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STEAM^{IN}THE GARDEN

The Mighty Erie Triplex

Six Part Series Begins

- **Staver Fall Steamup**
- **Coal-Fired 7/8ths Accucraft Emma**
- **Live Steam Carousel**
- **Turkey Trot Steamup**

Workshop Project

Steam Powered Carousel

Text and Photos by Buzz Barry



Griffith Park
Carousel

Sonny Wizelman has been live steam-ing for about 33 years. He likes to build scale models of buildings, which he thoroughly customizes with his own themes, colors, lights, signs, and many other details.

Just about every Wednesday, Sonny and a group of about four or five fellow small-scale live steam railroaders meet for a steam-up at Jim Gabelich's house. One day Sonny mentioned that he had been thinking about a new project— a miniature carousel which would be powered by steam. This is a story about that project and the pleasures and friendships borne out of a shared hobby.

Sonny knew that one member of the garden railroading group, Greg Dahlem, also enjoyed woodworking and had a fairly complete shop in his garage. He also thought that this writer, who was relatively new to live steaming, might learn something by assembling the steam engine to power the carousel. We both agreed to join the project.

As a starting point, we decided we ought to go look at a full-scale carousel. Sonny called the owners of the carousel at Griffith Park, explained the project, and asked if the group could have a close



Photo 1 - Gathering the engineering details of a real carousel at Griffith Park, Los Angeles, CA.



Photo 2

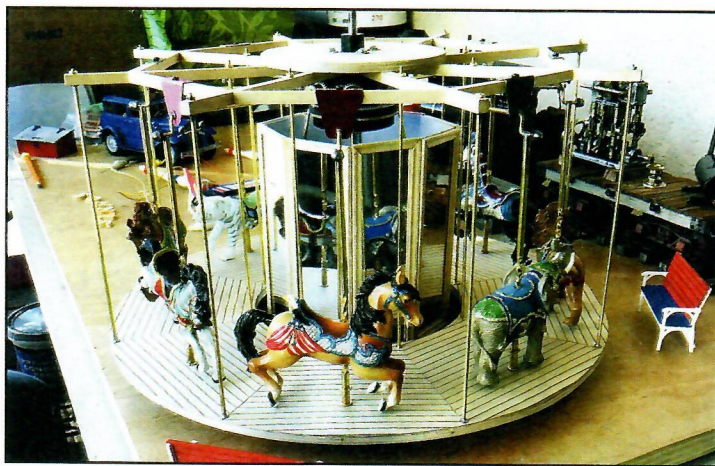


Photo 3

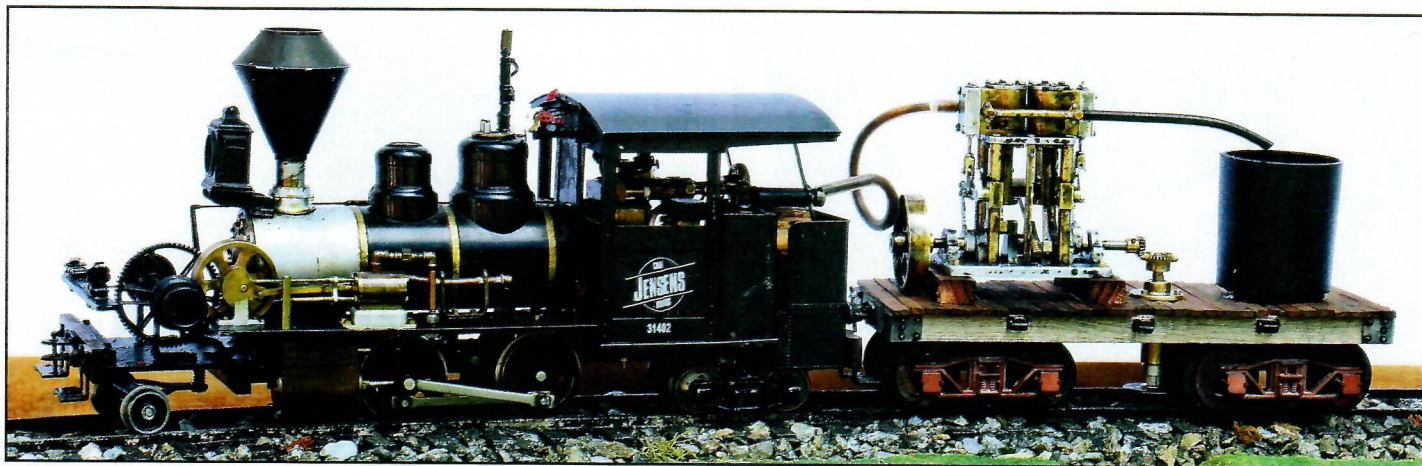


Photo 4 - Sonny's heavily modified Accucraft Ruby is the Carousel's power plant.

look at the gears and other workings of the ride. (It's amazing how explaining live steaming to people can open doors.) The owners were very gracious and accommodating, and the group spent a hot summer's morning taking a behind the scenes tour. Notes, measurements, and photos were taken for future reference (**Photos 1 & 2**).

Horsing Around

Making a steam engine and a scale model structure was one thing, but finding miniature carousel animals in the proper scale was quite another—bottom line, no animals, no carousel. Sonny called several wood carvers who offered to create the animals, but each one would have cost around \$150! The notion of buying just one and having the rest somehow fabricated via a 3-D printer was also considered, but this approach seemed to raise more issues than solutions. Happily, through various internet searches, the group discovered a New York City company, Kurt S. Adler, Inc., which imports resin Christmas tree ornaments in the form of

horses and other carousel animals. These came very nicely painted and even with a vertical brass “pole” through the middle. The group used four horses of different colors, as well as a frog, an elephant, a lion, and a tiger (**Photo 3**). The project had come back to life.

Steam Power

Historically, there actually were some full-size steam powered carousels. While the group was aware that other model makers had built miniature carousels which ran on electricity (“sparky” carousels?), to our knowledge nobody had yet tried their hand at building a steam powered version, and this became an appealing challenge.

To provide water, a boiler, and an oiler, the group sketched out a layout featuring Sonny's Accucraft Ruby locomotive, which he had previously made into a nicely weathered Falk and parked on a piece of curved track, together with a flat car which would carry the steam engine (**Photo 4**). I built the flat car from scratch, based on various kits



Photo 5

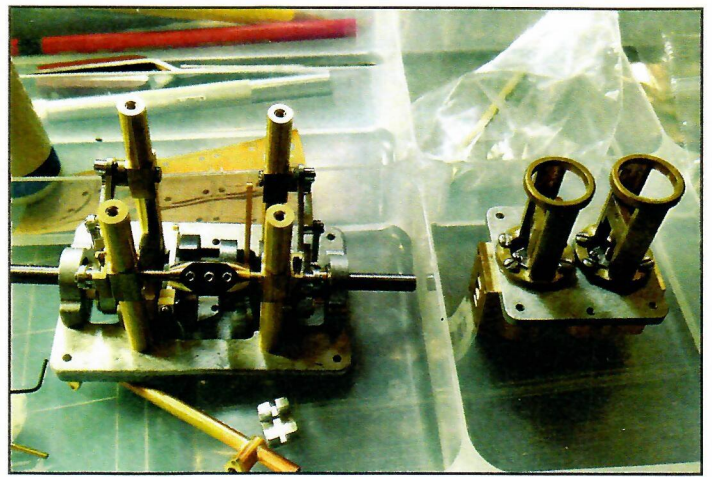


Photo 5

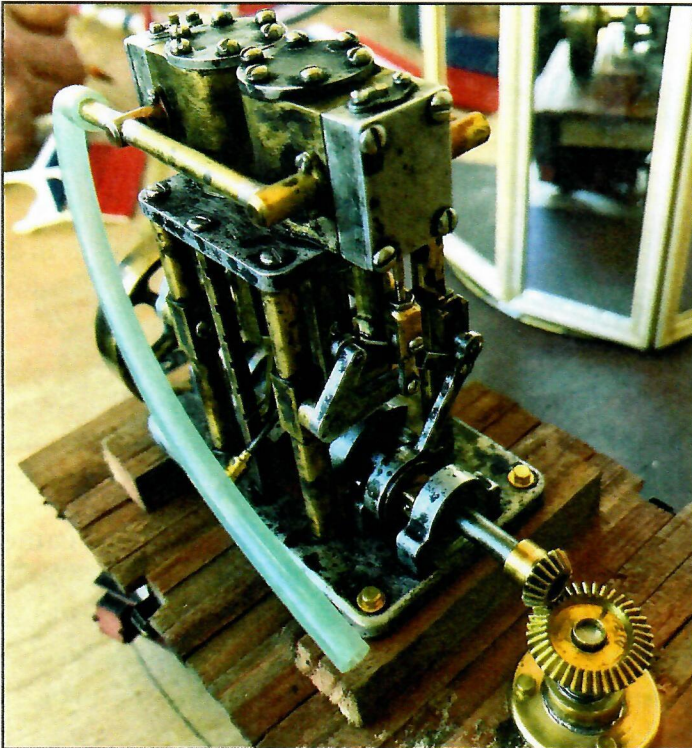


Photo 7



Photo 8

I had enjoyed building from Ozark Miniatures. For the steam engine, the group chose the TVR1ABB kit from Graham Industries (**Photos 5 & 6**). This is a fully machined, twin cylinder engine with shielded ball bearings, and a BFLY1 flywheel, also from Graham Industries (**Photo 7**). As Sonny predicted, I had a great time assembling the kit and did learn a lot, but not enough, apparently. The finished engine definitely needed some trouble-shooting (**Photo 8**).

Enter Jim Gabelich, who hosts the Wednesday steam-ups, knows his way around a metal lathe, and who has built, among other things, several stationary steam engines. By the time Jim finished di-

agnosing the problems (including my possible failure to note the front and back of the engine in the instructions), re-lapping surfaces, and adjusting timing and tensions, the little engine passed its compressed air test with flying colors, and also ran like a top on steam (much to my great relief), more than ready to power the carousel.

Engineering

None of those in the group so far could claim any engineering background. We had studied how the Griffith Park carousel worked and decided that, to make the miniature version revolve, we would need some sort of belt drive from the steam engine



Photo 9

to turn a sprocket attached to a center pole. To make the animals go up and down, there had to be separate bevel gears and rotating rods with offset bends or brackets of some kind. Further, the animals had to move in staggered phases, that is, they couldn't all go up and down at the same time. How should all this be done?

Sonny captured several approaches in some drawings, which were discussed and analyzed. Finally the group reached a brilliant conclusion: call Larry Bangham! Happily, Larry, who does have an engineering background, was enthusiastic about the project and came on board. Our next step was to deliver the work-in-progress to Larry's house. As we had hoped, Larry proved to be expert in translating concepts and general ideas into specific, refined, and detailed systems, including such esoteric subjects as gear ratios, timing, tolerances, and the properties of various materials. He put together and fine-tuned the mechanisms for all of the motions of the carousel, and even built a carrying case for it out of items he had on hand.

Larry can also be just plain ingenious. How to co-ordinate the serial up and down motion of the animals? Make stands of different heights for them around the carousel before engaging the bevel gears on the rods (**Photos 9 & 10**). A very simple, elegant solution—I wonder why none of the rest of us thought of it? Larry's contributions reminded me of the fairy tale of the elves and the shoemaker. Just leave the carousel at Larry's house and everything magically gets done (**Photo 11**).

The process of finding suitable gears merits some discussion. The group, with the help of Eric Strauss, originally selected potential gears from the extensive catalogs of RBC Bearings and PIC De-

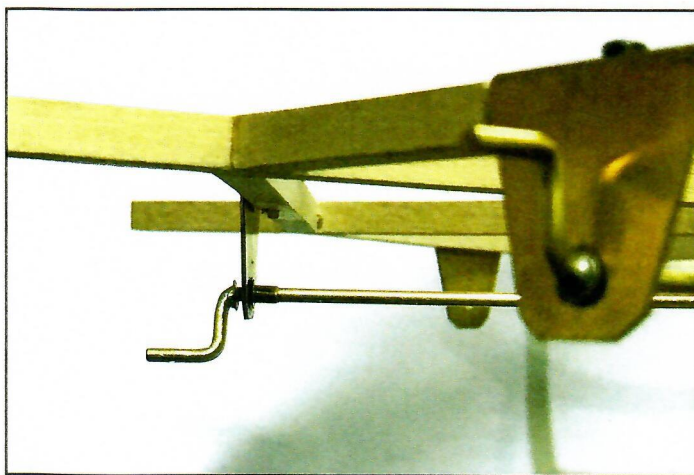


Photo 10



Photo 11

sign, and did end up purchasing thrust bearings, belts, pulleys, and a crown gear. Eight bevel gears were specially cast in white bronze for the carousel at a very reasonable price by Valley Brass and Bronze, aka Trackside Details. A variety of needed brass screws, set screws, nuts, and washers were sourced through Micro Fasteners Inc., and brass tubes to go over the poles on the animals were obtained from Special Shapes Company.

Woodworking

From the start, the group imagined that the basic frame of the carousel and its floor would be made of wood. We also knew that Greg Dahlem had a table saw, chop saw, and other woodworking tools in his garage; and that he could find and use them very well once he cleared out about twenty years worth of accumulated stuff. With me as his assistant, Greg started by drawing an 18-inch diameter



Photo 12

circle on a piece of quarter-inch plywood with a shop-made jig (**Photo 12**). He then cut a rough circle outside the pencil line with a jig saw. Numerous passes against a belt sander trimmed the rough edge down to a smooth one right on the line. To give the floor the effect of wood planking, sheets of miniature decking, purchased from Northeastern Scale Lumber, were cut into wedges and glued to the plywood with spray-on contact cement and trimmed, again using the belt sander (**Photo 13**). Once a hole was drilled for the center pole of the carousel, the floor was complete (**Photo 14**).

To support the horses and other carousel animals, Greg fashioned a frame out of bass wood resembling a eight spoke wheel, with some blocking braces for strength. This structure would support the bevel gears and brass rods leading out above each animal. Finally, Greg made the rectangular base for the overall diorama out of five-ply plywood, together with walls contoured to follow the levels of the landscaping.

Music

Calliopes and carousels naturally go together, so the group wanted music and a miniature sound system. It is said that you can find almost anything on the net nowadays, and the group did find a small company which makes and sells miniature calliopes, but these beautiful items were quite expensive and beyond our budget. The solution was to ask Rick Parker, the highest tech person in the group, to find, select, and download suitably merry calliope music from the public domain. To broadcast the music above the rhythmic clatter of our steam engine, an iPod Shuffle and a small battery-



Photo 13

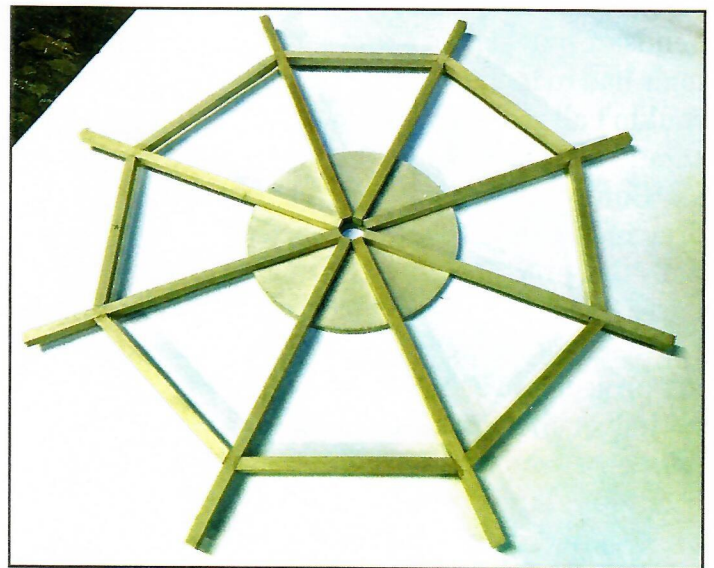


Photo 14

powered Dynex portable speaker were hidden inside the ticket booth (**Photo 15**).

Finishing Touches

As mentioned at the beginning of this story, Sonny is a master model maker. Each model he has made, whether a barber shop, roadside diner, used car lot, or saloon, reflects his artistic vision and sensibility. He incorporates miniature posters, lights, sounds, trees and shrubs, curtains, table settings, peeling paint and other weathering effects, and populations of men, women, children, and dogs. True to form, Sonny transformed the carousel from essentially a steam-powered turntable into a whole scene, with a path and gate, picnic table, a 1930's four-door sedan (with work-



Photo 15

ing headlights and taillights thanks to Jim Gabelich's machining skills), a ticket booth, and a variety of figures purchased from Fun and Games in Jefferson City, Missouri. Over the entrance path there is a sign reading "Steamers Carousel" in custom raised letters created by LA Laser Cutting Service. Sonny created the landscape by cutting and shaping sheets of foam and covering them with Woodland Scenics Mold-A-Scene Plaster. He then glued real gravel and dirt onto the surface for a realistic effect, and embellished that with miniature trees, shrubs, and grasses. He suggested the red, white, and blue color scheme for the carousel, the sign over the entrance, the ticket booth, the benches, and other elements, and he also did all the painting, using a rubber roller to apply paint to the raised letters on the sign. He added a circle of acrylic mirrors, made by I Love Lucite, around the interior of the carousel to reflect the light given off by strings of LED lights affixed to the carousel's perimeter posts. The lights were Nano String LED's, in the cool white shade, purchased from Evan Designs in Colorado.

The layout was just about complete, except for one key piece — the carousel had no canopy, and none of the group knew how to sew. Happily, Pam Iacobucci, Larry's girlfriend, volunteered to make it, and she contributed a beautiful, tailored canopy. She even inserted a hidden zipper so that a flap can be rolled back to show how the mechanism works (Photo 16).

The group tried to keep some sort of a record of this project, and fortunately had the benefit of Rick



Photo 16

Parker, a professional photo journalist as well as live steamer, to take a few photographs along the way.

The Debut

By chance, the owner of the Lois Lambert Gallery at Bergamot Station in Santa Monica saw some photos of Sonny's models, including the just-finished carousel. She was so delighted by them that she offered him a show at her gallery, and so the carousel had its "debut" at a show entitled "A Moment in Time," which ran from July 15 through September 3, 2017 and was a pretty big thrill for a bunch of live steamers. (Photo 17)



Photo 17 - Opening night at the gallery for Sonny's "Moment in Time" Show.