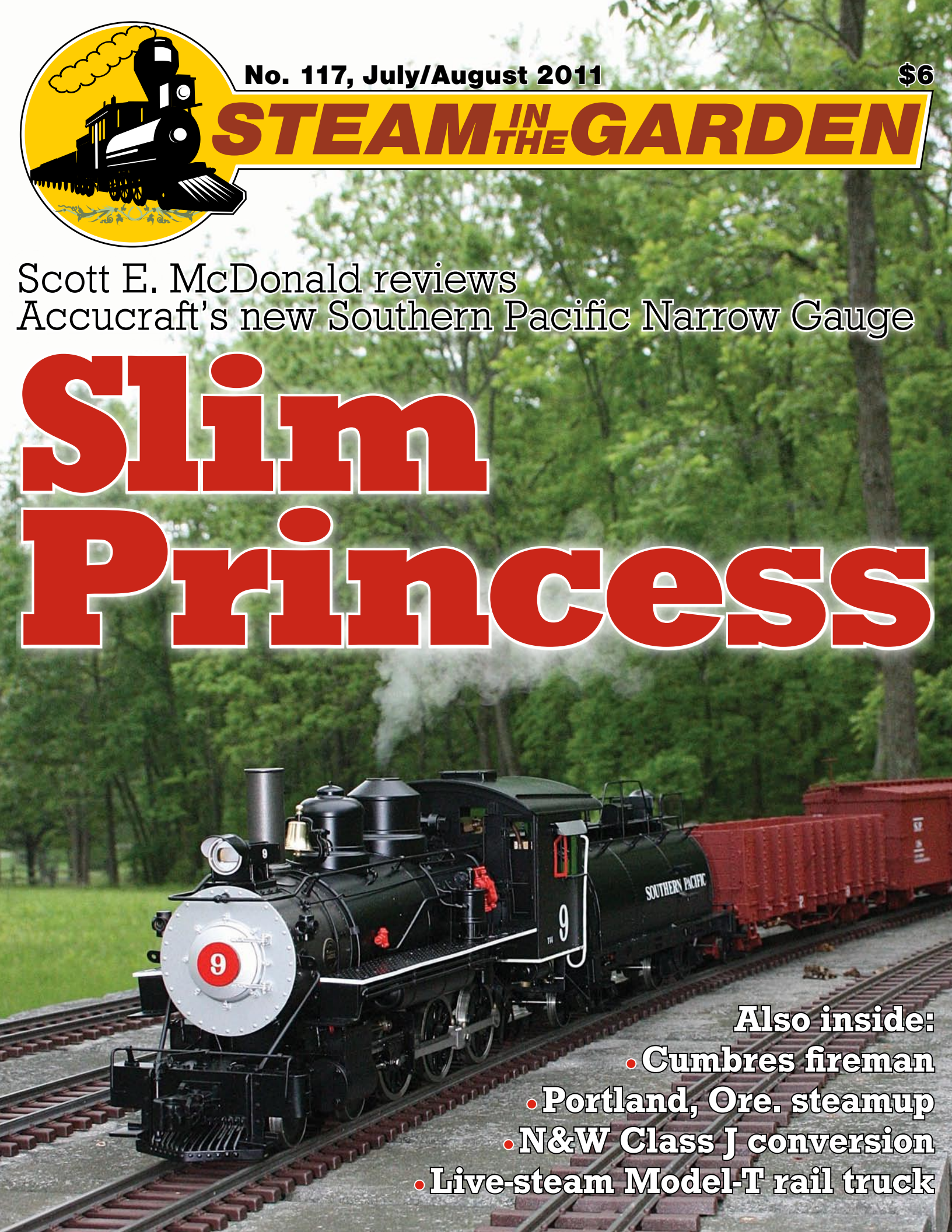
No. 117, July/August 2011 $6

STEAM IN THE GARDEN

Scott E. McDonald reviews
Accucraft's new Southern Pacific Narrow Gauge

Slim Princess



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- Cumbres fireman
- Portland, Ore. steamup
- N&W Class J conversion
- Live-steam Model-T rail truck

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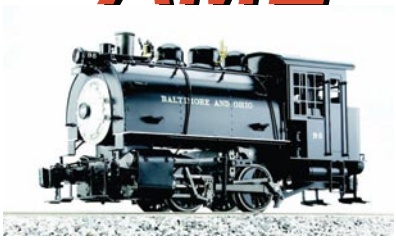

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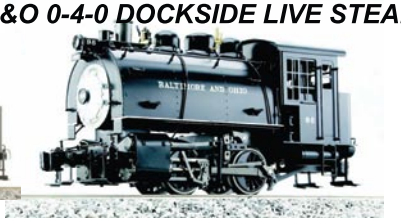

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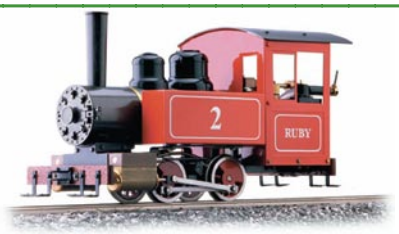

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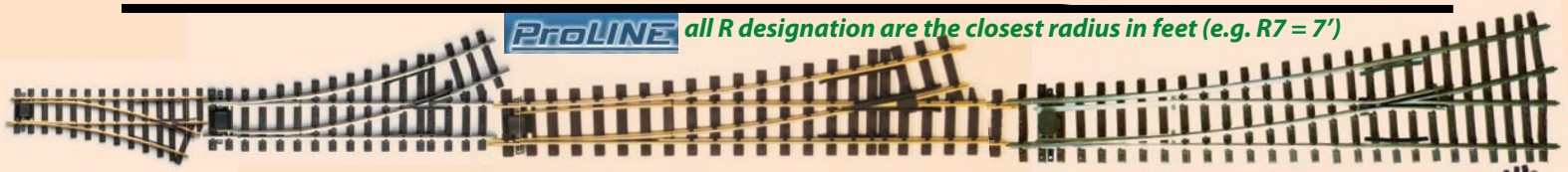

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STEAM IN THE GARDEN

Gather friends, while we inquire,
into trains, propelled by fire ...

Editor ..... **Dave Cole**
dmcole@steamup.com
(650) 898-7878, Fax: (650) 475-8479

Advertising Manager ..... **Sonny Wizelman**
ads@steamup.com
(310) 558-4872

Circulation Manager ..... **Marie Brown**
circ@steamup.com
(607) 642-8119, Fax: (253) 323-2125

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Cover: Accucraft's S.P. Narrow Gauge No. 9 lets off a little steam. By Scott E. McDonald.

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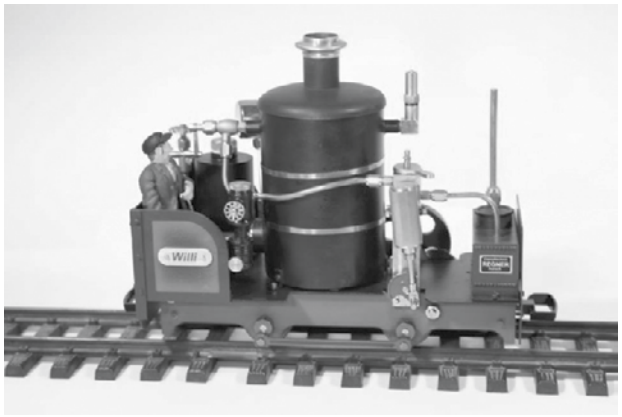

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LATEST WAYBILL

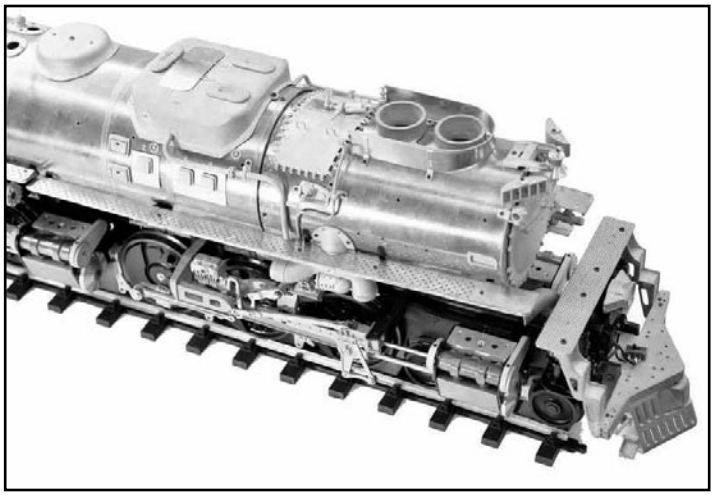
Aster Challenger pilot on pace

A project to create a 1:32 scale model of the Union Pacific Challenger — the largest and one of the most powerful steam locomotives ever built — appears to be on schedule, the train's maker said in early July.

Aster Hobby USA LLC, the U.S. distributor for Aster Hobby Co. Inc. of Yokohama, Japan, released photos of the pilot model of the locomotive on July 5, showing the 4-6-6-4 locomotive in brass. The company had said that the pilot would be ready in August 2011 and that kits and ready-to-run locomotives will be released at the "end of 2011."

Aster is only going to build enough models for those who join the reservation list. Aster USA says that the kit price will be $12,500 and that the ready-to-run price hasn't yet been established; a $1000 down payment is required to get on the reservation list.

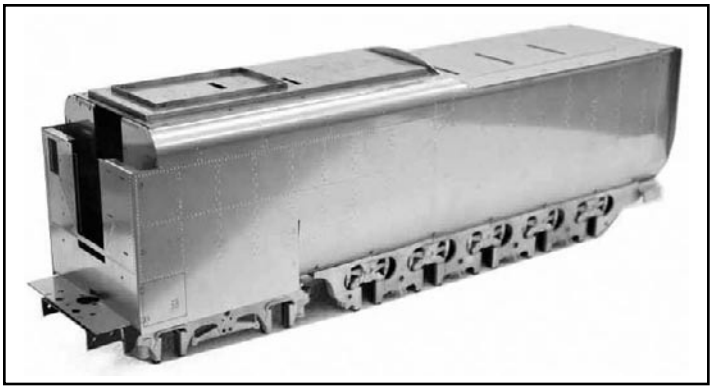
"The current economic situation no longer permits large-scale production and long-term product warehousing," Aster USA says on its web site.



Pilot project: *Aster released photos of the pilot model of the U.P. Challenger in early July.*

The company announced the locomotive in February 2010 and received a license for using the name and likeness of the Challenger from Union Pacific in April 2010. Aster says the model will be an alcohol-fired C-type boiler, with working drain cocks on all four cylinders. "All the necessary appliances featured on the latest Aster models" — as well as a battery-powered headlight — will be included, Aster says.

American Locomotive Co. built 105 of the Union Pacific-designed Challengers between 1936-1943, though only two remain today: No. 3985, which is oper-



Tender too: *Aster's U.P. Challenger will include a tender for the locomotive, which will have 14 wheels.*

ational and part of U.P.'s "heritage collection" based in Cheyenne, Wy., and No. 3977, which is on static display in North Platte, Neb. The Aster model will be of No. 3985 in the "as preserved" condition (originally a coal-burner, No. 3985 was converted to oil fuel in 1990).

The Challenger is an articulated locomotive, with a pivot-point in the middle of the frame, allowing for the large wheelbase to go through existing mainline curves. It carried a 32-ton, 14-wheel tender. The locomotive was designed for fast freight but was sometimes used in passenger service, attaining a top speed of about 70 mph.

According to U.P., No. 3985 was built in 1943 and last ran in regular service in 1957; the company retired the locomotive in 1962, keeping it in storage (and briefly on display) for the next 19 years. Volunteer Union Pacific employees restored No. 3985 to running condition in 1981.

— dc

In memoriam: William 'Bill' Colleran

A long-time East Coast live steamer, William "Bill" Colleran Jr., 89, of Virginia Beach, Va., died June 12, 2011. He served with the 79th Division during World War II and in civilian life, he was an accountant He is survived by his son, Wayne Colleran and wife Debbie of Maryland. Bill had a life long interest in both model trains and steam engines.

Wayne recounted, "My dad bought me my first American Flyer train set when I was eight months old", and remembers Bill having a Wilesco stationary steam plant that drove all sorts of machinery.

Like many, Bill's first large-scale trains came from LGB. About 1994, he and Wayne were attending a train show where he discovered — and purchased — his first Aster locomotive, a GER 0-6-0.

By 2002, the two had built a permanent Gauge One steam track and began hosting regular get-togethers for live steamers in the Tidewater area.

Bill had several locomotives including a Japanese C-11, a PRR K4, Climax, and multiple Shays. He most enjoyed the geared engines.

Bill will always be remembered in his later years as the guy relaxing in the chair, enjoying the action, always with a story at hand, and quick with a new joke to tell.

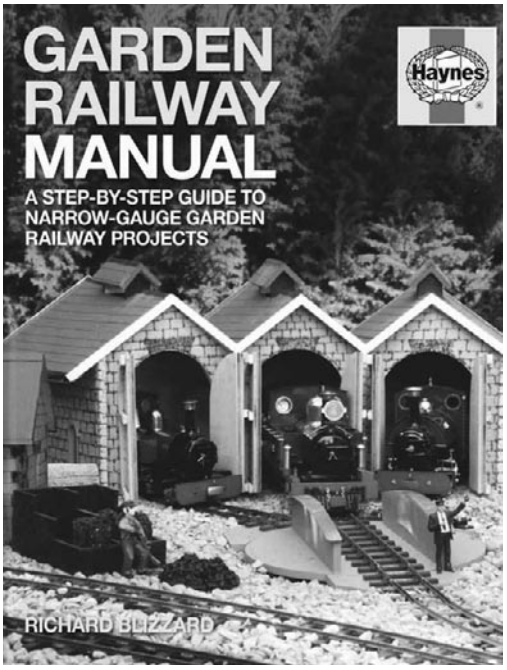
He loved to share his knowledge of the hobby with others and encouraged the new guys to actively participate rather than just watch the old hands use up all the track time.

I enjoyed being around him at every meet; we will miss him a lot.

— Jim Stapleton

Book review: Good designs for your backyard railroad

Garden Railway Manual, a step-by-step guide to narrow-gauge garden railway projects; by Richard Blizzard. 2011 by Haynes Publishing, Yeovil, Somerset, U.K.; ISBN 978 1 84425 715 7; distributed in North America by MBI Publishing Inc.; U.S. list price — $32.95; U.K. price — £19.99.



Aimed primarily at the relative newcomer to the hobby, this 184-page "how-to" book of garden railway projects includes much that would be of interest to any garden railway hobbyist.

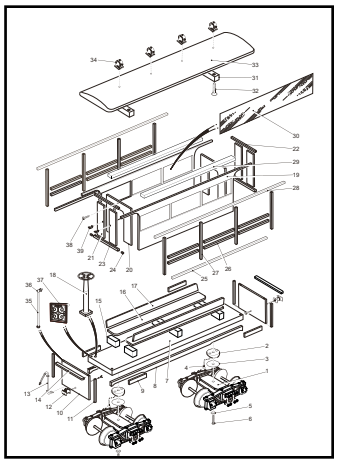
It features detailed three-dimensional computer-assisted design plans, detailed materials lists with dimensions, step-by-step instructions and full-color photographic illustrations. There are 16 projects for the reader to build, including rolling stock, structures, a semaphore signal, a girder bridge and a diesel railcar. While written in the United Kingdom and ostensibly 16mm scale, most of the projects have a generic appearance that would make them suitable on a 15mm- or 16mm-scale garden railway located just about anywhere.

All projects, as finished in the book, feature a family appearance, with common elements of color and finish carried throughout. These finishing suggestions are optional but do give a good idea of how incorporating a family appearance in your work can help "bind" your railway into a coherent form, rather than producing a series of un-related individual elements. In addition there are sections on laying track, building a steam locomotive from a Roundhouse kit and adding additional detail to a steam loco.

The author has been an active garden railroader for 25 years and has written a number of other hobby books (wooden toys, garden woodwork) as well as produced a number of hobby television programs.

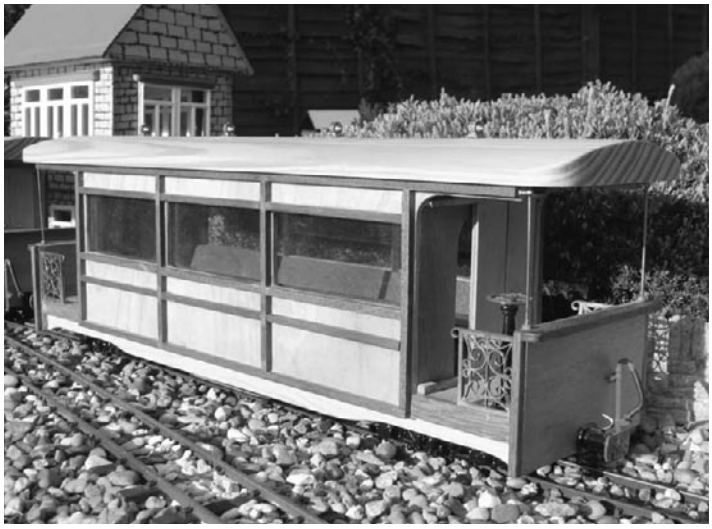
The forward is by Richard Longley of Brandbright

Ltd., a well known U.K. mail-order and hobby-show supplier, who, not surprisingly, recommends the book. In thinking about it, so do I. At first glance I didn't care for the appearance of some of the projects too much, and allowed that to influence how I was reading the book. Somewhere around half way I realized that was un-fair, on my part. How the author chose to finish something didn't affect the quality of the design of the project.



Material choices are robust and relatively easy to source in most communities. Sheet elements are one-quarter-inch, 3/16-inch and one-half-inch marine plywood with fractionally sized stripwood used for the rest. Components are glued and screwed (where size warrants) together. The finished product should be able to withstand being left on the layout during the season, but I would recommend against leaving them out the year round. The glue on marine ply might be good, but I don't think it's that good.

Tools required are those that might reasonably be found in anyone's home workshop. Complex looking projects have been developed from a number of simpler components, so anyone with basic woodworking skills should be able to realize a satisfactory result, while improving their skills as they go.



Bogie coach: *Blizzard's 3D CAD drawings, left, and his finished piece of rolling stock, above.*

The book's paper quality is good as is photographic reproduction and reproduction of drawings and tabular material. The book is hard covered, with colored board covers. Recommended!

— Peter Foley

On the Cumbres & Toltec, taking classes to become a real live-steam

Fireman

By Rob Lenicheck

For those of you who don't know it, there is a real gem of a narrow-gauge railroad in Southwest Colorado/Northern New Mexico — and it's not the Durango and Silverton. It was originally part of the Denver and Rio Grande system, which was bought in 1970 by the states of Colorado and New Mexico when the Rio Grande decided to abandon the line. The new railroad was named The Cumbres and Toltec Scenic Railroad and operates most years from Memorial Day weekend through mid-October.

Shoveling as fast as he can: *The author learns the finer points of getting the coal as far to the front of the K-36's firebox as possible.*

In 2010, the C&TS instituted a new program of classes that allow any and all interested people to have the experience of learning how to run a steam locomotive. I was privileged and lucky enough to be enrolled in one of those classes in August 2010, a once-in-a-lifetime experience in the cab of a large, narrow-gauge locomotive (a K-36) on the Cumbres and Toltec Scenic Railroad. What follows is a diary of that experience.

Monday, Aug. 16
C&TS K-36 No. 487

How can I begin to express my excitement as I met my fellow classmates, six counting myself, in front of the Chama, N.M., depot. The special events organizer and Chama Depot manager for the C&TS, Alan Loomis, took us over to the Chama Town Hall where we would spend the morning. Despite my desire to get out to the loco ASAP, this classroom time turned out to be very beneficial and enlightening. We spent time reviewing safety aspects of running a real railroad, including the need for a timetable, which I had not appreciated before now. Hand and whistle signals were reviewed. (This was great,

Oiling, greasing, checking: *The class gathers around as various external components are checked, oiled and/or greased.*

as you actually had to remember and use the correct whistle signals out on the line.)

After looking at a basic video about how to fire and run a steam loco, we were joined by Ronnie Lopez and Jeff Stebbins, two 14-year veterans of the C&TS, who would be our guides through the next 2½ days in the cab. We talked with them about the type of coal they used (from Hesperus, Colo.) and how it was relatively clinker free. (Clinkers form easier in some types of coal and can prevent efficient burning and other problems in the firebox.) We also learned from these two that the fireman is responsible for checking and maintaining the boiler water level (gulp!) and making sure the fire is well maintained, both of which are harder than one would expect.

As an aside, my five classmates had varying experience with steam locomotives and came from all types of backgrounds: two doctors, one guitar maker, one Amtrak engineer, one geologist and myself. It was no more or no less easy for any of us to run these beasts. In-cab experience was everything and something none of us had.

After a great lunch at the Boxcar Café (the new replacement for Carlotte's across from the Chama yards; highly recommended), we split into groups of two for our initial orientation: making up the train we were to use for our runs on Tuesday. Each group had about an hour in the cab, Stebbins doing the honors at the throttle while Lopez patiently taught us the basics of being a fireman, one at a time.

The first job of the fireman when climbing into the cab is water, water, water. If there's no water, you've got — or will get very soon — a huge problem. The water gauges and angle cocks on the boiler backhead must be checked and verified for the water level in the boiler. If needed, an appliance called an injector is used, which blasts tender water into the pressurized boiler. This thing, we learned, had to be handled with some subtlety and finesse to work correctly but, once mastered, it was one of the easier lessons.

After checking the water, a look at the boiler pres-

sure is next. If the pressure is down then and adjustment inside the firebox is in order, usually adding more coal. More subtleties here: When you open the firebox door you must look for empty spots in the fire and try to fill them. This is where experience in shoveling snow might come in handy. The trouble is that the firebox grate on which the coal burns measures about five feet wide, by 10 feet deep. The area close to the doors is easy. But getting a shovel-full all the way to the front — well, it's a long way. And to make matters worse, the access door into the firebox is about 24-inches long, by 18-inches high. Sometimes a shovel-full of coal just doesn't make it in cleanly. If Ronnie and Jeff were laughing to themselves it wasn't obvious.

Good humor men: *Ronnie Lopez (left) and Jeff Stebbins, 14-year veterans of the C&TS, showed the fireman class patience.*

Tuesday, Aug. 17
C&TS K-36 No. 487

The plan for today was to make six trips up the hill to just short of the Lobato trestle, which had been damaged by a fire in late June, about four miles. A bit of a disappointment not to get to fire all the way to the top of Cumbres pass on a four-percent grade, but probably better on the back that way. We were again split into teams of two but this time when we showed up at the cab for our turn one of us was ushered into the engineer's seat! In other words, we were now responsible for both jobs; halfway up the hill we switched jobs. As fireman, after checking the water-level and firebox needs, you are also responsible for controlling the air-actuated bell when leaving the yards. Throwing coal into the firebox became a bit easier with more practice. It was more obvious why they designed most larger fireboxes angled downward toward the front — that way the coal would be assisted by gravity and migrate in that direction under the vibration of the engine.

Changing jobs into the engineer's seat was rather daunting to the uninitiated. Here is 187,000 pounds of locomotive which you need to control with brakes, the Johnson bar and the throttle. First, there are two different brake types to worry about — independent (engine) brake and the train brake — and you really use them both at various points. To move forward, the Johnson bar (the Chama guys actually used this term rather than "reverser") is pushed forward.

The bar in these particular engines doesn't move very easily so it required leg power, too, to get it to move. The "notch" the Johnson bar is placed into is

a reflection of what grade you're on and how warm the cylinders are. Then the brakes are released (now let's see, was that moving the lever forward or backward?) and you bring the throttle back towards you. But it's not quite that simple. After giving the throttle a little nudge you need to back it off again to let the steam which was admitted into the cylinders do some work. Otherwise the drivers will slip from having too much power too soon.

Yea, it's easy to do.

Oh, and some engines have loose throttle linkages so you have to use a popping action with your arm back and forth to get the needed action. A lot to think about and absorb in a short amount of time. But one heck of a lot of fun!

A word needs to be said of the superb team teaching of Lopez and Stebbins. They both showed a high degree of patience and good humor throughout this entire three-day class. They obviously knew their subject thoroughly and projected their love of it to all of us.

Wednesday, Aug. 18
C&TS K-36 No. 484

Today brought an unplanned special treat to all in the class. We met for rolls and coffee at the Chama depot and then were transported to Antonito by bus so that we could take turns on a tie train (flats

loaded with ties) to Osier and back. This was to be a real work train which was to assist the track crew by dumping ties off at various locations on the way to lunch at Osier.

Once again we split into twos and planned out our one hour in the cab in each direction, alternating between fireman and engineer. Taking the train out on the flats west of Antonito was a real thrill — doing about 25 mph (fast for a K-36) and watching the engine sway side-to-side on the track from the engineer's seat. Jeff had been encouraging us to feel the engine so as the grade increased and she started to slow we needed to open the throttle. The fireman, in turn, had to pay more attention as the need for more steam increased, also.

Locomotive learning: *Cumbres & Toltec's 2010 class for aspiring steam-train firemen pose in front of No. 484; author third from right.*

Because of the more-or-less constant 1½ percent grade to Osier, Ronnie has developed a technique to optimize the injector flow amount and then leave it open the entire time. For those who have seen videos of the C&TS and noticed a hose from the cab spraying out on the weeds or even on the engine running boards during a run should know that this is the method of determining the water flow through the injector. Ronnie showed us just how to do that and, thus, leave the injector alone on the way to Osier.

The run uphill in either the fireman or engineer position in the cab was fairly uneventful. Not so when we started downhill. The track on the first leg back goes slightly up and down so that control of the train becomes a bit of a dance between using the throttle and the brakes — or letting the engine simply drift downhill. Each function alone was fairly straightforward. On the uphills the throttle is used with the Johnson bar in the "company notch." (So designated because you are using the expansion capability of the steam to do the work. This increases the engine efficiency and, thus, keeps the company management happier.) When drifting, the Johnson bar is pushed forward with the throttle off and you then apply the brakes in little bursts to control speed.

The real problem becomes the switch between the two situations. When drifting the cars bunch up into each other. As the grade changes to uphill the cars must be played out using a little train brake action along with opening the throttle. And this needs to be done so that the wine doesn't spill in the Parlor Car at the back. Not such a subtle thing to master.

One thing which really helps this situation is knowing the railroad really well. Like Ronnie and Jeff, you come to know each curve and uphill so you can anticipate the needed actions. It doesn't make it any easier to do — just more predictable.

One unpredictable incident which happened on our return trip could have been very tragic. Just downhill of Mud Tunnel, a family of three with a dog was either waiting for the train or walking on the tracks. This area is very remote and the crew was astonished they were there. Nevertheless, while coming around a curve, Ronnie happened to see the male of the party run onto the tracks to retrieve the dog. Ronnie instinctively yelled, "Stop!" Immediately, Jeff reached over the student engineer, pushed in the throttle and slammed the brakes into emergency, thus averting a potential disaster. Ronnie mentioned later that if we had been doing the usual train speed during that drifting section the family would now be fatherless.

Conclusion

This "class" was everything I expected it to be. It was very well organized and thought out, all the way down to refreshments and water at the appropriate times. It was the thrill of a lifetime to be in the cab of that powerful engine getting dirty and sooty, although I was a bit disappointed that my overalls were still relatively clean after the three days.

And the biggest thrill? It had to be pulling the cord overhead, signaling for each grade crossing and track warning, and trying my hand at twilling that powerful whistle up and down the track. Wow!

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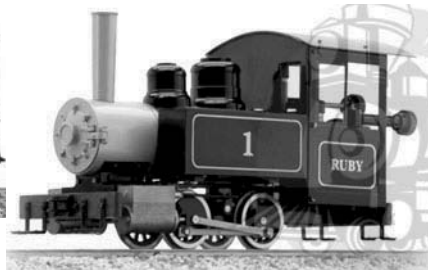

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A JEWEL

of a steamup at Staver Locomotive in Portland, Ore.

Text and photos by Harlan H. Chinn

A little-known secret tucked away in Portland's industrial Southwest Quarter is a 16,000-square-foot, heavy-timber warehouse complete with overhead gantry crane and massive overhead doors, a "jewel" amongst the utilitarian industrial landscape, where owner Larry Staver and his staff over the course of several years have transformed this former heavy manufacturing building into a facility that serves to showcase Larry's passion for the small-scale, live-steam railroad hobby.

Trackside tinkering: *Alex English sits under a lamp to work on his Accucraft Shay.*

Over the days leading to the weekend of April 28-May 1, Larry hosted this, his Fifth Annual Spring Steamup, at Staver Locomotive. In attendance at this spring's steam-up were 32 registered participants many with their spouses coming from as far as Utah, California, British Columbia, Washington State — as well as local Oregonians.

This year's spring weather, cold and rainy as it was, kept the temperatures in the main warehouse space quite cool, which made for some pretty spectacular steam plumes. While the cool temperatures didn't keep us from running our trains, it just meant that our wives spent a lot of time out shopping or chatting in the cozy heated confines of the administrative offices with Larry's office manager, Yolanda, or around a toasty, warm, wood-burning stove seating area next to the steam track.

Other amenities at Staver Locomotive are located along the north side of the building and feature a complete restaurant food service kitchen facility allowing for the preparation of gourmet meals or for catered food set-up. Washrooms, a gallery space and lounge area complete with baby grand piano are located adjacent to the kitchen provides a warm area to take a break, where a buffet of bagels, juice, fruit and coffee are set out daily. Further down along this bank of rooms are Larry's work room and office where he has a gas-assisted laser cutting table amongst a display of his collection of model railroad equipment, as well as complete wood and metal fabrication shop spaces.

Spring steam: *Cool weather makes for good steam plumes at Portland's Staver Locomotive in late April.*

Aster advice: *David Leech, back, gives steamers some thoughts on the Aster Mikado.*

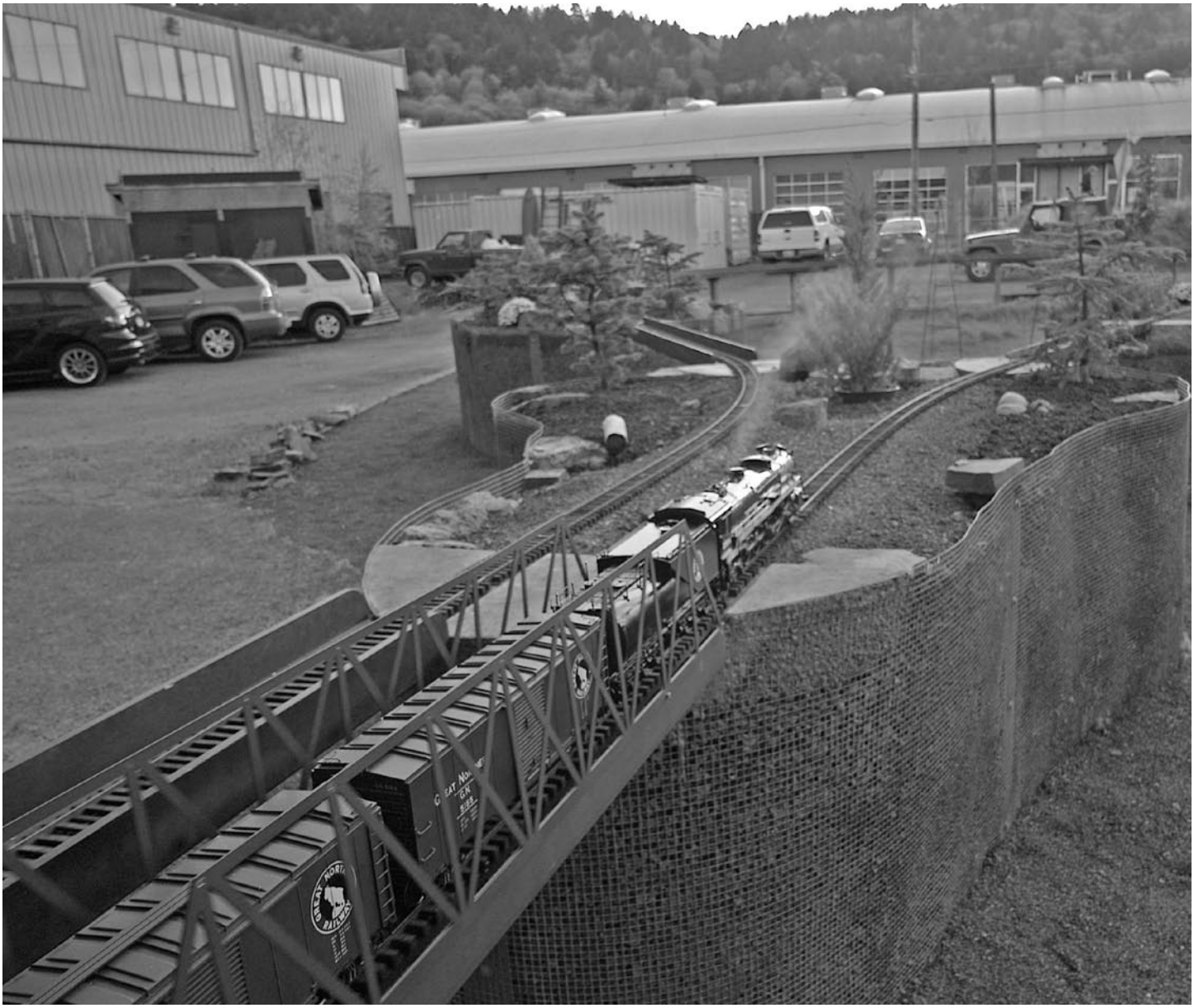
The track at Staver Locomotive is a 600-foot, elevated single-track loop comprised of all hand-laid track of one-eighth-inch by three-eighths-inch steel rail, welded together and set in machine-milled wooden ties that floats over a bed of crushed rock gravel, retained between a continuous steel-ribbon edged tray over a heavy timber support structure. Switches and turn-outs throughout the layout are handmade — many by Timothy Miller — and work to perfection even with our equipment barreling through at high rates of speed. The indoor portion of the layout runs along the length of the south half of the warehouse space, where it snakes around the building's timber supports. There is the ability in nice weather to head outdoors with the installation of two drop-in bridges, which allow for an extension of 90 feet of track leading out a sliding door to a loop through an innovative system of raised-bed gardens, rock structure and pond. Off of the mainline is a large storage yard and passing tracks at key locations.

Access to work benches and tables located inside the layout are through lift-out bridge sections as well as an ingeniously designed swing out bridge located — at of all places — on a curve. With the great length of mainline track, several trains were able to run simultaneously with their "engineers" following closely along to maintain even spacing between trains and for switch and turnout verification. With the number of registrants, train schedules were published with alternating steaming sessions for those who run faster main-line trains and for those who run geared and narrow-gauge trains.

Even with a massive ongoing underground-sewer utility project outside his building, the outdoor planted landscape areas appear to be returning to excellent form. Larry, with his great vision, is planning on adding additional length to his layout once the city relinquishes this section that they are currently using for project staging. A word of warning: you will do a lot of walking when you run trains at Staver Locomotive.

Members of our Puget Sound Garden Railway

Steam social: *Amy Staver, left, greets guests at the Friday night combination open house and fundraiser.*

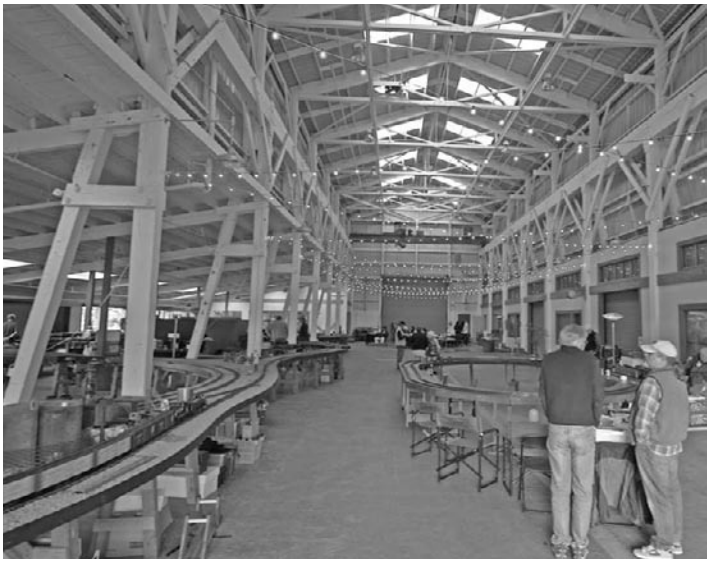


Out and about: *Staver Locomotive has both indoor and outdoor running; here an Aster S2 heads out .*

Society brought down and set up the club's portable layout that features 45mm-32mm dual-gauge track in a two-track oval loop within the expansive warehouse space between the mainline and the adjacent shop areas. It's the place to gather around to watch the infamous Spam-can train as well as other esoteric steam-powered tin trains.

A generous depot of distilled water, butane canisters and methyl alcohol was supplied and is included along with a Saturday evening barbecue dinner with steamup registration. Featured libations at that evening's dinner were margaritas, as well as a fine selection of wine and beer. Convenient hotel accommodations are located less than a quarter of a mile away from Staver's, at the Silver Cloud Inn, with special rates provided for Staver-event registrants. Or, for those with pets, the La Quinta Inn offers reasonable rates with no extra fees.

Being the generous philanthropists that Larry and his wife Amy are, Friday evening they hosted a festive benefit open house featuring our trains, where for two hours the facility was open to the pub-



Staver space: *The space at Staver Locomotive is vast, as shown by the Friday night open house (upper left), the setup of the Puget Sound Garden Railway's portable steamup track (lower left) and Jim Hadley and Jim Montgomery dwarfed by the space (lower right).*

lic allowing kids and their parents to watch trains steam along with live music from a couple of vocalists/musicians. That evening an estimated $10,000 was raised in donations to help fund a synthetic turf field for a local elementary school.

In September, Larry will again host the Sixth Annual Fall Steamup at Staver Locomotive, so check the web site for registration information for the largest gathering of garden-railroad live steamers in the Pacific Northwest (http://www.staverlocomotive.com/).

My wife and I have attended several of these events at Staver's where each time as we prepare to leave Staver's and Portland there's a feeling like being at a family reunion of friends and fellow live steamers, the camaraderie and knowledge shared in the hobby is very much worth the effort to attend this event. We're looking forward to seeing our friends new and old again for what will be the much larger event of the year this fall.

Accucraft's new
Southern Pacific Narrow Gauge 4-6-0

Slim Princess

Text and photos by Scott E. McDonald

When Accucraft Trains first announced the Southern Pacific Narrow Gauge 4-6-0 Nos. 8-9 — known as the "Slim Princesses" — I was ecstatic to say the least. I am an SP fan, having grown up in the Southern California Mojave high-desert city of Palmdale. Our family had friends who worked for SP, and I was fortunate to be able to be a part of some memorable moments in SP history. We moved to Palmdale in 1959, one year before the demise of the only SP narrow gauge rail line in existence and it was just a few hours north of us in the Owens Valley. Because of its demise when I was only five years old, I really wouldn't learn of the history of this branch of the SP, or visit its remains until years later.

The model

Accucraft is selling three versions of this locomotive: a model detailed like No. 8, a model after No. 9

The mummy: *Accucraft wraps locomotives well before shipping. Right, a look at the backhead from above.*

2011 Accucraft
Southern Pacific 4-6-0 'Slim Princess'

- **Loco type:** Baldwin Locomotive Works narrow gauge, circa 1908. Cylinders: 16-inch diameter, 20-inch stroke. Drive wheels: 44-inches. Boiler pressure: 180 psi. Tractive effort: 17,800 pounds. Weight: 87,150 pounds. Tender capacity: 1800 gals. oil, 3000 gals. water.
- **Scale:** 1.20.3, 45mm gauge.
- **Length:** 33½ inches.
- **Height:** 7¼ inches.
- **Width:** 5½ inches.
- **Boiler:** Single, center flue.
- **Fuel:** Butane.
- **Water tank:** 425ml — 80 percent full (14 oz.).
- **Min. radius:** 1.2 meters (~48 inches).
- **Water pumps:** Tender hand pump.
- **Cylinders:** Two, with D-valves.
- **Valve gear:** Simulated Stephenson.
- **Fittings:** Throttle, check valve, water-level gauge, pressure gauge, boiler petcock.
- **MSRP:** $2700.

and an unlettered version; I chose to buy the No. 9. Like many of the locomotives made by Accucraft, of Union City, Calif., this one comes "mummified" as I have heard others refer. That is to say that it is well wrapped and attached to the wooden board that is inside the metal tray that protects the locomotive in shipping. The metal tray has handles for ease of removal, but is always a snug fit and having a helper to pull the box off is always a good idea.

You will need a large Phillips-head screwdriver and an adjustable wrench to get the four bolts out in order to remove the wooden base on which the locomotive is attached. Once the wooden base can be slid out of the tray, the unwrapping can begin.

For the tender, not as much effort is required. It is packed in Styrofoam and foam rubber which makes its removal easier. You will need to turn the tender over to remove little pieces of foam rubber that are in the trucks, just make sure that before you do that you remove the tenders water access plate before flipping, otherwise it will fall to the floor (or grass).

At the end of the butane line is the burner jet. Leave the packaging on for now until you are ready to mate the two units. This helps to protect that tiny little opening that is so critical to proper firing. There is usually a small piece of rolled up newspaper inside the back of the jet to act as particle filter. Many of my fellow steamers remove this as a natural part of their unwrapping. For the inaugural firing I didn't. I wanted to first see how it would steam without removing the paper. Something to think about for later if it doesn't seem to be getting enough fuel through the jet to light off.

There is a plastic bag with a couple of tools and detail parts that you can add later. The tool is "L" shaped and has a 3mm hex head drive on one end, and the other end is to help in turning the hex head driver. You will be using this for attaching the gas jet into the fire tube for the set screw.

— Continued on Page 30

On display: *No. 8, left, is on display in Sparks, Nev., while No. 9, right, is in Laws, Calif.*

A brief history of the SP Narrow Gauge

At the end of its operation, the Southern Pacific Narrow Gauge line only ran about 74 miles, between Laws and Keeler, in California's Owens Valley.

Its history goes back to 1880, when the railroad was first conceived as the Carson & Colorado, by the Virginia and Truckee Railroad. It started in Mound House, Nev., just outside of Carson City, and ran for 300 miles south into the Owens Valley.

Often referred to as the "railroad that was built 300 miles too long or 300 years too early," the line was a division of the V&T until it became its own incorporated entity in 1892. In March 1900, it was sold to Southern Pacific, which then began to transform the northern half of the railroad into standard gauge. Narrow-gauge operations would persist in the lower half, from Mina, Nev., south into California via Montgomery Pass until 1942, when the section between Mina and Laws would be dismantled.

The railway interchanged with the standard-gauge "Jawbone Branch" of the SP at Owenyo, Calif., in order to transfer goods for points south. No dual-gauge track here: Raw materials were dumped from narrow-gauge gondolas into standard-gauge gondolas via a transfer trestle where the standard-gauge line was situated underneath the trestle.

Other goods would be transferred by hand trucks between box cars on a platform paralleled between the two different gauges of track. Mining in and around the Owens Valley in its heyday included silver, pearlite (a mineral used in steel alloys) and salt transported from the Saline Valley via an aerial tram.

You can find more history of this railroad that was referred to by the locals as "The Slim Princess" online and in print. Like a good western pulp fiction with intrigue and adventure, the history of the Southern Pacific Narrow Gauge is just as good a read.

Books:

- "Slim Rails Through the Sand," by George Turner (1964).
- "Narrow Gauge Nostalgia," by George Turner (1965).
- "Southern Pacific Narrow Gauge," by Mallory Hope Ferrell (1982).
- "Steamcars to the Comstock," by Lucius Beebe and Charles Clegg (1957).
- "Railroads of Nevada and Eastern California (Vol. 1)," by David F. Myrick (1962).
- "Jawbone: Sunset on the Lone Pine," by Phil Serpico (2006).

Movies:

The Slim Princess was also featured in movies filmed in the Owens Valley. John Wayne spent some time in and around her in "The Three Godfathers." Hopalong Cassidy filmed a complete episode titled "Sinister Journey" at Keeler that prominently features the railroad. These are available through Netflix and have some of the best footage of the trains in action.

— S.E.McD.

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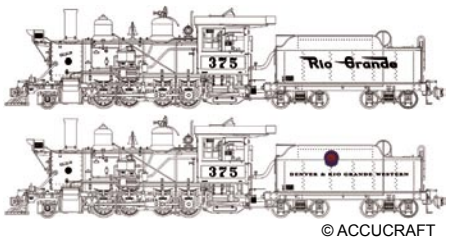

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Photo by Joe Dale Morris

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- Brass & Stainless Steel
- Butane Fired, D-Valve

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- 1:32 Scale, 45mm Gauge
- Brass & Stainless Steel
- Butane / Alcohol Fired, D-Valve
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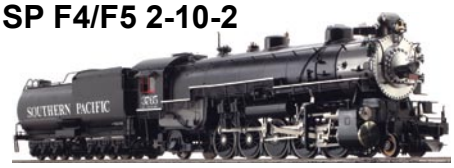

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- Brass, Steel, Die-Cast Metal
- Butane Fired
- Few Units In Stock

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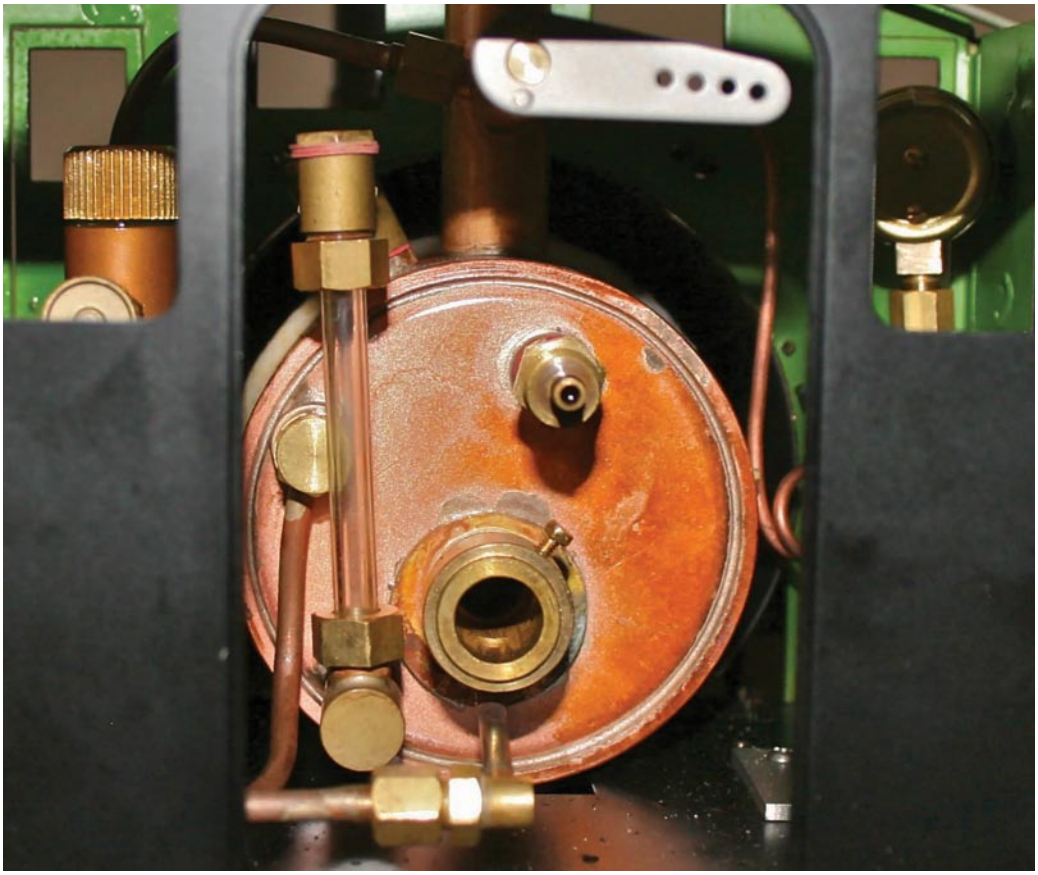


Backhead beauty: *Accucraft neatly arranged the SPng 4-6-0's backhead, providing a sight glass and a boiler drain fitting.*

— *Continued from Page 27*

Once everything is unpacked it is time to start oiling up the locomotive and tender. If this is your first live steam locomotive, a small tube of general purpose model oil or three-in-one oil is a must for you steamup kit. The foam rubber that the locomotive comes packed in is great for assisting with oiling the underside as it will protect the finish as you give all of the motion parts a small drop of oil with it upside down on the foam.

Once you have all the wrapping off and the motion parts are oiled, it's time to set up on the track and mate the two. Now is the time to remove the packaging off the end of the fuel line and slip it into the fire tube in the boiler. There is a 3mm hex head screw to help hold this in place on the ring sticking out from the back of the boiler.

You will need the tool in the bag of parts that comes with the loco that is there for this purpose. I found the angle of the screw and the length of the tool too cumbersome to fit into the cab so I used one of my own 3mm hex head drivers that is bit shorter and fit into the cab. Next is to hook up the water supply line from the tender into the backhead. It was a simple "slip tube onto fitting and tighten in place with collar."

The tender drawbar has two holes for the locomotive pin to drop in to. I started with the back hole for the first few runs just to see how much space I have for access from the back of the cab to reach the throttle while running. The cab roof easily lifts up and slides over to the side to get easy access to everything in the cab for putting steam oil into the displacement lubricator. Lots of room here! My fingers can easily get to the Johnson bar.

Backhead arrangement

The backhead of the boiler is neat and well arranged. Starting from the top center and going clockwise we have the following: Needle valve for throttle, inlet fitting/clack valve for water from tender, at six o'clock is the fire tube and gas jet. Moving around we come to the boiler drain fitting, which is partially covered by the sight glass. Next is the adjustable displacement lubricator. This was my first Accucraft with this adjustable lubricator, so I set it at a quarter turn, which is the same as on another steamer by a different manufacturer. That setting worked fine.

First steamup

After getting water into the boiler, steam oil into the lubricator and fuel into the tank in the tender, I added water into the tender for the pump. My tender leaked a little at the point where the side steps are attached, so I lost water down to that level. I have three Accucraft locomotives with tenders that have pumps, and every one of them leaks a little. But

No. 18 in Independence

For those who enjoy Ferroequinology, the historic study of railroads long gone, you can visit Locomotives No. 8 and No. 9 in Sparks, Nev., and Laws, Calif., respectively.

Additionally, No. 18 is in Independence, Calif. The most exciting thing about her is that she is currently in the process of restoration for operation. The Carson and Colorado Railway Inc., a non-profit organization in Independence (see previous link) is working hard to breathe fire back into the belly of No. 18.

In April 2010, on the 50th anniversary of the demise of the SPng, volunteers laid 90 feet of track at the site of the old Kearsarge station, a few miles due east of Independence. They have acquired land, rail, ties and are also restoring original rolling stock.

Independence day: *No. 18 behind a fence.*

Like a kid who was just told that the family is going to Disneyland, I can hardly wait!

— S.E.McD.

not fast enough to where it was really a problem.

These minor leaks can easily be taken care of with caulking, but with the whaleback tender, access is not so easy. So if you have a major leak, be prepared to take the tender apart to apply a bead of caulking, reassemble and clean up that which will squeeze out with some cotton-tipped swabs.

Time to light off. The smokebox door swings open for lighting. I opened the fuel valve on the tender and let the first bits of fuel spit out. Depending on your weather for the day, you will almost always get a short puff of liquid, so I closed the valve, let that settle out before re-opening and going for the lighting. Mine lit right off and the fire snapped back into the fire tube and all was good.

I turned the burner on high to get this big boiler going — it's large and a single flue. Don't worry about fuel conservation by trying to fire going with a low flame. This locomotive needs fire! Even after I got the steam up, which was in about five minutes, I kept the fire going strong. I wanted to see how this large boiler acted and what type of run I would get with a strong fire.

Steam was up in about five minutes. Safety lifted, I opened the throttle, and moved the Johnson bar a few times to clear out the condensate that immediately forms in the cylinders because they are cold, and in short order I am ready to roll.

My first run was with only two pieces of Accucraft SPng rolling stock, because at the moment, that was all I had for my "Slim Princess." I borrowed a 1:22.5 SPng stock car from my host for the second run because it was available. It really looked small against the other pieces but in the real world you could have seen the same. Rolling stock comes in all sizes.

Personally, I am not looking to pull a huge consist as in my research of the railroad they didn't pull long consists. Five to 10 cars would be about the average and one of those was a water tank car to help out the locomotive in between the water stations. My subsequent runs a few weeks later were with five pieces of rolling stock and the loco didn't notice any difference.

I let No. 9 take her laps checking the water sight glass every three laps or so. Even with the fire roaring, she is very conservative on the water. And during the first run I didn't have the petcock on the boiler drain completely closed, so I was actually wasting some steam for a bit.

After about 20 minutes I pulled it in for a quick top off with the tender pump. Poured some more water into the tender for the next time if needed and set her on her way. I ran for about another 20 minutes and I topped off again.

After about 10 more minutes it was time for lunch, so I backed into the siding, dropped off the cars and then backed up the grade into the steamup bay. As I

was dropping off the cars I noticed that there was no more roar of the fire. I made it all the way back up about a 30-foot section of three-percent grade into the steaming bay with steam to spare.

Taking that into account, the fuel tank holds enough fuel for about an hour of firing, of which five-six minutes was getting up initial steam. So I am very happy with those results.

Overall thoughts

Like all new live steam locomotives, regardless of maker, the Internet comes alive with discussions of the good and the bad. I have had my share of both from many different manufacturers. With this engine, my initial thoughts are all good. I had plenty of steam to be able to up the ante on a consist. It operated flawlessly through switches, on a railroad that is made with Code 250 rail and No. 11 switches. I also had a chance to run it on another layout that had No. Six, Code 250 switches, and she negotiated those without issue. With a fuel tank that holds an hour's worth of butane, and the ability to easily pump more water into the boiler from the tender, this was a perfect purchase for me.

Usually when writing a review, we get one stab at

running only one new loco out of the entire batch. For this review I was able to actually assist in observing the inaugural steamup of another Accucraft 4-6-0, this one with the No. 8 details.

I just watched and didn't offer any insight into my experience until after steam was raised and it was trundling around the track. The results were identical and No. 8 offered up the same performance that I got with my No. 9. So that is a random sampling of two out of the entire batch that offered great performance right out of the box.

I have to admit that I was a bit jealous of No. 8 in the detail department. No. 8 comes with a very detailed authentic number plate on the front of the boiler. No. 9 is a simple red disk with the "9" in white. No details around the rim showing the maker. There are other details on the cab that give the effect of a finely detailed model, but these details are not complete and you would have to add a few more to get a true fidelity to the numbers, codes and the like that would be found on the prototype.

Of course, once we have a new locomotive, and in many cases, even before we receive it, we ponder the "what ifs" of upgrading its capabilities. I made a list of possibilities that I think this locomotive has the potential to handle:

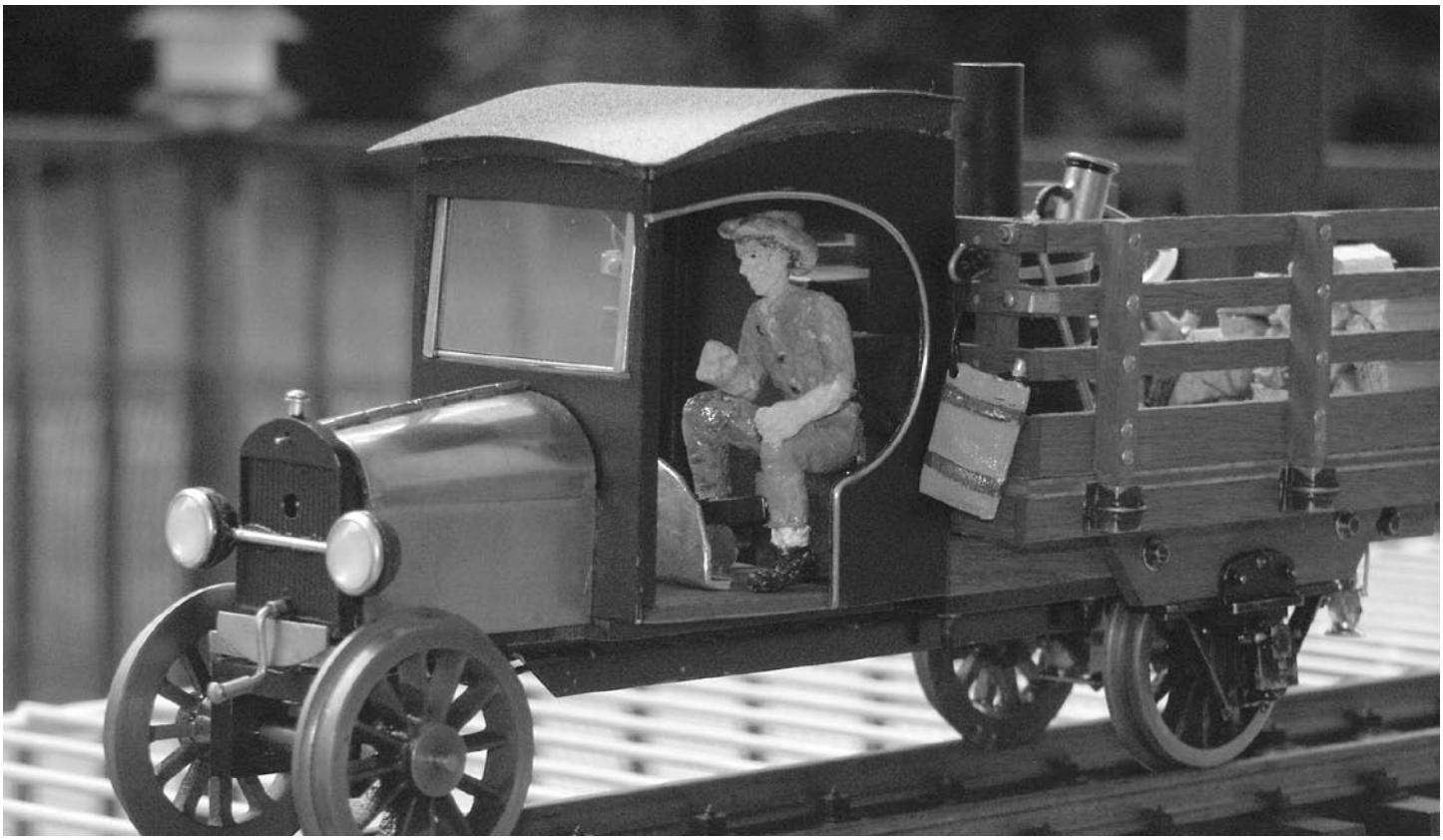
- **Radio control:** Usually this is one of the first questions posed. While this locomotive does not come with pre-set servo mounting brackets, there's plenty of room to add r/c in this model and that fact is also mentioned in the manual provided. Can some of the electronics go into the tender? Possibly, but it would require reworking the water sump and pump as the water in the tank also acts a bath for the butane tank.
- **Axel pump and bypass valve:** I see great potential here as there is the already installed pump that feeds into the boiler through a fitting at the backhead. There is also a fitting that is installed as a boiler drain valve. Or maybe it's supposed to be a blown-down valve, although I wouldn't try to open it under steam for fear of scalding my fingers. So wear gloves or use a good rag if you try that. I tried to use it post run to drain the boiler and resorted to my trusty syringe. But this fitting holds the key for completing a potential full circuit for water to add an axel driven pump later.
- **Illuminating the head lamps:** Lots of potential here.
- **Whistle:** I'm sure that there will be an aftermarket available in the future. Lots of room to add one of these under a running board disguised as an air tank.
- **Chuff-sound enhancement:** Personally I don't see the need to go that route as my locomotive had a great chuff.
- **Couplers:** The couplers provided are too big. The SPng had couplers that were about 3/4 the size of other railways. So I will be changing mine out for something more diminutive.

Whether or not you are a Southern Pacific narrow gauge fan, this locomotive has the potential for bashing into other late model Baldwins. I am very pleased with my purchase and look forward to many years of fun steaming up my "Slim Princess."

Building a steam-powered Model-T

Rail truck

Text, photos & drawings by Howard Maculsay



A Tin Lizzy should be so lucky: *Maculsay's Model-T steam truck in it's first test run.*

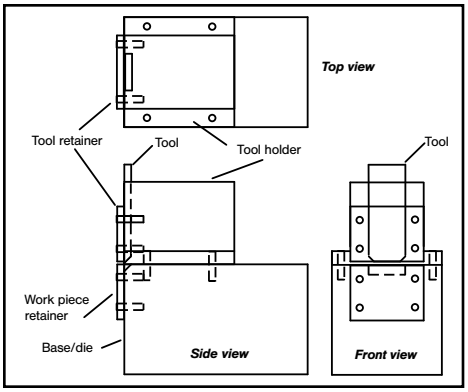
Inspired by Sonny Wizelman's "Matilda," a live-steam rail truck itself inspired by a similar engine at the 2008 Diamondhead — and knowing that many Ford Model-T trucks were used as rail vehicles — I decided to build a steam-powered Model-T patterned after the stake-side truck the company built in 1925.

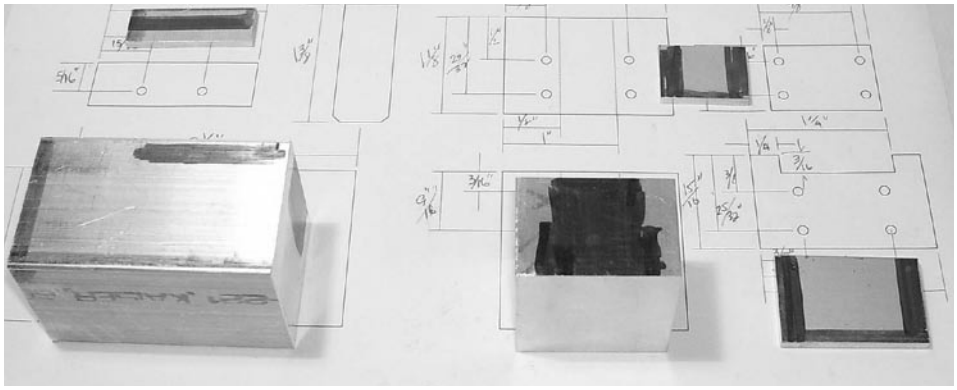
Sonny also helped out on this project by showing me a German miniature boiler, butane tank and steam-motor, which would fit my rail truck perfectly.

Forming the hood louvers

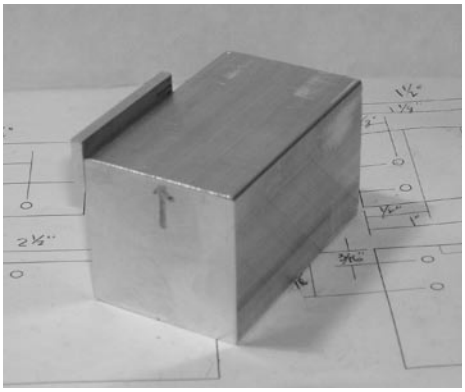
The louver forming tooling is made up of six pieces. The business-end of the tooling is a 3/32-inch by one-half-inch oil-hardened flat steel tool used to do the forming. The base/die and its retainer/stop, the tool holder, its retainer and the side alignment stop pieces are aluminum.

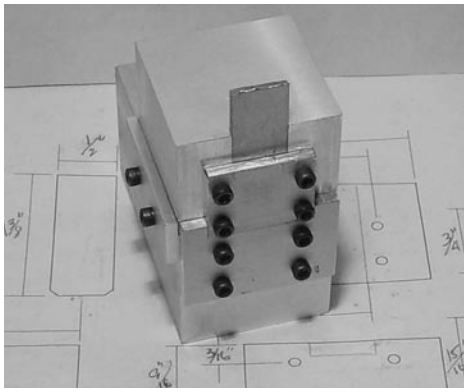
All of the aluminum pieces were rough cut, faced-off to size, marked-up with Dykem Blue layout marker and readied for laying out the drilling positions.

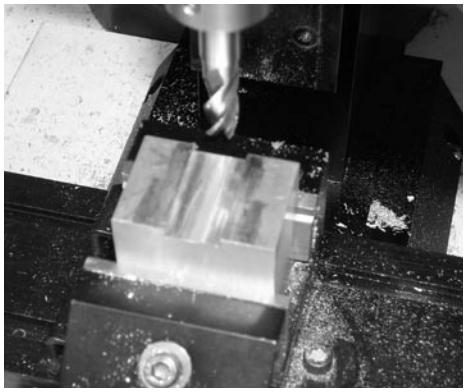




Tooling: *Louver-forming pieces were computer-assisted designed, left, and marked up with bluing, right.*







More louver: *Side-alignment stop, left; front-face alignment, center; slot milled for forming tool, right.*

Three copies of the steel tool were cut, so that I could experiment with different louver shapes and whether I'd use the tool strictly as a louver forming tool or to actually harden and sharpen the tool so that it would punch through the brass to cut the louvers.

The aluminum for the base/die is 1½-inch by 1½-inch by 2½-inch. It has a side alignment stop secured to the base/die by two 4-40 by 3/8 socket-head cap screws.

The die portion is for a single louver shape, one-half-inch long by 3/32-inch wide. The die is machined into the edge of the base piece at a 30-degree angle. It creates a louver that protrudes at a 30-degree angle from the flat hood surface. Because of the narrow width of each louver (3/32-inch) a work piece retainer (1¼-inch by 1½-inch) is secured with four, 4-40 by 3/8 socket-head cap screws across the face of the die to keep the formed brass in line with the front edge of the die.

It also aligns the front face of the base/die with the front face of the tool holder.

The tool holder is aluminum 1½-inch by 1½-inch by one-inch. It has a slot milled on its front face to match the width and depth of the actual forming tool.

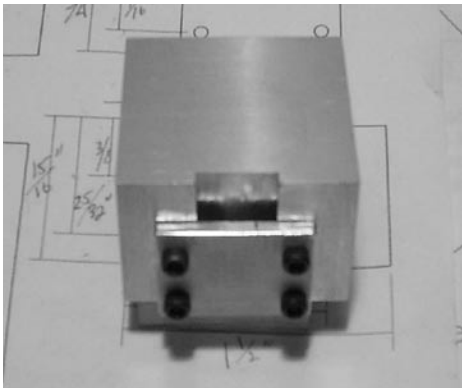
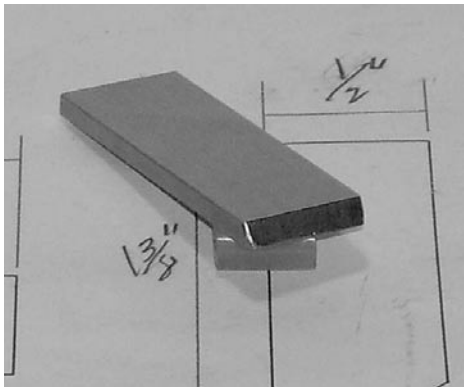
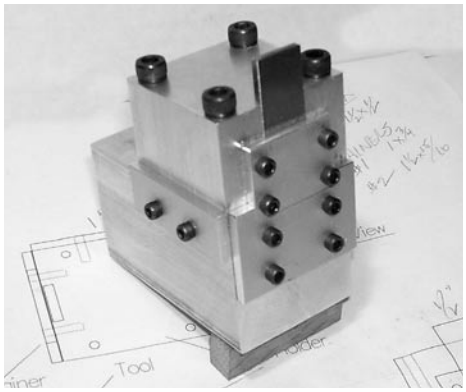
A one-inch by 1½-inch retainer bar is screwed across the front of the tool body's milled slot giving a repeatable movement of the tool against the die. Again, four 4-40 by 3/8 socket-head cap screws were used.

The one-half-inch wide by 3/32-inch thick steel tool itself is machined at a 30-degree angle on one end in addition to being ground at a compound angle at the top and bottom edges, yielding the shape of the louver and its edges. The die represents the outside shape of a louver while the tool is shaped to be the inside shape. Using a hammer to hit against the top of the tool, the brass work piece is formed into the shape of the die.

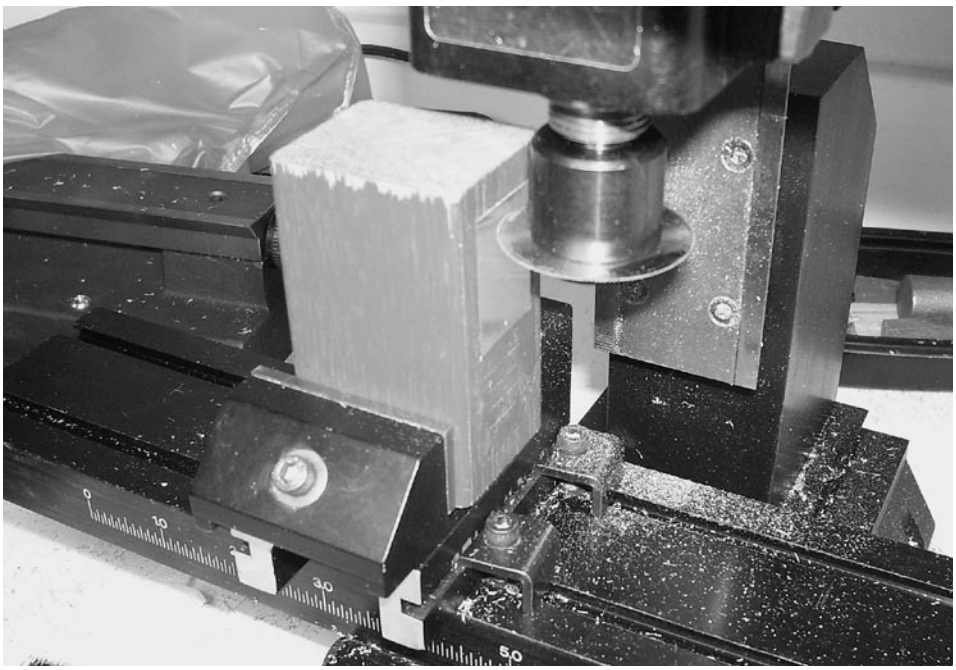
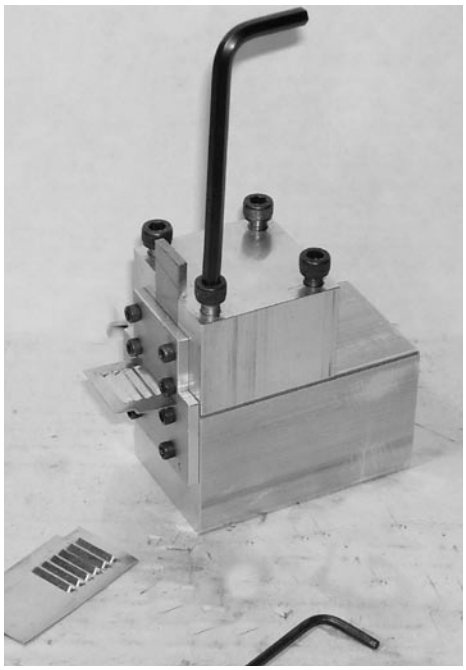
The tool holder's bottom face is secured to the base/die's top face by four, 10-32 by 1¼

Building a steam-powered Model-T rail truck: series concludes

Back in issues Nos. 111-112, we covered the project's inspiration and resource materials used, the steam components, the burner test, the general arrangement drawing, building the under carriage/frame and the insulation layer and cab/hood connector. In last issue, No. 116, we covered the building of the cab. In No. 113, the article mistakenly skipped over the main fabrication steps; in this issue, we complete what was started back in No. 113, the finishing touches. Taken as a whole, the articles in *Steam in the Garden* Nos. 111-113 and Nos. 116-117, cover all the steps of building the steam-powered Model-T rail truck.

Tooling, con't.: *Retainer bar, left; steel tool, center; completed forming tool, right.*

Making louvers: *The slitting saw, left, cuts the slots, while the tool forms the louvers, right.*

socket-head cap screws. The screws provide for firmly holding the work piece in place while forming a louver. Loosening the screws allows for advancing the work piece to the next louver position. I added a scribed reference line along the length of the base/die to facilitate side-to-side alignment of the work piece when advancing it to the next louver position.

After some experimentation with using the steel tool to punch through the brass work piece to form a louver, I decided the quality was not satisfactory.

The alternative was to precisely pre-cut slots in the work piece with my mill, using .015-inch thick brass test piece like the actual hood side pieces. I did a six-louver test to see how repeatable and uniform they would be.

I needed to cut six slots, one-half-inch long every .134-inch across the face of the test piece. To do this, I mounted my .012-inch thick by 1½-inch diameter slitting saw blade in my mill. I glued the test piece to a wood block with cyanoacrylate (CA), then mounted it in my mill's vise. To get the one-half-inch long slot, I laid out a one-half-inch long chord on the face of my slitting saw blade. The distance from the center of the chord to the edge of the blade was measured at .047-inch. Then by advancing the x-axis .047-inch the blade would cut into the brass and wood block, producing a one-half-inch long slot. Now I could advance the z-axis .134-inch to position the blade for the next slot, and so on.

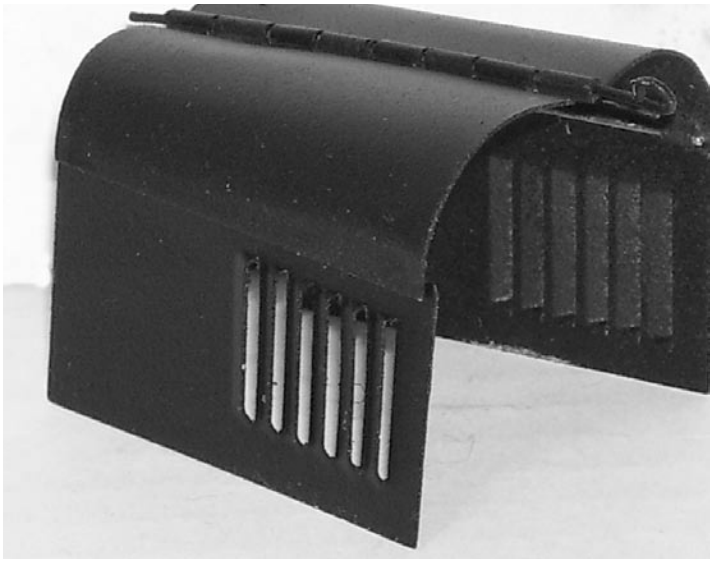
With the slots so accurately cut, by removing the tool retainer, aligning the tool with the next slot was very precise. After running the test piece through the forming tool process for each of the six louvers I got the following OK results.

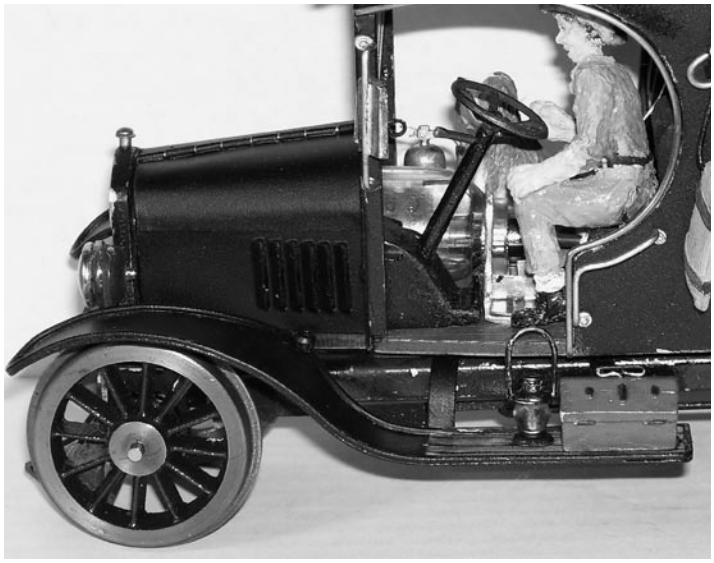
This produced an acceptable set of louvers, but I reduced the space between each louver from .134-inch to .118-inch (about 1/64-inch closer together). So I repeated the process for the real hood's side pieces.

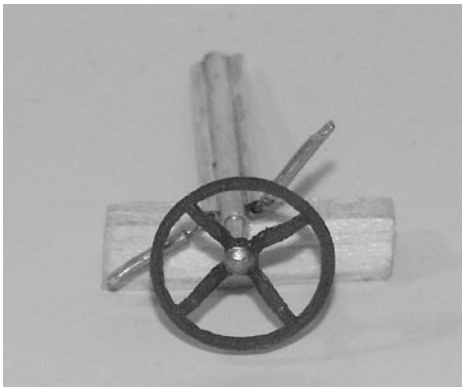
After cleaning up some sharp edges with a file I reassembled the hood.

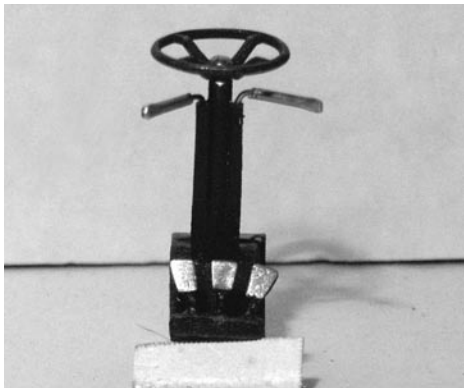
The cab interior

On top of the column is the steering wheel casting









Hood and interior: *Top left, the louvered hood is finished and painted. Top right, it's in place on the truck. Bottom left, the steering column is started, with the levers attached. Bottom right, the foot peddles are put onto the column piece.*

secured by an escutcheon pin and soldered to the inner brass column.

Using the next telescoping-size brass tube as the outer steering column, I slipped the inner column into place. On the outer steering column I added the two control levers — spark advance and idle — by soldering 1/16-inch square channel to each side.

A 1/16-inch diameter T-pin, bent to 90 degrees with an attached copper lever is slipped down the square channel.

The front portion of the brass floor board structure is canted at about 45 degrees and is only on the driver's side. I fashioned three pedals out of brass — a brake pedal, forward and reverse — representing the then-state of the art planetary transmission controls. The steering column is soldered into the floorboard structure, while the pedal assembly was JB Welded to the floorboard.

Since the butane tank is coming through the center of the cab, the seat and seat back needed to be a single piece. The passenger side does not have a seat and will be used as a place for a dog sculpture to sit. The seat and seat back is a piece of balsa wood carved to represent the shape of a seat cushion. An escutcheon pin has been inserted in the center to achieve that upholstered look. The seat and seat back is made to be one piece and is CA'd to the cab floor. Escutcheon pins attach the sculpted driver to the seat and the dog to the floorboard. I also converted a CO_2-type fire extinguisher casting to simulate an old carbon tetrachloride fire extinguisher like those available in the 1920s and mounted it in the passenger's side of the cab.

The exterior details

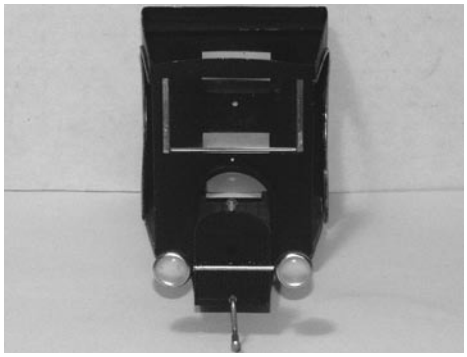
I made a muffler and exhaust pipe out of various sizes of brass tubing. I added a drive shaft and rear axle support rods, all attached to a wooden simulation of a transmission and Model-T's IC engine's lower end.

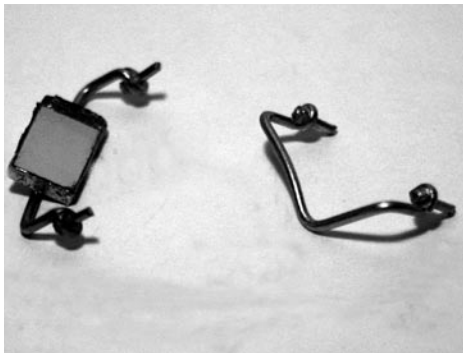
I painted a number of Ozark Miniature detail items — track tools, jacks, hammer, wrench, shovels, rake, pick, chains, bucket — and added them to the truck bed area and driver's side of the bed's stakes and rails. I made a water tank to supply the steam driven water transfer pump mounted on the passenger-side running board.

On the passenger side, I added the transfer pump's water hose and nozzle, hung from the bed's front rails ... all ready for track-side fire suppression.

The headlight castings were chemically blackened and enhanced by adding pearlescent snap buttons

Undercarriage: *The Model-T rail truck has details on the underside, including a muffler and muffler pipe.*





Outside details: *The headlights, left, made from pearlescent buttons; center, installed; right, rear view mirrors.*

as the light's lenses, then CA'd in place. The castings were attached to a 3/64-inch cross piece and CA'd in place on the radiator casting.

The rear-view mirrors are made from small glass squares obtained from a local craft store. I made a small copper container from adhesive-backed copper strip to fit around the mirror's back and edges. After fluxing the copper, I applied solder to secure it in place. Using a brass grab iron, I fashioned a mounting frame and soldered it to the mirror. Additionally, grab irons were used for the cab door hand rails.

An initial firing on the blocks

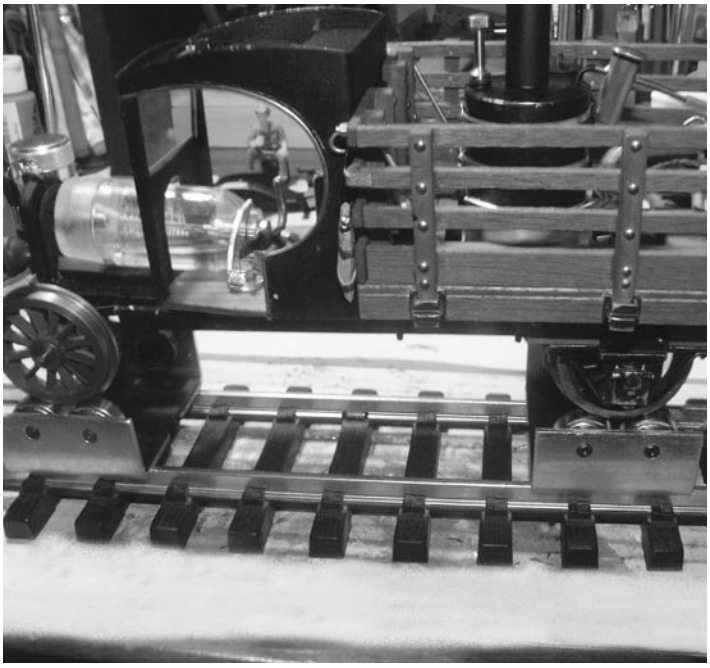
Along the way the urge to see something running became overwhelming. So when I got to the point that the steam components were installed I gave in and put what I had to the test. I filled the butane tank to just below its outlet tube (a little more than half with the tank mounted horizontal). I added the recommended 30ml of distilled water to the boiler. It took less than four minutes to get a good head of steam. I flicked the flywheel in the correct direction a few times and off it took. It sounded like a bumblebee. It ran for a full 15 minutes as advertised, but that was not under any load, so it might not get 15 minutes when on the track. The boiler cladding worked well; I was able to touch it with little discomfort. When the motor stopped running, the boiler still had 2ml of water, the lubricator was mostly empty, but only about half of the butane was consumed, so the water will have to be watched closely.

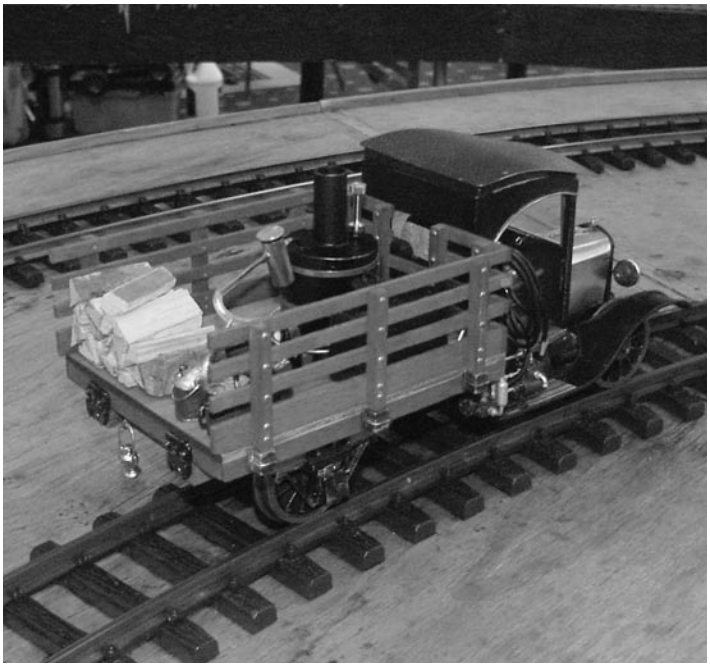
In the next test, I counted the drive wheel's revolutions per minute to calculate how fast it will travel down the track. The main drive wheels turned at 135 rpms. With a wheel diameter of 1.531-inch by 3.1416 that equaled 603-inch in one minute, or about 50 feet/minute. In 1:20.3 scale speed, that's about 11.8 mph.

All-in-all a successful test ... I was very pleased.

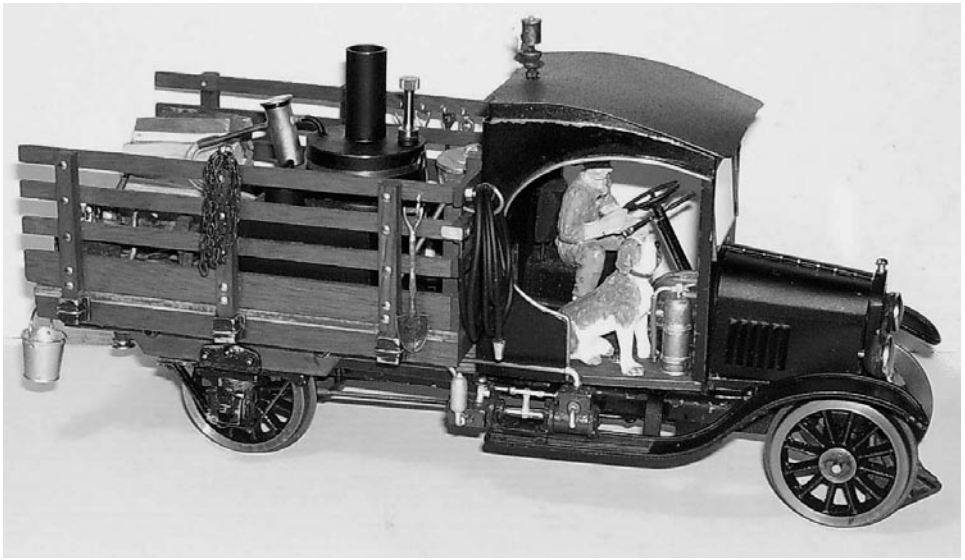
Multimedia

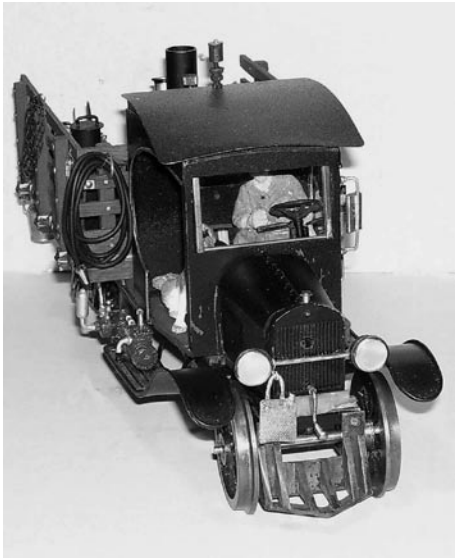
- **Video One:** http://www.youtube.com/watch?v=aMPQPdMkK1c
- **Video Two:** http://www.youtube.com/watch?v=2rgUee05ZCA
- **Rick Parker slide show:** http://rickparkerphoto.dotphoto.com/CPViewAlbum.asp?AID=5540816





Testing: *Left, the first run on blocks; right, a run at the National Summer Steamup in 2008.*





Finished project: *A close look at the truck's passenger side, left, and from the front, right.*

Run on rollers, track

Running the Model-T on the rollers yielded results similar to those seen when run up on blocks. The main differences were that the drive wheels were now attached to the drive axle with Permatex Thread Sealant, the steam motor had to overcome any resistance of the rollers and full weight of the rail truck was being exerted on the wheels. Flame shooting into the L-shaped flue could be seen on the front side of the boiler. Applying some manual resistance to the wheels rotation only slowed the RPMs down slightly, so I anticipated that it would indeed get around the track quite nicely. Next is the tryout on my track.

I got one run of the rail truck on the track one night, but we had some thunderstorms run though here with their accompanying downpours so I had to quit. The next day I made a couple of successful runs, with the rail truck running well: it took my track's slight grade better than my stock Ruby did initially. Overall, I was satisfied on how it ran.

First public outings

Earlier in the build cycle I had agreed to make a presentation on the building of rail truck at the National Summer Steamup in July 2008. This was the first time I attended NSS, so besides making the presentation I was like a "kid-in-the-candy-shop" ... so much to take in, so little time.

Well, that's it! A full and fun five months of model building, complete with a deadline to be ready to be used as the topic of a clinic in Sacramento.

The N&W Class J No. 611 electric-to-steam

Conversion

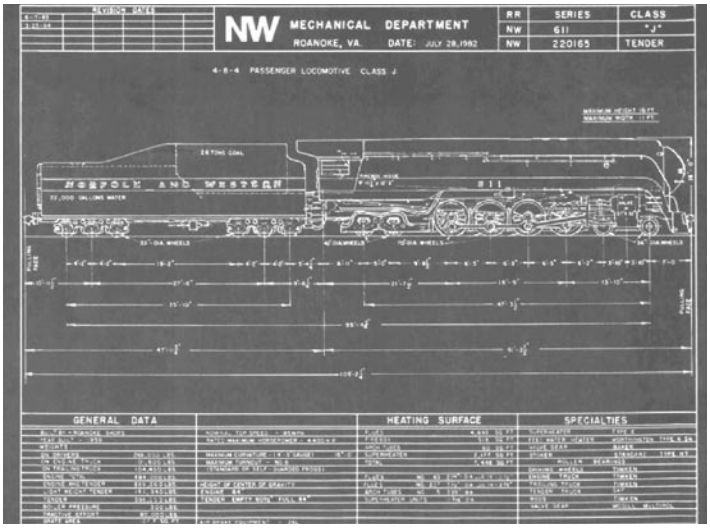
Text and photos by Charles & Ryan Bednarik

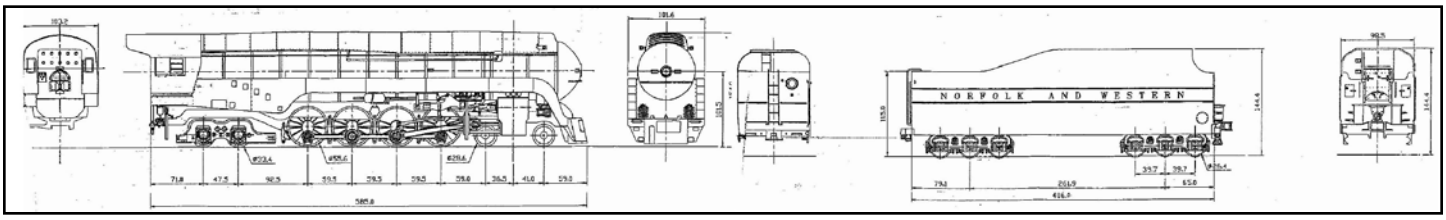
An article published by fellow hobbyists in the *Gauge One Model Railway Association Newsletter and Journal* in 2006, on how they converted an electric locomotive to live steam, inspired us that if we could find an existing electric Norfolk & Western Class J Gauge 1 model locomotive, we were confident that we could convert it. The search was on — with many opportunities slipping beyond our grasp. Finally, on eBay there was the earlier version of the South Korean-made Samhongsa Class J No. 600 for sale. When we reached the owner he indicated that model was sold, but he had another available, the last one in his collection. Thus the quest has begun to have a small-scale live steam representation of (arguably) one of the finest steam locomotives ever to grace the iron ribbons: N&W Class J No. 611 had arrived.

The Class Js were famed for their dual-service capability, pulling long freights and running passenger trains at 90 mph. Automatic lubrication at over 200 points and roller bearings everywhere (axles, main and side rods, valve gear, wrist pins) permitted 15,000-mile per month usage and 1½-year intervals between shop visits. The Class Js could be fully serviced in just about an hour. With this efficiency, this small group of locomotives could handle 80 percent of the N&W's passenger trains. They operated daily between Cincinnati and Norfolk, Va., pulling such trains as "The Powhatan Arrow," "The Pocahontas" and "The Cavalier."

The N&W Class Js were assigned the passenger service for the Pocahontas and Cavalier through Roanoke on their daily 680-mile runs between Norfolk and Cincinnati.

A second order of the Class J in 1943, built within





Different scales: *Top left, the blueprint for N&W Class J No. 611; top right, workers in the N&W Roanoke erecting shop work on No. 600. Bottom, the Samhongsa drawings for its model of No. 611. Top photos: Published with permission, Norfolk & Western Historical Photo Collection, Norfolk Southern Archives.*

World War II restrictions on locomotive construction, was designated for freight service until the end of the war.

After passenger service was changed to diesel-powered locomotives in 1958, the once-proud Class J was demoted to freight service. On Jan. 6, 1958, tests were conducted with a Class J pulling 198 empty hopper cars estimated at 4,950 tons. A second run with 53 loaded, 24 empties with a total weight of 4,818 tons was successful, averaging about 38 mph.

On Feb. 28, 1958, Class J No. 607 pulled 150 coal loads having 122,970 tons. The run was near four hours in service with a top speed of 40 mph. A Class J in freight service running the 100-mile Columbus, Ohio, to Portsmouth, Va., route for a two-hour trip that averaged 50 mph.

The relatively short, mountainous N&W routes, required the Class J to start and stop frequently with a five-10 car passenger train, while keeping to a strict schedule. Fast acceleration from 25- to 60-mph was not uncommon in order to handle sustained grades at track speed, and sprint to 90 mph or so when necessary. Several of the Class Js ran almost 3 million miles each before retirement.

In spite of having only a 70-inch driving wheel, the design safety limit of the rotational and reciprocating mechanism was more than 140 mph. Tractive effort of 80,000 pounds (without a booster truck) for the Class J was not matched by any other 4-8-4 in the United States.

This enabled Class J to start heavy trains unassisted on steep gradients, curves or both, and still safely run at 100 mph the few places that speed was permit-

The N&W Class J No. 611 series: electric-to-steam conversion

How do you get a live-steam model of a locomotive you've always loved? Charles and Ryan Bednarik — owners of Triple R Services of Mount Holly, N.J. (www.realsteamservices.com) — decided to convert a 1:32-scale, electric N&W Class J No. 611 to live steam. In this five-part series, they walk readers through their process of removing the electromechanical pieces and adding in the boiler and fittings.

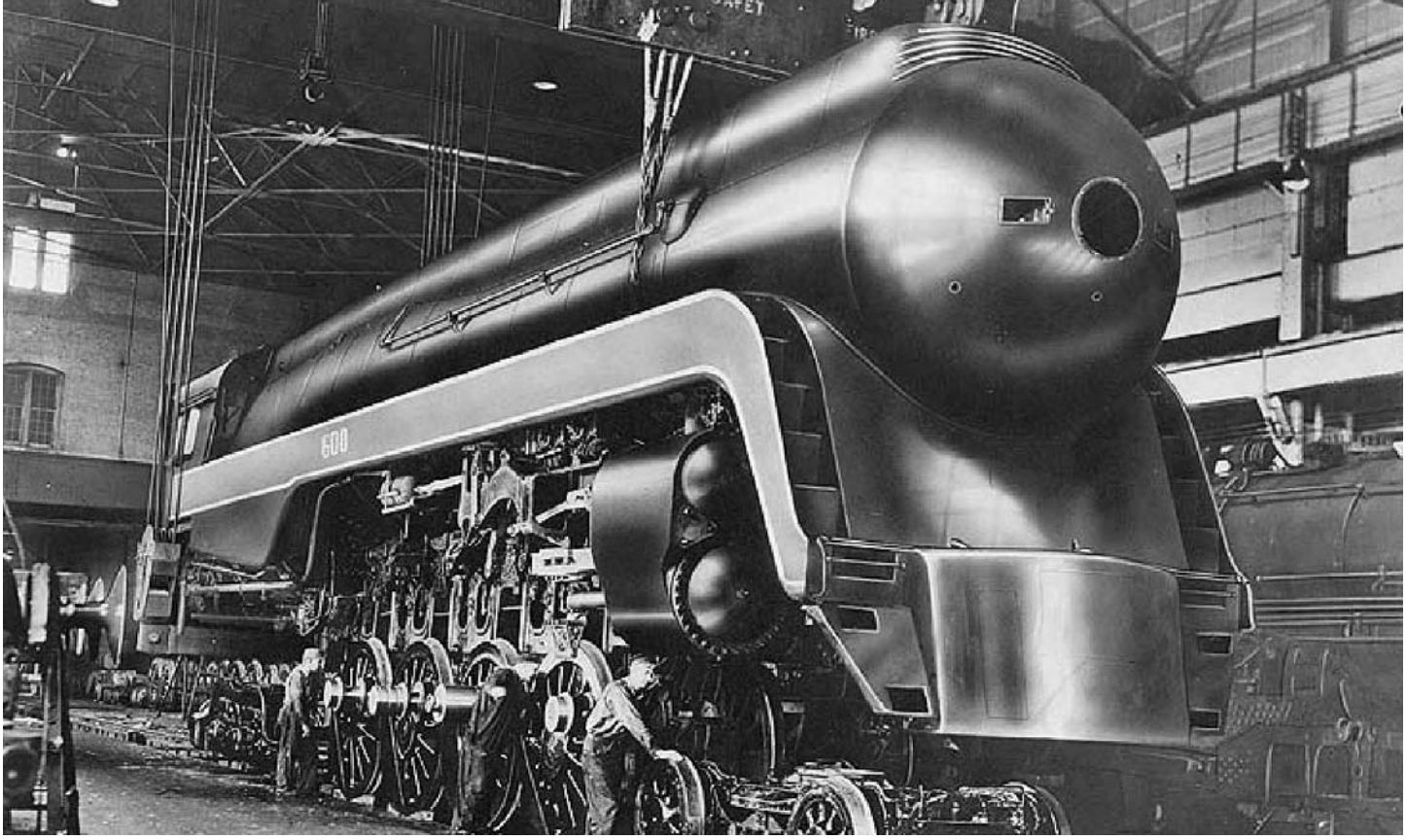
Part One: Background; general overview of conversion up to the finish of electrical removal.

Part Two: Overview of swap; focus on chassis, cylinder, suspension, running gear, tender mods and build expectations.

Part Three: Basic components — cylinders, steam lines, axle pump and running gear.

Part Four: Basic components — boiler, back head, exhaust and plumbing.

Part Five: It's alive — completed and running.



Body work: *In the Roanoke shops in 1946, a body is lowered onto a Class J chassis. Published with permission, Norfolk & Western Historical Photo Collection, Norfolk Southern Archives.*

ted. Performance in regular service was equally impressive, with speeds on straight sections of track reported to approach 100 mph.

Judging by their performance in hauling a 15-car 1,050-ton train at speeds in excess of 110 mph while on loan over Pennsylvania Railroad's "racetrack," the Fort Wayne Division, is a claim that is hard to match from any other Class One railroad of the 1950s.

Samhongsa
N&W 4-8-4 Class J performance

The locomotive will be able to track well on most of the layouts a hobbyist would encounter, with a minimum radius of 6.7 feet. Based on the original setup of the electrical output the locomotive, it should be able to achieve 85 scale mph with a full consist. With tractive effort estimated to be 12 pounds, performance expectations under steam are that the engine should compare with the Aster GS-4 (7.9 pounds) and Berkshire (10 pounds). The Class J will be able to pull 250 pounds of train at a constant 85 scale mph throughout a steaming session for standard-gauge live steam.

The performance would be ongoing with the large firebox and steam production over an hour-long run. The size of the firebox will be larger than the GS-4 and boiler will be only one-third smaller than the Aster Bigboy.

Using Martin Evans' factor of 30-times tractive effort, the N&W Class J should be capable of pulling 355 pounds under optimal conditions. Based on actual performance of GS-4 locomotives (Aster, Accucraft) pulling 250 pounds of train (18-car Accucraft Daylight set), the estimate for the converted N&W J is deemed to be fairly accurate.

Gauge One live-steam performance*

Locomotive	Tractive effort (est.)	Wheel diameter	Stroke	Bore diameter
N&W Class J	11.9 lbs.	2.18" (55.3mm)	0.94" (24mm)	0.59" (15.00mm)
NKP Berkshire	10.2 lbs.	2.08" (53.0mm)	0.94" (24mm)	0.59" (15.00mm)
SP GS-4 (Aster)	7.9 lbs.	2.44" (62.0mm)	0.86" (22mm)	0.59" (15.00mm)
SP GS-4 (Accucraft)	8.8 lbs.	2.44" (62.0mm)	0.86" (22mm)	0.62" (15.88mm)
PRR K4	5.4 lbs.	2.44" (62.0mm)	0.78" (20mm)	0.51" (13.00mm)
USRA Mikado	6.7 lbs.	1.96" (50.0mm)	0.78" (20mm)	0.51" (13.00mm)

*Estimates based on calculations from Martin Evans ("The Model Steam Locomotive," 1983).

N&W Class J locomotives

Profile, in-service Class J Locomotive Base ID271:

- **Railroad:** Norfolk & Western.
- **Whyte classification:** 4-8-4.
- **Road numbers:** 600-613.
- **Gauge:** Standard (4-foot, 8½-inches).
- **Builder:** N&W (1943-1950).
- **Wheel arrangement:** 4-8-4.
- **Engine weight:** 494,000 pounds.
- **Tender weight:** 378,600 pounds.
- **Total weight:** 872,600 pounds.
- **Valve gear:** Baker.
- **Driver diameter:** 70-inches.
- **Overall wheelbase** (engine & tender): 95.40 feet.
- **Tender water capacity:** 22,000 gals.
- **Tender fuel capacity (coal):** 26 tons.
- **Weight on drivers:** 288,000 pounds.
- **Cylinder, bore x stroke:** 27-inches by 32-inches.
- **Boiler pressure:** 300 psi.
- **Tractive effort:** 77,899 pounds.
- **Adhesion factor** (weight on drivers/ tractive effort): three.

Samhongsa model

The N&W Class J No. 611 build dimensions:

- **Length:** 23 inches.
- **Width:** Four inches.
- **Height:** Six inches.
- **Weight:** 19.8 pounds.

N&W Class J frame and body construction in service

The Class J was built on a rigid steel frame cast by General Steel Castings Corp. This large one-piece casting included not only the complete locomotive frame, but the two cylinders, the mounting brackets for certain auxiliaries and an extended frame support for the cab. Air compressors were mounted on the pilot beam area in front of the boiler. Hollow sections cast integral with the frame were designed to serve as reservoirs for compressed air used to operate the air brakes and signaling devices.

The performance of the Class Js was because of the use of Timken lightweight compound rods and dynamic augment to cross counterbalance the locomotive. A unique side-rod and driver counterbalancing design, in conjunction with stiffened centering of the leading and trailing trucks, permitted speeds in excess of 100 mph with drivers only 70 inches in diameter, performance unequaled by other Class One U.S. railroads.

According to vibration calculations, the balancing theoretically would have allowed speeds of up to 140 mph without the rail damage that would have occurred with conventional designs. The piston, piston rod, crosshead, side-and-main-rod assembly are of Timken Roller Bearing Co. light-weight design. The N&W engineers incorporated needle, roller and tapered roller bearings throughout to reduce friction and wear.

Mechanical pressurized lubrication systems could operate 1,300 miles between refills, feeding oil to 220 points. Grease fittings were located to allow fast lubrication of 72 points. Eleven of the Class Js operated a total of more than 5 million miles with only two roller-bearing failures.

Developing components for the Samhongsa model conversion

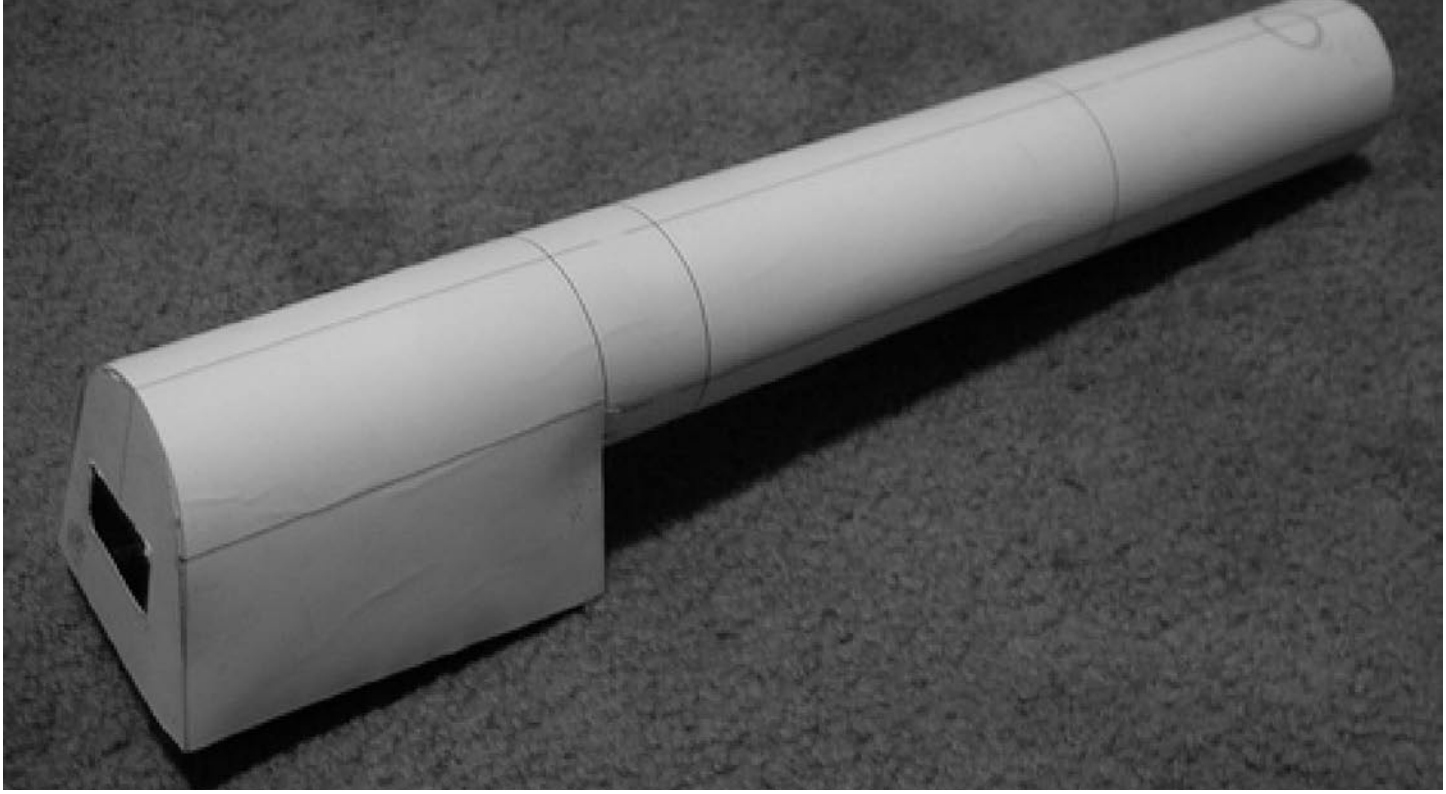
In order to retrofit the major component to a platform that originally designed for electric — and at the same time keeping many of the production components — was going to require inside access to the model structure. Some of the areas to examine closely would be the boiler shell, cab, cylinder casting, drivers, frame, running gears and trailing truck. Each major area would have to be developed to retrofit components such as the boiler, axle pump, cylinders, running gear, fire grate/ash pan, water tank and steam appliances. This resulted in a list of things to do along with how to get it done. It would also require resources and references for materials, supplies, third-party services and build time. Our original schedule was developed for initial completion in fourth quarter of 2011.

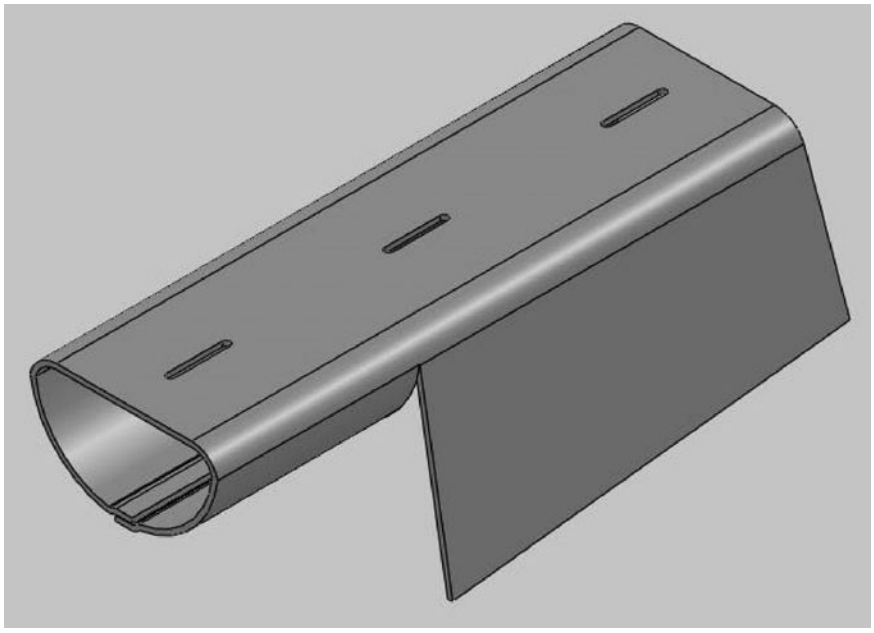
At this point, having a prototype boiler and cylinder design, the project seems to be on target. The two key components are the boiler and cylinders. Presently we have the outer portion of the boiler that has been successfully test fitted. The cylinder drawings for this first retrofit will be a “D” valve, but plans are to later convert to piston valves, remaining true to prototype of the real Class J. The cost and time factor of developing the casting and technique of building the cylinder set as in the “old days” was not going to be timely for the project.

N&W Class J boiler in service

The N&W J boiler — along with the cylinders, combined with the size of the drivers — were key to its success during service.

The riveted boiler was built to be unusually large in diameter without exceeding the clearance and height limits of Eastern railways. The Class J had the longest combustion chamber of any 4-8-4 and the largest fire-





Computer-assisted design: *Our friend and colleague, Justin Koch, designed the boiler and firebox for the 1:32-scale N&W Class J. He first did concept drawings in a CAD program and then, later, used the software to create three-dimensional drawings of the boiler, above, and the firebox, right.*

box on any of bituminous coal-burning Eastern 4-8-4s:

- Direct heating surface: 578 sq. ft.
- Indirect heating surface: 4,693 sq. ft.
- Total evap. htg. surface: 5,271 sq. ft.
- Firebox htg. surface: Five arch tubes; 60 sq. ft.
- Combined htg. surface: 7448 sq. ft
- Evap. htg. surface/cyl. vol: 248.56 sq. ft.
- Superheating surface: 2,177 sq. ft.
- Grate area: 107.7 sq. ft.

Samhongsa specifications for boiler

The boiler shell will be a one-piece unit from the smokebox (the cab floor and backhead were soldered to boiler shell) to the footplate. To explore the interior of the boiler shell required removing the nose cone, a simple press fit, followed by dropping the pilot truck and a large allen screw removed. The cab had to be removed along with the scale backhead to open the other end of the boiler shell.

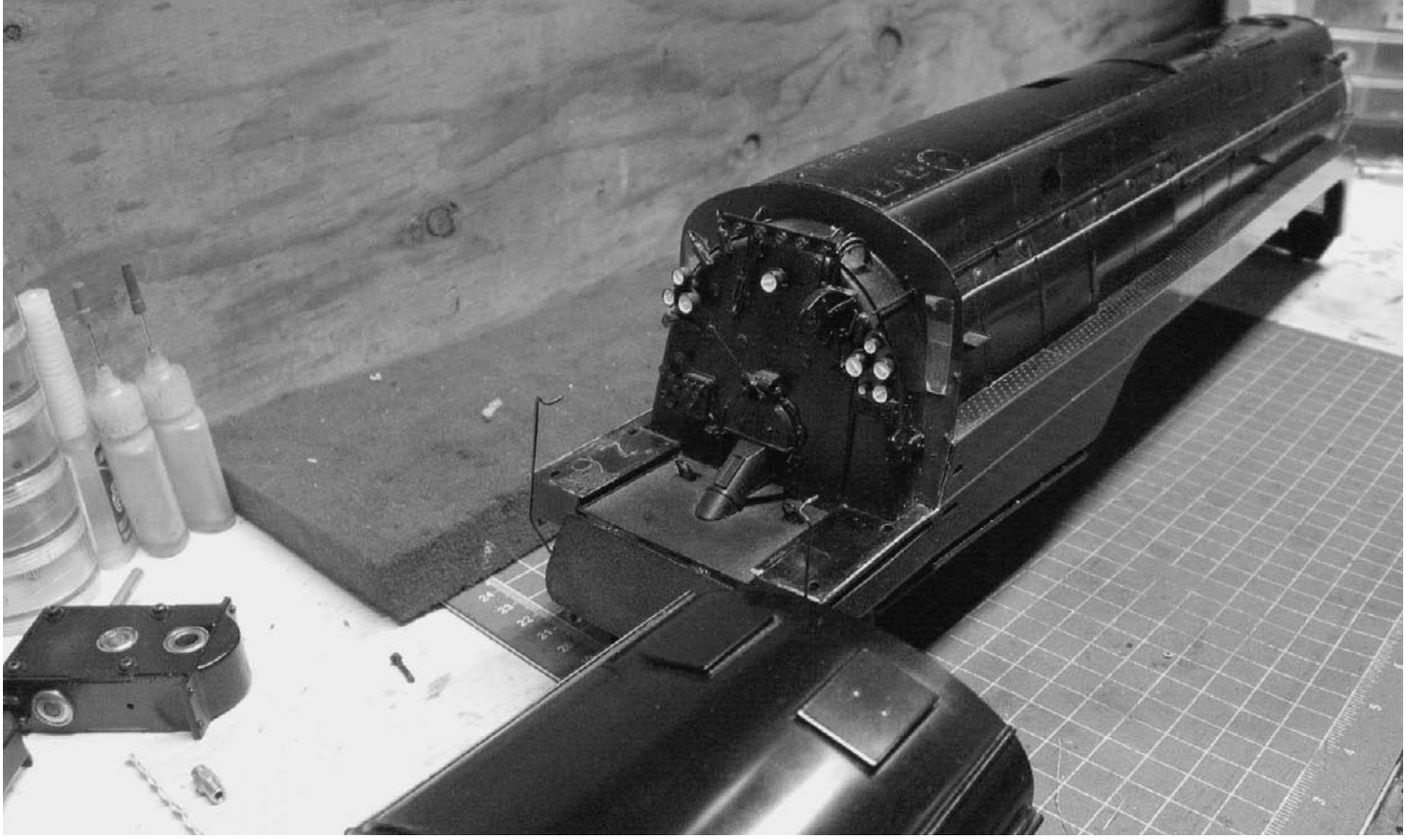
Boiler shell overall:

- Length: 18⅞ inches.
- Width (cab): 4⅛ inches.
- Diameter (smokebox): Three inches.
- Stack diameter: One inch.

Firebox:

- Length: 4¾ inches.
- Width: Four inches.
- Depth: Four inches.

The boiler's total dimensions (in general one can compare to the Accucraft Cab Forward for a size per-



Bench work: *The Samhongsa Class J sits partially deconstructed on the workbench.*

spective) and efficiency makes it a candidate not only for burning Welsh coal, but any good anthracite coal. Finally, the boiler fuel set up will allow for either coal-burning or alcohol. The over-all length of the firebox and boiler combined is 500mm (~19¾ inches).

Firebox:

- 130mm long by 89mm wide by 84mm high, sloping to 93mm high (5.1 inches by 3½ inches by 3.3 inches, sloping to 3.6 inches).
- 1mm (.04 inches) thick side walls/front.
- Combustion chamber: 35mm (1.4 inches) long.

Boiler:

- 70mm (2¾ inches) outside diameter.
- 338mm (13.3 inches) length

The smokebox will be 54mm (2.1 inches) in length. The boiler will have a water tube area 249mm long (seven tubes; one of them three-quarters of an inch, while the other six will be three-eights of an inch) and the mudring will be 12mm wide by 3mm thick (about a half-inch wide by .1-inch thick). The smoke-stack will have a 21.5mm (almost three-quarters inch) outside diameter tube.

The N&W Class J tender in service carried 35 tons of coal and 20,000 gallons of water. Stops were frequent enough to avoid the need of service-only stops. Plugs and chutes were provided at regular stops. If there were unexpected delays, a Class J could fuel or water at any of many on-line service points provided for freight use.

The Samhongsa N&W Class J No. 611 tender specifications:

- Length: 16 inches.
- Width: 3.9 inches.
- Height: 5.68 inches.
- Weight: 8.8 pounds, dry.
- Wheel diameter: 1.03 inches (26.4mm).
- Water capacity: 800 ml, 1800 ml combined with auxiliary water tank (27 ounces and 60.9 ounces, respectively).
- Coal capacity: Two pounds.

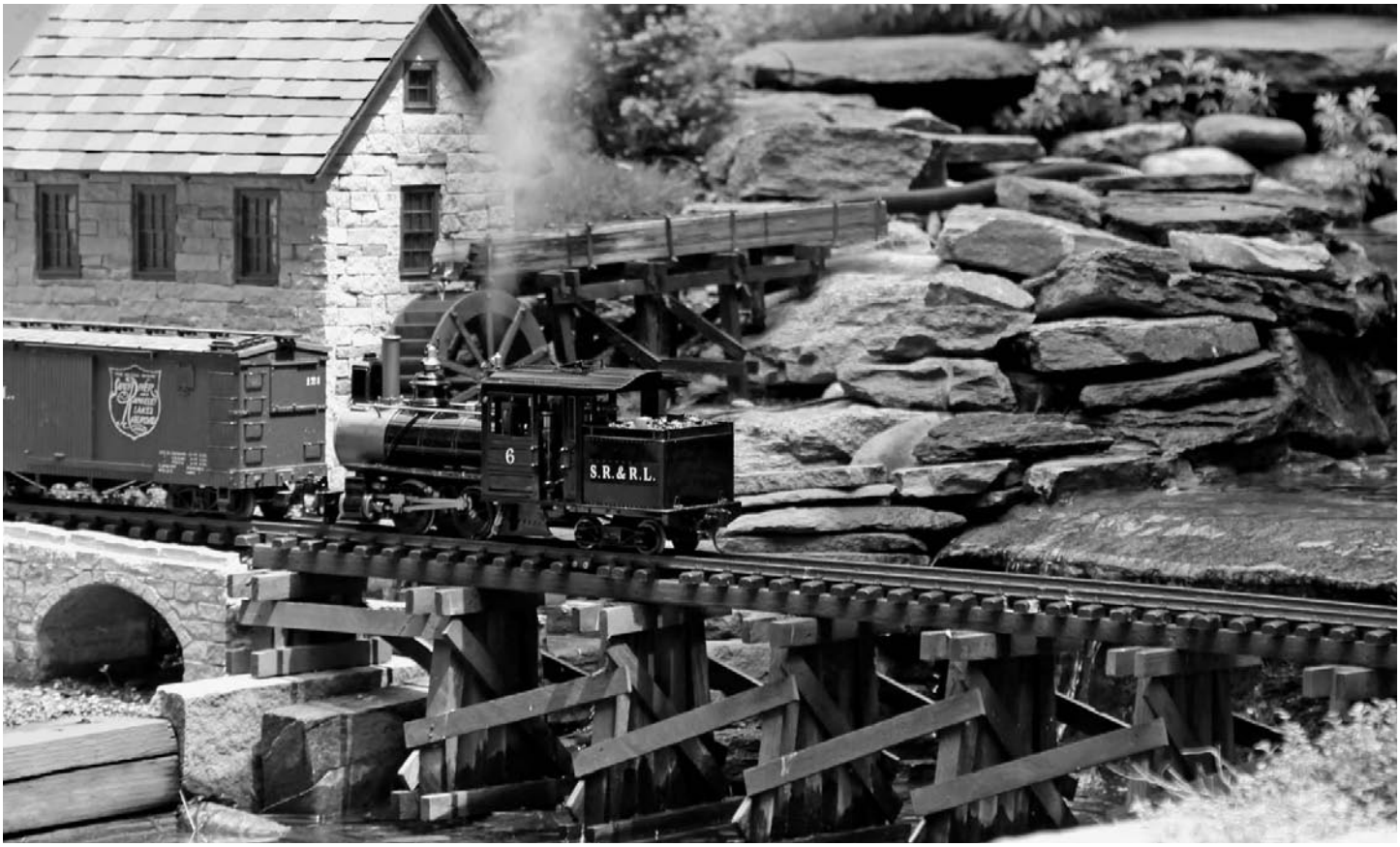
While the engineering of this conversion is exciting, we found that the research into the actual workings of the prototype N&W Class J locomotives to be almost as compelling. Next time we will concentrate on getting the cylinders and valve chests to fit on the frame as well as remaining close to scale in size or appearance.

THE STEAM SCENE

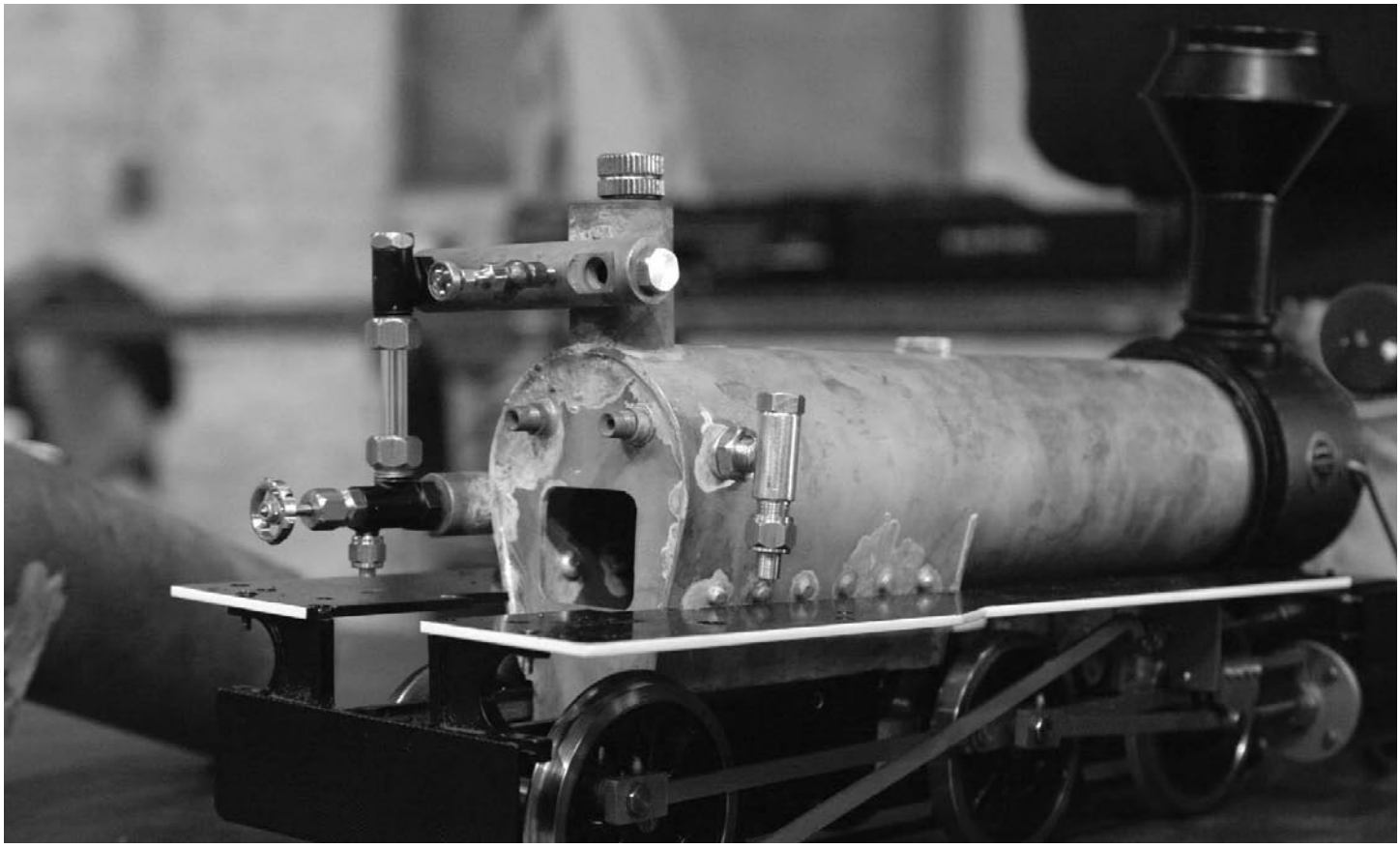
Cape Cod: *Father's Day at Doug Hill's railroad in Brewster, Mass., saw Mike Wells' Brandbright GWR 14xx Autotank and its autocoach cross the trestle, above.*

Cape Cod: *The Hill railroad's steamup bay saw lots of action at the Second Annual Father's Day Steamup.*

Cape Cod: *Plenty of Accucraft Southern Pacific locomotives at the Father's Day Steamup; with S-14 1285 in the top right and bottom left pictures and an S-12 middle right. All photos on this page by Reneé Berry.*



Down by the old mill stream: *Jim Coplan's Roundhouse Forney does some shunting on his Ardmore, Pa. railroad; that's a scratch-built mill in the background (using Stoneworks' methods). Photo by Jim Coplan.*



Boilers by Justin: *Justin Koch's prototype boiler to convert an Accucraft Mogul to coal firing, as seen at the East Coast Large Scale Train Show in April. Photo by Charles Bednarik, Triple R Services.*

THE CUPOLA VIEW

Promoting live steam — and *SitG*

Kent Killam — who calls himself the "minister of propaganda" at the Satucket Creek & Millshire Railway and the shop foreman of the Millshire Locomotive Works & Dining Carriage Service — is one busy small-scale live steamer.

He and Doug Hill have in the last two years basically created a live steam group in Southern Massachusetts and the Cape Cod area from scratch. Their Second Annual Father's Day Weekend Steamup at Doug's Satucket Creek & Millshire operation last June drew a healthy crowd (see "Steam Scene" on Pages 46-47) and Kent is now using that participation as a launching pad for — if not a club — at least a database of area live steamers who might gather at infrequent intervals to at least chat about Gauge One locomotives and rolling stock, if not actually operate them.

But if that weren't enough, Kent used the facilities of the MyLargeScaleOnline.com web forums to not only further promote small-scale live steam, but also to promote our own *Steam in the Garden*. He issued a challenge:

"I will be ordering a subscription to *SitG* for my local library," he wrote. "To me it was a brilliant idea, and I'm sure I didn't think of it before someone else, so I'll be adding to the existing list. Any others?"

While we didn't get as many takers — or at least takers who wished to be publicly acknowledged — as either Kent or I had hoped, the idea seems to have nonetheless gained a bit of traction.

Disturbing to me, though, was at least one private correspondence I received, wherein the writer complained that no only did his local librarian decline his offer to send a free, gift subscription to *SitG*, but she was also very rude about it.

I think I can understand the declining of the gift, but the rudeness makes me mad.

Another idea, posted by our favorite Shay locomotive expert, Dan Rowe, was to send gift subscriptions to *Steam in the Garden* to school libraries.

"I have been sending *Live Steam* to the United States Merchant Marine Academy for over 25 years now. When I started to write about Shay locomotives in *SitG,* I added a subscription to USMMA also," Rowe wrote.

"When I was a cadet there I was always looking forward to reading *Model Engineer*, so hopefully several engineering cadets are learning about the fun side of engineering." Great idea, Dan.

So, check with your local public library or a school library (perhaps your *alma mater*; maybe just a local school) and see if they would like a gift subscription to *SitG*. Then, you can visit the web site at http://www.steamup.com/ and use a credit card to make the gift.

•

The resurrection of "Steam Scene" this issue is

'Cupola View' is written by Dave Cole; you can contact him at dmcole@steamup.com or P.O. Box 719, Pacifica, Calif. 94044-0719.

not a reaction to a complaint we received recently, but does give *entrée* to again attempting to explain the economics of not only magazine publishing, but of the live-steam hobby as well.

"Why are you wasting that space on the 'I Pledge' campaign" — I'm paraphrasing here — "you should use it for 'Steam Scene' or something else."

When the members of Steam in the Garden LLC came together in January, we all agreed on one thing: the small-scale live steam hobby is an ecosystem in which the magazine is an important part.

Readers of the magazine become excited about the hobby and they buy products from the advertisers; the advertisers make more money by selling more, so they advertise more, which in turns allows the magazine to print more pages, making the readers more excited and they buy more.

This loop only works, though, if the advertisers understand that the readers buy their products because the advertisers appear in the magazine. Right now, there is a disconnect in the loop.

You buy the locomotive or the freight car but you don't say, "I'm doing business with you because you support the hobby by advertising in *Steam in the Garden*."

Without that sentence, the advertiser thinks that you appeared on their purchasing doorstep by magic and then they stop advertising in the magazine. Which means we print fewer pages and then you're less excited, which means you buy less. The loop works just as well in reverse as it does going forward.

Even with all the hoopla and goodwill of the new management and redesign of the magazine, in our four short issues we have still lost advertisers, because, they say, *"Advertising in your magazine doesn't work."*

(That said, the offices of Ad Manager Sonny Wizelman continue to increase the number of advertisers and the total amount of advertising. Hosannas and huzzahs all around.)

As soon as we stop getting that complaint, we'll stop running the "I Pledge" campaign.

●

Lastly, the web site: what can I say? Starting a new web site from scratch, using the latest in content management systems with sophisticated membership extensions, video, audio, online subscription maintenance, back-issue ordering, a digital "Swap Shop," an interactive "Timetable" and stories and pictures has turned out to be a much more complex project that I had originally thought.

In many ways, it reminds me of building my backyard railroad: I was confident I could build it in six months; it took 18.

Similarly, I had thought that I would have the magazine's web site wrapped up in a month or so ... we're now running at three times that and I'm still weeks away from opening it up to the public.

Hence, a few weeks back, I took a few hours away from the really sophisticated site and built a really simple site: it allows you to order a subscription via PayPal, a crude way to renew a subscription and some contact information.

Better than nothing, which is what we'd had before. I should have realized the scope of the project I'd undertaken and installed the, ahem, "temporary" site earlier. You can visit it at http://www.steamup.com/ (the new site will be at that address too ... whenever I finish it).

Or, like my backyard railway, whenever it's done enough to have you over to see it.

TIMETABLE

Aug. 5-7, 2011 — Finger Lakes Live Steamers Invitational Live Steam Meet, Marengo, N.Y. Inaugural event for new elevated Gauge One track, adding to existing ground-level layout. Also, visitors will be able to ride the 1½-inch and one-inch scale trains. Motel and other info: http://www.FingerLakesLiveSteamers.org/.

Aug. 6-7, 2011 — Huckleberry Railfans' Weekend, Flint, Mich. Michigan Small-Scale Live Steamers set up three portable tracks (one dual-gauged) at the Huckleberry Railroad, which includes after-hours ride on full-scale live steam train for small-scale steamers, as well as steam-powered saw mill, cider mill and many other attractions. Info: http://www.mssls.info/.

Sept. 2-4, 2011 — Pennsylvania Live Steamers Annual Fall Meet, Rahns, Pa. Grounds include Gauge One up to 7½-inch gauge. Gauge One track is a ground/elevated combination with two mainline tracks and sidings. Additional portable elevated track will also be available. Info: http://www.palivesteamers.org/.

Sept. 3-6, 2011 — Narrow Gauge Convention Presteamup, Easley, S.C. Bruce Gathman hosts a "narrow-gauge live-steam only" steamup, 9 a.m. to dusk. Steaming supplies and narrow-gauge cars available to steamers flying to event and locomotive available. RSVP: (864) 850-3642 or shaygearhead@bellsouth.net.

Sept. 7-10, 2011 — 31st National Narrow Gauge Convention, Hickory, N.C. Info: http://www.tarheelpress.com/ngc/.

Sept. 22-25, 2011 — Staver Locomotive Fall Steamup, Portland, Ore. Info: (503) 222-3223 or visit http://www.staverlocomotive.com/.

Sept. 23-25, 2011 — Tenth Annual Marty Cozad Steamup in Nebraska City, Neb. New elevated, dual line live-steam track with turntable. Battery-powered folk are welcome also to run on 3500-foot dual line, ground-level track. Info: juking@atcjet.net.

Oct. 28-29, 2011 — Steamup at the Greater Baton Rouge Model Railroad Club, Jackson, La. Info: Ted Powell, (225) 654-3615, powell876@hotmail.com.

Jan. 15-22, 2012 — International Small Scale Steamup and Arts Festival, Diamondhead Resort, Diamondhead, Miss. Called "the most important small-scale event in the U.S.," Diamondhead includes 24-hour steaming, a "flea market," seminars, dealer room, festive meal and extracurricular activities. Info: jreshew@mindspring.com; http://www.diamondhead.org/.

Regularly scheduled events

Puget Sound Garden Railway Society. Two steamups per month, one at the Georgetown Powerplant in Seattle on the second Saturday and a steamup at a member's track on the fourth Saturday. Info: http://psgrs.org/livesteamtimetable.html.

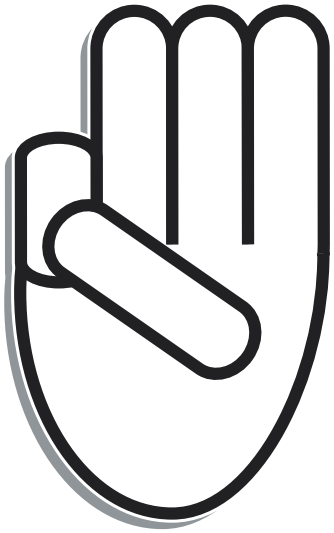
Pacific Coast Live Steamers. Irregularly scheduled backyard steamups, mostly in Northern California. Info: http://www.p-c-l-s.org/.

Michigan Small Scale Live Steamers (MSSLS) hosts a large number of steamups. Info: http://www.mssls.info/.

Southern California Steamers: Contact Sonny Wizleman for dates, places and other pertinent information. (310) 558-4872. sonnyw04@ca.rr.com.

Greater Baton Rouge Model Railroad Club Open House and Gauge One Steamup. Info: Ted Powell, (225) 236-2718 (cell), (225) 654-3615 (home), powell876@hotmail.com.

Advertiser index



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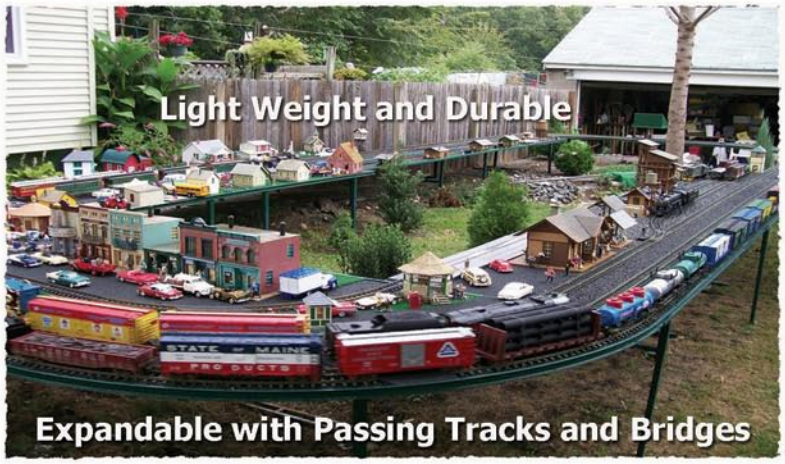

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If your passion demands 1/32 scale live steam models of highest precision, aesthetic presentation and prototypical functionality, look no further than Aster. All locomotives are designed and manufactured by Aster Hobby Co. Inc. of Yokohama, Japan.

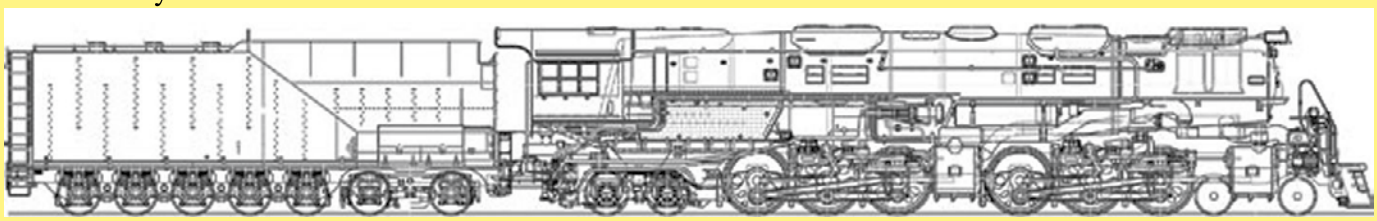
New Release for late May 2011
Krauss Tank / Iyo Railway

Built by Krauss Locomotive Works Munich, Germany, in 1888, several of these narrow-gauge locomotives were exported to the Iyo Forestry Railway in Japan. Aster has faithfully modeled this little machine in 1/20.3 scale and equipped it with all the armatures found in any large standard-gauge model. A black version is also available. For additional pictures and information, visit our web site. Please call for pricing.

Now under development for January 2012 release
Union Pacific Challenger

We are commissioning the UP Challenger as the next U.S. prototype locomotive. This best known and largest operational steam locomotive in the World will surely be a jewel in any Gauge One 1/32 scale live steam collection. There is still time left to make your reservation!

The engine will feature a C-type alcohol fired boiler and all the modern functional appliances common to the latest Aster designs. UP Challenger #3985 will be modeled after the original locomotive, as preserved in Cheyenne, WY.



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B-Type Shay

This latest Aster locomotive is modeled after a Lima-built, 28-ton, two-truck Shay operated by the Japanese Forestry Railways. The locomotive features 3 cylinders with D-slide valves and fully functional Stephenson valve gear. Other features are butane firing, water-gauge glass, pressure gauge, ratchet-type Johnson bar, twin safety valves, tender hand pump, an axle feedwater pump with bypass valve driven from the first rear truck axle and a butane gas line adapter installed on the rear coupler beam for use with the Aster utility car. Please check our website for more information.

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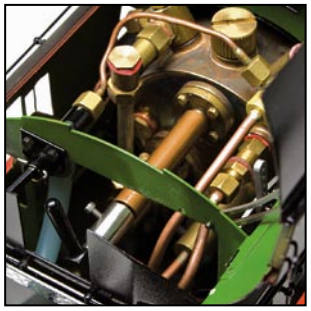

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