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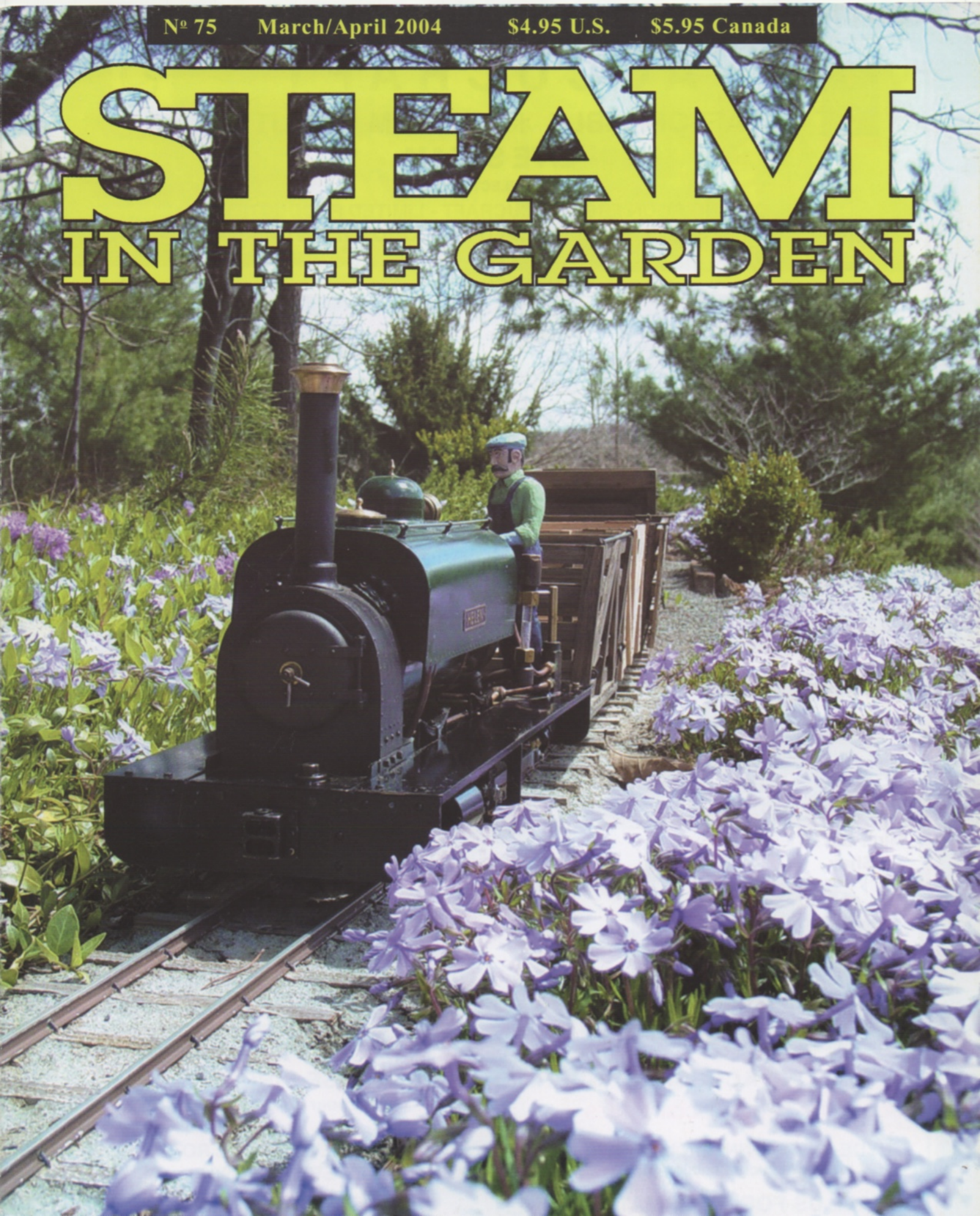
STEAM IN THE GARDEN



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STEAM IN THE GARDEN

Vol. 14, Nº 3
Issue Nº 75

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

Articles

Departments

FRONT COVER:

HELEN,* Stephen King's two foot gauge, 7/8" scale cabless Hunslet with a short rake of peat wagons, heads through the beautiful Virginia countryside into the setting sun. The engine was custom-built by Argyle, ex-works 2003, and is gas fired single flue with Stephenson's valve gear and axle pump.** ***photo by Steve King

Editor/Ink-stained Wretch
Ron Brown

Publisher & Staff Shutterbug
Marie Brown

CAD & Other Drawings in This Issue
Larry Bangham

Regular Contributors
Larry Bangham ..... California
Keith Bucklitch ..... England
David Hamilton ..... Canada
Les Knoll ..... Illinois
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Check out ***Steam in the Garden Online,*** located at: <http://www.steamup.com>.

CALENDAR OF EVENTS

May 21-23, 2004 - National Convention, Canadian Association of Railway Modellers & Canadian Railroad Historical Association, Brock University, St. Catharines, Ontario, Canada. Model and prototype clinics, layouts, railfanning excursions, banquet, displays and more. Contact: Pete Moffett, 7 Jolie Court, St. Catharines, ON, Canada L2M 6V5 l Phone: 905-934-6575 l Email: secretary@caorm.org l Website: http://www.caorm.org/convention

May 28, 29 & 30, 2004 - Pennsylvania Live Steamers Spring Meet, Rt 29 1/2 mile N of Rt 113, Rahns, PA. Contact: Harry Quirk (610) 346-8073 or Mike Moore (mikemoore@comcast.net).

June 6, 2004 - Fifteenth Annual Steamboats Only Meet at Meadowland Park Pond, South Orange, NJ. For additional information, contact Ron Hermann at 301-891-3020 ● Steve Siegel at 610-391-1190 ● Charlie Roth at 908-638-8341.

June 19, 2004 - The Pine Ridge Lumber Co. in Jenison, Michigan will host a steamup from 9 AM until 6 PM. We have 300' of 45mm track with 5 meter radius curves. Also available is a portable track with 2 meter curves. For more info contact: Robb DeVries ● 7450 21st Ave. ● Jenison, MI 49428 ● Phone: (616) 667-1260 ● e-mail: steamlogger@usxchange.net

June 26 and 27, 2004 - Finger Lakes Live Steamers Annual June Open House. The Upstate NY Steamers will join the Finger Lakes Live Steamers at our Gauge 1 layout in Marengo, NY (mid-way between Rochester and Syracuse) from 10:00 AM to 4:00 PM both days. The Gauge 1 track offers zan elevated steam up bay with ground-level running. The open house will also include running on 7.25" gauge and 4.75" gauge tracks. Information available at http://www.fingerlakeslivesteamers.org/ or contact John Spencer (315) 689-3402 ● e-mail airtrains@aol.com.

July 8-11, 2004 -31st Annual Tuckahoe Steam and Gas Show, located in Talbot County on Maryland's Eastern Shore, five miles north of Easton between mileposts 57 and 58 on Route 50. Lots to see and do for the whole family. Mike Moore's portable Gauge 1/Gauge 0 track will be set up and operating, so bring your steamers and trains. For information call 410-822-9868 or e-mail: info@tuckahoesteam.org Web site: http://www.tuckahoesteam.org/

July 16-18, 2004 - Shay Days, Harbor Springs, Michigan. Steam up your Shay (or other geared loco) in front of Ephraim Shay's historic mansion! Run trains and spend time with other Shay enthusiasts. For more info contact Bruce Gathman, 6200 State Rd., Harbor Springs MI 49740 l (231) 526-0174 ● e-mail: shayloco@voyager.net

July 22-25, 2004 - National Summer Steamup, Lions Gate Hotel, McLellan (suburban Sacramento), California. An opportunity for live steamers using 45mm or 32mm track to gather and run equipment in a secure, indoor, friendly setting. More tracks than any other small-scale steamup. Contact: (415) 931-0776, visit www.steamevents.com or e-mail steamup@summersteamup.com.

August 7, 2004 - Second Annual Summer Steamup at Les Knoll's Rivendell & Midland Railroad. Track opens about 10:00AM and doesn't end until all participants go home. There will be food and soft drinks, but all are encouraged to bring something to pass around. The Rivendell & Midland is located at 1310 Keenland Drive, Bartlett IL. An RSVP wouldn't hurt. The 45mm Rivendell & Midland has a 200' ground level mainline with 10 foot radius curves. In addition, there are branch lines, facing and trailing point sidings with run-arounds, a turntable, steaming bays and yards for those that want to operate as well as run. The day's festivities may also include impromptu concerts on the mighty three manual theater organ in Les's basement. Phone: (630) 372-8138 ● e-mail: steamrocks@aol.com

August 7, 2004 - Jim Curry's Steamup in Maine. 10:00 am til evening. Light lunch served. RSVP to jjc@structureguard.com or 207-273-3699.

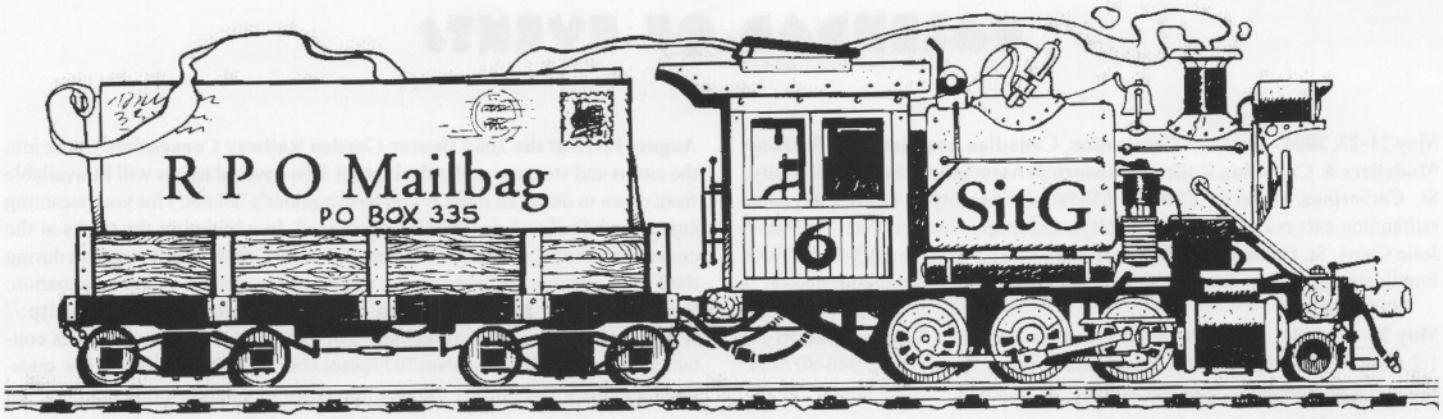
August 12-15 at the 2004 Denver Garden Railway Convention. Come join the circus and steamup under the bigtop! Two covered tracks will be available from dawn to dusk (all night if you have a miner's helmet!) for your steaming enjoyment. Fuel and water will be provided. In addition to the tracks at the convention center, we will be running out at the Colorado RR museum during the Friday evening barbecue (ticket purchase required). Contact Information: REGISTER for the convention online (or print a form) at: http://www.denvergrs.org/convention.html For general convention questions contact Kelvin Harr at: kelvinharr7077@aol.com or 303-431- 6793. For questions specifically regarding the steamup email jreyer@earthlink.net.

September 3, 4 & 5, 2004 - Pennsylvania Live Steamers Fall Meet, Rt 29 1/2 mile N of Rt 113, Rahns, PA. Contact: Harry Quirk (610) 346-8073 or Mike Moore (mikemoore@comcast.net)

September 25 and 26, 2004 - Finger Lakes Live Steamers Annual Fall Open House. The Finger Lakes Live Steamers welcome visitors at our Gauge 1 layout in Marengo, NY (mid-way between Rochester and Syracuse) from 10:00 AM to 4:00 PM both days. The Gauge 1 track offers an elevated steamup bay with ground-level running. The open house will also include running on 7.25" gauge and 4.75" gauge tracks. Information available at http://www.fingerlakeslivesteamers.org/ or contact John Spencer (315) 689-3402 l e-mail airtrains@aol.com.

July 10-11, 2004 - The Greater Cincinnati Garden Railway Society's 1st Annual Cincinnati Small Scale Steam Up in Cincinnati, Ohio. 8:00 A.M. until 12:00 A.M. The Registration Fee ($30; $50 after June 15th) includes: fuel (butane or alcohol) water, and steam oil, lunch each day and dinner Saturday evening, non-alcoholic drinks, snacks, coffee and water. Two double track Gauge 1 loops will be provided for running. Tables will be provided for swapping or selling. Lees Inn and Suite Hotel available nearby at a reduced rate of $79. http//www.leesinn.com/cincinnati htm. Mention "steamup" to get this special rate. Go to www.gcgrs.org click steamup for more information and get your registration form. If you've attended any one of the three garden railway conventions in Cincinnati you know we know how to throw a party!!! Join us in July for two days of small scale live steam, good food and lots of fun.

Because of publication lead time, please send info for Calendar of Events well in advance. Include name of host and location of event, with address and/or phone number to contact for complete information. Some basic info about the site is also useful (i.e., ground level or elevated, minimum curve radius, ruling grade, etc.)



Letters from readers are welcomed and encouraged. Offer advice, encouragement, suggestions or constructive criticism. Tell us about your current project (and don't forget the photos!) or just share live steam experiences. But please keep your letters to a reasonable length so everyone has a chance to use this forum. Letters may be edited for length or clarity. Send your letters & photos to: SitG, Dept. RPO, P.O. Box 335, Newark Valley, NY 13811, USA.

* * * * * *

Mexico City
via e-mail

Dear Ron,

I have been reading the mail about the momentum car use. What is the reason for this car? Is it for the kinetic energy stored in the system, as if there was a flywheel being turned with (theoretically) no friction, or is it for the friction caused between the various turning elements, shafts in their bearings used in this system?

If it would be the load, friction, then there are many ways to cause friction. This would cause more steam to be used, more water and fuel used to pull the load. Consequently, the "chuff" and steam out of the chimney would be much more noticeable. If it is only momentum, kinetic energy, that you are looking for, this would result in causing a load only when starting up and the consequent chuff sound and visual steam plume caused by using more steam at that time. Since there are no brakes on our locomotives other than the remote controlled reverse, the momentum, kinetic energy, would only make the locomotive coast farther when trying to stop it by shutting off the steam supply.

It is my opinion that a momentum car is needed to cause a larger work load on the engine when you want the engine to labor more. This could be on slower start ups, on small up grades, or on level tracks where you want more of a steam plume and the chuff noise. Real life large steam locomotives make the most noise and sent up the biggest steam plume when they are working the hardest and that's when they are starting up or going up hill. I think that a momentum car should be made with a RC controllable pressure friction brake on its fly wheel that can some how be tied together with the throttle when wanted. This way a slow start up can be made with no brake being applied to the fly wheel. The brake would be applied for gentle coasting stops with the steam supply feathered or when you want to see the steam plume or hear the chuff on level track. Then if it is momentum and controlled braking for the load that's required the easiest way to go would be to load a ball bearing wheeled car with lead and install some sort of RC controllable braking system on the car's wheels.

Arthur Cohen

* * * * * *

Frisco, Colorado
via e-mail

Dear Ron,

Until I read the article by Arthur Cohen in SitG Nº 65 I thought that the tongue of fire that occasionally belched from the smoke door of my Aster Mogul as I tried to light the butane burner might be one of the vagaries of living 9000 ft. above sea level. Instead, as Cohen explains, the torch-effect is a result of a design problem that allows liquid butane to reach the Mogul's burner jet. The problem goes away if the expansion tank is removed and the main tank is modified so that gaseous butane is skimmed from the top of the tank and fed directly to the burner.

After completing the first step of Arthur Cohen's Mogul improvement plan, that is, the drilling of a hole in the topmost part of the valve body, I decided that, with my limited mechanical skills and a well founded fear of doing irreversible damage, I should look for a simpler solution to the fuel problem.

Since the expansion tank is not essential, its very short needle valve can be used as part of the solution, but only for the version of the Mogul that uses a banjo bolt (not a nut) to connect the fuel line to the main tank beneath the tender. The following steps will solve the problem:

1. Remove the banjo bolt, sight glass, and needle valve from the main tank.

2. Using the sight glass opening for access, drill a small hole in the uppermost part of the valve body. Replace the sight glass after applying caulking compound to its periphery.

3. The axial hole in the end of the banjo bolt is the original valve seat. Enlarge that hole to 1/8" dia. and epoxy in the hole a 2" length of thick wall 1/8" OD copper tubing. When cut to the proper length, the end of this tube will become the new seat for the needle valve.

4. Screw the short (expansion tank) needle valve stem into the main tank, back it up several turns, and probe its tip from beneath the tender. Use this measurement to determine where to cut the copper tube to make a valve seat. Remove the needle valve, reinstall the modified banjo bolt using caulking compound on mating surfaces beneath the tank to insure that the structure is sealed. Then reinstall the short needle valve.

You must reroute the flexible hose that runs from the tender to the engine so that it connects directly to the burner jet. Removing the expansion tank from the cab is optional. In principle, gas-phase butane will be fed to the burner if the new valve seat is above the liquid fuel level. In practice, filling the tank only to the midpoint of the sight glass, as recommended by Aster, allows some sloshing while providing more than enough butane to consume a boiler-full of water.

Dick Hodges

* * * * * *

Reading, Pennsylvania

Ron,

Give me a break--9 pages in the last issue (№ 74) of Diamondhead shots that I could pull up on the web, and more meet photos, photos, photos of IE&W and PLS--same ol', same ol'. How about more construction articles like the "Denver", or just plain useful information or critical reviews.

Robert Blackson

Robert, thank you for your feedback. We try to offer our readers a balance of coverage. Not all of our readers have access to a computer, and not all of them are interested in construction articles. Our efforts to offer a balance means that not every article in every issue will appeal to every reader. We also cannot publish what we don't receive. Perhaps I can interest you in submitting some articles that would be of interest to you? I'm sure they would appeal to other of our readers, and we would be happy to consider your submissions for publication. -- ed.

* * * * * *

Annapolis, Maryland
via e-mail

Dear Ron,

Since I converted my C-16 to r/c, as described in the article, I have heard from a couple of folk that Accucraft have changed the tender on the #268/278.

My #42 comes apart with 4 bolts, as described, and I checked with Noel Crawford that his #268 was the same. However, the newer versions are different - the rear chamber behind the coal area (where the butane tank is located) is enclosed with a bottom plate that is soldered to the tank.

There appears to be no easy way to dismantle the tender and gain access. Two different solutions have been reported: cut a hole in the back, or use part of the coal area.

Clem O''evitch reports that he cut a hole in the plate to gain access to the area in the back of the tender. He mounted the on/off switch in the top, under the water hatch. After that, his solution is similar to mine.

Arthur Cohen took a different approach. He used the open area where coal would normally sit, and partitioned it. (Note: if you hadn't noticed, the 'coal' area is designed to hold water around the gas tank. That keeps your butane at a more stable temperature so it flows more easily. It is also a place to mount a hand-operated water pump, though I haven't heard of anyone doing so, yet.) His r/c receiver and batteries are easier to reach, but it was a lot more work.

Arthur reports: "It was a real job as far as the tender went. I decided not to tear the tender all apart to get to that enclosed chamber that was soldered closed at the rear of the tender.

"What I did was open up the 2 holes that are under the little manhole cover on the top of the rear of the tender. This was to be able to pass the connectors of the Futaba switch through them. Then, just below the top of the vertical manhole cover's oval tube/support I drilled 2 holes and machined a slot to accept the on/off switch. To do this was quite a job because the holes and slot's center height, over the tender's cover, was lower than the raised edge or wall (I'm forgetting my English) that extends above the tender's cover. What I did was machine a drill guide with sloping perforations to drill the holes for the 2 screws and the slot for the switch's toggle clearing the upper part of the tender's rear wall. This way I didn't damage the paint or sheet metal of the tender. Mounting the switch here was unobtrusive and also allowed that the little cover could be closed on top of it without the switch interfering.

"I then drilled a 1" hole in the back vertical wall below the tender's top cover, behind where the fuel tank is mounted in the coal (water storage) area. I put a grommet there so that the wires going through the hole wouldn't be abraded. I ran the 3 cables from the switch through that middle wall. I then made and installed a brass wall that got mounted just behind the butane tank. This left me enough dry space/area where to place the r/c receiver and batteries. I drilled two/16" holes through the floor in this area that allows me to pass the servo cables under and to the front of the tender without being seen. The wall I made was fastened in place with six 2-56 bolts. The wall was made out of #28 (about) brass sheet with 3/8" angles I made that were soldered to the bottom and 2 sides. After securing the wall with the screws I sealed the union with ordinary yellow enamel paint. It took 3 to 4 paintings to flow in and fill the joints to be water tight. Silicone is too messy. All this was about 20 hours of work."

Pete Thornton

WHAT'S NEW?

Grand Scale Railroading in the United Kingdom! Imagine the thrill of driving a locomotive belonging to one of the world's most famous riding railways! Imagine the feel of the breeze and the smell of the burning coal as you meander through open farm lands and thick forests. Imagine the history and the people of those who rode before you. And imagine having unheard of access to shop buildings and private railways. Now you no longer have to imagine it! You can experience it for yourself as part of the Grand Scale Railroading in the United Kingdom tour.

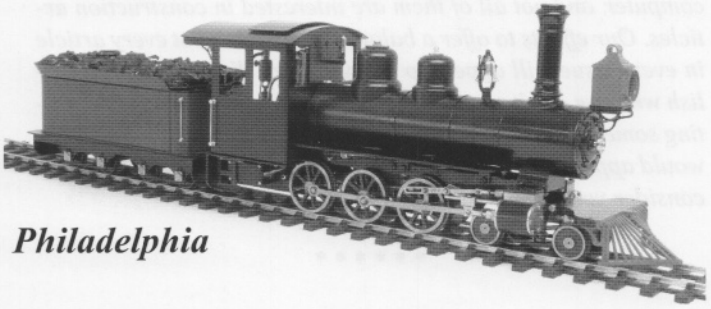
Robinson & Associates is proud to announce the date and availability of this very special tour. Join us September 9 - 22, 2004 for an unforgettable two weeks of travel in beautiful England and Wales. Experience the highlights of England including London, Stratford-Upon-Avon, the gorgeous Lakes Districts, a night in a castle, unforgettable gardens, and railways from 7.5" to 36" gauge. Travel with fellow rail fans on a luxury motor coach and meet some of the elite writers and railway owners in this friendly country. Stay in comfortable 3 and 4 star hotels and enjoy delicious English breakfasts and other delightful treats.

Reservations must be made before July 1, 2004 to participate. And this exclusive tour is limited to only 25 guests. For more information, visit our web site at www.grandscales.com <http://www.grandscales.com> or call 530-527-0141 (or 800-564-1066).

Sunset Valley Railroad has a new address... 15309-S.E. 142 St., Renton, WA, 98059. Ted tells us that he now has O gauge turnouts on dual gauge track available, and will shortly have true dual gauge #6 turnouts in stock.

Cheddar Models is inroducing their latest locomotive, *Philadelphia.* They are planning on a first production run of 12, once sufficient orders have been received. A 10% deposit will be required upon placing the order. The price is £2295.00 Inc VAT at 17.5%.

During the first world war the British Government placed an order for 495 2ft gauge 4-6-0-T locomotives. All were built and delivered between autumn 1916 and spring 1917. The design followed standard American practice. Weight in working order was 14 1/2 tonnes. Many of these locos were sent to France for use on military duties. ***Philadelphia*** was one of these locos. She eventually found her way to Australia where she was converted to a tender loco for use in the sugar cane fields of Queensland. She has been preserved and is now an oil burner and runs on the Dreamland site in Queensland.



Philadelphia

General Specification: Supplied for 32mm or 45mm gauges • Choice of colour: black, green, blue or red. Approx. Measurements: • Length 680mm • Height 195mm • Width 115mm • Weight dry 7.2kg • Working 8.2kg • Minimum working radius is 1.22 metres.

Standard Equipment: Cross tubed centre flue boiler • Working Tender • Hand water pump • Radio controlled steam whistle • Ceramic gas burner • Boiler water level gauge • Pressure Gauge • Safety valve • Boiler refill valve • Large refillable gas tank fitted with a gas regulator • Bushed running gear • Lubricator • Hand rails and footsteps • Sprung Axle boxes and spoked wheels • Lost wax brass cast chimney & smoke box door, whistle and head lamp • For more details e-mail Cheddar Models at sales@modelsteam.co.uk

New Product Announcement

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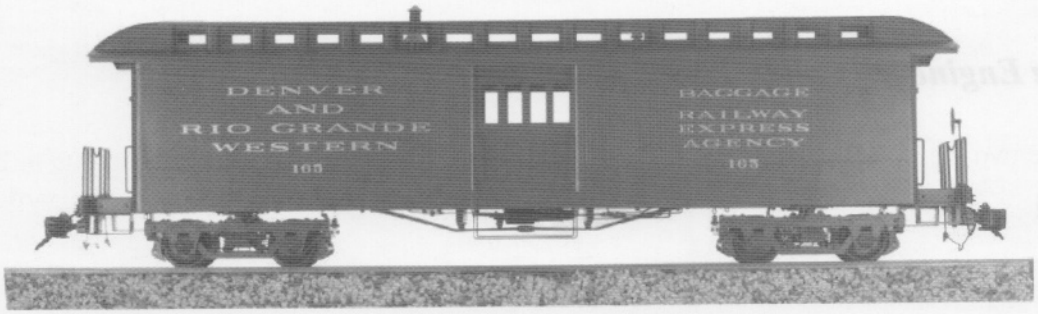

D&RGW SAN JUAN SET

ACL (Accucraft Custom Line) is proud to announce the production of D&RGW San Juan passenger car set in 1:20.3 scale and 45mm gauge. Like other fine products from Accucraft, these models will be meticulously handcrafted from brass and stainless steel.

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AL84201	D&RGW SAN JUAN SET
AL84201E	COACH #325

(Price effective 4/15/2004, price includes freight within continental USA. Items subject to change in price, color, specification, design and availability without notice. Delivery will be based on production serial number.)

Rishon Locomotives' Mason Bogie

by Jerry Reshew

The Breckenridge Engine lives on in 1:20 scale...

Technical Details

Scale: 1 :20.3

Butane gas fired copper boiler - capacity 290 ml

Electronic water level gauge installed

Steel frames

Bronze cast wheels with stainless steel tires - minimum radius 36 inches

Bronze cylinders with stainless steel motion

Front pilot is cast bronze

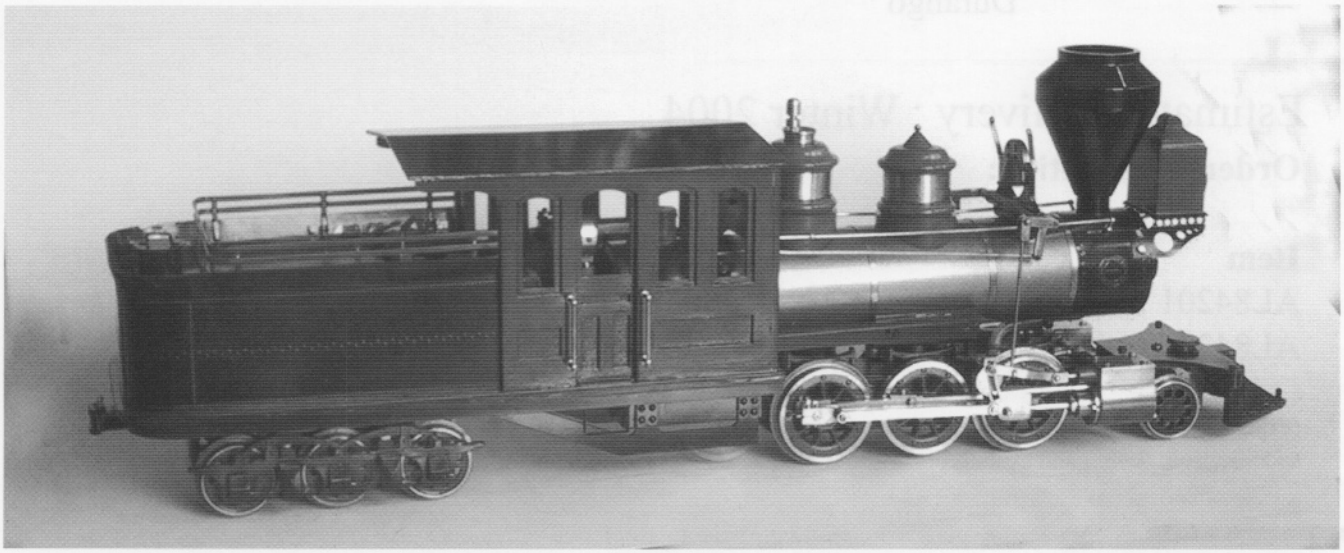
Wooden cab

Options for stack and coupler types

Brass fuel tank

Full radio control is standard with the model

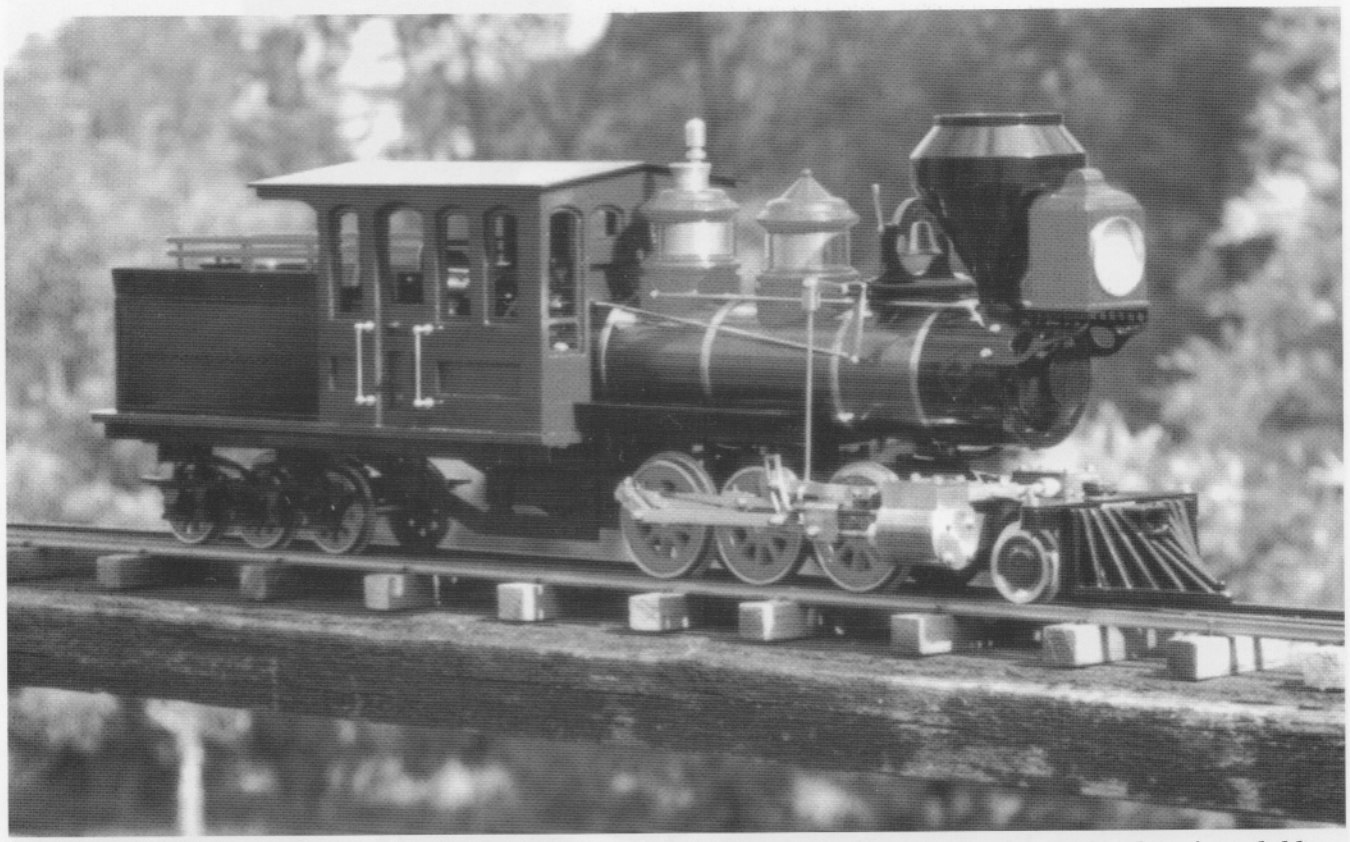
The model weighs in at twelve pounds empty



The locomotive class that we are looking at was an articulated, or flexible design originally conceived by a Scot, Robert Fairlie, in the early part of the 19th century. The idea of having a freely pivoting power truck (called a 'bogie' in England) to accommodate the rather undulating narrow gauge tracks of the colliery railroads became very popular in the mining and timber industries and was eventually brought to the United States as a single power truck heavy hauler for the mines in the Colorado Rockies.

The Mason Bogie has a distinctive Victorian architecture and is a graceful design that was ornamented with scroll work and fanciful lettering of the period during the late 1800's, but the examples built in the early 1900's were utilitarian in appearance and did the lugging work of most mining locomotives of the day.

What makes the Mason Bogie a particularly interesting technical achievement, in addition to the pivoting power truck, is the incorporation of Walschaerts valve gear - the first locomotive design in the United States to see this in a production model. The valve gear is operated through an external overhead frame, and this is a unique and easily recognizable feature. While railroad historians have given the design high marks, there are a few who deride it as being too complex and clumsy looking.



I wish we could have done this photo in color, becasue the Mason Bogie is really a stunning loco in red, blue, black and brass. Maybe in a future issue we can give our readers a cover photo.

William Mason of Taunton, Massachusetts built a number of locomotives under the Mason - Fairlie nameplate before starting the production of about 150 of these between the years of 1871 and 1890 under the Mason nameplate. The Mason company devoted about half of its total production to these locomotives and about 80% were 3 foot narrow gauge. The standard gauge machines found themselves on railroads as far East as the Long Island Railroad and as far West as the Union Pacific, but the great majority of Mason's articulated locomotives, the narrow gauge designs, were employed in the Rockies.

The example that we are discussing is a model of the number 15 ***Breckenridge*** of the Denver, South Park and Pacific Railroad, a three foot gauge locomotive. It is considered to be a 'light' Mason Bogie example. Normal operating procedures for passenger carrying consisted of three or four coaches.

If you want to find out more about the Mason Bogie and articulated locomotives in general, I recommend the web site **wikipedia.org** as a source.

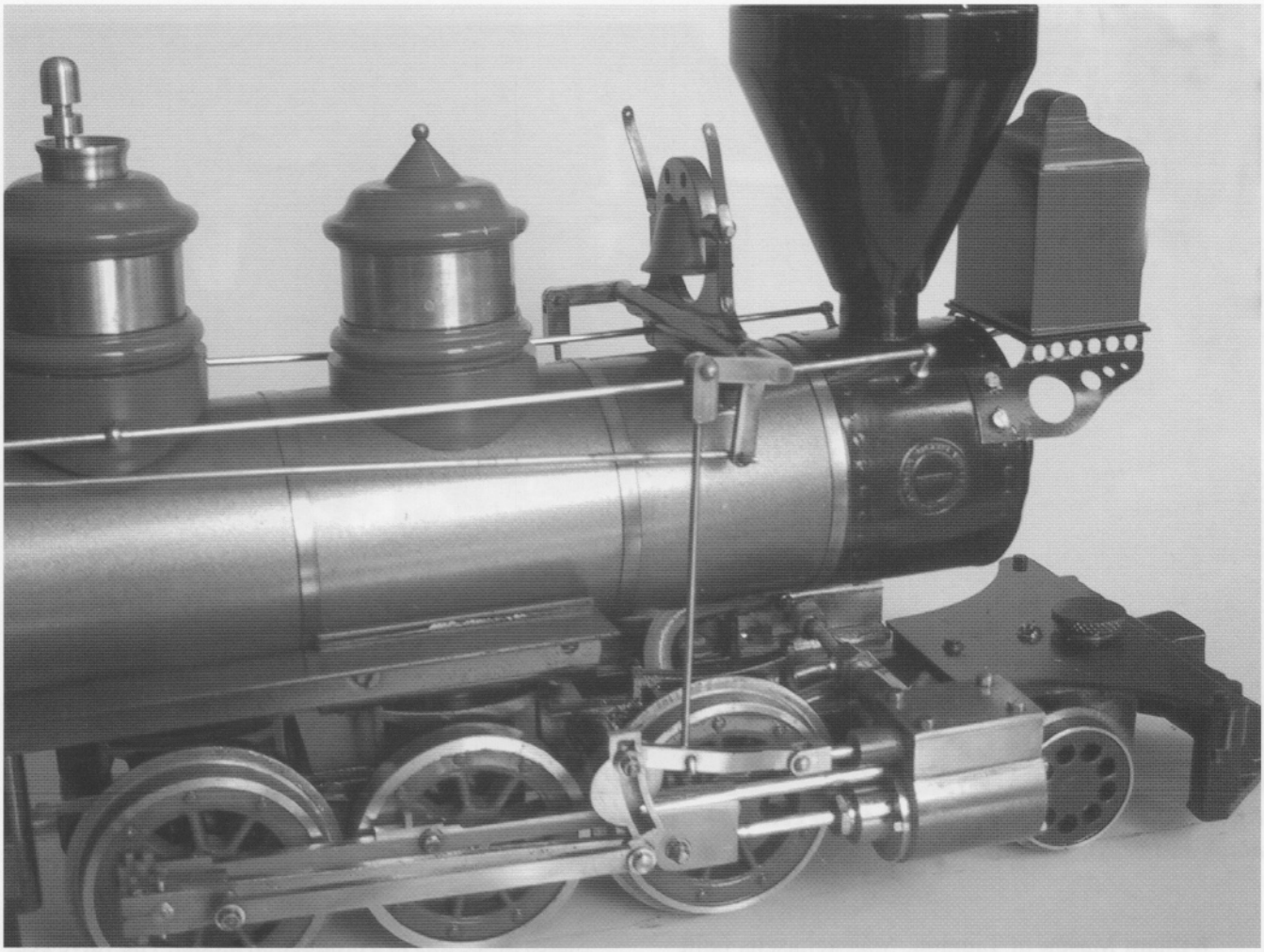
The Model

Our model was built by Paul Trevaskis of Rishon Locomotive Works in Australia, and it is striking in both appearance and performance. While it comes without the ornamentation associated with DSP&P locomotives, this all can be added later by obtaining an appropriate decal set. The domes and head lamp of the model are already painted red so you have a start towards full decoration. Rishon dealers in the United States can give you an estimate of cost and availability.

Getting Started

The lubricator is located on the front deck and must be filled with steam oil - do not use motor oil - until the space between the cap and the oil surface appears to be about 1/10 of an inch. Do not overfill since the resulting mess of steam oil being expelled from the locomotive will leave you a cleanup job from the very start.

Oil around all of the moving parts sparingly using a light machine oil. Sparingly is the operative word here - too much is almost as bad as not enough. Any excess oil will distribute itself in an uncanny way, right onto the track.



As on the original locomotive, the valve gear on the model is operated via an external overhead frame.

The butane tank is next in line. Using a butane (or iso butane mix) container with an appropriate nozzle, fill the fuel tank until there is a noticeable hiss from escaping gas.

The boiler is the last to be attended to. The boiler may be filled with distilled water using a squirt bottle and the Goodall valve, or the plug under the dome may

be removed and the boiler water can be added using a funnel or syringe. The boiler should not be overfilled - a space of about 1/4" below the boiler plug is needed for steam.

There is no water level glass on this model and attention should be paid so as not to overfill. The electronic water level gauge will light the red LED if the water level drops below 50 ml and you will see this occur when you start to fill the boiler. Distilled water has no mineral content, and it is recommended that a teaspoon of tap water be added so that the electronic probe can properly sense the water level.

The radio transmitter is turned on first and then the receiver. Move the controls to see that all is free and that the servos seem to be doing something..

Open the gas valve in the cab about a quarter turn and apply a flame to the stack top. You will hear a pop as the flame is pulled to the burner. If the fire doesn't seem to be at the burner and seems to stay in the smokebox, turn the gas off momentarily and then turn it back on until the fire is drawn to the burner. A soft roar will indicate that you've done this properly. I've discovered that by applying the flame to the rear bottom of the smokebox you will get a positive result every time. Turn the regulator to the 'off' position using the radio control and then increase the gas valve setting to a full turn. When the pressure gauge indicates 40 pounds or so, and the safety valve pops, turn the gas off and then refill the tank. Repeat the lighting process and then you are ready for the first run.

The locomotive will move with authority, but there will be some water expelled from the stack and around the piston rods until operating temperatures are equalized. This is a powerful machine and it will handle a substantial load running for about 20 minutes before the water and fuel must be attended to.

If the red LED blinks you have about 50 ml of water remaining and you need to refill. This is easily accomplished if you use the Goodall valve refill system, and the water temperature in the boiler will still allow for running. Gas and lubricator steam oil can be topped up at this time.

Safety

As with any model steam locomotive there are safety concerns that you must become aware of.

The locomotive is HOT and it should never be picked up without protecting your hands. Leather gloves are the best way to handle this locomotive while the boiler is hot.

Do not look down the stack of an operating locomotive, or down at the safety valve. A geyser of boiling water or steam can cause injury.

Do not leave your model unattended while it is under steam - particularly when there are children around.

Remember that this is not a toy and it is not designed for operation by small children. If your kids or grandkids need to play, let them be the radio operator from a safe distance while you stand by.

My Impressions

The Rishon Mason Bogie is a gem and it has the funky attraction of a retro piece of machinery. It draws interest when it is on the track or at the prep bench, and it is a flawless runner with no nagging procedures to remember - add water, oil, and gas and you are ready to go (don't neglect to see that the batteries are fresh).

I would have liked to have had a conventional water gauge glass and a water pump , but it is superb as it sits and I'm delighted with it.

My attempt to install a headlamp came to naught since I was going to snake a wire between the jacket and the boiler...only to discover that there is no jacket. The boiler is exposed and painted, and the smokebox door is a soft bronze casting that cannot be pried off without marring it. The smoke box riveting and builder's plate is a brass wrapper on the boiler shell. Removing it is a hassle requiring a fair amount of disassembly.

These are nit picking observations and they indicate that there are no real complaints about my investment. This is a wonderful model and a most desirable addition to any locomotive stable.

Book Review

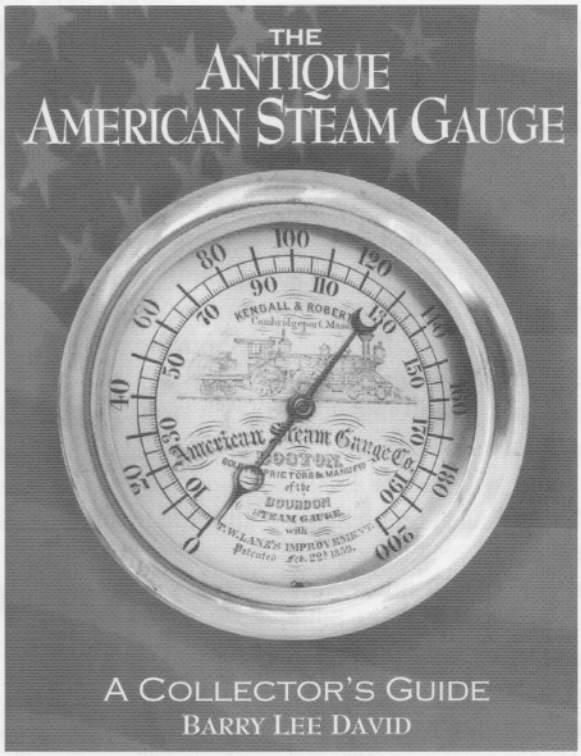
The Antique American Steam Gauge -- A Collector's Guide

Reviewed by Jim Reyer

The Antique American Steam Gauge -- A Collector's Guide
Barry Lee David
ISBN 1-931626-13-8
Astragal Press, 2003
www.astragalpress.com

Old pressure gauges have a certain aesthetic appeal that you find in a lot of 19th century scientific instruments. There is always a lot of polished brass, intricate engraving, elaborate scrolling, and attention to details on parts that have absolutely nothing to do with the function of the device. In contrast to modern technology, you have the feeling that you are supposed to get a sense of precision just from the appearance of the thing.

If you have any interest in such things you will appreciate this book. It is a large format (8 1/2 by 11 in.) paperback with excellent quality graphics and 8 pages of color plates. As the title implies, it is written as a guide for the collector of antique gauges. However, I think the book has a broader appeal for fans of steam, history of technology, and the plain curious. I certainly found the book fascinating, and I have never collected a gauge in my life.



I was surprised to learn that there have been relatively few variations in the underlying technology of pressure gauges over 150 years. The Bourdon tube gauge, based on the deflection of a curved, flattened brass tube, was invented before the middle of the 19th century (the US patent was issued in 1852). Most gauges have used that principle ever since. You can buy a Bourdon tube gauge today for about five dollars. The case may be plastic but the internals are remarkably similar to 19th century drawings you'll find in the book. There were lots of patents over the years (which are listed in a large table in the book) but most had to do with minor improvements such as better linkages for reducing friction and wear. Diaphragm valves have been the only major alternative to the Bourdon tube and never enjoyed much popularity.

There are three chapters in the book of specific interest to collectors. There is a chapter on the history and products of all of the significant American gauge manufacturers. This includes details on the specific physical characteristics, identifying marks and patents for each company. There are numerous crisply reproduced illustrations from period catalogs and magazines. These include not only many drawings of gauges and their internals but interesting historical tidbits such as pictures of factories (with smoke stacks belching) and company correspondence and invoices.

A chapter appropriately titled "Discovery" deals with how the collector can identify a gauge as to manufacturer, use and historical period. Another chapter for the collector deals with the restoration of old gauges. Cleaning, dial restoration and glass replacement are described. Viewers of "Antiques Roadshow", who are conditioned to never refinish and antique, may be amused to find that antique gauge collectors apparently want to restore their finds to working condition, whatever it takes.

The broader appeal of this book comes from the fact that much of it is organized around the various applications of gauges, and is not strictly limited to steam. There are chapters on gauges in fire equipment, traction engines, presses, ships, building systems, steam cars, and trains. The book describes the technology behind each of these applications before dealing with the specifics of the gauges involved. Where else can you find the piping diagram for a Stanley Steamer, a description of the cotton seed pressing process, or the controls of a WWII submarine (yes, there is a section on submarine gauges)?

The railroad gauge chapter covers not only boiler pressure gauges, but air brake, feedwater heater, stoker and car heating system applications. Each had unique requirements which resulted in distinctive gauges. Air brake systems gave rise to the duplex gauge for displaying both reservoir and train line air pressure. Two separate Bourdon tubes were

put in a single case connected to separate pointers on a common axis like clock dials.

The locomotive also motivated one of the few variations on the basic Bourdon tube design. The Lane improvement, patented in 1859, splits the original horseshoe tube into two opposing halves. The shorter tubes are stiffer and so less prone to vibrations for application on moving steam equipment.

An omission which will be evident to SitG readers is that there is no mention in the book of models or miniature gauges. I presume that the tiny versions that we use have been around about as long as the full size models, but the book is silent on this subject.

Overall, I found the book to be an interesting read and a source of a lot of fascinating and obscure information. For a real gauge collector it would be invaluable. Clearly, a lot of work went into compiling the information in this book and it comes across to the reader as a labor of love. An invention that has endured unchanged for over 150 years deserves some respect from anyone interested in technology, and this book does the subject justice.

Aster's JNR C62/2

by Ross Schlabach

The Steamy Saga Continues...

When I wrote my initial review of the new Aster C62/2 for *Steam in the Garden* (issue N° 73), I was working with the first production model delivered to the US importer. That model was in stock and available for sale, so we were not able to steam it up. But shortly after the first article was completed, my local Aster dealer, Jim Pitts of Southern Steam Trains, acquired a factory built C62/2 for his own collection. He kindly offered me the opportunity to give that locomotive its first steamup at his open house. About the same time, I purchased the first US C62/2 kit from Jim.

Before we move to the initial steamup, I'd like to share a few observations from my kit purchase. Upon opening the kit, I was surprised by a couple of major changes. First, the directions were really different. Many of you who have built Aster kits over the years will remember having to work with the awkward combination of a text instruction manual and a large format booklet of drawings. Now Aster has combined this into a single construction manual with surprisingly little text and the replacement of isometric drawings with detailed photos. This type of manual was developed by Aster to reduce costs, and Aster dramatically reduced the amount of text because they expected that the buyers were going to be experienced modelers. The absence of text can cause some problems. They use a special symbol to indicate where sealant is to be applied. I missed some of those symbols and had a leaking water tank to deal with.

The second big change was the type of fasteners. For this model, Aster switched to the extensive use of Phillips head screws. I'm aware that some modelers - especially in Europe - have complained about this change because the Phillips head screws are not *prototypical.* Well, speaking just for myself, hex head bolts don't look

terribly prototypical either, being overly large - much larger than the Phillips head screws. But more importantly, the Phillips head screws grip nicely to the tip of the provided screwdriver and remain in straight alignment. This eases their insertion into some very inaccessible locations. I for one will gladly welcome them in future Aster kits because of this and because they allow the attachment of more scale-sized fittings and other details. Without them, the construction time on the kit would have been much longer. I very reluctantly remember my aggravation when building an Aster Southern Mike as hex fasteners routinely and repeatedly fell out of the socket driver! Keep in mind that we don't always have a free hand to grip the hex head screw in a pair of tweezers. Then the convenience of the Phillips head screws will be obvious.

This installment of the article was not intended to be a detailed study of the assembly of the C62/2 I promised the editor that the second part of the article would be devoted to a follow-up article on the first steamup and running characteristics of the model. But I would be remiss if I didn't mention one more thing about the construction of this model. Aster advertises that this kit has over 1,000 parts. I took the time to look through the sections of the construction manual, and if you include fasteners in the count as I did, this kit has over 1,800 pieces. As an example, there were 81 parts in the leading truck alone! Awesome detail! Now on to steaming...

The initial runs of Jim's engine took place at his Fall Steam-Up and Open House. I was charged with the responsibility of firing and running the factory built C62/2 for his guests. Since at that time my kit was not quite done, I was delighted to have a chance to see firsthand what my model should be capable of. My first step was a careful inspection and lube of all moving parts. During this inspection I noticed that the factory assembler had omitted the four parts that make up the trailing truck centering spring assembly; and a couple of the parts in the trailing truck equalization system were incorrectly installed. I decided that the absence of the centering spring assembly would not be greatly missed, but I went ahead and relocated the equalization system hangers. In oiling around, I was delighted to find no binds in the driver assembly and that smoothness showed in slow and steady running in actual operation. Handling of the locomotive for lubing is a real challenge because of the high level of detail everywhere. It is difficult to pick it up at all without causing some damage, so I had pre-made a cradle to hold the locomotive inverted for lubing. Subsequently, I went back to my workbench and made a new custom cradle that allows one to tip the loco over for servicing and to bring it back upright without having to handle the locomotive too much. The result is zero damage!

The locomotive was now ready for fluids: water, butane and steam oil. Steam oil servicing was easy since the locomotive comes equipped with a large mouth lubricator hidden under a sliding plate just below the smokebox door. Gassing up was reasonably easy too. The fitting works well with existing fillers in use in the USA and little gas is wasted. The only difficulty is that there is

little sound to let you know that gas is transferring and there is no sputtering as normally seen when filling is completed. But I must have gotten plenty of gas in the C62/2 because the initial firing run was over 45 minutes from light-up, and I ran out of gas before the engine did!

Filling the boiler was a bit more tedious. Remember that this is a good-sized Hudson so there is a large boiler to fill. The C62/2 is equipped with a large tender pump - I think this one is the same as on the Allegheny. It takes plenty of strokes to fill her and the tender is relatively small so you'll top up the tender two or three times before you finish filling the boiler. The detail on the boiler is extensive, and there is no provision for filling at the boiler, so the pump is all you've got. Some of the more adventurous souls may wish to use one of the model airplane *turkey baster* fueling devices and attach its filler hose to the blowdown fitting, loosen the blowdown valve screw and SQUEEZE. This may be a quicker way to fill the boiler but it means another bulky tool in your tool box. Over several runs, I learned that the boiler seems happiest when you fill it such that the water glass reads about 3/16" below the top of the glass. This is a locomotive type boiler and makes much of its steam at the crown sheet, so it appears the locomotive steams more freely with the gauge glass nearly reading *full.*

With everything topped off, it was time to boil water. In a first for my experience with gas-fired engines, the instructions recommended the use of a blower on the stack to assist with steaming up - like you would do with coal and alcohol burners. Since you light the burner by opening the firebox door, having the blower attached and running protects against flashback fires. By the way, I encourage any C62/2 buyers to get some welding rod and make themselves an 8-inch long hook to use in opening and closing the firebox door - it's safer for the fingers!

Once the blower was attached and running, the gas burner lit off quietly, smoothly and SAFELY. I should remind readers that this engine is equipped with a new plate style burner and this burner has eliminated much of the noise pollution experienced with poker burners. Setting the burner gas flow is still a bit touchy, though it is far less sensitive than earlier models like the C&S Mogul; but even the C62/2 could benefit from one of Kevin O'Connor's gas valves. Nevertheless, it was possible to get a smooth fire going after some experimentation.

Over three day's worth of runs, I have subsequently learned that the burner can be turned up a lot without making too much noise and it never squeals. Burner blowouts were few and normally resulted from my failure to open the steam blower as soon as I brought the engine to a halt. The proper fire level is with the flames detaching from the back of the burner plate but still touching the front of the burner. It's a pretty tall flame pattern and hard to describe. If you hear pulsing from the burner, it is telling you it needs more air. This is not experienced when the start-up blower is used but it was common out on the mainline, and the application of a little steam blower was all that was needed to smooth it out.

The Aster manual said that it should take only about 5-7 minutes to a full head of steam. My initial steamup took almost 13 minutes, but I was a bit too easy on the burner the first time around.

With pressure up to 4 bars, I opened the drain cocks to clear the condensate. These work well and help avoid the *water fountain* exhibition one frequently witnesses with the Mikados, but the cocks use lots of steam - especially if you try to get the engine moving while the cocks are open. The cocks cleared quickly and the engine smoothly moved out of the steaming bays. I was immediately impressed at how slowly and smoothly the engine ran, even without the benefit of a stationary track break-in run. Incidentally, unlike my Southern Mike, the C62/2 does not seem prone to further hydraulic lock after the initial start-up.

As I mentioned in the first part of this review, the C62/2 throttle is different from many former Aster models. It has no needle valve so its operation is very smooth and no force is required to really close the throttle. I found that the throttle worked much like those on the full scale types. To get things moving, you swing the throttle way open about 80-90 degrees (it only opens a total of 120 degrees) and after a very short delay, you back it off to keep the wheels from spinning. This procedure made for very prototypical starts every time. The locomotive would start slow and had plenty of pulling power.

I made several trips *light* around Jim's backyard track and everything operated smoothly and quietly with pressure holding at 4 bars. Once under the load of five Aster JNR coaches, the C62/2 still ran smoothly but boiler pressure dropped to 2 bars. My first thought was that the burner was not up to the job. However in the course of that first day's running, I discovered that the problem was not the burner nor the locomotive. It was I! The manual did not give any guidance for proper burner settings. In fact, there were only two pages devoted to firing and running the engine, and these pages were riddled with errors. But this engine was made with experienced modelers in mind, so I instead had to learn from doing rather than reading.

As I was to confirm from the later initial runs of my own completed kit a week later, the burner is fully capable of holding 4 bars of pressure even when pulling a load of 21 MDC cars up a 1 percent grade. You just need the flame turned up per the description two paragraphs ago! To give you an idea of how stable the gas burner can be, in a run with my C62/2 on a track with extended 1 percent up and downgrades I was able to run the engine for 3/4ths of a mile (12 laps) without touching the burner.

My only adjustment throughout that run was to the axle pump bypass valve to maintain water levels. Now I must admit that getting just the right combination of gas and water is important, but once the burner was set I could leave it alone.

In start and stop types of operation, the engine functions very much like an alcohol burner. As soon as motion stops, you need to crack the steam blower to keep the fire from starving for oxygen. This is probably a function of the locomotive style boiler and its tight-fitting coal ashpan. The engine will tell you when it needs more air because the burner will make pulsing sounds - not very loud but noticeable. Open the blower a bit and the burner smooths out. Start the engine back in motion and it's time to close the blower.

I should mention that the C62/2 has a controllable ashpan door that can be left open to admit additional air to the firebox area, but I found it ineffective as compared to the steam blower.

My first timed run with Jim's C62/2 was 45 minutes from light up. We had a number of other hoggers there, so I did not feel it appropriate to test the limits of the gas tank capacity, but 45 minutes of burner operation without a gas top-up is plenty. Now my initial *easy on the gas* burner operation no doubt contributed to that extended run, but subsequent *full-burner* runs with both Jim's factory built and my kit built C62/2 gave very satisfying runs too.

When the gas gets low, the engine lets you know as the muted burner sound gets even quieter and further opening of the control valve accomplishes nothing. Add more gas and things are quickly back to full pressure operations. This burner is forgiving enough that it is easy to top off the gas tank with the burner running without blowing out the flame. Now I realize that the safety inspectors among us will condemn me for even mentioning this, but it can be done. Keep in mind though, that if you shut the burner down to recharge the gas tank, then you need your start-up blower or enough steam pressure remaining in the boiler for steam blower operation to safely restart the burner without a potentially dangerous blowback.

How about pluses and minuses on the C62/2? Well, the level of detail on this locomotive is both a plus and a minus. Handling this engine without some kind of protective cradle will result in bent pipes, damaged steps, or bent leaf springs. There's so much detail that it is almost impossible to find a place to grab at the front end without damaging some parts. Final engine cleanup is a challenge too, because your rag wants to catch on all the fine detail parts. But seeing this locomotive in operation with all its beautiful piping and castings is a joy.

I must admit that I favor alcohol firing because of its user friendly operation and efficient steam produc-

tion in all seasons. Yet, so far I have found this gas burner up to the task too. Our weather has not gotten cold enough yet to test the steam heat exchanger that is supposed to keep the gas warm and gas pressure up. However, in operations to date I haven't noticed the tender water getting all that cold either. That could mean that the burner just uses gas more sparingly. To me though, this also suggests that the steam heat exchanger may be able to do its job in keeping gas pressure up for nice winter runs. I'm not expert enough to be sure so we'll need some serious cold weather to test this system.

A real plus is the quality of the assembled product. Initial operations of both the factory built and my kit engine did not show any need for break-in. Both locomotives ran equally well slow or fast with excellent timing and quiet operation. In fact I find this engine's operation almost as smooth and quiet as that of Aster's famed Daylight. The C62/2 pulls very well, notwithstanding the tall drivers. I was repeatedly able to start a 21-car train on the uphill grade with little slippage and smooth acceleration. The speed range is similarly very good. If high speed mainline operations are your bag, then this engine can handle it. Ditto for low speed drags - although I expect that the tall drivers make this a less efficient, and probably non-prototypical, way of running - unless the load is relatively light.

Oh, then there's the whistle. Well, it's an improvement over past Aster models and it's less prone to blubbering, but it is still no substitute for a Bangham whistle. If any of you out there are considering putting a Bangham whistle on this engine, I would encourage you to leave the Aster whistle off during construction and just install the related plumbing. The long whistle body can't be removed without taking the boiler off and it uses up lots of space between the frames - so much in fact that I can't find enough room for a pair of AAA alkalines to light my headlight!

Another minus is that Aster skipped providing a factory coal load - again. Normally I would not find this to be a big deal, but this locomotive has an awkwardly shaped coal bunker. So a factory coal load would have really been appreciated.

The C62/2 is marketed as a coal-fired or gas-fired model. In my opinion, coal firing will be a real challenge because of very limited access to the firebox door and the difficulty of cleaning up after a day of running. The smokebox can be removed and an internal plate unscrewed to access the flues, but this involves removing a number of small screws and may be more work than it is worth. The high level of external detail may also get in the way during cleanup and you have to worry about cinders and ash in the fully sprung & equalized chassis. However, one should never underestimate the tenacity of coal aficionados!

The special (and expensive) quick disconnects on the tender hoses worked perfectly every time. It will be interesting to see how these hold up over time. I think that cleanliness around these parts will be important (coal burners beware) and careful handling will be critical. A pair of fine tweezers is the best way to unhook these fittings and they can be connected with just light fingertip pressure at the back of the fitting. Would I want them on my next engine? I'm not sure. They are convenient, but probably add more than $100 to the cost of the model.

I am especially pleased with the throttle design. Since there is no needle valve, there is no problem with the throttle binding up as the boiler cools. Its operation was smooth throughout its range with a solid cutoff when closed. It took almost half its total movement to get the steam flowing, but that didn't cause any problems with speed range or control. It will be interesting to see if I can easily hook this throttle up for R/C operations.

The C62/2 is equipped with a small tender and the locomotive cab is full of fittings. That means the best place for the receiver and battery is in the tender under a coal load. Space here is at a premium too, and there's no real room under the tender deck either. Most of the remaining interior space is occupied by the gas and water systems. The net effect is that large receivers and batteries need not apply. Only very compact receivers and small rechargeable battery packs will do. But since you will probably only be operating a single throttle servo, the battery load should be light and a small battery pack will suffice. I'd like to remotely operate the whistle too, but the standard Aster valve mechanism may require more servo torque than the available cab space will allow. Of course, a change to one of Larry Bangham's valve mechanisms could solve that problem, space permitting.

Final observations? This latest locomotive from Aster is quite a model for the money. Aster has shoehorned as much detail and as many operating features as they could into this model. In fact, we may not see this level of detail again soon on future Aster models because of the cost involved. Japanese prototypes have not been strong sellers here in the USA - possibly because of their appearance. But this locomotive has a real Western look that belies its heritage. Talented (and brave) kitbashers may find this kit a great starting point to create a believable model of an American Hudson. But be aware that the tender design is very small and does not lend itself easily to conversion into a more common US profile. Nevertheless, the C62/2 is a very attractive design that could appeal more to Western markets than other Japanese prototypes have in the past. Now I think it's time to stop talking and instead go boil some water!

Not a J-Bar?

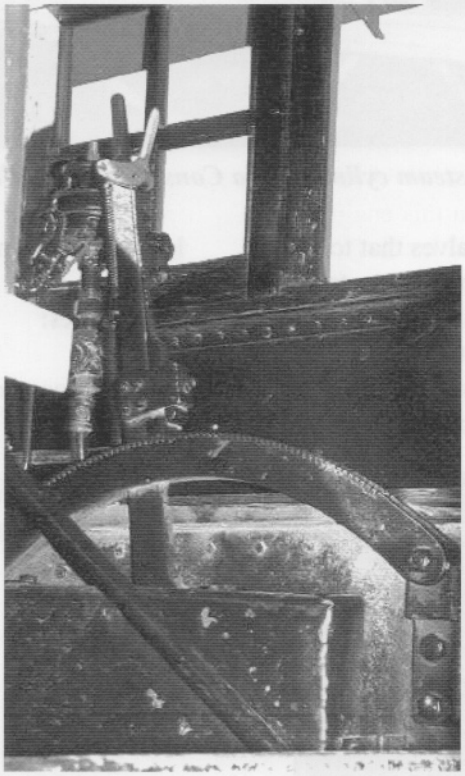
by Pete Fowler

Egad! Can it be true?

Until I got into small scale steam I'd never heard of a 'Johnson Bar'. I'm familiar with the reverse lever that controls the cutoff of a steam loco but had never heard it called anything else. So, being interested in the origin of such expressions, for instance how 'bran new' became the modern 'brand new', I started asking who this Johnson was.

The cult of steam locomotives is full of fascinating fairy tales with little foundation in fact, and I heard some prime specimens in the search for Johnson. The one I like best is that it is a reference to an old slang term for a crucial part of the male anatomy, the same source as the term 'joy stick' in aircraft. If this were true, one would expect there would be other related names for it so I regretfully have to reject this guess.

Another is that it refers to a mysterious Mr. Johnson who invented a valve gear in England coeval with Stephenson. There are several catches to this theory, the most telling that the term 'reverse lever' is still the only one in use in England for the part in question. Plus, though there may have been such a person, he isn't mentioned in any history I've found.



Reverse lever of a Lancaster Locomotive Works 4-4-0 originally built in 1864 but much modified later.

Early slide valve locos were operated with a simple lever held by a pawl in a notched quadrant. This arrangement does not give sufficiently fine adjustment of the cutoff for economic operation, as there is too big a step between positions. (Many locos, once set moving, were operated always at full throttle and controlled only by the position of the reverse lever. Others were operated with the reverse lever in the 'Company position' and the power adjusted with the throttle.) So a Mr. May invented the toothed pawl shown in the picture as an improvement. An exact drawing of this type of reverse lever is Figure 193 of reference 1 if you want to add one to your model.

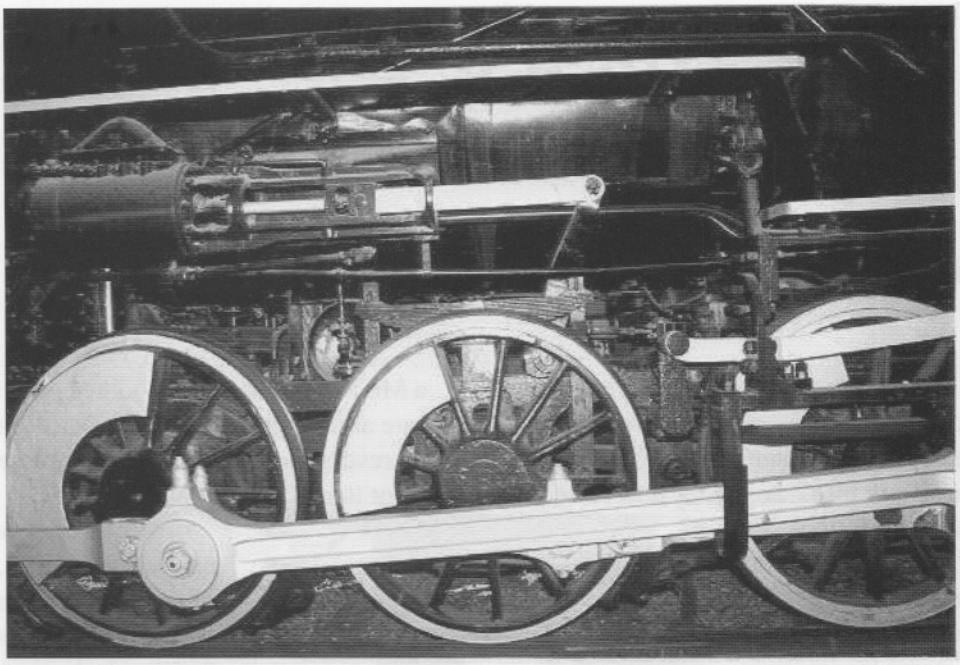
Now reference 1, originally published in 1892, has no mention of the 'Johnson bar' and discusses only 'reverse levers.' So I speculated that the mechanical reverse lever was never called a J-Bar but perhaps the steam reverse lever was so called. The difficulty with this theory is that the very first piston valve locos had steam reverse gear well before 1900, as in the picture. The quadrant for these has very fine teeth, as there is practically no force on them. Reference 2, 1921, has no mention of Johnson, though steam reverse gear was the norm by then. So the control for these weren't called J-bars either.

And your model of a piston valve loco should have a dummy steam cylinder to work it. Or of course if you are really driven, an actual working steam reverse cylinder. While the slide valve reverse gear handle was a fairly hazardous thing to be around, it had nothing on a piston valve control. The forces on these are very large, much more than a human could handle, making the steam cylinder essential.

While I am old enough to have operated working steam locos, unfortunately I wasted my time with college and other distractions so I don't have first hand knowledge of prototype operation. Nor can I claim to have read every book on steam locos ever written. The few I have read provide no clue as to where the expression 'Johnson Bar' came from, so here is an un-

proved speculation.

The Baldwin chief engineer in the 1930's was a Mr. R. P. Johnson. Among other things he introduced the 4-4-4-4 loco as an improvement on the less successful 4-8-4, perhaps at the urging of the Pennsylvania Railroad. These locos had four high-pressure cylinders with piston valves that took a tremendous force and many reach rods to control. I speculate that Mr. Johnson designed a new steam control system for the valve gear and that the handle operating this was referred to as the 'Johnson bar.' The origin was forgotten and the name then spread to all types of valve controls so by 1955 books referred to the 'Johnson bar or reverse lever.'



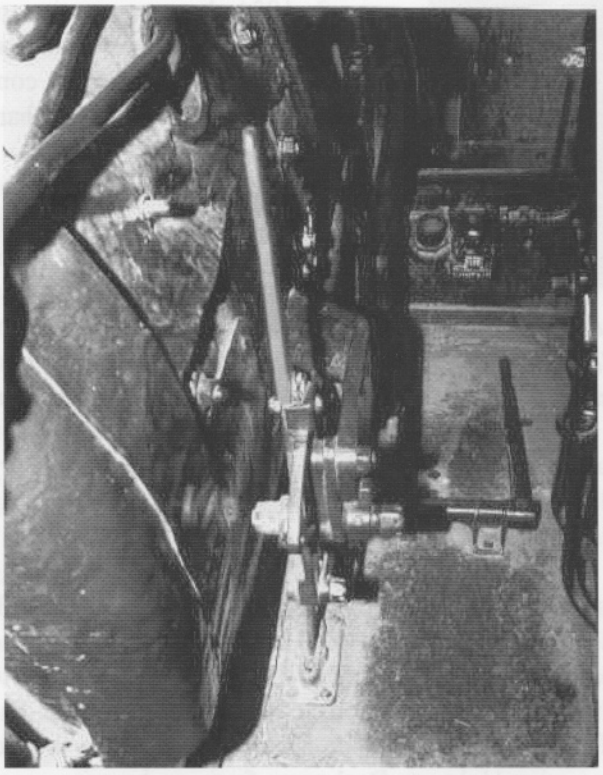
Reverse steam cylinder on a Consolidation built in 1899.

I don't know if the above is true and hope someone of our learned readers can confirm or refute it. But if your prototype is from before 1940 that control is the reverse lever and nothing else.

References:

Modern Locomotive Construction
Meyer, 1892

Locomotive Valves and valve Gear
Yoder & Wharen, 2nd edition 1921



Reverse quadrant of the Consolidation. Note the light construction compared with the American.

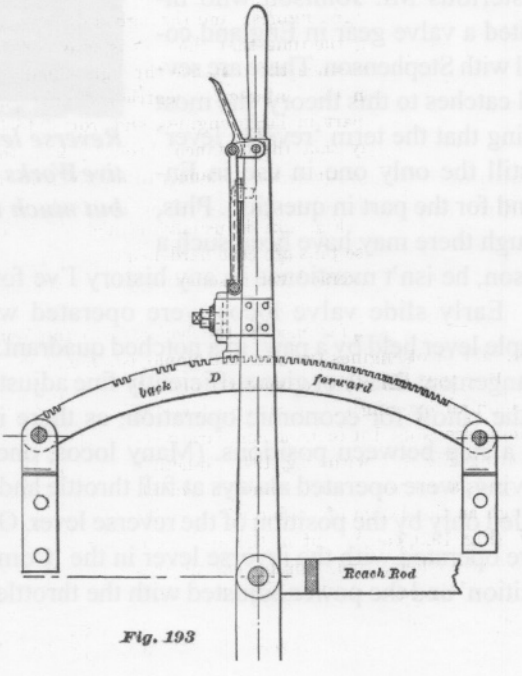


Fig. 193

A World of Great Machines

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SP GS-4 DAYLIGHT LIVE STEAM

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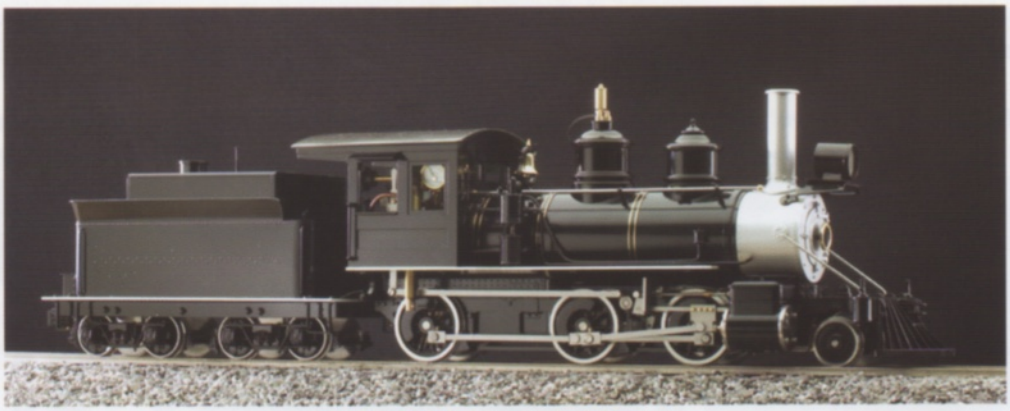

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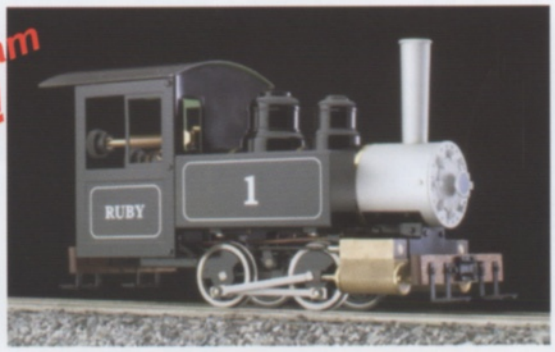
1:20.3 Scale, 45mm Gauge, Available Fall 2004

Live Steam Kit!



RUBY 0-4-0 KIT LIVE STEAM

1:20.3 Scale, 45mm Gauge, Available Summer 2004

ACCUCRAFT TRAINS
MUSEUM QUALITY BRASS MODELS

31112 San Clemente St., Hayward, CA 94544 Tel: (510) 324-3399 * Fax: (510) 324-3366
www.accucraft.com

Top: This is the venue for the President's Day Weekend steamup in Scranton, Pennsylvania. Held on the grounds of Steamtown, USA in the Electric City Trolley Museum. This meet combines electric and steam trains running on 2 large tracks and one small portable track. The Trolley Museum treats us like royalty, ,and everyone had a wonderful time. Some of the attendees (including your editor and staff photographer) stayed in the famous Lackawanna Hilton, formerly a train station in the grand old style. Our thanks and appreciation go to Clem O'Jevitch, the organizer and promoter of this very popular winter train meet and show. **photo courtesy Electric City Trolley Museum**

Bottom: An inside look at the room containing the steam tracks. Mike Moore brought his large and excellent track (foreground), and Tom Bowdler brought his smaller portable track (back corner) **photo by Marie Brown**

Dan Long set up these loops outside the main entrance to greet visitors to the 2-day show.

Harry Quirk (r.) prepares for a run on Mike Moore's track as Roy Ganderton observes. The trolley car in the background is awaiting restoration.

Roy Ganderton and Kristin Moore in an animated conversation inside the car barn. The facility was heated and well lit, making this midwinter meet very comfortable.

Tinplaters will take advantage of any flat space to run trains! Here Nicholas Wilson, son of well known steamer Murray Wilson, runs one of his father's antiques.

Tom Bowdler (right, bent over table) shows a group of interested steamers how he created his coal-burning Shay.

Mike Moore suggested that this would be a good venue in which to test the pulling power of the new Catatonk Climax. It never did run out of power, but ran out of traction on the oily rails at 41 cars.

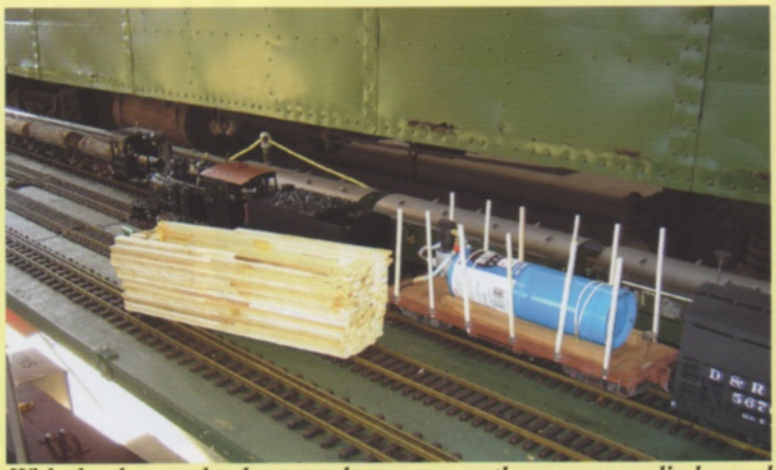
Bede McCormack checks his loco while running on Tom Bowdler's portable track.

Nicholas Wilson watches as Peter Martin's Roundhouse Darjeeling chuffs past with a string of Sierra Valley's Munger Mining Series cars.

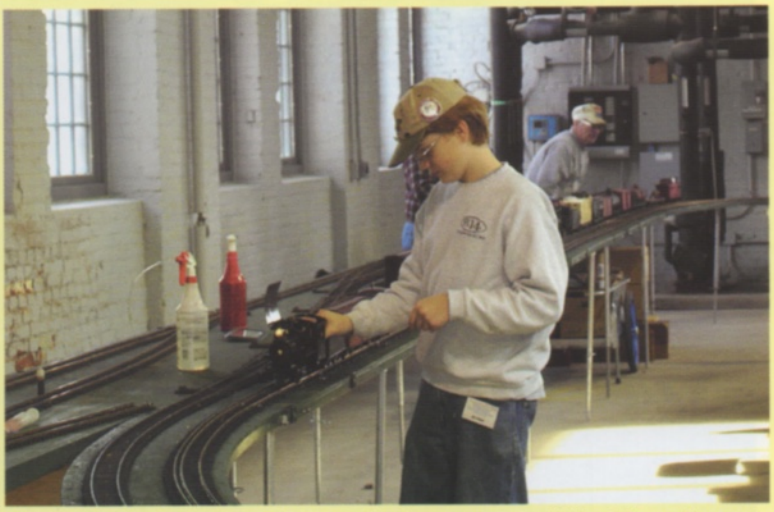
Unless otherwise noted, all photos on these pages by Marie Brown

Noel Crawford (r.) keeps a close eye on his train as it passes other traffic. There was a steady stream of interested onlookers coming in to watch the trains run all weekend.

Noel Crawford's loco running on propane power. The gas cylinder and regulator are hidden under the dummy lumber load.



With the dummy load removed, we can see the propane cylinder and regulator valve used on Noel Crawford's steamer.



Ryan Bednarik tweaks his loco during a run on Mike Moore's track. Notice the operating headlight.

The Resonator Whistle - Part 5

by Larry Bangham

Two whistles for the Accucraft C-16 #42.....An easy way and a hard way. The phrases 'easy way' and 'hard way' bring to mind an incident that took place during my Aerospace engineering days. The company had just gone through a merger which resulted in several new "professional" managers being brought in. Most with non engineering backgrounds. This resulted in some incredibly asinine directives coming down.

There is a popular saying that is particularly appropriate when applied to decision makers that make bum decisions. In deference to our younger readers, the phrase, slightly reworded, is "He's got his head up his rear end".

Out of frustration I composed a chart entitled "Improving your management skills" which illustrated the easy and hard way to achieve the posture evoked by this expression. I thought it was quite poignant, but it was a little too graphic and the sarcasm a little too cutting, so it never got published in the company newsletter. The 'easy way' was shown as being achieved with a forward bending motion. The 'hard way' was a real back breaker.

Although this little anecdote really has no place in a whistle article, I do enjoy recounting it, and it does serve to point out that even the impossible might be accomplished easier one way than another. However, building the C-16 whistles requires only degrees of difficulty, not the impossible, and the notion that the intensity of the pride should be commensurate with the quality of the achievement is a good message in this application.

The easy way

The running board mounted whistle, disguised as an air tank, can be applied to many different engines, from Rubys to Hudsons. With the C-16, (see fig.1), the valve is mounted in the cab close to the steam source. On engines where the steam source is on top of the boiler, it may be preferable to mount the valve out on the engine, similar to the Aster Mikado whistle installation. Functionally, the steam line from the whistle to the valve should be an elastomer tube. Neoprene can be used but I prefer silicone because of its greater flexibility and low outgassing. Some people insist on hard plumbing this line with copper or brass, which looks nice, but causes more condensation, and the heat expansion can cause misalignment of the whistle aperture. However, if hard plumbing is preferred, use a short piece elastomer as a flex coupling between the metal line and the whistle.

The straight whistle used in this application is described in part 4 of this series, and the whistle and valve details are shown in part 3.

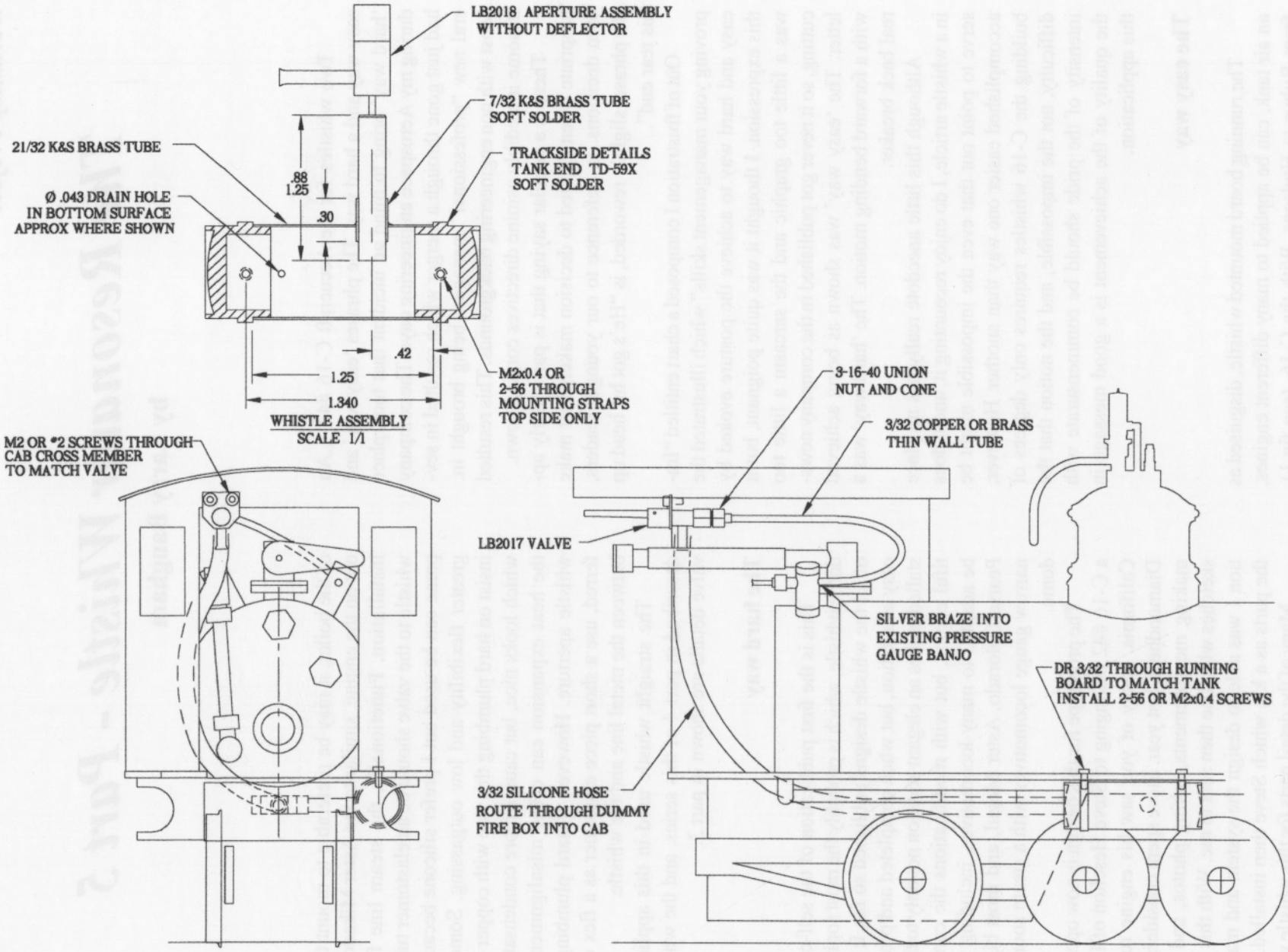
The hard way

This is the first publication of the self-contained dome whistle, which is probably the most sophisticated of all the whistle designs published so far. It is not an easy adaptation, but when completed and properly installed makes an elegant addition not only to this beautiful engine, but with modifications the concept can be adapted to many locomotives, including the K27, Pearse Colorado, Aster Mogul, and most big domed narrow gauge locomotives with a steam source in the dome.

The prototype for this design is now operating on a C-16 #42 belonging to Steve Heselton of Los Altos California. Many of you saw his engine running at Diamondhead last year. Steve spent considerable time making measurements, taking photos, and drawing sketches which he then sent to me. With this information I was able to design the system and machine all the parts as a kit, which Steve then installed.

Many of the detail parts for this whistle were published in previous installments of this series.

See part 3 for the aperture body, aperture sleeve,



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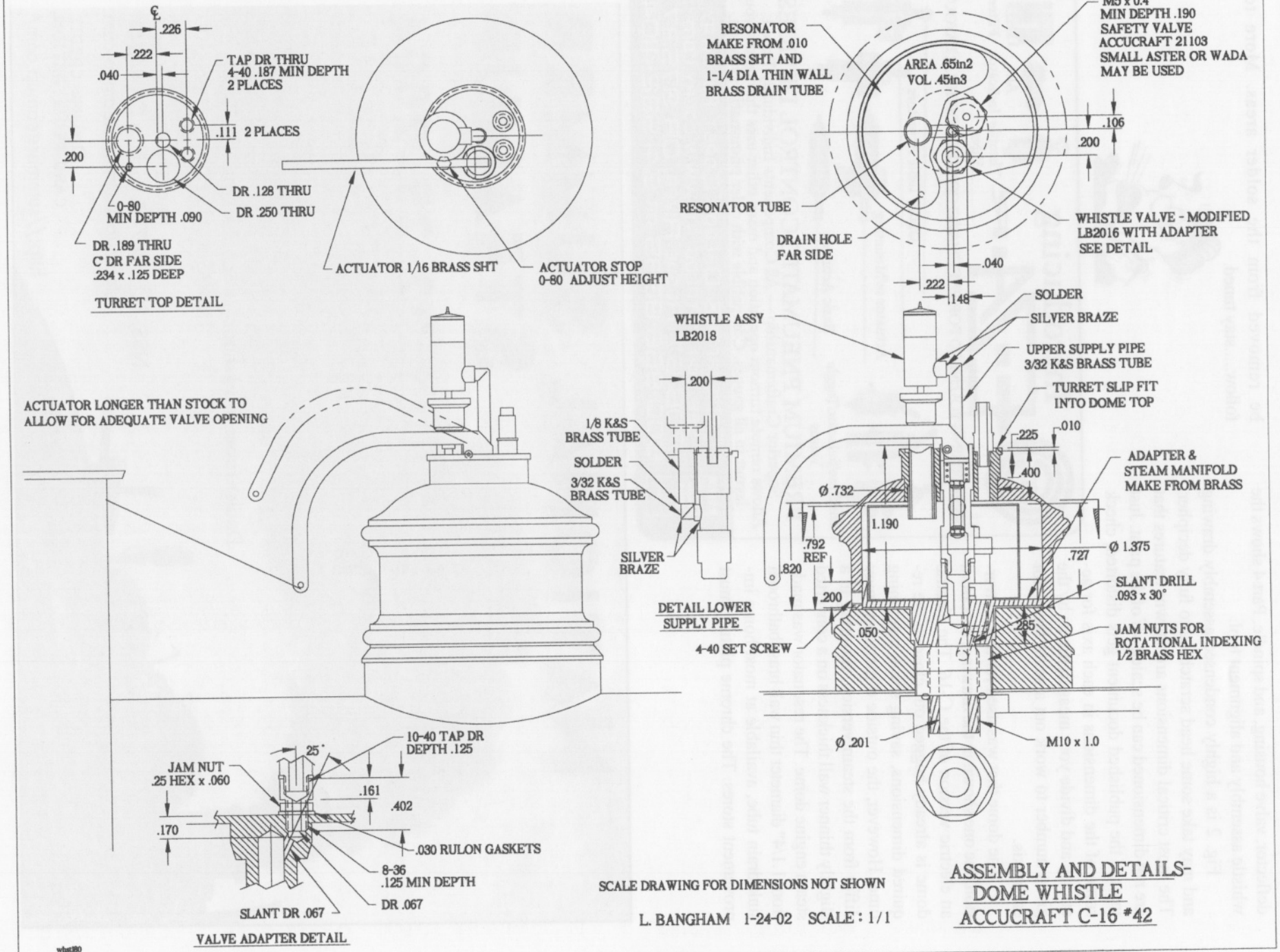
L. BANGHAM 11-25-03 SCALE: 1/2 & NOTED

PRELIMINARY LAYOUT - C-16 #42 RUNNING BOARD WHISTLE


℄
.226
.222
.040
TAP DR THRU
4-40 .187 MIN DEPTH
2 PLACES
.111 2 PLACES
.200
DR .128 THRU
DR .250 THRU
0-80
MIN DEPTH .090
DR .189 THRU
C' DR FAR SIDE
.234 x .125 DEEP
TURRET TOP DETAIL
ACTUATOR 1/16 BRASS SHT
ACTUATOR STOP
0-80 ADJUST HEIGHT
RESONATOR
MAKE FROM .010
BRASS SHT AND
1-1/4 DIA THIN WALL
BRASS DRAIN TUBE
AREA .65in2
VOL .45in3
M5 x 0.4
MIN DEPTH .190
SAFETY VALVE
ACCUCRAFT 21103
SMALL ASTER OR WADA
MAY BE USED
.106
.200
RESONATOR TUBE
DRAIN HOLE
FAR SIDE
WHISTLE VALVE - MODIFIED
LB2016 WITH ADAPTER
SEE DETAIL
.040
.222
.148
SOLDER
SILVER BRAZE
WHISTLE ASSY
LB2018
UPPER SUPPLY PIPE
3/32 K&S BRASS TUBE
TURRET SLIP FIT
INTO DOME TOP
ACTUATOR LONGER THAN STOCK TO
ALLOW FOR ADEQUATE VALVE OPENING
.200
1/8 K&S
BRASS TUBE
SOLDER
3/32 K&S
BRASS TUBE
SILVER
BRAZE
DETAIL LOWER
SUPPLY PIPE
.225
.010
.400
ADAPTER &
STEAM MANIFOLD
MAKE FROM BRASS
Ø .732
1.190
.792
REF
.820
.200
Ø 1.375
.727
SLANT DRILL
.093 x 30°
.050
.285
4-40 SET SCREW
JAM NUTS FOR
ROTATIONAL INDEXING
1/2 BRASS HEX
Ø .201
M10 x 1.0
25°
10-40 TAP DR
DEPTH .125
JAM NUT
.25 HEX x .060
.161
.402
.170
.030 RULON GASKETS
8-36
.125 MIN DEPTH
SLANT DR .067
DR .067
VALVE ADAPTER DETAIL
SCALE DRAWING FOR DIMENSIONS NOT SHOWN
L. BANGHAM 1-24-02 SCALE : 1/1
ASSEMBLY AND DETAILS-
DOME WHISTLE
ACCUCRAFT C-16 #42
whst180

deflector, valve housing, and spindle. Part 4 shows the whistle assembly and alignment tool.

Fig. 2 is a highly condensed assembly drawing and may take some head scratching to fully decipher. The most critical dimensions are shown; features that are not dimensioned can be scaled off of the print. Just in case the published document gets distorted, check some of the dimensions in each axis for accuracy and divide your measurements by the given number to work out a scale factor for each axis.

The dome that was used for this conversion, the one shown in the drawing, was from an electric version of the C-16. The electric dome is already hogged out close to the required dimensions, saving some machining time. However, the outside dimensions may differ from the steam version, resulting in a slightly thinner wall thickness on a converted steam engine dome. The resonator was made from 1.1/4" diameter thin wall brass bathroom sink drain tube, available at most home improvement stores. The chrome plating must be removed from the solder areas. More to follow.....stay tuned.

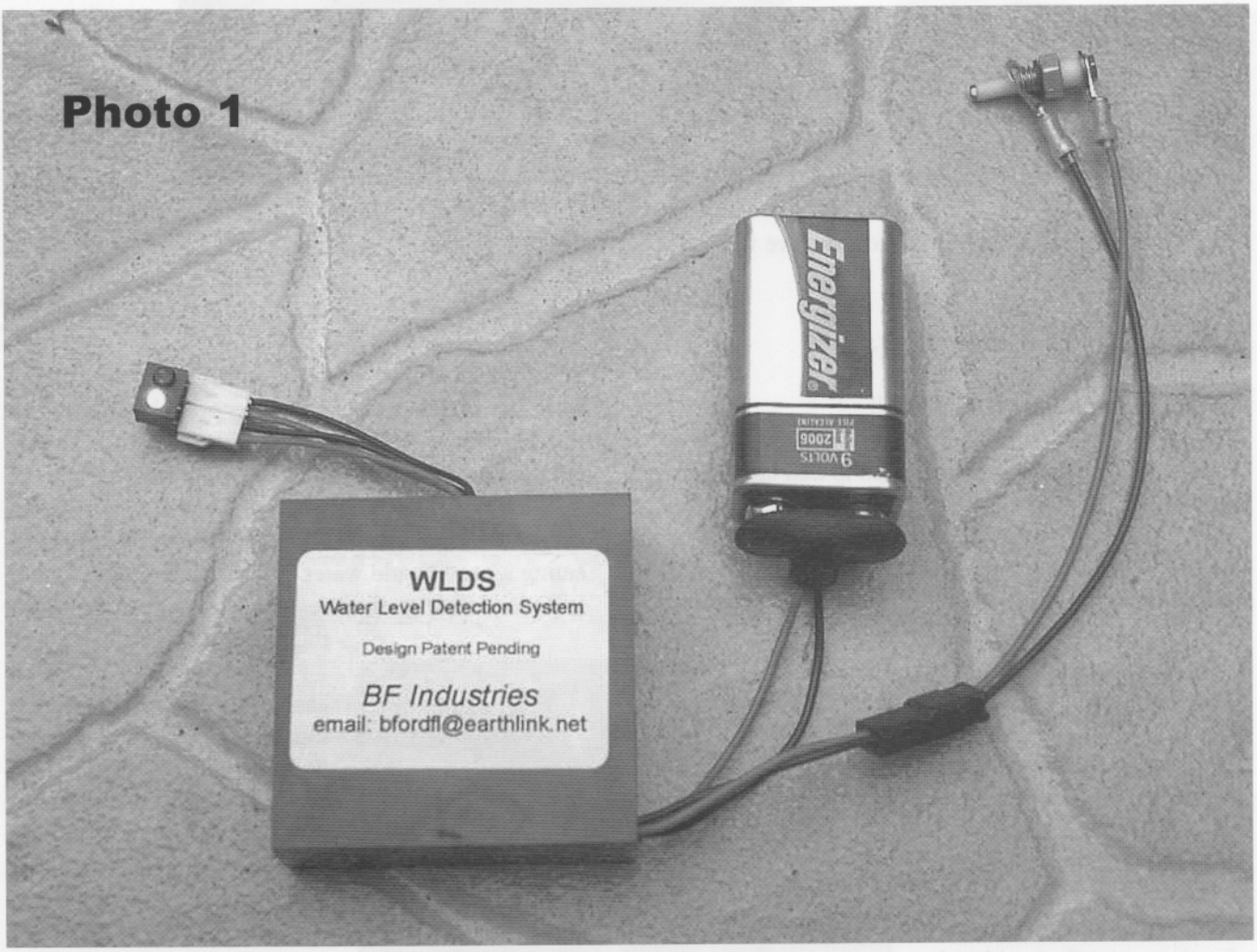
New Product

An Electronic Water Sight Glass

by Bill Ford

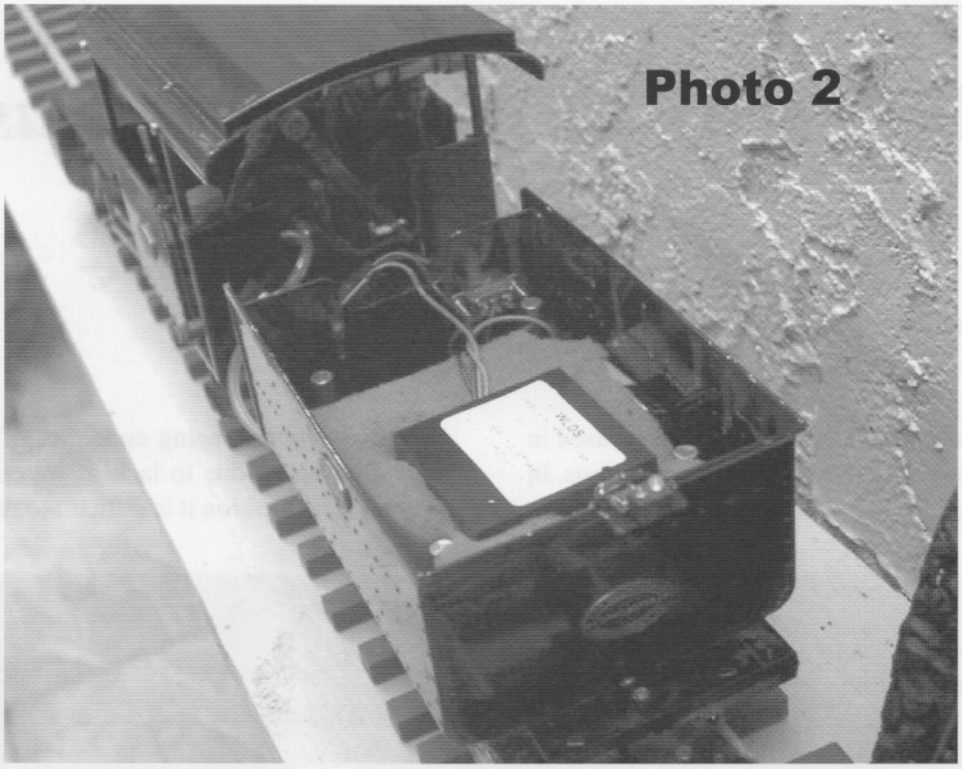
High-tech for our little steamers!

Unfortunately the water level sight glass used in our model steam locomotives has many limitations. In order to keep in scale and with small size boilers, they are often too short to provide much information on the amount of water available in the boiler. Unless a by-pass valve is part of the sight glass, which is often not the case, the indicated water level is always questionable as it can be influenced by air bubbles. This sets up a potentially damaging condition of overheating the flue and boiler due to lack of water. Sometimes because of its location it is difficult to read. The cab roof has to be opened and the train always has to be stopped to take a reading of the water level in the boiler.



The Water Level Detection System described here operates as an "electronic water sight glass" to detect when the level of water in a boiler is getting low and is

in danger of damaging the boiler. The electronic circuit uses a unique approach, which offers many advantages over previous approaches. When using larger fuel sources and the Goodall valve, a means of determining water level in the boiler is necessary. In addition, being able to monitor the water level without stopping the locomotive is a big advantage.



For mechanical protection, the electronic circuit is sealed in a 2" x 2" x 0.7" box with leads to the boiler probe, a green and a red LED, and a 9v battery connector. This makes it easy to install in a locomotive tender or steam boat. The complete WLDS system is shown in Photo 1.

Here Are Some Other Advantages:

Simple, accurate and easy to install

Works with distilled water - no need to add tap water as in other systems

Uses an RF coupling circuit which avoids corrosion and/or plating of the probe

A continuous visible indicator assures a 'working system'

Necessary for extended fuel systems such as Propane

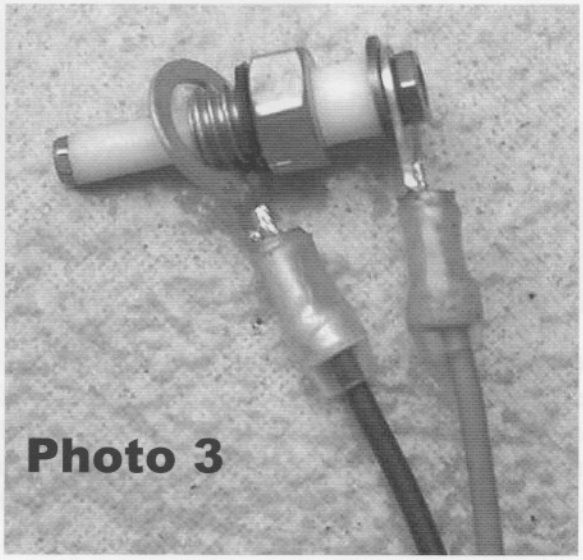
Allows long, safe runs

Useful for monitoring and adjusting water flow with axle pumps

In boats, water level can be monitored from the shore

How it Works:

The front end of the circuit generates a signal which is sent to an antenna (the probe) which when imbedded in a fluid (distilled water) couples the signal to a circuit that turns on the Green LED. When the distilled water level falls below the probe, it does not couple the signal and the Red LED is turned on, indicating a need to add water. Therefore one or the other LED is visible at all times, assuring a positive working system.



The probe is installed easily into the boiler by drilling a small hole and tapping the hole with a 10-32 tap. This is not as scary as one might think, and installation instructions are included. It is actually simple and the approach has been tested and approved by skilled mechanics. The probe is inserted by turning it in by hand and snugging it up with a small wrench. Usually no sealant is required. The small size of the probe in the

boiler results in the boiler pressure acting on a small area, which makes it secure and safe.

For installation in many of the Accucraft Locomotives another option is available. The water sight glass assembly can be removed and a special probe is available which can be inserted into the boiler without having to drill a hole.

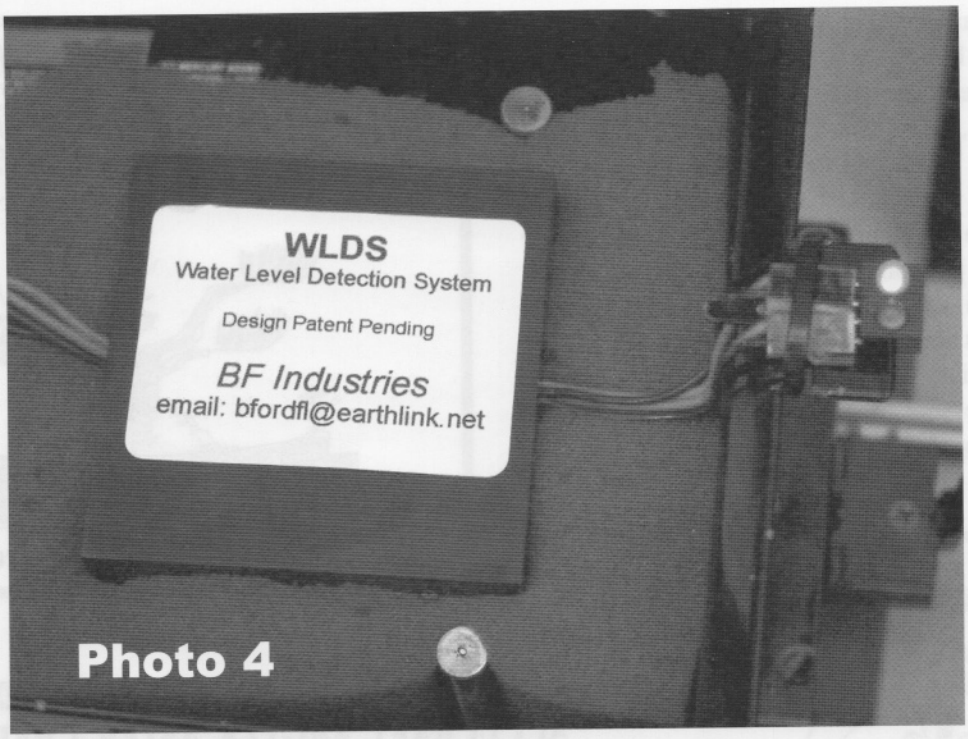


Photo 4

The probe should be mounted in line with the top of the flue so that when the 'low water level' is detected, there is still water safely surrounding the flue. However, water should shortly be added through the Goodall valve.

Photo 2 shows the WLDS mounted in a Roundhouse Fowler tender. It is easily concealed as shown in Photo 2. The probe, shown in Photo 3, is mounted in the boiler and plugged into the system mounted in the tender using a connector. The LEDs are mounted together on top of the tender for good visibility as shown in Photo 4.

The condition of the water level can continuously be observed from distances of 10 foot or greater.

A propane tank is easily located in the baggage car following the tender and runs of 40 minutes or more are usual. When the top of the baggage car is in place, the propane tank is not visible and the special propane valve reduces the pressure so the flow can easily be controlled by the gas valve.

Using the Goodall valve to add water, run time is limited only by the volume of steam oil available. Propane works well and has many advantages, not the least of which is its low cost and no fuel loss as occurs in filling tanks with butane. Many times at steamups, butane filling poses a fire danger as other locomotives with exposed flames pass by the one being filled with butane.

I have installed the WLDS system in a steam powered Seguin tugboat. The LEDs are mounted on the mast and the water level status is visible from the shore. When 'low water' is indicated, there is time to bring the boat to shore to add water to continue running.

This system is currently being produced and contains everything needed except a 9v battery for a price of $75.00 plus $6.00 S&H in the US. A set of 2 drills and the proper tap for mounting the probe in the boiler is available for $10.00. A special probe and plug for Accucraft models is available.

A future design will include circuitry to power a water pump to automatically add water to the boiler as instructed by the water level sensing system. Once the pump is activated, a time delay is built in to continue to add water for a short time to prevent excessive cycling of the pump on and off. In addition, the added water will have little affect on lowering the temperature of the steam in the boiler, permitting extended runs.

For further info, send an e-mail to <bfindus@earthlink.net> or to order, make check payable to:

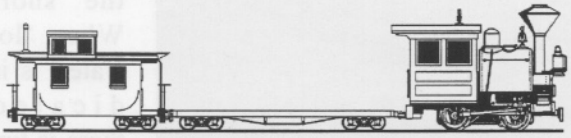
Bill Ford
BF Industries
325 Dryberry Way
Fern Park, FL 32730

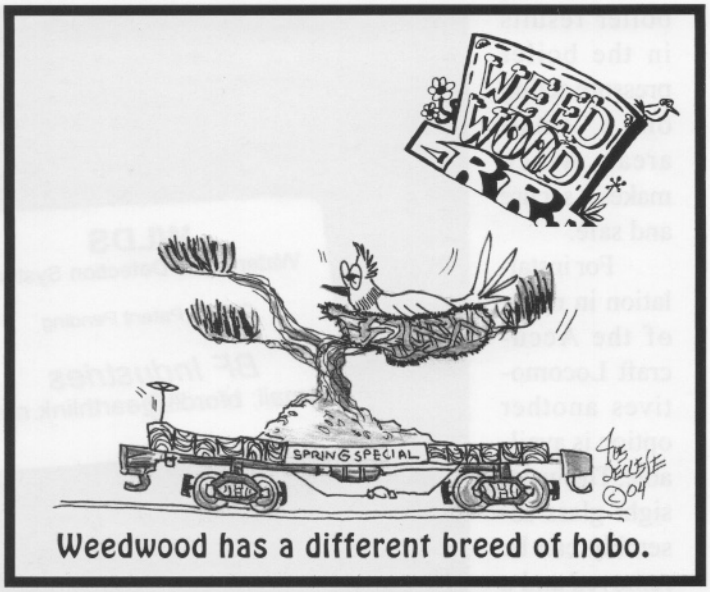
Addendum:

Regarding any concerns about drilling a hole in a boiler, I would like to add the following.

If a boiler is operating at 40 lbs psi pressure, that

is 40 lbs pressure per square inch. My probe when inserted into the boiler has a diameter of 0.100 inches, which is the area exposed to the 40 lbs psi. If you calculate that area, it becomes 0.01 square inches (3.14 x 0.50 squared). Therefore, the pressure applied to that area is 0.4 lbs (40psi x 0.01 square inches). This is a negligible amount of pressure. The pressure on the brass threaded portion of the probe is 2x that, or 0.8 lbs. (also negligible). Therefore there should be no safety concerns about drilling and threading a hole of this size in a boiler. Even if the same boiler operated at 100 psi, the pressures on the probe would only be 1.0 and 2.0 lbs. respectively.





Weedwood has a different breed of hobo.

Workshop Project

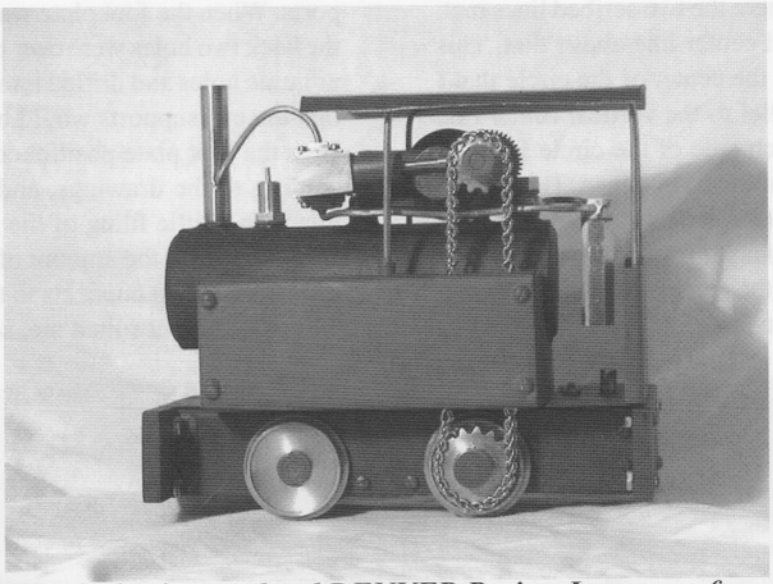
DENVER Project Locomotive - Part V

text by David Hamilton
photos by Curtis Glen

The final installment of David's DENVER project - the Fire Box and Cab

I began the last section of the project by making wood forms, to be used in folding up the fire box sides, the fire box front and back ends, and the cab back sheet. I sawed and sanded these three pieces of wood to the dimensions called for on these parts. I was particularly interested in the height of the fire box sides, the widths of the fire box front and back sheets and the width of the cab back sheet.

To make the fire box sides, I cut two rough sheets of .020" thick brass sheet stock. I trued up two sides, to be a top edge and front edge of each. From these edges I laid out the holes to be drilled on one of the sheets, including those that would accommodate the cab supports. And, with the true edges lined up, drilled all the holes.



The Author's completed DENVER Project Loco seen from the left side.

I used the drilled holes to bolt the two sheets together with 4-40 nuts and bolts. From there I was able to file and sand the other edges to their finished dimensions.

After unbolting the two sheets, I chose one to go on the left side of the engine. It had to have a couple of rectangular holes cut into it. These would accommodate the drive chain between the engine drive shaft and the rear wheel. These holes were laid out and chain drilled around the inside edges. The rough pieces were filed out and then the holes were finished to size and shape with small files.

The lines that would determine where to set the wood form for folding were laid out on what would become the inside of the sheets. The wood form was put in place between these lines. Another block of wood was clamped to the other side of the sheet to hold it firm and flat while folding.

The position of the wood former was double checked. All was clamped very firmly together and the sheet was folded around the top and bottom of the wood former. The fold was started by pressing that part of the sheet to be folded against the surface of the work bench and finished with a block of wood and a small hammer. All sheets were folded in this way, and in this case it gave the correct height for the fire box sides.

The end pieces of the fire box were cut out and, after a top and one edge were made reasonably true, were drilled and bolted together and finished to overall size, as with the side sheets. The front and back sheets required a semicircular hole, right in the center of the sheet, and the correct, radius to be a firm fit

around the boiler. It can't be cut too high or too low in the sheet, because the boiler must hold it firmly in place on the frame when all is assembled. So I first measured and laid out a vertical center line on the sheets. Then I measured the distance between the top of the frame and the bottom of the boiler. I laid out a horizontal line on the sheet at this distance from the bottom.

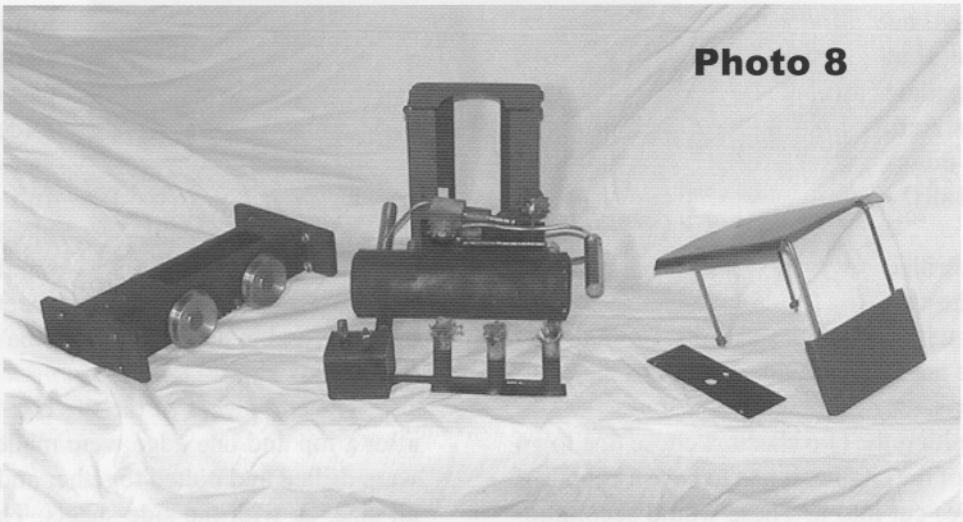
My dividers were set at the correct radius for the curve. One point was placed at the spot where the two scribed lines met. The other on the vertical center line above that. This latter, top point, became the center of the circle that I scribed. Two lines, parallel to the vertical center line were scribed, one on each side of the circle from its outside edge to the top of the work piece. This whole area was chain drilled around the inside edges and filed to the finished size and shape. I was careful to check the fit with the boiler on the chassis as I did the filing.

When finished, the two sheets were separated. A vertical center line was laid out and drawn on the wood former. The center lines of sheet and former were lined up. All was clamped and folded, as with the sides. The sides were assembled to the front and back of the fire box with 4-40 nuts and bolts. Only slight filing of a couple of the holes on the end sheets was required to make the parts fit together.

The foot plate is simply cut and filed to size and shape. Then four holes are laid out and drilled.

Completed fire box, foot plate and cab assemblies.

One will accommodate the fuel tank filler hole. Another will allow the 4-40 screw to go through and hold the burner in place. The other two holes will hold the backs of the cab supports. When the foot plate was in place on the engine, the back two holes were over the buffers so I used them as guide holes and drilled into the buffers, just a bit, so that the cab supports would have a place to sit. I may have the foot plate positioned a little too far back according to the drawings, and I could have corrected this with a little filing of the rear boiler support. Particularly where the amount of silver solder is a bit excessive, where it connects to the boiler. But the way it was working out suited me, so I kept it like that.

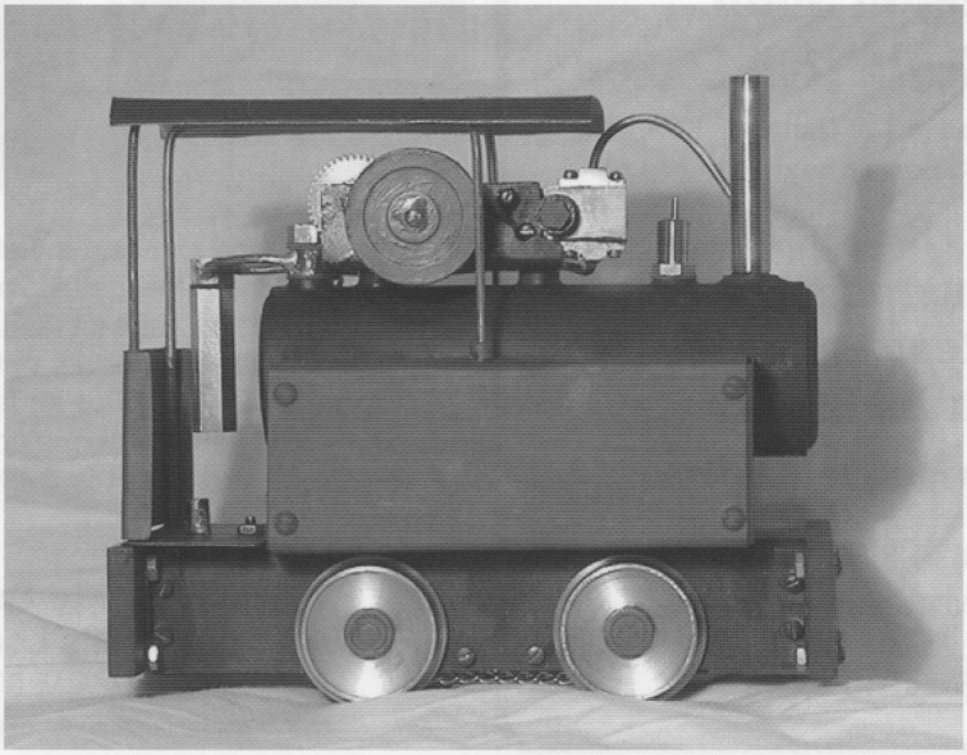


All the completed bits, ready to assemble into a working locomotive.

The cab back sheet and roof were given the same treatment as the previous sheet metal parts, but they did not have matching sheets to bolt together for finishing and there were no holes to be

drilled. After folding up the cab back sheet, I used the same wood former to fold the left and right sides of the cab, just to give them a bit of an angle.

The cab roof was made from scrap roofing material left behind by the crew that put the roof on the church! You never know what you will find in a heap of someone else's garbage. Buffers. Cab roofs. The possibilities are endless



The completed DENVER Project Loco seen from the right side.

The cab supports were cut and filed from coat hangers and folded at the dimensions indicated on the drawings. The front ends, that mate with the holes in the tops of the fire box, have small pieces of neoprene tubing glued in place so that a small part of the wire would go into the hole. Then the backs were adjusted to sit in the back holes of the foot plate and buffer. When all seemed right, the cab back sheet was set in place and secured with small amounts of crazy glue where the top edge sat against the supports. If you want to try this, it's very important that you not use too much glue at this point or you will permanently glue the cab to the foot plate and the foot plate to the chassis. I had to very quickly disassemble all of the above a couple of times.

But in the end, having the cab supports in place was the easiest way to hold them and the cab back sheet together for gluing. When they were held together with a very small amount of glue, I removed the cab supports and back sheet from the rest of the engine and applied more glue to secure the assembly of these parts. The assembly was then turned upside down, on top of the cab roof, and a few drops of crazy glue were applied to the cab roof and supports. I just found it easier to set these parts up on the locomotive and let them support each other while gluing.

You could probably solder these parts in the same way. I was just too lazy to get the soldering stuff down from a top shelf and fuss with the fluxing and heating. After allowing the glue to set, I painted the brass back sheet and installed the finished cab on the finished locomotive **Photo 7** shows the completed fire box, foot plate and cab assemblies.

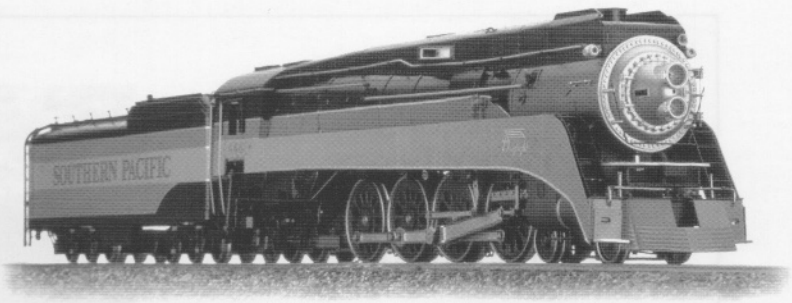
So there it is. The completed DENVER. At least for now. This locomotive design is open to some creative alterations. An alternate engine assembly and gas burner are included in the drawings, and there is plenty of opportunity for adding details. The engine is mounted on the boiler, so who knows what I may do to it in the coming years.

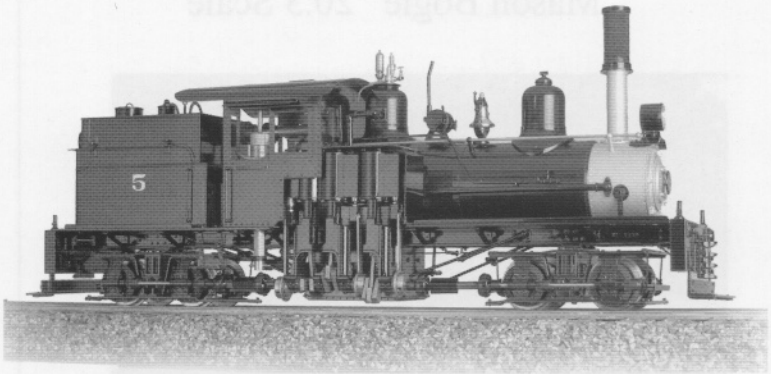
Photo 8 shows the completed assemblies. The engine is mounted on the boiler. The fire box is behind it. In front is the burner, with the chassis on the left and the cab and footplate on the right.

I hope that others will feel encouraged to take a shot at building this locomotive. I believe that the basic design is a great project for anyone, and I am quite sure that if I can do it - YOU CAN!

I'd like to thank Ken Orme, Marc Horovitz and Jim Reyer for their work on this design, and for making it available to all of us. And a special thanks to Ken Orme for his regular encouragement and support through the duration of this project.

Accucraft's exciting new SP Daylight (GS-4) in Live Steam, priced at just $4449.99! Now taking orders...don't miss out on this one! Call for order forms. A small deposit will be required to secure a place in line. ("Built to order" engines - C-21, K-27 Daylight require deposits)





Accucraft 3-Cylinder Shays....

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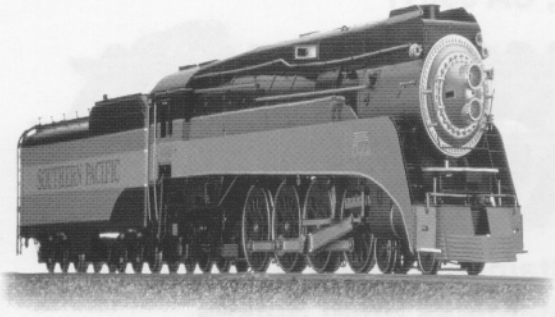
We are one of only a handful of Accucraft dealers authorized to sell the magnificent new K-27 in live steam. Call now to reserve yours!



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For Sale: O.S. KRAUSS 0-4-0. German engine, 3.5" gauge. Will pull 2-3 people. Weight 40 lbs. Perfect condition. $3,000.00 ● kit cost $4,500.00. 231-798-3000 - ask for Jim. (72)

For Sale: Gauge 1 'Porter' 0-4-0 with tender of logs. Built in England in 1994 by Maxwell Hemmens. Complete with 2-channel radio control for graduated forward/reverse and whistle. Original Instruction Manual, Test Certificates and Tools. New Fuel Tank replacing unavailable canisters. Original owner. Total use to date about 12 hours. $1400.00, including shipping from England. Donald Elliott, donald.odette@virgin.net (74)

Wanted: GAGE SHAY 1 engine kit. Contact Phil Chaplin, 5478 River St., Lowville NY 13367 ● phone (315) 376-8927 ● e-mail pechap@northnet.org (74)

Wanted: Looking to replace Picture/Poster (approx. 18" x 34) lost in fire. The picture is Double Headed C62's (Japanese National Railway) blasting through the snow. Please contact: Thomas (Tracman) King, PO Box 1493, San Martin CA 95046 or call collect 408-776-1446. (74)

Swap Shop listings are offered at no charge as space permits. No dealers and no phone-in ads, please! Send your listings to SitG, P0 Box 335, Newark Valley NY 13811, or fax to 253-323-2125 (24 hours), or e-mail to <docsteam@steaminthegarden.com>. Ads must contain sellers name, plus address and/or phone number. Ads will be run one time only unless previous arrangements are made.

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End of the Line

Mystery Solved!

The mystery we are referring to is the identity of the person who took the cover photo used on our last issue. Dick Hodges sent an e-mail to let us know that the credit for that excellent photo is his. Thanks, Dick! We have extended your subscription by a full year as a token of our appreciation.

Thanks for your patience...

Issue Nº 74 was late, and now this issue is late! What's going on? I apologize to all our readers and advertisers for the inconvenience, but my health continues to slow me down. By the time you read this, I will be recovering from heart surgery and hopefully will have regained at least some of my dwindling supply of energy. I'd like to promise you that we will be back on schedule by the end of the year, but all I can really do is to promise you that we will do our best to make that happen.

Calendar

Have you noticed how full the Calendar of Events is getting? Faithful Assistant commented just this morning that she's never seen so many steamups listed. We see this as a sign that our hobby is alive and well...and growing. Our cup runneth over! So check it out and see what's happening in your neighborhood, then make plans to boil some water with friends and fellow steamers. We hope to see you somewhere this steaming season.

Happy steaming,

Ron

Photo, outside rear cover - Lee Shulman's pride and joy. Charlie Mynhier built the locomotive, and after Lee acquired it he had Norm Saley add a few details and convert it to run on either butane or propane. Lee had the loco plasma coated and polished. Now it looks more like a piece of jewelry than a piece of machinery!

photo by Lee Shulman

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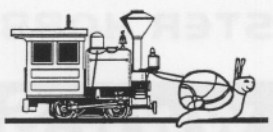

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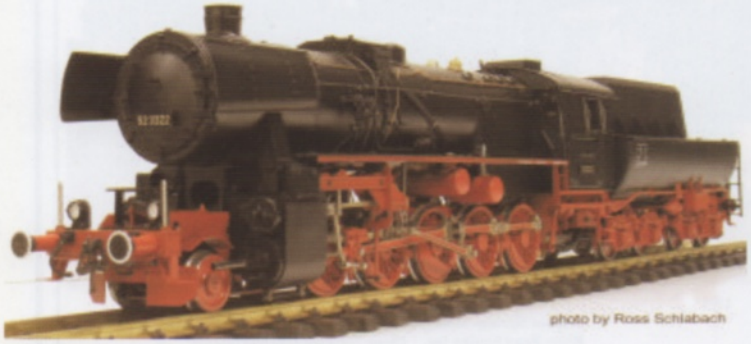

The BR 52 features axle driven feedwater pump, tender hand pump, boiler drain valve, bypass valve, whistle, blower valve, water glass, opening fire box door, Roscoe lubricator, Waelscharts valve gear, Johnson bar style forward /reverse lever, functional leaf spring suspension and alcohol firing. **Available now**

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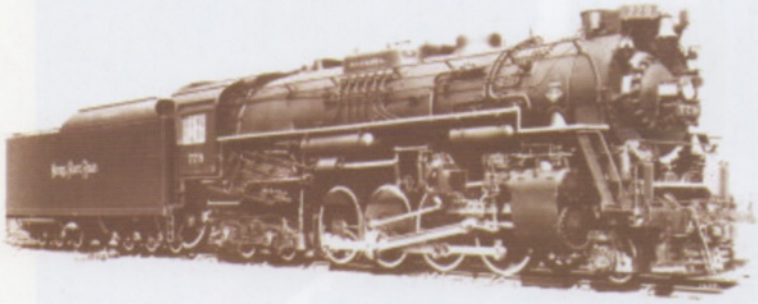

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