

BAY AREA GARDEN RAILWAY SOCIETY TRELLIS AND TRESTLE

APRIL 2024



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PRESIDENT'S PERSPECTIVES

ANNUAL MEETING HIGHLIGHTS

There were many. Some of the highlights for me were:

Observing members enthusiastically engaged as Roger Nicholson demonstrated how he installs battery power in locomotives.

The interactive discussions about railroad construction, which Steve Smith and I had the joy of facilitating.

Lunch enjoyed by most, if not all members, arranged by Larry Silverman and served with support from Melinda Murray, Lynn Gerber, and Bill & Perky Ramroth.

The wonder on small children's faces as they saw live steam locomotives operating for the first time and listening to the explanations given to them by their parents.

Seeing the amazing G scale house modeling skills of Dottye and Dart Rinefort recognized as one of their new houses took first place in the model contest.

Members volunteering to take on roles, Bill & Katy Ackerknecht to be the Social Coordinators for the Santa Cruz and Monterey Area, and Gary Damiano to help with BAGRS marketing.

Matt Abreu's pithy answer to my final question to him about the Sacramento Valley National Garden Railway Convention, being held June 18, to June 21, in 2025. I asked Matt, "why would BAGRS members come to the Sacramento National Convention?" To which Matt answered, "Why wouldn't they!"

Having the amazing 'Wandering Railroad,' also from Sacramento, on display for members and museum visitors to enjoy.

Overhearing numerous members greet other members, noting that they had not seen each other for a while.

New Director, Rob Lenicheck, articulately and gracefully thanking Richard Murray for his many years of service as the live steam group coordinator, a role that Rob is now assuming.

Seeing so many member-vendors with a great array of well-priced equipment and accessories filling their tables.

Meeting Bing, from Accucraft, for the first time, and hearing that he plans to join BAGRS.

Watching many volunteers help to clean up after the meeting ended. **Thank you!**

For those of you who attended, I hope there were many highlights for you as well.

For those of you, who were unable to attend, you missed a lot of neat stuff!

OPEN RAILROADS 2024

More Dates Available this year. Scheduling for May/June/July is underway.

Many Railroad Owners said that they would like more open date options, so we have adopted a new approach to scheduling open railroads. We did a successful test of the new approach last fall and are rolling it out for 2024.

We are currently scheduling open railroads for May, June, & July. We will schedule August, September, & October separately, starting in May.

This is what is going on at present.

We have shared these open dates.

MAY: Saturday, May 4, & Sunday, May 19

JUNE: Saturday, June 1, & Sunday, June 23

JULY: Saturday, July 13, & Sunday, July 28

Railroad owners are now telling us which of those dates they could be open at:


<https://www.surveymonkey.com/r/BAGRSOpenRRs>

We asked RR owners to share all the dates they could open, so we can find sets of railroads in the same vicinity that can open on the same date.

The survey closes on APRIL 10

We will then put the schedule together, finding as many sets of railroads open on the same day as we can. Open railroads will be announced monthly via *T&T* and email, as we did last fall.

MEMBERS ONLY PAGES
OPEN RAILROAD—
10:00 a.m. to 4:00 p.m.
ET&WNC Railroad



Yronwode—6632 Covey Road, Forestville, CA
Our fictitious model of the steam-era ET&WNC in Tennessee and North Carolina merges into a Northern California narrow gauge scenic route. 300 feet of track on three lines run through hills and valleys beneath a redwood tree and a fully operational 11 scale crossback signal. With hundreds of plants, 2 tunnels, 8 iron bridges, & wooden trestles, and 1927–1941 era buildings, vehicles, and figures, there are plenty of locations for photography. Industries include a crystal mine and rural agriculture with billboard reefer consist, and an "exaggerated fruit" consist based on early 1900s California postcards. We enjoy creating self-similar replications, so our actual barn and signal are reproduced in miniature on the layout.
Photo by Jeff Nantz

MEMBERS ONLY PAGES
OPEN RAILROAD—
10:00 a.m. to 4:00 p.m.
Little Bear Railroad



Hays—1722 Campbell Ave, San Jose, CA
The **Little Bear railroad** was built in 2016 and was converted to DCC in 2017. In 2020 the railroad was extended by adding two small mountains with two bridges, tunnels, and trees to get to the upper mountain loop. In addition, we planted both the old and new areas (with the expert help of Nancy Norris). The layout is about 75 feet long and 9 feet wide, with about 240 feet of track and 20 structures. All trains and structures are from the steam era. We run both DCC electric steam and 79th live-steam on the railroad.

MEMBERS ONLY PAGES
OPEN RAILROAD—
10:00 a.m. to 4:00 p.m.
Vista del Bahia Railway



Smith—17 Balclutha Drive, Corte Madera, CA
The **Vista del Bahia Railway** runs through lush gardens, over a river, and past a working vineyard, and is perfectly aligned for taking photographs against an unobstructed Mt. Tamalpais background. The railway has a fully automated block system including signals, siding, and trackside features. A reliable car line runs a Powell & Hyde style car, with two fully automated turntables, one on each end. Two belts? The most recent addition is a separate, fully automated Mt. Tamalpais Delivery. A Shay pushes gravity cars up the steep hill to the Mt. Tam Tavern, then launches them off the top one by one to coast "the crookedest railway in the world" down to Mill Valley Station.
See this railroad on YouTube: [Vista del Bahia Railway - 2023 NCCB Program](#)
Photo by Jeff Nantz

OPEN RAILROADS MAY/JUNE/JULY 2024

When will railroad owners know their open date?

By April 25

Do RR owners only get one open date?

Yes, one date May thru July, but they can be open again later in the year.

How many railroads will be open on the same day?

This depends on what RR owners tell us about their availability to open. We hope to find sets of 3 to 5 RRs in the same vicinity to open on the same day. On some dates, there could be 2 sets of open RRs in different parts of the Bay Area.

What happens if a railroad doesn't fit in a 'set'?

We schedule it to be open on its own.

What are the opening hours for open railroads?

10 a.m. to 4 p.m. unless otherwise noted.

Can Railroads 'Under Construction' open?

Yes! Yes! Yes! Members like seeing railroads under construction.

Can railroad owners choose to be open both Saturday and Sunday of the weekend they are scheduled?

Yes

When will members know which railroads are open on the 6 dates?

Monthly via the *Trellis & Trestle* and email.

Where does *T&T* get the information about each railroad?

Primarily from member's profiles, which is why they need to be up to date!

Where does *T&T* get images of the railroads?

We have a large collection of images, built over the last couple of years, especially for the convention last year, but the collection has gaps, so owners may be asked to share images. Owners are also encouraged to send us new images, especially of new features.

Send them to Roger Nicholson at communications@bags.org

From the Editor's Desk



Roger Nicholson lives in Union City, California, and operates the [Crystal Cove & Rose Railroad](#).

- **On the Cover.** Mick Spilsbury delivers a report on the status of BAGRS at the BAGRS Annual Meeting. The meeting was a lot of fun, and we had a higher attendance than we have had in years. I've included a selection of photos of the various activities that happened at the meeting. Thanks to everyone who sent me photos. The Annual Business Meeting Report may be found near the end of this issue of the *T&T* in the "Members Only" section.
- **As I was reading Dave Frediani's column about how he and his grandson worked together to add a cab to his "Leafer,"** it reminded me of when I was growing up. I loved working with my hands, and worked with my grandfather and my father often on various projects, which required manual dexterity. My own five children, however, grew up in the age of computers, and never showed interest in such things. Yet, my oldest son is now an orthopedic surgeon, and he rebuilds shoulders (he is, in fact, *very* good at it). When he was in med school, he once called me up and told me that he was working with the same tools that I used: saws, hammers, pliers and such—he just used them on human bones instead! He also has told me several times recently that I would have enjoyed being a surgeon if I had chosen to take that path instead of engineering years ago. However, I am content simply working on my backyard railroad empire.
- **Thanks to those who gave me old issues of the *Trellis & Trestle* and *Garden Railways* magazines!** I am slowly scanning all of the old *Trellis & Trestle* issues starting from 1998. There is a lot of interesting information in them, some of which I will use in future issues of the *T&T*. I'm also getting a lot of good ideas from *Garden Railways*. There are things in *GR Magazine* that folks fabricated using styrene that I am considering designing for a 3-D printer.
- **Speaking of 3-D printers, I am going to start including more regular features on 3D printing.** I am currently printing the "[OpenRailway EMD SW1500 1:32 Locomotive](#)". I've made substantial modifications to the design to accommodate USA Trains power trucks, battery power, and lights. Stay tuned!

- **Also in this issue, Jim Ralph tells you everything you ever needed to know about the Bay Area cultural icon once known as the Doggie Diner, and how he has resurrected it in G Scale. The diners are long gone, but the memory of their mascot still lives rent free in our minds. Thanks to Jim’s efforts, at least four new G Scale Doggie Diner franchises are scheduled to open on various garden railroads located in both the Bay Area and Sacramento! -Roger**



WELCOME NEW MEMBERS

We would like to welcome BAGRS’ newest members and invite you to tell us something about yourself. We are happy that you decided to join us, and we hope that you will enjoy getting to know other members.

Remember, you do *not* have to have a garden railroad to participate in the club or have to contribute to BAGRS or the *Trellis & Trestle*—approximately half our members do not have their own railroad. Also, if I get some information wrong or misspell your name, please let me know and I’ll take care of it.

If you would like to submit an article, member update, fun train-related thing you saw while traveling, open house you visited, photographs, videos, or have any questions or corrections, please contact me (**Roger Nicholson**) at communications@bagrs.org.

- **Matthew DeLio**, Holly You, Cupertino, California. Joined 3 March 2024.
- **Dan Keen**, San Jose, California. Joined 8 March 2024.
- **Jim Steiner**. Burlingame, California. Joined 25 March 2024.

Report on the BAGRS Annual Meeting

The BAGRS Annual Meeting was held on March 9, 2024, at the Hiller Aviation Museum.



The food for breakfast and lunch was excellent, with some new selections this time around.



BAGRS President Mick Spilsbury held the annual business meeting, and the new board of directors was elected.





There were photo and model displays and contests.

Matt and Jerry Abreu from the Sacramento Valley Garden Railway Society came to speak to us about and promote the 2025 National Garden Railway Convention which will be held in Sacramento.





There were many vendor tables that were open between sessions.





There were a bunch of door prizes.



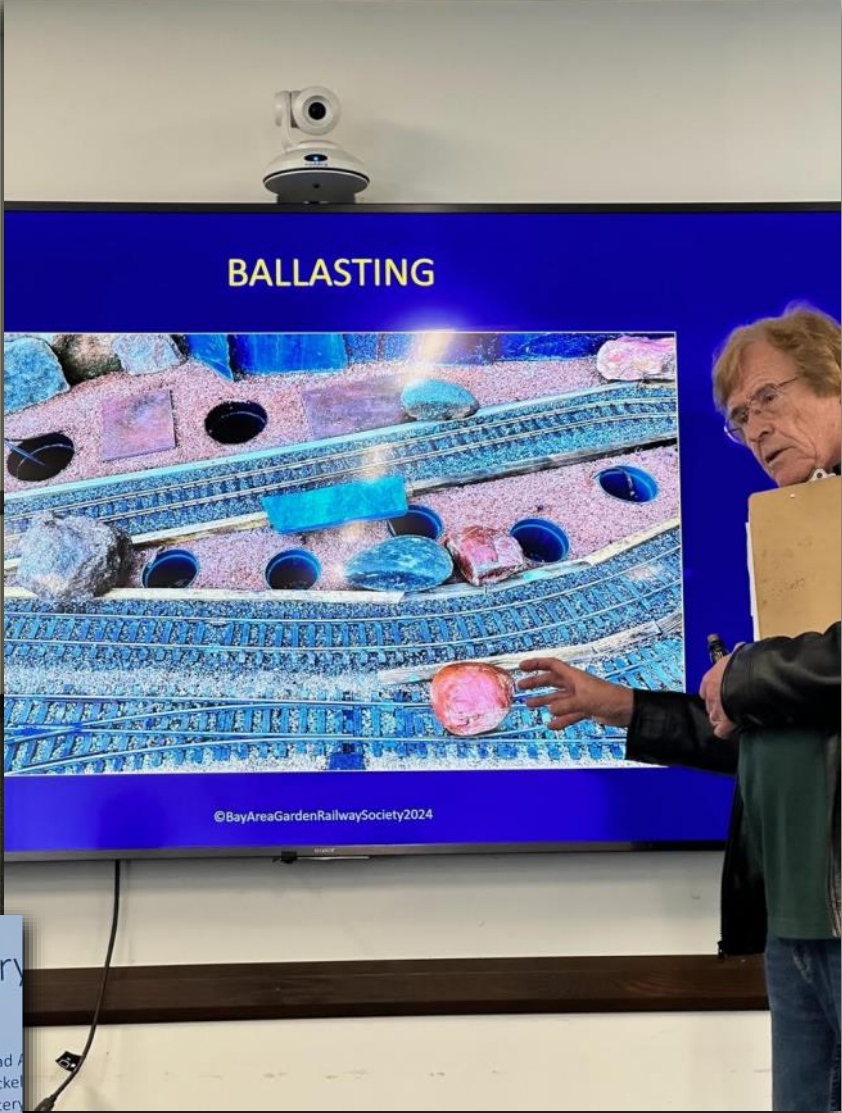
The Live Steamers were set up in the back courtyard.





Also in the back courtyard was something new to our Annual Meeting: Matt and Jerry Abreu's *Wandering Railroad*! The railroad is located in a massive converted trailer towed behind Matt's F350. Visitors to the museum got quite the treat that day with the live steamers and the Wandering Railroad! (Matt has an honest-to-goodness real diesel locomotive horn with a compressor installed on this truck, so you don't want to be blocking him on the freeway!)





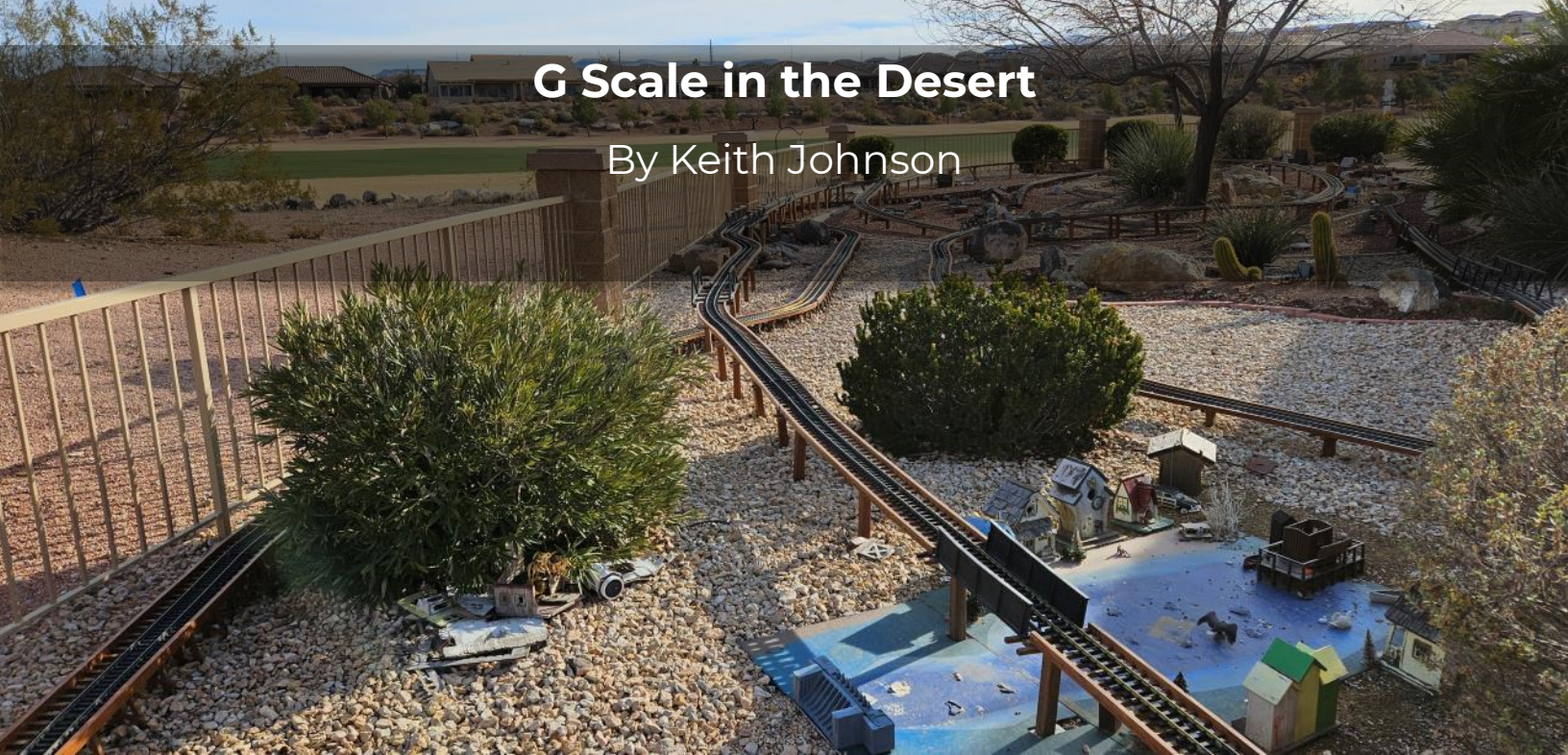
Something else we haven't had in a while at the annual meeting: breakout sessions and clinics!



A good time was had by all! ■

G Scale in the Desert

By Keith Johnson



Model railroading is a hobby that is enjoyed by many people in many locations. G scale model railroads are generally enjoyed in outdoor spaces—that's why it's called Garden Railroads. Here in the U.S. and in other countries as well, garden railroads can be found in all kinds of climates, from cold snowy climates to hot arid climates. Each climate has its own characteristics that makes garden railroading unique. Garden railroads in the snowy climates can have snowplows on the engines. Garden railroads in more tepid climates can have beautiful landscapes. Garden railroads in warmer climates have the pleasure of running most, if not all, the year. I will venture to say that garden railroads in desert climates have their own characteristic that makes creating and maintaining a garden railroad somewhat challenging. This article is intended to describe some of those challenges, giving real life experiences of how those challenges have been met to various degrees of success.

First, a bit of background about the author who has experienced both the more tepid climate and now the hot desert climate. I originally built my garden railroad in San Jose, California, was a member of BAGRS for many years, and had my railroad on the tour during the NGRC in the Bay Area in 2016. The railroad was fully integrated in an outdoor garden with a full variety of flowers, vegetables, bushes, and trees. I then moved to St. George in the southwest corner of Utah. The environment here is gorgeous and beautiful. We now live surrounded by red rocks, Zion, and Bryce national parks. As I started to create a new garden railroad, I came across many challenges I had not experienced in San Jose. This has led to this description of "G scale in the Desert."

So, what is so different? First, temperatures. While we were contemplating a move to southwest Utah, I set about tracking the temperatures in both locations throughout the year. What I found was the winter months were about 10 degrees colder than in San Jose



and the temperatures were about 10 degrees hotter in the summer months. In St. George, the winter months may experience a day or two of very light snowfall (happened twice in the 7 years we have been here) with temperatures in the low 30s at night and 50s and 60s during the day. The summers are usually in the 100s with some days over 105. Overall, very nice and comfortable conditions.

The REAL second difference is the humidity. I never thought of San Jose being a humid environment. It generally seems to be 25%-40% humid most of the time (except in winter). Southwest Utah generally is in the 8% to 15% range. This might not seem like much, but it really makes you rethink construction materials, adhesives, track construction and especially 3-D printing filaments.

The third difference between a more tepid climate like San Jose and the desert climate like southwest Utah is the effect of the sun's UV rays. This, in conjunction with the higher temperatures, has a major influence in the construction and maintenance of a G scale layout in the Desert.

What This Article is About

I could go on and on about garden railroads in the desert, but I will save the reader some time and create multiple articles over time. I'll divide the articles into the following subjects to make it easier to understand G scale in the desert:

- Roadbed Construction Issues
- Building Structure Issues
- Operational Considerations
- Maintenance Issues

Keep in mind these topics are based on the specific environment here in the desert: high temperatures, low humidity and high UV rays. Let's start with the first topic.

Roadbed Construction Issues

When first considering how to design and construct my layout, the first thing I realized was that my backyard mostly consists of rock. This is not true everywhere in southwest Utah, but it is prevalent in many areas. First question is do I lay the track roadbed on the ground or not? If I lay it on the ground, I should create a reasonably solid base to lay the roadbed for the track. This would require digging 2 to 4 inches down through the existing rock. The rock I'm dealing with is $\frac{3}{4}$ " to 1" rock called Gold Star or Cappuccino. Fortunately, we have a material called 'chat' or crushed granite that makes for a nice solid roadbed. Once the existing rocks are moved away and dug down a few inches, forms can be added to create a trench of 4 to 8 inches wide (single track or double track). The trench is then lined with a flexible material, like bender board. The chat is added to the level of the surrounding area or a bit higher to be a bit more realistic. Next, the chat is packed down, wetted, packed again and wetted once more. When dry, this forms a solid roadbed that is almost like concrete. By the way, the chat we have here comes in both a brown and a red color, so it blends very well with the surrounding rock. Using a flexible material like bender board to line the trench allows curves to be handled just as easy as a straight run.

I spent some time digging my trenches and laying the roadbed. I'm thinking this really isn't a lot of fun, especially in the heat. Plus, a ground level roadbed means I'm on my knees a lot and an older gent doesn't get up and down so easily. So, my next option is to build a raised roadbed. Okay, how high and made of what. Don't forget, we have high temperatures, high UV, and very low humidity. So, I decided on a roadbed about 4 inches or so above the ground. Since I like to see a variety of height in my layout and I wanted trains crossing over trains, I wanted most of the layout to be elevated 4 inches and then about 14 inches of elevation for trains crossing over and under.



Now, how do I build a roadbed at 4 inches and one at about 14 inches? Let's start with the 4-inch height. My first thought is to just use some bender board, and cut to a basic width of the track. This would work okay for the straightaways but would have to be hand cut with multiple pieces for the curves. Then to keep it raised, I would have to build some bents, and glue and nail the bender board to the bents. The bents would be redwood or cedar, stained using either a redwood color or a dark brown color to blend in with the surrounding rock color. After staining, I also heavily coated all the wood surfaces with a UV protectant, usually exterior Varathane (water based) or Helmsman Spar Urethane (oil based). Using a table saw, I cut 8-foot lengths of construction redwood to ½" by ½" strips 8 feet long. I then stained each 8-foot length the appropriate color. Next, I cut each 8-foot length to the correct size for the bents as shown here. I built a jig for assembling the bents. To construct the bents, I used exterior glue (Titebond III) and brads (5/8" 18 gauge). Once all the proper lengths are cut, the bents were built using an assembly line model. It didn't take all that long.



The next step was to add the bents to the bender board roadbed. Since the bender board is somewhat flexible, I felt that a bent every 4 inches would suffice. After gluing and nailing each bent to the bender board, I would clear an area of the rock about an inch down, lay down a base of chat, and add the assembled bender board/bent section. I then pushed the rock back around the bents so it would look much more integrated.



Building the roadbed this way for the curves was another challenge. I would cut short pieces of bender board with each edge cut to the correct angle (based on the diameter of the curve) and glue/nail the bents to each piece. The assembly of the overall curve was accomplished by gluing a spacer under each pair of bender board pieces to connect all sections together.

For the 14-inch elevated roadbed, I used the same construction method using bender board, but I substituted the bents with a 1" X 1" wood post mounted on a 4" X 4" tile for a base. The post was likewise treated with stain and UV protectant. Again, building the roadbed for a curve was not the easiest thing to do.

I thought this method of roadbed construction was a reasonable way to do it. I found out after a couple of years that I was wrong. Due to the high temperature, high UV and low humidity, many of the joints were failing (even though they were nailed), and the bender board was warping. So I had to come up with a new roadbed construction method.

Roadbed Reconstruction

I decided I would learn from another member of our club and would try his construction method. Still using stained bender board and ½" x ½" spacers, I just put everything together

differently. I cut the bender board into 8-foot lengths about 1 ¼" wide. Then I would plane the boards down to about 0.16" thick. The intention is to create 2 8-foot lengths by ½" thick 'rails' separated by a series of ½" x ½" X 6" spacers. First, I created a jig of 1" x 1" blocks screwed to a table, simulating the curvature of the track. I would take 3 (you could use more) 8 foot x 0.160 strip and glue them together and clamp them around the simulated track curvature. The 3 x 0.160 strips created an approximate ½" thick strip. Using exterior glue, clamping the strips around the simulated track, leaving it to set overnight, is sufficient to maintain the curvature of the track. There was very little, if any, spring in the final result. This created one side of the new roadbed.

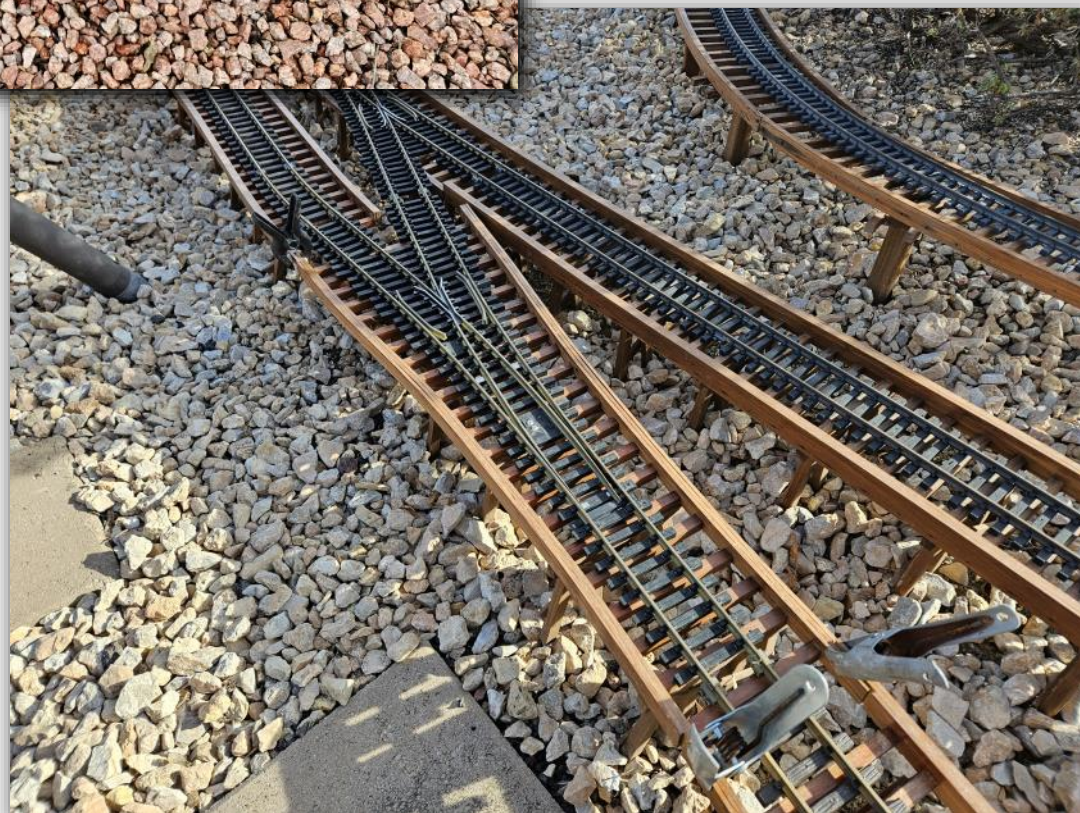
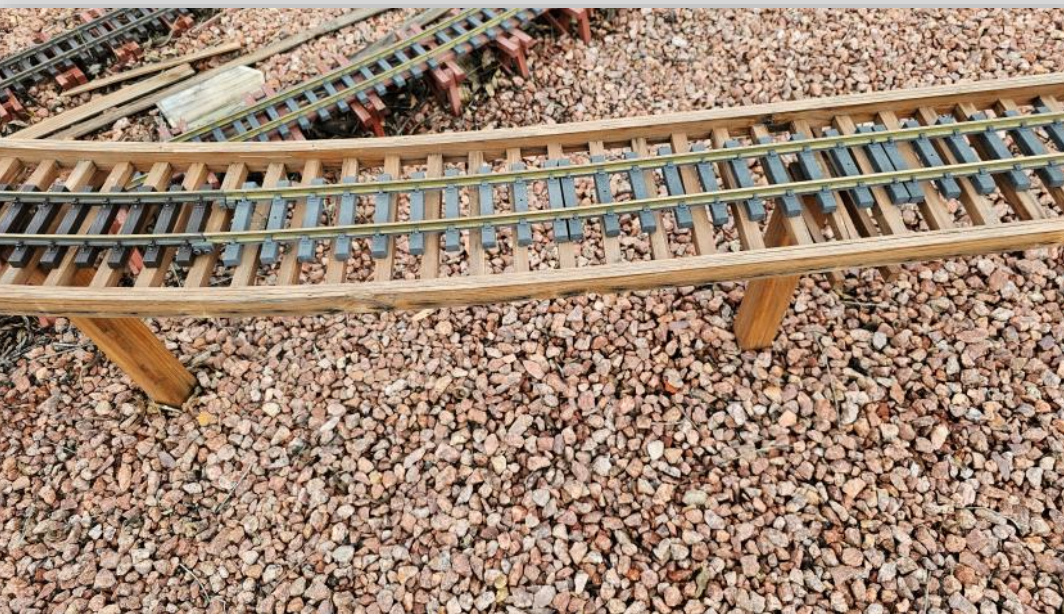


I added the ½" x ½" X 6" pieces to the glued 8-foot strip. The 6" pieces were glued and nailed every 2 inches along the length of the one roadbed side. That assembly (one roadbed side plus spacers) would be used as a jig to glue and shape the other side of the roadbed. Once the glue had set overnight, the second roadbed side was glued and nailed to form a complete roadbed section. To assure a consistent spacing, a jig was used to set the spacing between the spacers with the spacing somewhat arbitrary. An alternative would be use the same space as the space between ties of your rails. Since I have a variety of track with various tie spacing, I decided to just use a standard spacing and have the track sit on top of the spacers instead of having the spacers between the ties. It was just easier for me.



Once each 8-foot section of roadbed was assembled, I used the older bents and glued and nailed each one to every fourth spacer. This completed section then replaced the old track section. The same process was used for the 14" elevated section, just substituting the 1" x 1" post for the bents. Using exterior glue and brads, this roadbed design seems to be holding up MUCH better in our heat, humidity and UV environment. It took about 5 months to replace all 650 feet of roadbed (although I didn't work 8 hours a day every day) and I'm much more pleased with the result.

That's it for now. In the next article I will talk about the construction and materials for buildings and other elements in this environment and things to be cautious about and what not to do based on my experience. ■



Garden Railroad Traffic Management System—Part 2

Garden Railroad—Arduino and RFID

By Henryk Krasuski



Henryk Krasuski is a member of BAGRS since September 2022, and lives in Denmark. He has a BSc in Electrical Engineering. He posts videos of his garden railroad development projects on his YouTube channel: [Henryk Krasuski](#).

Part 2 of the story about my experiments with automating model trains using Arduino and RFID tags.

Preface

I chose to experiment with RFID because it's easy, flexible, weather-resistant, and supported by Arduino.

FACT: On the real railway, beacons are placed on the tracks, which the train reads as it passes over, reporting its location to the Traffic Control Center (TCC).

I decided to mount the RFID reader on the locomotive, with the RFID tags placed on the tracks. This is the best and most flexible solution, closely resembling a real-world scenario. However, this means there needs to be a computer on the locomotive, such as the Arduino. An ESP8266 and ESP32 can also be used.

In this article, I will construct a track with 3 RFID tags and then program the locomotive to autonomously decide what to do when it passes over an RFID tag.

Bill of Materials:



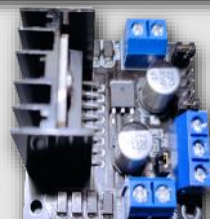
Arduino UNI R3 or R4



Drive Unit for BR80 Steam



3 RFID tags

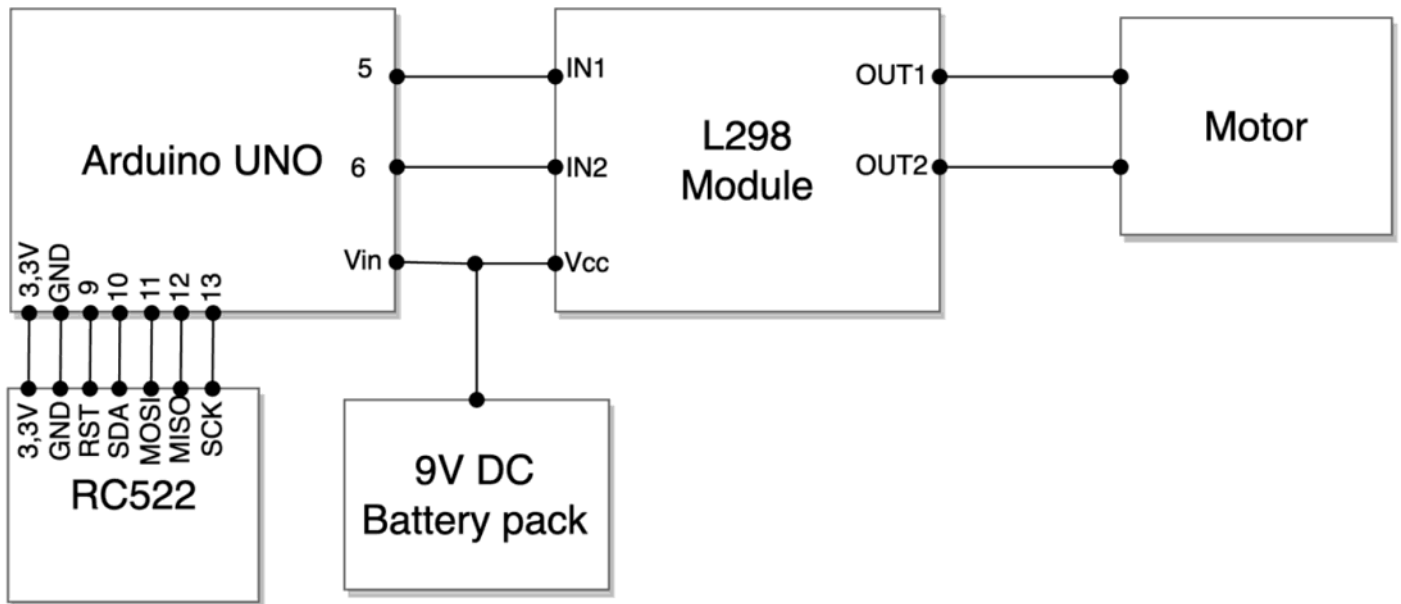


L298 Motor



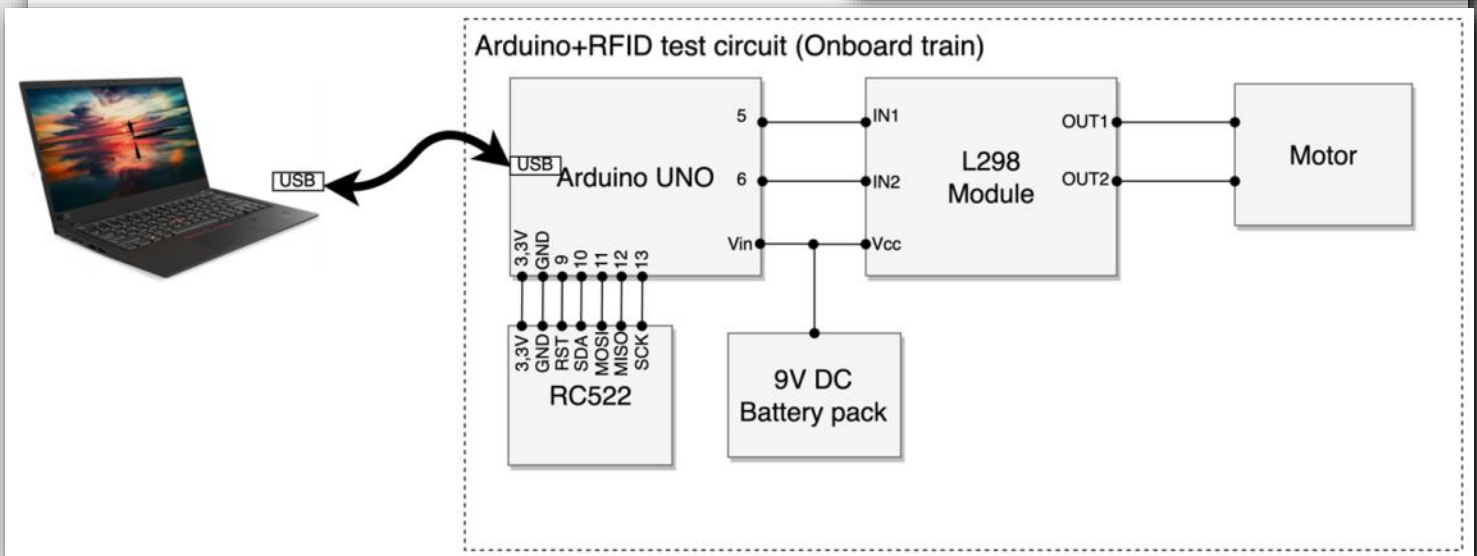
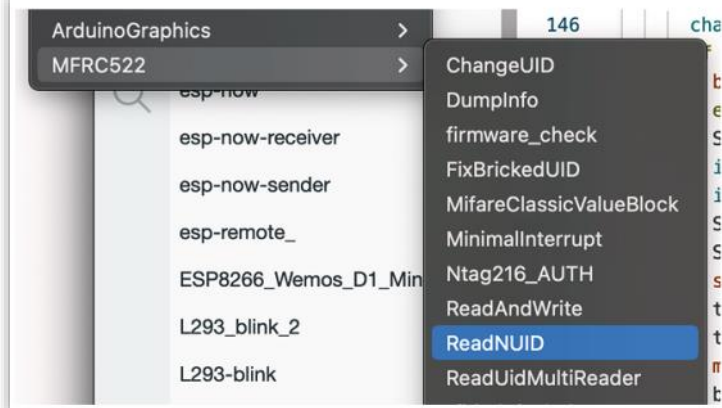
RFID-RC522 Card reader

Arduino+RFID test circuit



Electronics: The ReadNUID example

The diagram is created based on the ReadUID example in the Arduino IDE and the motor driver configuration outlined in my previous article "GRTMS, T&T January 2024." Utilizing the Arduino examples makes it easy to test the code, and step-by-step, everything comes together seamlessly.



Using the MFRC522 example "ReadNUID," I can test if the RFID card reader can read tags.

- When an RFID tag is brought near the card reader, Arduino forwards the Tag-NUID to the computer via the USB cable. The NUID is a unique 32-bit code, which can be viewed in the Serial Monitor in the Arduino IDE.

To the right is the output from the Arduino IDE Serial Monitor, displaying the NUID codes read from two different RFID tags.

Each RFID tag has its own 32-bit (4 bytes) code. By mounting the card reader on the locomotive and placing RFID tags on the track, it's possible to program the Arduino to perform different actions based on the RFID tag it reads.

One important question I aim to answer:

- How fast can the train move and still manage to read the NUID?

I am testing these questions by mounting the Arduino and RC522 card reader on a train car. I secure the RC522 with Lego bricks, allowing me to adjust its height relative to the track. Since it's a test setup, I can keep the USB cable between the computer and Arduino to read the NUID to the Serial monitor at the Arduino IDE.

The orientation of the RC522 card reader doesn't matter; what's crucial is that the coil is centered on the track. It can be rotated, and I position it so that the components are facing upward.

Source code for the Arduino with RC522 Card reader

<https://gist.github.com/hekras/1b97c4cd038d241d5f0fe7607d17d806>

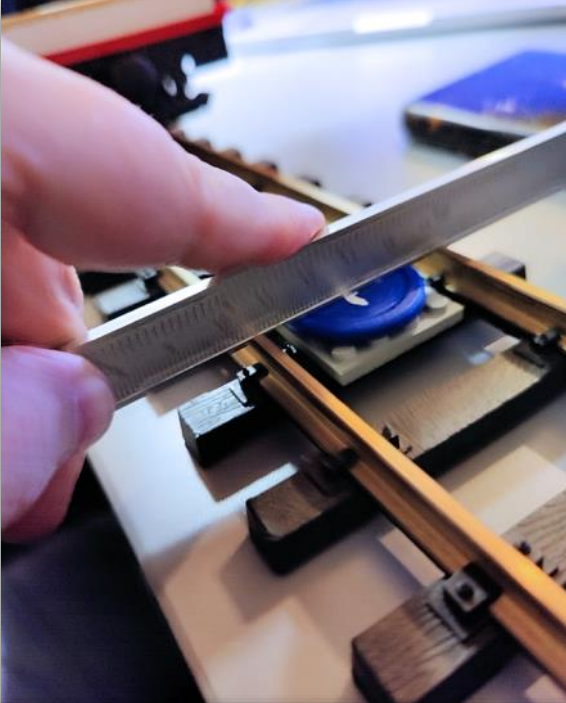
```
Output Serial Monitor x
Message (Enter to send message to 'Arduino U

PICC type: MIFARE 1KB
A new card has been detected.
The NUID tag is:
In hex: 5A 49 46 59
In dec: 90 73 70 89

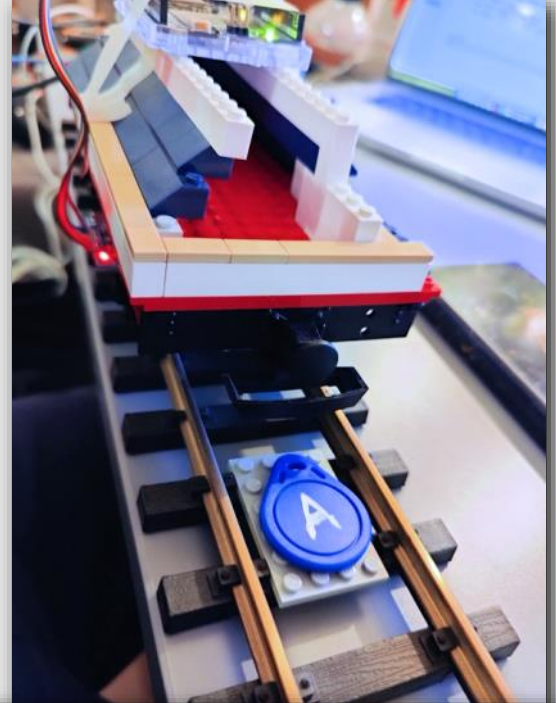
PICC type: MIFARE 1KB
A new card has been detected.
The NUID tag is:
In hex: E9 CE 0B D5
In dec: 233 206 011 213
```



Measurement car with RC522 card reader, mounted approximately 3 mm (0.118 in.) from the track



RFID Tag A (E9 CE 0B D5) on a single Lego plate, positioned to align with the level of the track



With my test setup, it's possible to reliably read the NUID at all speeds I could manually push the car.

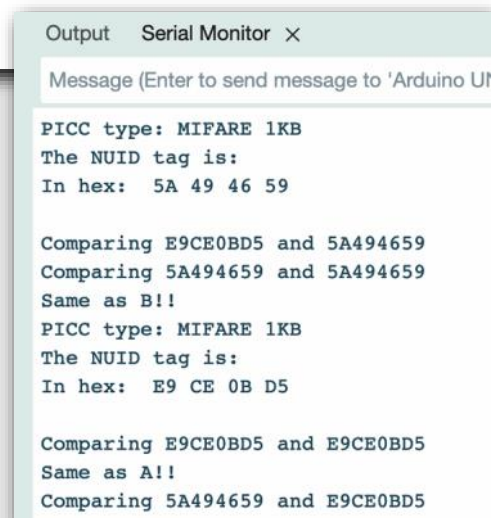
Next step is programming

I begin with a program that incorporates logic and output the results of the decisions to the Serial Monitor. This way, I can continually monitor that the program functions correctly.

<https://gist.github.com/hekras/5a8fb7a7a81ab6b0f02f20fc154e1bb1>

The two tag NUIDs entered as hexadecimal values in uppercase:	<pre>42 char *TAG_A = "E9CE0BD5"; 43 char *TAG_B = "5A494659";</pre>
In the loop() function, when a RFID tag is triggered and received, the NUID is compared the TAG_A and TAG_B to identify where the train is at	<pre>95 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_A)){ 96 Serial.println("Same as A!!"); 97 } 98 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_B)){ 99 Serial.println("Same as B!!"); 100 }</pre>

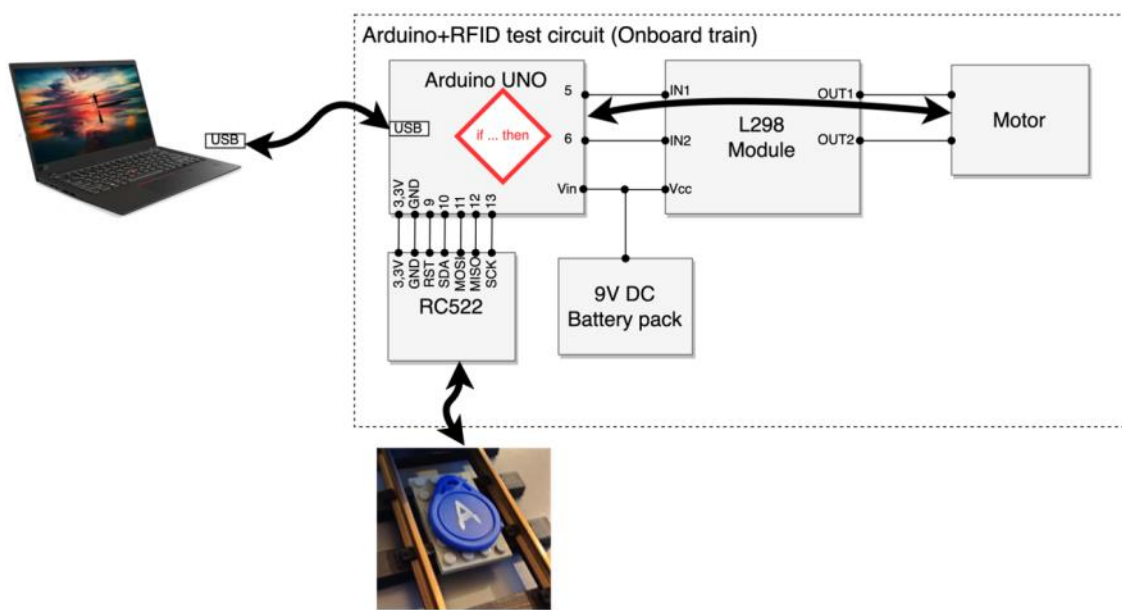
Highlights:



It's time to control the engine

The L298 driver is also used to drive motors in CNC machines and 3-D printers. In this application, the L298 serves as the motor driver, as the ports of the Arduino cannot deliver sufficient

power to move the motor. Ports 5 & 6 on the Arduino are configured to use PWM (Pulse Width Modulation) with values ranging from 0 to 255. The direction is determined by . . .



Action	Pin 5	Pin 6
Stop	0	0
Forward	Between 1 and 255	0
Backward	0	Between 1 and 255
Error	Between 1 and 255	Between 1 and 255

Note: there is a dead zone where the motor does not move. In my case, it's between 1 and 70 (eller below 70 eller ≤ 70).

I modified the program so that TAG_A activates forward motion, and TAG_B activates backward motion.

Arduino source code

<https://gist.github.com/hekras/f489f1244a4650c970da3ceb98c20cef>

Highlights:

The two Arduino ports 5 & 6 are named Pwm1 and Pwm2	<pre>45 uint8_t Pwm1 = 5; 46 uint8_t Pwm2 = 6;</pre>
In the loop() function, direction has been added as shown in the table above. I use 255 for 100% throttle, but you can change the values to suit your train	<pre>98 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_A)){ 99 analogWrite(Pwm1, 255); 100 analogWrite(Pwm2, 0); 101 Serial.println("Same as A!!"); 102 } 103 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_B)){ 104 analogWrite(Pwm1, 0); 105 analogWrite(Pwm2, 255); 106 Serial.println("Same as B!!"); 107 }</pre>

3rd RFID tag

The next step is to add another tag (TAG_2), in the middle of the track and make the train stop, with a 5-second pause at each RFID tag. I use the Arduino IDE Serial Monitor to read the new NUID (TAG_2 = '603EF655').

Arduino code listing:

<https://gist.github.com/hekras/3b57aabaefc0f0af59936f0099085c4>

TAG_2 added	<pre>42 char *TAG_A = "E9CE0BD5"; 43 char *TAG_B = "5A494659"; 44 char *TAG_2 = "603EF655";</pre>
Two variables are added to remember which way the train should go when it reaches TAG_2	<pre>48 uint8_t Pwm1value = 0; 49 uint8_t Pwm2value = 0;</pre>
Inside each 'if' statement: - Stop - Delay 5000 milliseconds - Start - Delay 2000 milliseconds The second delay of 2000 milliseconds is to avoid reading the same RFID twice	<pre>101 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_A)){ 102 Serial.println("Same as A!!"); 103 analogWrite(Pwm1, 0); 104 analogWrite(Pwm2, 0); 105 delay(5000); 106 analogWrite(Pwm1, 255); 107 analogWrite(Pwm2, 0); 108 Pwm1value = 255; 109 Pwm2value = 0; 110 delay(2000); 111 } 112 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_B)){ 113 Serial.println("Same as B!!"); 114 analogWrite(Pwm1, 0); 115 analogWrite(Pwm2, 0); 116 delay(5000); 117 analogWrite(Pwm1, 0); 118 analogWrite(Pwm2, 255); 119 Pwm1value = 0; 120 Pwm2value = 255; 121 delay(2000); 122 } 123 if (compareHex(rfid.uid.uidByte, rfid.uid.size, TAG_2)){ 124 Serial.println("Same as 2!!"); 125 analogWrite(Pwm1, 0); 126 analogWrite(Pwm2, 0); 127 delay(5000); 128 analogWrite(Pwm1, Pwm1value); 129 analogWrite(Pwm2, Pwm2value); 130 delay(2000); 131 }</pre>

Highlights:

Link to YouTube video of test on the desk and on the track:

<https://youtu.be/1aqRkESp628>

Ta-da!

And that's it. The train is now controlled effectively with RFID and Arduino. However, there are limitations since you can't trigger light or sound effects outside the train. If you want to achieve this, use Arduino with WiFi and send messages/orders to other devices and to other trains on the track.

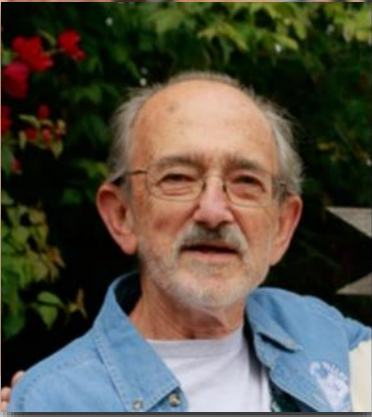
Next step is to embed the electronics and model the test car to look like a locomotive, like this one. ■



Carnivale on the Green: A Railcar Based Traveling Carnival

Rail Car #31: THE DOGGIE DINER

By Jim Ralph



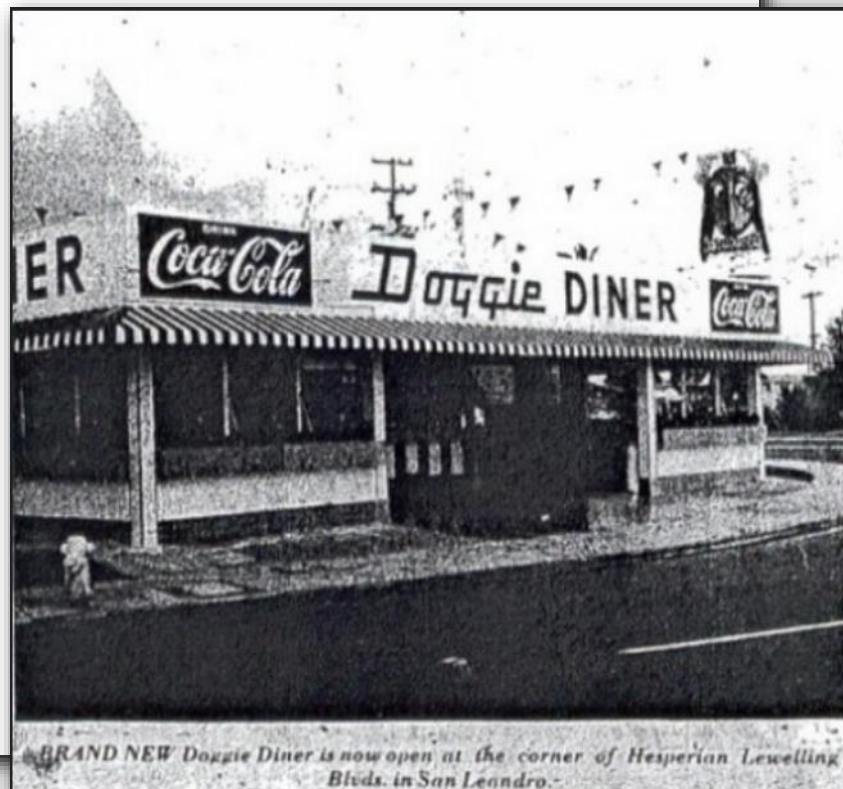
Jim Ralph is a member of the *Sacramento Valley Garden Railway Society*, and is the brother of BAGRS member Bill Ralph.

The DOGGIE DINER was never a part of the carnival world but was a part of mine growing up in the San Francisco Bay Area (Castro Valley). It was the go-to place for a hot dog for our dad, my brother and I in nearby Hayward located on E. 14th Street. During my high school years, it became a regular hangout and a turnaround spot for cruising 'the strip' with Pring's Coffee Shop at the other end at the San Leandro border (another gathering place).

In 1948, Al Ross opened his first DOGGIE DINER on San Pablo Avenue in Oakland, eventually expanding the chain to thirty Bay Area locations with the majority in San Francisco. The last one closed in 1986 under the pressure of the likes of McDonald's and Burger King. The DOGGIE, an early entry into the fast food world, was sparse in design and had a simple menu consisting only of hot dogs, hamburgers, fries, milk shakes and sodas.

In 1965–66, Harold Bachman, a billboard and ad designer, was given the job to create a supersized advertising piece to catch the eyes of passersby for the restaurants. He came up with the now iconic smiling 7-foot tall fiberglass dachshund dog head wearing a chef's hat, sporting a bow tie and weighing in at 300 lbs. Each store was then fitted with a tall pole with the slowly rotating head on top.

The history of the Doggie Diner can be found on YouTube: [DOGGIE DINER History](#), posted by "Doggie Diner."



With their closings, the heads were scattered to the winds. Some are in private ownership, but sadly some are still missing. The City of San Francisco memorialized one on Sloat Blvd. as SF Landmark #154. Three are on display in Golden Gate Park.

The iconic DOGGIE head has developed a cultlike following and was the subject of the comic strips Zippy, and Odd Bodkins. In 2004, the eclectic street performing group Cyclecide took a cross-country trip in an old repurposed bus pulling a trailer with MANNY, MO and JACK, three DOGGIE heads. The goal was to visit unusual roadside attractions and perform along the way to their final destination of Coney Island to meet up with the original Nathan's Hot Dogs restaurant. A (and very eclectic) documentary was made of the trip called 'HEAD TRIP' and can be found on DVD. You can view the trailer on YouTube here: ["HEAD TRIP" trailer by SFCacophony](#).



Why the build? I often scan through the many thousands of 3-D print files offered for download on the web hoping to find something of interest to use. And with absolutely no forethought of the long gone DOGGIE DINERS, I chanced upon a 3-D print file of the iconic DOGGIE DINER was a must build!



The DOGGIE head, signage, stools, appliances, cook, customers and even the hot dogs are all 3-D prints. The acrylic walls and bass wood framing were laser cut and added to my basic flat car. This build along with most of all my CARNIVALE railcars would only be conceptual. With the recent availability of the 3-D printer and laser cutter for the scratch builder, these concepts can now become a reality. ■

YouTube: [DOGGIE DINER History](#), posted by "Doggie Diner"



THE LIVE STEAM DEPARTMENT

Miniaturizing a miniature train: Thoughts to Gauge, Scale, Standards, and Proportions

By Paul Wallace

Thank you for following along on my adventure to model a 1950s Ottaway live steam amusement park locomotive in 45 mm gauge to run on the BAGRS club track. This month I am asking for help determining the inspiration and proportions of the Ottaway.

My Grandad, Don Hineman, had a fascination with all things steam and mechanical and was fortunate to have a long line of toys including a steam launch, miniature steam tractor, miniature steam train, and railroad speeder. In the 90s, he had the opportunity to acquire a steam train from Portola Valley and thus Ottaway #1074 started service as engine 1 at the White Oak and Eaton Railway.



What is an Ottaway?

The Ottaway is a simple/rugged coal fed miniature steam train that was mass produced in the late 1940–50s for amusement parks and traveling carnivals. Number 1074 was finished in September of 1950 toward the end of the run (#64 of 79 documented trains). In 1950, an Ottaway package with Engine/Tender, 320 feet of welded tie track, and two ride in coaches with an observation car, cost \$3000 or about 40k today. The rolling stock includes two original open top cars. In the 90s, 1074 received an oil conversion, steam-driven boiler feed pump, and three new cars including a new open top gondola with high seats, a covered excursion car, and caboose.

The Ottaway is best described as “enjoyable for children of all ages.” It is not built to any particular scale but rather optimized for amusement park duty. The train is relatively light and runs on welded tie track that can be set up temporarily on level ground. The 4-4-0 wheel arrangement is a natural choice for tight turns although the lack of weight and suspension makes the locomotive slippery with the small grade at White Oak and Eaton when hauling 4 cars/~15 people so sanding is required. The “ride in” open top cars certainly help keeping feet inside the vehicle. And while an adult can squeeze into a seat, getting out can be tricky. When in operation, White Oaks and Eaton or Emerald Hills Railroad (#1052) cycles through about 800 riders in four hours. Search for “Don’s San Carlos Train Rides” on YouTube for an example.

Inspiration

While the Ottaway is my inspiration for my Ruby conversion, what is the inspiration for the Ottaway? The Ottaway certainly follows a formula for miniature railroads in 12” gauge but with a facelift to 1905–1920 sensibilities like a short stack, steam turbine/ electric light (post 1899), a single arched window, air brakes and a 1920s style steel “Chair Car.”



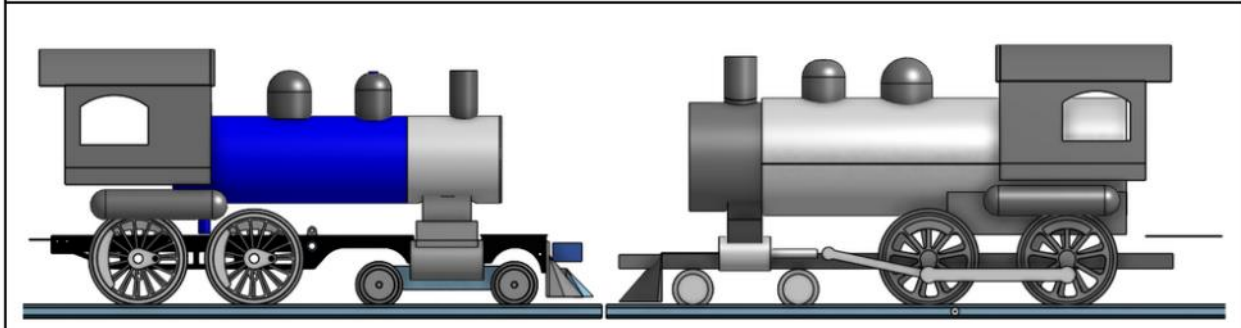
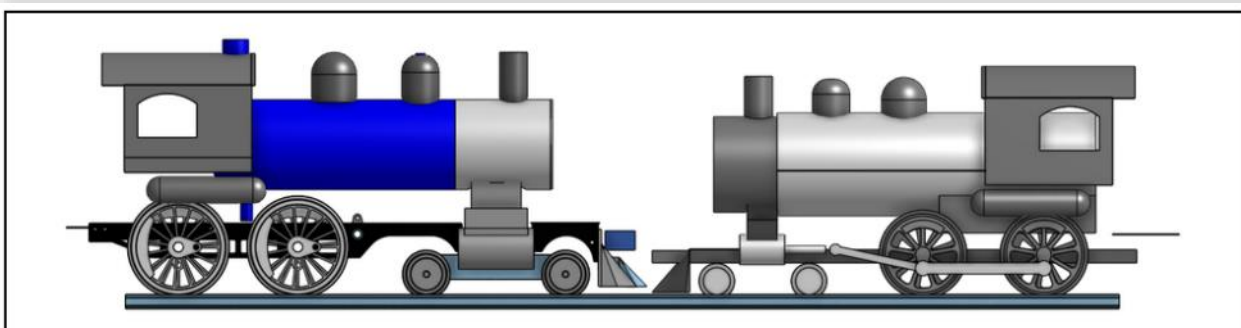


“NKP 181 Cleveland OH circa 1905” Provided by Ray Breyer from The [Nickel Plate Road Archive](#).

If I key into the arch window and restrict myself to the *Nickel Plate Road*, the Ottaway picks up some cues from the NKP Class O 4-4-0. Thoughts?

Gauge and Scale:

White Oak and Eaton Railway is gauged to 12” and we can have some fun making comparisons with Standard Gauge at 4’ 8-1/2”, Narrow Gauge at 36”, Gauge 1 (standard gauge models running on 45 mm track), and the Fn3 flavor of Garden Gauge (narrow gauge models on 45 mm track).



- A) Scheme #1: 1/32 scale Ruby and Standard Gauge Ottaway
- B) Scheme #2: 1/32 scale Ruby and 4' narrow Gauge Ottaway

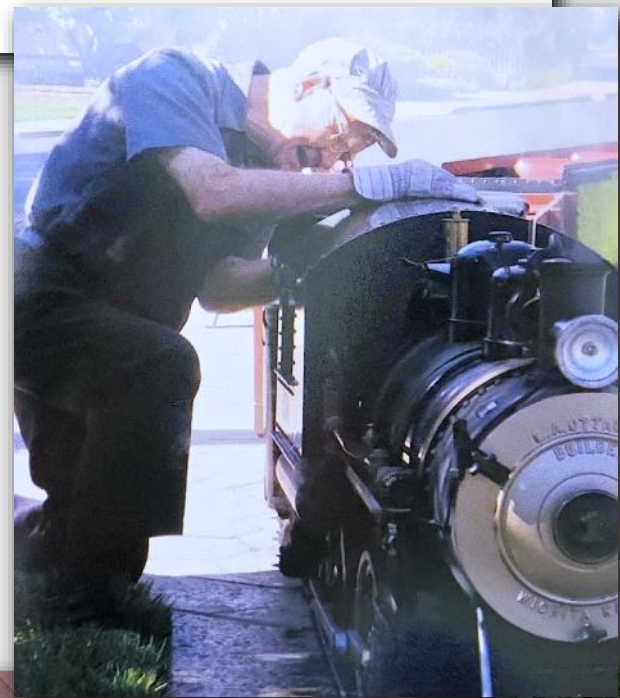
	Standard Ottaway	Narrow Ottaway	Gauge 1	Fn3
Scale vs 12"	1:4.7	1:3	1:32	1:20.3
Inch to the foot	2.55	4	0.38 ($\frac{3}{8}$ "	0.6 (15mm)

Proportions & Progress:

Secretly, the 4-4-0 Ruby is an excuse to get out to the shop and cut metal, but along the way I have tackled CAD drafting and 3-D printing as tools to help me visualize the project and rapidly prototype parts.

I should be wrapping up the drafting phase of the Ottaway & cars and get back to printing soon.

Thank you for following! ■



THE GARDEN DEPARTMENT

Musings of a Brown Thumb: The Bougainvillea and I

By Roger Nicholson

After I moved in to my newly built home in 2002, I decided that I really wanted a Bougainvillea. I loved the way that they looked, so I acquired a number of bougainvilleas over the next few years. I planted them in pots or in the ground at various locations around my yard. I always ended up with the same result: they would eventually die. I could not, for the life of me, keep a bougainvillea alive in my yard. My reputation as a “brown thumb” was not in any danger of being diminished.

During one of my many bougainvillea planting cycles, I placed two of them in the narrow side yard on the west side of my house. The area is mostly shaded because of my neighbor’s two-story house. I planted them in the ground outside my den windows, hooked them up to the drip system, and, as I am inclined to do, forgot about them. They *flourished* in that location, and ONLY in that location. Somehow the conditions were favorable for them there (or the planets aligned properly . . . I really don’t know why.)

Years later, when I completed the overhead train storage tracks in my garage, I was faced with the task of running a track through the garage wall seven feet off the ground, and along the entire side yard to my backyard, where it would connect with a helix that would bring the track down to the level of the main line. There was a big obstacle in my way: the two bougainvillea plants had become very large, and I needed to run a train right through the middle of them.



I decided to construct a very large and sturdy redwood arbor to support the two bougainvilleas, and I designed it so that the track could run right through the middle of it. Surprisingly, it worked very well.

At least, it worked quite well as long as I kept my eye on the bougainvillea before running a train through it. A randomly growing branch had the potential to send my train 7 feet down to the

ground. A few times, it actually did just that. These plants had a LOT of randomly growing branches that I had to keep on the lookout for. Complicating matters was the huge bush on my neighbor's side of the fence, which ALSO began sending branches toward my track. Every time I got ready to run a train from my garage storage to my backyard, I had to get up on a ladder and inspect every inch of this line, and then I had to follow the train so that I could be ready to catch it if it fell.



As scenic as it might be to see a train run through the middle of a plant, there was always that lurking danger. After a recent “near miss” where I literally caught the train as it fell, I decided that I needed to create a better solution: one that wouldn’t stress me out whenever I needed to run a train through this area.

I had a pile of wood left over from some old cedar arbors that I had dismantled. I never throw away potentially useful wood. I gathered all of the arbor pieces and puzzled out how I might use the shapes to build a structure that would keep the plants at bay and create a safe passage for my trains through the danger zone. I cut up the old wood according to the plan in my head and then ran each piece through my planer.

I ended up designing a “plant shed,” which performs much the same function as a “snow shed,” except . . . Well . . . it does it for *plants*. The back wall of the shed is covered with cedar “boards,” which keeps the neighbor’s plant at bay, and the roof keeps my bougainvillea out. I left the front open, because I like to be able to watch the train.

It turns out that it works quite well, and my stress level has decreased significantly. Who knows . . . using up that pile of old wood may have actually added a few years to my life. ■



Dave's Corner

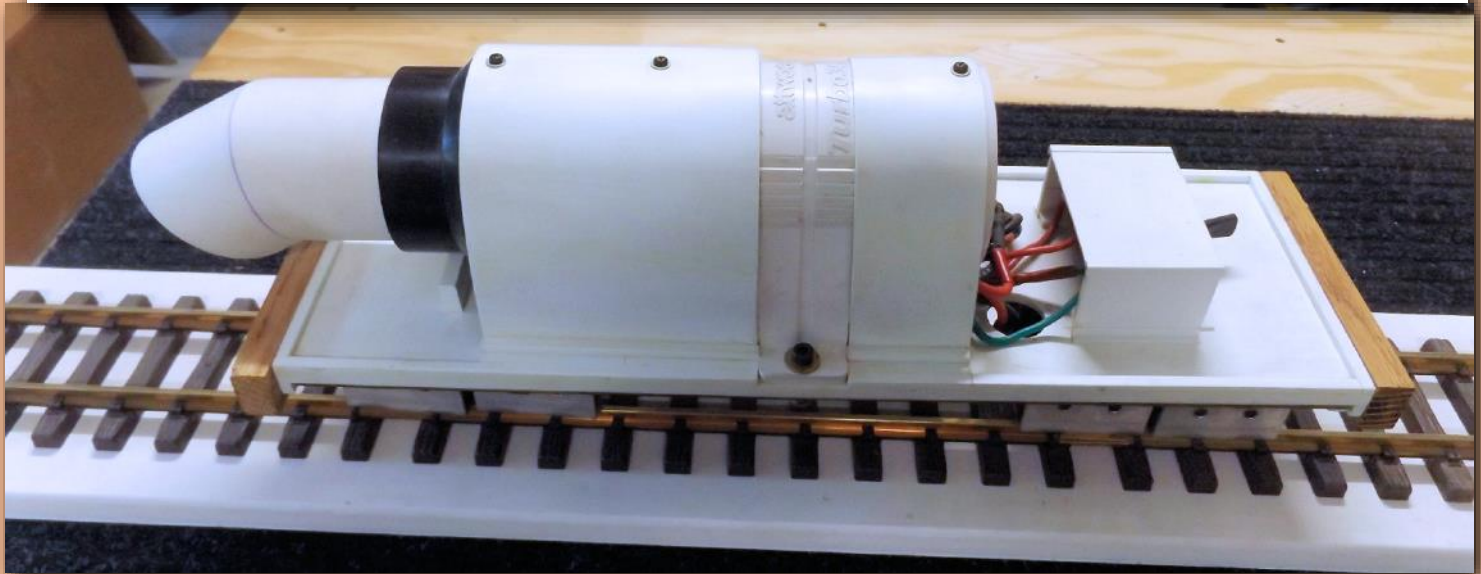
by Dave Frediani



Dave Frediani lives in Sonoma, California and, among his many talents, constructs 7/8 scale rolling stock.

WORKING ON MY OLD LEAFER

It all started when my youngest grandson, Isaiah, came over to spend the day with us. He's eight years old and sometimes its hard to keep him entertained, so my wife suggested working in the shop with him and maybe have him help build a car for himself.



Well he started looking over my old leaf blower car, that I use to clean my track and after a few minutes he asked me, why there is no cab on the blower car, and wanted me to build a cab for it. I told him to draw what the cab should look like. He spent about a half hour or so drawing, then we stopped for lunch, but after lunch it was off to the shop again.



A future designer and planner

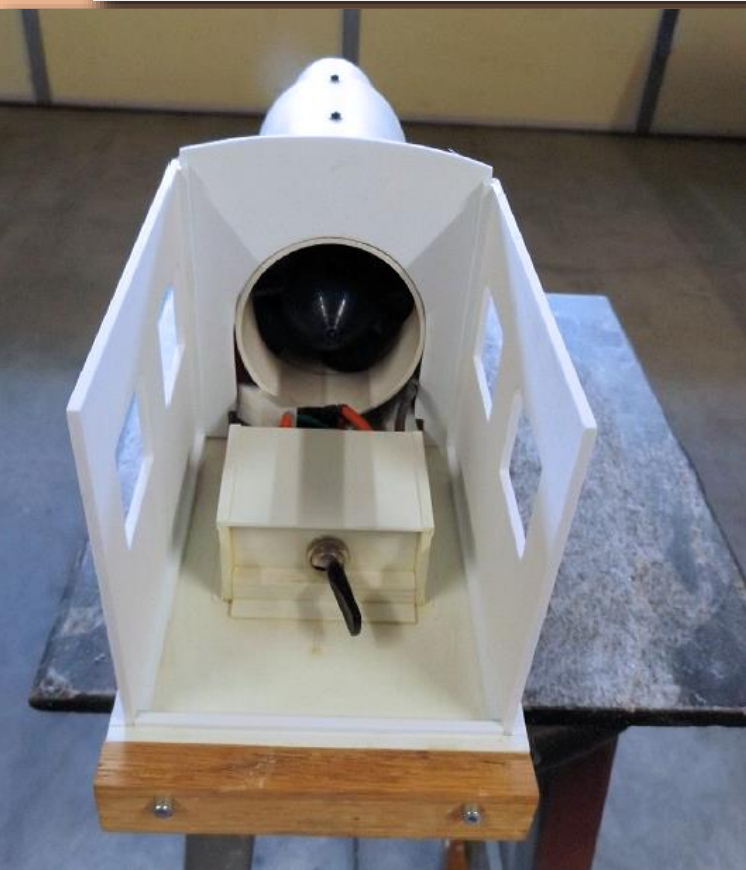


I knew if we were going to build a cab, it would be built from 1/8" and 1/16" styrene. After I drew up a few different types of cabs to scale, my grandson picked the one that was closest to the one he drew.

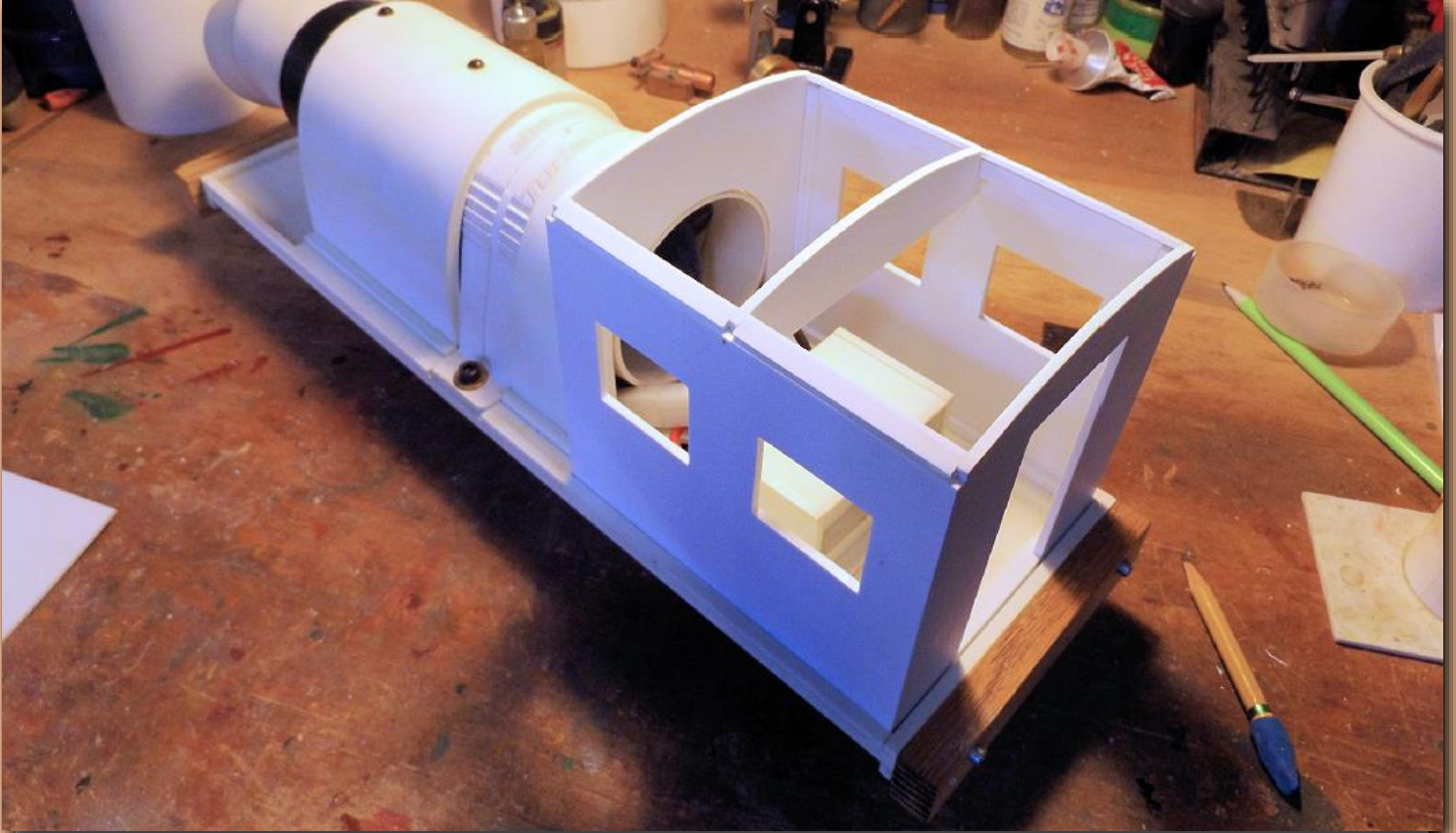
I was soon cutting out 1/8" styrene for the sides of this new cab with two windows on each side. For his part, he filed all four windows and sanded the sides inside and out.



Next came the front section of the cab that had to have an opening for the air to pass through the blower and the curvature of the roof. This took some time to work out all the different cuts.



While I was cutting out the rear section of the new cab, my grandson was busy filing and sanding the front section.



After Isaiah had finished sanding and filing all four pieces of the new cab that he designed, it was time to glue them together.

Moving on to the roof, the first thing we did was to cut out and install a roof rib, and add some pieces of 1/8" styrene between the roof rib and the body to add strength and a place for the roof to bond to the body.

Next we cut a piece of 1/6" styrene for the roof covering, which we made 1/2" larger than the cab.

After four or five hours of working in the shop, he never seemed bored with working and was very observant, always watching all the cutting, drilling, and Dremel work I was doing.

He was told mom is on her way and he started cleaning up without being told.

To be continued on his next visit.

After Isaiah left, my wife said to me “don’t work on the cab until Isaiah’s next visit,” and of course I answered “yes dear.”

Well it’s been a week, and Isaiah’s back and it’s time to get back to work. We didn’t get that much done this week. The only thing we did was to install the roof. After the glue dried, I stepped in and trimmed out the roof using my Dremel.

The trimmed out roof.



My grandson and I with the cab almost finished. We just finished painting the body of the cab. I use acrylic paint to paint the bodies of all the cars I build. But when it comes to the roof, I use Rust-Oleum textured paint, and I don’t want my grandson exposed to that toxic paint, so I’ll paint the roof at a later date.

How about a little background on my leaf blower car, or as I like to call it “my leafer.”

I needed some type of car to keep the leaves, pine needles, acorns, and other debris off my tracks, so this is what I came up with.

I first built a 4-axle flatcar and installed an Attwood 3000 Turbo Blower, which was originally made for inboard boats to blow gas vapors out of there bilges to prevent explosions or fires. The cost of the blower eight years ago was about \$25.00. I remember telling the salesman at the local marina what I wanted the blower for and asked him if he thought it had enough power to do the job, and than the crazy salesman said, “that thing could blow the hair off your dog at twenty feet.” I shook my head and laughed at his response. That was good enough for me and the first thing out of my mouth was “I’ll take it.”

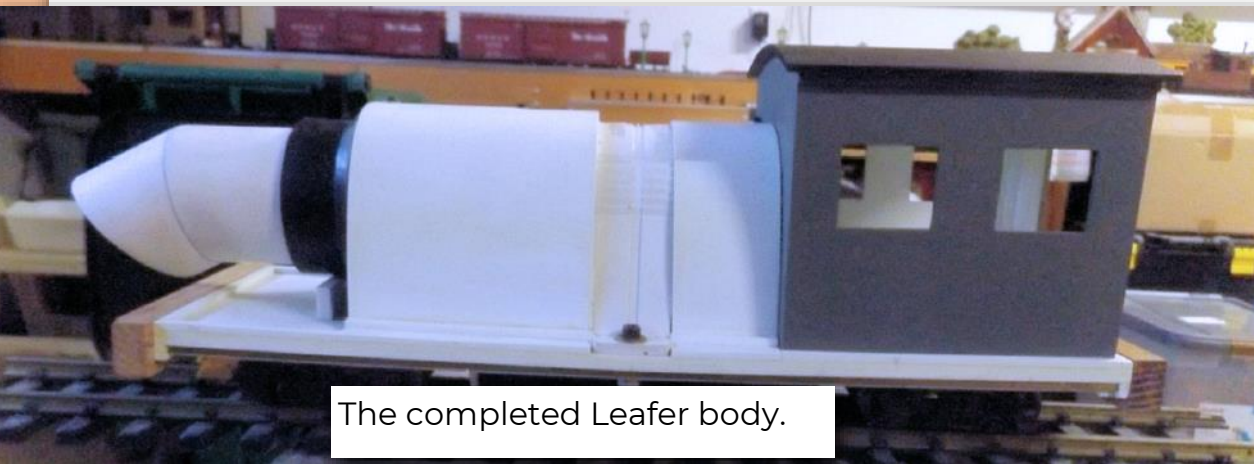
I also added an adjustable nozzle to the blower to blow the debris off in different directions. If I’m running on the inside or outside track it doesn’t matter. I can clean two or three tracks at once just by adjusting the angle of the nozzle.

Next I mounted two 2400MAH batteries, wired in series under the body of the flatcar. Because of the weight of the batteries and the torque of the blower, I wanted to keep the weight of the batteries as low as possible.

I designed this car to be pushed in front of any type of locomotive, whether it is live steam, electric, or battery powered.

I really enjoy taking my leafer to Hagan Park. If you are one of the first ones at the park, you have to unlock one of the containers to get out the leaf blower and extension cord, blow the track off, and then return everything to the container. I prefer to fire up one of my steam engines and just blow the tracks off while pushing my Leafer. It just makes

for more fun. ■



The completed Leafer body.

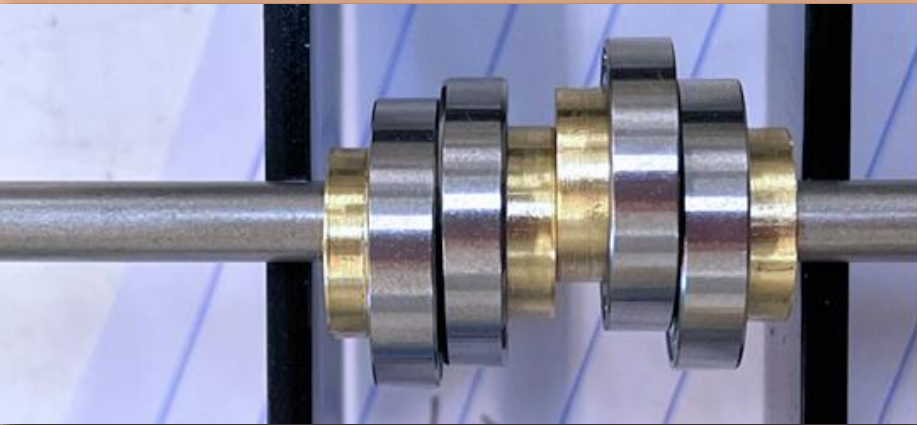
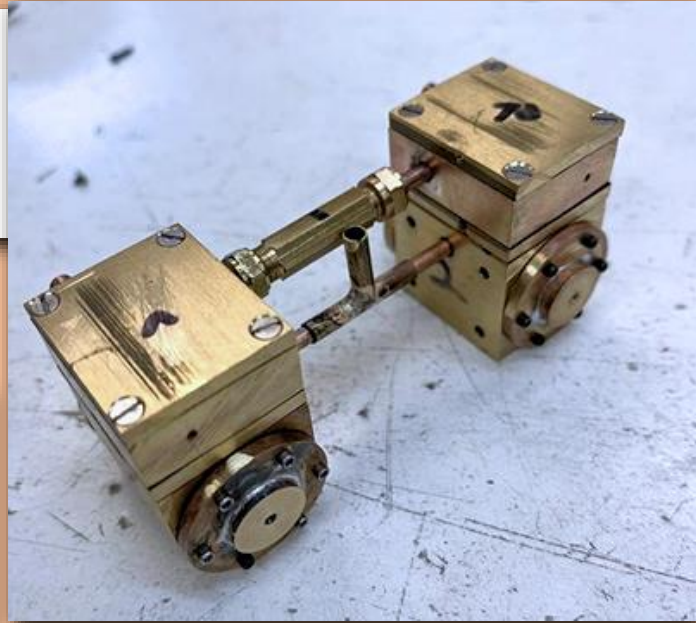
East Devil Hills Modeling Group

by Henner Meinhold



Henner Meinhold resides in Berlin, Germany. The *East Devil Hills Modeling Group* meets regularly to create, collaborate, and share incredibly machined models.

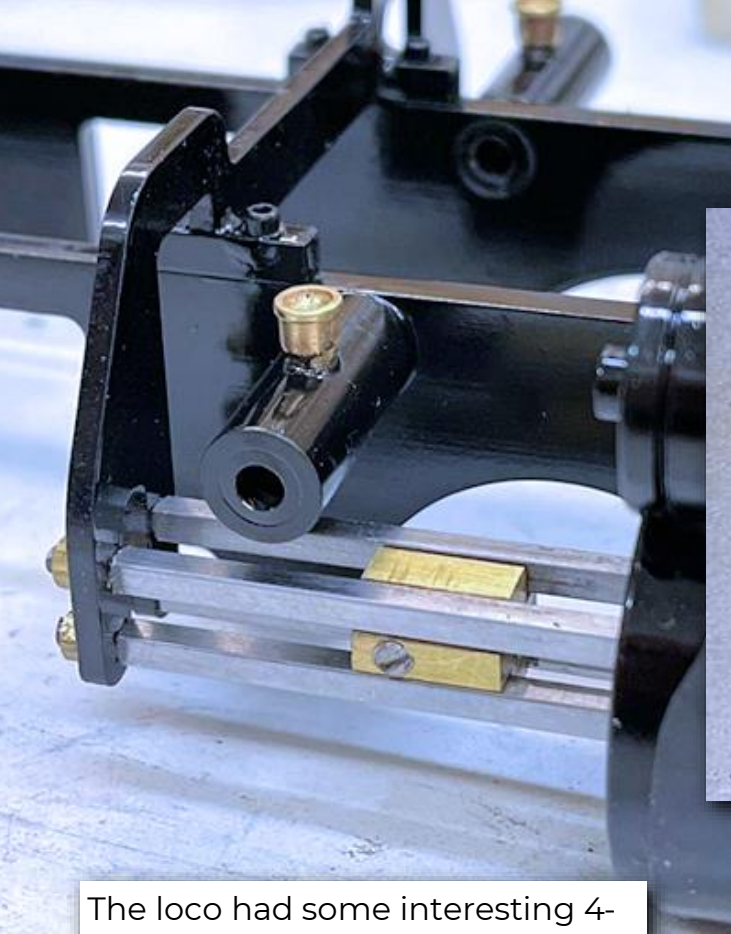
Projects are finally picking up. Let's start with Bill Allen and his NWP 133 build. As usual he is (literally) going full steam ahead. The cylinders are already finished.



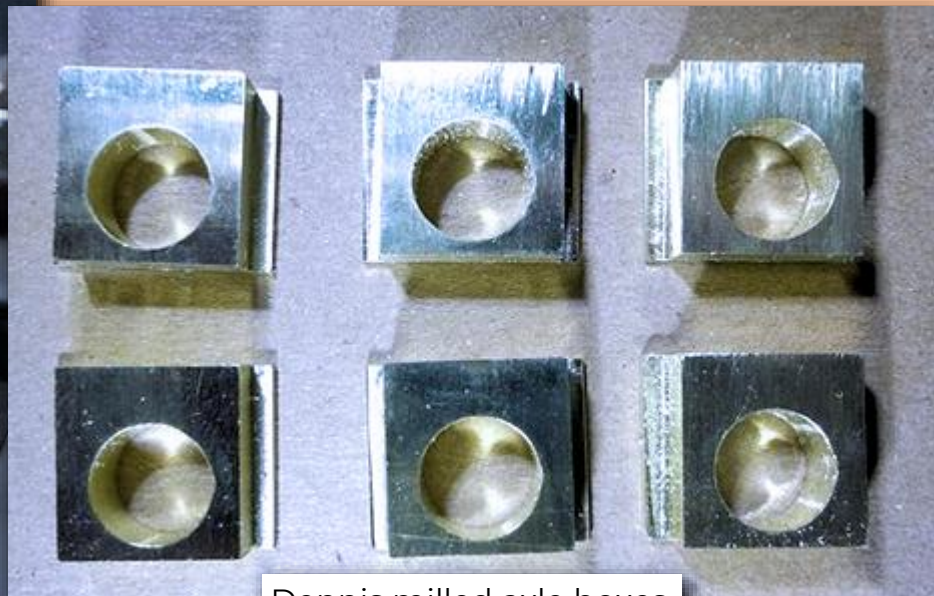
This loco has Stephenson valve gear driven by internal eccentrics, one pair for forward and another one for reverse.

After Dennis CNC-milled the frames, Bill added the spacers and painted the assembly.





The loco had some interesting 4-bar crosshead guides.



Dennis milled axle boxes.

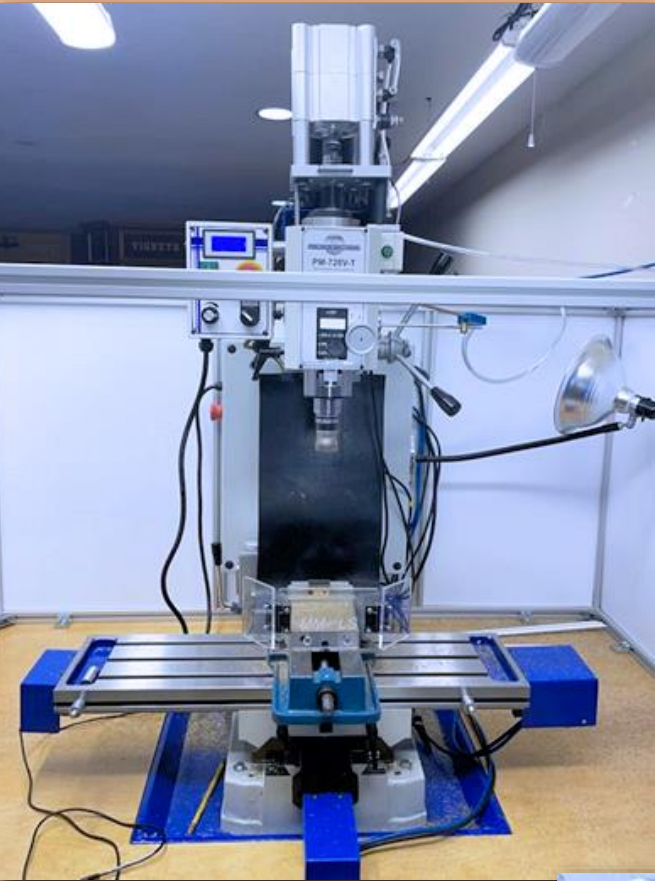
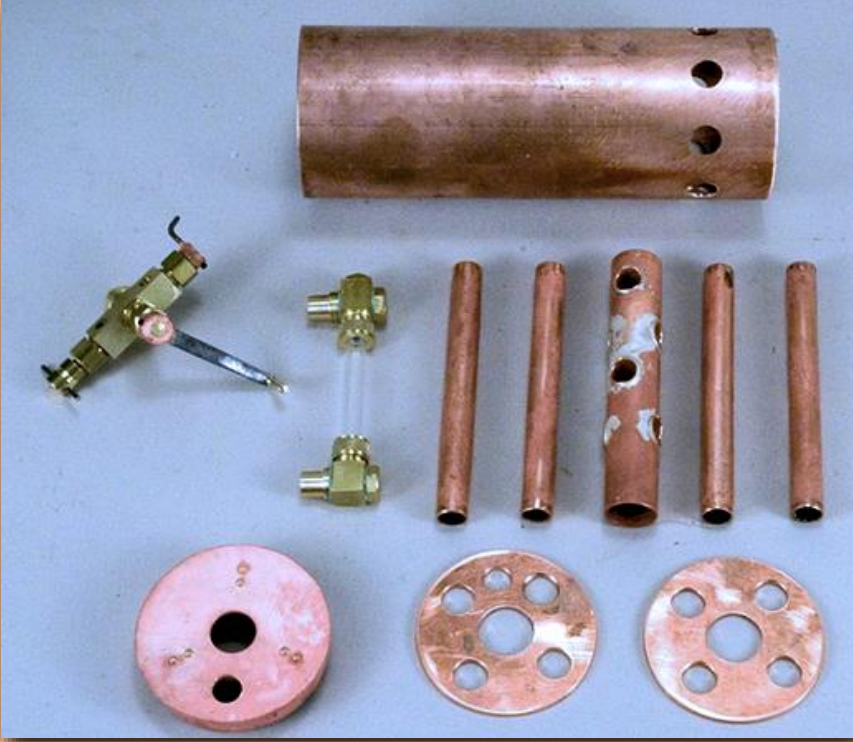


And bell cranks.

While waiting for the wheel castings, Bill started with the boiler. It is his proven design with a dry back head. It looks as if Bill is back to his former productivity after his accident.

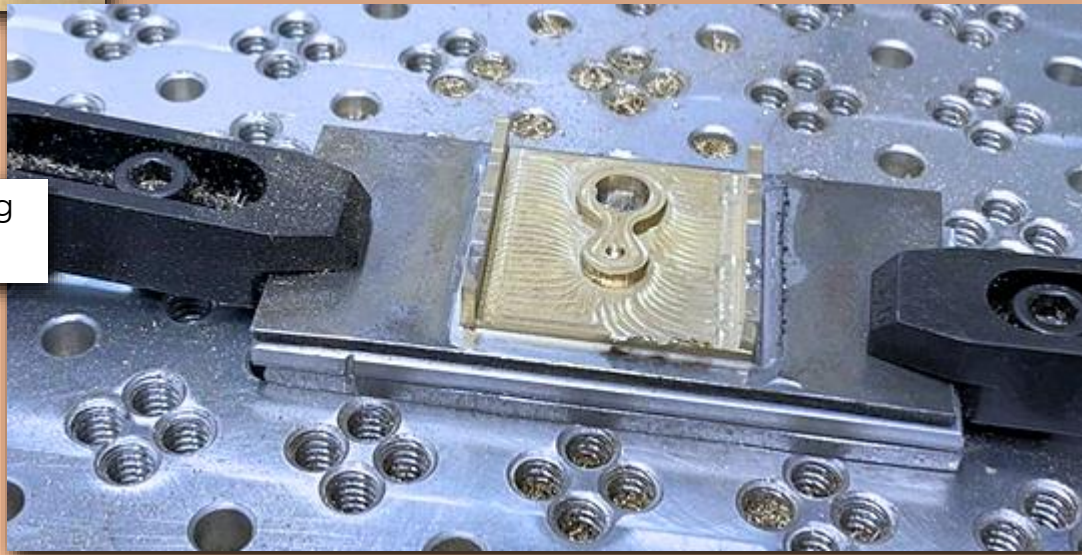


Another convalascent is Marc Horovitz. He started a new project, a tram loco with vertical boiler. Here is a picture of the boiler build.

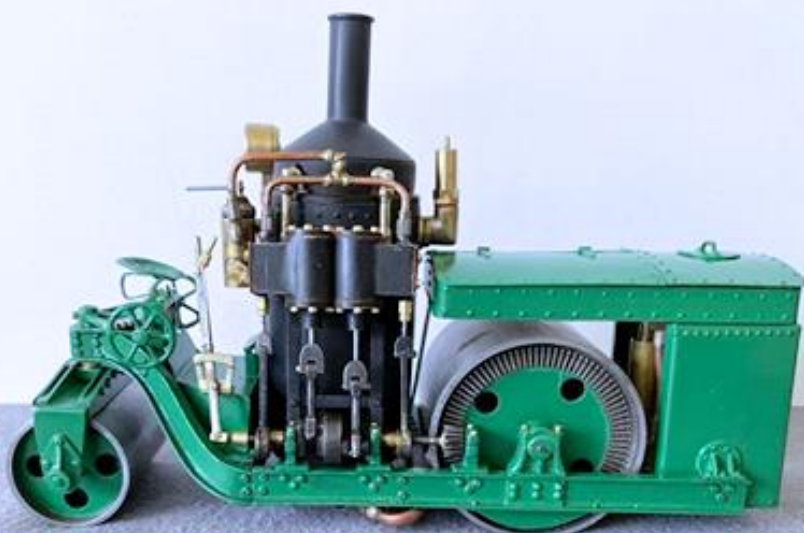
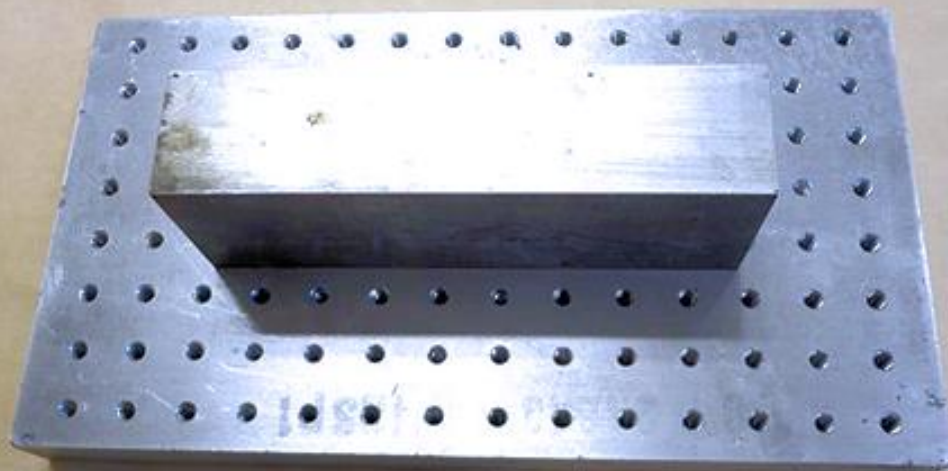
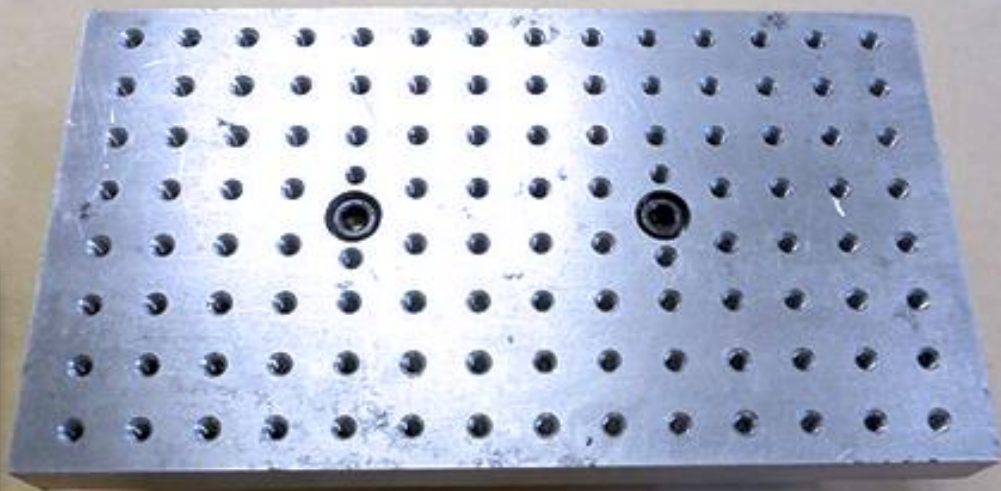


Sanjaya has been working on the conversion of a substantial milling machine to CNC. The project is now finished and he starts turning out parts.

Here is a complex part being milled.



It will be interesting to see his next project. Sometimes you need fixtures for machining. One very useful accessory is a flat surface with holes to clamp small flat parts. This gadget has been proven to be very useful, so Dennis built one for Bill. It can be clamped in the machine vice.



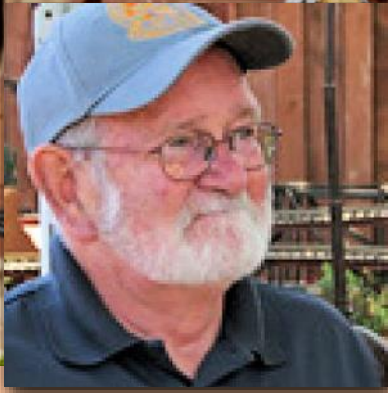
Finally Ron Malouf painted his beautiful steam roller.

Next month we will see a lot of progress!

Henner ■

Postcards from the Past

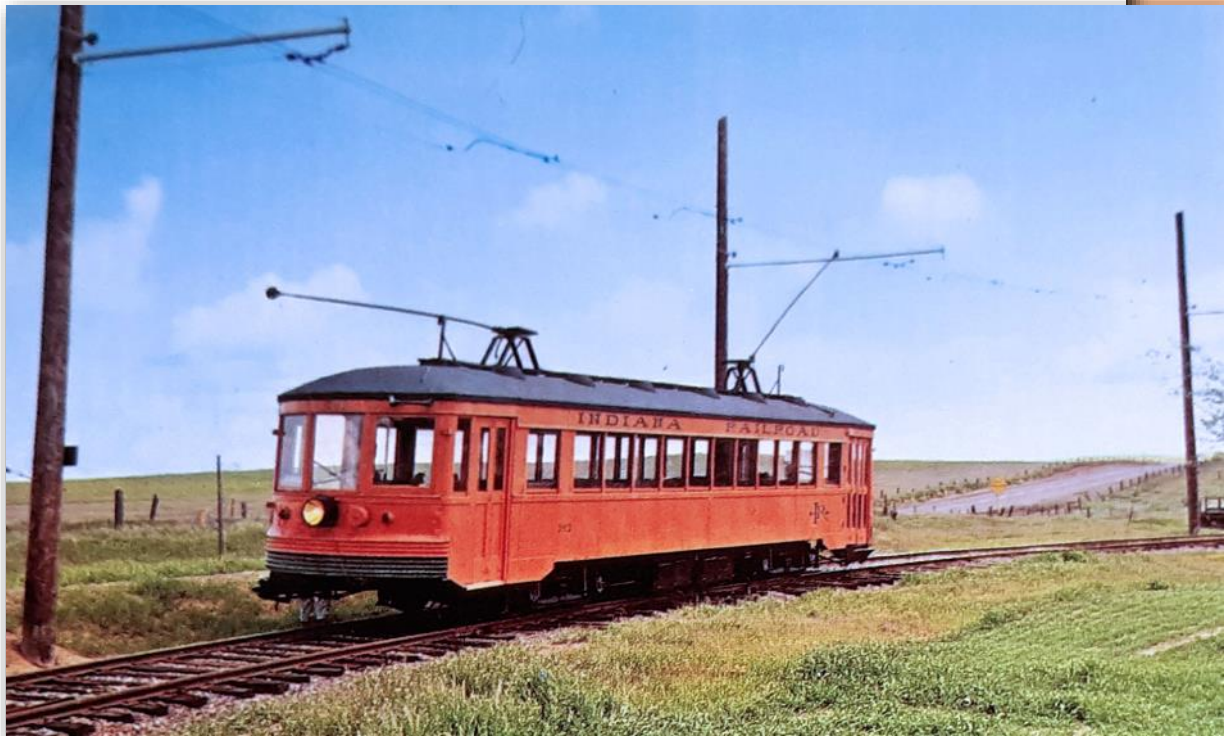
By Bill Ralph



Bill Ralph operates the [Porcupine Gulch Railroad](#), and knows a thing or two about amusement parks and postcards.

CALIFORNIA RAILROAD MUSEUM

The Bay Area Electric Railway Association (BAERA) selected the former Sacramento Northern Railway station stop at Rio Vista Junction near Suisun, CA, in 1960 as a permanent location to store, display, and operate their ever expanding collection of interurban transit equipment. BAERA was founded in 1946 by a group of Bay Area rail fans that held informative meetings and conducted excursions to local street car lines resulting in the purchase of wooden street car Key System 271. Association members began purchasing and donating other cars to the growing list of passenger and work cars. In order to avoid confusion with the California State Railroad Museum in nearby Sacramento, BAERA renamed their facility the Western Railway Museum in 1985. The museum owns twenty-two miles of former Sacramento Northern main line, has a diverse collection of trolleys including equipment from Key System, the largest collection of Sacramento Northern Railway equipment in existence, and operates a Heritage Railroad on a five-mile portion of track and overhead electrification. ■



Circa 1970s California Railroad Museum postcard pictures Indiana Railroad No. 202 built by the Kuhlman Car Company in 1926 for the Indiana Railroad. From the collection of Bill Ralph.

**THE NATIONAL CONVENTION IS COMING BACK TO
NORTHERN CALIFORNIA**



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June 18–21, 2025

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TOP POSTS 2022

The 4 most liked posts : The 300+ Club



The Dunlap Line CO : Image Mick Spilsbury



BAGRS Steamers @ Makers Fair: Image John Rhoadarmer



Don Watters BAGRS Line: Image Russ Miller



BAGRS @ Golden Gate Park: Image Russ Miller

If you would like to see if your railroad and/or image can be a 2023 Top Post, send images to president@BAGRS.org

- ◇ Images should be high resolution (we can handle images up to 25 MB)



We are now also publishing videos on YouTube and are looking for BAGRS videos

- ◇ 2 to 5 minutes long
- ◇ Displaying name of railroad
- ◇ Without commentary or voices
- ◇ With/without music (which we can add)



Videos of Convention Open RRs would be particularly welcome!



This video features 12 BAGRS RRs like Ken Brody's Line

MEMBER UPDATES

From Eric Struck: An article published in *Barron Park Association* magazine describes the dismantling of Eric's garden railway. You can read the entire article online here: Douglas L. Graham, "[A Fond Farewell to Eric Struck's Garden Railway](#)," Barron Park Association magazine (Fall 2023 edition)

FALL 2023

A Fond Farewell to Eric Struck's Garden Railway

By Douglas L. Graham



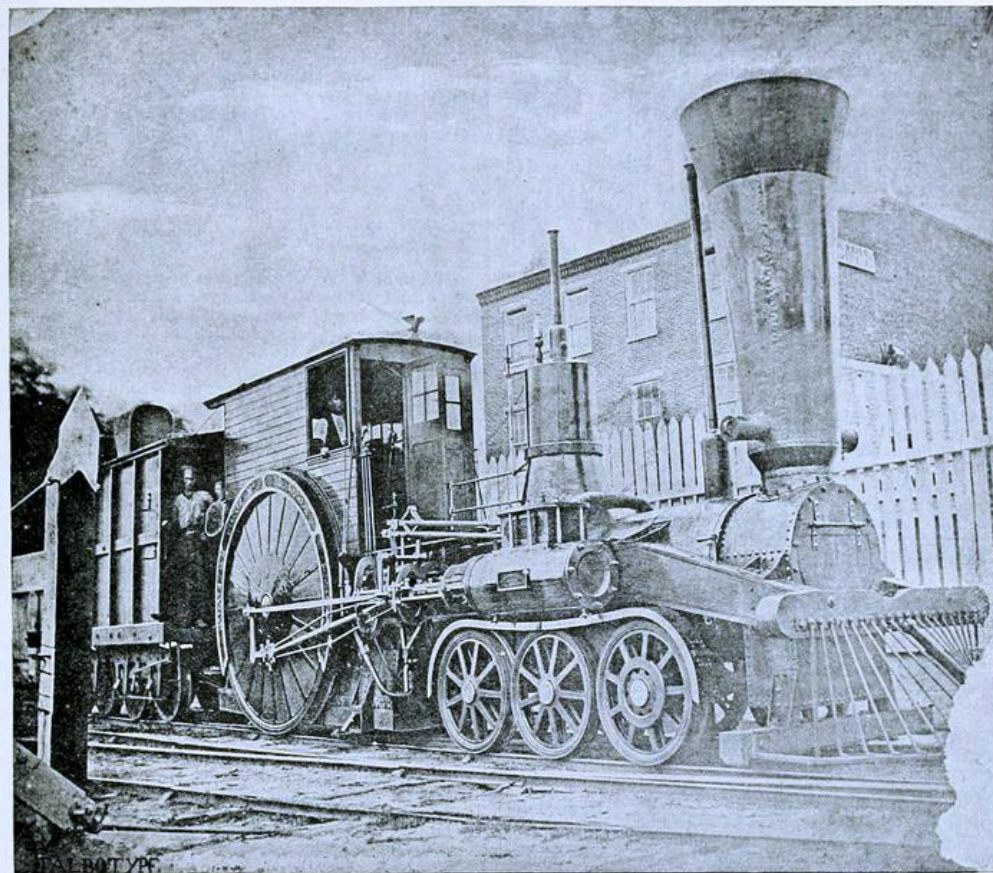
Eric's G-Scale locomotives are each about 18" long and stand about 4" high. They are precisely detailed and beautifully painted. He owns more than 50 engines (32 diesels and 20 steam engines). His rolling stock - at least 70 freight and 40 passenger cars - is extremely varied and probably includes types of railcars we couldn't name offhand.

A Nostalgia-Inducing Whistle

The railway wound in and around the shrubbery in the backyard, crossing over itself in spots. There are sidings and rail switching yards, including one very large one with 50 or more cars. There is an Old Western village of realistic-looking G-Scale houses and commercial buildings almost big enough to be dollhouses, and of course, a railroad station, a water tower, and all the usual accoutrements of a working railroad. The railway is electric,

From Roger Nicholson: While searching for the source of some old steam locomotive photos on the web, I stumbled across an online archive of *The Railroad and Engineering Journal*. This journal was published in 1892, and contains some fascinating images and even technical specifications for steam powered locomotives, steamships, and pretty much anything else that was steam powered. I found this photo of a steam locomotive design that I've never seen before. They label it as "A Fast Locomotive of Forty Years Ago." That would place it in about 1852.

There is a top level index for the issues that are online in the Internet Archive here: [The Railroad and Engineering Journal in the online books library at University of Pennsylvania](#). It looks like they have volumes 61-66.



A FAST LOCOMOTIVE OF FORTY YEARS AGO.



THE LAST PAGE

If you have never visited the Fairplex Garden Railroad in Pomona, California, you really ought to. Located at the Los Angeles Country Fairgrounds, the railroad will actually be 100 years old this year! Among the many sites to see on the Fairplex is this functioning funicular railway.

TRELLIS AND TRESTLE

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