No. 143, January/February 2016 $5.95

STEAM IN THE GARDEN

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GAUGE ONE MICRO LAYOUT

- Latest 'Dora' mod: Steam tram, Part 3
- Review: Wuhu Bowande's new 0-4-0 Porter
- Modifying 'Ruby' to make it a hot-rod engine
- Adding radio control to two Aster locomotives

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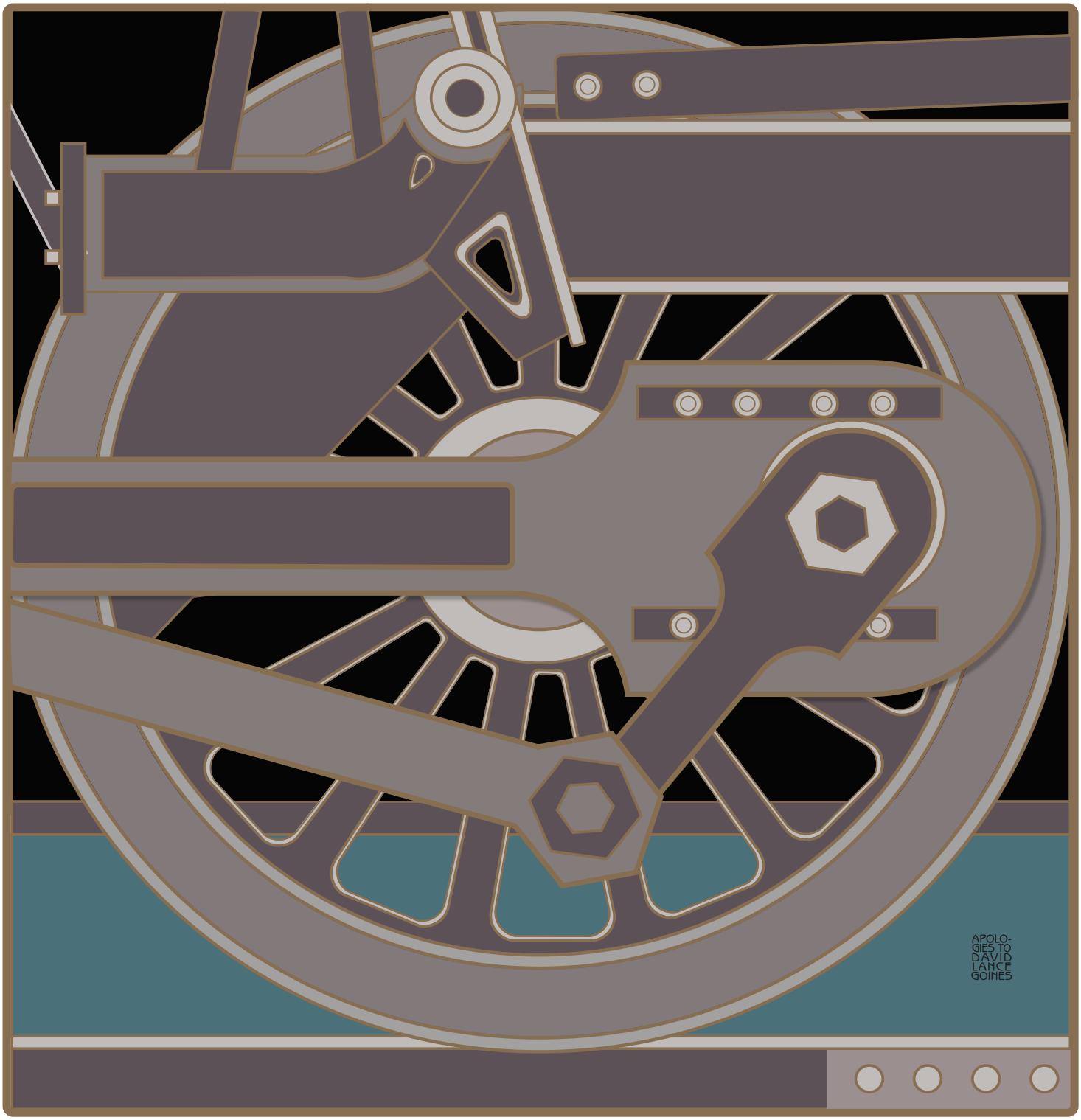

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The model will be 1:32 scale, Gauge One (45mm), butane fired with a ceramic burner, bypass valve, Walschaerts valve gear, hand pump, axle pump, working whistle. Limited to 50 sets worldwide.

GERMAN BR41 — TWO VERSIONS

Big deflector (right) or small deflector (left). 2-8-2 locomotive, 1:32-scale, Gauge 1 (45mm), butane fired, ceramic burner. With R/C or R/C-ready. Walschaert valve gear; fully sprung axles, sprung buffers. 29½-inches long, 5½-inches tall, 3¾-inches wide (750mm x 142mm x 97mm). British pressure gauge, water gauge, working whistle.

China's 'Big Boy' — steam model 'QianJin'

Limited to 50 sets released worldwide — accepting reservations

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Vol. 26, No. 1; Issue No. 143; January/February 2016

STEAM IN THE GARDEN

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

Cover: A 'Cricket' locomotive prepares to move off the saw mill siding on Shawn Viggiano's micro layout. Photo by Shawn Viggiano.

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POSTMASTER: Send Form 3579 to *Steam in the Garden*, P.O. Box 335, Newark Valley, N.Y. 13811-0335.

Subscriptions for the United States, Canada or overseas should be mailed to *Steam in the Garden*, P.O. Box 335, Newark Valley, N.Y. 13811-0335. Phone, fax and e-mail subscriptions are gladly accepted and we take VISA, Discover and MasterCard. PayPal payments are also available. Phone: (607) 642-8119; fax: (253) 323-2125.

Hobby retailers: Contact Kalmbach Publishing Co. at (800) 588-1544, ext. 818, if you wish to stock *Steam in the Garden* in your store.

Steam in the Garden LLC
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Dan Pantages, **President** — Howard Freed, **Secretary/Treasurer**

Marie Brown, Dave Cole, Scott McDonald, Paul Scheasley, Sonny Wizelman

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Los Angeles, Calif. 90064-4330 USA

Circulation: P.O. Box 335
Newark Valley, N.Y. 13811-0335.

Steam in the Garden (USPS 011-885, ISSN 1078-859X) is published bimonthly for $35 (Canada: $US42; Overseas: $US72) per year (six issues) by *Steam in the Garden* LLC, P.O. Box 335, Newark Valley, N.Y. 13811-0335. New subscriptions, please allow six-eight weeks for delivery. Periodical postage paid at Newark Valley, N.Y., and additional mailing offices. Printed in the U.S.A.

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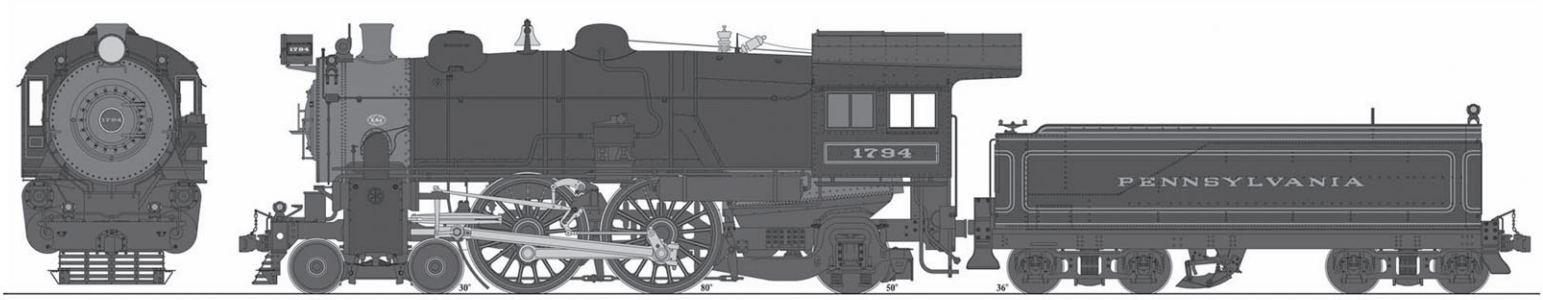

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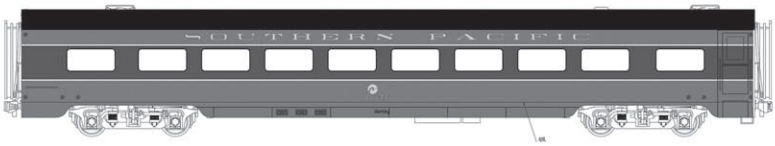

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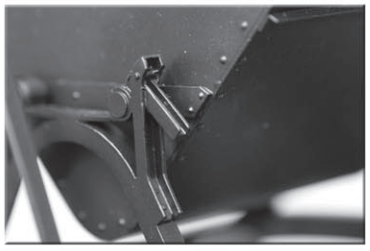

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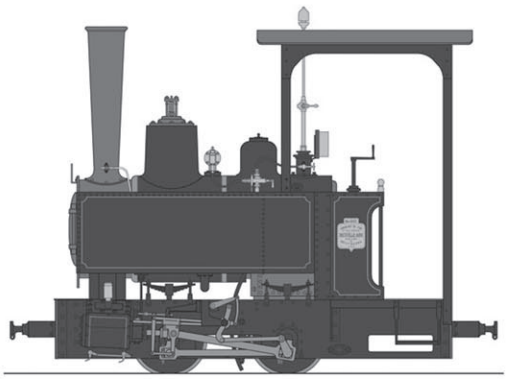

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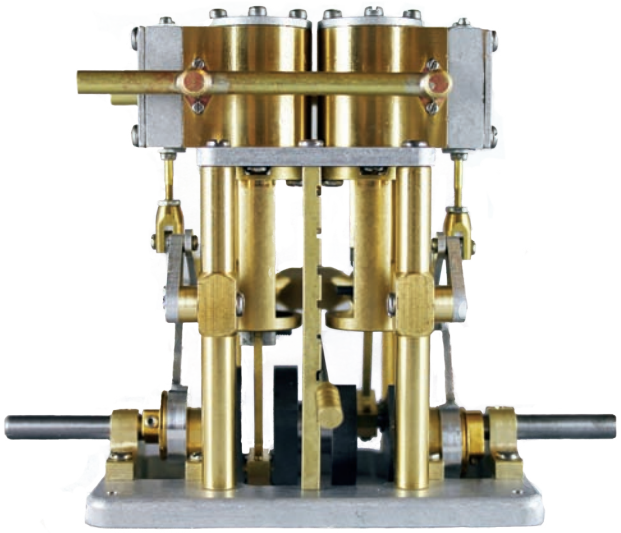

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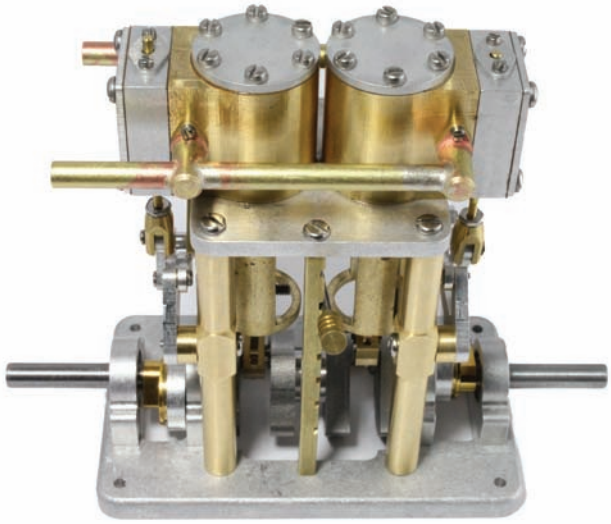

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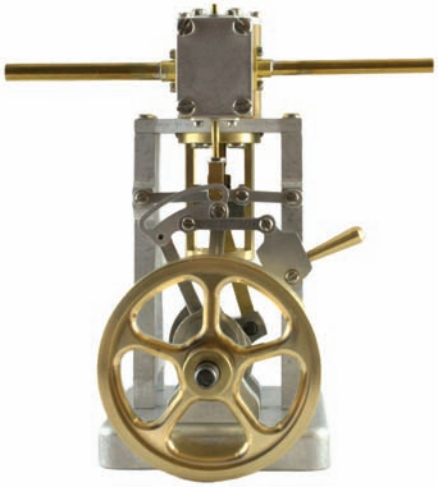

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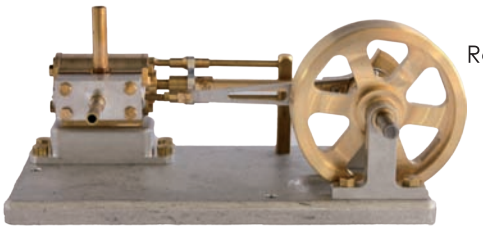

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LATEST WAYBILL

Llagas Creek Railways sold

Gauge One rail and tie manufacturer Llagas Creek Railways was sold last fall and the buyer is Bryan Dickson, a suburban Pittsburgh, Pa., mechanical engineer, farmer and garden railroader.

Llagas was founded in 1987 by California live steamer Gary Broeder; it was named for a small stream next to his home and is Spanish, pronounced "yagas." The company had been owned since 2007 by William Mai, the co-founder of a Baltimore-based plastics firm that had provided the tie-molding services for Llagas.

The company pioneered the use of realistically sized Code 250 or Code 215 rail, with ultraviolet-resistant plastic tie strips that included "very realistic wood grain." Llagas' use of flex-track technology gave live steamers and garden railroaders the ability to set unique curves rather than having to design to the fixed curves of rigid rail systems. The company also offered aluminum rail as an option when other suppliers only provided brass or nickel silver.

The 30-year-old Dickson said in an email shortly after the acquisition that he has been a user of Llagas Creek track products since he started in garden railroading five years ago. "During the planning stages of an addition to my layout, I found Llagas track had been difficult for me to locate and purchase," Dickson said.

"So I went to the source," he said, to previous owner Bill Mai. "After many conversations with Bill and a visit to his home and the manufacturing center, I convinced Bill to sell the business to me with the intent of rebuilding it to its previous status."

Dickson says he has "an entrepreneurial spirit" as well as a "passion for precision, and accurate garden railroad track work."

The new Llagas owner says he is "planning many changes to the business including a much larger amount of stocked inventory — rail, ties and turnouts — and an increased presence online."

Dickson says he is "going to stay focused on delivering our industry-leading products to the customer in a timely and efficient manner."

While many may be concerned about the overall health of model railroading, Dickson says he sees "the future of large-scale model railroading as positive." Nonetheless, Dickson says, "It is very important for those of us currently active in model

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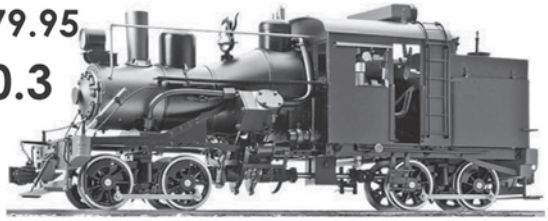

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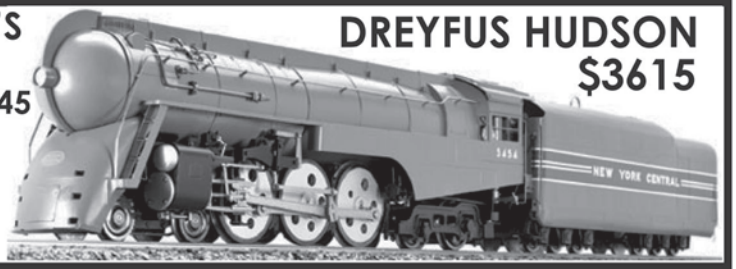

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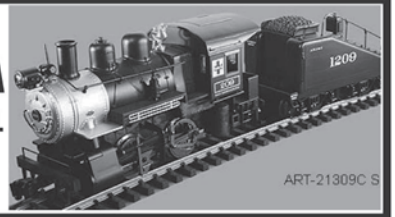

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Bagnall: *Accucraft U.K. has designed a new 0-4-0 with a saddle tank based on Bagnall practice.*

railroading to help promote the hobby and spread the word through clubs, social media and any other form of communication."

Mai has sold the entire operation to Dickson, though the two "will remain in close contact throughout the entire Llagas transition." Additionally, Dickson has reached out to the company's founder. "Gary Broeder is also a marvelous person and he and I have formed an excellent working business relationship," he says.

Llagas Creek is on the Web at http://www.llagastrack.com and by phone at (724) 986-5079.

U.K. Accucraft distributors merge

Accucraft UK Ltd. said in October it had acquired the assets of Gauge One Model Co. for an undisclosed amount. Gauge One Model has focused on designing and distributing 1:32-scale British locomotives and rolling stock that were manufactured in Accucraft Trains' factory in China, while Accucraft UK has focused mostly on the design and distribution of narrow-gauge engines and cars made at Accucraft's Chinese factory.

Both firms have been based in Herefordshire, England. Trevor and Jenny Taylor started Gauge One Model Co. in 1987, while Ian and Sandy Pearse started Accucraft UK in 2004, following 20 previous years of designing and building small-scale live steam locomotives.

"After 28 years in the model railway industry and having delivered close to 6000 units of Gauge One stock, my wife and I have decided to retire," said Taylor in a statement. "We both wish to thank all our Gauge One customers for their massive support and encouragement as well as their orders."

Pearse said, "We have enjoyed working in harmony with the Gauge One Model Co. for some years now, each business complementing the other's range and sharing the expertise and quality offered by the Accucraft factory. When the opportunity to acquire

Isle of Man: *Train Department's brake van kit comes with wood, metal and plastic parts.*

G1MRCo arose, we realized it would be a 'glove fit' for Accucraft and help us to expand our Gauge One range enormously."

Pearse said the deliveries of Gauge One Model Co.'s London North Eastern Railway A4 4-6-2 would not be affected by the change in ownership, and that while the new listed suggested retail price will be $4630 (£2995), "we will honor all existing orders at the original price."

In other Accucraft UK news, the company said in September it would be making a 7/8ths-inch scale (1:13.7) 0-4-0ST model of a locomotive built by W.G. Bagnall Ltd. of Stafford, England.

The saddle-tank locomotive will be offered in four different liveries — black, blue, light green and red. It will be 12½-inches long (320mm), five-inches wide (125mm) and 7½-inches tall (190mm). The butane-fired locomotive will have a center-flue boiler and a working pressure of 60psi. It will feature simplified Walschaert valve gear and have a safety valve, a pressure gauge, a water gauge with a blow-down valve, a Goodall valve and a displacement lubricator with a drain.

The suggested retail price of the Bagnall 0-4-0ST will be $1700 (£1,100). Accucraft UK is on the Web at https://www.accucraft.uk.com and by phone at 011-44-1981-241380.

'Brake van' kits available

Kits for United Kingdom Isle of Man "brake vans" — cabooses in U.S. parlance — have been developed by The Train Department of Hazlet, N.J., the company said in October.

The 1:20.3-scale kits are available with either 45mm-gauge six-spoke wheels or as an optional 32mm gauge with the same wheels. The kits include parts in wood, metal castings, laster-cut steel, scale brass hardware and plastic nut-bolt-washer details. The brakes are "fully functional, should you desire."

Compact crew: *Argyle Locomotive's 'Short Staff' figures (which despite this photo, come unpainted).*

The kits are provided with Accucraft couplers and tri-color dry transfer decals drawn by Ed More. The Train Department said the suggested price of the kit is $235.

The company also said last fall that it now has 1:20.3-scale ball bearing upgrades for Accucraft AMS rolling-stock wheels and axles. The upgrades are available for the gondola, flat, wheel-and-tie, stock, reefer, box car, short caboose, the Jackson & Sharp coach and combine and the brass San Juan coaches. The upgrades are $30 per axle.

The Train Department is on the Web at http://www.thetraindepartment.com or by phone at (732) 770-9625.

7/8ths-inch scale figures

Argyle Locomotive Works A.B.N. of Victoria, Australia, said last fall it is now selling human figures in 1:13.7-scale under the brand "Short Staff."

The unpainted figures come in five different styles, with two that have adjustable heads. The figures are named: Albert, Andy, Fergus, Flynn and Fred.

Argyle notes that the "Short Staff" figures are suitable for locomotives such as the Accucraft Quarry Hunslet, the "Emma," the "Fairymead" and Accucraft U.K.'s soon-to-be-released Bagnall 0-4-0ST.

The company says each all-white figure is $US35.70 ($AU50). Argyle is on the Web at http://www.argyleloco.com.au or by phone at 011-61-3-9751-1964.

Wuhu Bowande revised its iconic 0-4-0 with refinements

PORTER

Text by Grover Cleveland
Photos by Grover Cleveland and Jeff Young

Wuhu Brand Arts & Crafts Co. Ltd. of China re-introduced its 0-4-0 Porter live steamer last July at the National Summer Steamup in suburban Sacramento. It is a model of the eight-ton industrial locomotive popular in the United States from the 1880s until the end of steam. A few operating examples still survive and it remains my favorite small engine. This new offering from Wuhu Bowande is different from the one introduced in 2013 and contains numerous refinements.

First run: *Author with his Wuhu Bowande Porter at Sacramento's National Summer Steamup in July 2015. Photo by Mike Martin.*

There is a tendency to compare this loco to the popular Accucraft "Ruby," but really this is a different beast. It is considerably smaller and sits lower. The cylinders are inclined just as on the prototype.

This model is shipped in a colorful cardboard box inside of which is a cleverly designed, form-fitting Styrofoam insert that protects the contents well. One could do worse than just leave this box as the main carrier for the engine. Also included are some basic items such as a small syringe, oil and the like. There is a minimal manual in English.

The Wuhu Bowande Porter is indeed small, weighing only four pounds (1.8 kg) and measuring 8¾-inches from front to rear step. The overall scale of this loco seems closer to 1:24 than the promoted 1:20.3, although the cab is a bit tall for 1:24. Construction is typical of small-scale steam locomotives using brass and steel. The wheelbase is 2¾-inches with a wheel diameter of 1⅛-inches and the spindly appearing rods seem to be of adequate thickness to withstand being bent. The drivers are sprung, but stiffly.

This is an attractive loco that duplicates the wonderful, chunky and yet delicate look of the prototype.

Cast brass wheels are found on the gas valve and lubricator adjustment. Both protrude slightly out of the rear windows and are easily handled. The throttle is a brass lever that barely sticks out of the rear of the cab. There is a water glass on the boiler

Pint-sized Porter: *Wuhu Bowande's locomotive is 8¾-inches long and hews more closely to 1:24 scale.*

back head together with a tiny but accurate pressure gauge. A lubricator drain is located under the floor on the right side of the cab.

Small (and I mean tiny) brass hex-head bolts are used throughout. I needed to buy a special set of metric nut drivers to work on the locomotive. I used 1.8mm, 2.0mm, 2.5mm and 3.0mm drivers.

The roof hinges off to the left side with a double set of hinge rods. On two of the models I saw, the roof did not fit easily into the cab. In fact, the photo on the shipping box shows the roof not sitting quite properly. I bent the roof flanges in slightly so that the roof would drop down, an easy fix. I also removed the hinge mechanism entirely for quicker access to the back head for filling the lubricator and gas tank, which is my preference.

Cast brass: *Wheel to control gas protrudes slightly out of the window for easy handling.*

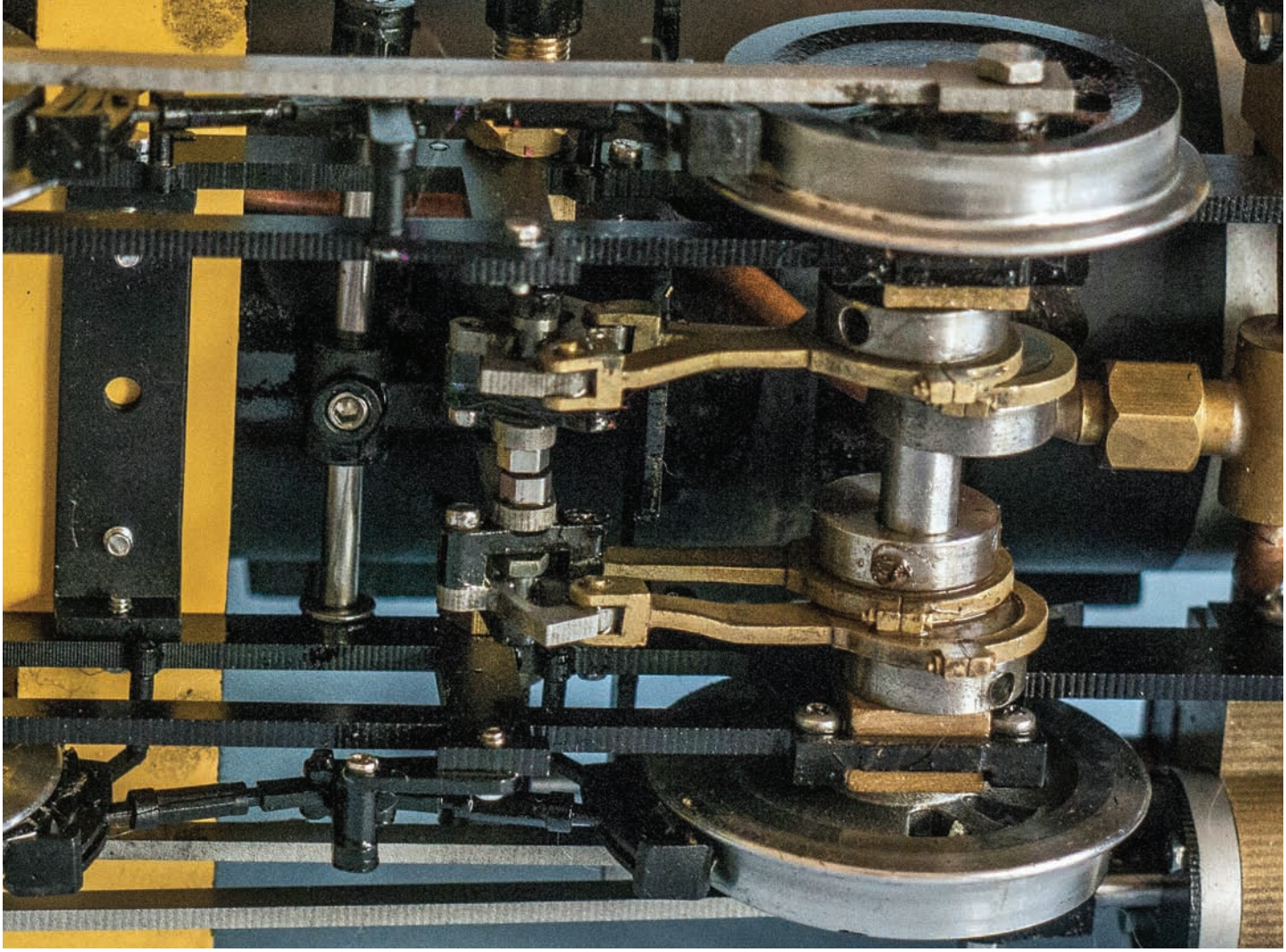
The steam line passes through the lubricator and directly to the cylinders. It is not superheated by running it through the fire tube. The lubricator flow is adjustable.

There is a hinged smoke-box door which you will open to light the burner. For more work in the smoke box — for example, changing the stack — the entire front is taken off with just two hex bolts. The sand dome conceals the safety valve, which is not accessible. If you wish to fit a different safety valve, you may have to grind out the dome with a rotary tool (Dremel). The steam dome is removed by first removing the four side bolts that hold the saddle tank. (The front bolts on the saddle tank are dummies.)

Turning the loco over reveals a jewel-like Stephenson valve gear that works properly. The quality of this machining is remarkably good. The Johnson bar lifts the links and it is enjoyable to watch this happen in such a tiny scale. The Johnson bar is notched in three positions.

The boiler includes a Goodall-type filler under the water hatch on the saddle tank. The water needs to be added here because the cab is fitted with a whistle that cannot be easily removed from the top of the manifold. The saddle tank is not used for water.

Filling the boiler completely shows the capacity to be 110cc (about 3¾ fluid ounces). From empty, the glass gauge first shows water at 25cc (0.8 ounces). At the top of the gauge the boiler will contain 75cc (2½ ounces) which is a good fill level, leaving 35cc



Beast's belly: *Jewel-like Stephenson valve gear that works properly. Machining is remarkably good.*

(about an ounce) of steam space.

A note on water gauges: Because of the small diameter of many glass water gauges they should not be trusted to determine boiler water level while running. This is because of capillary action; the smaller the glass, the more likely it will be inaccurate. In some locomotives a blow down is provided to clear the glass, but this is not present on the Wuhu Bowande Porter, nor on many other small-scale locomotives.

I am not at all inexperienced, but I found steaming to be quite difficult at first, since I had trouble maintaining a good fire. The flame would too easily pop off the burner and require relights. Reading other's posts on the Web, I see that I was not alone.

In my case this was partially because of a less than tightly machined gas valve; I solved this with a spring from a ballpoint pen, which is a common fix for many engines. Ideally one should let the burner run for a minute before closing the smoke box. Patience here pays off. I intend to closely examine the burner itself later. I think some modifications might be in order.

I found the run time initially to be a measly six minutes with a small load. As the engine broke in and I learned to fire it better, I could approach 10 minutes, but not often, due to running out of butane, not water.

A few other owners have reported good

Wuhu Bowande Porter

- **Loco prototype:** H.K. Porter & Co., eight-ton 0-4-0, 1899. Cylinders: Seven-inch diameter, 12-inch stroke. Drive wheels: 23-inches. Boiler pressure: 140 psi. Tractive effort: 3040 pounds. Weight: 16,500 pounds.
- **Scale:** 1:20.3, 45mm gauge.
- **Length:** 8¾ inches (222.25mm).
- **Width:** 3½ inches (90mm).
- **Height:** Five inches (128mm).
- **Boiler:** Single flue.
- **Fuel:** Butane.
- **Min. radius:** 23⅝ inches (666mm).
- **Cylinders:** Two, piston.
- **Valve gear:** Stephenson.
- **Fittings:** Water-level gauge, British pressure gauge, working safety valve, working whistle.
- **Available models:** Black, yellow.
- **MSRP:** $610.

The Porter locomotive

H.K. Porter began building small industrial locomotives in Pittsburgh, Pa., in 1866. By 1878, Porter had created H.K. Porter & Co., which became the largest producer of industrial locomotives, and built almost 8000 of them, many of which were of the type modeled by Wuhu Brand Arts & Crafts Co. Ltd.

Porter & Co.'s line also included light-road locomotives such as Mikados and Consolidations. The company's locomotives were sold around the world and even today Porter still manufactures industrial equipment, although the last locomotive was built in 1950.

Porters were intended to be used in construction, mining and other operations that didn't have long distances to travel. The little engines were designed to be operated by just one man.

From the 1949 Porter catalog: "This type locomotive is the best possible selection for contractors, shifting and industrial service, where the haul is not extra long and where a simple, compact design is needed for sharp curves, rough track and hard work. It has abundant speed for such service, but is not intended for extreme speed nor for very long hauls."

— *G.C.*

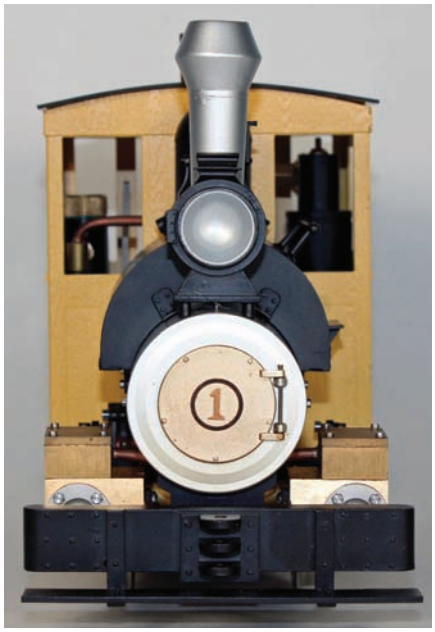
Porter preserved: *Cortez Mines' Porter, built in 1890, at California's Ardenwood Historic Farm in 2009. Photo by Randy Hees.*

steaming times, but the included gas tank is really small and I had trouble. Running in a quiet environment should help with adjusting the burner, but I was operating either in a busy convention hall or outdoors in the noise.

Pulling power is as to be expected from an engine of this size. I had no difficulty pulling four heavily loaded Bachmann side dump cars on a straight and level track. I do recommend a load of some kind behind the engine as small cylinders often mean that a light engine will run away.

There is no noticeable chuff from the exhaust but there is room in the smoke box to fit a chuffer. At this writing there is not a commercial version available so you will have to build your own or adapt another.

The front and rear beams have typical link-and-pin coupler pockets. A non-working headlight is located on the smoke box and a nice brass bell sits at the front of the saddle tank.



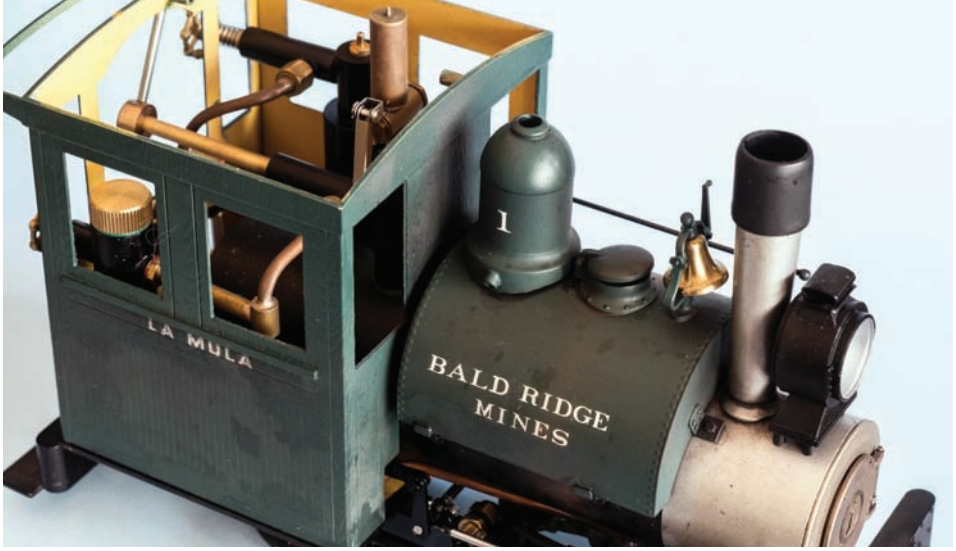
Chunky feel: *Model captures delicate features of prototype.*

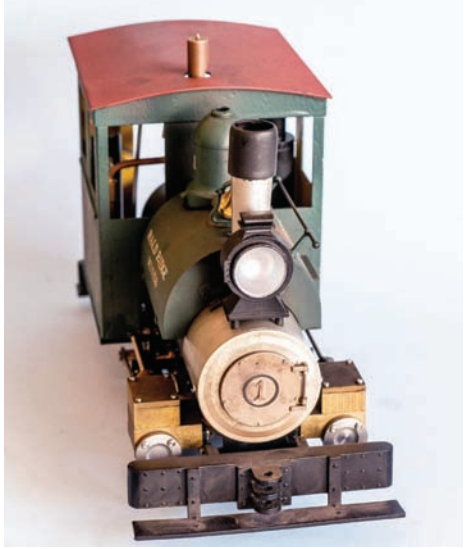
Modifications

Looking at my Porter you will notice two things: First, I repainted the engine since I found the yellow paint glaring. I like my engines to look like they really work hard. Second, I rebuilt the stack because I didn't like the provided stack at all. At first I just cut off the top with a rotary tool but later added a sleeve. Frankly, the earlier model Wuhu Bowande stack or the Accucraft "Ruby" stack with its top screen look far better to me.

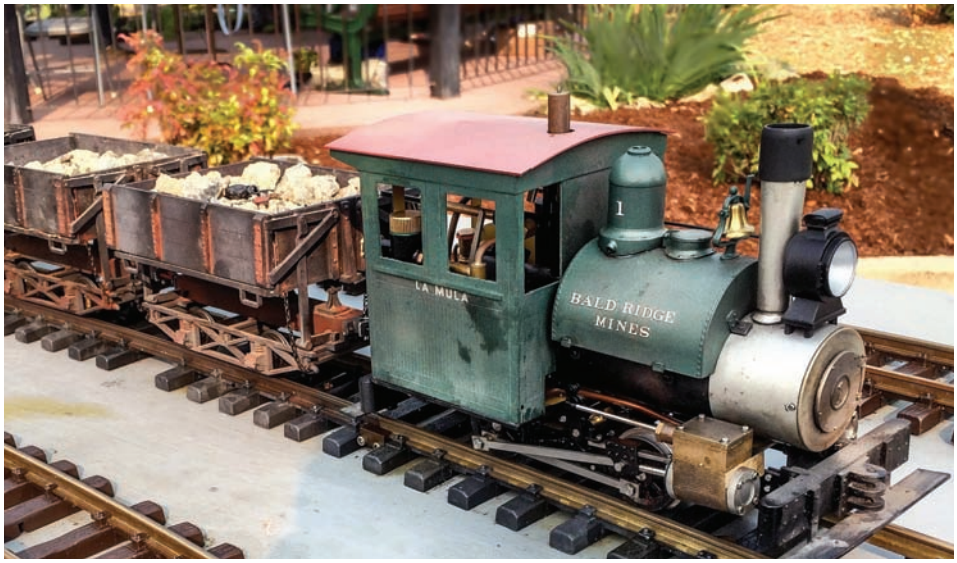
If the gas-tank valve presents an adjustment problem to you, it can be fixed with a spring; a few owners are also having larger tanks built. I will keep a careful eye on the water level so that I don't run out of water before running out of fuel.

Finally, I slipped a homemade brass tube over the internal exhaust pipe to deflect the "spooge" from





Author's alterations: *New paint and the new smoke stack, which has a tube inside to catch 'spooge.'*



Designed to work: *Author's Porter has been painted and weathered to look like a functioning engine.*

the oil and steam condensation when starting. That helps to keep the loco a bit cleaner, somewhat.

There does not seem to be any room for a throttle servo or any remote control. I hope that someone can prove me wrong, because this is something I would like to fit.

The Wuhu Bowande Porter is a handsome little engine with tons of character that will look great pulling a small manifest. This engine will require patience, a delicate touch, and a few hours of break-in running to achieve a satisfactory experience, but once you have done this, you will be pleased.

Porter postulants

Do I think Wuhu Brand Arts & Craft Co. Ltd.'s Porter is good for the beginner? For the same price a newcomer might be advised to try an Accucraft "Ruby" — easier to fire and to run. However with patience, and perhaps some assistance from an experienced steamer, this could be a fine addition to your stable, or even the first. I'm certainly keeping it in mine. The Wuhu Bowande Porter captures the look of the original better than the Accucraft in my opinion.

Other Porters are available:

- The "Ruby" by Accucraft is another good choice although it lacks the attractive delicacy of the Wuhu Bowande model. Several versions of the "Ruby" are readily available in the used market as well as new from Accucraft.
- Maxwell Hemmens made a popular live steam Porter with a tender. One in good condition will be about $1000.
- Another nice Porter was made by Wrightscale. This is a fine-scale engine that is selling for about $1200 on the used market, if you can find one at all.

Many steamers have built small four-wheel tenders for their Porters; the Maxwell Hemmens comes with one. This could be a project for Wuhu Bowande owners.

— *G.C.*

Steam away those winter blues with a Gauge One

Micro layout

Text and photos by Shawn Viggiano

Do you ever have those days in the winter when the temperature is too cold and your outdoor layout has been buried under feet of snow for weeks on end? You start going through withdrawal because you need to get that smell of steam oil in your nostrils. I have gone through many winters like this. Although I will most times brave the elements, sometimes the body just doesn't want to do it. My solution to fighting off that cabin fever is a micro layout.

Indoor logging: *Author's micro layout has switching and a loop.*

I have had a fascination for micro layouts since I first learned about them through the late Carl Arendt's web site featuring micro layouts (http://www.carendt.com/). What intrigued me about them was that you don't need a lot of space, they can be fairly inexpensive and they are fun to build. Just doing a search on the Web will bring you to a variety of excellent micro layouts in all scales.

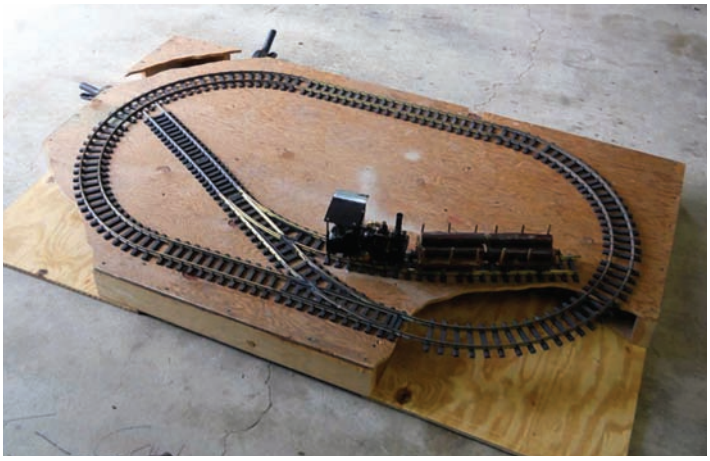
What's nice about a micro layout is anyone can build one. It doesn't matter whether you live in a small apartment, a condo or are traveling by camper. They take up very little space and can be stored under a bed or in a closet. There is no longer an excuse that you do not have enough room to run trains.

I had been toying with the idea of building a micro layout in a smaller scale. My first was an On30 micro layout (1:48-scale on 16.5mm-gauge track), which was fun to build, but it was not a scale I enjoyed.

I really wanted something using Gauge One track (45mm), because I had gotten into live steam and had an interest in the smaller geared live steamers like the Bellflower "Cricket" and the Regner "Easy Line" locomotives.

I have a garden railroad to run my steamers on, and I did build a small portable layout that I can set up in the garage. The problem with the por-

Miniature mill: *Left, logs are worked on the micro layout; right, a rectangular water tower.*



Initial build: *Track and plywood started project.*

Stream: *Bridge over culvert for access to outhouse.*

table track was it took up half my garage. Besides, the time to use the portable was during the winter, which is also the time I like to park the cars in the garage. Setting up and breaking down the portable layout was taking up more time than I had to waste.

I had to think of a way that would allow me to run my live-steam trains indoors without taking up space, which was easy to set up. I also wanted something with some scenery to break things up. That's when the micro layout idea came to life.

Planning and design

When designing my live-steam micro, I had to keep in mind that I would be running mainly steam. I also wanted something durable, something that won't get damaged when being stored or moved around. And I wanted something more than just a loop.

I wanted something with sidings; that way I could also do some switching. And scenery was also something I had to have: I wanted trees, ballast, trestles, buildings and lots of detail. Since I was working in such a small area, I wanted everything to be scratch built including hand spiking my track.

My theme was going to be the same as my outdoor layout: logging. It needed a small saw mill on one siding and a fueling station on another siding. The big question was how to fit all this into a small area.

When building the micro, I wanted to use materials that I had on hand; I'm a big fan of recycling. I also wanted the construction to be simple, nothing too complicated. I wanted to throw something together and have fun.

My first step was to decide on a size for the micro layout. I also had to keep in mind the diameter of the curves. For this I used Code 332 brass track, though Code 250 or smaller would have been better. (Again, my goal was to use what I had on hand.) I bent the track using an Aristo-Craft rail bender, until I found the smallest diameter curve that my smaller live-steam trains could negotiate.

I found that my "Cricket" and my Regner "Easy Line" steamers were able to go around a 31-inch diameter curve (15½-inch radius). Now I had the width of my micro layout, keeping in mind I wanted to have some extra room on the outside of the track for scenery.

My next step was to consider how long did I want to make the micro? I wanted more than one siding

Saw mill still life: *Workers at rest on the author's small Gauge One layout, suitable for indoor use.*

incorporated into the layout. After trying a few scenarios, I decided that two sidings would be my limit to keep the size of the layout small.

Once the track was laid out, I had to decide on a surface. Since I wanted to incorporate landscaping into the layout (stream, ravines, ledges and trestles) the option of using just a piece of plywood was out of the question. I had thought about using that foam insulation board found at the big-box stores, but for live steam I wasn't too comfortable with the material.

After researching the subject of building indoor layouts, I came up with an idea. I started out by laying out my track on a piece of plywood. (I won't give the thickness of the wood used because anything would work and using smaller wood makes the micro lighter.) Once I was satisfied I started sketching out the cuts I would need to make in the plywood (see photo on Page 26).

I cut three of the four corners into a wavy pattern. One was to become the ravine with a trestle, the other corner would become a ledge, and the third would be a creek bed. Another sheet of plywood was used for the bottom, with two-by-fours in between to create the thickness (also to create the height for the trestle). The total size of the layout is 40 inches by 60 inches.

Track, landscape, detail

The next step was to start hand laying the track. Since this was an indoor layout, I used some pine I had laying around. The ties were cut 3¾-inches long, one-half-inch wide and one-quarter-inch thick. (I didn't follow any standards, just what looked good.) The ties were stained with golden oak and then washed using a mix of black shoe polish and alcohol.

The rail was then spiked to the ties using Micro Engineering spikes. I just used spiking pliers from Micro-Mark and track gauges from Micro Engineering. I glued the track to the plywood using Titebond III. My original plan was to make some stub switches, but since I had some four-foot Aristo-Craft switches laying around, I decided to use them. I painted the ties to match the wooden ties using a mix of browns, tans and grays.

I won't go into the landscaping specifics too much because everyone will have a different taste. I'm not

— *Continued on Page 30*

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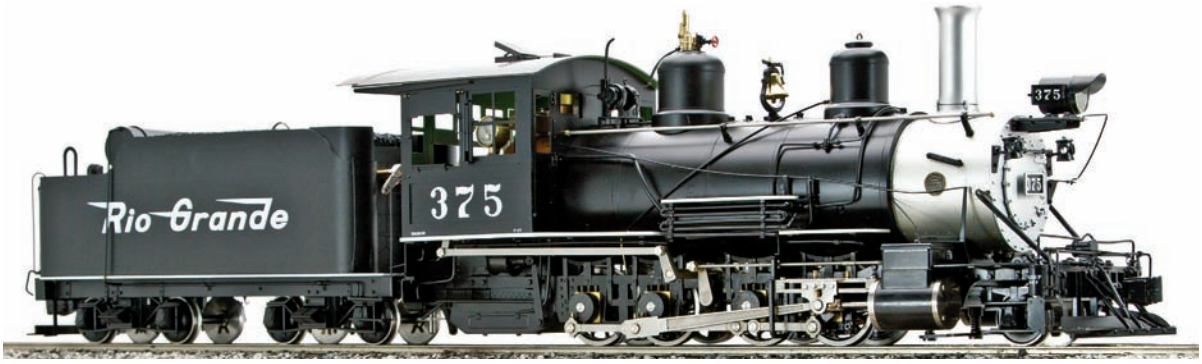

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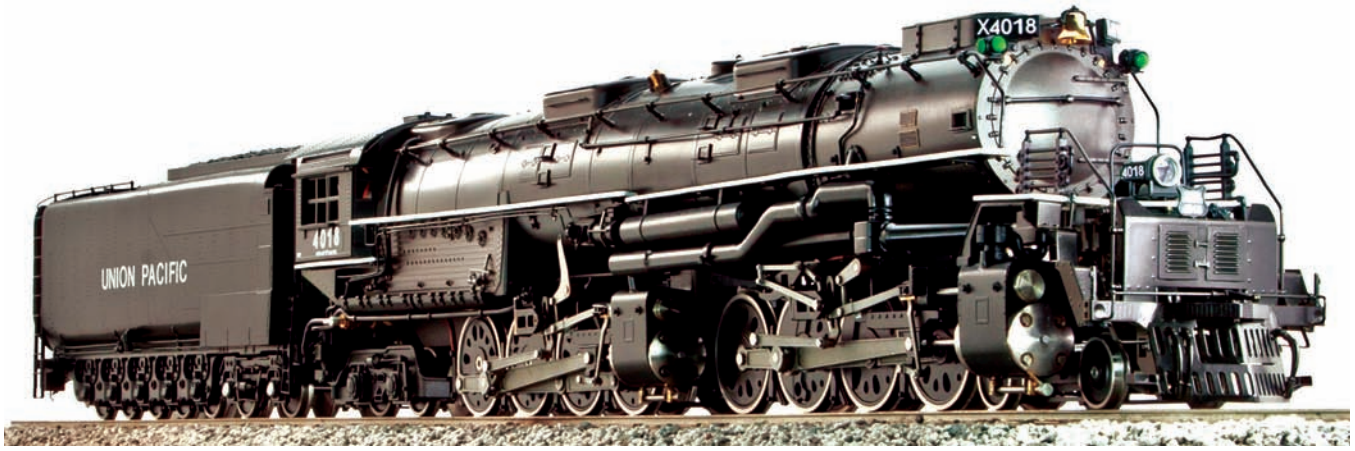

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'Cricket' world: *The 0-4-0, 1:20.3-scale locomotive crawls all over the author's saw mill micro layout.*

— Continued from Page 27

in any way an indoor modeler and most of it was trial and error. It's nothing like landscaping an outdoor garden layout. I'll just briefly explain what I did.

Once the track was secured, I ballasted it using Woodland Scenics' fine dark brown ballast. It took a few tries to get the ballast glued down properly. (Again, indoor modeling was new territory for me.) The brass rails were soaked in a brass darkening solution to get a weathered look. The entire layout was also covered with a light coating of the Woodland Scenics fine dark brown ballast. Then different tones of green turf were added on top of the ballast until I had the look I was after.

I used a modeling compound — Sculptamold — for the cliffs and ravines to create a bare rock look, and then painted it with different tones of natural color paints. I made pine trees using wooden dowels and fake ferns from a local art-supply store (Michaels). A simple search on YouTube.com brings up tutorials on how to make trees.

Since I was building a logging line, I needed a saw mill. I built a compressed version of a portable saw mill on one siding. Eventually the other siding will get a fueling facility with an office in a future project.

Throughout the layout there are details such as fencing, wooden walls, an outhouse, foot bridge and a trestle. The detailing is never-ending and I'm always adding something. My goal when complete is for someone to look at the micro an hour later and see something they missed before.

Wrapping up

You no longer have an excuse: it's too cold to run or it's too rainy. Start building that micro layout. Remember there are so many ways to build one. It can be simple or complex and any material will work.

So dust off those smaller steamers and build a micro layout to help ward off those winter blues. You might not be able to run that Big Boy or that three-truck Shay, but it's a great excuse to fire those smaller steamers up; and if you don't own a smaller steamer then this is the time to get one. The "it's too cold or rainy" excuses will no longer work.

Hopping up a 1:20.3-scale loco to provide maximum power

Hot-rod 'RUBY'

Text and photos by Bill Allen

"Hot rod" is a term normally used for cars which have been "hopped up," usually by installing a larger engine which is then modified to produce maximum power. Hobbyist Dave Hottmann of Cherokee Village, Ark., had hopped up an Accucraft "Ruby" before I was involved in the hobby, and I wasn't able to see it first hand, but I heard stories of its success and decided to take the idea to another level. Where Dave used all stock "Ruby" parts, my plan was to only use the stock parts in the visible areas and make my own parts for everything else.

I wanted my "Ruby" not only to have torque for pulling but also enough steam production to maintain a long and heavy load (horsepower). With this in mind, my goals were:

- Four-pound drawbar pull.
- Largest bore while maintaining same exterior cylinder size.
- Improved valve timing.
- Larger boiler and fuel capacity.
- Better burner design.
- Increased weight for more traction.
- Maintain the "Ruby" look.

The drawbar pull is the combined result of the steam pressure, cylinder bore and stroke, wheel size, valve timing and reduction gearing (if any), and traction. Horsepower is all of the above plus the ability to maintain, at speed, the drawbar pull.

As I wanted to keep the "Ruby" look, I decided that the visible outside diameter of my cylinders needed to match the one-half-inch "Ruby" cylinders which are just over seven-eighths-inches outside diameter . I could make new cylinders that size, but because the wall of the cylinder needed to be thick enough for the head bolts, the largest bore I could go with would be 0.550-inches. Not really worth my while.

'Ruby' pull: *Nineteen cars on Rob Lenicheck's Palo Alto, Calif. layout.*

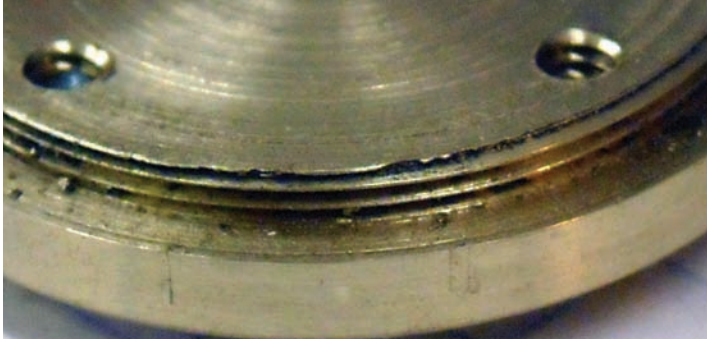


Photo 1: *Cylinder head is threaded to 50 threads per inch on the lathe. Note head bolt holes which will be inside the cylinder bore and plugged with short bolts.*

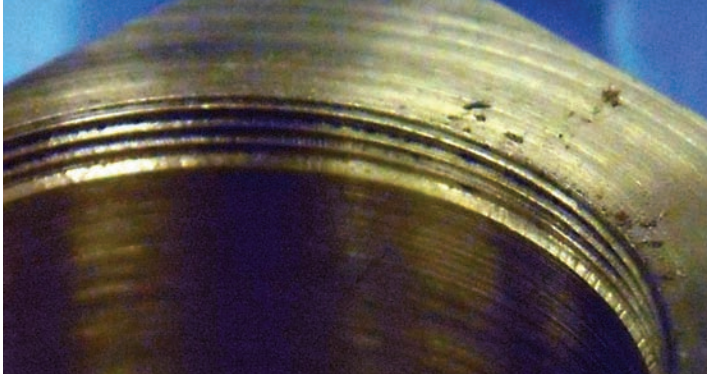


Photo 2: *Cylinder bore is threaded to accept the cylinder head.*

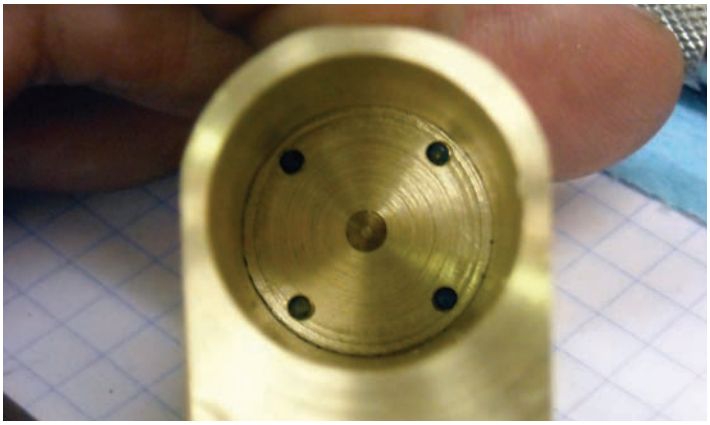


Photo 3: *Inside cylinder shows front head in place.*

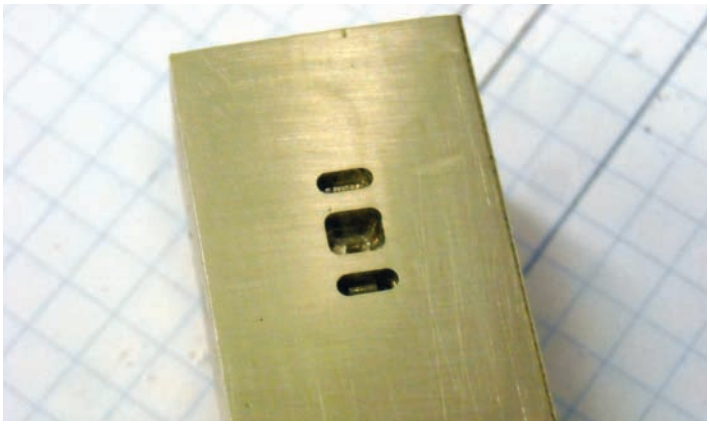


Photo 4: *Large slide valve ports milled into cylinder.*

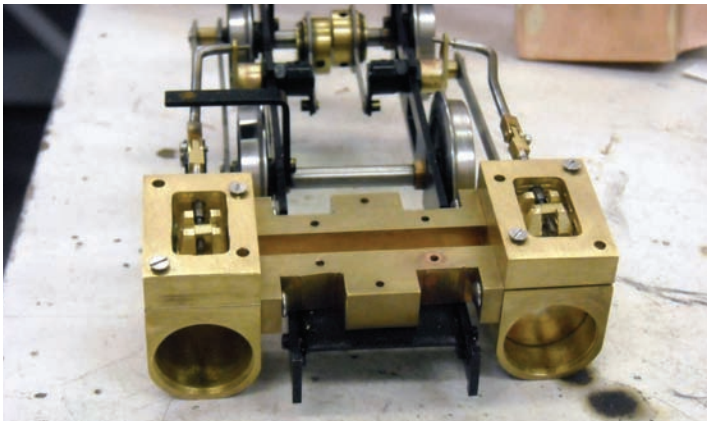


Photo 5: *Cylinders, valves mounted to stock chassis.*

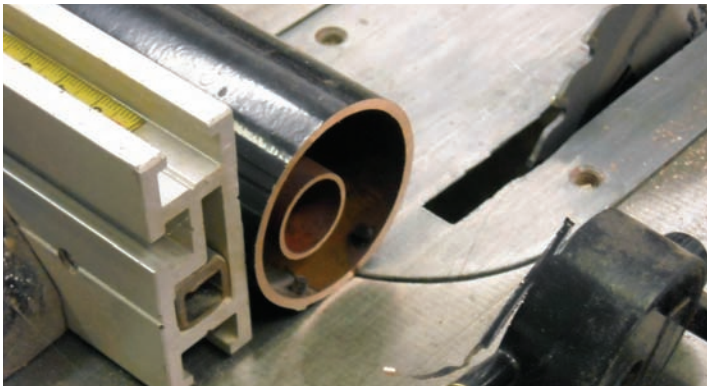


Photo 6: *The rear of the 'Ruby' boiler is cut off on the table saw with a metal cutting blade.*

I decided I could go with a thin wall and press the heads on, but I would not be able to remove them for service. The rear head could be done this way as it never needs to be removed but for the front heads, I decided to cut threads in the cylinder wall and head so I could just screw the head on (**Photos 1, 2** and **3**). I then decided on a three-quarter-inch bore which is 2¼-times the area of a one-half-inch "Ruby" and 1.44 times that of an Accucraft K-28.

Valve timing

The large cylinders now needed proper steam supply and exhaust clearance as well as proper timing. I decided to go with slide valves with oversize oval porting (**Photos 4** and **5**).

I had a "Ruby" chassis with stock eccentrics, so, since this was to be a quick project, I used them as is. It is impossible to get the proper lap and lead in both directions with single eccentrics. I had originally planned on slip eccentrics or Stephenson gears, but decided to make this a forward running rig only.

The boiler needed to be not only big enough for a long run but more importantly, it needed to be able to produce enough steam for the cylinder size and loads I planned on pulling. I decided on a locomotive-style boiler with a gas-fired ceramic burner.

The boiler would retain the original "Ruby" portion that protruded from the front of the cab but have a firebox and extra water capacity in the cab (**Photos 6, 7** and **8**). Because the boiler would take up all of the cab's interior, I went with a fuel tank in the tender. I had an old Aster Climax tender I had

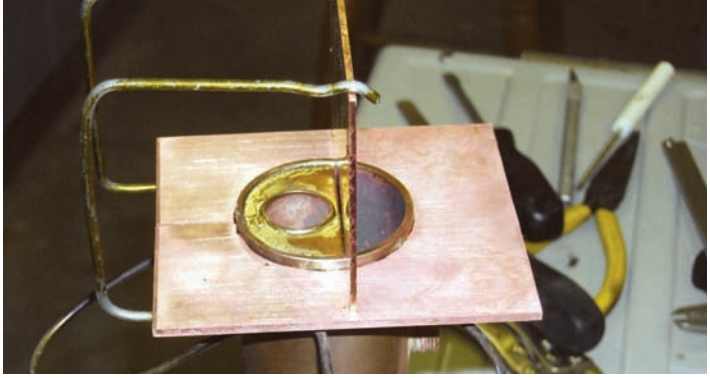


Photo 7: *Fire box plates silver soldered to boiler; coat-hanger wire clamps everything in place.*

Photo 8: *Finished boiler has a recess for lubricator.*

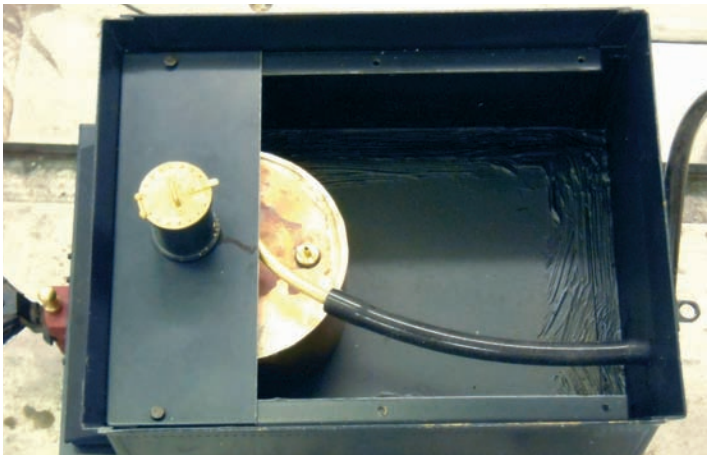


Photo 9: *A larger fuel tank is made and mounted in the tender, which is sealed for a water bath.*

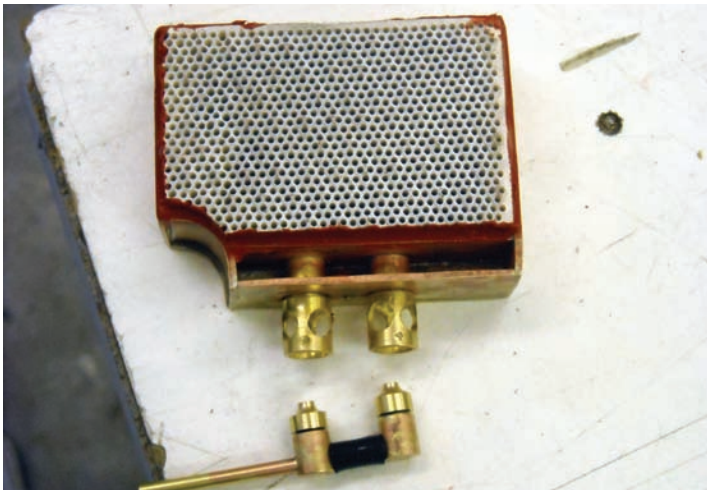


Photo 10: *Ceramic burner with two jets.*

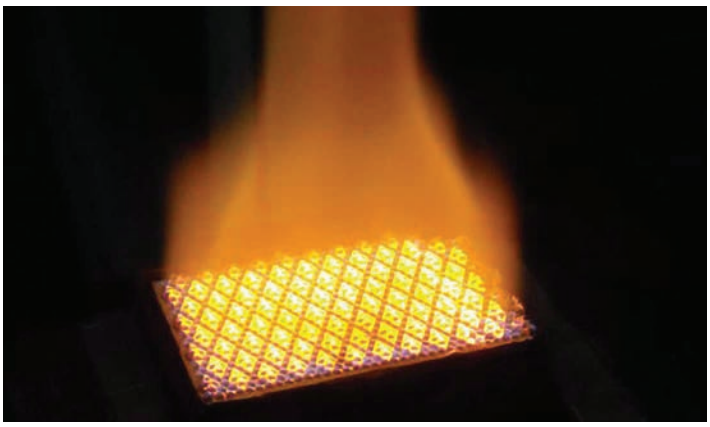


Photo 11: *The burner is tested on the bench.*

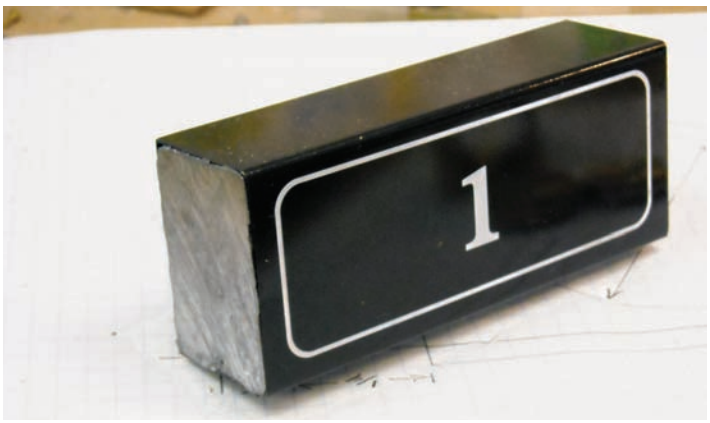


Photo 12: *Both side tanks are filled with molten lead.*

bought at a swap meet which seemed to look OK with the "Ruby" (**Photo 9**).

I was getting into uncharted territory with the boiler design, as matching up to the front of the "Ruby" boiler made for a shallow firebox burn area. I had to try several versions of ceramic burners before I got one that worked. I went with a two-jet design because of the steam requirement (**Photos 10** and **11**).

The stock "Ruby" weighs in at about five pounds. At that weight, the maximum pull without slipping is just over one pound. As the pull on most stock "Rubies" is less than that, there is not much problem with traction. My new design would have enough torque to easily exceed four pounds of pull, so I needed to get around 15 pounds engine weight.

In his hot-rod "Ruby," Dave had filled his side tanks with lead shot, but I wanted more weight, so I filled mine with melted lead, thus eliminating the air pockets (**Photo 12**). The tanks felt like they weighed a ton but when I weighed them, to my surprise, the two tanks weighed only just over five pounds together.

I needed five more pounds, so I started casting lead blocks to mount between the frames and anywhere there was air space (**Photos 13** and **14**). I replaced the wood buffers with cast lead ones (**Photos 15** and **16**) and along with the larger boiler, I made my goal of 15 pounds.

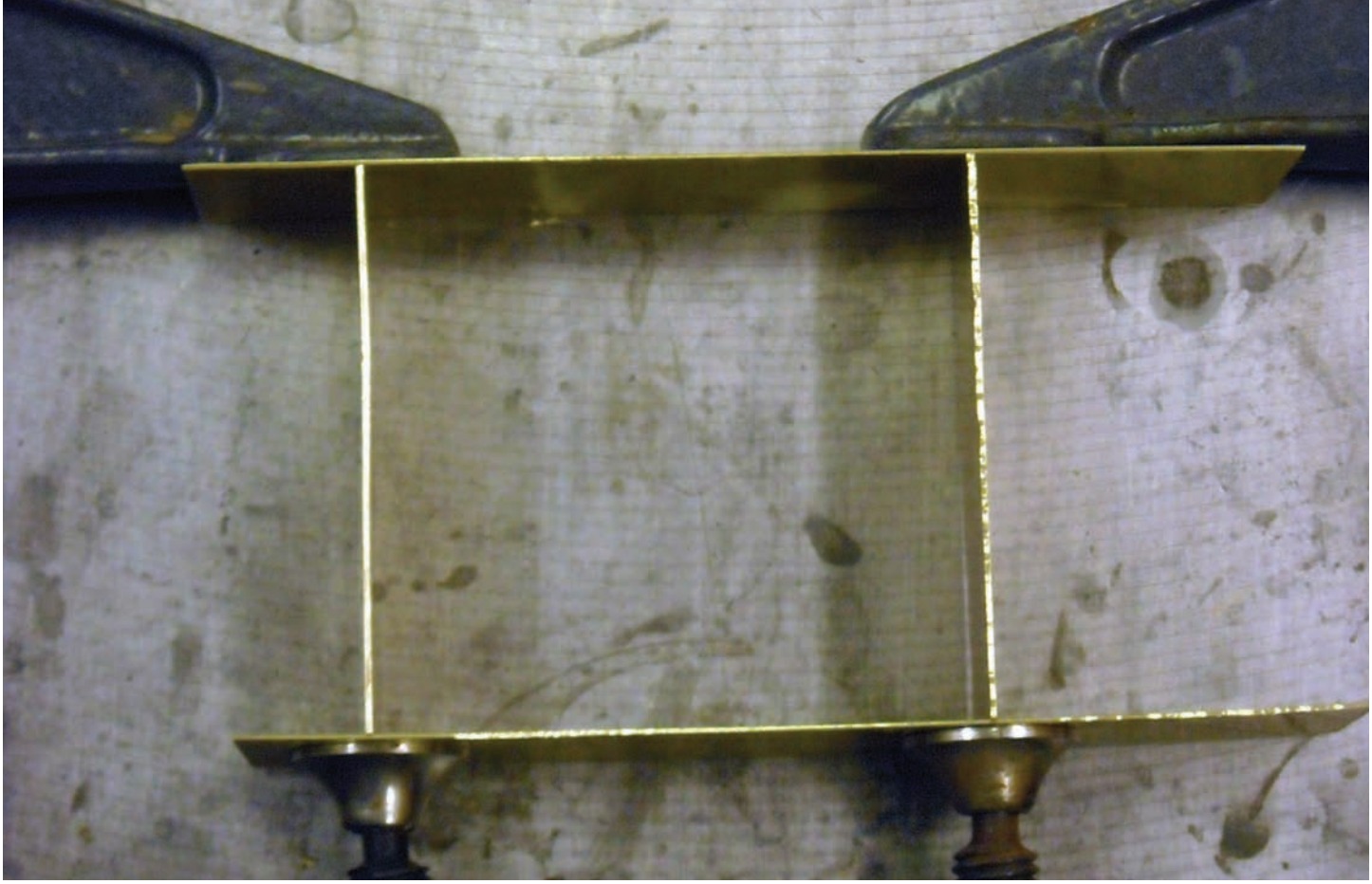


Photo 13: *This is a quick and easy way to cast lead. The lead does not stick to the cast iron table or the brass strips. It then is cut to size on the table or band saw.*

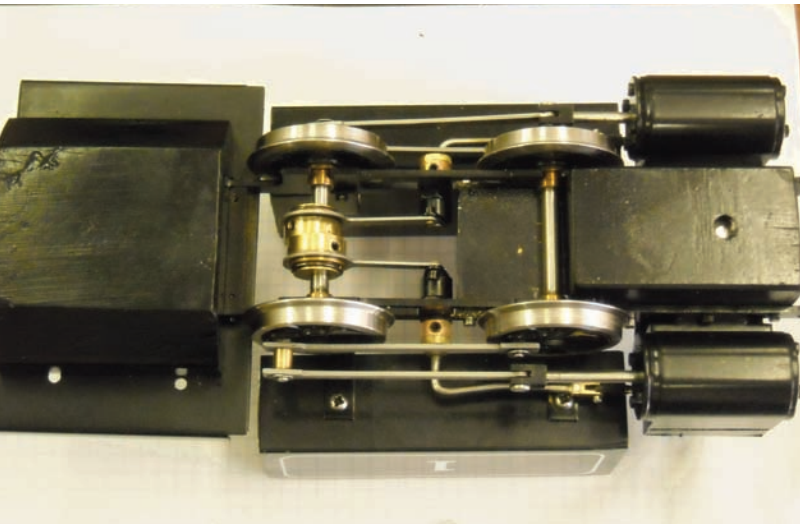


Photo 14: *Here is a shot of the underneath of the chassis. Note the two large lead blocks.*

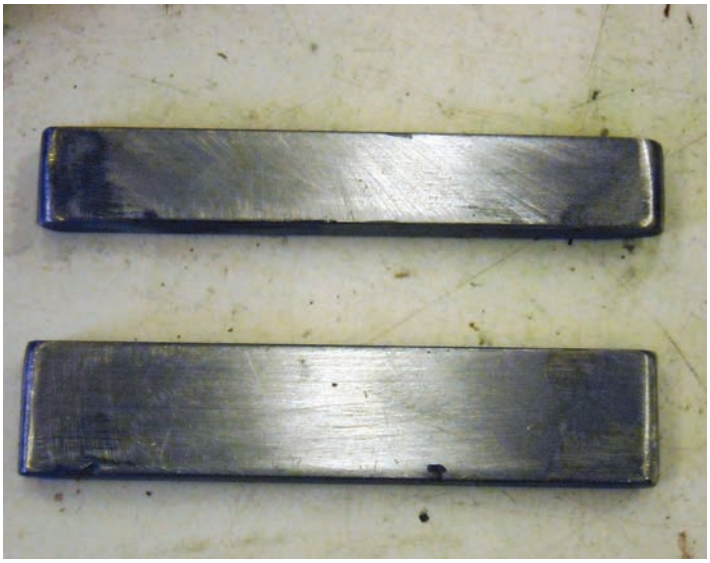


Photo 15: *Lead buffers cast using the above technique.*

Results

On its maiden run, I hooked up all the cars that were at the steamup (15 of Accucraft's 1:20.3-scale freight cars) and it pulled them with ease. At the next steamup, I was able to gather up 25 of the same size cars and again pull them at less than full throttle and a reduced fuel setting.

A friend then hooked his K-28 to the setup but it stalled out when it hit a slight upgrade in the track, thus making my day. Since then, on a dual-gauged track (45mm inside, 4½-inch on the outside), I was able to pull myself on a 4½-inch riding car with the "Ruby" and at 2015's National Summer Steamup in Sacramento, we pulled a load car (one-pound draw-bar pull) with 30cars behind it.

I think my longest run has been about 30 minutes and I haven't run out of gas yet. The water supply seems to be adequate but I do keep the boiler water level up with the Goodall valve.

This project met or exceeded all of my expectations.

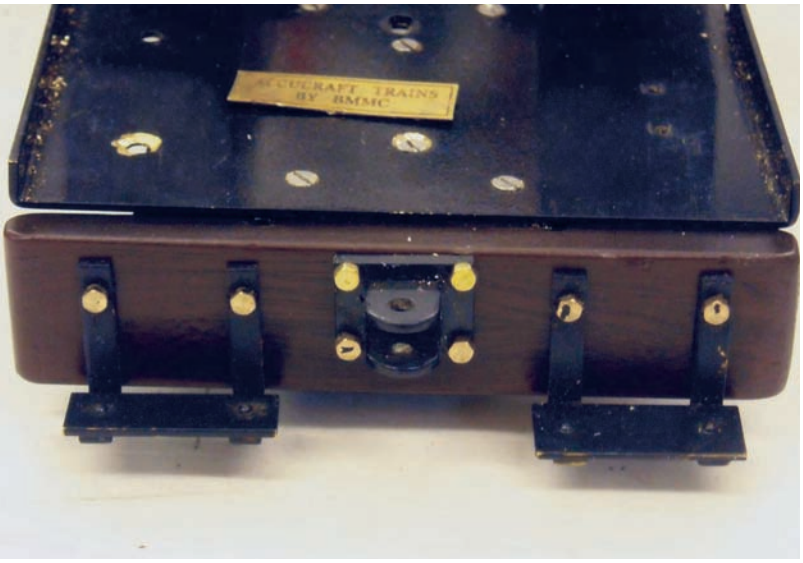


Photo 16: *Wood grain paint is applied to the buffers and stock 'Ruby' fixtures are attached.*

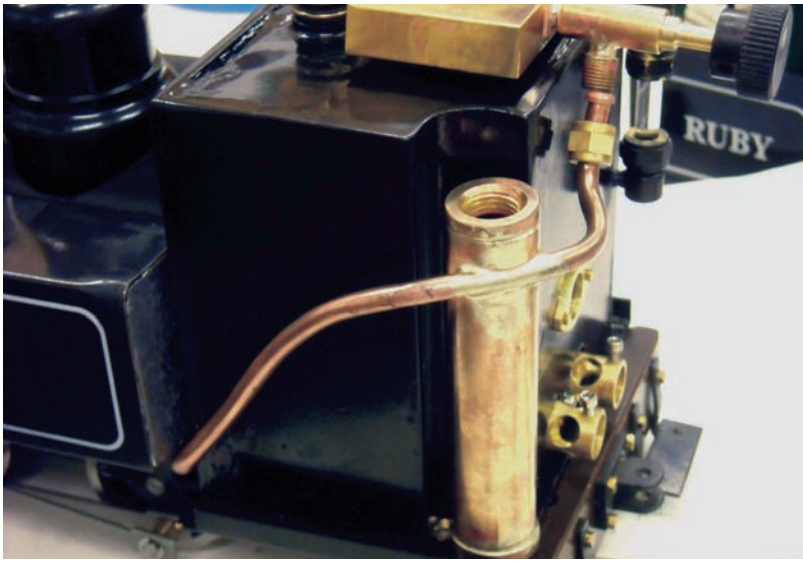


Photo 17: *A pass-through lubricator similar but larger than on a stock 'Ruby' is installed.*

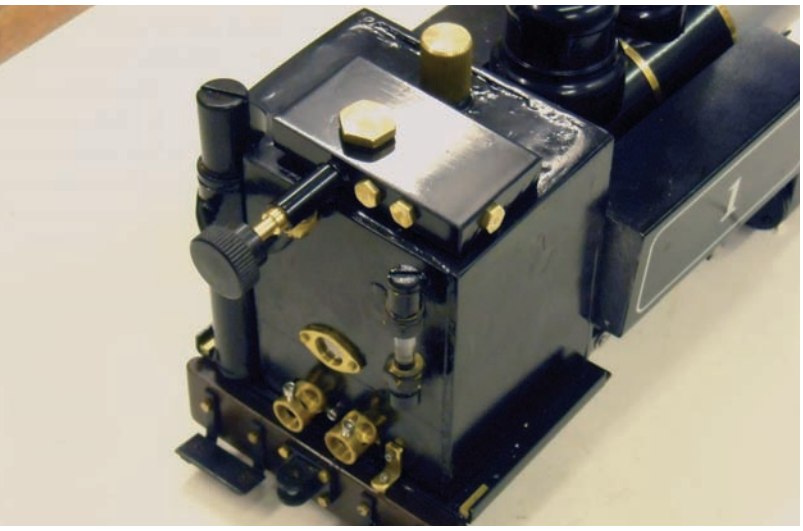


Photo 18: *The finished boiler with water sight glass and firebox sight window.*

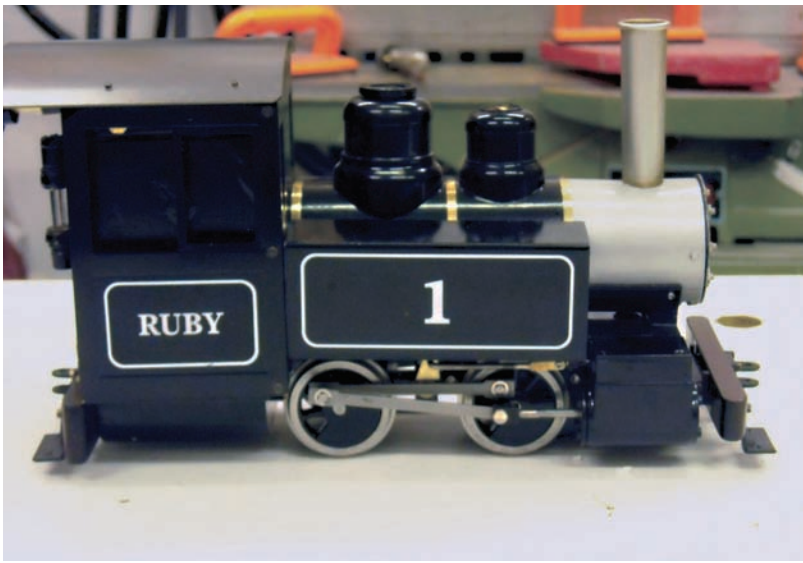


Photo 19: *Just another 'Ruby'?*

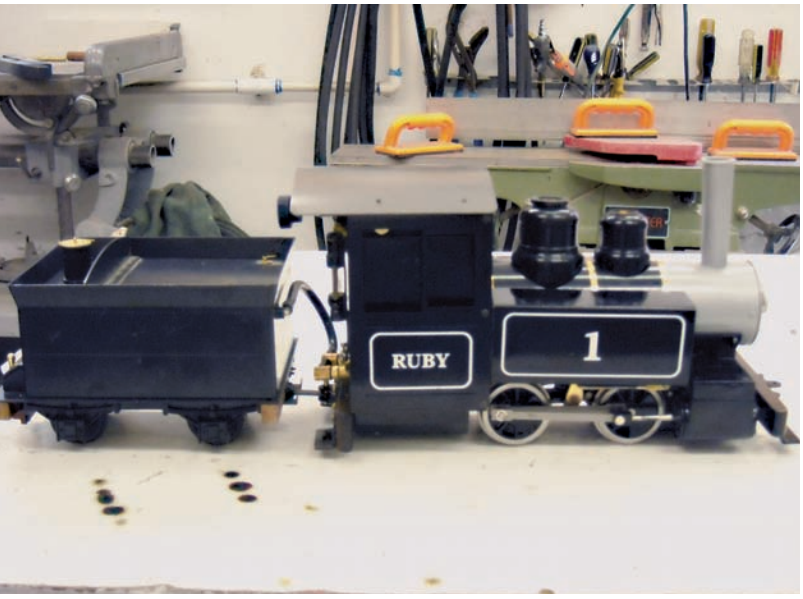


Photo 20: *With the Aster tender, is it a 'Rubaster'?*

Photo 21: *Maiden run.*

Adding radio control to two engines, paid for with an old watch

Rolex Asters

Text and photos by Gerald Pierce

I received a Rolex Chronograph watch as a gift decades ago — it cost $165 new. I wore the watch for many years, but it became expensive to clean and repair.

Four years ago, I did an Internet search to have the watch cleaned and oiled. To my amazement I discovered that people not only collected used watches, they were paying a lot of money to own them. I put it up for auction with Heritage Auction Galleries at its New York location.

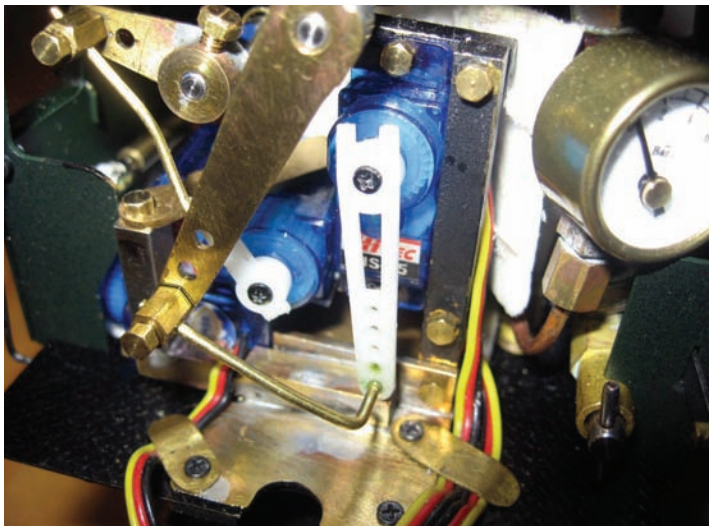


Photo 1: *BR5 rear cab view, servos and linkage.*

I received enough cash to buy three Aster small-scale live steam engines. It was a good decision: I prefer owning and running these beautiful locomotives than owning an old watch in a box in my dresser drawer.

For two of the Asters, I purchased the British Aster locomotive kits, the BR5MT and the Rebuilt Merchant Navy (RMN). Both have fully operational Walschaert valve gear in addition to a blower and steam regulator. I wanted to add radio control to operate the regulator, blower and reverser. (I won't cover the building of the kits here, as this is fully explained in the instructions and on several Internet sites).

Benefits

Radio control increases the pleasure of operating any Gauge One live-steam locomotive. Few tracks are level over the entire line, so the engine may slow down or stop on the high spots and in curves. If the regulator is opened to keep the engine moving in these areas, then it will run too fast in the level areas. I have never enjoyed jogging after my trains.

Some prefer that their Gauge One engines not have radio control (R/C). They attempt to find the perfect regulator "sweet spot" where the engine will run the entire line without stopping. I enjoy having control of the engine where I can change the speed and direction, and easily open the blower when the engine is in motion. Also, it is easy to stop the engine to check steam pressure and water level. It is a decision of the owner.

A short discussion of the Walschaert valve gear and the operation of the separate parts is helpful when setting the reach rod and checking if the reversing gear is set and operating correctly.

Both of my "Rolex Asters" have a working combination lever, which provides the valve lead for steam intake. It will also provide a quick release of the exhaust steam out of the chimney. The lever is moved by the cross head, drop arm and anchor link; the movement is not based on the position of the reach rod, expansion link or radius rod. With the die block in the middle of the expansion link, the ports will still "crack" on each dead center when the wheels are turned. Radio control does not adjust the combination lever.

When the reach rod is moved by the reversing

Photo 2: *Aster British Railway 5MT in the front, and the Aster Rebuilt Merchant Navy, in the rear.*

stand lever or servo, the die block and radius rod normally moves down for forward and up for reverse. These parts control the amount of port opening. An engine is best started with the die block in full gear. ("Full gear" means that the die block is near the bottom or top of the expansion link.)

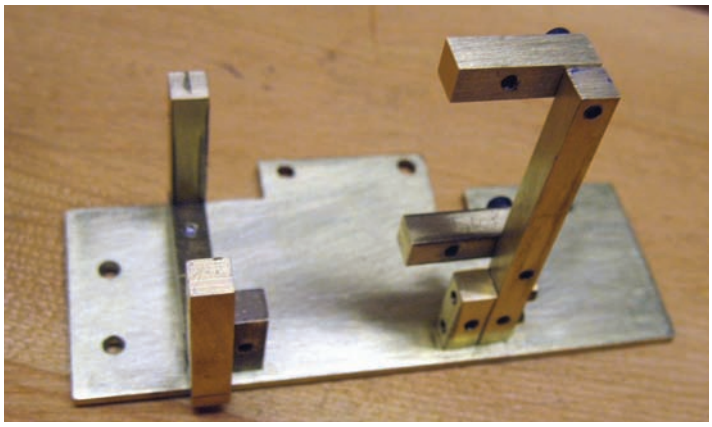


Photo 3: *RMN finished servo mount.*

Remember that the radius rod and die block should not be raised or lowered right to the ends of the expansion link slot. The die block needs some space to move slightly up and down within the expansion link when the engine is in motion.

When the reversing rod, or reach rod, is "notched up," the die block moves slightly toward the center of the expansion link, and steam admission cut-off will occur earlier. Notching up refers to notches cut on the top of the reversing stand. These notches keep the reversing lever in place. The engine is notched up after it is in motion. Since the ports are not fully opened on each stroke, less steam is used. If an engine has a screw reverser without notches it is still referred to as notching up.

In theory, radio control will allow a longer run because you can move the die block toward the center, which reduces the amount of valve movement and steam admission after the engine is running. For our size of engines this may not produce a benefit, but I like to think it does.

One additional point: with a servo attached to the reach rod, the radius rod can be moved down or up with a finger on each rod. It will stay put unless you have a broken servo gear. Therefore, if the servo stops working because of a weak battery or other malfunction you can still move the gear to forward or reverse.

Is R/C for you?

It is fairly easy to add radio control to operate the regulator and blower valves. These are simple valves to allow the passage of steam. The valves open and close easily and the amount of steam flow is easy to adjust.

The reverser, however, is a more difficult job. The valve gear may be stiff when the engine is new. (My BR5 took a year of running before I got good reverser results.) Since several parts are being moved, it is essential that all parts move freely with no binding. The servo placement and connection to the reach rod will take additional planning. The reverser servo will need more torque to operate. It usually is necessary to remove the cab to install and adjust the servo linkage.

I think engines without radio control are rarely reversed. Some reversing stands are difficult to reach and may be stiff to operate. When R/C is added, it is a simple matter to reverse the engine and worth the extra work to install.

Steam engines should run equally as good in reverse as forward. Since these are external com-

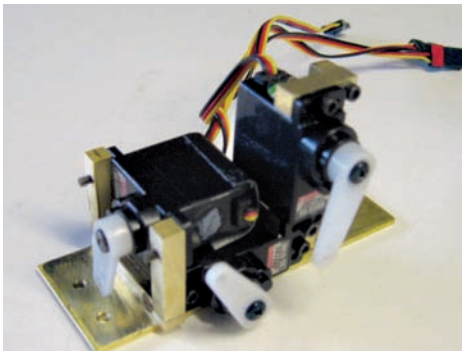


Photo 4: *RMN servos attached to the mount.*

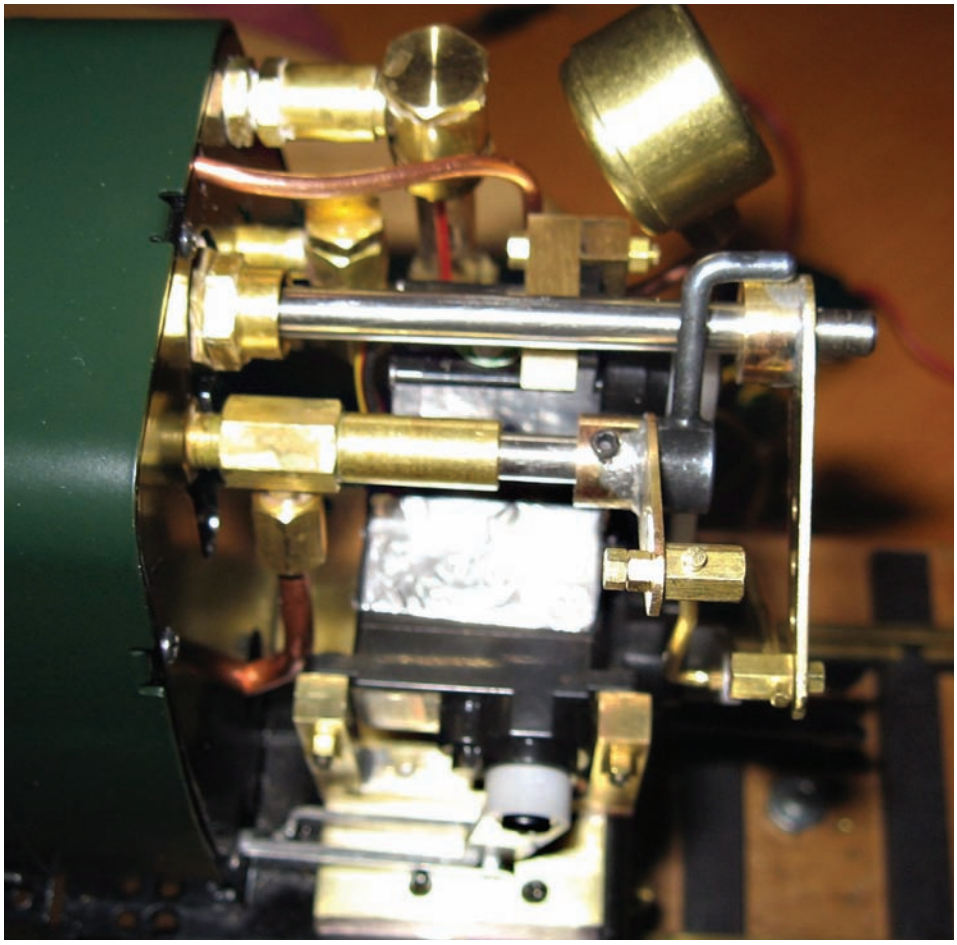


Photo 5: *RMN reverser servo arm attached to reach rod.*

bustion engines, the full power of the steam pressure is available instantly. There are no gears to shift to get the engine to move from dead stop or to increase speed. Internal combustion engines archive power by high revolutions and gearing. They are usually not run at high speed in reverse.

During the Civil War, the locomotive "Texas" ran backward for more than 50 miles to eventually overtake the stolen "General" locomotive. Steam engines certainly can run at full speed in either direction. The only problem is pushing some light cars which may derail.

Aster designed both of the engines I purchased using a true Walschaert valve gear, which increased their price. Unless radio control is used to operate the reverser, then I believe you are not getting your money's worth.

Planning

Installing R/C in an 1:32-scale Aster can be a challenge because of the small and crowded cab. My first R/C was installed on a Roundhouse "Lady Anne" component parts kit which I converted to a Prairie-style engine; roughly a 1:22-scale locomotive.

That installation is illustrated in "A Live Steam Whistle" (*Steam in the Garden*, May/June 2010, No. 111), where photos show the three servos for regulator, reverser and whistle. This is a narrow-gauge engine with a large cab for the servos and fuel tank, and the R/C installation works well.

I currently use the Spektrum DX6i transmitter and related receivers. This transmitter allows the binding — making the receiver respond to only one specific transmitter — of six receivers. Each engine can be selected separately and the transmitter allows individual settings for each engine.

I use the left control stick for steam regulator — up to open the valve which increases speed and down for slow and stop. The right control stick is used for the reverser — up for forward and down for reverse. Both allow for variable movement.

The blower control uses the gear switch, which isn't a variable movement switch. I prefer the blower to open without holding a lever. This helps when getting pressure up as it is not necessary to hold the transmitter while waiting for full pressure. The amount of blower valve movement can be adjusted either by linkage design or transmitter adjustment.

One item of caution concerns heat in the cab from the fittings, tubes and boiler. There is only a small separation between the servos and boiler back head, so the servos and wires should be protected from the heat. You must ensure that there is adequate clearance between the servo, wires and any hot items such as pressure gauge tube, feed water tube and boiler back head. I have placed insulating material in spots to protect these parts.

The R/C installation for both engines is similar. For the BR5, I used three Hitec HS-55 sub-micro servos. These are inexpensive servos, about $10 each. I have had only one fail over a four-year period. I thought that the reverser servo would fail

Carrier and track loader

After adding radio control, both of my Rolex Asters require a difficult engine-to-tender hook up when on the track — six connections are needed. These include the two water tubes, the alcohol feed tube and three servo wires. The alcohol feed line could develop a split from the repeated attaching and removing. Therefore, a carrier and track loader becomes essential for easy and safe hook up. This way, all hook up can be done before you get to the track.

The top photo shows the carrier empty, while the bottom photo shows the carrier with the engine inside.

The carrier is made from one-half-inch steel angles held in place with three-quarter-inch steel bars. I cut three-quarter-inch sections of the three-quarter-inch steel angle to attach four aluminum three-quarter-inch flats. Cross brass and aluminum rods connect the aluminum at the top, which also serve as lift handles for a two-handed lift.

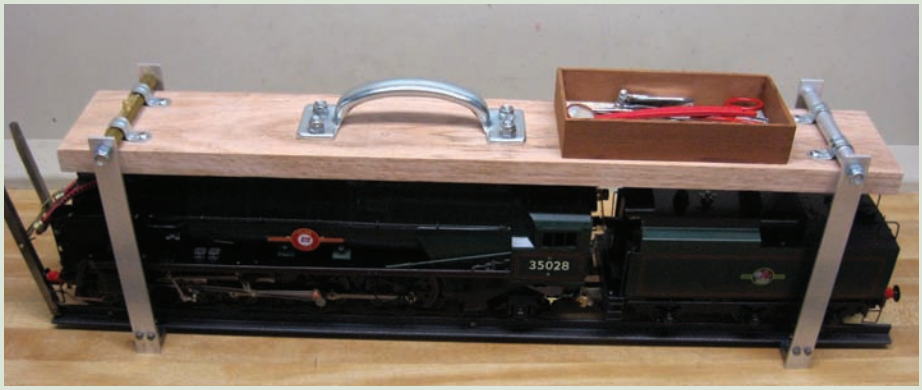
The round brass block drops down into the locomotive chimney from the front hex brass rod, which keeps the engine from rolling out of the carrier. A 1/16th-inch pin keeps the block in place.

For a one-handed lift, I added a 3½-inch wide by three-quarter-inch oak board with a strong handle on the top. The handle is forward of the carrier's center for a level lift. You may need to experiment to find your locomotive's center of balance. I added a small parts box on top of the board.

To unload, place the carrier with the engine on the track. The brass pin and block are removed and the ramp is lowered to the track. The engine will roll onto the track when the rear of the carrier is lifted.

— *G.P.*

Carrier: *Constructed of angle metal and oak, with a sturdy handle.*



Carrier filled: *Complete with small parts box on top of the board.*

first, however it was the steam regulator servo which broke. This was easy to replace without removing the cab, which must be removed to replace the reverser servo.

The servo wires run from the engine to the tender through an opening in the front of the tender. All wires are held in place with brass clamps to ensure that the servo arms do not hit the wires. It is helpful to paint the plug end of the servo wires and place a drop of paint on the receiver plug socket. I use green for regulator, blue for blower and red for reverse.

I placed the receiver and a 4.8-volt battery in the tender with an on/off switch. The receiver and wires were placed forward of the fuel tank. A brass plate was used to prevent the fuel tank from hitting the wires as it is placed in the tender. The battery fits on the side of the fuel tank and the receiver and battery are held in place with servo tape. A switch fits in a slot on the right front of the tender.

I made the servo stands using 1/16-inch brass plate and 3/16-inch square brass rod; the plate is held to the cab floor with screws. The servos are attached to the brass rods which are soldered to the plate. **Photo 1** shows a rear cab view of the BR5.

The plate is cut and installed first. I made a template from a thin piece of cardboard, which is transferred to the brass sheet using marking blue. Cut the plate to shape and insure that it will fit over the cab floor. Drill for mounting screws. **Photo 3** shows the RMN servo mount.

The servo placement will depend on the location of the water gauge, pressure gauge, valves and

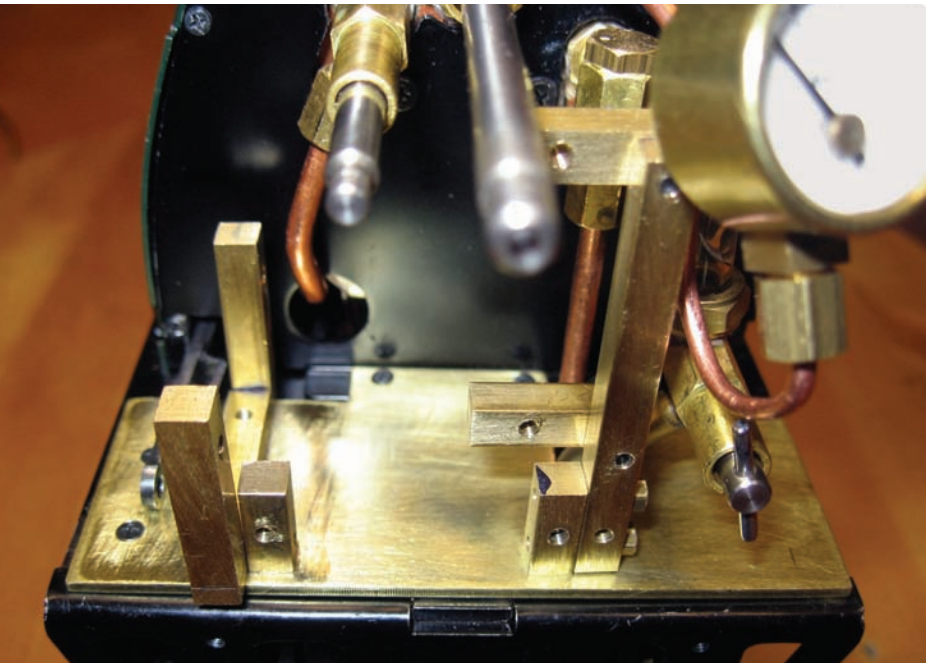


Photo 6: *RMN servo stand attached to foot plate.*

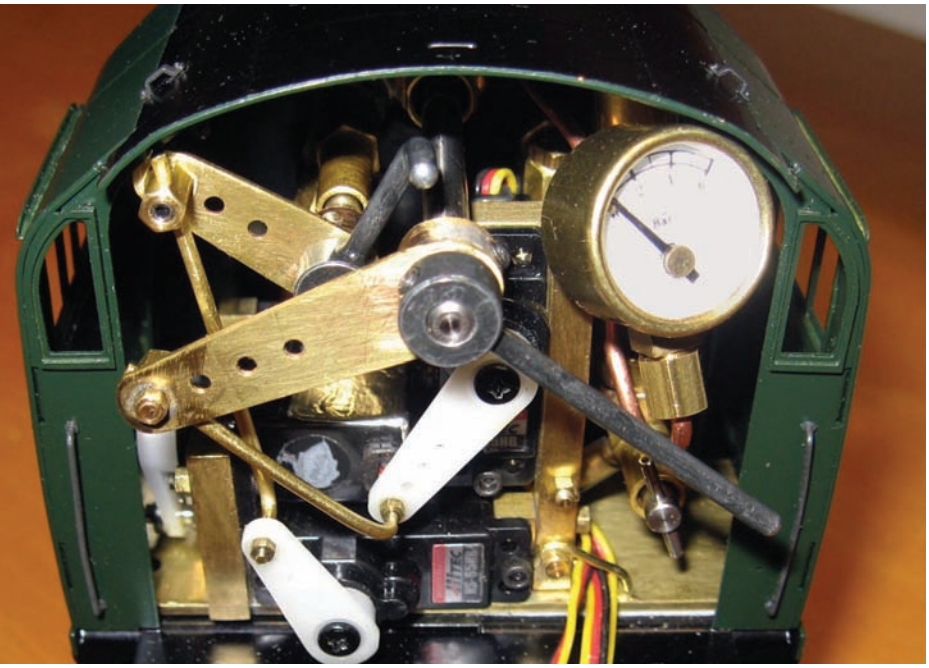


Photo 7: *RMN rear cab view, servos and linkage in place.*

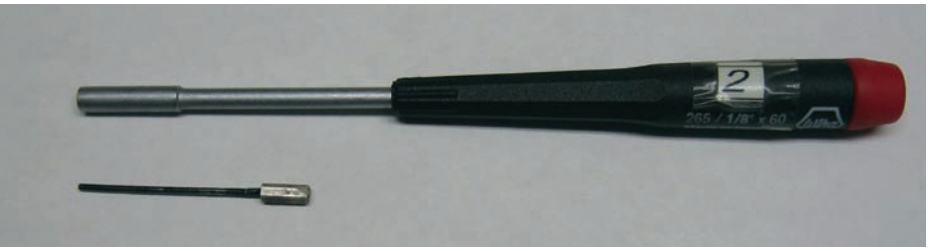


Photo 8: *Tool for valve-stem set screw.*

reversing stand. In both of my Aster engines, the regulator rod stem is at the boiler top center. The blower valve stem is just to the left of center with the reversing stand left of blower. The water and pressure gauge are on the right side of the cab.

I mounted the regulator servo upright with the arm spline at the top. It will be close to the water and pressure gauges but with a small space to prevent melting the servo. The blower servo is mounted on the flat side. **Photo 4** shows the RMN servo placement.

The reverser servo is mounted either above or below the blower servo depending on the height of the reach rod above the foot plate. For the RMN it was mounted above with the servo arm pointing down. For the BR5 it was below with the servo arm pointing up. The movement is only about one-quarter-inch from center (**Photo 5**).

An air test should be done after servos and linkage are hooked up. This is best done with the cab off. Observe the movement of each function and make needed adjustments. Ensure that the die block is not hitting the link ends. Note the position of the transmitter reverse control stick in full gear. It is not necessary to move it to the end of its travel range. Take your time on the final adjustments. It is difficult to make adjustments with the cab in position.

Next, a steam test on rollers should be performed. When the engine gets hot and parts expand the valve motion that worked well on air may be tight. The valve gear may have reduced movement with a hot engine.

The RMN uses Hitec servos HS-65HS for the regulator and blower. Reversing movement is by a metal-gear servo (HS-65MG). All servos moved 90 degrees, which I found was adequate. If needed, a servo stretcher can be installed for more movement.

The battery for the RMN would not fit in the tender, so I placed it in a coach. For the RMN, I attached the handles for the blower and regulator on the valve stems. This allows for manual operation of the regulator and blower when valve arm set screws are loosened (**Photos 6** and **7**).

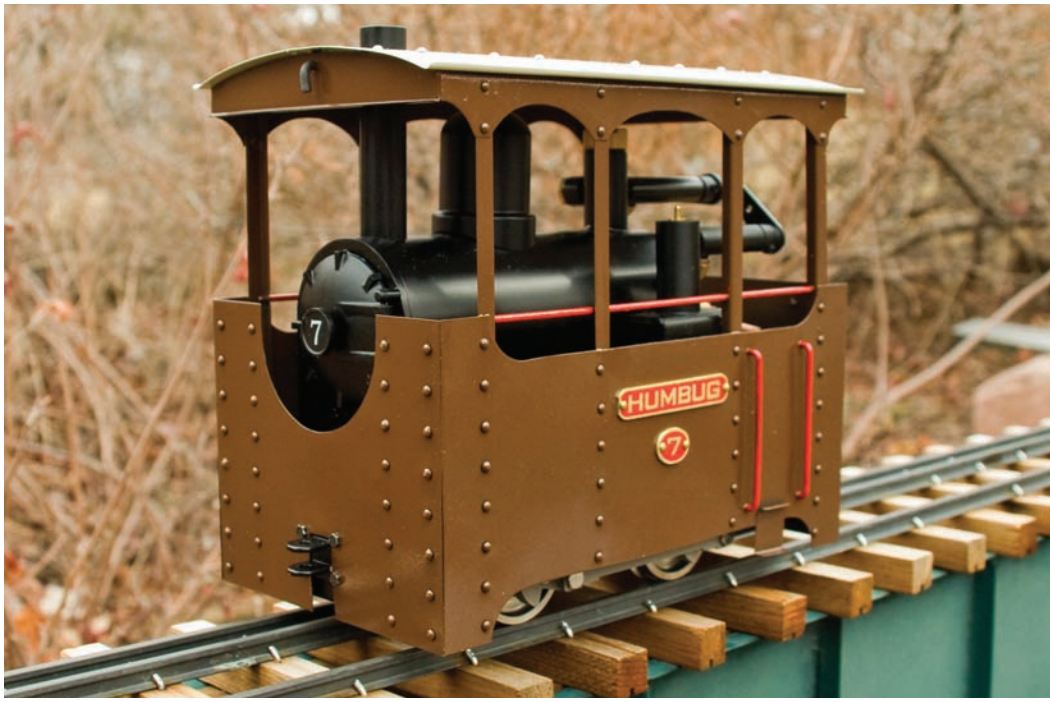
The valve stems set screw have a 3-48 thread and a hex key size of 0.050 inches. The L-shape hex key wrench is too short to reach inside the cab, so I made a tool to reach the set screws. The L-wrench was cut straight, then soldered into a small one-eighth-inch hex bar which is held by a No. 2 hex wrench (**Photo 8**).

These Asters are not only beautiful locomotives, they run great. In fact, with the radio control, they run like a Rolex.

Learn tinplate skills and bash Accucraft's 'Dora' into a

TRAM

Text, illustrations and photos by Marc Horovitz



Finished tram: *Completed 'Dora' bash 'Humbug' on author's layout.*

Now comes the fun part of working with tinplate — assembly. Virtually all of the parts will be soldered together, so here are a few words on soldering.

- **Solder.** I like good old tin-lead solder — either 40/60 or 50/50 is fine. I have a spool of stuff that's about 0.040-inches in diameter, which is a good size to work with.
- **Flux.** I prefer a paste flux. I use either Nokorode or AlphaFry WaterFlow 2000, the latter being water soluble and a little easier to clean up. There are lots of suitable fluxes out there — just find one you like.

I do almost all of my tinplate soldering with an iron. My tools of choice can be seen in **Photo 51** — 35- and 100-watt irons, both of which have chisel tips. If I had to choose a single iron, I'd choose the 35-watt tool. The other one is too big for some jobs. A resistance solderer might also be used, and may even be preferable in some instances, but it is not essential. A torch, even a small one, is definitely not the tool to use here.

- **Tinning.** Tinplate is tin-plated steel. Given that, it should need no tinning. However, I find that I get much better results if I tin each part first. This just means fluxing it and laying down a thin coat of solder — the thinner the better.
- **Sweat soldering.** This is applying heat to the outside of an already-tinned joint, causing the solder within the joint to melt and bond the parts. We'll be doing some of this. I find that this works better if I add flux to the top of the part, where the iron will be applied, even though no solder will be added there.

Photo 51

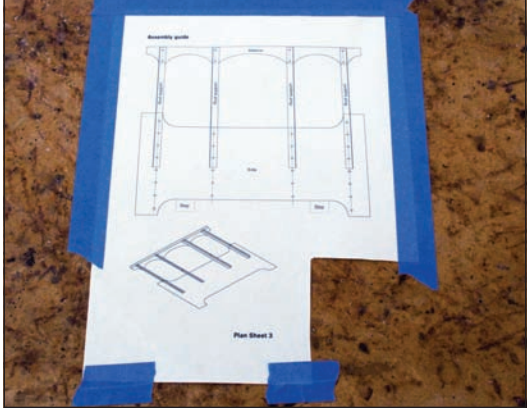


Photo 52

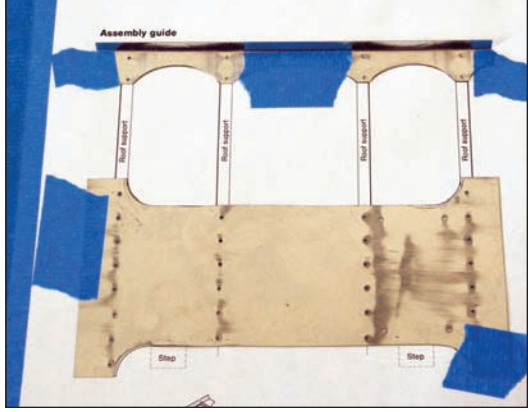


Photo 53

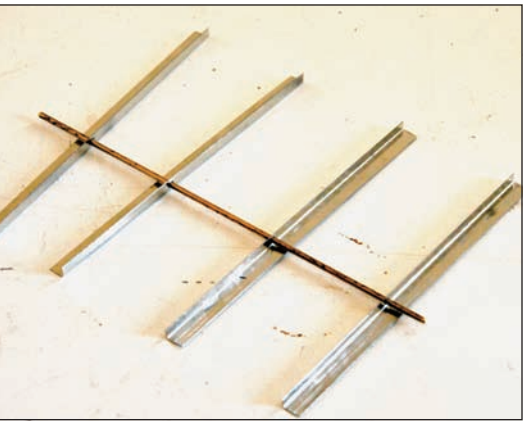


Photo 54

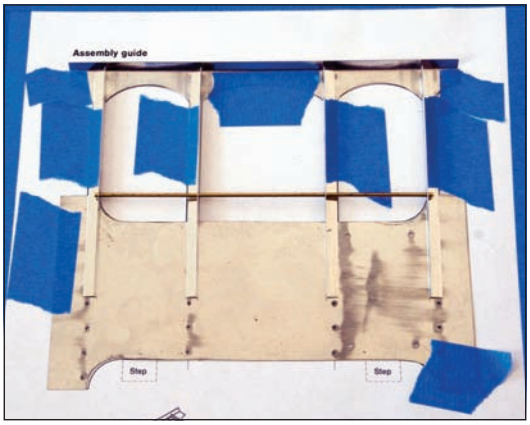


Photo 55

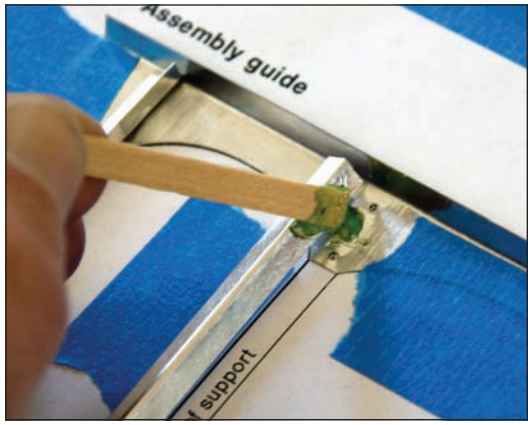


Photo 56

The flux seems to help with heat transfer and makes for a faster, cleaner joint.

- **Tinplate characteristics.** If you've done much soldering of brass, you know that it (and copper) tends to quickly disperse the heat, which makes a lot of heat necessary and results in very hot parts. Tinplate, on the other hand, tends to concentrate the heat. This means that you can quickly solder a joint with a relatively small iron and the rest of the piece stays pretty cool. Also, you won't unsolder the part next to the one you're working on.
- **Messy joints.** If your joints come out messy, don't worry about it. They can always be cleaned up later. What's more important is proper alignment of parts. It's often difficult to separate misaligned pieces, so be careful when setting up your joints. All of this soldering information is covered on the Tinplate Girl web site (http://tinplategirl.com/).

Putting it all together

Note: When you start assembling the pieces, several of the rivet holes will be covered and must be drilled through again later.

Tape the assembly guide on Plan Sheet 3 to your work surface, the one on which you'll be soldering (**Photo 52**). You'll need two pieces of 1/16-inch-diameter rod, each 5½-inches long. Tape a valance and a side, right-side down, to the assembly guide (**Photo 53**). Slip the brass rod through the holes in four of the roof supports (two right, two left — **Photo 54**), then carefully tape the roof supports to the assembly guide, as shown in **Photo 55**. The leg with the hole in it should be on the side of the roof support closest to the center of the tram. Make sure they are positioned squarely. Now remove the brass rod.

The tape securing the roof supports can act like a hinge. Turn one up and apply some flux to the contact surfaces (**Photo 56**). Then tin each surface. Once that's done, apply the heat to the outside of the joint (**Photo 57**), melting the solder already applied. Do that for each support, top and bottom. When all of the supports have been soldered in place, replace the brass rod and solder it in. You really only need to solder it one place — I

Bashing 'Dora' into a tram

Live steamer Marc Horovitz wanted to turn an Accucraft "Dora" into a steam tram. While the project has many steps, it is really quite easy.

- **Part One:** An introduction to the project, showing how to remove the "Dora" body, starting with part making.
- **Part Two:** Making the roof supports, the interior braces, the roof side valance and the sides.
- **Part Three:** Putting it all together — soldering, pre-body assembly, rivets, final body assembly, roof connectors, steps and grab irons.

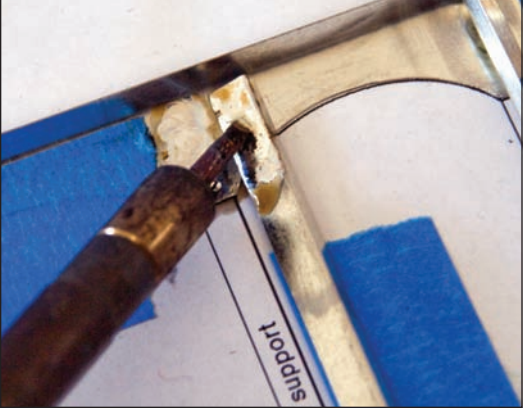


Photo 57

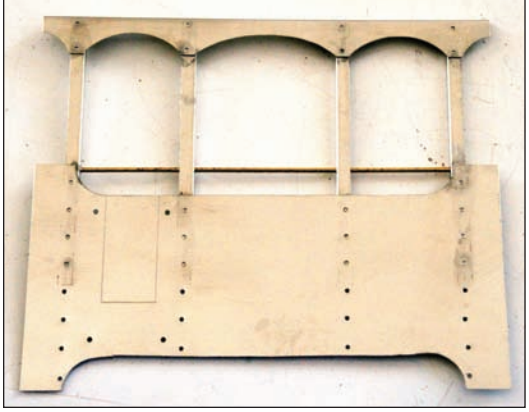


Photo 58

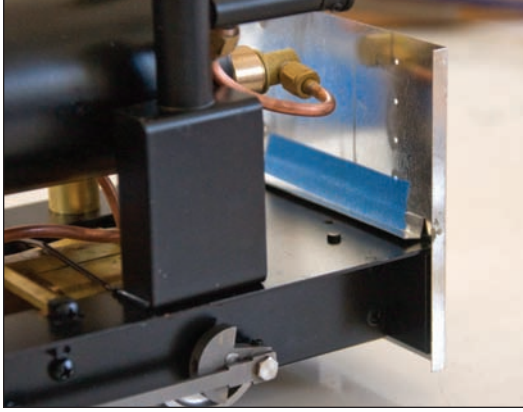


Photo 59

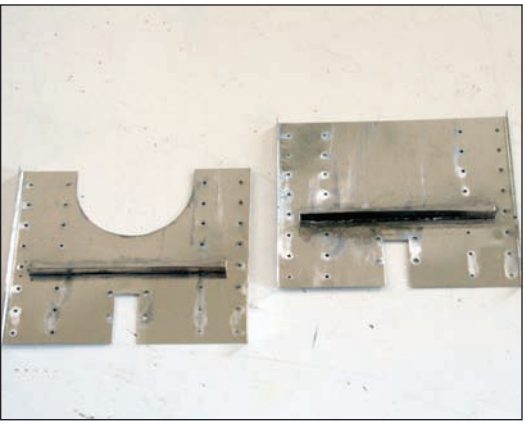


Photo 60

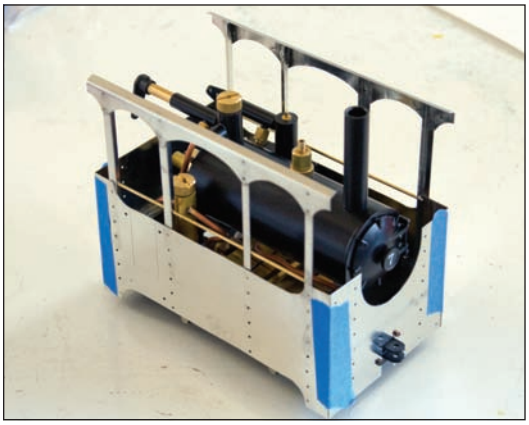


Photo 61

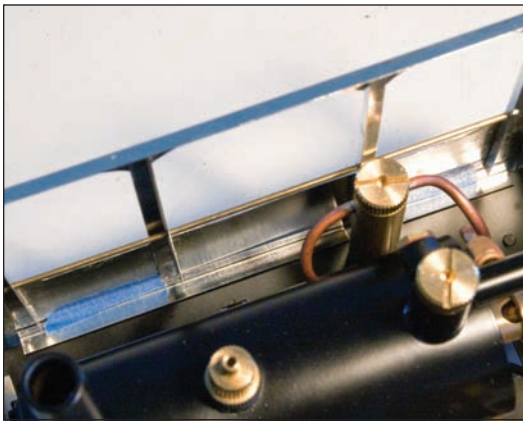


Photo 62

Photo 63

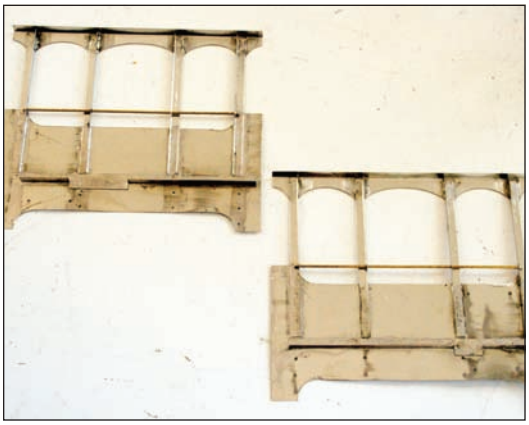


Photo 64

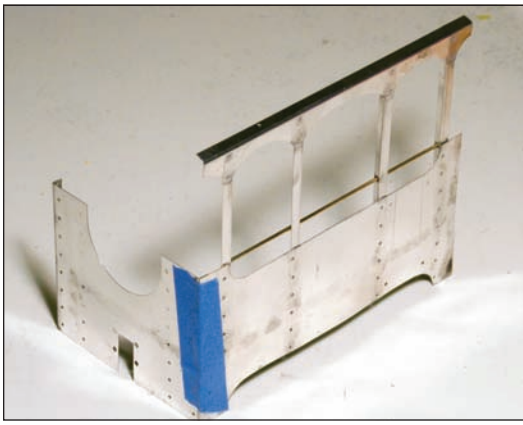


Photo 65

suggest an end. The finished assembly should look like **Photo 58**. Now do the same for the other side.

• **End braces.** With the ends attached to the locomotive, tape an end brace in place on each end. One leg of the L brace should rest on the floor while the other should be flush against the end sheet (**Photo 59**). Remove the ends and solder the end braces to the end sheets in the same way you did the roof supports. The finished assemblies should look like **Photo 60**.

• **Side braces.** Screw the end sheets back into place on the engine. Then tape the sides to the ends as per **Photo 61**. If you want to drop the roof in place temporarily, this will give you an idea of what the finished engine will look like. Slip the side braces into place beneath the ends of the roof supports and tape them to the insides of the side panels (**Photos 62** and **63**). Then remove the sides and solder the braces into place. These will give the sides a little extra stiffness. **Photo 64** shows the finished assemblies.

This is a good time to drill out all of the rivet holes that got blocked during assembly.

• **Body pre-assembly.** Take an end sheet and an adjoining side and flux and tin the mating surfaces. Tape them together as per **Photo 65**. When all is good, solder them together, using a block to ensure squareness. Now do the same for the other end sheet and side. You'll then have two L-shaped subassemblies (**Photo 66**).

• **Rivets.** Now is a good time to add all of the rivets. Insert an escutcheon pin into a hole, making sure the head is flush with the tinplate surface.

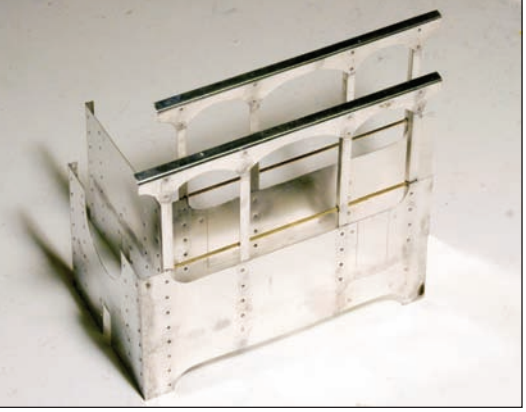


Photo 66

Photo 67

Photo 68

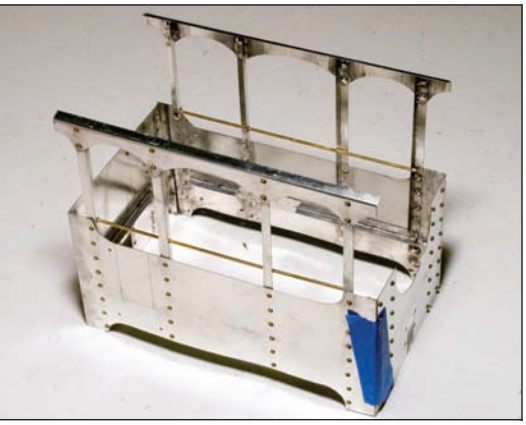


Photo 69

Photo 70

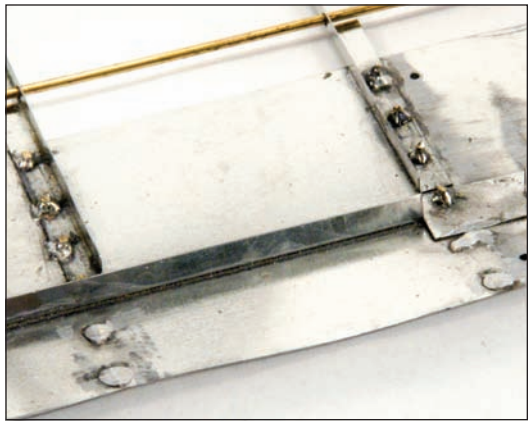


Photo 71

Apply a little flux to the inside and touch your iron to the pin while applying a little bit of solder to the side of the pin opposite the soldering iron (**Photo 67**). The solder should flow easily, making a clean joint. With a pair of wire cutters, cut the pin off close to the joint (**Photo 68**). Now do the same again, 159 more times.

• **Body final assembly.** Flux and tin the remaining mating surfaces on the sides and ends, tape them together (**Photo 69**) and solder the joints. The basic body is now together (**Photo 70**).

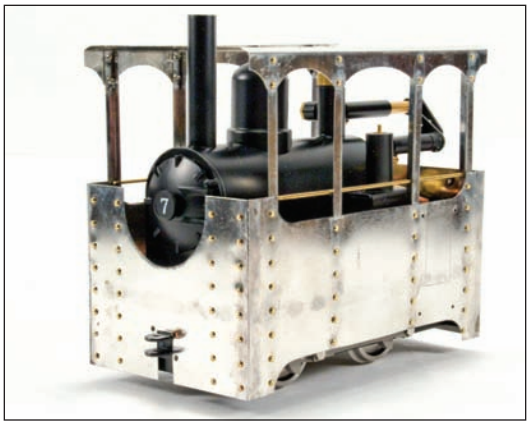


Photo 72

• **Test fitting.** Now's it's time to test fit the body to the chassis. You'll probably have to grind down the points on all of the rivets below floor level (**Photo 71**). I used a little drum sander in my Dremel rotary tool — it just took a matter of minutes. Also, the throttle lever is too long to allow the body to slip over it, so you'll have to temporarily remove it. While it's out, you might as well reduce its length, as per the first modification (see *Steam in the Garden*, September/October 2013, No. 129). When all is well, it should look like **Photo 72**.

Test-fit the roof on the body. I found that on mine, the roof rivets interfered with the side valances. If you have the same experience, grind away the edges of the side valances to clear the rivets and their solder (**Photo 73**). You can leave the body on the chassis for the time being. We're in the home stretch now.

• **Roof-end valances.** The roof-end valances can be soldered into place now. Tin the mating surfaces and tape the valances into place. Make sure that everything fits well and is square and level, then solder the corners. This is probably easiest done with the tram on its side (**Photo 74**). The finished body should look like **Photo 75**.

• **Roof connectors.** Cut two lengths of 3/32-inch brass rod, each one-inch long. Bend 3/16-inch of one end of each, 90-degrees, to form L-pins (**Photo 76**). Set them aside. Now you'll need to prop the tram upside down, with the roof on the bottom (**Photo 77**).

Plan sheets

After the first part of this article was published, a minor error was found in one of the plan sheets. If you downloaded any of the sheets before Sept. 1, please go back and download them again.

http://www.steamup.com/dora-tram/

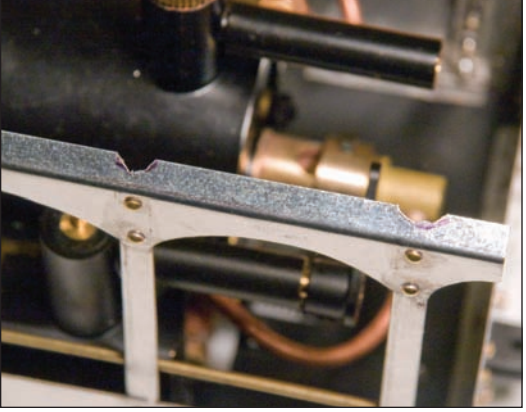
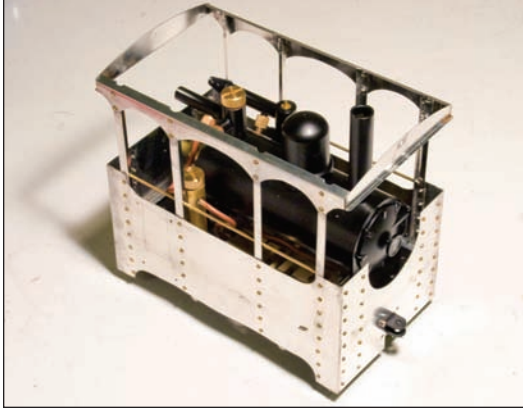


Photo 73

Photo 74



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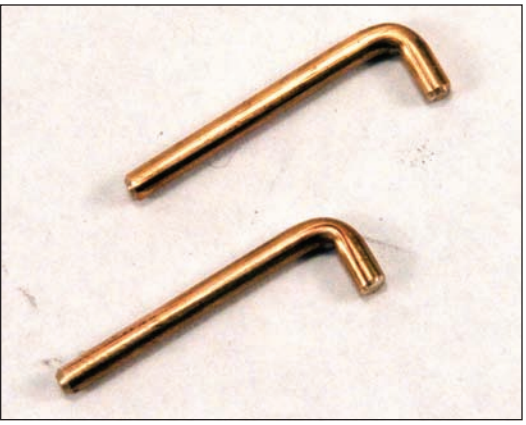


Photo 76

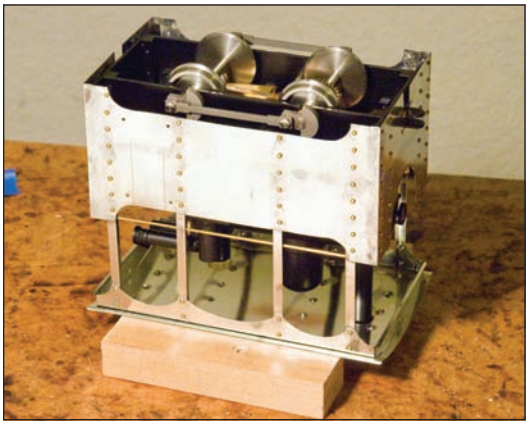


Photo 77

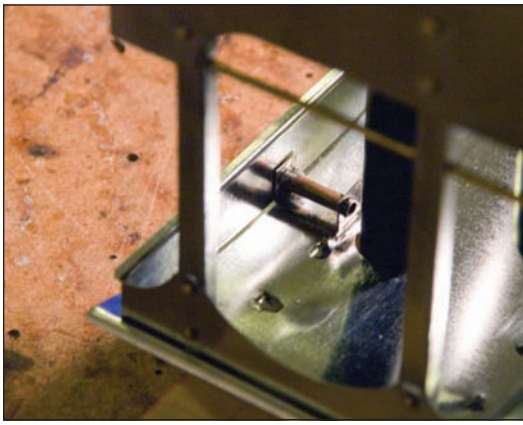
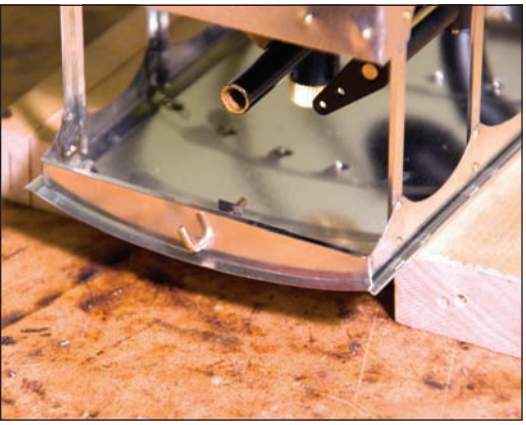


Photo 78



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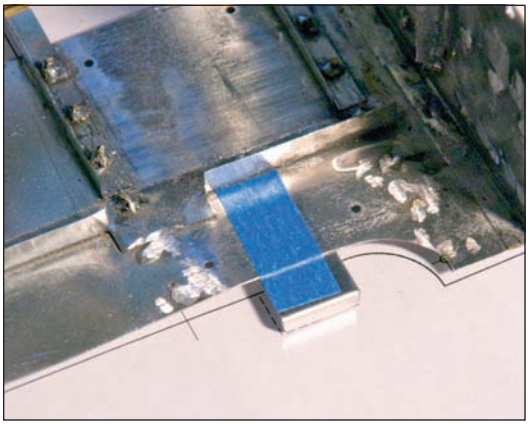


Photo 80

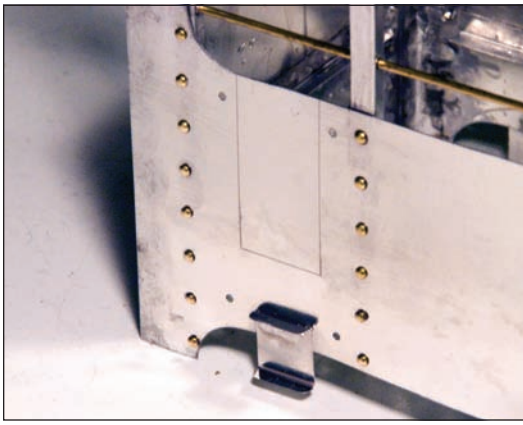


Photo 81

Make sure the roof is well centered. Flux the roof connectors and put them in place, as shown in **Photo 78**, transferring some of the flux to the roof.

Remove the connectors and tin them, also tinning the roof underside where they go. Put the connectors back in place and slip one of the L-pins through the roof end valance into the connector to properly align it (**Photo 79**). Again making sure the roof is well centered, solder the connectors to the underside of the roof, taking care not to solder the pins in place or the roof to the valances. If you've done your work right, you'll be able to remove the pins and pop the roof off in a second for engine servicing.

• **Steps and grab irons.** All that remains (except for paint) is to solder the steps in place and make and install the grab irons. Remove the tram body from the chassis. To properly position the steps, you'll need the Assembly Guide (Plan Sheet 3) again. Place a step on the guide, then place the tram body over it, in position. Tape the step to the body on the back side (**Photo 80**). Make sure the step is below the door, not at the other end. Then, using the tape as a hinge, flux the mating surfaces, tin them, and solder the step in place (**Photo 81**). Do the same with the other step.

Grab irons are made from 1/16-inch brass rod. The trick is to bend them precisely so that they fit neatly into the holes. The way I do it is this: The distance between the grab-iron holes on the tram sides is 1.734-inches, so the inside dimension of the bent grab iron should be 1.672-inches. I cut the rods around two-inches long, then marked the dis-

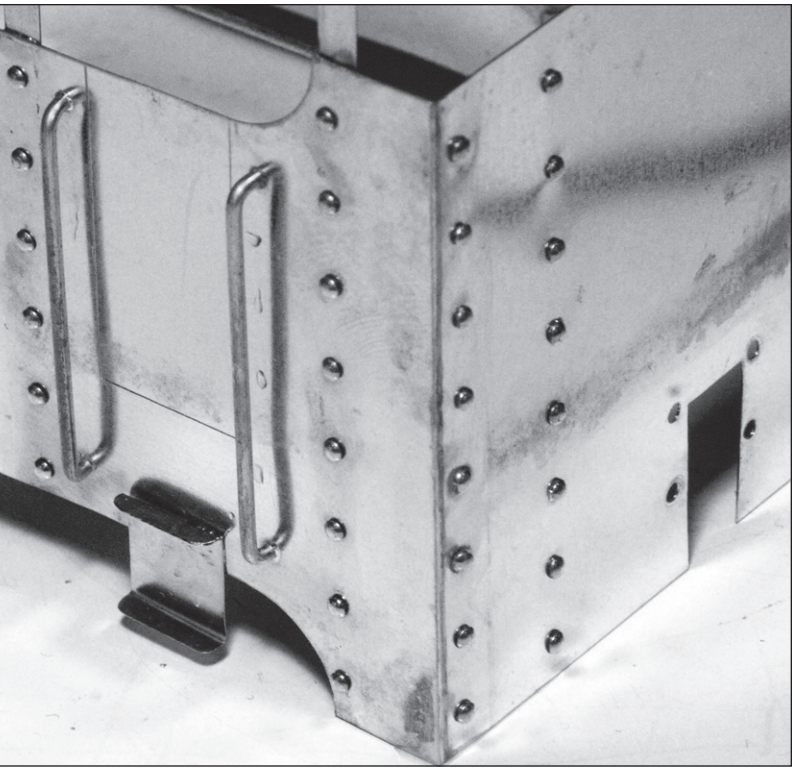


Photo 82

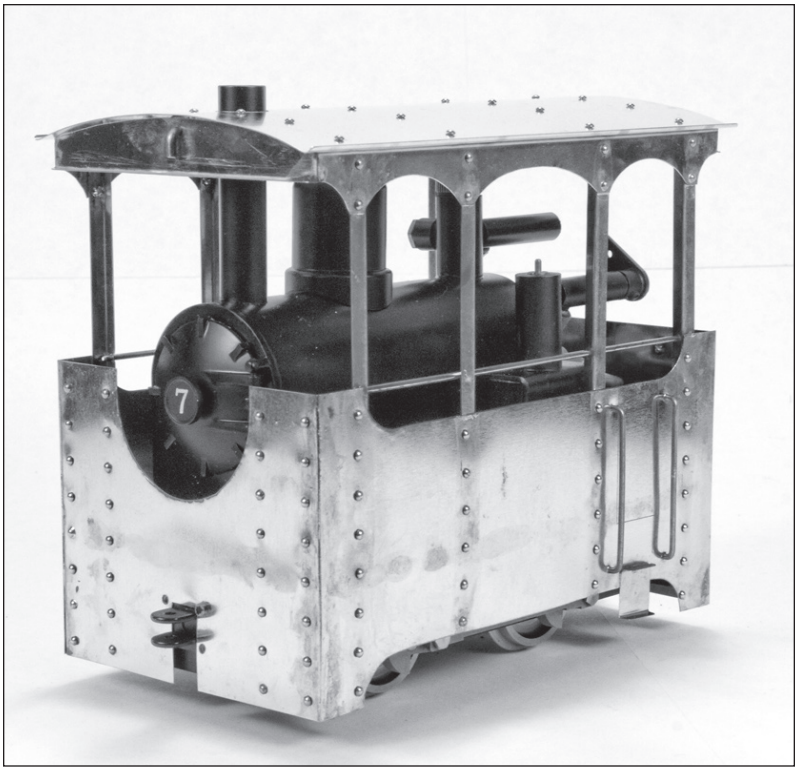


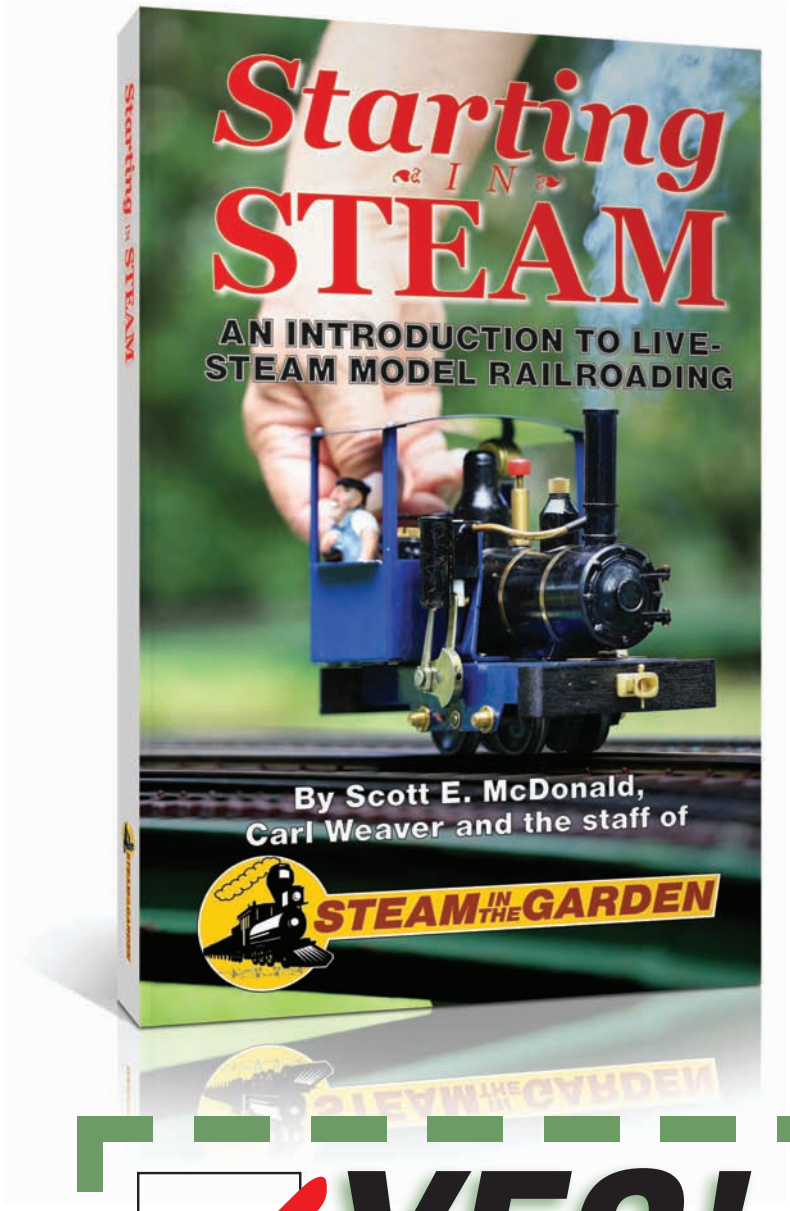
Photo 83

tance of 1.672-inches, leaving approximately equal amounts at the ends. Then, gripping the body of the grab iron in the vise, I bent one end over 90-degrees with a small hammer. Turning it around, I then bent the other end. I've had good results with this method (**Photo 82**).

Once the grab irons are in place, your tram is finished (**Photo 83**). There are details that you could add if you like — headlamps, half-round beading around the top and bottom edges, door handles and so forth.

Before painting, the tram will need a good degreasing. I just use Dawn dish soap and give it a good scrubbing, followed by a coat of Rust-Oleum primer. Just remember: A good paint job — or even one like mine — will cover a multitude of sins. Even if you think your work has been sloppy up to now, you'll be surprised at how good your project will look once it's painted.

FUN TRAINING FOR TINY TRAINS



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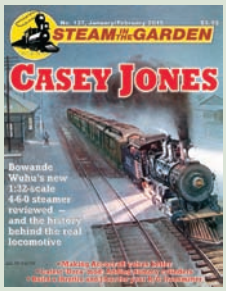

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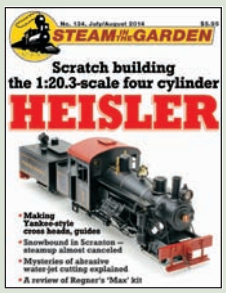

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Steam in the Garden, USPS Publication Number 011-885, Filed Nov. 4, 2015.

Steam in the Garden is published six times a year by Steam in the Garden LLC for an annual subscription rate of $35. Known office of publication is PO Box 335, Newark Valley, NY 13811-0335; contact person is Marie Brown (607-642-8119). General business offices of the publisher are located at 929 E. 200 South, Salt Lake City, UT 84102. Publisher: Dan Pantages, 2986 145A St., South Surrey, B.C., V4P 1P7 Canada. Editor: Dave Cole, PO Box 719, Pacifica, CA 94044. Owners: Steam in the Garden LLC, 929 E. 200 South, Salt Lake City, UT 84102. Marie Brown, PO Box 335, Newark Valley, NY. Dave Cole, PO Box 719, Pacifica, CA. Howard Freed, 929 E. 200 South, Salt Lake City, UT. Scott McDonald, 1402 Idaho St., Woodbridge, VA. Dan Pantages, 2986 145A St., South Surrey, B.C., V4P 1P7 Canada. Paul Scheasley, PO Box 5190, Lake Wylie, SC. Sonny Wizelman, 10321 Northvale Rd, Los Angeles, CA. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities: None. Tax Status: The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes has not changed during the preceding 12 months.

The average number of copies of each issue during the preceding 12 months is: a. Total Number of Copies Printed: 1303. Paid Circulation: 1. Mailed Outside-County Paid Subscriptions Stated on Form 3541: 700. 2. Mailed In-County Paid Subscriptions State on Form 3541: 0. 3. Paid Distribution Outside the Mails including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution outside USPS: 127. 4. Paid Distribution by Other Classes of Mail through the USPS: 176. c. Total Paid Distribution Circulation: 1003. d. 1. Free or Nominal Rate Outside-County Copies included on PS Form 3541: 57. 2. Free or Nominal Rate In-County Copies included on PS Form 3541: 0. 3. Free or Nominal Rate Copies Mailed at Other Class Through the USPS: 17. 4. Free or Nominal Rate Distribution Outside the Mail: 3. e. Total Free Distribution: 77. f. Total Distribution: 1080. g. Copies Not Distributed: 223. h. Total: 1303. i. Percent Paid: 92.8. The actual number of copies of a single issue published nearest to the filing date (November/December 2015) is: a. Total Number of Copies Printed: 1300. Paid Circulation: 1. Mailed Outside-County Paid Subscriptions Stated on Form 3541: 733. 2. Mailed In-County Paid Subscriptions State on Form 3541: 0. 3. Paid Distribution Outside the Mails including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution outside USPS: 121. 4. Paid Distribution by Other Classes of Mail through the USPS: 181. c. Total Paid Distribution Circulation: 1035. d. 1. Free or Nominal Rate Outside-County Copies included on PS Form 3541: 55. 2. Free or Nominal Rate In-County Copies included on PS Form 3541: 0. 3. Free or Nominal Rate Copies Mailed at Other Class Through the USPS: 15. 4. Free or Nominal Rate Distribution Outside the Mail: 0. e. Total Free Distribution: 70. f. Total Distribution: 1105. g. Copies Not Distributed: 195. h. Total: 1300. i. Percent Paid: 93.6.

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RAILWAY POST OFFICE

Now when firing up, success! The steam goes up and all of the hot grunge goes down! Skin and clothing is much better protected!

Chip Rosenblum
Columbus, Ohio

'Fairymead' modification

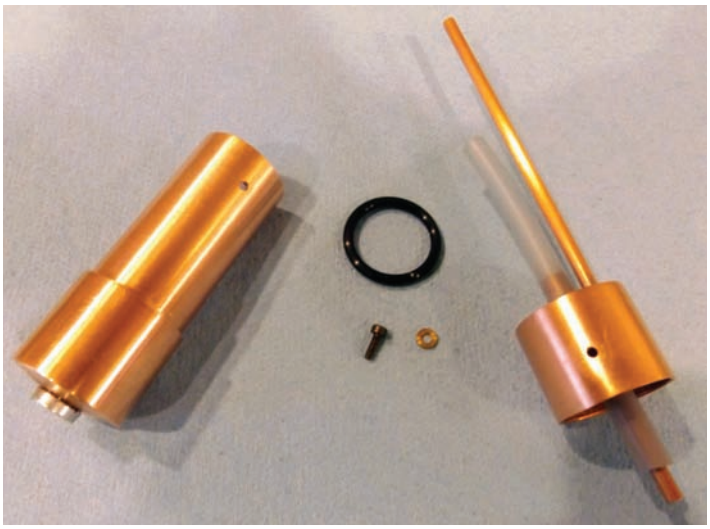
When I was looking at the parts of my Accucraft "Fairymead" that came as a "kit," I noticed that from my perspective the exhaust pipe had a problem. It was wide open at the top.

In my experience exhaust pipes should be closed at the top with a way for steam and priming to escape such that the steam goes up and liquids go down, saving one's forehead from third degree burns.

Exhaust mod: *Rosenblum added a screw and cut slots in the pipe.*

I noticed that the interior diameter of the pipe was very close to the tap drill size for a No. 2-56 machine screw thread. I ran a tap about one-eighth-inch into the top of the exhaust pipe, turning very slowly and withdrawing the tap frequently as to not torque or bend the softened copper.

I used a hex-head brass No. 2-56 by one-eighth-inch machine screw and a stainless No. 2 lock washer tightened into the top of the pipe to close off the top opening. I then cut five slots with a rotary tool (Dremel) cutoff wheel that went about halfway through the pipe, leaving openings.



New catch can: *Note O-ring and set screw.*

Catch-can improvements

I have made some changes to the catch can for my "Brunel" locomotive (see *Steam in the Garden*, September/October 2015, No. 141). Now, I only solder the bottom cap to the catch can, so that it can be removed and emptied.

I installed a three-quarter-inch inside diameter by 15/16-inch outside diameter rubber O-ring to the inside of the top cap to seal the catch can.

With the catch can's top cap installed I drilled a 1/16-inch hole through both pieces (the top cap and catch can).

I then removed the top cap and soldered a 2mm

Assembled catch can: *Magnet holds it in place.*

nut to the inside of the catch can, so that it can be bolted together and form a good seal. Everything else remains the same.

Everyone asks me why the bottom of the catch can has a magnet — the reason is for easy removal and to hold it in place.

Dave Frediani
Sonora, Calif.

Time priorities

I have a great deal of respect for those live steamers who have developed a layout which incorporates scenery and buildings and, moreover, simulates an industry which the railroad serves (see *Steam in the Garden*, November/December 2015, No. 142, "Cupola view").

However, as much as I like the idea, having a layout like this is simply beyond the scope of the time which I can dedicate to the hobby.

We all make priorities with our time, largely based on our interests. My interests center around designing and scratch building locomotives. I love doing this work — it is very rewarding for me.

Put simply, I would not get the same level of satisfaction in building and, argh(!), maintaining more than a basic, tabletop layout.

I like the idea of running my engines on a beautifully maintained "garden" layout — but I guess that will have to happen at a location other than my own backyard.

As they say, life is short — build locomotives first.

Rob Lenicheck
Palo Alto, Calif.

Editor's note: Rob's was one of more than a dozen responses to my column on whether live steamers should include scenery on their backyard layouts. The volume was so great that we'll devote a full story to them in the next issue (still isn't too late to contribute — write me at dmcole@steamup.com).

TIMETABLE

Jan. 10-17, 2016 — International Small Scale Steamup and Arts Festival, Diamondhead Inn and Suites, Diamondhead, Miss. Called "the most important small-scale event in the United States," Diamondhead includes 24-hour steaming, a "flea market," seminars, dealer tables, a festive meal and extracurricular activities. Diamondhead Inn & Suites: (228) 255-1300. Info: Patrick Darby, k5pat@bellsouth.net, (985) 867-8695; http://www.diamondhead.org.

Jan. 15-17, 2016 — Cabin Fever Model Engineering Expo, Lebanon Valley Expo Center, Lebanon, Pa. Info: http://www.cabinfeverexpo.com.

Feb. 12-14, 2016 — 18th Annual Presidents' Day Steamup, Electric City Trolley Station & Museum (Steamtown), Scranton, Pa. Two tracks in G-gauge and 0-gauge, sponsored by the Pennsylvania Garden Railway Society, Warrior Run Loco Works, Aikenback Live Steamers and Wyoming Valley Live Steamers. Info: Clem O'Jevich Jr., (570) 735-5570 or wrunloco@aol.com.

March 26-27, 2016 — East Coast Large Scale Train Show, York Fairgrounds, York, Pa. Aikenback Live Steamers will set up its 54-foot, double-tracked and dual-gauged (32mm and 45mm) layout, with 10-foot curves, at this event. Info: http://www.eclsts.com and Mike Moore, mike@aikenback.net.

April 21-24, 2016 — Spring Steamup, Staver Locomotive, Portland, Ore. Info: http://www.staverlocomotive.com.

July 4-10, 2016 — National Garden Railway Convention, Santa Clara, Calif. Self-guided and motorcoach tours of area garden railroads; clinics, vendor hall, speakers, banquet, ice cream social. Steam layouts. Info: http://ngrc2016.org.

July 13-17, 2016 — National Summer Steamup, Lions Gate Hotel, McClellan, Calif. Multiple layouts, more than a dozen loops, 38,000-square-foot steamup hall; open 7 a.m.-1 a.m. Clinics, dealers' room. Lions Gate room reservations: (916) 643-6222 (http://www.lionsgatehotel.com). Info: http://www.summersteamup.com or (650) 898-7878.

Sept. 7-10, 2016 — Thirty-sixth National Narrow Gauge Convention. Augusta, Maine. Layout tours, modeling contest, modular layouts, clinics, dealers' room. Info: http://nngc2016.org.

Regular steamups

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.

Upstate N.Y. Steamers. Several steamups per year in various locations around Western New York. Info: http://www.tinyurl.com/upstatesteamers.

Southern California Steamers. Contact Jim Gabelich for dates, places and other pertinent information. (310) 373-3096. jfgabelich@msn.com.

Crescent City High Iron. Steamups as necessary on an elevated backyard layout on Northern California's upper coast. Info: Don Cure, diamondd1947@msn.com.

On the Brink Live Steamers. Wednesday, and occasional weekend, greater Sacramento, Calif., steamups on elevated live-steam tracks at two locations, as well as special events. Info: Paul Brink, (916) 935-1559, paulbr@aol.com.

Puget Sound Garden Railway Society. Two steamups per month, one at the Johnsons' on the second Saturday and a steamup at a member's track on the fourth Saturday. Info: http://psgrs.org/ or call Pete Comely at (253) 862-6748.

Michigan Small Scale Live Steamers (MSSLS). Info: http://www.mssls.info.

Pacific Coast Live Steamers. Irregularly scheduled backyard steamups, mostly in S.F. Bay Area. Info: http://www.p-c-l-s.org.

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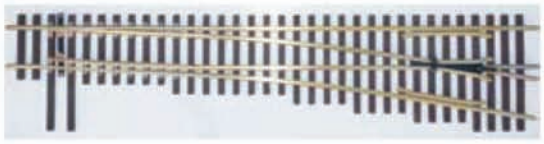

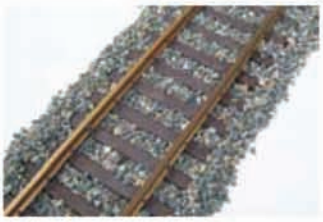

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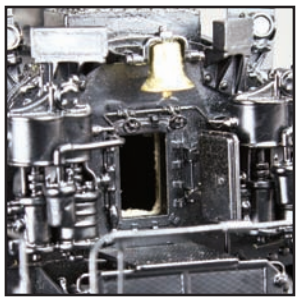



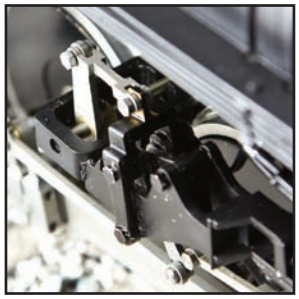

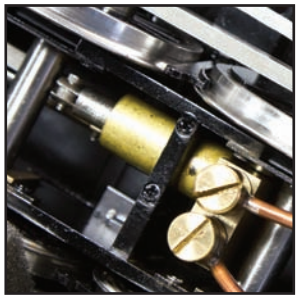
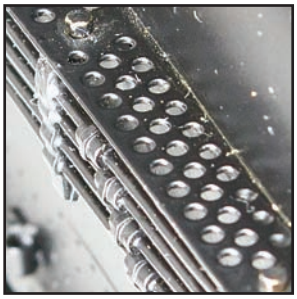

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