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STEAM IN THE GARDEN

with **Steam on the Pond**

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Issue Nº 64

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FRONT COVER:

A little Forney pulling a short passenger consist rounds a curve on Chuck Walters' Twin Lakes Railway in upstate New York. This is a late running afternoon train with a dozen weary commuters on their way home from work. They aren't upset that the train is late, because they are enjoying the mid-winter foliage and absence of 'Old Man Winter'. Chuck reviews the Roundhouse Engineering Forney for us in this issue.

photo by Chuck Walters

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2002 CALENDAR OF EVENTS

(H)ouston (S)mall (S)cale (L)ive (S)teamers has the following steamups scheduled:

May 11 - Tom Burns (Sugar Land,, TX) e-mail - Tsbsbh@aol.com
Contact the host or Jim Crabb at saltycrabb@aol.com for more information.

April 20, 2002 - West Side Reunion / Logging Modeler's Convention will be held at the Santa Cruz Portuguese Hall, 218 Evergreen St., Santa Cruz CA. Modeling, technical and history clinics, logging model contest, swap meet and dealer sales. Layout tours and operating sessions are also planned for Friday the 19th and Sunday the 21st. Contact WSR, PO Box 117, Fish Camp CA 92623-0117; phone 559-683-7764; fax 559-658-5097; www.westsidereunion.com; e-mail shayman@sti.net

May 3-5 2002 - Midwest Small Scale Steamup, St. Peters, Missouri. For information contact Diana Eaton, 504 Coldstream Ct., St. Peters, MO 63376 - Phone: 636-978-0725 - E-mail: <deaton02@mail.win.org>

May 24-26, 2002 - Pennsylvania Live Steamers Memorial Day Weekend Steamup. Rte. 29, 1 mile north of Rte. 113, Rahns, PA. Permanent Gauge 1 rack and Gauge 0/Gauge 1 portable tracks in operation. Night running with lights. Food available on site with lodging nearby. For information and directions contact Harry Quirk, PO box 215, Springtown PA 18081 - phone 610-346-8073 - e-mail mikemoore@comcast.net.

May 25-27, 2002 - Memorial Day Meet & Work Day, Manatee Central RR & Family Lines. Parrish, Florida. 35 miles south of Tampa, 20 minutes south of Sarasota. Privately owned. 9000' of 7.5" gauge track; 1200' of 4.75" gauge track; portable 3.5" gauge track; Gauge 1 loop in sheltered, wooded area. Pond for boats. Visitors welcome, please call first. Larry & Joan Smith, 9111 Erie Lane, Parrish FL 34219-9049 - (941) 776-2109.

June 2, 2002 - 6th Annual Large Scale Train Sale, Holiday Inn, Farrell Rd., Liverpool New York - 9 a.m. to 4 p.m. Dealer sales, manufacturers, importers, custom builders, miniature plantings, private vendors, door prizes, demonstrations, seminars, workshops. Information contact Central NY Large Scale Railroad Society, 315 Viking Place, Liverpool, NY 13088 - e-mail <gdavis4@twcny.rr.com> - web site: <http://home.twcny.rr.com/cnylrs>

June 22, 2002 - The Pine Ridge Lumber Co. in Jenison MI, will be hosting the fourth annual steamup from 9 AM until 6 PM. The 300' of 45mm track has 16' radius curves and is raised two feet off the ground. For more info contact Robb DeVries (616) 667-1260 or visit <http://steamlogger.homestead.com>

July 4, 2002 - Independence Day Run, Manatee Central RR & Family Lines. Parrish, Florida. For more info, see listing for May meet on this calendar.

July 19, 20, and 21, 2002 - The Harbor Springs (Michigan) Area Historical Society has authorized a second annual steam up to be held in conjunction with the 2002 "Shay Days". Portable gauge #1 layouts will be set up outside and the essentials for steaming will be provided (except for fuel). You will be able to say you operated your live steam locomotive on the site of the Shay machine shop, where Ephraim built and maintained three locomotives for the Hemlock Central Railroad just across the street from his home. Limited to all geared locomotives but particularly Shay locomotives! For those of you wishing to participate in the steam up for the weekend please contact Bruce Gathman at: shayloco@voyager.net or 231-526-0174, for further information about Shay Days and Harbor Springs and help making arrangements for your accommodations.

August 30, 31 & September 1, 2002 - Pennsylvania Live Steamers Labor Day Weekend Steamup. Rte. 29, 1 mile north of Rte. 113, Rahns, PA. Permanent Gauge 1 rack and Gauge 0/Gauge 1 portable tracks in operation. Night running with lights. Food available on site with lodging nearby. For information and directions contact Harry Quirk, PO box 215, Springtown PA 18081 - phone 610-346-8073 - e-mail mikemoore@comcast.net.

September 1, 2002 - Valley Forge Model Ship Society's Steamboats Only Meet at Gotwall's Pond, Kimberton Pennsylvania, off PA Rt. 113 in Pennsylvania. Ground-based R/C frequencies required. Starting time 9:30 a.m. If you're coming to the PLS meet, bring a steamboat and join us...we're just 12 miles from the PLS site. For more info, contact Ernest Morris, 929 Spring City Rd., Phoenixville PA 19460 - phone: 610-948-8107.

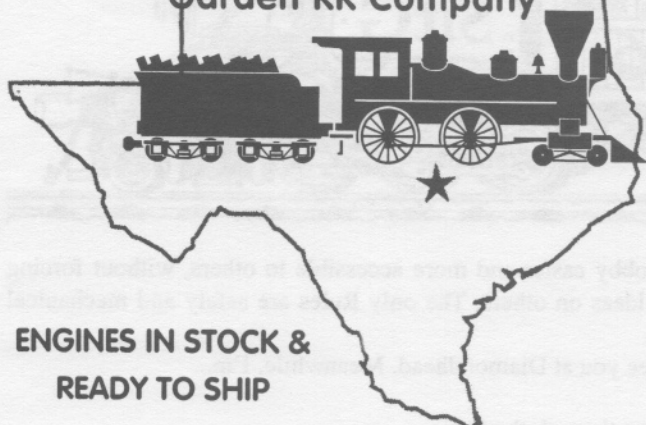
November 9 & 10, 2002 - Fall Meet, Manatee Central RR & Family Lines. Parrish, Florida. For more info, see listing for May meet on this calendar.

January 1, 2003 - New Years Day Run, Manatee Central RR & Family Lines. Parrish, Florida. For more info, see listing for May meet on this calendar.

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.)

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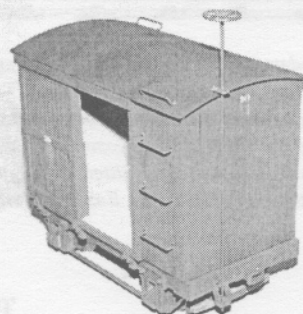
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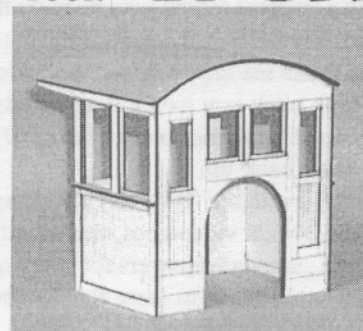
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Letters from readers are welcomed and encouraged. Offer advice, encouragement, suggestions or constructive criticism. Tell us about your current project (and don't forget the photos!) or just share live steam experiences. But please keep your letters 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.

Tallahassee, Florida

Dear Ron & Marie,

Please accept my thanks, and share them with your writers and advertisers, for helping me get started in live steam. I've nearly completed my collection of back issues and reprints of SitG. As I read them again, I am impressed by and grateful for the information provided and the quality of the people in this hobby. I've learned that:

(1) A modestly persistent fellow with no more than ten thumbs can run live steam. Ruby has had a few spills, but still works her little pistons off to make me happy. (Corollary: wide curves, level track, and don't trust track you haven't inspected.) She deserves some of John Thomson's improvements (SitG #61), but no major surgery until she has a back-up.

(2) Knowledge is available. Between your magazine, *Garden Railways*, Marc Horovitz's videotapes, the advertisers' catalogs, the internet sites, etc., there are answers for every question. It may take reading three or ten times to learn the vocabulary to understand the issue, but keep plodding.

(3) You get what you pay for. The prices of locomotives and other goodies relate directly to the materials and effort used to create them, with not much added for the expertise of the builders and the investment in tools and equipment. The only explanation for the intense involvement of so many talented people is love of the hobby. Nobody gets rich and some go bust.

(4) The pleasure you get from trains is not determined by the dollars you spend. I can't budget the dollars for a high-end Aster, but I might be able to cobble together a one-lung brass tram, following Marc & Dons inspiration. (*Model of the Month* pages on the *Sidestreet Banner* website.) No better fun than "rolling your own."

(5) People are wonderful. I cannot list the suppliers, dealers, and authors who have spoken to me kindly and personally, with no used-car seller's hustle and no condescension. The same warmth and civility permeates your magazine. Your writers may disagree, but are not disagreeable. Mostly, they invest a lot of effort to make

the hobby easier and more accessible to others, without forcing their ideas on others. The only Rules are safety and mechanical rules.

See you at Diamondhead. Meanwhile, I'm...

Rolling through the fog,
Mike Simpson

Well said, Mike! Hope you enjoyed your first visit to Diamondhead. - Ed.

Santa Fe, Texas
via e-mail

Ron,

Today the loosely knit group known as the Houston Area Small Scale Live Steamers (HASSLS) got some really good news. We learned that our leader, Jim Crabb, is now a Roundhouse dealer and he will be doing business under the name of TEXAS ROUNDHOUSE.

Jim was the very first person I met when I first learned about small-scale live steam. Jim introduced me to many other live steams through his efforts to have get-togethers at the tracks located at individual homes in East Texas. His efforts make it possible for many of us to make steam-in-the-garden. Jim also introduced many of us to Diamondhead, Mississippi. If you look at the roster of 2002 attendees at Diamondhead you will see a goodly number of names of folks from East Texas.

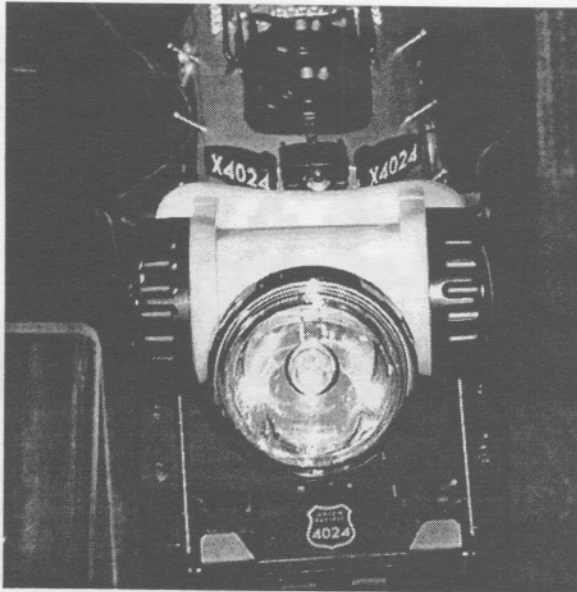
Jim has long been a great asset to the small-scale live steam hobby. The fact that he has become a Roundhouse dealer can only make the hobby even better.

Dave Young

Charlotte, North Carolina
via e-mail

Dear Editor,

After much effort, I have devised a working headlight for my Big Boy (see photo). May try again later with slightly more atten-



tion to scale! Why do you wait to publish my stuff till your "April Fool" editions?

Jim Burns

News from the Manatee Central RR & Family Lines

Parrish, Florida

Dear Ron,

The Florida Live Steamers, 7.5" gauge, had a real good winter meet. Our part was February 18-20. So many people came early that it looked like we had a meet going the 16th and 17th. We had 417 people in attendance, and a number of trains on the Gauge 1 track. Also 2 boats on the pond. Larry is going to start work soon on a new Gauge 1 track in the woods.

Enclosed are some dates for your 2002 Calendar of Events.

Joan Smith

San Antonio, Texas

Dear Editor;

For a novice, acquiring the basics - besides an engine - can prove frustrating. More accurately, bloody annoying for this crotchety geriatric. After a good bit of reading over the years, I finally broke down and ordered a beginners live steam locomotive. From my reading, I knew that live steam involved practicable consumables other than a pile of kindling, a match and tap water. First off, steam oil. Where does one get it? None of the magazine articles or advertisements told me. During one phone conversation, a salesman with a large west coast hobby shop told me to forget it. Just get a quart of 40W Castrol motor oil,

mix in a couple ounces of Marvel Mystery Oil, and I would have an economical and viable solution. Not so, apparently. Additives in conventional motor oils may prove harmful to small steam engines. I finally found a source for steam oil (Sulphur Springs Steam Models. There are probably more, but.....???

Fuel for gas fired boilers? Use butane, I gather, not propane. Unacceptable pressure differences, or some such. Available at any drug store selling cigar lighters, or a camping supply store. Bull! I scoured this city of over a million population (many camping stores and 5 hobby stores). No butane. Clerks pointed to full shelves of 16-ounce propane cannisters, assuring me of no difference.

Following a tip, I called a mail order camping supply outfit which might stock butane. No go, but a kindly customer service lady tracked down a company that did carry it. No individual cannister sales, only case lots for \$51.95. I ordered a case.

Then there is the matter of filling a fuel tank with gas. The butane cannister looks like a spray paint can without a spray button. Observe closely...the can nozzle is threaded. Now what? One needs a gas filler adapter for these cannisters. What kind do you want, longneck or shortneck? What's the difference? One is longer than the other, Pilgrim!

Very enlightening, right? Not to this novice. I found a source for adapters, same as for steam oil. I ordered and received a longneck model. The adapter is a very nicely machined brass unit, with a knurled cat and a nozzle. Actually, a little jewel. I screwed it on one of the cannisters. Nothing happened. Only by accident, later, did I discover that gas will discharge when the nozzle is pressed in. Useful bit of information from a safety standpoint...the nozzle is spring loaded. Not readily apparent. No instructions with the adapter.

Now, when my 0-4-0 finally arrives, I am all set. Right? I have a feeling that may not be so. I am bound to have missed some "kinder primer" steam operating tip, which everyone knows about - except the novice. Well, just let him dig for the information. He will enjoy the hobby more. Right?

I say, if the inventive, kitbashing, upgrade modification experts, magazines and advertisers want to expand the live steam hobby - help eliminate the simple mysteries. I have read, for example, articles/letters about installing a performance enhancing supersteam pipe in a single-flue boiler, such as my simple 0-4-0 will have. The idea makes sense, but the articles are not clear enough for me to understand. What kind of pipe, configuration and fittings? I would be happy to buy a kit. A re-reading of this letter tells me this must have been my night to grump. I hope what I have found will be of help to another novice.

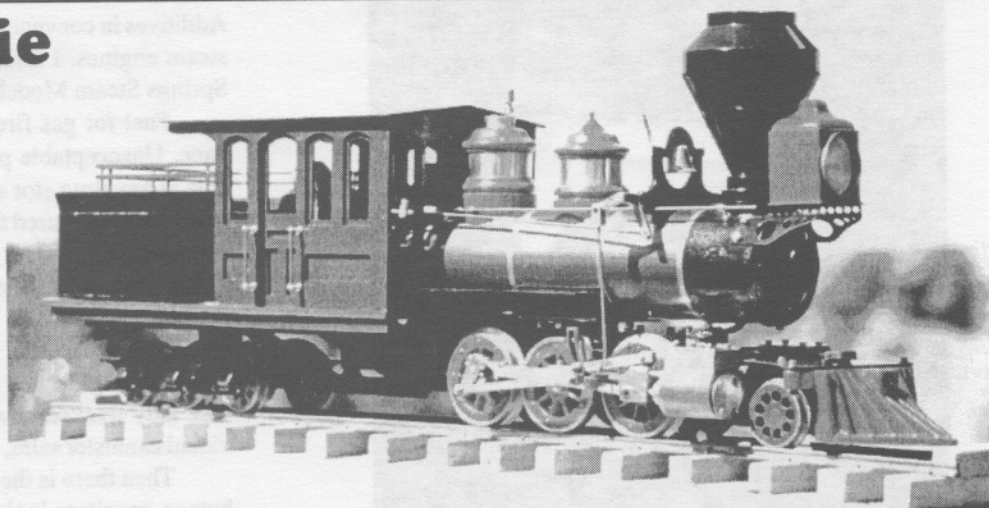
Warm regards,
Arn Granheim

Arn, you have made an excellent point! We all start out as novices. Some of us are fortunate to have an experienced hand to guide us into the hobby...most have to go it alone. Are you listening, advertisers and writers? We are going to try to do our part with a new column by Chuck Walters, starting in the next issue, focused totally on the needs of the beginner. - ed.



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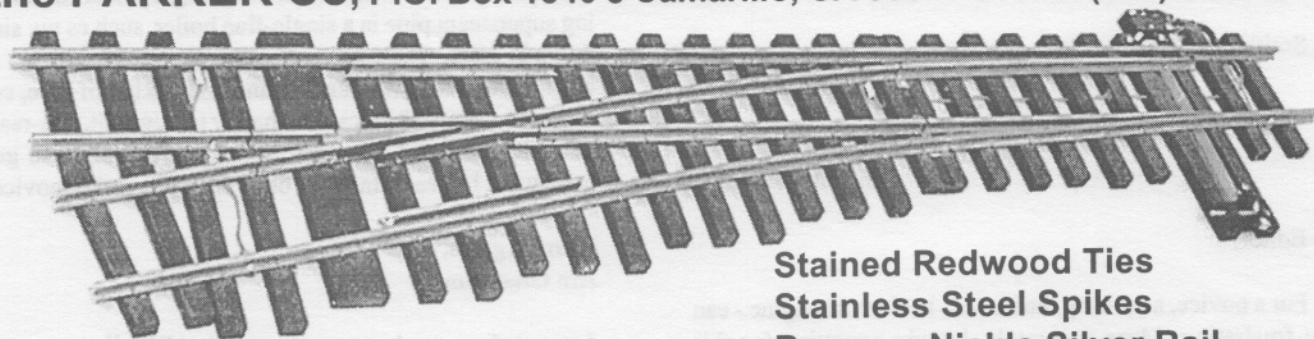
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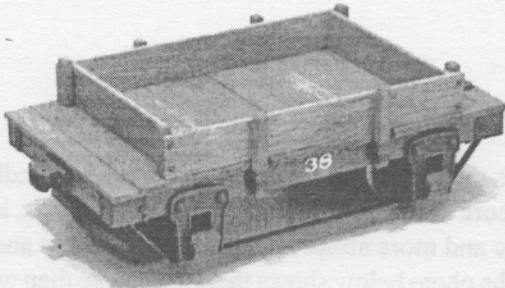
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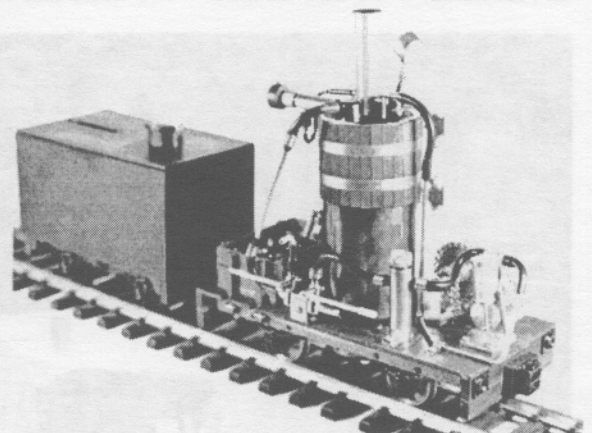


Sierra Valley Enterprises, 2755 Saratoga Avenue, Merced, CA 95340
• phone: (209) 722-8282 • e-mail: sierravalley@cell2000.net has introduced **GCE - 11' Sand and Gravel Car #M6**, a new addition to their line of 1:20.3 scale, R-T-R, museum quality rolling stock, and another of the maintenance-of-way cars requested by collectors of the "Munger Mining Co." series. Carl Pierce of Citrus Heights California gets credit for the idea for this car. It would most likely be used in a maintenance train, but could be pushed into revenue service if required. This is another type of 'shop build' maintenance car constructed by industrial railroads to fill a specific need. The car would probably be used to transport replacement materials (sand and gravel or ballast) for the track road bed,

which would wash away with the annual rains. This car is typical of the maintenance-of-way equipment used on small industrial railroads from the early 1880's into the middle of the 20th century. Like all the cars in the "Munger Mining Co." series, this car represents the general construction and railroad practices of the day, rather than a specific prototype. To our surprise and delight, the car comes complete with a gravel load that really did come from a river bed in California's Mariposa County. Gary Watkins tells us that he collects dirt from a river that runs through a friend's ranch, and screens it to get the 'scale' ballast size. Gary says he can't promise that there is gold in the gravel load, but if you look closely you can see some gold colored rocks! We love our little sand and gravel car and the whole Munger Mining Co. series of cars, which make an interesting and beautiful train behind a small Porter, Shay, Heisler or any little industrial or mining loco.

Quisenberry Station, 3903 Quisenberry Drive, Alexandria, Virginia 22309 • phone: 703-799-9643 • e-mail: turbohvn@aol.com, announces that they are now a dealer for Roundhouse™ live steam locomotives. Quisenberry Station became a Roundhouse dealer in December, 2001, and their goal is to always keep in stock the most popular engines, kits, parts and accessories. In house repairs and custom painting of Roundhouse locomotives are available as well. Full color catalog \$3.00.

If you have always wanted to try coal-firing, here is the way to go without breaking your budget -- an 0-2-2 logger in 1:20.3 scale for gauge 1 track. The prototype ran at Diamondhead 2002 and generated a lot of interest (see contributor Jim Crabb's enthusiastic comments about this loco in the Houston Steamup Report in this issue). The ready-to run locomotive, with single-cylinder oscillator, chain-drive gear reduction, steam blower, feed-water pre-heater, check valve, and water tender with hand pump is available by special order. The loco comes with everything you need to get started in coal firing, including Mesquite charcoal for startup, Welsh steam coal, custom coal shovel, pricker, and complete firing instructions and maintenance manual. E-mail, call or write for specifications, pictures, and pricing. John Thomson, 4321 Crestover Dr., Mesquite, TX 75150 • Phone: 972-226-3229 • e-mail: jthomson@flash.net



FH&PB Railroad Supply Co. announces the discontinuation of their Forney conversion kit for the Accucraft Ruby. All the Forney kits produced have been sold; thanks to the many customers who bought them! FH&PB continues to offer laser-cut wood cab and pilot kits for the Ruby, and a laser-cut wood cab for the Accucraft C-16 should be available shortly.

Diamondhead Report - 2002

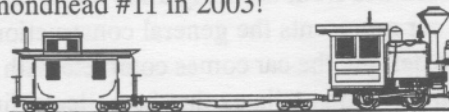
International Small-Scale Steamup celebrates its 10th anniversary

In spite of having looked forward to the Diamondhead 10th Anniversary Steamup for a full year, we missed it. There was some consolation in attending vicariously through the photos and video clips posted on the *Steam in the Garden Online* web site (www.steamup.com), but it just wasn't the same as being there.

We know *where* and *why*. Now, thanks to a few generous contributors (Carol Jobusch, Jim Pitts and Michael Martin), in the next few pages we can all catch a few glimpses of *who* attended and *what* they were running.

Steam is the reason for its existence, but Diamondhead is so much more than just steam. Over the last decade, it has become more and more about friendship, fellowship and camaraderie. The photo below shows that spirit more than words could begin to.

Enjoy Jim Crabb's in-person report and the photos on the following pages, and start now to make your plans to attend Diamondhead #11 in 2003!



Jim Stapleton (VA), Kevin Strong (CO), Peter Jobusch (MD) and John Synnestvedt (VA) admire and discuss Peter's latest acquisition. A Bachmann Big Hauler????!! Well, no...not exactly. The locomotive is a 1:20.3 model of ET&WNC #12 in about 1938, custom built by Gordon Watson of Argyle Locomotive Works in Australia (see ad in this issue). It won the pulling contest at DH this year. This is also the prototype that the Bachman 'Big Hauler' was based on. Peter worked with Gordon Watson for several years to get the locomotive built. Lots of work on this end gathering information ... books, photos, visiting the prototype to snap particular details, etc. Gordon then got to have all the fun of building the beast. Peter says he remembers that one of Gordon's first comments when they sat down with a published sets of plans to discuss building it was "Gosh, that'll be HUGE." The model is about 5.5" wide, 32" long, 7.75" high, and weighs a ton. The nice thing about a locomotive this size is that there is enough thermal momentum in the boiler that it is easy to fire and operate. Peter has promised to write a more extensive article on this loco for a future issue. His next Tweetsie locomotive project is converting an Accucraft C-16 into an ET&WNC #3. I can't wait to see it!

Carol Jobusch photo



Diamondhead 2002 - A Tribute to Jerry Reshew

by Jim Crabb

And that is the way the meeting got started officially. After the opening remarks by Jerry Reshew he was met at the podium by Jerra Matticks and presented a huge book of memories and tributes which had been assembled by Marie Brown. Thanks for the 10 years -- thanks for finding and maintaining the venue -- thanks for promoting a hobby that so many of us have come to enjoy.

It has been previously recorded how the event started, but the real magic is how it has been sustained. Jerry is so modest in assigning credit to others but it is really his behind-the-scenes leadership all year long which makes everything flow so smoothly on *Mississippi Time* during the actual event.

An example comes to mind concerning the lighting in the big atrium. (Some may ask - what lighting?) I've never been there when ALL of the lights were in place and working. This year Jerry arranged (because the motel wouldn't) for a scissors lift to be brought in and an operator to replace ALL of the bulbs. What a difference!

Officially the event started on Friday morning (Jan 11th) - but, but, BUT! According to Jerry the Canadians arrived on Thursday the week before ready to steam. They agreed to visit and sightsee through the weekend and the track went up Monday. In fact, Pat Darby was posting pictures to the SitG website showing participation Tuesday evening.

That really whetted my appetite. I had planned to work (at my paying job) on the way to Diamondhead and get in Thursday evening. It was only a matter of conscience which made me dress appropriately and work the plan. I really wanted to just jump in the car and pedal as fast as I could. If you have never been to DH I can't explain it -- if you have been, there is no need to elaborate. This is the largest gathering of live steamers (in these scales) in the world.

I've written in these pages about the fellowship, friendship, and fraternity before -- you have to experience it. Thank you, Jerry! It took me two hours to get to my room after checking in the hotel. The reunion with friends -- some of whom I hadn't seen or talked to in two years -- was wonderful. Sometimes we just picked up on a conversation as if it were yesterday. Catching up quickly with a few paragraphs and a promise for more extensive sharing during the weekend.

There was a somber note as well. Some of our friends would not be coming to DH again -- particularly Bob Paule, Erv Mueller and Rick Runyon who had passed away during the year. It was unusually quiet Saturday night about the time we would have been enjoying margaritas made in Bob's wonderful steam powered mixer.

Others had made a choice not to fly (or otherwise get too far from home and loved ones) for reasons understandable given the current state of the world. The universe of small scale live steamers is very small and the loss of just one of our members is a loss felt by all. What is truly amazing, though, is how folks always seem to step up to fill the void.

Norm Saley, not expecting to be present, had canceled his presentation. Unaided by visual aids, Kevin O'Connor gave a superb presentation at the last minute and answered questions

about burners. As usual, the seminars were wonderful. Surely everybody attended at least one while many attended them all.

There were a lot of new engines being offered by commercial producers: Aster showed their Allegeny; Accucraft their Mich-Cal #2 Shay. Individuals were also hawking their wares: Bob Starr's Vertical boiler geared logger; John Thomson's *entry level* coal fired BAGRS engine; John Clark's wonderful little Peruvian Inspection Car powered by Gail Graham's engine. John Shawe was taking orders for his coal fired conversions. And the list goes on.

As you have come to expect there was a certain amount of foolishness -- Bill Courtright was seen using his coalfired SR24 for *revenue purposes*--he was hauling *Rue*, his aged little rat terrier. Since this was going on at 4 a.m. I'll bet you missed it...even if you were there! The Mardi Gras train presented by Carole & Peter Jobusch and seen for several years was running Saturday afternoon and beads were appearing everywhere. The weight lifting contest was underway, but somehow didn't have the usual participation that Walt Swartz generates. The swimming pool was usually filled with both kids and pop-pop boats.

And there was also culture -- whoa there! It's true -- the *Clack Valves and Cornets Steam Band* (15 strong) gave a wonderful performance on Saturday evening. There was also a 5-piece ensemble which played during the Saturday noon buffet and again around the pool in the afternoon. The old railroad movies sponsored by Jerry Hyde have become expected and were well attended. See, there really is something for everybody! Jerry Reshew, you are one clever fellow!

Thanks to Dave Cole and Pat Darby (through Richard Finlayson) a lot of photos were up on the net for those folks not able to make it. But there was no way to allow you to participate in the wonderful swap meet overseen by Carol Homuth. It was actually in a better location this year -- out by the pool. It was billed as a *flea market* and I was looking for some fleas for my circus train -- must have sold out earlier. So did a lot of stuff! It was gone before the actual opening time -- tools, engines, many assorted pieces of rolling stock, parts, books, wooden train carrying cases, belt buckles, switches and time pieces ... you had to be there!

There were about 80 door prizes given out (I maintained my record, though, of never winning one at DH). I don't know whether to wrap up this report or keep on writing. Jim Montgomery single handedly spiked an HO track between two Gauge 1 tracks and ran his HO live steam engine. John Coughran had headed a group which added a 3rd rail to one of the tracks for the 32mm gauge steamers. And so it went until we were signing up for the 2003 event on our way out the door. Again, Jerry, Thanks! Thanks for the opportunities.



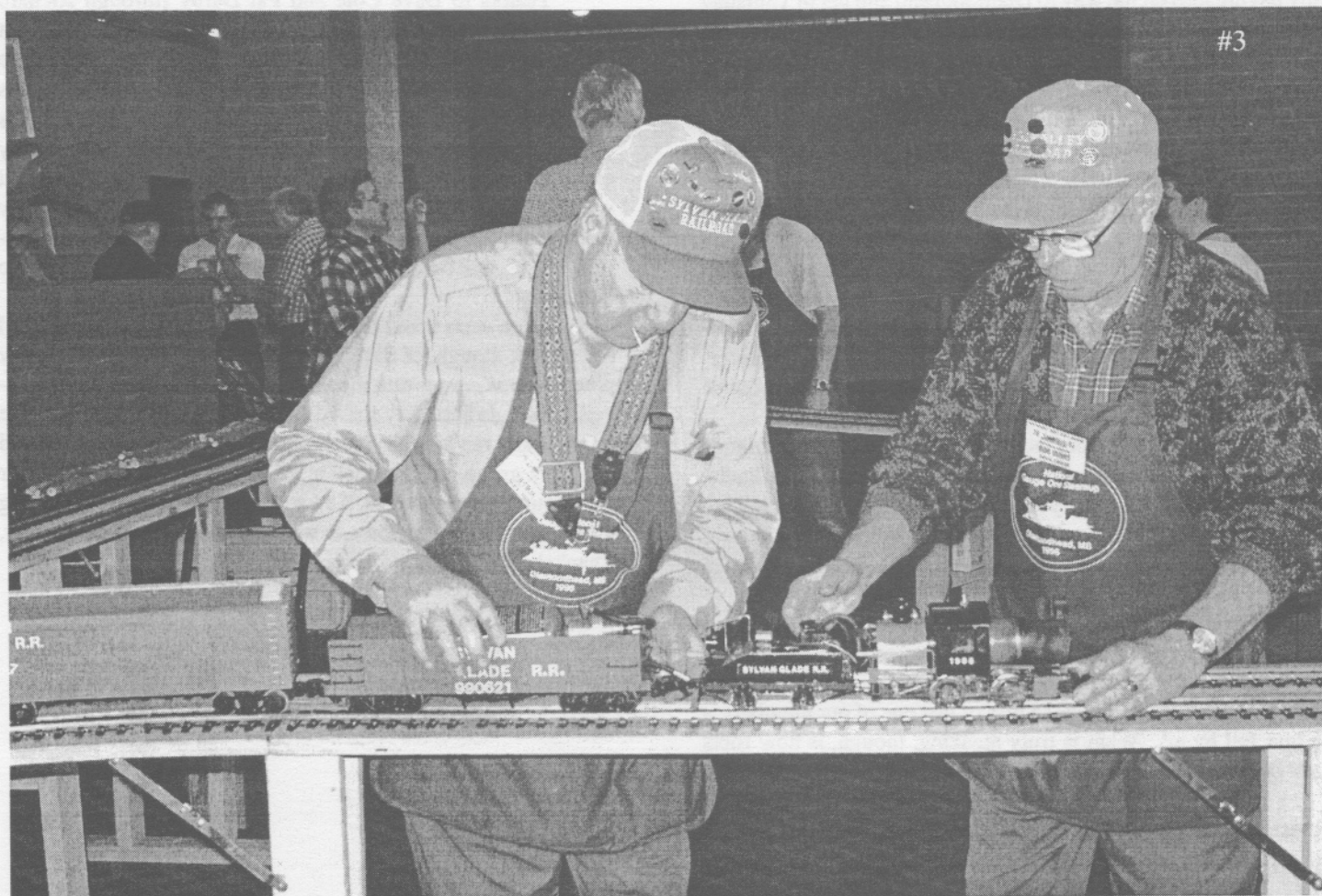


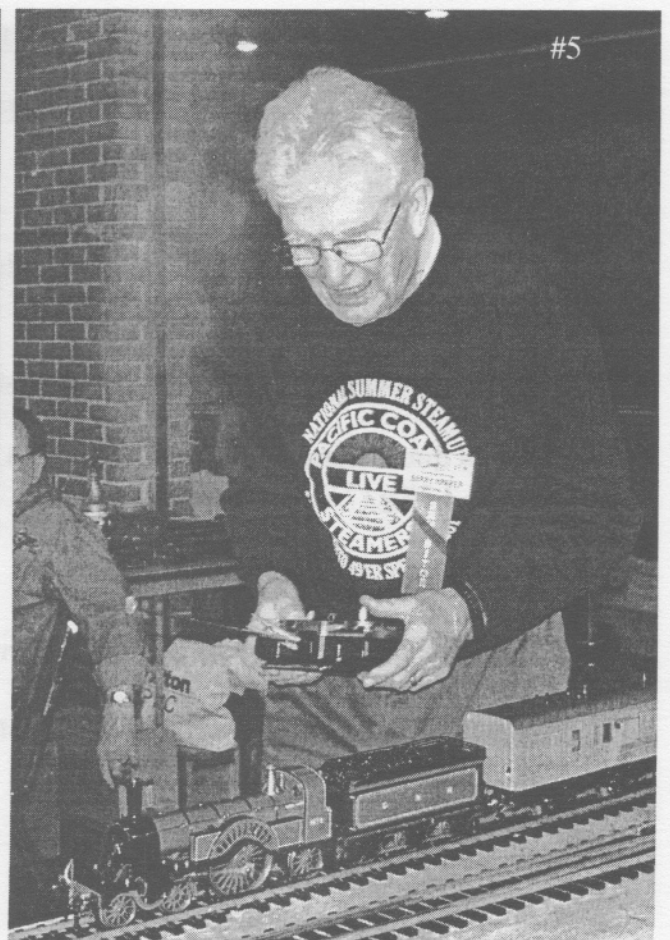
#1 - Charlie Baker (TN) and Jimmie Millhorn (TN) admire Peter Jobusch's new steamer from Argyle Loco Works.



#2 Dan Fuller (TX) gathers all the essentials to boil some water.

#3 Ed Cook and Bob Mars (both from CANADA) with an interesting little Camelback.





#4 - Jesse Grimmer (VA) chats with Carl Malone (TX) and Keith Manison (JAMAICA) about Keith's GOLD BUG Climax locos.

#5 Barry Harper (OH), a veteran steamer, running his Aster Stirling Single with a rake of coaches built by Peter Comley.

#6 Richard Jacobs (LA) tweaks the throttle as his Accucraft C-16 rolls by.

Diamondhead Report continues on page 23...

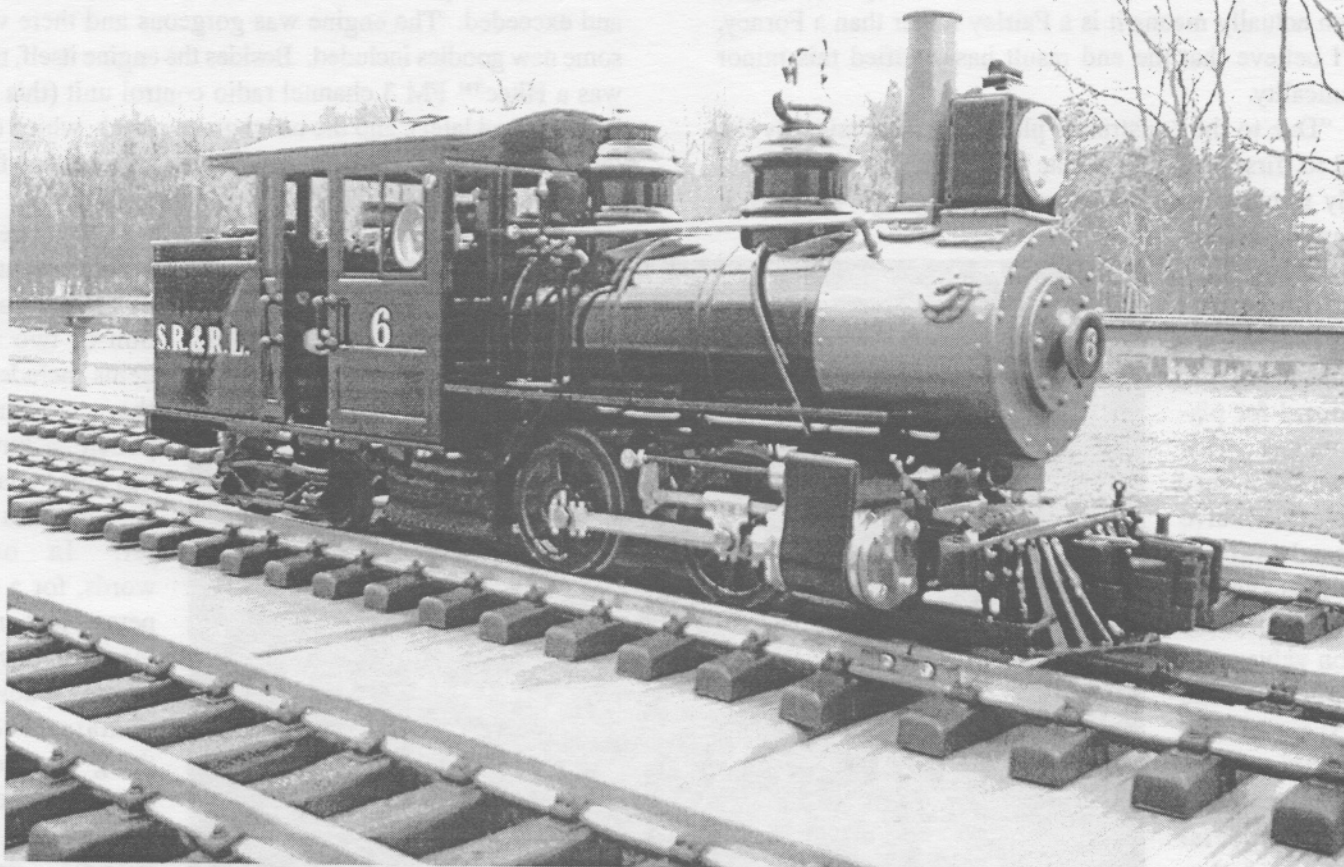
Roundhouse Engineering's FORNEY

by Charles W. Walters (photo's by the author)

*Another winner from the
good folks at Doncaster*

Technical specifications:

- 0-4-4 inside framed chassis with double acting piston valve cylinders
- Reversing by piston-type steam reversing valve between frames
- Fully articulated to allow operation down to 2' (600mm) radius curves on 45mm gauge or 3' radius on 32mm gauge
- Radio control of both speed and direction available
- Internal gas firing using the Roundhouse 'FG' system
- Boiler capacity 250ml
- Controls fitted as standard are: steam regulator, safety valve, pressure gauge, displacement lubricator and gas regulator
- Optional water gauge and boiler top up system available, either factory fitted or do it yourself
- Overall dimensions are: length 380mm (14.96"), width 110mm (4.33"), height 150mm (5.90"), weight 3.3Kg (7.28 pounds)
- Insulated wheels standard
- Compensated rear bogie for improved running and tracking
- Optional S.R. & R.L. N° 6 lettering and numbers



Raising steam on the Author's elevated line in northern New York State

Introduction

When you hear names like Rolex™ and Porsche™, they remind you of quality and sleekness of design. For many small scale live steamers, the name Roundhouse™ also brings to mind quality and sleekness. For twenty years Roundhouse has been producing quality engines for the hobbyist and their latest entry into the market is no exception.

Before we look at the locomotive itself, let's start with a little background on the full size locos. They were built by the Portland Company around the turn of the century and were used on quite a number of the two-foot gauge railroads in Maine. They were of the 'Forney' design, which was a rigid framed loco with an integral coal and water tender, having a short, coupled set of drivers in the front and a bogie under the rear. The huge distance between the front driving wheels and the rear of the loco did cause problems with the 'ride' on these engines, and in fact there are reports that some railways would only run them in reverse as they performed better that way.

The Portland engines were bought and sold by the different railroads in Maine, and you will often find photos of the same loco working on different railways during its life. They were also modified over the years, so no two appear to be identical.

Background

To gain a better understanding of why Roundhouse chose this engine and the unique design of the power unit, I decided to contact Roger Loxley of Roundhouse, one of Roundhouse's chief engine designers, for his response to these questions. Roger stated, "Forneys appear to be a very popular loco in the United States, so we felt it was a good candidate for a model. Our model does not represent any specific Forney engine manufactured by Portland. It takes features from several different locomotives, so it is more of a generic Portland Forney."

Roger further states, "Having decided on this engine, some design decisions had to be made. Because prototypical Forneys had such a long rigid wheelbase, they were

normally only suitable for running on large radius curves. With that in mind and with the idea that our aim was to give it as wide a market as possible, it would be a necessity that the engines operate on two-foot radius curves. To achieve this, we decided to articulate the power bogie, which actually means it is a Fairley rather than a Forney, but I believe that the end result has justified this minor technicality.

“Due to the constraints placed on the design by the need to, first of all, articulate the power bogie, and secondly to offer both 32mm and 45mm gauge versions, it became obvious that fitting in a conventional valve gear was not practical either, so we opted for piston valves. This allows for a very simple fixed valve gear and reversing by a steam valve. However, because piston valves rely on perfect size and shape of both the piston and the bore in which it works, special machinery had to be purchased to enable us to produce the long, small diameter and extremely accurate holes which are required. The pistons must be similarly very accurate, as a clearance of no more than 5 microns (.0002") is needed for correct operation.

“Our Research and Development team spent many hundreds of man-hours developing and fine-tuning the articulated power unit with all its problems of flexible steam pipes and very close tolerances. In the end, it was worth it and we are pleased with the results.”

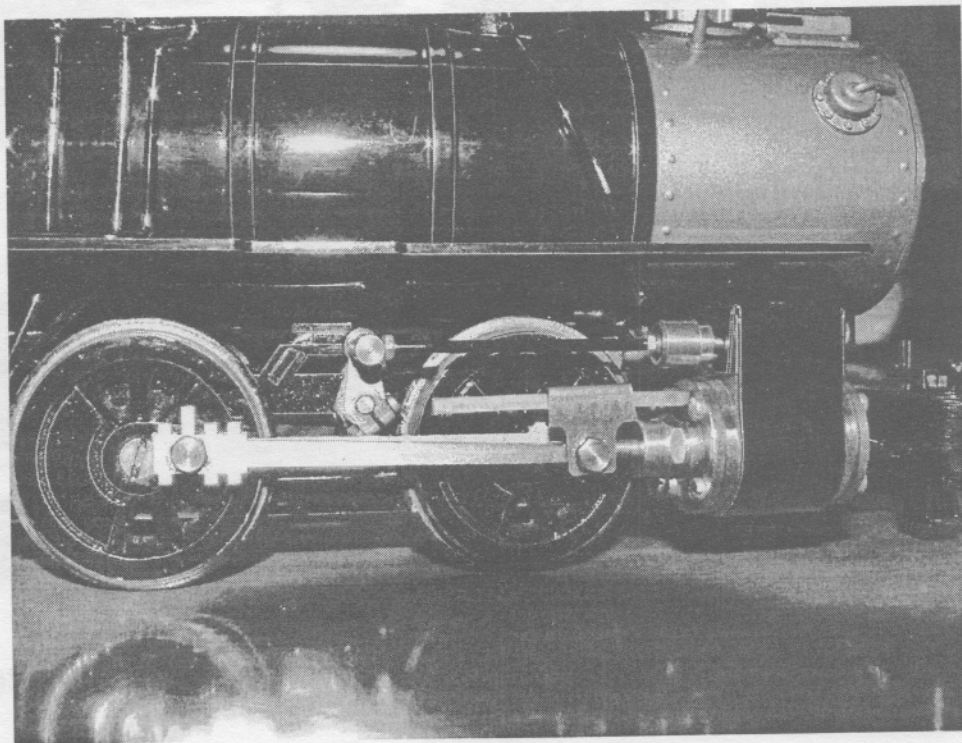
Description

I have had nothing but great experiences running the Roundhouse engines I have owned. The Forney would be my third edition from this company. I was well aware of what comes in a box from Roundhouse. With that in mind,

I had no fears when I placed my order for the Forney. My engine arrived only 5 days. Several Roundhouse dealers stock these engines for immediate shipment, which sure beats waiting for months...or years.

When I opened the box, my expectations were met and exceeded. The engine was gorgeous and there were some new goodies included. Besides the engine itself, there was a Hitec™ FM 3 channel radio control unit (this will be discussed later), and the usual green pouch, which contained the standard replacement rings, spare Ronson filler valve, steam oil, syringe, gloves and instructions.

What really caught my attention was the addition of two new items included in the green pouch...a butane gas filler adapter and an extra gas jet. In other words, for a new person just entering the hobby, the Forney package contains everything you would need to fire her up immediately and even make simple repairs should you have the need. Of course, distilled water, gas and some lubricating oil would still be needed.



Closeup view of the Forney's drivers & right-hand side cylinder. Note the piston valve & chest atop the cylinder. Special machinery is required to hold the 5 micron tolerance accuracy necessary for this type of valve.

The engine itself is a very well thought out piece of engineering. Roundhouse has taken twenty years of experience in manufacturing small-scale live steam and put it into this engine. As stated in Roger Loxley's response as to why Roundhouse decided to articulate the front power bogie, this was done to allow the engine to run on smaller radius layouts. To achieve this, the designers had to find a way to keep everything flexible between the chassis and the power truck.

First of all, they used high temperature flexible tubing to bring the steam from the boiler to the reversing valve block. For the reversing valve gear, they devised linkage that runs down the center of the engine between the frames and controls the valve (piston style) for both pistons within a single steam distribution block (see photo). The valve

block then connects to the cylinders with two sets of rigid pipe, two rear and two forward lines. The inlet and outlet lines are activated by the position of the reversing piston valve. Very ingenious! The only weak point may be the flexible steam lines from the boiler to the reversing block, but these can be easily replaced.

The radio control unit that comes with this package is a three channel Hitec FM transmitter and receiver with subminiature servos. FM (Frequency Modulation) radios are a good choice for live steam engines as there is less interference, or glitching. However, the Hitec radio does have one irritating problem. Some live steam operators like to turn off the transmitter after the engine is running at a good speed. Hitec radios have built in circuitry (fail-safe) that causes the receiver to send the servos back to center should it lose the signal from the transmitter, making it impossible to turn off while the engine is running.

The inside of the cab is pretty standard (see photo). There is a water gauge, pressure gauge, lubricator, reversing gear lever, steam regulator and the servos. The receiver, battery pack, gas regulator and gas filler valve are housed in the tender. The antenna for the receiver is routed out from the tender and up through the cab to the roof. It is fastened to the roof and attached to the cab roof vent. This helps reduce the chance for glitching and allows for the best signal reception.

As an option from the factory, you can also add a water top up system. The Roundhouse water top up system is attached to the back head instead of on top of the boiler where a Goodall-type valve is usually found. Basically it operates the same as a Goodall-type valve.

The outside of the engine, although void of a lot of detail, is a beautiful piece of work. The standard engine is shipped painted black and unlettered. One of the factory options is the have the engine factory lettered and num-

bered with S.R. & R. L. N° 6 (see photo #1).

The engine is also shipped with working knuckle couplers on the front and rear. It appears that a switch to Kadee™ couplers will be a straightforward conversion.

Running the Engine

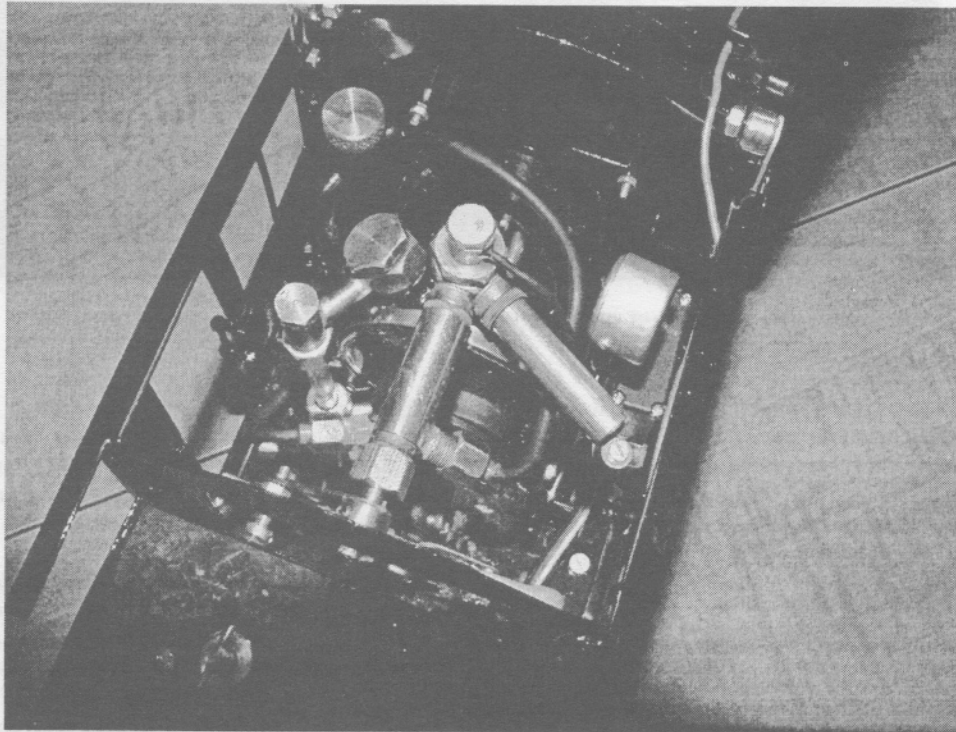
I have a few vices in my life and one of them is associated with running my steam engines when I am alone. I like to enjoy a nice brandy and a fat cigar when running the trains in my back yard. I do not indulge in this ritual when guests are here or I am at someone else's layout so as not to offend.

But when the sun is setting, the air is crisp and it is still and quiet, a good cigar, a brandy and running a steam engine are as close to heaven as one can get.

With my handy steaming kit (water, oils, gas, rag and lighter), my engine and my brandy and cigar, it was off to the layout. It was the middle of February with no snow on the ground, no wind and the outside temperature was 55 degrees.

The usual steaming ritual was performed. First I filled the boiler with 250 ml of distilled water and then drew out 25 ml to make room for the steam. The lubricator was filled with the proper steam oil. Next, I filled the gas tank with a mixture of 70/30 butane/propane. The directions that come with the Forney state that it's okay to use straight butane, isobutane, or an 80/20, 70/30 or 60/40 butane/propane mix. This is the first manufacturer I have seen that actually states that the use of a butane/propane mix is safe in their product.

Now the engine was lubed up all around. Be careful to get the points between the frames and underneath that need lubing also. The engine was now prepped and ready to go. With a turn of the gas valve and a flame placed over the stack, a glorious 'pop' was heard and the familiar sound of the burner could be heard gently heating the cold, circular copper tube that contains the water.

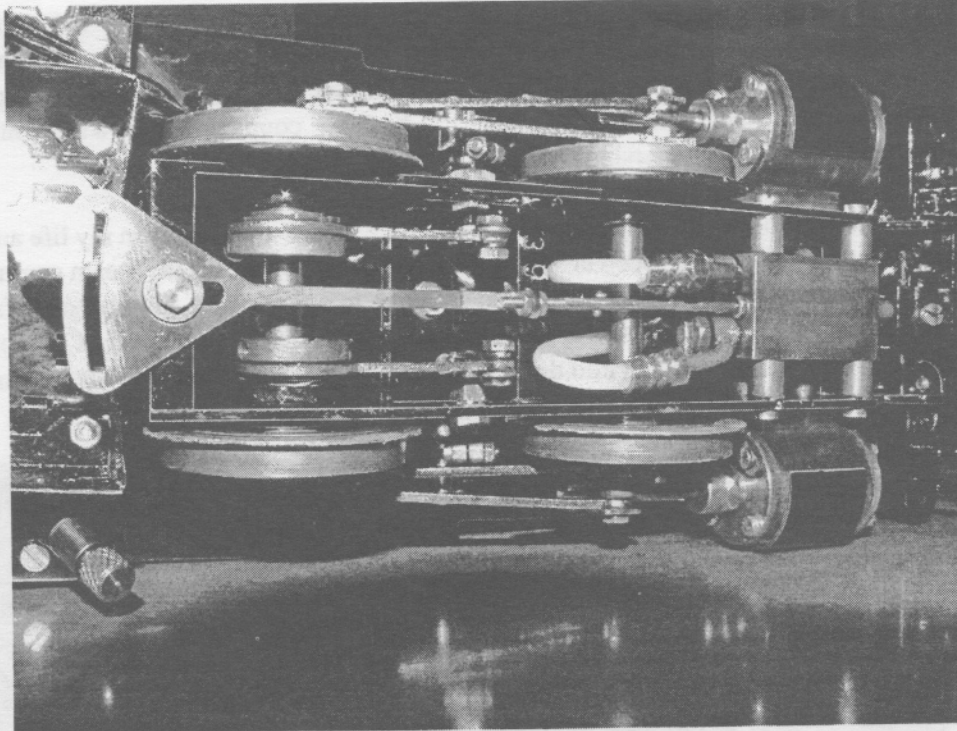


Cab interior and controls.

Within five minutes of lighting, the safety lifted at about 50 lbs. of pressure. I grabbed the radio, moved the reversing gear into forward position and gave her some steam. With a spit and a sputter and a quick shimmy and shake, she moved out onto the mainline. Within a few seconds, she was running as smoothly as any locomotive I have seen.

The engine completed three perfect laps on the layout and I decided to see if it moved as nicely in reverse. Forward and reversing are very smooth with this engine and running in reverse was just as smooth. As with all Roundhouse engines (at least the ones manufactured within the last few years) the fuel tank capacity is designed to run out before the water does. In fact, the water glass had still shown 3/4 full when the gas ran out after a 28 minute first run. With a quick refill of butane, and the boiler topped off, the engine was back in service. On subsequent steamings, I have been able to achieve thirty-minute runs while pulling five passenger cars with no problems.

Design Considerations



Ballast or tie's view of the mechanism.

As there are no things on this Earth that are perfect, there are a few things that could be improved in the design of the Forney. While the articulated power truck is an engineering triumph, the gas regulator, access to the bunker and the lubricator could be improved.

The lubricator is tucked way up inside the cab and sits close to the cab wall, making it very difficult to turn with your thumb and fingers. Perhaps a slot cut into the top would allow the use of a screwdriver to help get it unscrewed and refastened. Just be careful not to over tighten the cap.

That's a sure way to ruin the O-ring seal.

The gas regulator valve protrudes from the top of the bunker and is very small. It consists of a stem and a small 'T' handle. It is very hard to turn due to its size. Perhaps the manufacturer could supply a wrench that could be placed over the valve to help those of us with large hands.

Finally, as stated previously, the batteries and the receiver for the radio control are housed in the bunker. However, the bunker is held in place with a couple of clips up front near the cab and two screws in the rear. This will necessitate the use of a screwdriver to change the batteries. This is not really a problem but more of a nuisance.

All in all, this is a great engine and another triumph for Roundhouse Engineering. Highly recommended for both the beginner and the experienced live steam enthusiast.

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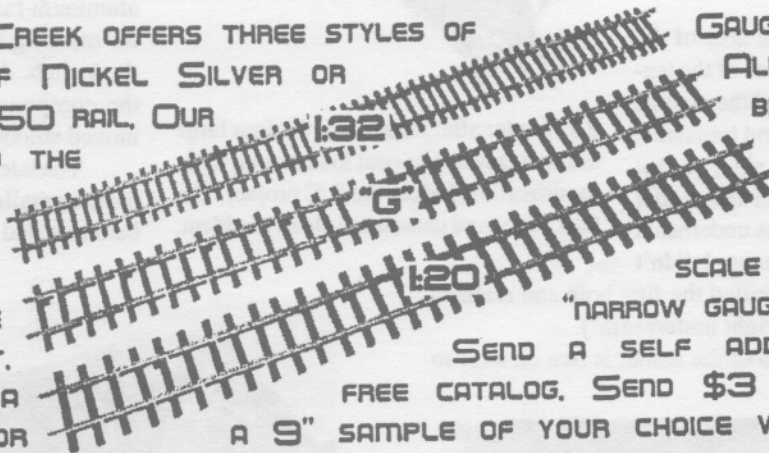
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Simple R/C for the Accucraft C-16

Part II

article & photos by Peter Thornton

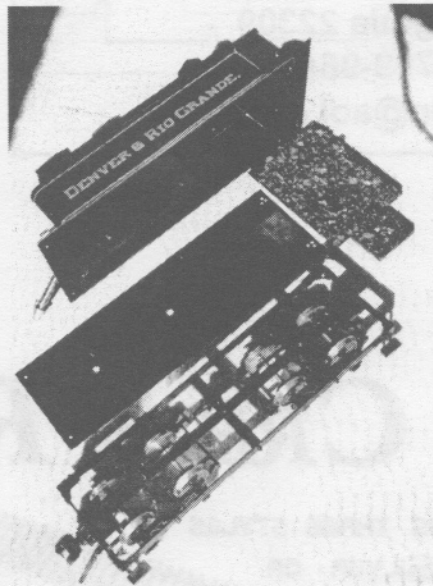
My first attempt to add R/C to a steam engine

Tender Modifications

I decided to take the tender apart to see if there was a way to locate the receiver and batteries without cutting through the top of the tank. There are four large bolts at the underside corners of the chassis, which I removed, and that was it! The tender came apart in three major sub-assemblies: chassis, floor and tank/superstructure. Photo 2.1 shows the components. It was clearly going to be easy to fit the R/C components in the back of the tender tank. It was so easy I didn't even worry about changing or charging the batteries, as it was a ten second job to pop the four bolts out and gain access.

I marked with a pencil the area of the floor not impacted by the coal area of the tender tank assembly. I also marked the chassis components on the underside, and translated the major parts onto the upper side, so that when I decided to drill through the tender floor I'd have some idea what was underneath that would be impacted. (Of course, I didn't really figure that out until I'd drilled the first hole and realized the chassis cross-member was right underneath!)

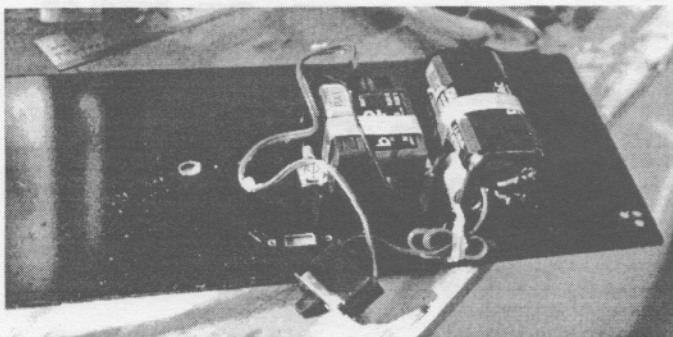
The whole of the rear third of the tender is free on #42, so



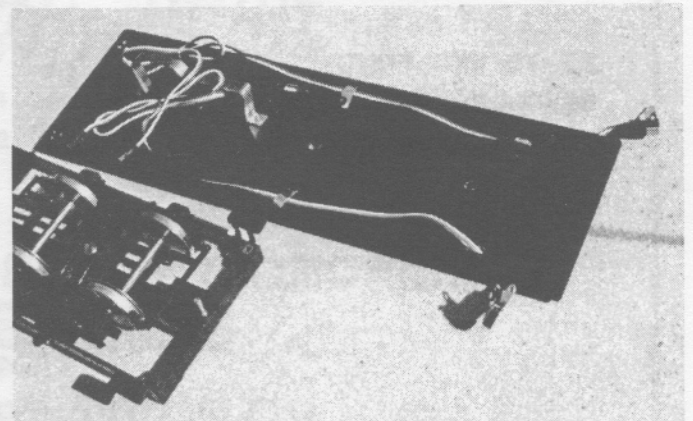
2.1 Tender after removal of the four large corner screws. The coal load was an early modification, before the R/C project. The tank, floor and chassis are clearly evident.

there is plenty of room. I marked the width of the receiver and battery pack (which came in the R/C set). A strip of 1/4" brass was bent and drilled, the floor was drilled and the receiver and battery pack were attached along the centerline. There was a simple on/off slider switch in the circuit, again supplied with the set, so I decided it should be accessible from underneath. I did a lot of pencil markings and turning over the chassis and floor to make sure it was going to miss the chassis frame members. Then I marked the four corners and drilled a few more holes in between with the drill press, so that I could easily file out the slot for the slider. This switch had a neat shiny aluminum face plate, so I used it as a pattern for marking the holes for the bolts to mount the switch. After drilling them out, I test fit the components and made sure the switch moved smoothly.

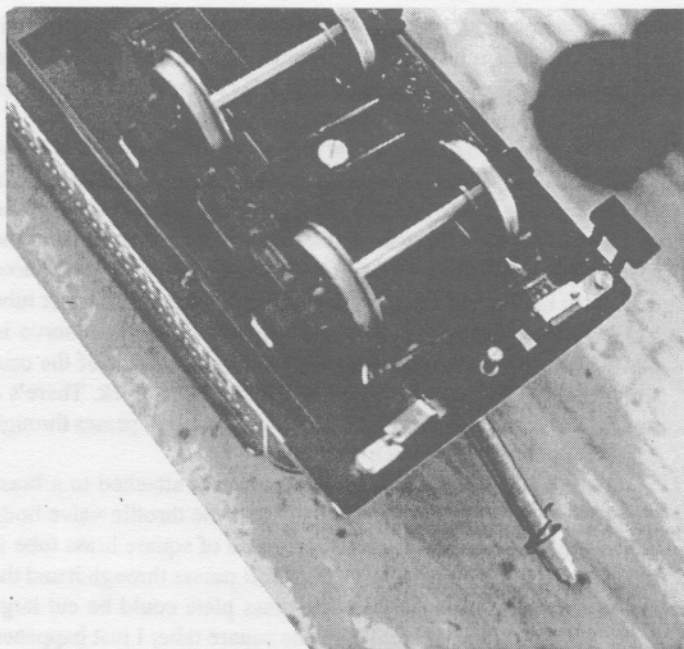
The later-style tenders on #268 and #278 have a smaller area at the rear for fitting the batteries and receiver. Nonetheless, there is



2.2 The tender floor with the addition of the straps to hold the receiver and battery case. The hole for the switch is also visible.



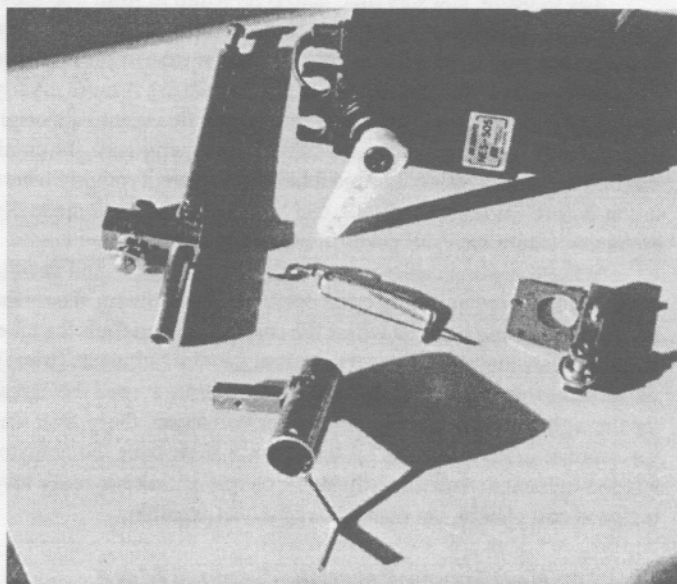
2.3 The tender floor with the servo extension wiring harnesses in place. Slots are cut in the front and small clamps hold the wires under the tank.



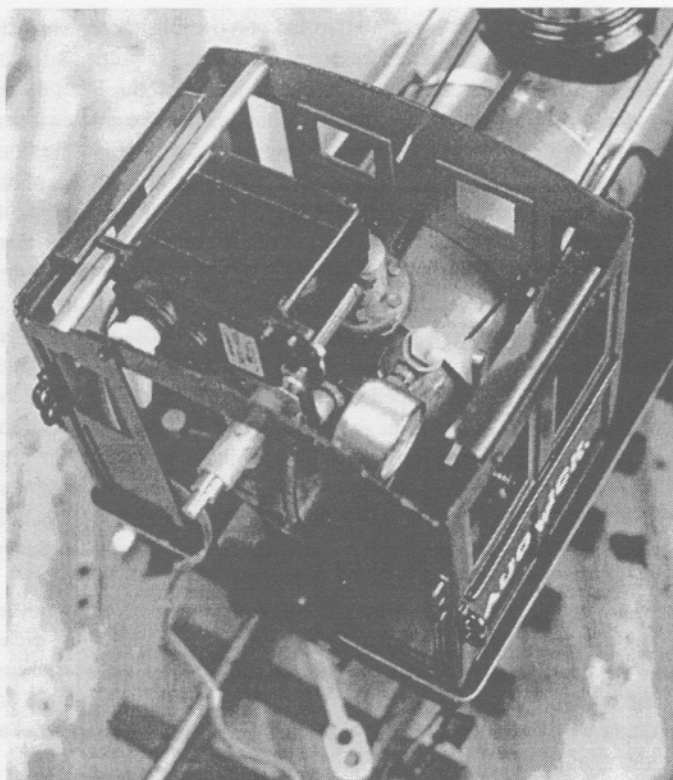
2.4 The sockets on the extension wiring harnesses are held in place under the chassis.

plenty of room to mount them on top of each other. Just adjust the location of the brass strap(s) (Photo 2.2) to hold them securely. Or use Velcro to hold the receiver in place against the tank, (although mounting it on the tank instead of the floor will make it more difficult to separate the wiring when you want to take it apart).

I was now faced with connecting the receiver at the back of the tender to the servos, which I planned to put in the cab. A visit to my r/c hobby shop turned up some extension cables (used as aileron extension cables for R/C aircraft), with a compatible



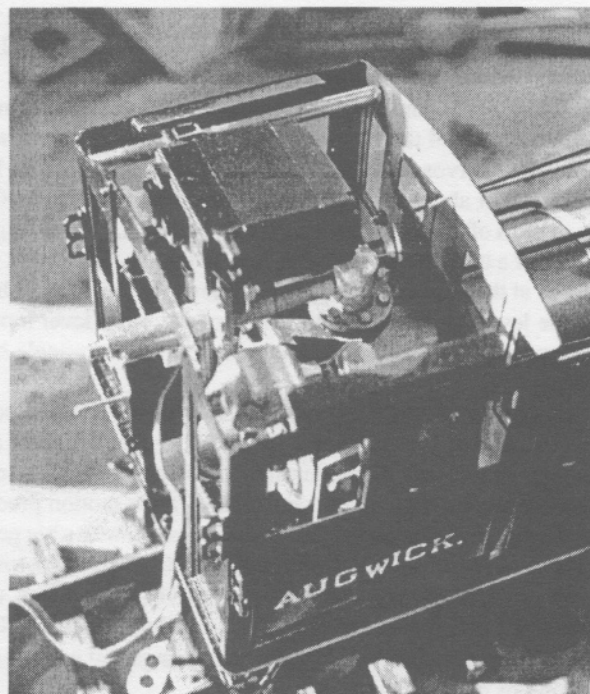
3.1 Throttle servo mounting components. In front, the throttle rod actuator. Behind, from left to right: the tube holding the left side of the servo; link rod from servo crank to throttle actuator; the right side servo mount.



3.2 Testing the fit of the servo above the throttle valve.

3-pin plug on one end and a socket on the other.

I could have cut the cables on the servos and inserted a longer cable, but I chose the extensions for a couple of reasons: the 3-way ribbon cable is neater than 3 separate wires, and I needed a plug/socket at the cab end to connect tender to cab



3.3 The actuator fitted after the right-side servo mount. The rod that fits the throttle lever can clearly be seen.

servos. I decided to use the supplied servo cables complete with their sockets in the cab, and to mount the extension plugs under the tender front. I then carefully marked the floor at the front of the tanks, under the long side tanks, and checked that the chassis members weren't in the way, before drilling and filing slots in the floor large enough to clear the extension cable's plugs, as shown in photo 2.3. I clamped them in place using the 2 large front chassis mounting screws. The tops of those screws are visible through the corners of the tender floor when it is assembled, so they need to be inserted the correct distance. There is a fairly thick brass strip under the head of the screw, part of the front step, which I filed down to reduce the impact on the screws. More 1/4" brass strip and a small brass nut/bolt were clamped round the plug, with a side extension twisted slightly to fit under the screw. (I drilled the strap with the plug in situ, intending the drill to take a small piece out of the plug and thus holding it in place when the bolt is tightened.) A U-shaped strip was soldered between the two clamping pieces to hold them in the right place and to prevent them rotating around the chassis screws. It can just be seen crossing over the tender pin in photo 2.4.

Finally, I screwed a couple of small pieces of brass further back on the floor to hold the extensions in place (photo 2.3). I didn't want to fight them into place under the side tanks when assembling the tender. I put everything back together and also bolted the antenna wire under one of the strips, intending to use the track as an antenna; more on that later!

Throttle Servo

The throttle lever sticks out of the cab quite a distance, presumably because the cab roof would obstruct access if it was in the cab. Tom Burns, who got his engine many months earlier, installed a throttle servo in the cab and put an extension over the throttle to actuate it from the cab. So I can't claim credit for the throttle servo positioning; I just copied from Tom's photos.

This servo is *standard* size and came with the R/C set. Tom mentioned that he had looked at several micro-servos, which were so small he could have fitted 4 of them under the cab roof! Last I heard he was talking about bells and whistles.

Most servos come with a 4-pointed star-shaped output arm. I cut down 3 arms of the standard actuator so I was left with just one lever. These servos operate through a range of only 90°, so I had some concern about the throttle. It opens a lot more than 90° although most of the action seems to be in the first half-turn. I figured that 90° or a bit more would work, and so far it is fine. To get more than 90° at the throttle lever, I made the lever on the throttle shorter than the lever on the servo. As the tip of the servo lever moves a fixed amount, the throttle crank moves through a greater angle if it is shorter.

As a side comment, I discovered that Hitec™ makes a couple of special servos for yachts: a 140° and a 35-revolution for a sail winch! Both are quite large, but they do demonstrate some of the options available if you aren't satisfied with the motion produced with my solution. Of course, you could use gears, with a big gear on the servo and a little one on the throttle, to activate as much rotation as you want. While you are looking at servos, take a look at the various rods connecting servos to gears and throttles in an R/C car; they have some neat ones with adjustable springs that prevent overreaching or damaging the servos.

I didn't bother with any adjustment capability for the rod connecting the two cranks, as the original throttle crank is attached with a set screw (allen key), so it can be set at any angle. I did add a

spring wire to hold it in place, yet enable me to remove it quickly if I wanted to manually adjust the throttle. I had a suspicion that the 3% grades and heavy copper pipe gondolas on the RGS East would require all the throttle I could muster!

The servo is held in place at both sides. On the left side of the cab and left side of the servo, a brass tube fits in the plastic slot in the servo casing. Mine had two slots, so I cut a piece of square tube that was larger than the round tube, drilled it through to clear the round tube, and added another tube in the second slot. (See photo 3.1.) Both tubes were soldered in place, and the lower, shorter tube had a nut/bolt and spring washer through it to keep the servo in place. The longer tube just fits between front and rear of the cab, and it rests on the top of the window frame at the back. There's a small nut soldered into the end of the tube, and a bolt passes through a hole drilled in the front cab wall into the nut.

At the right hand side of the servo, it is attached to a brass plate that has a hole large enough to clear the throttle valve body tube. (Again, see photo 3.1.) A short piece of square brass tube is bolted to the brass plate and a nut and bolt passes through it and the slot in the servo casing. [Note: the brass plate could be cut large enough to reach the servo without the square tube; I just happened to find a piece of brass in my scrap box with the right size hole, but it wasn't quite tall enough!]

Photo 3.2 shows the servo in place over the throttle. This approach has the advantage of holding the servo securely aligned with the throttle shaft, which is a good thing. The final piece is the actuator on the throttle. A piece of brass tube large enough to clear the existing throttle body was cut to fit and it slides on after the right-hand servo mount (which also serves to stop the actuator from rubbing against the valve body.) A short brass rod, bent at a right angle, is soldered in a small hole in the tube and fits a hole in the original throttle arm. (It's clearly visible in the later photos, e.g. 5.3.) Another short square tube was cut, with a hole drilled in one end. The length of the tube - actually, the distance from the center of the round tube over the throttle to the hole drilled in the end - should be shorter than the servo crank if you want the throttle to open more than 90°.

The opposite end was filed across its width to form a shallow slot, and the sides of the slot were flared out to increase the area touching the tube before it was soldered to the tube at the opposite end from the rod. The photo, especially 5.1, shows it more clearly than I can describe. The angle between the rod fitting into the original crank and the square tube isn't critical. As I mentioned, the crank can be set in any position. I found it helpful to have it roughly where it was before the R/C was fitted, as I had been running it manually and knew where the OFF position was located.

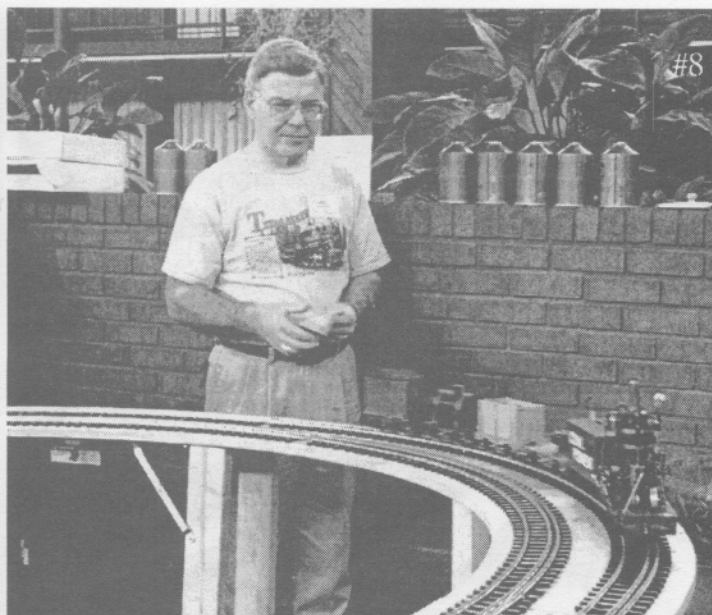
What was more critical was the angle of the servo and throttle crank at the closed and fully open position. The drawing shows the maximum opening position where the connecting arm fouls the tube. As previously mentioned, the transmitter has fine-adjusters (trims), which were very useful for making sure the servo turned the actuator through the maximum arc in a smooth fashion. Only then was the original crank put back on the throttle shaft over the actuator rod and tightened. And then adjusted a couple of times to make sure it closed completely, yet opened as much as possible.

Next Issue - Reversing Servo & More

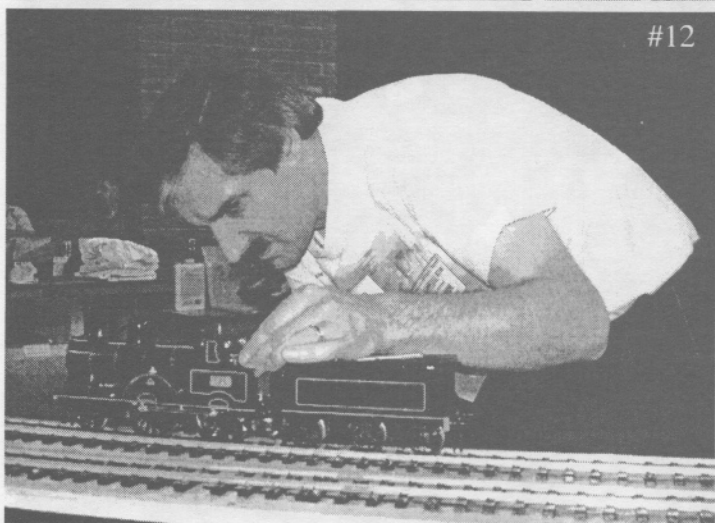




#7



#8



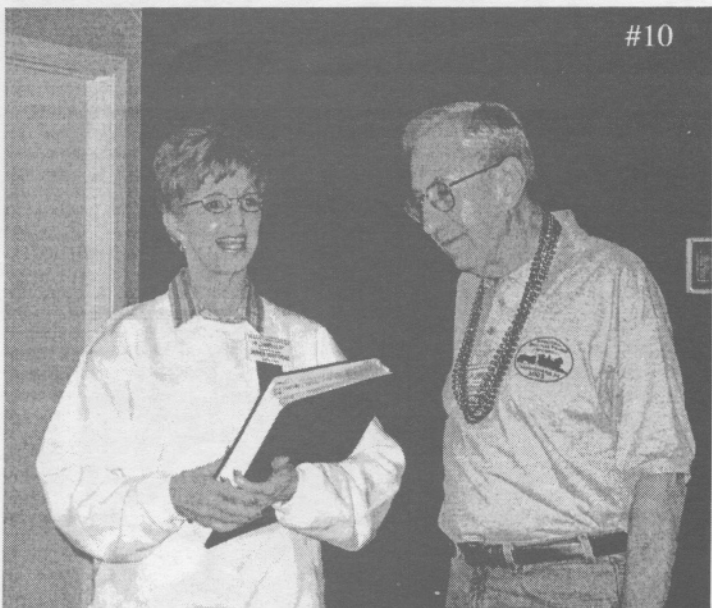
#12



#9



#11



#10

#7 - Richard Longley (ENGLAND) of Brandbright always has a happy smile...and a LOT of goodies for the live steamer.

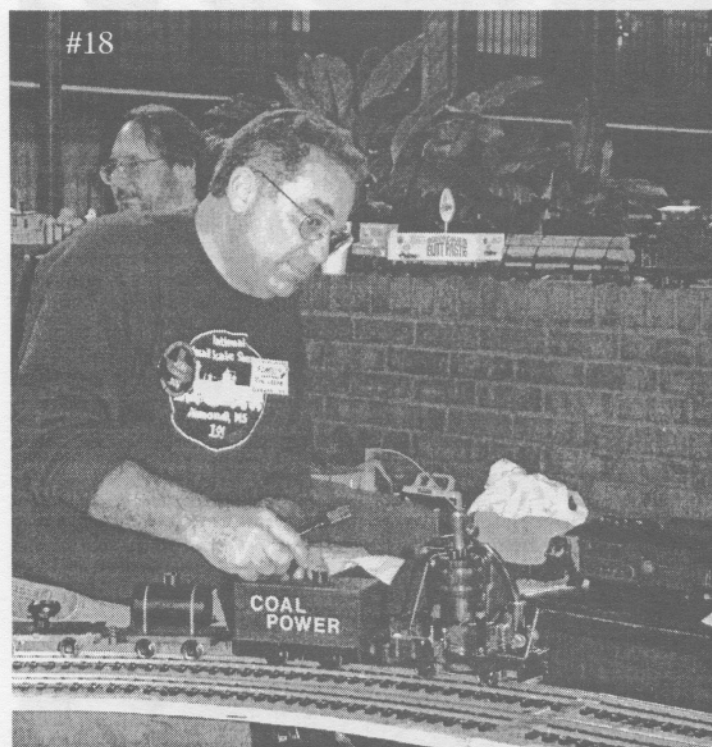
#8 - John Thomson (TX) running his coal-fired BAGRS loco.

#9 - Ginny Morris (PA) with her Accucraft RUBY.

#10 - Jerra Matticks (TX) presents Jerry Reshew, Diamondhead founder and host, with a book of Diamondhead Memories assembled by Marie Brown.

#11 - Bill Shipp (CANADA) with his beautiful scratchbuilt Double Fairlie.

#12 - John Shawe (ENGLAND) scrutinizes one of his excellent coal-fired conversions.



#13 - Jesse Groth, one of the new generation of Diamondhead steamers, takes his loco out on the mainline. *photo by Michael Martin*

#14 - Abe Cohen (NY) couples up some rolling stock to his Rishon Forney.

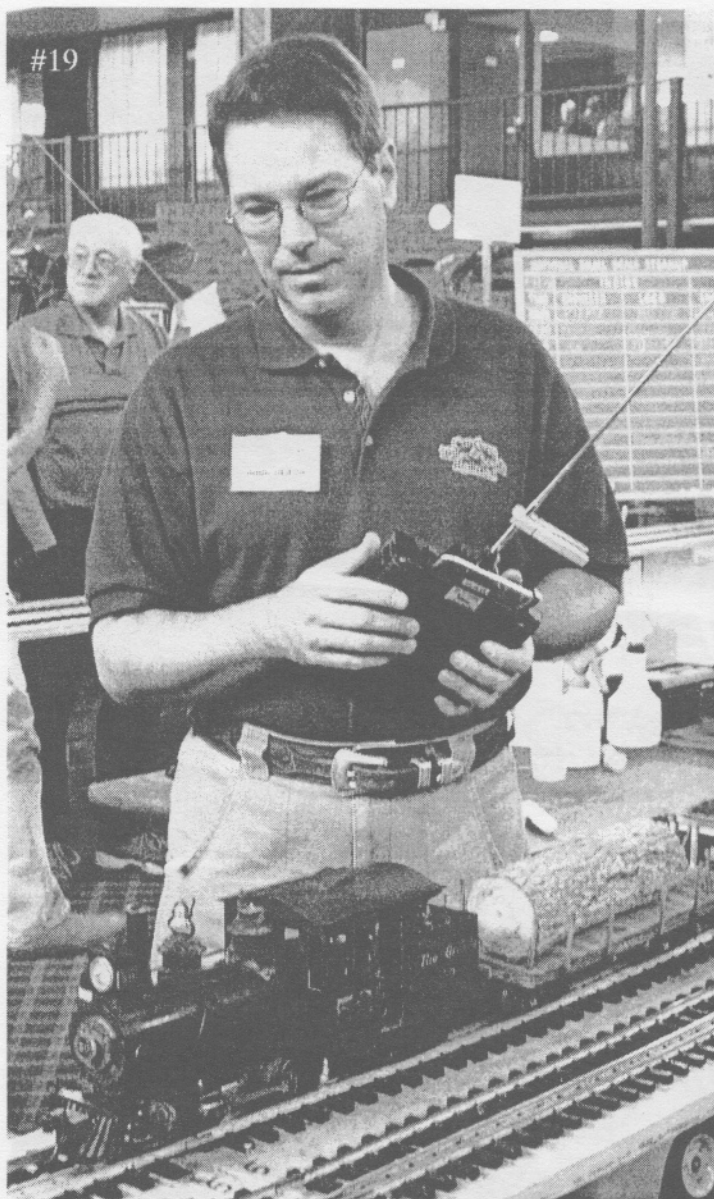
#15 - Dee Dostaler (UT) and Sonny Wizelman (CA) like the geared logging locos.

#16 - The whole event would come unglued without the help of Jerry's staff of volunteers! Pictured here are Jerra Matticks (TX), Valerie Nichols (MD), Joan Cohen (NY), Isabel Grummons (VA), Cherron Crane (MD), Vi Homuth (CANADA) and (seated) Frances Ingham (IL).

#17 - Ruth & Norm Saley (FL) relax at a table displaying some of Norm's creations.

#18 - Jim Crabb (TX) had a ball learning about coal-firing with John Thomson's coal-fired BAGRS loco.

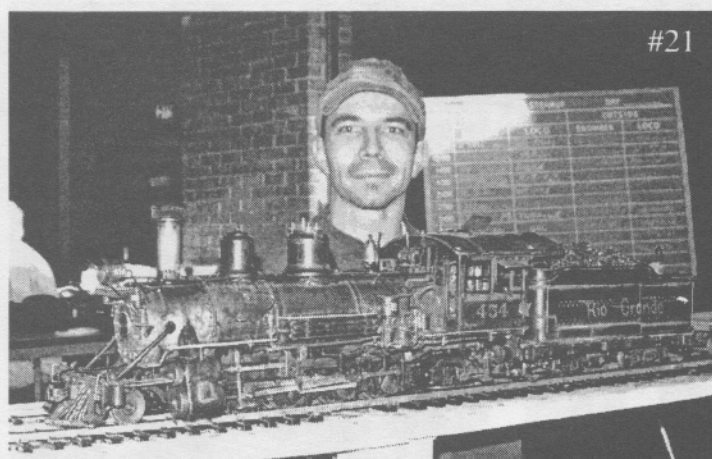
*photos this page by Carol Jobusch
(except as noted)*



#19 - Doug Joslyn (KY), hauls some revenue logs with his nicely weathered and detailed Roundhouse Forney.



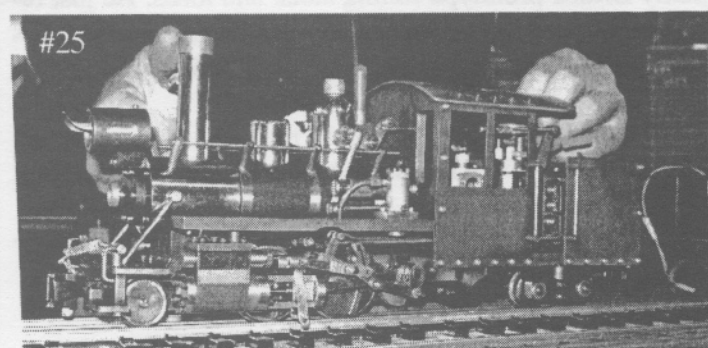
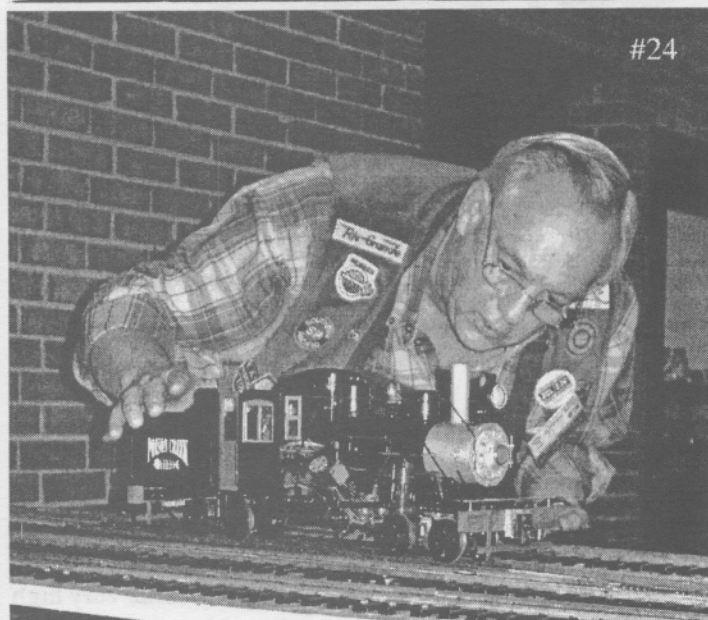
#20 - Neil Rose (ENGLAND), seen here in the Dealer's Room at his Finescale Locomotive Co. stand, builds some very high quality British prototype rolling stock and locos. He just recently announced a Harriman coach for the USA market. His exclusive USA representative is I E & W Railway Supply.



#21 - Sonni Honnegger (NM) built the most amazing model of D&RGW N° 454. It helps that he works with the real thing!



#22 - Dawn Brightwell (WA) fills the gas tank on her steamer as John Bigelow (WA) observes.



#23 - Lee Schulman (FL) is pleased as punch with his Hiawatha, built by Norm Saley. The engine started out as a Hiawatha electric by Samhonga. Norm converted it to live steam by using a pair of Roundhouse cylinders. He says was an easy conversion because the shroud covers the boiler completely, and all but the lower part of the cylinders. It is an excellent runner and it was pulling six Daylight coaches at DH.

#24 - Bob Simpson (FL) is intent on his Poison Creek Heisler, built by Jim Hadden.

#25 - One of Charlie Mynhier's (TX) scratchbuilt works of art.

#26 - Jim Hadden (UT) readies his scratchbuilt Poison Creek Heisler as his son Jeremy looks on.

*Diamondhead coverage continues on page 31
photos this page by Carol Jobusch*

Still Steaming in Houston

by Jim Crabb

And now they're doing it with coal



The Author (left) gets a taste of coal firing John Thomson's BAGRS-type loco at Diamondhead, which led to...well, read the article and see for yourself!

photo by Mike Martin

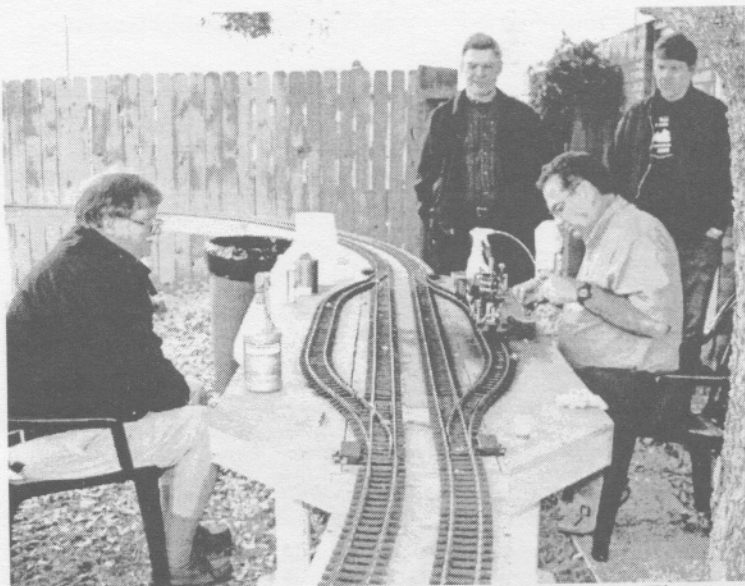
The (H)ouston (S)mall (S)cale (L)ive (S)teamers starting coming out of the woodwork March 16 at the home of John & Carolyn Thomson in Mesquite, Texas. (See the calendar for steamups already planned in April and May.) This group started with 6 live steamers just five years ago...we are about 30 now and soon there will be 4 coal fired engines in the group.

The first thing that happened after a quick round of

handshaking was an introduction to my new coal fired BAGRS-type engine, **COAL THERAPY**.

This engine is being built by John Thomson commercially (see *What's New* in this issue). He took my order at Diamondhead just a couple of months ago and delivered it complete with Welsh Steam coal and tools to shovel and maintain the fire.

There were about a dozen steamers from the Dallas



Houston steamers (standing, l to r) Dave Young, John Thomson and Dan Fuller watch as Jim Crabb (seated) prepares his locomotive.
photo by Carl Malone

The second time around (the first time we stayed in steam for about 1-1/2 hours) it was all up to me. We added a train (and made it proper with a caboose) and stayed in steam almost two hours learning the proper balance of fire and water, steam and power, pressure and heat -- WOW!

Driving miniature live steam engines can't get any better than this.

Carolyn prepared a great lunch and we all reluctantly took a break to sit around the table and solve the problems of the world. The afternoon session continued until almost dark with the weather just cool enough to show wonderful plumes. We always hate to give up on days like this, but we'll all be back to steam again. John's track has held up well for several years and it is always a pleasure to come here in the spring and fall.

P.S. If anybody has a BAGRS kit they haven't built...or an engine they built and don't know what to do next...you too can have a coal fired engine!



area, Houston area and San Angelo. John has a great double oval in his backyard with 10 foot radii and passing sidings. A lot of good looking and well manner engines were being run that day, including Trotfox's (Landon Solomon) highly modified Ruby, an American Mogul built by Randy Kimball from a couple of Lady Anne kits he traded for last year (the Mogul was sporting a scratch built tender which was a real gem) and Carl Malone's new toys -- a COFFEE-POT built by Rishon Locomotive Works and a GOLD BUG CLIMAX built by Keith Manison.

A lot of Roundhouse engines were pulling a variety of trains, including Dave Young's FORNEY, Rob Cooley's SANDY RIVER 24 and Bill Courtright's coal fired SANDY RIVER 24. I'm sure Dan Fuller ran his Aster Schools earlier in the day.

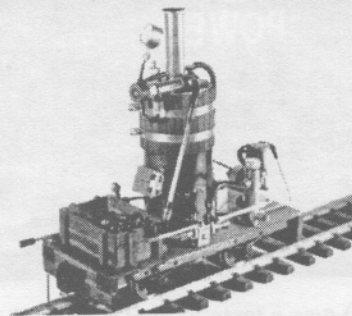
Poor John! In addition to his own coal fired BAGRS type engine, he has a Roundhouse BILLY and a well modified Ruby COLUMBIA (see page 41 in the last issue of *SitG*) -- but he was so busy being a host and a mentor that he didn't get to run anything!

But best of all (in my opinion) was my new coal fired beauty. I couldn't stop grinning from ear to ear. It was only six years ago that I got hooked into live steam via Bill Courtright and his Frank S. I couldn't believe how easy the whole process can be. John tutored me carefully from lightup to cleanup...we even went over the 5 hour maintenance schedule.

From lubrication and steam oil to preparation of the Welsh coal and mesquite charcoal (used to light the fire in the beginning), tending the fire, monitoring the water consumption -- everything you ever needed to know in order to coal fire an engine.

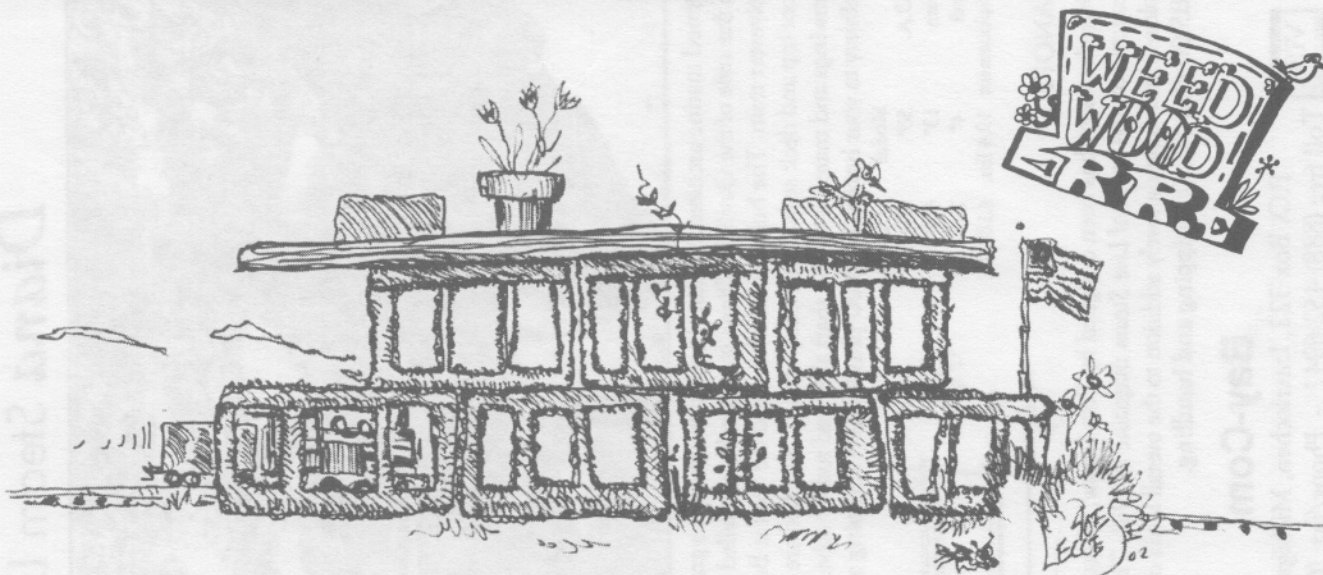
Breakthrough in Coal-firing!

(Coal-Firing on a Budget)

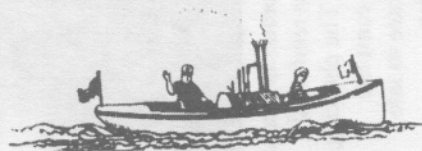


- **READY TO RUN** • OR • **CONVERT YOUR BAGRS**
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- **COMPLETE WITH COAL BUNKER AND WATER TENDER**
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WeedWood engine house. Cinder block construction, Plenty of fresh air!



Steamboating Favorites



Fiberglass Hull

SEGUIN TUGBOAT - Kit #992

With a spacious hull and a laser-cut superstructure, this model is perfect for a twin cylinder steam power plant of your own choosing.

Length: 39" • Beam: 7-3/4" • Scale: 3/8" = 1'



Balsa Sheet Hull

FANTAIL LAUNCH II - Kit #958

A more traditional design, this model features all wood construction and is perfect for our Heritage Pre-Assembled Steam Engine (Kit #987).

Length: 19" • Beam: 7-3/4" • Scale: 1" = 1'

- Midwest's Success Series Steam Boats Feature:
- Micro-Cut Quality Wood Parts
 - Success Series Construction Manual & Full Size Plans
 - All Running Hardware

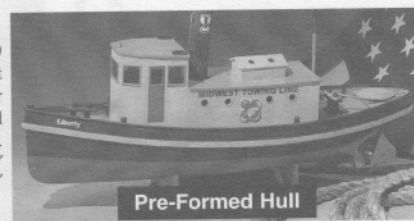


Pre-Formed Hull

ELLIOTT BAY STEAM LAUNCH - Kit #988

Easily constructed, this model was created with permission from the Elliott Bay Steam Launch Co. in Portland, OR. Requires our Heritage Pre-Assembled Steam Engine (Kit #987.)

Length: 25-1/4" • Beam: 6-7/8" • Scale: 1" = 1'



Pre-Formed Hull

LIBERTY TUG - Kit #990

A beginner's tugboat that assembles fast! Requires our Heritage Pre-Assembled Steam Engine (Kit #987).

Length: 25-1/4" • Beam: 6-7/8" • Scale: 1/2" = 1'

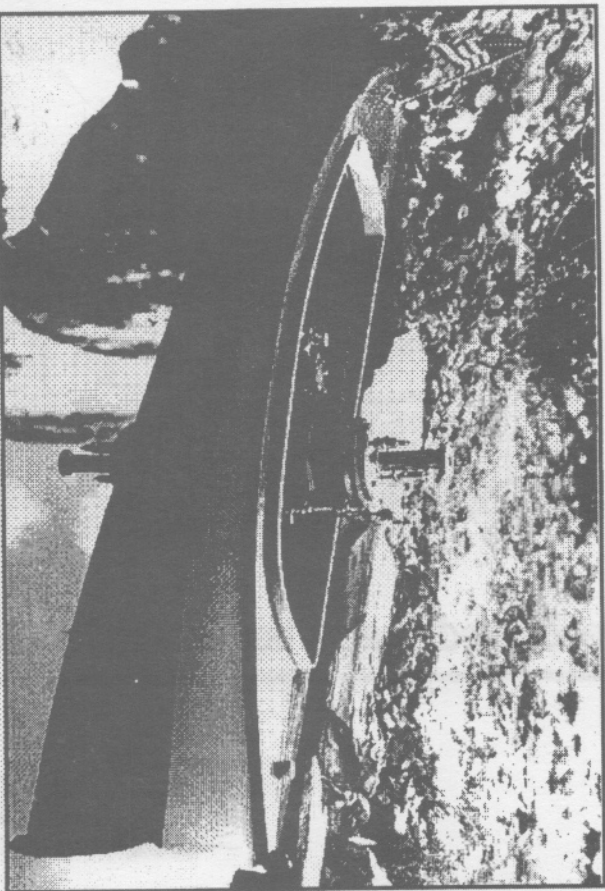
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Diana Steam Launch

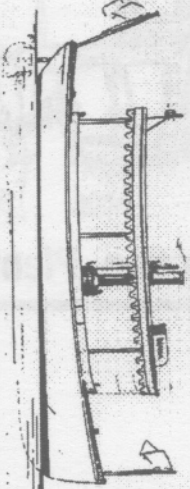


Famed marine architect Weston Farmer designed this graceful and beautiful steamboat in the style of the Gay 90s. Diana is impeccably modelled in fiberglass-reinforced polyester resin. The hull is gloss white, and the deck is Boston Buff. The planking, boot-top and deck seams are clearly incised. Supplied are hull, deck, complete drawings and material for the shaft alley and rudder tube. We guarantee its safe delivery to your home. \$276.00 plus \$24.00 shipping and handling.

Model	Full Size
L.O.A.	50"
Beam	13"
Draft	4"
Displacement	19.4 lbs.

CANOPY

Diana's canopy has been designed by Tom Lexow, whose radio-controlled Diana was featured on the cover of *Live Steam* magazine in 1981. The canopy is also Boston Buff colored and makes a lovely addition to the overall looks of your launch. \$85.00 plus \$12.00 shipping and handling.



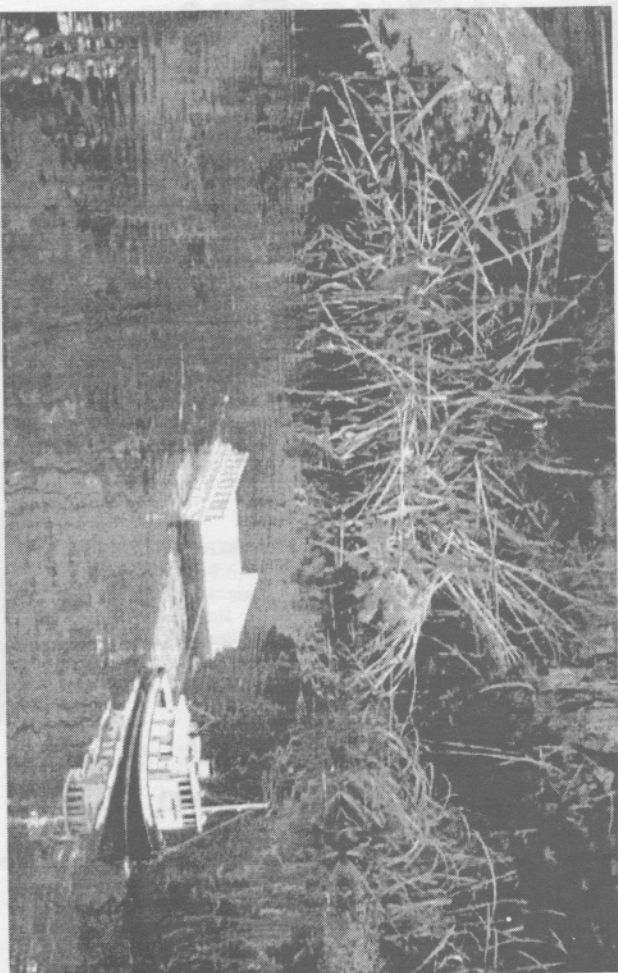
Bay-Com



P.O. Box 322, Interlochen, Michigan 49643

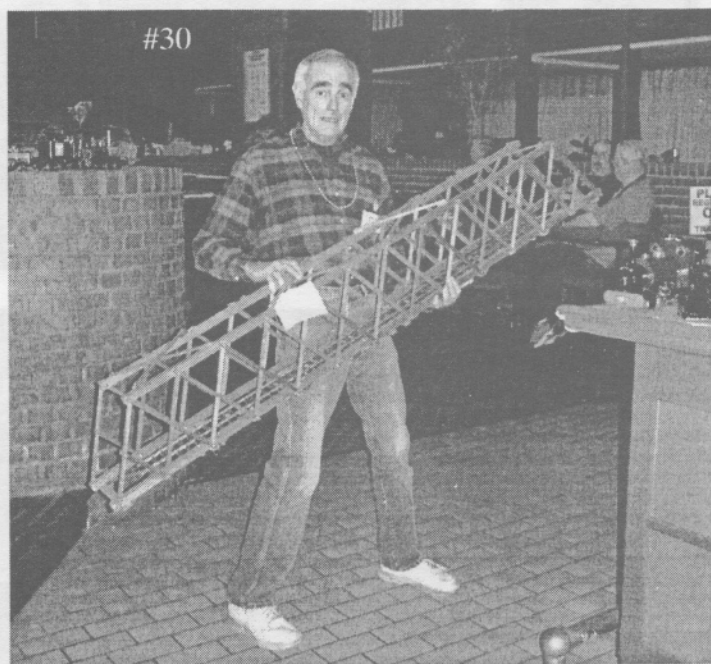
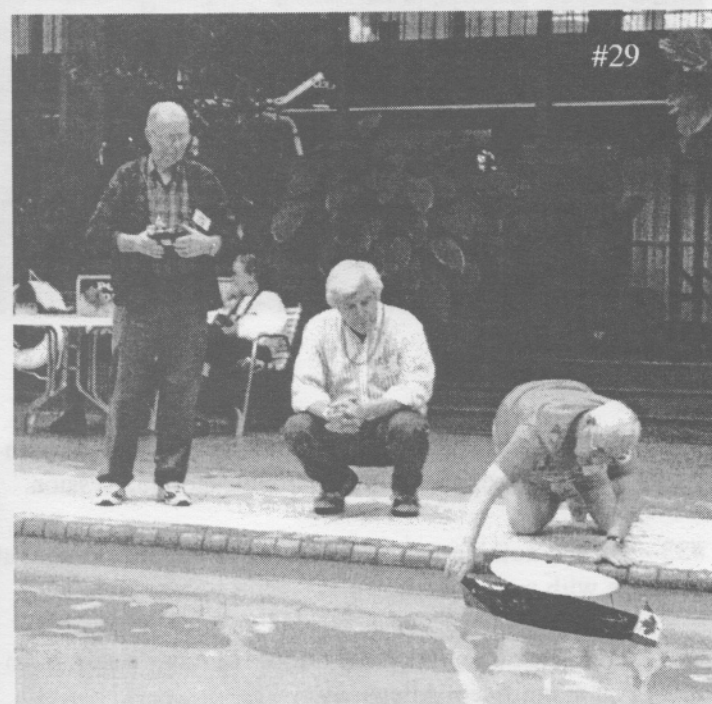
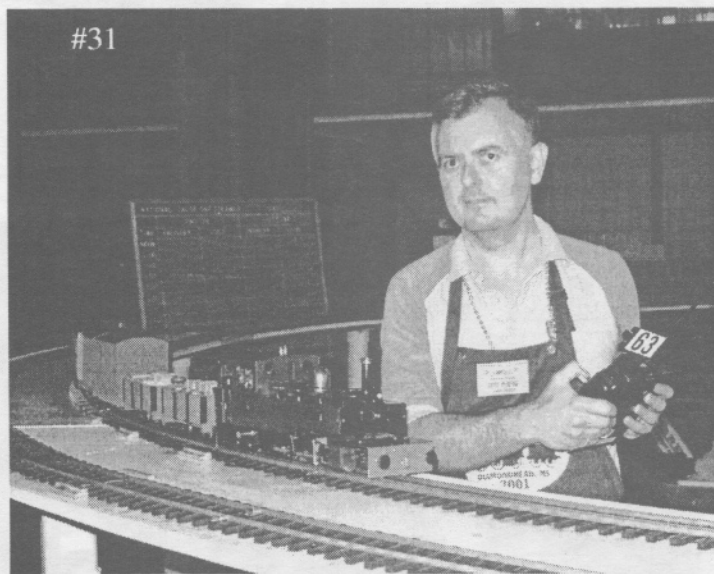
Toll free (888) 452-6947 - Phone/fax: (616) 276-7194

<http://www.bay-com.com>



Lorne Scott's scratchbuilt Fosse tug is always ready to rescue railroad crews who miss a corner and end up in the lake on Doug Muir's place in Canada.

photo by Dan Pantages



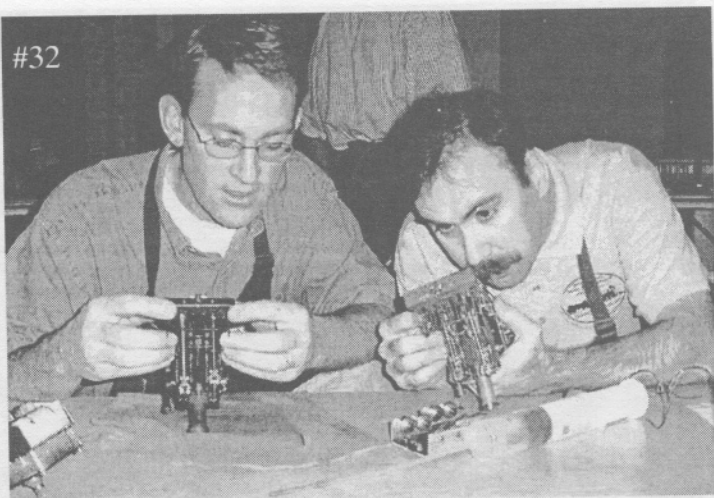
#27 - Steve Leermakers (CO) enjoys a run on the new elevated track.

#28 - David Hamilton (CANADA) with a Mamod.

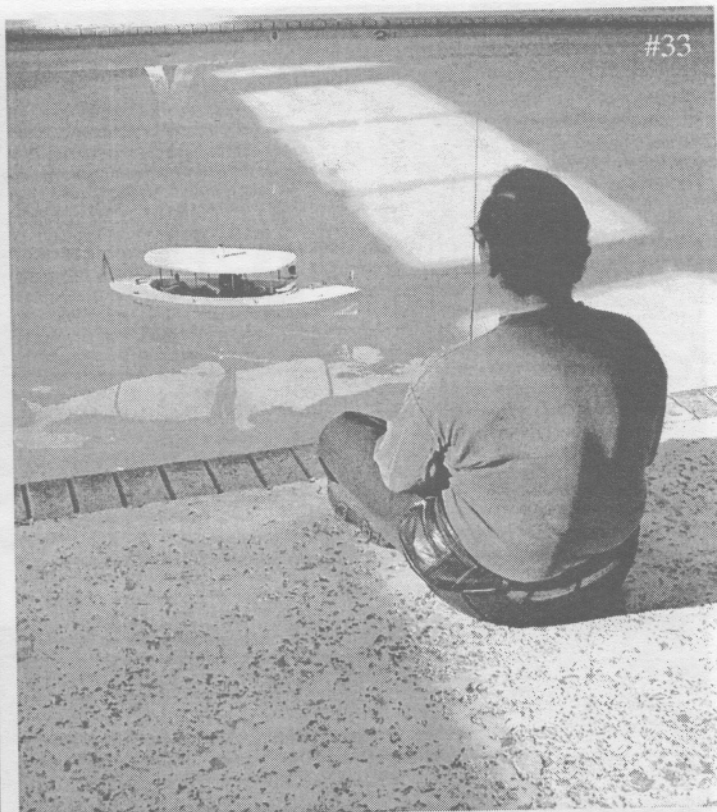
#29 - There wasn't as much steamboating activity in the pool this year as in some previous years, but these fellows seem to be having a good time.

#30 - What the heck is Joel Neshkin (AL) doing with this bridge? No, it's not part of the weightlifting contest!

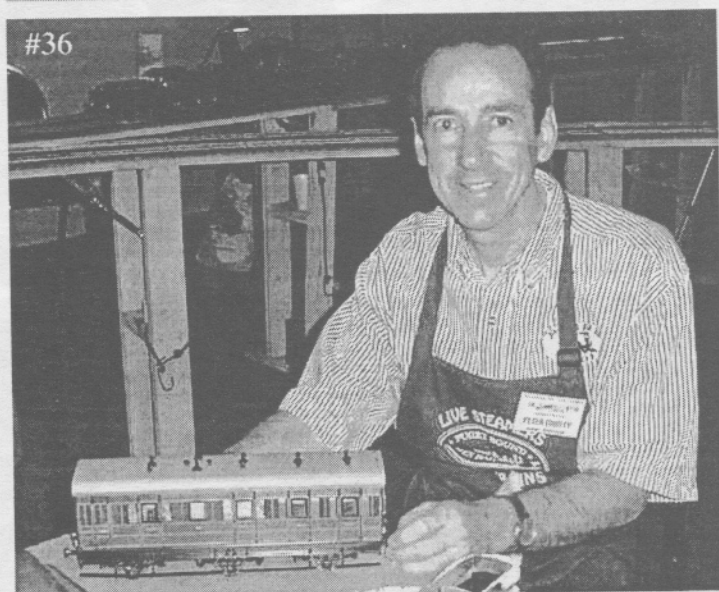
#31 - Jeff Young (CANADA) was delighted to find that this year there was a new dual gauge track with greater radius curves for the 32mm gauge enthusiasts.



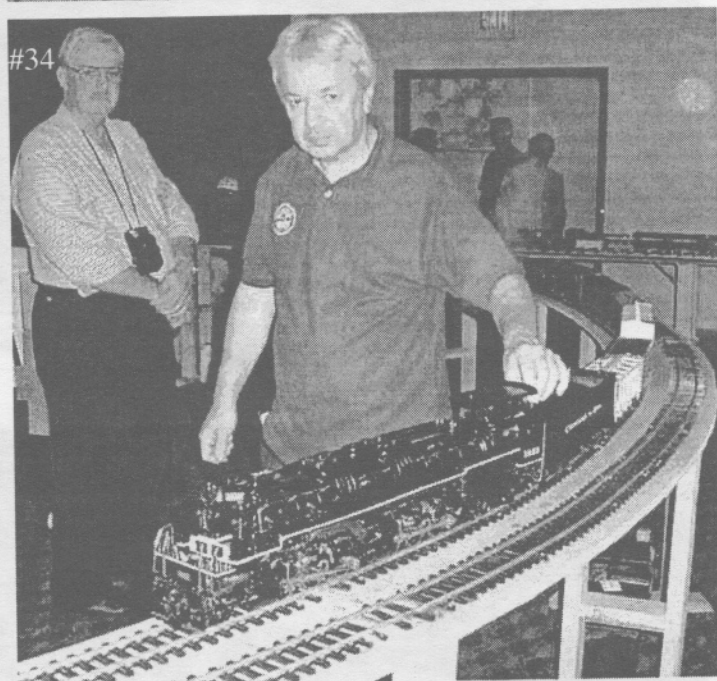
#32



#33



#36



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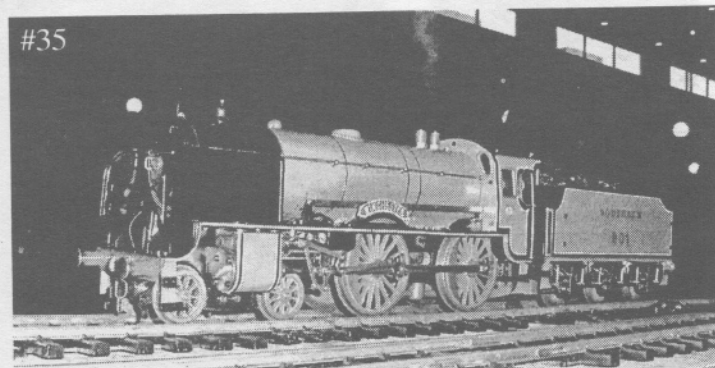
#32 - Richard Finlayson (CA) and David Martin (MI) compare Aster Grasshoppers during a troubleshooting session.

#33 - There's nothing quite so relaxing as a quiet moment at poolside with a steamboat.

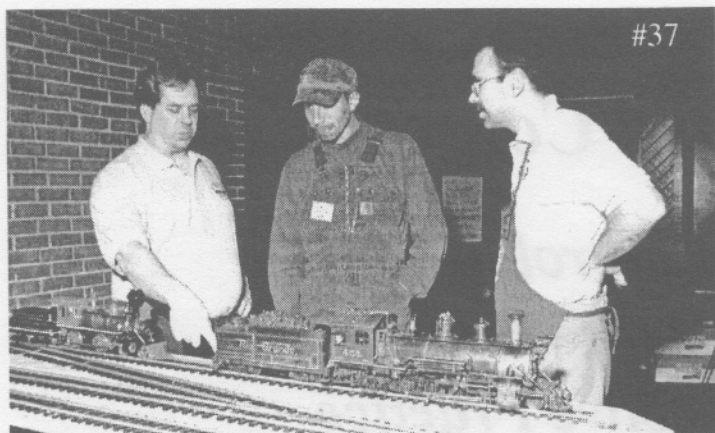
#34 - Jerry Hyde (OH) takes the throttle of Aster's new, mammoth and magnificent Allegheny.

#35 - Aster's ubiquitous Schools has been out of production for many years, but it still enjoys tremendous popularity.

#36 - Peter Comley (CANADA), custom builder of fine quality rolling stock for Gauge 1.



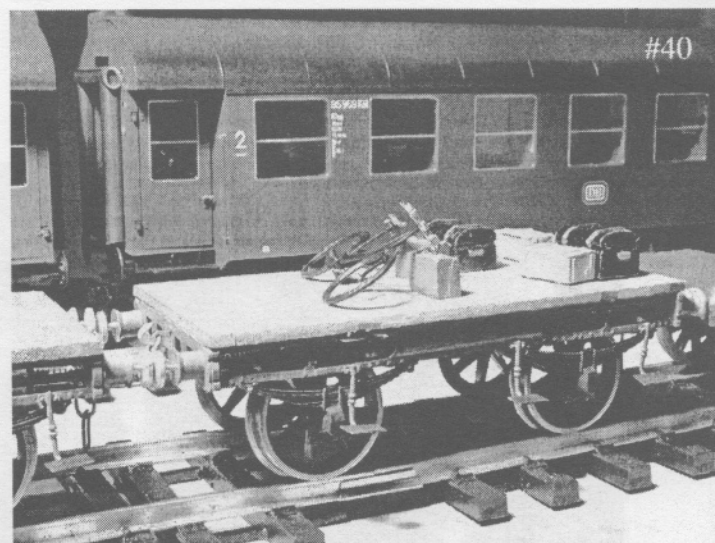
#35



#37



#38



#40

#37 - Soni Honnegger (center, NM) discusses his scratchbuilt K-27 with fellow steamers.

#38 - Bill Wilson (ENGLAND) makes a point in a conversation with Dawn Brightwell (WA) and Jim Montgomery (WA).

#39 - Jim Crabb (center, TX) and John Thomson (right, TX) prepare John's coal-fired BAGRS loco for a run. Salty Fogelquist (Vagabond) looks on.

#40 - What a great flatcar & load! Sorry, no further info is available.



#39

The Unit Shop Fuel Control Valve

for the Precise Control of Both Liquid and Gaseous Butane in Model Locomotive Practice

article & photos by Kevin O'Connor
drawings by Larry Bangham

Background

In the late fall of 1994 I discovered three things; that I had an interest in small scale live steam locomotives (but not railroading in general), the 'Cricket' steam motor, and my mentor, one 'Smokey Jones' (Mr. Michael O'Rourke) of children's railroading home video cassette fame and incidentally, the producer of the limited amount of Crickets that were brought to market.

The first discovery led to all the others, and to many more items of interest along the way. One of them was that there was no butane fired small scale live steamer on the market that fea-

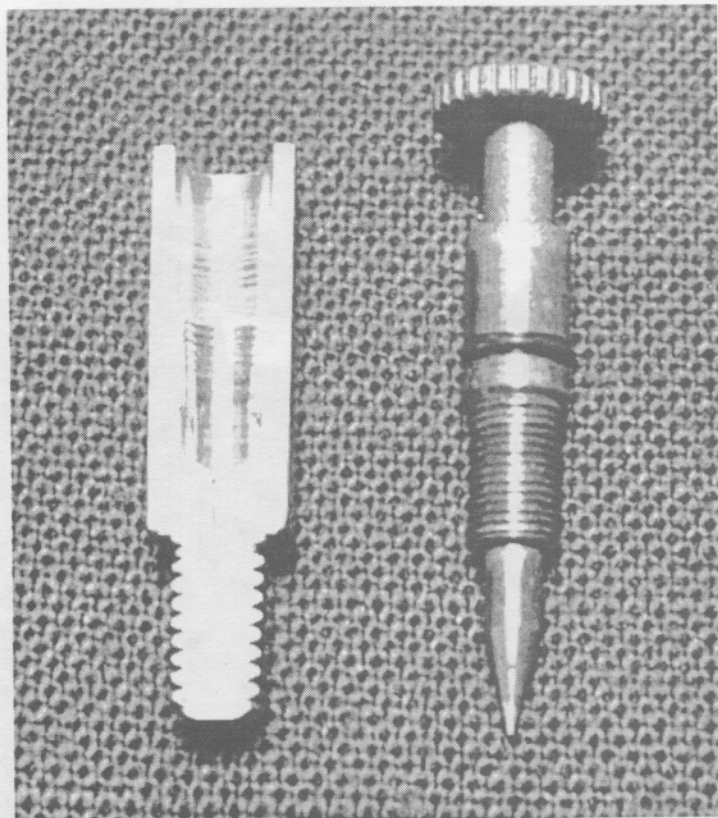


Photo #1: Original Berkeley Locomotive Works Gas Flow Control Valve.

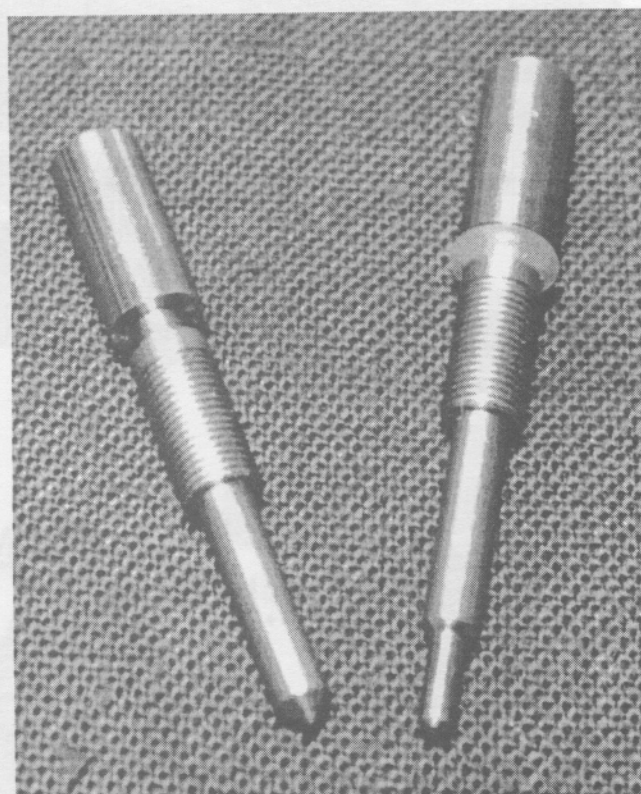


Photo #2: Frank S. gas flow control valve spindles. As built on left, modified on right.

tured a gas control valve that truly attenuated the flow of fuel to the boiler's burner. The Cricket was in this category as well as the LGB/Aster Frank S., which was my first introduction to live steam.

During the fall of 1994 I was lucky enough to 'intern' at the Berkeley Locomotive Works under the apt tutelage of Mike O'Rourke, and I was exposed to the very neatly designed gas control valve that was fitted to the Cricket Steam Motor. This same valve design also doubled as the steam regulator valve. The valve consists of three pieces: a valve body into which a valve spindle screws, and an O-ring. (see photo #1)

This valve design has no need of a valve stem gland nut

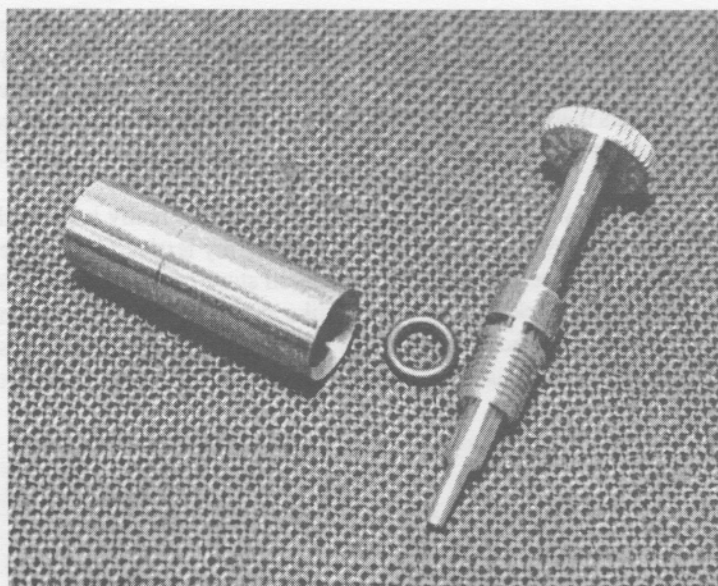


Photo #3: Current Unit Shop gas flow control valve.

and packing because the O-ring seals the spindle against the valve body's inside diameter. Please note that the Cricket's valve stem ends in a taper that at some point bottoms out in a hole through the valve body below the 4.5mm diameter thread. The intent was to mimic the *needle valves* that are used in model airplane engines to adjust the fuel flow to the carburetor. As we will see later, this approach was doomed to failure from the beginning.

The Frank S. approach to fuel metering, if anything, was worse. (see photo #2) On the left side is the original Aster design, and to the right is the seminal Unit Shop modification. One can see that the end of the Frank S. gas control valve spindle ends with an included 90° angle that is intended to contact a hole at the end of the threaded part of the valve body, which is silver brazed to the top of the copper fuel tank. Both of these approaches do not work, and for the very same reason. Both are relying on the knife edge interference of either the large or the small included angle, at the end of the valve spindle, against the top edge of the constant diameter through drilled hole. This approach is flawed because no thread exists that is fine enough to allow the valve spindle to move in so small an increment that it would have a prayer of modulating the flow of a medium (butane) whose molecules measure at the low end of the scale.

The model airplane engine guys get away with their needle valves controlling their flow of fuel because they are dealing with a very viscous liquid as compared to butane gas. Their fuel is a mixture of alcohol, nitromethane, and castor or synthetic oil to the tune of 20% to 30% of the mixture by volume. The early butane fired, axial flow, model gas turbines used in model jet planes were impossible to throttle properly, and so they tended to run like a stock Aster Locomotive; full on-full off.

The present generation of *toy turbines* (average cost about 2 to 3 thousand American) use JP-whatever (kerosene) as their fuel of choice because the fuel flow can be easily controlled without having to resort to exotic valves with tiny clearances.

Michael once had a run of Cricket valves turned out with a 60 pitch thread in an attempt to overcome this problem. They did not work any better than the original .5mm pitch thread. The Unit Shop modified valve spindle does not rely on the 45° angle interfering with the valve seat for flow metering. What it does do is insert a precise constant diameter into the fuel valve's through hole which severely restricts the flow of either liquid or gaseous butane through the valve body.

So now that I have identified the problem, you ask "And so what is the solution and why is it important to me?" Let me answer the last question first as part of the discussion.

Precise butane gas or liquid flow control is important if you want to run your model locomotive in a prototypical fashion. Full size locomotives don't run with their safety valves lifting, nor their burners roaring. As you know my recommended method of firing a locomotive suggests that it be run using the lowest boiler pressure consistent with getting the job done, and as quietly as possible. This approach leads to very gentlemanly running for long periods of time without having to refuel. In the last issue of *SitG* I lifted the curtain on my work in the realm of radiant burners. Judging from the response directed to me here in Sacramento and to the Editor in Newark Valley, I'm betting that there will be lots of model engineers who will be interested in building/modifying gas poker burners of the radiant variety. These are the folks who will profit most from the use of the Unit Shop designed gas control valve, and the reason is that the radiant burner requires very small amounts of fuel flow to operate properly. Too much fuel flow and the radiant burner will run cool (think about it), or just blow out, or maybe not even light.

The Solution

In February 1995, after I came home from my first Dia-

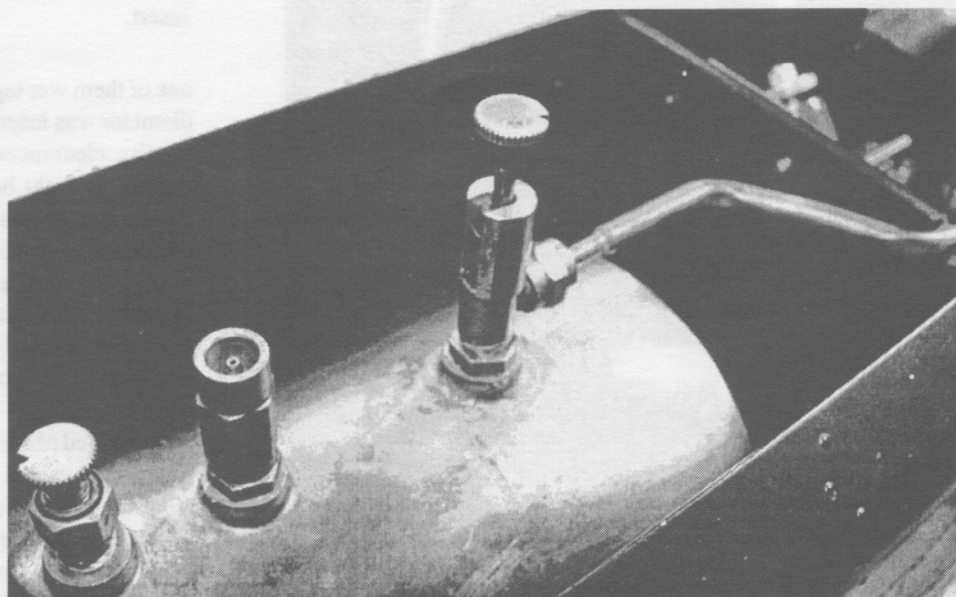


Photo #4: Big Boy's inserted gas flow control valve.

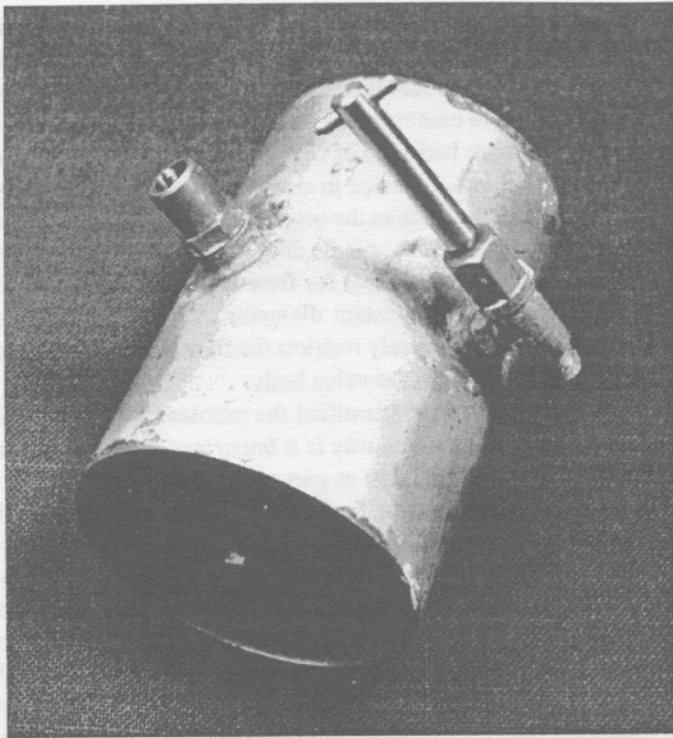


Photo #5: Stock K-4s butane fuel tank.

mondhead experience, I decided to take advantage of the rainy, cold, winter weather and devote myself to some heavy Unit Shop time with regard to my only locomotive, the Frank S. that I bought in late October of 1994.

The twin tasks that I set for myself were to solve the fuel

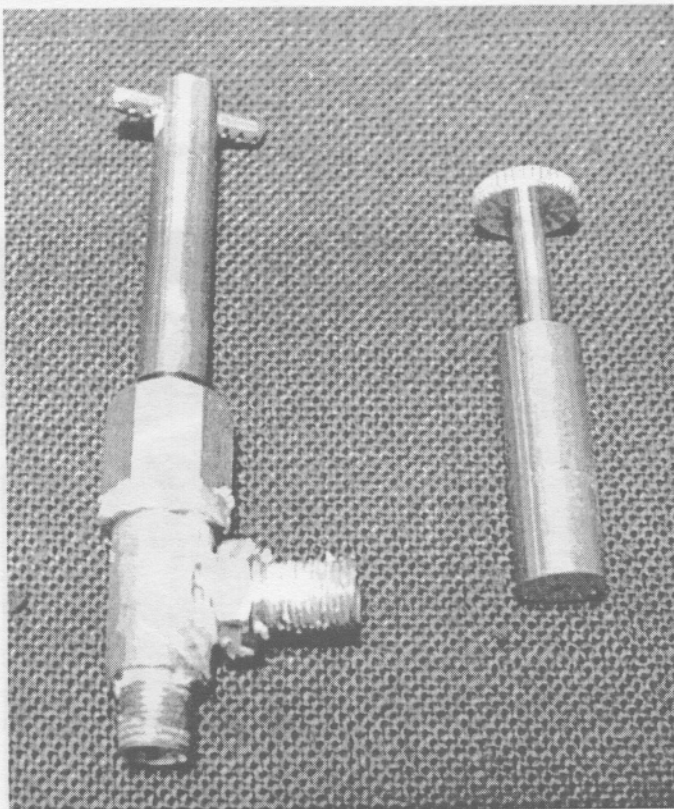


Photo #6: K-4s and Unit Shop valves.

attenuation problem and to improve the efficiency of the gas burner; I started on the attenuation problem first. It was pretty obvious to me from my experiences at Berkeley Locomotive Works that altering the included 90° angle on the end of the gas control valve spindle to a more acute taper was not the way to go.

Now this next part is not a Fairy Tale; it really happened this way! At some point, while walking my terrier, Gus, in the morning, I remembered the childhood story of the Little Dutch Boy who stuck his finger in the dike and saved his village from the influx of the Zuider Zee. I really don't have a clue what his fingers looked like, but I had ten of my own to consult, and not

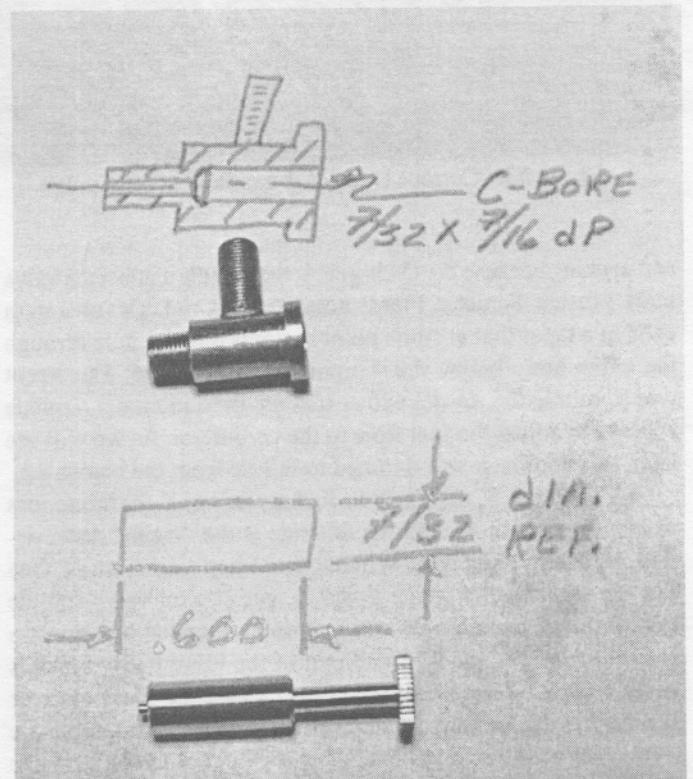
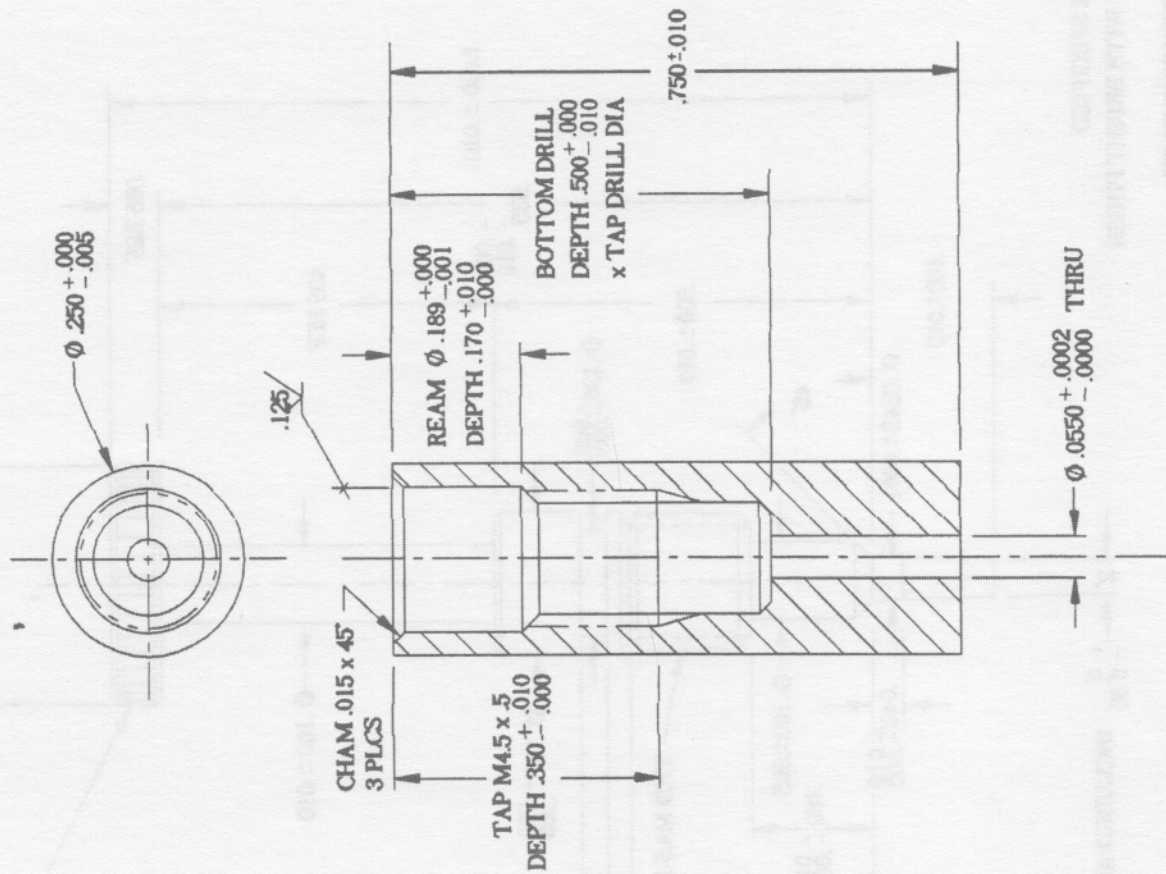


Photo #7: K-4s valve body core and Unit Shop valve body insert.

one of them was tapered. And so it occurred to me that if a straight diameter was inserted into a constant diameter hole, and that the relative clearances between the two entities were tightly controlled, it might be possible to meter such a thin substance as butane gas by inserting or withdrawing the straight diameter within the constant diameter. Actually this principal is pretty old as it is very similar to the design mechanism of a labyrinth seal as used on the shafts of steam turbines. So now that I had the basic idea in place all that remained was to experiment with relative dimensions and build a working prototype; nothing to it, or so I thought.

I called Mike and asked him to sell me a bunch of his Cricket gas control valves as I had decided that I did not want to experiment with the one and only Frank S. gas control valve that I had. The Cricket gas valves arrived and I started. Cutting to the chase, let me say that it took me longer than shorter to get to the *magic combination* of numbers that would consistently yield the de-



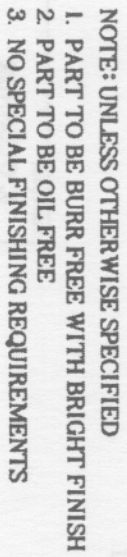
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4. REAM .189 DIA, 125 RMS MIN FINISH

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1. PART TO BE BURR FREE WITH BRIGHT FINISH
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 3. NO SPECIAL FINISHING REQUIREMENTS

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DRAWN BY L. BANGHAM
DATE 4-17-98
ECO NUMBER EKO-102

MATERIAL FULL HARD BRASS
SCALE: 4/1
VALVE CASE



EKO-101

VALVE SPINDLE

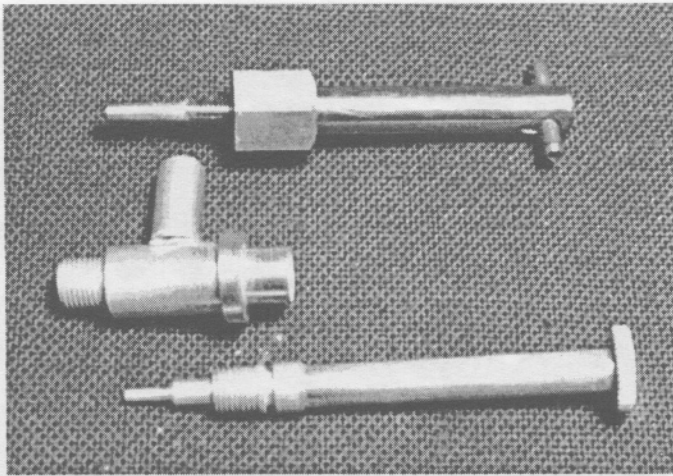


Photo #8:

Top - Original Aster valve spindle

Middle - Re-machined Aster valve body with
Unit Shop Valve body inserted

Bottom - Modified Unit Shop valve spindle

sired results.

The fact is that the *numbers* will vary somewhat from stock valve to another design of stock valve, but once they are identified for that particular stock valve they will remain constant, and the resulting flow of gas is predictable and controllable. As time has gone by I have outsmarted this stock gas control valve variation by noodling a way to insert a Unit Shop gas control valve into the stock valve body that is provided by the manufacturer of the locomotive. More on that later.

The basic numbers turned out to be a close fit of the straight portion of the valve stem nib to the constant diameter of the gas valve body's through hole to the tune of .0003 total combined clearance! No, that's not a misprint nor an error; it's the real deal!

The other important dimension is that the engagement of the straight portion of the gas control valve's nib be at least two times the thread pitch of the spindle. Now before anyone says that they can't duplicate my tolerances, please consider that all this experimental work was performed on my at least 65 year old Logan 9" swing floor lathe; the work goes slow, but it goes.

At this point please study the series of drawings that show the dimensions of the Unit Shop gas control valve. This is all you need to make your own valves or to hire out the making. My suggestion is to just purchase a couple from Sulphur Springs Steam Models at <www.sssmodels.com> (or see their ad in this issue of *SitG*). In oneseys and twoseys they are not expensive. Take a look at the photo of a Unit Shop gas control valve. (see photo #3)

Adapting the Unit Shop Valve to a Stock Valve

Early on it occurred to me, as I was altering the elebentyenth stock gas control valve, that there had to be an easier way to alter stock gas valves than to remanufacture them. At that time I was in the middle of dealing with a gaggle of Aster locomotives and I was growing weary. My next project was the gas valve on my Aster Big Boy, and it was at this point that I

decided to shoehorn in a Unit Shop gas control valve insert - what a concept! (see photo #4)

Please note that this one installation sports what seems to be a kind of gland nut on the top of the valve body; it is not. What it is, is a keeper, Loctited in place, that prevents me from unscrewing the valve spindle and losing it as the gas pressure blows it across the yard. This is the only installation that required such a device.

My good friend Clark Lord sent me the stock Aster butane gas tank out of his K-4s so that I would have it to convert, and to record the event for this article. (see photo #5) This photo clearly shows the stock butane flow control valve positioned on the side of the tank. Let's talk about that for a minute!

K-4s Design Flaw

Most butane fired small scale live steam locomotives are designed to burn butane gas drawn from the top of the fuel tank. The K-4s is an exception because of the placement of the fuel flow control valve on the side of the butane tank. When the model engineer prepares the K-4s for a run, the fuel tank is filled up to the top with liquid butane until liquid butane vents from the top of the fill valve. At this point the fuel flow control valve on the side of the fuel tank is pressurized with liquid butane, and will remain so until the fuel level drops below the half way point. Beyond that point the fuel flow control valve will be pressurized with butane gas. Under the best of circumstances, the actual metering ability of the stock valve is very marginal, and this deficiency is magnified when the stock valve is expected to control the flow of liquid butane. The reason being that any given fixed degree of fuel metering attempted by maintaining a constant distance between the butane control valve spindle and its

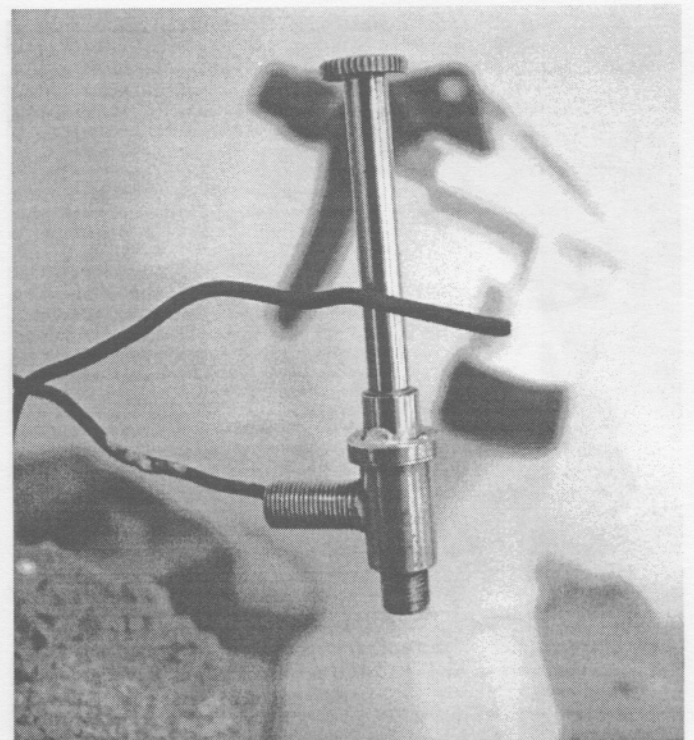


Photo #9: Brazing setup, Unit Shop insert into K-4s valve body core.

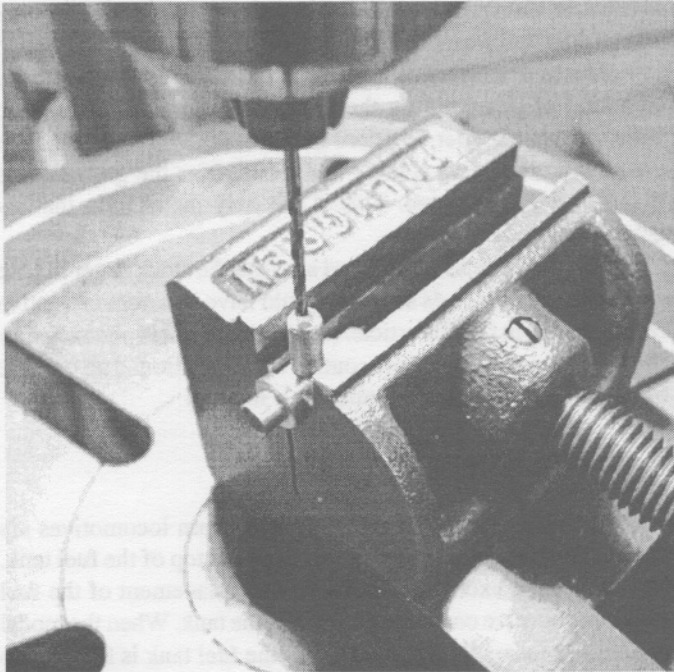


Photo #10: Drilling new gas passage through Unit Shop insert.

seat will allow the same volume of butane, either liquid or gas, to pass through per unit of time. If a given volume of butane gas passes through the valve it just finds its way through the fuel piping to the burner without any more expansion than it already experienced in flashing from liquid to gas within the fuel tank.

On the other hand, if the same volume of *liquid* butane passes through the valve, it still has to flash into butane gas and expand in the fuel line prior to arriving at the burner's gas jet.

Simply stated, two equal volumes of butane, one liquid

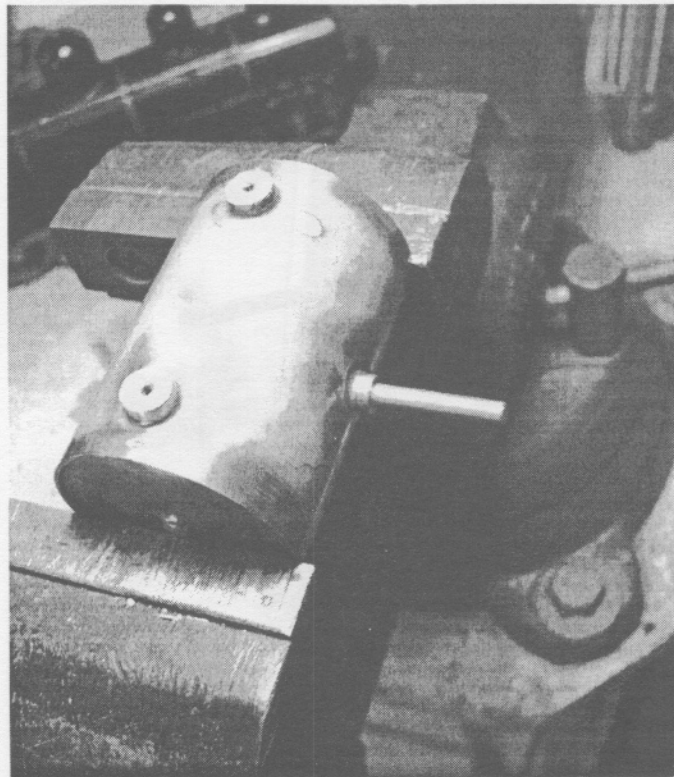


Photo #11: Removing fuel tank valve boss.

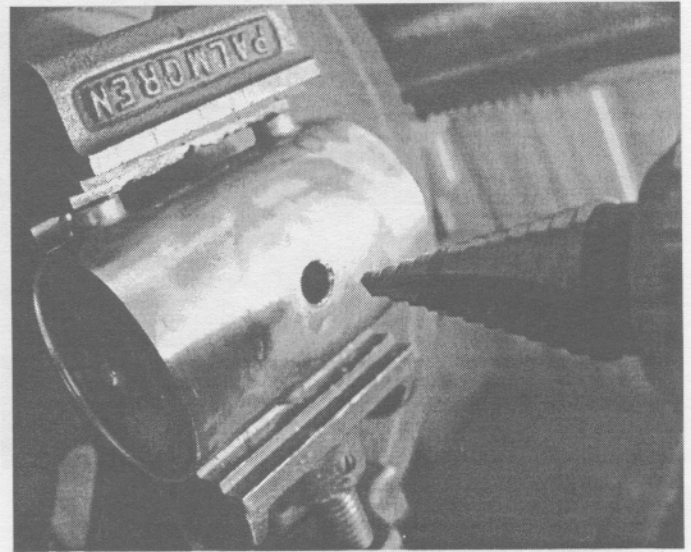


Photo #12: Resizing fuel tank valve boss hole.

and the other gas, contain dramatically different caloric values from one another, with the liquid volume calories being a bazillion times greater. The inability of the stock fuel control valve to precisely meter liquid butane flow to the burner results in hard lighting of the burner and to excessively high combustion chamber temperatures.

When you couple the excessive combustion temperatures with the K-4s boiler's propensity to run with low water levels, in relation to the two top boiler flues, because of poor tube placement and a sight glass that reads over full when the top tubes are barely covered with water, it becomes clear why these boilers fail at the top flue's braze joint with the combustion chamber at the rear tube sheet.

The solution is to install a valve or valve insert that will accurately meter butane; liquid or gas. A better way is to add a directed pickup tube to the fuel tank's valve boss, and to either run on liquid or gaseous butane, drawn from the bottom or top of the fuel tank, but not on both as is now the case. More on this later as well.

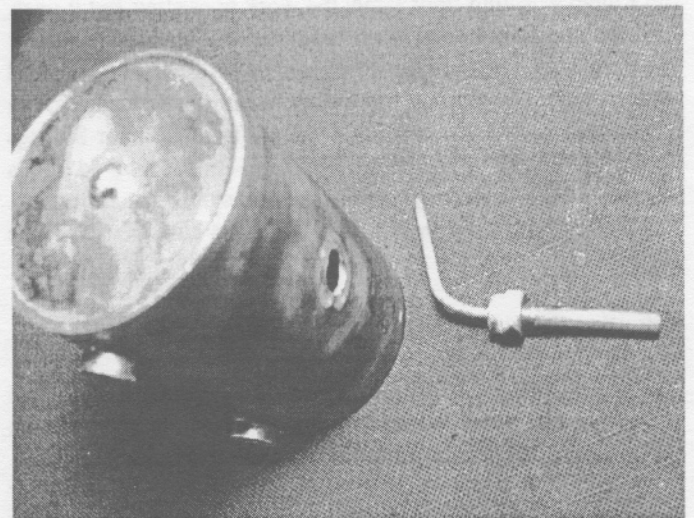


Photo #13: Fuel tank boss and pickup tube assembly with threaded mandrel attached.

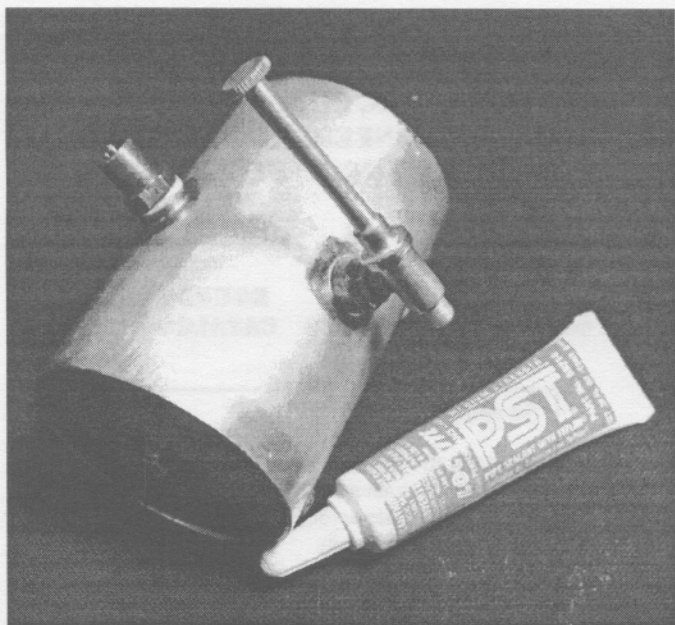


Photo #14: Completed fuel tank conversion with Loctite™ thread sealant.

Adapting the Unit Shop Valve - continued

You can see in the series of photos just how I drill out the inside of the stock valve, machine the Unit Shop valve to insert within the stock valve, and silver braze the assembly together. (see photos #6, #7, #8, #9 and #10) Actually my late, great, steaming buddy, Bob Paule was part of the inspiration to go the valve insertion route, and to get away from the re-manufacturing of the stock valves. We were talking on the phone one day about my burner experiments and I was sweating out the drilling of some .004" dia. holes. His comment to me was that he preferred to purchase his holes rather than make them. The principal is the same here too. One can now purchase the two ten thousandths of an inch clearance that is necessary to control the flow of butane gas or liquid in their model live steamer from Sulphur Springs Steam Models LLC.

Converting the K-4s Fuel Tank

The Unit Shop butane control valve will accurately meter the flow of both liquid and gaseous butane, and so the choice of fuel state is up to the discrimination of the model engineer. I tend to favor using liquid butane as a fuel source because all the vaporization of the liquid to a gas occurs outside the fuel tank in the fuel line leading up to the burner's gas jet. This approach to vaporization means that the vapor pressure in the fuel tank will remain very constant because so little heat is required to push the same amount of BTUs out of the tank in liquid form as opposed to drawing out gas that has vaporized within the tank, and thus cooling it and lowering the vapor pressure of the tank.

The liquid draw works best with tender locomotives that have the fuel tank in the tender where no waste heat from the backhead can reach it to warm it during operation. Butane gas draw works best with locomotives that have the fuel tank located in a warm to hot place such as the cab or side tanks of a

locomotive.

Sam DiMaggio has run in all seasons (Madison, Wisconsin) using a Unit Shop re-manufactured liquid butane feed fuel tank in his K-4s without any problems. He also uses a radiant poker burner.

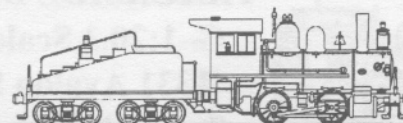
Clark Lord lives in Las Vegas, Nevada which has a far milder, but hotter climate, and so I chose to convert Clark's butane fuel tank to a gas draw type. I removed the existing fuel control valve boss from the side of the fuel tank by first making up a threaded mandrel and screwing it into the boss. (see photo #11) Next I heated up the boss until the brazing filler flowed, and then I wiggled the boss out using a plier clamped to the threaded mandrel. The resultant hole in the fuel tank was not perfectly round because of an uneven deposit of brazing filler. I then resized the hole using a UniBit to the next regular diameter. Do not use a regular twist drill to resize this hole. A regular two flute twist drill will catch, dig in a lip, and bind in the hole. You could be injured if you ignore this warning. *Please...* either file the hole round or use a UniBit to do this task.

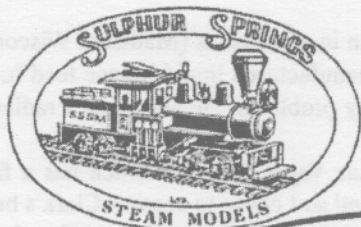
The old boss cannot be saved, and so a new boss that has a 3/32" dia. copper tube bent at an angle sufficient to reach the top of the fuel tank must be fabricated. (see photo #13) The 3/32" dia. copper tube is silver brazed to the back of the threaded boss, and then the whole assembly is silver brazed into the side of the butane fuel tank. Once all the parts of the tank and valve assembly are acid etched and cleaned after the brazing steps, the tank is assembled and tested for leaks. (see photo #14)

Conclusion

It would seem to me that the joining of these two Unit Shop developed concepts, the radiant gas fired poker burner and the truly controllable butane gas or liquid fuel metering valve, should end all the folk lore concerning butane firing in small scale live steam model locomotives. Drawing butane liquid directly from the fuel tank and delivering it to the burner is by far not a new concept. G1MRA members in England have been using this approach for years, but they have always lacked the precise control of the fluid flow that is so important to proper operation, and they have had to resort to preheat and heater loops to prevent the burner from encountering cardiac arrest. None of this stuff is required any more if the Unit Shop valve assembly is inserted in the system. The benefits are many, and what really needs to be done is to get Larry Bangham to author an article on the liquid butane fueled train that he has been running since he became the proud owner of a couple of the Unit Shop fuel control valves.

If there are any questions about anything that I have written, please feel free to contact me by e-mail at <unitshop@dcn.davis.ca.us>, or through the editor.





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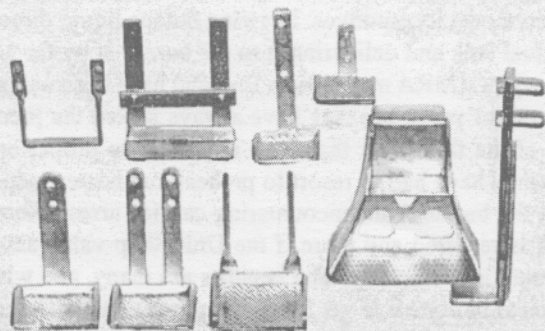
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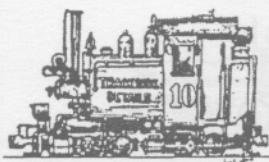
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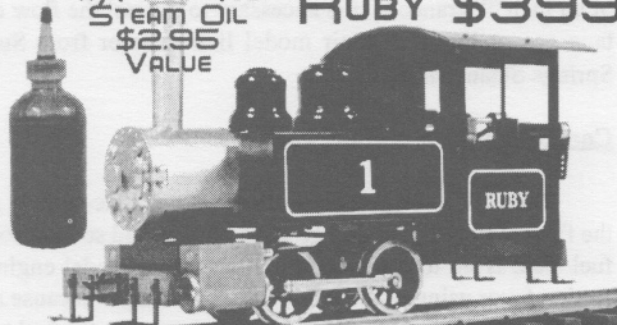
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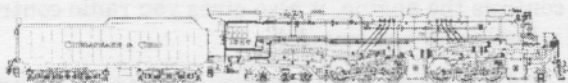
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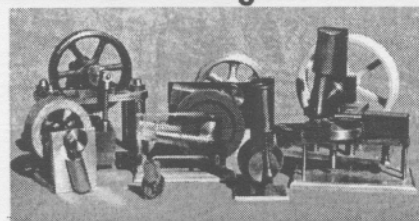
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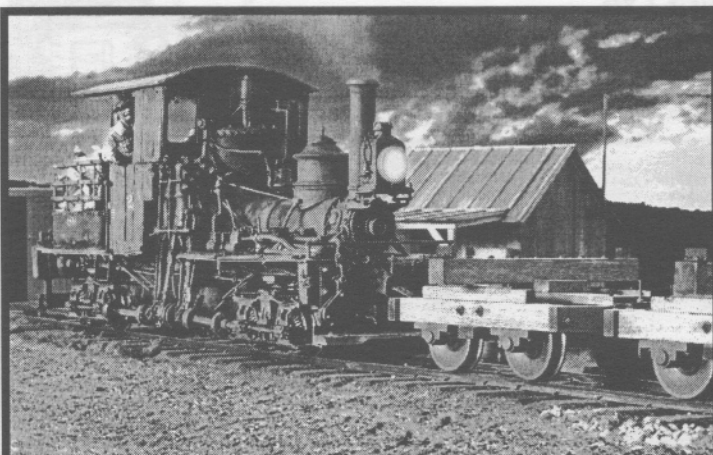
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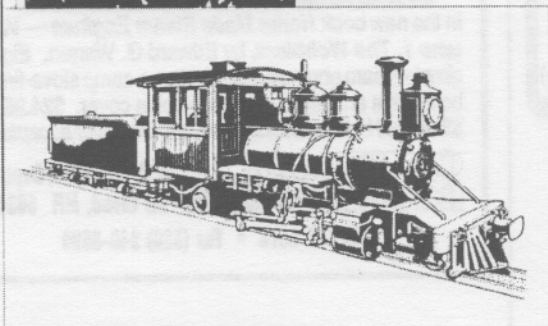
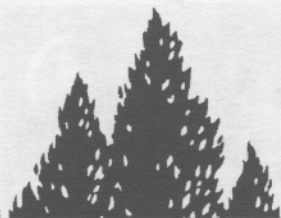
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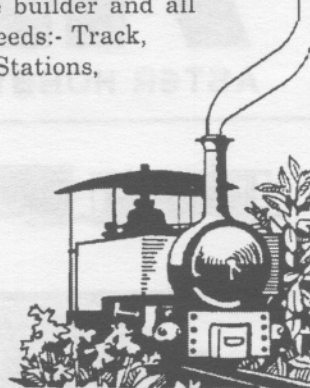
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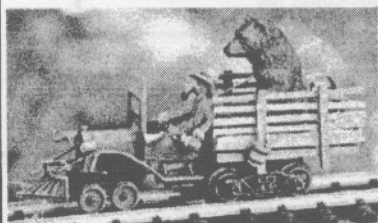
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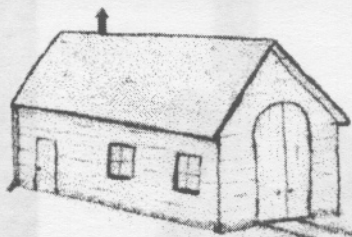
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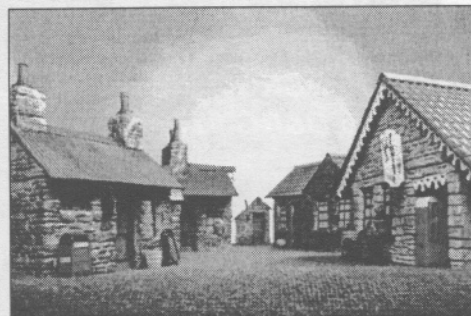
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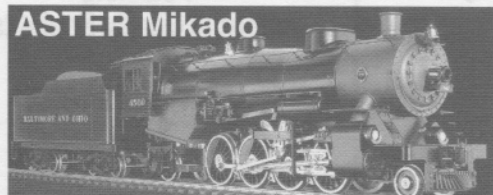
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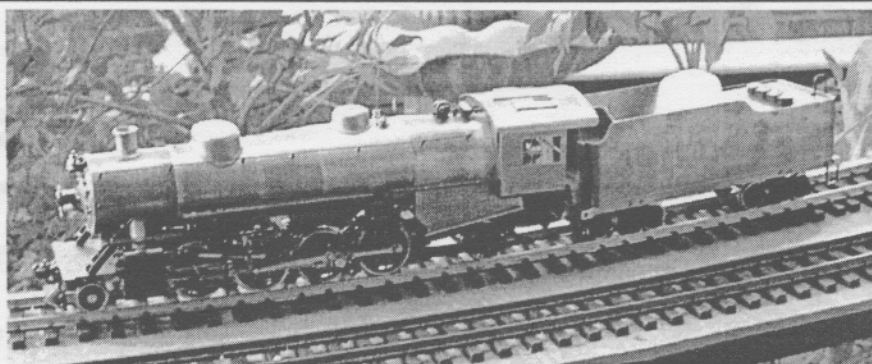
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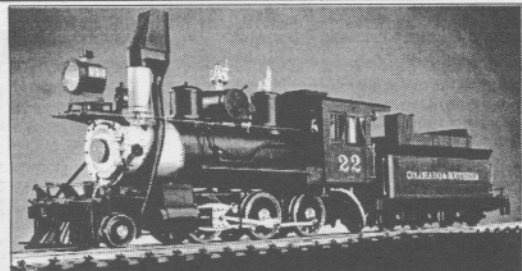
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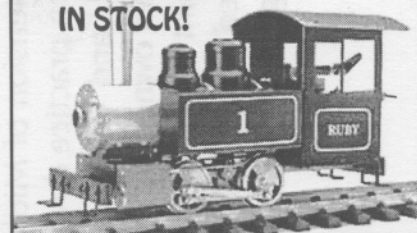
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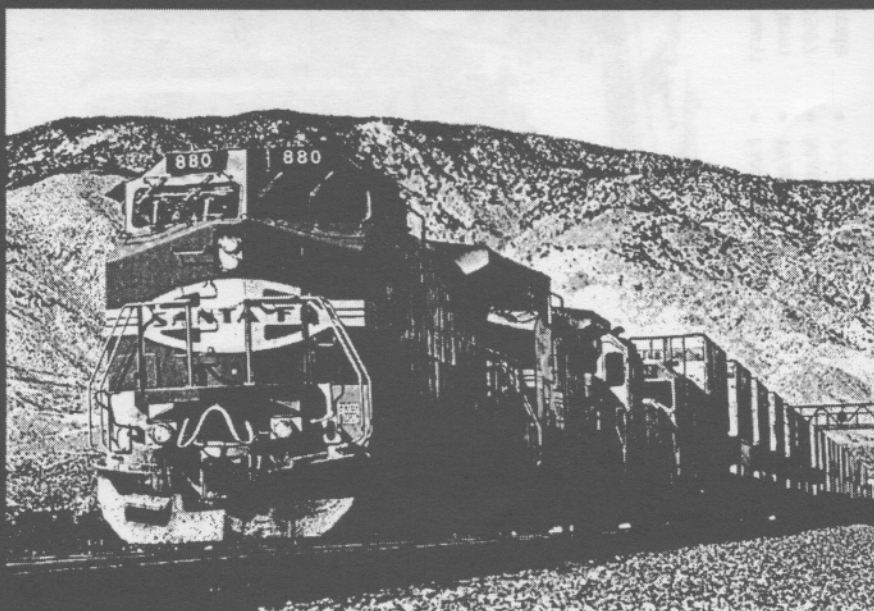


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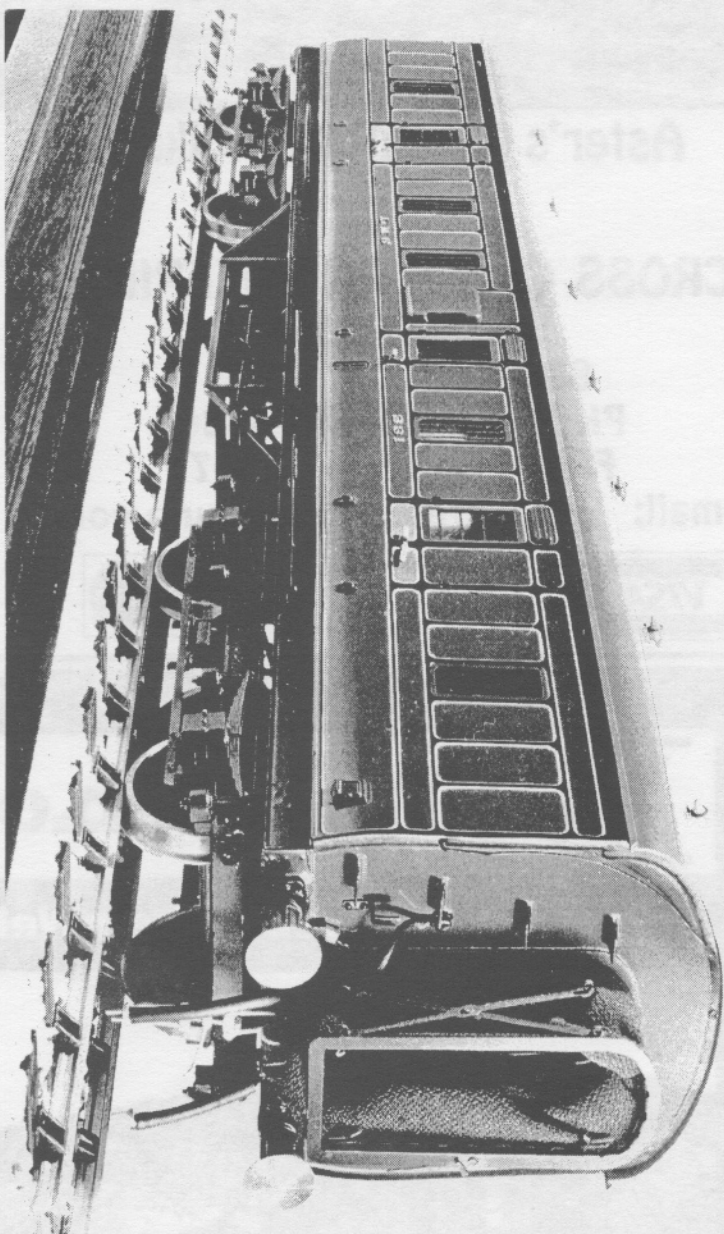
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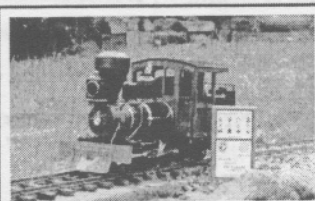
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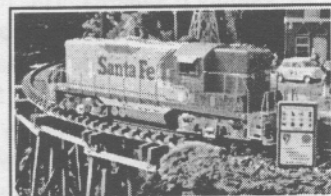
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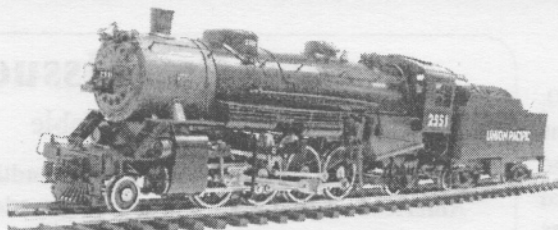
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Captions, Outside Back Cover (clockwise from top right): (1) Antique steamers are gaining popularity. This replica of a Shoener was built by Larry Smith (FL) and was *photographed at Diamondhead by Michael Martin* (2) Many of us find the Darjeeling and Himalayan Railway fascinating, and Ken Parkinson (FL) expressed his interest by building this fine loco and coach based on his memories from his Army days in India - *photo by Ken Parkinson* (3, 4 & 5) Hervé Quéméré (FRANCE) is a prolific builder whose work has been seen in these pages before (*SitG* #58). Pictured here are 3 of his projects. Loco N° 2 was built in 1992 using Roundhouse cylinders. A new chassis was built for this loco in 2002. Loco N° 4 uses Roundhouse cylinders and was a 2000-2001 project. Loco N° 9 has Tich cylinders. Hervé used photographs from Narrow Gauge Pictorial VI as a guide. All 3 locos are fitted with radio control, hand water pumps and mechanical water pumps running off an axle eccentric. Planned future projects include a K37 and a steam tug. - *photos 3-5 by Hervé Quéméré.*

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