

# **Newsletter of the Piedmont Garden Railway Society**

April 2020 Editor: Scott Williams

### Greetings fellow club members! I hope this finds all of you happy and healthy.

I thought I would be compiling and sharing a "Post Trainfest" newsletter. **Instead**, it appears I am producing a **Postponed** Trainfest newsletter. It's a bit of a surprise but nothing we won't get past and we still have all the great presentations ready for when we feel it's time to reschedule Trainfest again.

In the meantime, I sent out an update from Doc on his Mogul Locomotive project to give our isolated club members something of interest to view and will include it again in this issue for the archives.

I also include some photos of how I am capitalizing on this 'Stay at Home' time. As I said in a previous email: "When life gives you lemons...play with your Trains."

Stay Home and Stay Safe everyone! Send me photos of the projects you all are working on so I can share them with the club please.

#### 00-000-00

# **BUILDING A 1:20.3 LOCOMOTIVE FROM SCRATCH**

By Doc Watson

Let me begin by saying that I've never built an engine before. I've built many pieces of rolling stock however. This is a first. The reason for this venture into scratch building engines all started with my strong desire to model late 18<sup>th</sup> century Rocky Mountain narrow gauge railroads, specifically the Denver, South Park and Pacific railroad. This RR is famous for its classic Mason Bogies. One of the other relatively rare engines is the Brookes Mogul. Many of you may be familiar with a popular model of this engine manufactured by LGB. However, this model is scaled at around 1:22. A common scale for LGB versions of US narrow gauge equipment. A big obstacle in building any engine is the drive. Making homemade drive units is not for the faint of heart and requires above average mechanical skills. Most average, lazy modelers like me will search for an existing drive chassis that fairly approximates the main driver diameters and axle spacing. It's too bad that the LGB mogul fails these tests.

Low and behold it turns out that the ever popular Bachmann "Annie" comes extremely close to meeting these requirements. First off, the Annie is a 4-6-0 engine and the Mogul is a 2-6-0 engine. So all one needs to do is replace the Annie 4 wheel pilot truck with a 2 wheel pilot truck. And, as it turns out, the Annie drivers are within 2 scale inches of the Mogul drivers. The only difference is that the distance between the Annie leading axle and the middle axel is a little shorter creating a minor challenge when it comes to adding certain details.

This is a photo of the engine I hope to build.



Not a bad sort of engine, huh?

Here is a photo of the Annie chassis I purchased for this project:



Next is a photo of where the chassis modifications now stand. Notice the changes made to the crosshead. Boiler yolk and piston cylinders are all new. The main drive rods were shortened considerably since the cylinders are much closer. The pilot truck is from a Bachmann C-19 and the pilot itself is handmade.



As you can see there has been quite a bit of chopping and modifying done to it so far. All the excess plastic has been removed to expose the springs and create a level surface for the boiler to sit on. Below photo shows some styrene strips have been added to accentuate the chassis frame.



The photo below shows the brake and reversing rod detail that was added.



In the last photo you can see the engine in its current state of completion. The domes and headlamp are from Accucraft. The boiler is a PVC pipe with a wrap of styrene. Rivet detail is a combination of Tichy plastic rivets and metal NB castings from Ozark Miniatures. The headlamp bracket and smokebox door are from Trackside Details.



That's it for now. Depending on the future of group meetings, I'll either provide more details in the next newsletter or present them at our next Trainfest.

### 00-000-00

Ah Springtime! The bulbs have mostly all bloomed and were lovely. The Hostas are shooting up and the Hydrangeas demonstrate once again that those dead looking sticks are actually quite alive and well along with the other flowering bushes. The Forsythia has bloomed and the Azaleas are on the verge of showing their colors and I've planted about 2 dozen different types of wildflower seeds that I received as a Christmas present. I've spread, Lime, grub/insect killer and fertilizer and the lawn has jumped! I've already mowed twice and could mow again but letting it get better established. So, the yard's all set. Now I weed eat and leaf blow around the train layout and see how it faired the winter...



Well, it needs some supports readjusted and aligned but over all. It's holding up quite nicely. I continue to have one warping issue with the deck plank boards. If you look at the right side of the inner loop, about midway up, you can see the boards have raised up. I plan to unclamp and lift off the track along that section and make some relief cuts with my circular saw set just shy of cutting all the way through from the top side. Then screwing a different support board along the bottom of the decking to hold it straight.

Shine up the rails this week and run some trains!!

## 00-000-00

One of my favorite engines has been out of service since before I bought this current home renovation project in the summer of 2016. My Southern Alco RS3 diesel road switcher.

There was nothing wrong with it back in '16, it was just all apart in the shop getting an early version of a MyLoco sound card installed and I had to box it up and move.

Then I had to gut and renovate this home so ALL train projects went away and then I had to get my hip replaced and then...time goes by. I mostly finished the home up last year and have been working on train projects once again. This winter I decided that I wanted to not use the old style

MyLoco soundcard but use the latest version and also I wanted to convert it to battery power and Railboss control. Here's the progress so far...

One thing that helps a lot with this narrow of a model is getting a 4 cell battery that's a brick, not a flat row of 4 cells. The brick style fits very nicely in the otherwise empty short nose.



I also decided to remove the original circuit boards entirely. Not necessary but just the way I wanted to do it. I also did not want to use the smoke generator equipment so I removed a lot of that assembly as well. Now there is a ton of room to install the Railboss/MyLoco boards and I only have the necessary wiring left for the motor leads and the lights to work with.



00-000-00

**MEMBER PHOTOS:** 

# Your project....<u>COULD</u> be here!!



Marge Monahan sent me photos and said that: "Fran has his trains up and running."





Send any idea, project, photo, something you found surfing on the Internet, etc., no matter how great or small you may think them to be to your newsletter editor. We all love trains so...if it's about trains, and you've got it on your computer, chances are you won't be the only person who might enjoy viewing it.

#### Send your photos and articles to: <u>srwavl@outlook.com</u>

#### 00-000-00

**Trivia Question**: In the first decades of the 20<sup>th</sup> Century, pulling freight trains was all about 'Tractive Effort' to pull long 'drags' of freight trains at a slow speed. Maybe as slow as 11 miles per hour. Your freight arrived...when it arrived. Freight trains moved **long** lines of cars SLOWLY. But, as highways and more efficient trucks improved, the railroads needed to 'Step up their Game.' So how did Locomotive manufacturers improve the speed that freight travelled?

#### 00-000-00

#### Membership:

Please consider sharing this newsletter with friends who might be interested and if they wish to become members ask them to contact our PGRS Secretary/Treasurer for a membership form.

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#### 00-000-00

# Train Lovers Luncheons and Apple Valley Model Railroad Club are temporarily postponed until travel restrictions have been lifted.

#### 00-000-00

**Trivia Answer:** Well, simple answer; they increased the Horsepower. Bigger boilers, bigger fireboxes with trailing trucks to support them, higher boiler pressure, **Faster/More Powerful**.

Lima Locomotive Works during the late 19<sup>th</sup> Century was known mostly for their hugely successful logging engines. The Shay. The Shay made it easy to climb rugged, poorly built rail lines to get timber from the woods to the mills. Their business started to decline near the turn of the century and they decided to think outside the box. The biggest locomotive manufacturers, Alco and Baldwin were also developing solutions but Lima decided to leap in to the fray with the most simple modification to existing Locomotive design. Their chief Mechanical Engineer, William E. Woodard proposed the alternative to building ever larger Locomotives was to

increase the firebox and boiler pressure to the most successful current locomotive designs. Bigger boilers and longer, more efficient fireboxes, supported by trailing trucks. **Lima 'Super Power**'. Woodard did this by starting in 1922 with the H-10 experimental heavy 2-8-2 design for the New York Central (Michigan Central 8000) and applying both relatively new science (the Cole ratios), and every efficiency-enhancing tool available – a larger firebox, increased superheat, a feedwater heater, improved draughting, higher boiler pressure, streamlined steam passages and a trailing-truck booster engine, and by applying limited cutoff (the range of steam valve admission settings) to prevent locomotive engineers from using excessive steam at starting. The 2-8-2 thus produced was demonstrated to be **26%** more efficient overall than its immediate predecessor, <u>and the NYC bought **301** locomotives</u>.



Left side builder's photo of the original H10 #8000.

A large increase in firebox area (from 66 square feet (6.1 m<sup>2</sup>) on the **H-10** to 100 square feet (9.3 m<sup>2</sup>) on the A-1), characteristic of his work, necessitated adding another axle to the trailing truck, thus creating the **2-8-4** wheel arrangement. Built in the spring of 1925, the first **Berkshire** (a demonstrator owned by Lima) was dubbed the **A-1**. In addition to supporting the very large firebox and grate, the four-wheeled trailing truck carried the ash pan. For this purpose, the truck was redesigned as an articulated extension of the locomotive frame. The result was an ash pan which could hold more ash, allowing the locomotive to travel farther between cleanings. For roads which burned coal, this was a significant innovation. But it was not without tradeoffs. The articulated frame reduced weight on the driving wheels, which did not aid tractive effort (pulling ability). The locomotives so configured also had more difficulty staying on the rails in reverse, particularly through yard trackwork like switch frogs.



The locomotive quickly proved to be 26-30% more efficient than the New York Central H-10. After a highly successful series of tests in the mid-1920s it was sent around the country to make the idea of "**Super Power**" known. **The first forty-five were purchased by New York Central's subsidiary Boston & Albany following initial road testing across the summit of the Berkshire Hills, and so the 2-8-4 wheel arrangement came to be known as the** "**Berkshire" on most railroads.** The prototype itself was later sold to the Illinois Central as part of an order for 50 similar locomotives. Woodard summed up "**Super Power**" by defining it as "**horsepower at speed**". <u>Previous design principles emphasized tractive effort (pulling ability)</u> <u>rather than speed</u>. By 1949 some 613 Berkshires had been constructed for North American service, of which twenty are preserved – at least two in operating condition (NKP 765 and PM 1225), both Lima products.

There were at least three successive waves of "Super Power". The first began with NYC 8000 and the A-1, and included Missouri Pacific 2-8-4s and Texas & Pacific 2-10-4s. These locomotives had conventional 63" driving wheels. In 1927, the Erie Railroad took delivery of a "second-phase" Berkshire with 70" driving wheels, capable not only of great power but higher speed; in turn, this design evolved into the Chesapeake & Ohio T-1 2-10-4s of 1930, with 69" driving wheels. The "third-phase" of the later 1930s and war years can be identified with locomotives such as the homebuilt N&W 2-6-6-4s, C&O/Virginian 2-6-6-6 and virtually all American 4-8-4s. Boiler pressures rose as high as 310 lbs/sq.in.; thermic syphons added to the firebox and combustion chamber added 8% to the efficiency of the boiler; roller bearings appeared on main axle boxes and sometimes on running gear. And the "Super Power" concept had extended to other builders such as Alco (the Union Pacific Big Boy) and Baldwin (the Santa Fe 5001- and 5011-class 2-10-4s). The four-wheel trailing truck became the standard for large locomotives (i.e. 4-8-4, 2-10-4, 4-6-6-4, 2-8-8-4), though the articulated main frame did not. Many railroads, particularly roads like the Santa Fe (which favored oil burning locomotives and, therefore, did not need the oversized ash pan), adopted many of the Super Power features but utilized a conventional full frame and separate trailing truck.

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#### Businesses associated with our club:



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