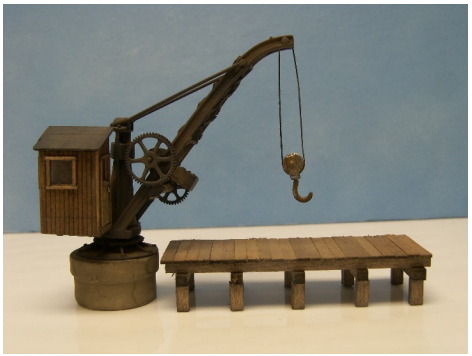


Photo 8 (Left): The completed crane and loading dock. The loading dock was shortened from the kit-supplied parts to fit in the available space on the layout.

Photo 9: The completed model has been installed at the team track in Northfield. The team track now serves two spots, one for loading milk cans and one for customers that don't have dedicated rail sidings.

Photo 10: The prototype Industrial Brown Hoist crane shown here is located in Rockport, MA

Years ago there were rail sidings on both sides of the crane in a small yard at the end of the B&M Rockport Branch. As a youth growing up on a 28' sailboat, I remember visiting this crane when we sailed into the nearby Granite Cove back in the early to mid 1960's. This photo was captured June 8, 2022 making this crane well over 60 years old.

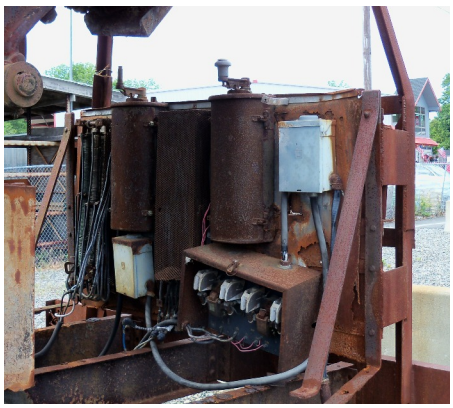


Photo 11 (Right): The motor controls are mounted to a steel frame without any weather protection. The two "trolley controllers" with their classic handles are mounted on the center with resister grids for speed control on the left and two contactors on the right.

Since I pulled this old kit down from the shelf to finally be built, it seems like coincidence that I have seen two other cranes. The first was the photo of the model submitted by Irwin Nathanson of his place winner in the model contest reported in the winter issue 2022 of the NER *Coupler*. Then a really fine operating session on Kip Grants D&H branch line in Queensbury, NY, revealed Kip's beautiful model. Seems like there is still room out there for us "old timers!"

Bannish Lumber - Part 1

By Mike Tylick, MMR

Since our F-scale Chester and Becket Railroad (see Great Model Railroads 2018) is loosely based on the prototype line in western Massachusetts, our industries are named after those on the prototype. Bannish Lumber (www.bannishlumber.com) is in business to this day, a modern sawmill and lumber operation specializing in flooring and hardwoods. For one of the final industries along the C&B, Steve Morrill built a very accurate model of an older sawmill. It's one thing to harvest and cut timber, but quite another to have a place to dry and store the finished product.

More than on smaller scale model railroads, space is at an extreme premium on a F-scale layout. The only space available was a tiny strip of layout edge at the rear of the table. The shed had to be less than two inches (about four scale feet) deep at the narrow end. This pretty much negated an open shed design. We decided the structure should be simple, really a background for the highly detailed sawmill. Because of the lack of space, it was reasoned that storage could be across the track from the mill. That way the finished product could either be loaded directly onto the railroad for shipment, or flat cars could be used as a loading platform while transferring the finished lumber to be cured and placed in stock.

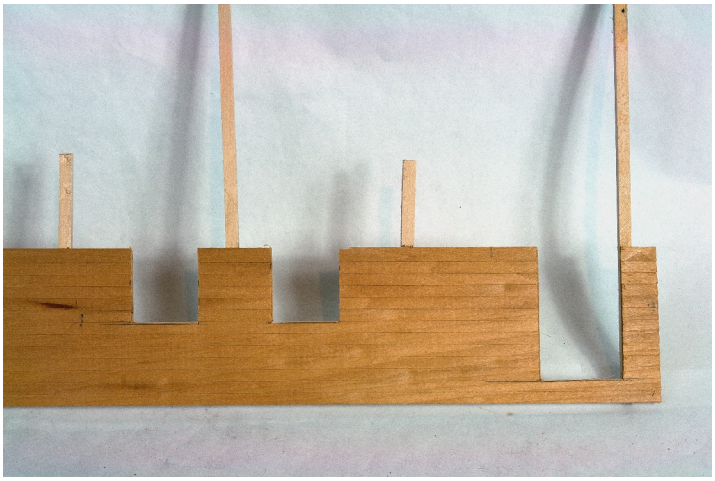


Photo 1: F-scale (1:20.3) structures require large walls: 1/16"-thick basswood sheet with 3/16" clapboards seemed a good size. A typical piece of siding only runs partway up the first floor. Even when two feet away F-scale models are large enough to be seen as a close-up model, so it is well worth the extra effort to build the walls from wood. Be sure to brace the walls adequately. Painting both sides of the wood will help to eliminate warping.

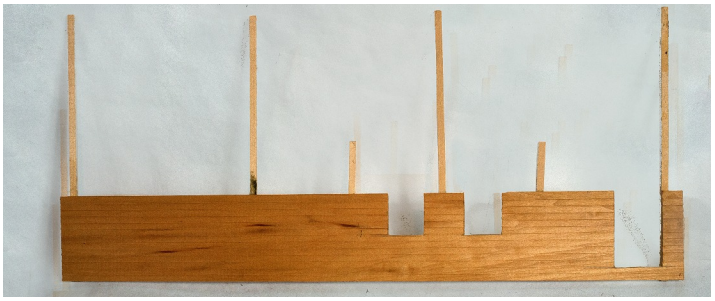


Photo 2: Overall view of the wall with the first piece of basswood siding.

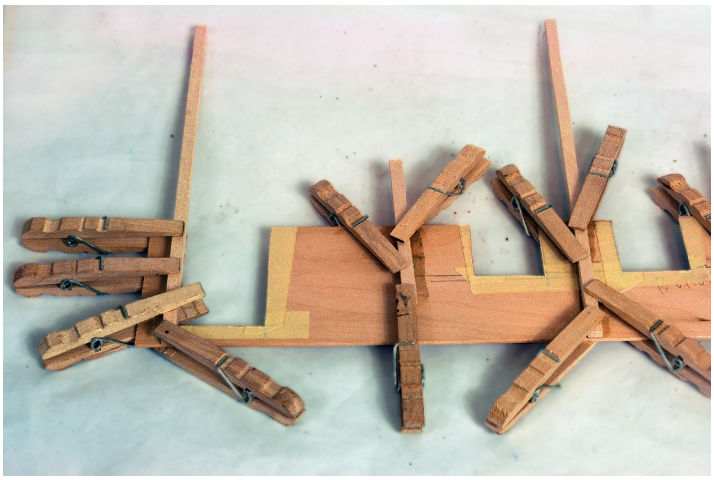


Photo 3: Clamps made from reversed clothespins hold the bracing in place while drying. Applying masking tape to the back side of the wall will help to prevent splitting when cutting the openings.

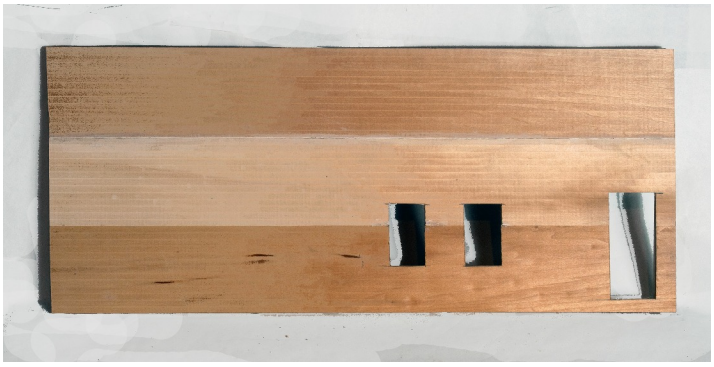


Photo 4: It took three pieces of basswood siding to reach the correct height. Fortunately there are very few window and door openings to cut. The unpainted wood may not match in color but it is important to cut the sections so the ends of the clapboards match those of the next.

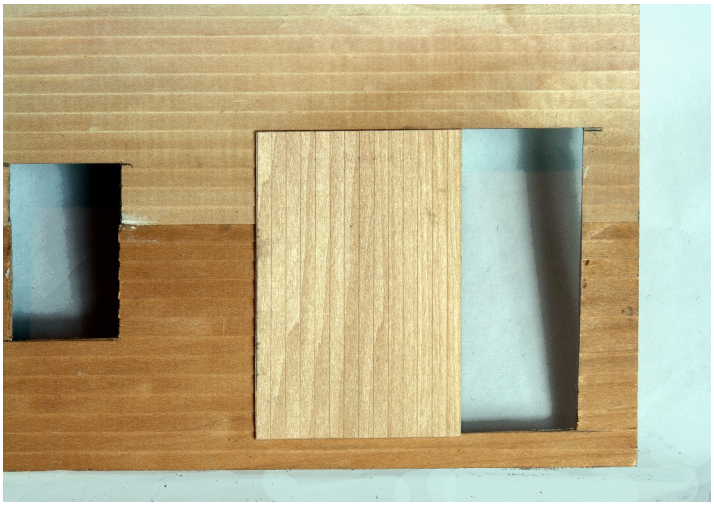


Photo 5: 1/8" scribed siding is cut for the lumber doors. Reversing the direction and width of the lumber helps to set the doors off from the walls. In large scale the 1/32"-thick doors are only about 3/4" inch thick – enough to provide sufficient relief while still being almost perfectly in scale. Smaller scales could use styrene to achieve thinner sections. The lack of true wood grain would also be less apparent at the same two-foot viewing distance.

(Continued on Page 13)

Bannish Lumber - Part 1

(Continued from Page 12)

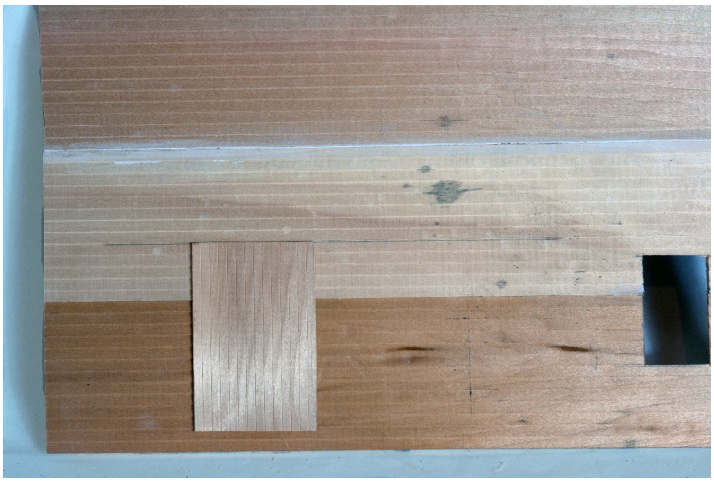


Photo 6: Since the doors sit atop the wall there is no need to cut openings for the closed doors. Lumber loading doors I have seen are often large enough to pass material but not standing workers.

Photo 7. A wood track is above the door – actually made from two pieces to ensure an accurate fit over the door. This might be difficult and completely unnecessary in smaller scales. The wood would protect rollers from the weather but this detail would never be seen on even a large-scale model. As you can see, the second door has been added. The track serves as a convenient way to align the doors vertically.

Photo 8: Second floor doors are added.

Photo 9: The Bannish Lumber shed is a flat model for the rear of the layout so the side walls are quite narrow. Inexpensive clothespins work as numerous clamps white the glue is drying.

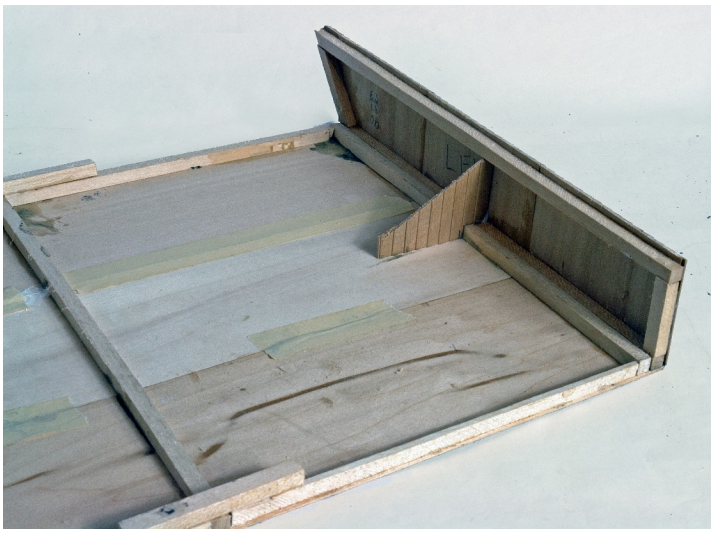


Photo 10: The walls are fastened together with corner-squares glued in place. To prevent warping, the inside wall has been coated with aerosol spray primer paint.

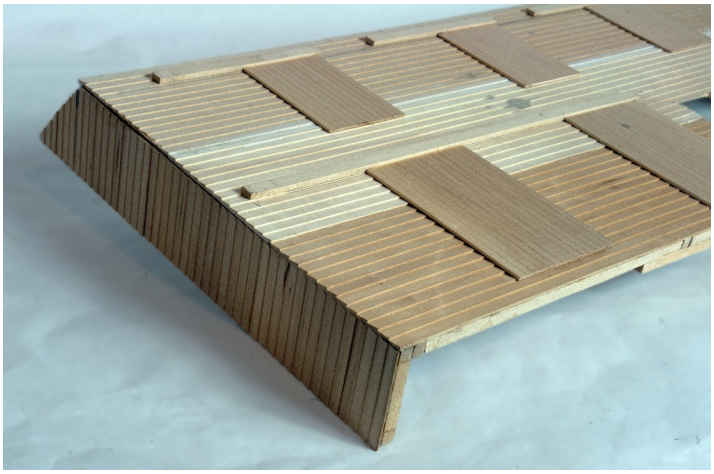
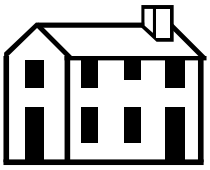


Photo 11: The outside view of the corner after assembly.

In Part 2, I will go over adding the foundation, the roof, door handles, windows, sign and finishing touches. Look for it in the next issue of the *Headlight*.



Achievement Program Master Builder Structures

By Peter Watson, MMR,
HUB Division AP Chairman

As I write this, it is mid-summer and most of us aren't spending much time inside working on our layouts. However, relaxing at the beach or in the mountains on vacation may be a good time to let your mind wander a little and start thinking about what you will do when the modeling season starts again. There's track to put down, cars and structures to build, scenery to do, etc. I suggest that you also think about the AP Program. As you are doing all of the things to build and get a layout running, you are also doing the things that can lead to earning some AP awards. Let's take a look at one of these, the AP award for Master Builder Structures.

If you go to the NMRA website, at the top of the home page, you will find a tab for the Achievement Program. Clicking on that will take you to the AP page. On the left side you will see a list of subjects. Clicking on Categories will take you to the list of categories that make up the program. For this discussion we will go to Master Builder Structures.

In order to qualify for this award, you must construct 12 scale structures and at least six different types of structures must be represented in the total. The reasoning here is to demonstrate that you can model a variety of types of structures. For example: a wood frame station and a brick station would be different types, but two different wood stations of different architecture probably would not be unless you could show that there was a substantial difference in the construction. Also, at least one of the structures must be a bridge or trestle. This doesn't need to be an elaborate wooden trestle that goes across a deep gorge or a multi-span truss bridge that crosses a wide river. A small bridge that spans a creek will do just as well as a large bridge. The intent here is to show that you can model a bridge that is appropriate for the use and can carry the weight.

There is nothing in the requirements that says all of the models must be the same scale or that they must be placed on a layout. For example if you have no need for a bridge on your layout you can still build a model of bridge as a separate project.

At least six of the models must be scratchbuilt. To be considered scratchbuilt, a model must have been constructed by the applicant without the use of any commercial parts except;

- Light bulbs & electronics
- Paint, decals, etc.
- Figures
- Basic shapes of wood, plastic, metal, etc.

"*A model is considered "scratchbuilt" if at least 90% by count of the model's pieces/parts (other than those specifically exempted in the list above) are fabricated by the modeler. This is an objective quantitative assessment based on the number of pieces with no weight given to complexity. This is a separate determination from the scratch-building score.*

The term "scratchbuilt" carries the implication that the builder alone has accomplished all of the necessary layout and fabrication which establish the final dimensions, appearance, and operating qualities of the scale model. This definition does not prevent the use of any tools or jigs as long as the builder alone has done the work necessary for the tool to make the part. This would include drawings or computer files to control CNC, automatic lathes, laser cutting machines, 3-D printers, and other tools. If a third party changes the builder's inputs, then the parts are not considered to be scratchbuilt."[1]

The remaining six, if not scratchbuilt, must be super-detailed with scratchbuilt or commercial parts.

"*To be considered "Super Detailed" it is necessary that a model have considerably more detail of excellent quality than is usually expected. The quality of the detail is of more importance than is the quantity. The applicant may qualify with Superior Craftsman Kits providing that, in the opinion of the Regional AP Manager, real individual craftsmanship is demonstrated.*

Models falling within the following categories may also be considered as "Super Detailed".

1. *Cross-kit models*
2. *Modified kit models*
3. *Parts-built models*
4. *Extensively altered, assembled models: e.g., to a different prototype. In addition such models are to have more detail"* [2]

When thinking about what to do for super-detailing a structure, think about the little details that you see on buildings – signs, roof details, ladders, electrical fixtures, window details, fire dept. sprinkler connections, etc. Maybe you can put in a detailed interior, with as much of it as possible scratchbuilt for extra points. Adding detail to your structures will not only meet this part of the requirements, but will also add to your score, and to the overall appeal of your model.

Finally, you must earn a score of at least 87-1/2 points on six of the 12 models in either an NMRA-sponsored contest or in AP Merit Award evaluation. I can arrange to have designated AP evaluators come to your home to evaluate your models. Note that only six of the 12 must earn 87-1/2 points. The others don't even have to be evaluated!

The last thing you need to do is to fill out the SOQ (Statement of Qualifications). A link to this document can be found at the bottom of the Structures page. If you have any questions on this or any other part of the AP program you can contact me at hub.ap.chair@hubdiv.org or call me at 508-378-3582.

Notes:

1. From the Scratch-Built definition of the NMRA Achievement Program Definitions page

2. From the Super-Detailed definition of the NMRA Achievement Program Definitions page

Treasurer's Report Fiscal Year Ended: June 30, 2022

By Gerry Covino

We have completed another year with continued financial success. The Division weathered the slowdown in activities caused by COVID-19, having been lucky enough to slot our New England Model Train EXPO (NEMTE) between what appeared to be the return of more normal conditions and the new variant surge in mid-January.

We did resume in-person RAILFUN meetings for all of the season. With the help of dedicated volunteers, we were able to support the Museum of Science "All Aboard Trains" exhibit between November and the middle of January. The Museum exhibit has been a tremendous success and the Division extended our contract with the Museum for another five years. Boris Maznek assumed management of the day-to-day scheduling of members while Dave (Shack) Haralambou remains the principal contact between the Division and the Museum even though he now resides in Georgia. The NEMTE was again profitable for the Division thanks to the extensive volunteer hours provided by our members under the Direction of John Russo. For both of these events, we will again use the Signup Genius application for your volunteering convenience.

Looking forward to this New Year, we hope to maintain our strong financial position enabling us to increase our programs. Dan Fretz has been securing items for the NEMTE donations table. We hope dealers and the modeling public again support our annual fundraiser, the NEMTE, and we hope you will continue to volunteer filling all the time slots needed to meet the shows operational commitments. This year we will see the return of Spring TRAINing, planned for April 2023 in Manchester by the Sea, MA. The featured clinician will be Mat Herman of ESU, with a hands-on sound decoder installation clinic. Watch the *Headlight* for complete details.

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 the HUB. The HUB Division is a registered 501(c)3 non-profit organization that can accept donations that might be tax deductible to you. You will find a form in this issue of the *Headlight* that you can use to make your contribution.

You also have two other ways for contributing to the Division:

1. When making purchases using PayPal, add a small donation to the HUB.
2. Use Amazon smile for your Amazon purchases and select the HUB Division as your non-profit choice. The Amazon Foundation will contribute to the Division at no cost to you.

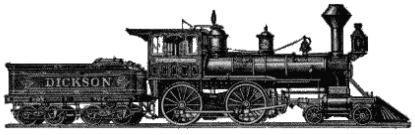
Your financial support as well as your volunteer support will continue to ensure the ongoing success of the organization and the programs offered to you and to all members. The Board greatly appreciates your continued generosity.

We hope this year will be a very enjoyable and successful modeling year.

Account Balances
Year-Ended June 30, 2022

Checkbook	$ 1,808.30
General Savings Account	538.50
Reserve-Life Savings Accounts	60,124.47
Restricted Savings Accounts	3,446.78
Program Checking Account	254.87
PayPal Account	398.79
USPS Permit Account	0.71
Total Funds Available	$ 66,572.42

Old Colony Model Railroad Club



22nd Annual Model Train Show
Sunday, September 18, 2022
Clarion Hotel, Taunton, MA
(Former Taunton Holiday Inn)

TIME: 10:00 AM - 3:30 PM;

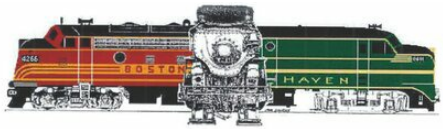
PLACE: Myles Standish Blvd., Route 495 Exit 25 (Old Exit 9)

ADMISSION: $5 per person, children under 12 free when accompanied by an adult. Scouts in uniform free

All scales, operating layouts, concessions & free parking

More Information: visit:
www.oldcolonyrailroadclub.com

Southern New England Model Railroad Club



Open House
Saturday, September 24, 2022

TIME: 9:30 AM - 4:00 PM;

PLACE: Chestnut Street United Methodist Church, 161 Chestnut Street, Gardner, MA

ADMISSION: Free

Featuring 65' x 40' Southern New England O-Scale layout, plus dealers, displays, free parking, food and beverages

More Information: visit:
www.snemrr.org

Head End Car

By Bill Harley

I have been working on a few head-end cars this summer. Seen below is from a Sparrows Point kit that Bethlehem Car Works used to offer. The prototypes of these 4x8 wooden baggage cars are most often seen with the single door to the left and the double door to the right - a great picture (and the only one that I could find) of the configuration for this car is in the B&MRRHS Album on FLIKR in the Baggage Car file.

Next car in the works is a B&M RPO Express car also from BCW.

Erich's Electronics Notebook

By Erich Whitney

Crossing Gate Project - Part 3

In this issue, we're going to look at the hardware I used to build my crossing gate controller. My goal was to make a low-cost controller, so I went to my go-to inexpensive hobby microcontroller source, www.arduino.cc. For this project, I needed to find a microcontroller that could drive servo motors, analog inputs to read photocells, and outputs available to drive the crossing signal LEDs. Bruce's Whitney Avenue grade crossing has two tracks, so by using the crossing logic I explained in Part 2, we need eight occupancy sensors, four for each track. Each crossing gate requires one servo motor and two LED drivers. The Arduino Nano (Figure 1) has eight inputs that can be configured for either analog or digital operation, support for two servo controls, and a handful of other digital pins. The reason I chose the option of using a photocell sensor for the block occupancy is simple, Bruce didn't want to cut into the existing rails to install the insulated gaps needed to support current-sensing block detectors.

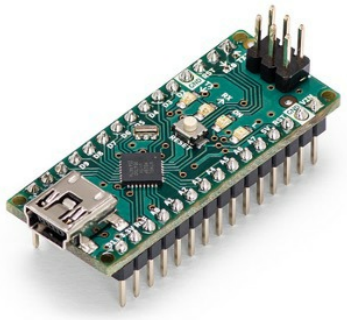


Figure 1: The Arduino Nano microcontroller

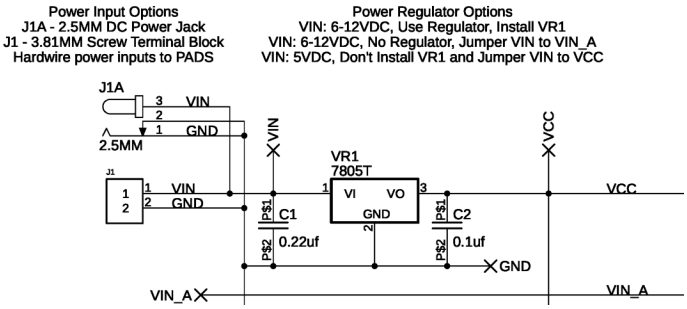


Figure 3: Enlarged view of the power input circuitry

Ultimately, I decided to build a circuit board to host the Arduino Nano and all the support circuitry I would need for the grade crossing of two tracks. I designed the circuit board to provide some flexibility with respect to the type of occupancy detection and how the LEDs are connected so that it can be adapted to other situations. Figure 2 is the schematic diagram of the circuit I came up with. The Arduino Nano is the rectangle in the middle, the block detection circuit is on the right, the power input circuitry is on the upper left, the LED drivers are on the center left and the servo drivers are on the lower left.

All the circuitry, including the Arduino Nano, operates on 5 volts which is regulated from a 9–12-volt input via the screw terminal J1 or the 5.5mm x 2.5mm jack J1A (common 9-volt wall-wart power supply). You also have the option of providing regulated 5 volts directly. (Figure 3)

(Continued on Page 17)

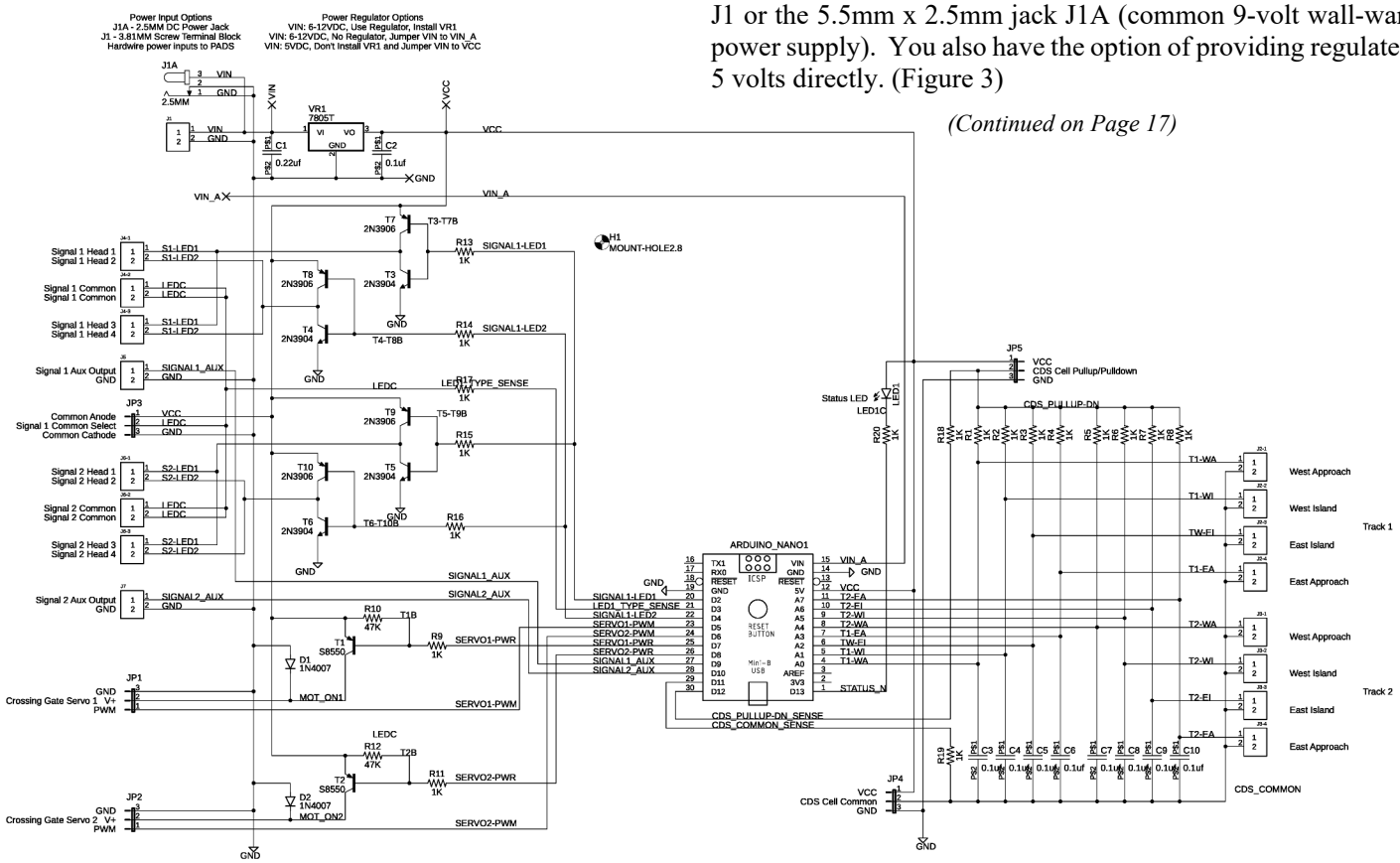


Figure 2: Crossing gate controller schematic diagram

Erich's Electronic Notebook

(Continued from Page 16)

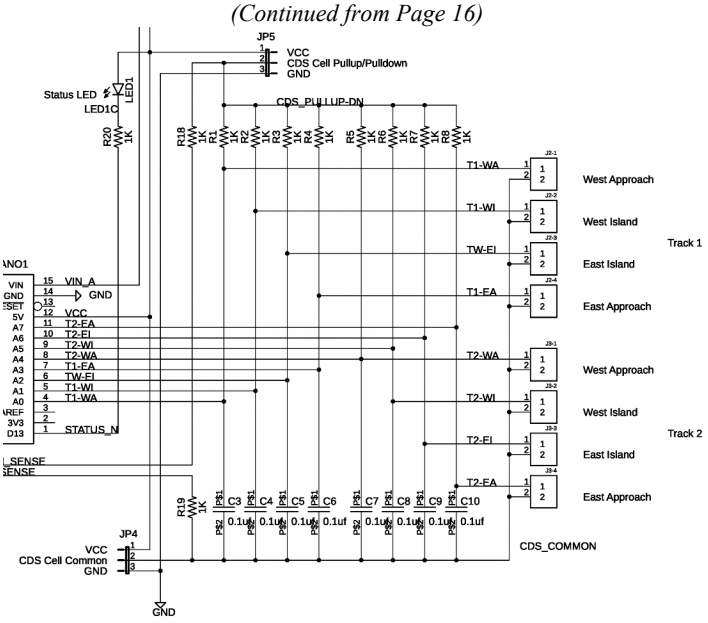


Figure 4: Enlarged view of the block detector inputs

The block detection inputs (Figure 4) can connect to the J2 and J3 screw terminal banks. JP4 and JP5 are jumpers used to configure the inputs to have either a pull-up or pull-down resistor, and whether the common sensor input is ground or 5 volts. The block detector inputs will work with either photocells or common block detectors such as NCE BD20s, CPOD, DCCOD, etc. LED1 is a status LED I added to give me a way to have the software blink a light for debugging purposes.

The servo motors come with a 3-pin female header that plugs directly into JP1 or JP2 (Figure 5). This part of the circuit comes from a clinic I attended by John Mick at the 2017 NMRA National Convention in Orlando. He gave a spectacular hands-on clinic on how to incorporate Arduinos into model railroad projects. Using his circuit saved me time because I knew it worked.

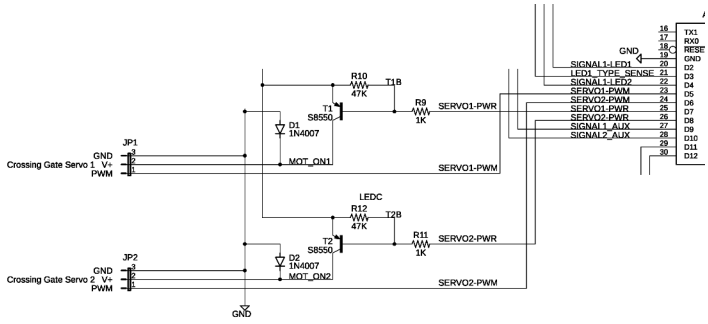


Figure 5:Enlarged view of the servo motor circuitry

The LEDs connect to J4 and J6 screw terminal banks. JP3 is a jumper used to configure the board for either common-anode or common-cathode signal LEDs. It should be noted that transistors used to drive the LEDs are installed based on whether you select common-anode or common-cathode. Common-anode uses transistors T3-T6 while common-cathode uses T7-T10. I chose to do this instead of using more jumpers because there isn't

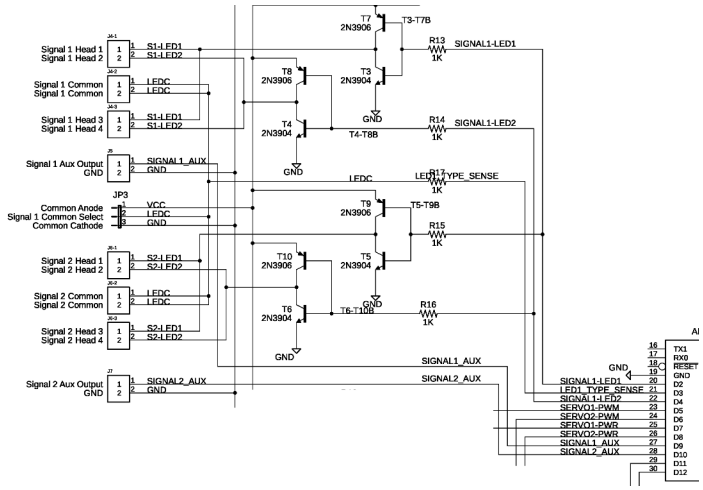


Figure 6: LED and AUX output circuitry

enough room on the board, and you only make this selection once based on the signals you purchased. I added an input to the Arduino labeled "LED1_TYPE_SENSE" so that the software can read the status of the jumper JP3 that indicates how the LED is turned on or off. I also provide two auxiliary outputs, J5 and J7, that can be used to drive a crossing bell sound module (but this is a topic for another article). These are directly connected to pins on the Arduino and can be configured via software as input or output. (Figure 6)

Figure 7 is a close-up view of the Arduino Nano module connections.

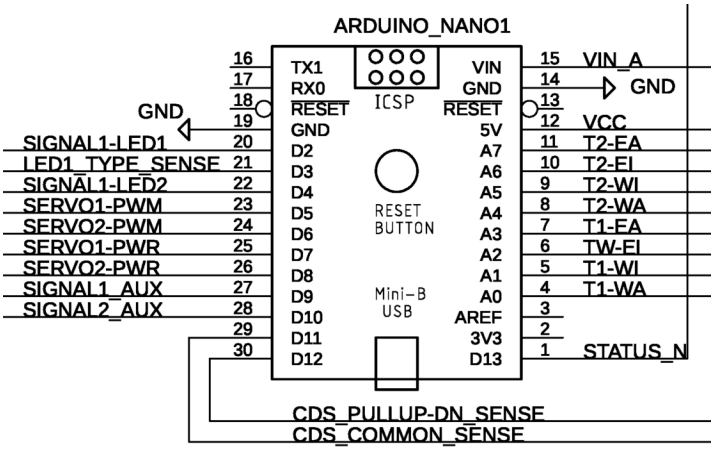


Figure 7 Arduino Nano close-up

Figure 8 is an image of the printed circuit board I created for this project. The board measures 3" wide by 2.2" high, but the connectors on the top, bottom, and right sides do need a little extra room for the wires. There's a mounting hole under the Arduino Nano module that can be used to screw the board under the layout. The Arduino Nano module plugs into header pins to allow it to be unplugged for reprogramming via its Mini USB connector. The Arduino Nano can also be reprogrammed when it's connected to the circuit board.

(Continued on Page 18)

HUB *Headlight*

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Erich's Electronic Notebook

(Continued from Page 11)

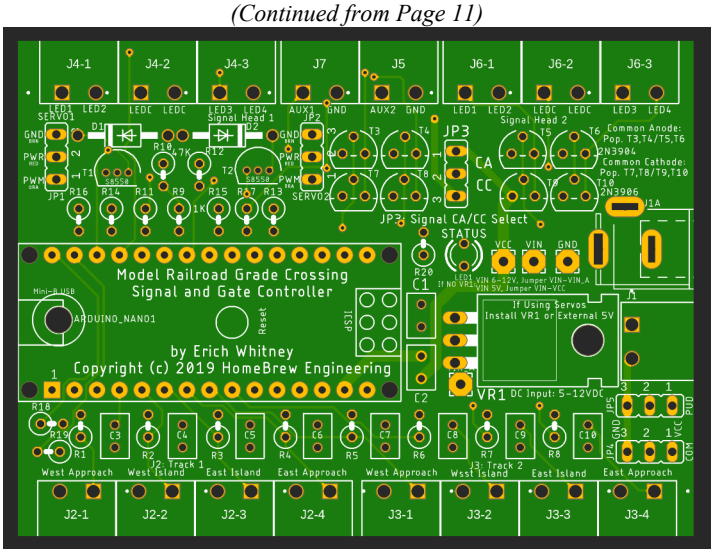

Figure 8: Printed circuit board

On Bruce's layout, I configured JP3 for Common Anode (CA) LEDs because this is how the LEDs in the NJ International crossing gate are wired. I configured JP4 for Common Ground and JP5 for Pull-Down because I found that the CdS Photocells work well when they are connected to 5 volts with a pulldown resistor. In this configuration, when the cell is in the dark, the analog pin reads a low voltage and when there's light, the voltage goes up. It works either way, but I think this is more intuitive when trying to debug the software. Figure 9 shows the assembled board ready for testing.

In the next issue, we'll look at the Arduino software I wrote for this project and in the final part, I'll show you how I installed it in Bruce's layout.

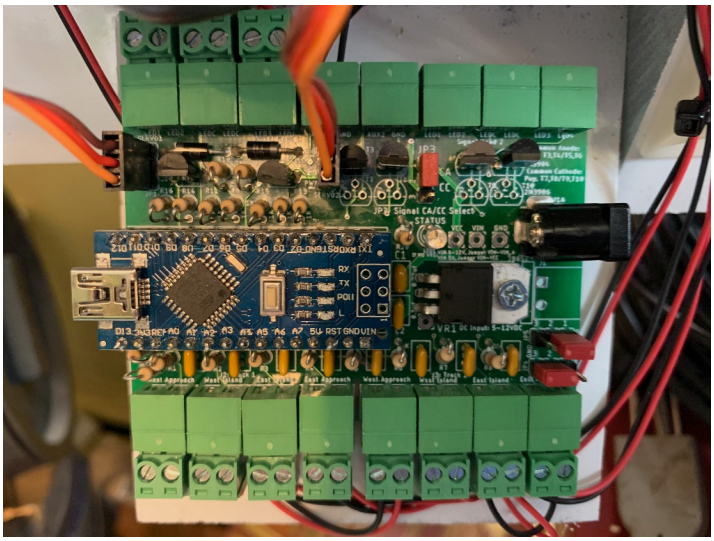

Figure 9: Assembled PC board

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